COMMONWEALTH OF KENTUCKY

BEFORE THE PUBLIC SERVICE COMMISSION

IN THE MATTER OF:

THE APPLICATION OF KENTUCKY POWER COMPANY FOR: (1) A CERTIFICATE OF PUBLIC CONVENIENCE AND NECESSITY AUTHORIZING THE TRANSFER TO THE COMPANY OF AN UNDIVIDED FIFTY PERCENT INTEREST IN THE MITCHELL GENERATING STATION AND ASSOCIATED ASSETS; (2) APPROVAL OF THE ASSUMPTION BY KENTUCKY POWER COMPANY OF CERTAIN LIABILITIES IN CONNECTION WITH THE TRANSFER OF THE MITCHELL GENERATING STATION; (3) DECLARATORY RULINGS; (4) DEFERRAL OF COSTS INCURRED IN CONNECTION WITH THE COMPANY'S EFFORTS TO MEET FEDERAL CLEAN AIR ACT AND RELATED REQUIREMENTS; 5) APPROVAL OF THE RENEWABLE ENERGY PURCHASE AGREEMENT FOR BIOMASS ENERGY RESOURCES BETWEEN THE COMPANY AND ECOPOWER GENERATION-HAZARD LLC AND (6) FOR ALL OTHER REQUIRED APPROVALS AND RELIEF	)	**CASE NO. 2012-00578**

KENTUCKY POWER COMPANY RESPONSES TO KIUC'S

FIRST SET OF DATA REQUESTS

February 20. 2013

VERIFICATION

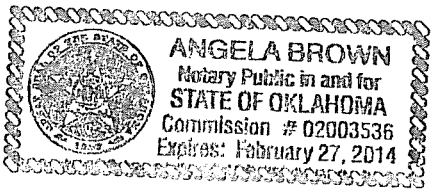
The undersigned, Mark A. Becker, being duly sworn, deposes and says he is the Manager, Resource Planning for American Electric Power Company that he has personal knowledge of the matters set forth in the foregoing responses for which he is the identified witness and that the information contained therein is true and correct to the best of his information, knowledge and belief

Mark A. Becker

STATE OF OKLAHOMA)
) CASE NO. 2012-00578
COUNTY OF TULSA)

Subscribed and sworn to before me, a Notary Public in and before said County and State, by Mark A. Becker, this the 14 day of February, 2013.

Angela Brown
Notary Public



My Commission Expires: 2-27-14

VERIFICATION

The undersigned, Karl R. Bletzacker, being duly sworn, deposes and says he is Director, Fundamental Analysis for American Electric Power, that he has personal knowledge of the matters set forth in the forgoing responses for which he is the identified witness and that the information contained therein is true and correct to the best of his information, knowledge, and belief.

K R Bletzacker

Karl R. Bletzacker

STATE OF OHIO)
) CASE NO. 2012-00578
COUNTY OF FRANKLIN)

Subscribed and sworn to before me, a Notary Public in and before said County and State, by Karl R. Bletzacker, this the 19 day of February 2013.

Holly M. Charles

Notary Public

Holly M. Charles
Notary Public-State of Ohio
My Commission Expires
March 7, 2016

My Commission Expires: March 7, 2016

VERIFICATION

The undersigned, Karl A. McDermott, being duly sworn, deposes and says he is the Special Consultant with NERA that he has personal knowledge of the matters set forth in the forgoing responses for which he/she is the identified witness and that the information contained therein is true and correct to the best of his information, knowledge, and belief

Karl A. McDermott

STATE OF ILLINOIS)
) CASE NO. 2012-00578
COUNTY OF CHAMPAIGN)

Subscribed and sworn to before me, a Notary Public in and before said County and State, by Karl A. McDermott, this the 16th day of February 2013.

"OFFICIAL SEAL"
BRADLEY M. KRALL
Notary Public, State of Illinois
My commission expires 01/04/15

Notary Public

My Commission Expires: 01/04/15

VERIFICATION

The undersigned, John M. McManus, being duly sworn, deposes and says he is Vice President Environmental Services for American Electric Power, that he has personal knowledge of the matters set forth in the forgoing responses for which he is the identified witness and that the information contained therein is true and correct to the best of his information, knowledge and belief

John M. McManus

STATE OF OHIO)
) CASE NO. 2012-00578
COUNTY OF FRANKLIN)

Subscribed and sworn to before me, a Notary Public in and before said County and State, by John M. McManus, this the 11 day of February 2013.

Notary Public

JANET L. WHITE
Notary Public, State of Ohio
My Commission Expires 09-09-2013

My Commission Expires:

VERIFICATION

The undersigned, Gregory G. Pauley, being duly sworn, deposes and says he is the President and Chief Operating Officer for Kentucky Power Company, that he has personal knowledge of the matters set forth in the forgoing responses for which he is the identified witness and that the information contained therein is true and correct to the best of his/her information, knowledge and belief

Gregory G. Pauley

COMMONWEALTH OF KENTUCKY)
) CASE NO. 2012-00578
COUNTY OF FRANKLIN)

Subscribed and sworn to before me, a Notary Public in and before said County and State, by Gregory G. Pauley, this the 11th day of February, 2013.

Notary Public 481393

My Commission Expires: January 23, 2017

VERIFICATION

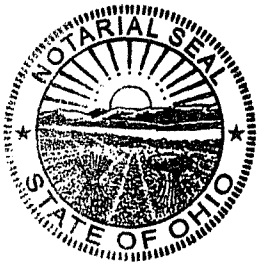
The undersigned, Scott C. Weaver, being duly sworn, deposes and says he is Managing Director Resource Planning and Operation Analysis for American Electric Power, that he has personal knowledge of the matters set forth in the forgoing responses for which he is the identified witness and that the information contained therein is true and correct to the best of his information, knowledge and belief

Scott C. Weaver

STATE OF OHIO)
) CASE NO. 2012-00578
COUNTY OF FRANKLIN)

Subscribed and sworn to before me, a Notary Public in and before said County and State, by Scott C. Weaver, this the 15th day of February 2013.

Notary Public



Cheryl L. Strawser
Notary Public, State of Ohio
My Commission Expires 10-01-2016

My Commission Expires: October 1st 2016

VERIFICATION

The undersigned, Ranie K. Wohnhas, being duly sworn, deposes and says he is the Managing Director Regulatory and Finance for Kentucky Power, that he has personal knowledge of the matters set forth in the forgoing responses for which he is the identified witness and that the information contained therein is true and correct to the best of his information, knowledge, and belief

Ranie K. Wohnhas

COMMONWEALTH OF KENTUCKY)
) CASE NO. 2012-00578
COUNTY OF FRANKLIN)

Subscribed and sworn to before me, a Notary Public in and before said County and State, by Ranie K. Wohnhas, this the 11th day of February, 2013.

Judy K Rosquist 481393
Notary Public

My Commission Expires: January 23, 2017

Kentucky Power Company

REQUEST

With regard to the Options discussed on page 5 of Mr. Weaver's testimony:

a. What was the basis for selecting a retirement date of June 2015 for Big Sandy 2 ("BS2")?

b. In Case No. 2011-00401, the Company proposed to operate Big Sandy 2 through the end of 2015 until it began an extended outage to tie-in the new environmental equipment in early 2016. Please explain why the Company now proposes to retire Big Sandy 2 in June 2015 instead of at the end of 2015. Provide a copy of all studies that address the timing of the BS 2 retirement. Identify which of those studies were relied on to accelerate the retirement date.

c. Please explain why the Company proposes to retire Big Sandy 2 prior to the summer 2015 peak rather than after the summer peak. Provide a copy of all studies that address the timing of the Big Sandy 2 retirement prior to the summer 2015 peak rather than after the summer peak. Identify which of those studies were relied on to make the decision to retire in June rather than September or October.

RESPONSE

a. The June 2015 retirement date is driven by the effective date of the MATS rule and expiration date of the PJM capacity commitment. The MATS rule becomes effective April 16, 2015, but the Big Sandy 2 PJM capacity commitment expires June 1, 2015. Based on joint consultations with PJM and several state environmental agencies overseeing the implementation of MATS, it is expected that Big Sandy Unit 2 will be able to operate through the end of its PJM capacity commitment.

b. Case No. 2011-00401 would have provided for the installation of emission control equipment needed to comply with the requirements of the MATS rule. The schedule for installing those controls, along with the availability of an extension of the effective date of the MATS requirements for sources installing controls, would have provided for operation through the end of 2015. Because installation of emission controls is no longer being pursued, June 2015 becomes the retirement date as described in the response to Part a. The June 2015 date is driven by established regulatory deadlines; no studies were performed or relied upon.

c. See the response to part b.

WITNESS: John M McManus

Kentucky Power Company

REQUEST

With regard to Options 1,2,3,4 and 6, the Mitchell capacity is acquired beginning January 2014.

a. Please provide all reasons why the Company assumed that Mitchell is acquired prior to the time that Big Sandy 1 ("BS1") and BS2 are retired.

b. What would be required to be acquire the Mitchell capacity when Big Sandy 1 and 2 are retired?

c. Provide all reasons why the acquisition of Mitchell cannot be delayed until BS2 is retired. Provide a copy of all analyses, source documents and/or calculations performed by or on behalf of the Company.

RESPONSE

a. January 1, 2014 is the date the Mitchell Units are being made available. See also the Company's response to KPSC 1-21.

b. The Mitchell units would still need to be available for transfer and their output would need to remain uncommitted to other parties, and both Kentucky Power and AEP Generation Resources Inc. would still need to be willing to enter into the transaction and agree on the appropriate transfer price. See the Company's response to KPSC 1-21.

c. See response to b. above. There are no relevant analyses, source documents or calculations.

WITNESS: Ranie K Wohnhas

Kentucky Power Company

REQUEST

In the 6 options identified by the Company, Big Sandy 1 ("BS1") is either retired, repowered, or converted to gas at different times. Please explain the following:

a. In Options 1, 4, and 6, please explain the basis for selecting "by June 2015" as the retirement date for BS1, since the consent decree allows it to operate until December 2015 before environmental upgrades must be made?

b. In Option 2 what was the basis for selecting "by April 2015" as the retirement date for BS1?

c. In Option 3, what was the basis for selecting "by June 2017" as the CC repowering date for BS1? In other words what was the basis for determining that would be the earliest it could be repowered. Please provide a timeline of milestones necessary to achieve conversion by this date.

d. In Option 5, what was the basis for selecting "by July 2015" as the gas conversion date for BS1, particularly given the consent decree allows until December 2015 before environmental upgrades must be made? Please provide a timeline of milestones necessary to achieve conversion by this date.

RESPONSE

a. The June 2015 retirement date is driven by the effective date of the MATS rule and expiration date of the PJM capacity commitment. The MATS rule becomes effective April 16, 2015, but the Big Sandy 1 PJM capacity commitment expires June 1, 2015. Based on joint consultations with PJM and several state environmental agencies overseeing the implementation of MATS, it is expected that Big Sandy Unit 1 will be able to operate through the end of its PJM capacity commitment.

b. April 2015 was modeling assumption based on the effective date of the MATS rule.

c. The Company believes it would require four years from the time a decision was made to repower the unit as a CC until commercial operation. This includes time for regulatory approval and permitting and construction. See the following preliminary milestone timeline for repowering BS1 as a CC:

Kentucky Power Company

Conceptual Engineering & Design = Project Start
AEP file CCN Request with KY PSC = 6 months
Air Permit-to-Install Filing Complete = 6 months
KY PSC CCN Granted = 15 months
Project Detailed Engineering & Design Authorization = 16 months
Start Site Mobilization for Site Development and Relocations = 18 months
Air Permit-to-Install Received = 24 months
Procurement Complete = 37 months
CT Power Backfeed Available = 38 months
Unit 1 Decommissioning Outage Begins = 39 months
First Fire = 44 months
Steam to Steam Turbine = 47 months
Commercial Operation = 50 months

d. The Consent Decree does not require environmental upgrades on Big Sandy Unit 1. Permitting and construction for a gas conversion project is expected to take 30 months. The following is a preliminary timeline of milestones for converting BS1 to gas-fired:

Submit regulatory filing =	Month 1
Start conceptual engineering =	Month 1
Submit air permit application =	Month 3
Award pipeline contract =	Month 7
Contract OEM/AE engineering =	Month 8
Order long lead material =	Month 10
Start pipeline construction =	Month 24
Start pre-outage plant construction=	Month 26
Commission Pipeline =	Month 28
Start BS1 outage construction =	Month 28
Start up BS1 as gas converted =	Month 30

WITNESS: John M McManus

Kentucky Power Company

REQUEST

What studies have been performed to reach the decision that BS1 should be retired? Please provide all reports, analyses, workpapers, and documentation of any type that was produced from conducting those studies. If no studies were performed, please explain why not. This information should be provided electronically with all formulas intact and no pasted in values.

RESPONSE

No decision to retire BS1 has been made. However, in order to meet the MATS requirement, BS1, as a coal unit, will need to retire by June 2015. As discussed on page 39 of Mr. Weaver's testimony, "As part of the solicitation process it would be very conceivable that a Big Sandy Unit 1 natural gas conversion project (Option #5A) could be offered in as part of a formal RFP submittal." Therefore, the ultimate disposition of BS1 will depend on the analysis of proposals received by third parties compared to the option to convert the unit to gas fired operation.

WITNESS: Ranie K Wohnhas

Kentucky Power Company

REQUEST

For continued operation on coal at BS1, please provide year by year estimates of environmental upgrade capital costs, environmental upgrade O&M costs, and other capital addition requirements. Please provide a description of each environmental upgrade investment and the capital addition investment required. Also, provide the revenue requirement model with data assumptions and provide the associated yearly revenue requirement costs for each capital investment and for each capital addition, and provide all O&M expenses through the planning period. This information should be provided electronically with all formulas intact and no pasted in values.

RESPONSE

During the 2005-2006 timeframe, the Company evaluated a wet scrubber and SCR application on Big Sandy Unit 1. See the enclosed CD for 'KIUC 1-5 Attachment 1_Big Sandy Unit 1 FGD Rev 7' and 'KIUC 1-5 Attachment 2_BS1UpdatedFeb03 final_0602007MWRBrief' for the available requested information. As a result of the Big Sandy Unit 2 wet scrubber price increases, the Company ceased further review of Big Sandy Unit 1.

WITNESS: Ranie K Wohnhas

Kentucky Power Company

REQUEST

For continued operation on coal at BS2 (Option 1), please provide year by year estimates of environmental upgrade capital costs, environmental upgrade O&M costs, and other capital addition requirements. Provide the revenue requirement model with data assumptions including the capital environmental upgrade investment and capital additions for each capital cost, and O&M expenses through the planning period. This information should be provided electronically with all formulas intact and no pasted in values.

RESPONSE

The year by year estimates of environmental upgrade capital costs can be found in the response to KIUC 1-12. The response to KIUC 1-31, electronic file named BS2DFGD STRAT INPUT DATA.XLS, includes the environmental upgrade O&M costs and other capital addition requirements.

The Company utilized Strategist to determine the long term costs for Option 1. See response to AG 1-12 for the Strategist modeling assumptions for Option 1.

WITNESS: Ranie K. Wohnhas

Kentucky Power Company

REQUEST

Please state whether the list in Exhibit SCW-4 reflects all anticipated environmental upgrades required at Mitchell. Please state where these costs may be found in the Company's workpapers/economic analyses of the Mitchell acquisition option.

RESPONSE

Exhibit SCW-4 reflects the cost of all anticipated environmental upgrades at the time of this response.

WITNESS: Scott C Weaver

Kentucky Power Company

REQUEST

Does the Company anticipate that the EPA will address the issues with the CSAPR regulations, and will eventually implement a modified CSAPR rule?

a. If so, when does the Company believe the modified CSAPR rule will be implemented? If not why not?

b. Has the Company incorporated estimates for these costs for BS1 and Mitchell in its economic evaluations? If not, why not, and if so, where in the Company's workpapers can these costs be found?

c. If not, please explain what the Company anticipates will happen to the CSAPR rule. For example does the Company assume that CAIR will continue and if so, where in the Company's workpapers can these costs be found.

d. Assume that CSAPR had passed as the EPA had intended. Please explain what modifications and annual costs would have been necessary at Mitchell, and BS1 to comply with CSAPR.

RESPONSE

It is unknown whether EPA will appeal the decision that vacated CSAPR to the Supreme Court or develop a replacement rule.

a. Because of the uncertainty regarding the strategy EPA will take in responding to the decision to vacate CSAPR, it is unknown when or if a modified CSAPR will be implemented.

b. No. Any analysis of potential impacts cannot be performed until EPA develops a CSAPR replacement and the requirements of such a rule are known.

c. As a result of the D.C. Circuit Court of Appeals decision to vacate CSAPR, the requirements of the CAIR remain effective until either the decision is reversed by the Supreme Court, or until EPA finalizes a CSAPR replacement rule.

d. The existing emission controls at the Mitchell Plant were expected to meet CSAPR requirements and, therefore, no modifications or additional costs for controls would have been required. The SO2 and NOx emissions market was expected to minimize, if not eliminate the need to install and/or modify emission control systems at Big Sandy Unit 1. The annual costs for Big Sandy Unit 1 would have been dependent on the market for SO2 and NOx emissions credits.

WITNESS: John M McManus

Kentucky Power Company

REQUEST

With regard to both the 20% and 50% acquisitions of Mitchell, provide the revenue requirement model with data assumptions including the yearly capital environmental upgrade investment and capital additions for each capital cost through the planning period. This should include all revenue requirements (capital, O&M, environmental, etc.) that were included in the economic evaluations. This information should be provided electronically with all formulas intact and no pasted in values.

RESPONSE

The Company utilized Strategist to determine the long-term costs for Option 1 which can be found in the Company's response to KPSC 1-1. See the Company's response to AG 1-12 for the Strategist modeling assumptions for Option 1.

WITNESS: Ranie K. Wohnhas

Kentucky Power Company

REQUEST

Concerning the BS1 retirement and replacement with a new CC unit, conversion to a repowered CC unit, and conversion to a gas fired steam turbine unit, provide the revenue requirement model with data assumptions including the yearly capital environmental upgrade investment and capital additions for each capital cost through the planning period. This should include all revenue requirements (capital, O&M, environmental, etc.) that were included in the economic evaluations. This information should be provided electronically with all formulas intact and no pasted in values.

RESPONSE

The thrust of the Company's filing in 2012-00578 centers on unit disposition alternatives --many of which are identified in this request-- associated with the 800-MW Big Sandy Unit 2, not the 278-MW Big Sandy Unit 1 (BS1). Each of those alternatives, including the 50% (780-MW) Mitchell Asset Transfer, approximates the replacement capacity and energy requirements for Unit 2. BS1 evaluation disposition options included: a 20% (312-MW) Mitchell Asset Transfer (Options #1A, #2A, #3A), a coal-to-gas conversion or re-fuel (Options #5A and #5A), as well as a PJM-market purchase replacement option (Options #1B, #2B, #3B, #4A, #4B and #6). The Company's ultimate recommended disposition for BS1 focused on the issuance of a 250-MW Request for Proposal for purpose of assessing the economic viability of both the bi-lateral capacity and energy market as well as the Big Sandy re-fuel option.

Please see the responses to PSC 1-1 as well as AG 1-12 for the detailed assumptions and evaluation results associated with the unique options highlighted.

WITNESS: Scott C. Weaver/Ranie K Wohnhas

Kentucky Power Company

REQUEST

Please supply all workpapers and analyses that were developed to create the table found in Exhibit SCW-4 and supply the table itself. Please provide this information electronically, with all formulas intact, and no pasted in values.

RESPONSE

See KIUC 1-11 Attachment 1 on the enclosed CD.

WITNESS: Scott C Weaver

Kentucky Power Company

REQUEST

Please supply all workpapers and analyses that were developed to create the Table 3 found in Mr. Weaver's testimony at page 22, and supply the table itself. Please provide this information electronically, with all formulas intact, and no pasted in values.

RESPONSE

See KIUC 1-12 Attachment 1 on the enclosed CD.

WITNESS: Scott C Weaver

Kentucky Power Company

REQUEST

On page 12 of Mr. Weaver's testimony, in referring to Mitchell he states that "it is not at all certain that additional retrofit requirements would be required in any event." Has the Company performed any analysis to explore what additional environmental regulations and what additional retrofits could realistically be required within the next 5 - 10 years? If so, please provide any analyses performed. Please supply this information electronically with all formulas intact.

RESPONSE

The Company has identified the expected environmental regulations and associated potential environmental projects as found in Company Weaver's Exhibit SCW-4.

WITNESS: John M McManus

Kentucky Power Company

REQUEST

On page 20 of Mr. Weaver's testimony, he discusses the necessary gas pipeline infrastructure (Options 2 and 3). Please provide any study or analyses that exist examining the requirements (tasks, costs, etc) to develop the appropriate pipeline infrastructure in each of the options. Also, include the same information for Option 5 in which BS1 is converted to a gas-fired steam turbine unit.

RESPONSE

Refer to KIUC 1-14 Attachments 1 through 3 for information in regards to the gas pipelines in support of the BS1 gas conversion (Option 5). Refer to KIUC 1-14 Attachment 4 for information regarding the gas pipelines in support of BS1 combined cycle units (Options 2 and 3).

Confidential treatment is being sought for the entirety of Attachments 1-4.

WITNESS: Scott C Weaver

REDACTED IN ENTIRETY

Kentucky Power Company

REQUEST

Why didn't Mr. Weaver mention Option 5 at page 20 in his discussion of pipeline infrastructure?

RESPONSE

The question and answer beginning on line 3 of page 20 of Mr. Weaver's direct testimony clearly identifies the Big Sandy Unit 1 Gas Conversion "...as a component of Option #5 in this filing."

WITNESS: Scott C Weaver

Kentucky Power Company

REQUEST

Please supply a revised Table 1-1 in Exhibit SCW-1 showing the winter peak forecast for Kentucky Power and AEP-East.

RESPONSE

See KIUC 1-16 Attachment 1.

WITNESS: Scott C Weaver

Projected (Winter) Peak Demand and Internal Load
KPCo and AEP-East
(Sep-2012 Fcst)

Year	Peak Demand (MW) KPCo	Peak Demand (MW) AEP-East*	Internal Load (GWh) KPCo	Internal Load (GWh) AEP-East*
2012	**1,471** (A)	20,159 (A)	**7,444**	127,337
2013	**1,516**	20,329	**7,427**	123,031
2014	**1,523**	20,575	**7,464**	124,329
2015	**1,527**	20,680	**7,495**	125,257
2016	**1,528**	20,689	**7,528**	125,985
2017	**1,533**	20,772	**7,557**	126,417
2018	**1,537**	20,854	**7,592**	127,023
2019	**1,543**	20,961	**7,629**	127,749
2020	**1,544**	21,003	**7,661**	128,435
2021	**1,555**	21,190	**7,696**	129,221
2022	**1,562**	21,313	**7,736**	130,030
2023	**1,566**	21,418	**7,777**	130,886
2024	**1,569**	21,482	**7,820**	131,769
2025	**1,580**	21,673	**7,859**	132,634
2026	**1,588**	21,808	**7,905**	133,538
2027	**1,596**	21,944	**7,953**	134,482
2028	**1,600**	22,037	**8,002**	135,457
2029	**1,609**	22,207	**8,045**	136,385
2030	**1,617**	22,346	**8,091**	137,352
2031	**1,625**	22,488	**8,137**	138,348

10-Year (2012-2021):		
Total Growth	**83**	1,031
Compound Annual Growth Rate	**0.61%**	0.56%

20-Year (2012-2031):		
Total Growth	**154**	2,330
Compound Annual Growth Rate	**0.52%**	0.58%

10-Year (2012-2021):		
Total Growth	**253**	1,885
Compound Annual Growth Rate	**0.37%**	0.16%

20-Year (2012-2031):		
Total Growth	**694**	11,011
Compound Annual Growth Rate	**0.47%**	0.44%

(A) Actual, Weather Normalized winter peak
* AEP-East includes Ohio-Wires customers

Kentucky Power Company

REQUEST

With regard to the highest summer and winter peaks that occurred in the 2006/2007 time period, what events caused such high peaks at those times, and what load loss has occurred since then that resulted in the load being much lower beginning in 2012 in Table 1-1 in Exhibit SCW-1.

RESPONSE

The Company has experienced declining load since the 2006/2007 time period. The historical loads shown in Exhibit SCW-1 have not been adjusted for weather or abnormal events. The Company's load endured the impact of recent U.S. recession fairly well. However, the decline in the coal production sector in the most recent years has had an impact on load. Coal production has dropped sharply between 2007 and 2011 according to data from the Energy Information Administration (EIA). For Eastern Kentucky, coal production dropped by 15.9% during that time period. Although the Company does not serve all of the Eastern Kentucky coal producers, it is good indicator of coal activity.

WITNESS: Scott C Weaver

Kentucky Power Company

REQUEST

Page 4 of Exhibit SCW-1 states that for the initial 2010/11 through 2015/16 Planning Years KPCo gave notice to opt-out of the PJM RPM 3 year forward capacity auction and to meet its resource obligation through the Fixed Resource Requirement ("FRR") construct. When that decision was made, were any analyses conducted? If so, please provide the analyses, electronically, with all formula intact, with no pasted in values.

RESPONSE

Qualitative assessments were done. Please refer to KIUC 1-18 Attachments 1 and 2 for a description of the decision criteria utilized for the most recent PY 15/16 election. Other written and/or electronic assessments for the previous elections above have not been located.

WITNESS: Ranie K Wohnhas

Interconnection Agreement (East Pool)
Proposal to the Operating Committee

Date: March 6, 2012
Subject: 2015/2016 PJM FRR / RPM Capacity Election

Background

AEPSC on behalf of its East operating companies needs to advise PJM of its election as to whether its system, or the individual operating companies, will be in the RPM capacity market for PJM planning year ("PY") 2015/2016 ("15/16") which runs from June 1, 2015 through May 31, 2016, or will self-supply their RTO capacity requirements under the FRR option. Such elections are made three years in advance of the actual delivery year.

Currently and through PY 14/15 the East operating companies provide capacity as a collective group to satisfy their aggregate capacity and reserve requirements to PJM under the FRR alternative. FRR was chosen because it provides efficiencies to the East Pool Members and aligns with the bundled structure and the cost-of-service ratemaking principles of the majority of AEP's eastern states.

Developments in Ohio indicate that in the future Ohio Power ("OPCo") is unlikely to be aligned with the bundled structure and the cost-of-service ratemaking principles of the majority of AEP's eastern states. This suggests that OPCo's election for RPM or FRR for PY 15/16 should be evaluated separately from the other East operating companies. While recent Ohio Commission orders have provided uncertainty as to the exact timing of certain events, Ohio law requires OPCo to legally separate its generation business from its wires business, and it is anticipated that separation remains likely to occur prior to PY 15/16. This suggests that OPCo should elect RPM for PY 15/16.

The other East operating companies, Appalachian Power ("APCo"), Indiana Michigan Power ("I&M) and Kentucky Power ("KPCo") are not governed by the election made by OPCo for PY 15/16. FRR is still a valid and efficient choice for these companies for PY 15/16, since it is anticipated that the Pool Members other than OPCo may ultimately be parties to arrangements that would allow them to continue to elect FRR in the future. In addition, extension of the FRR election to PY 15/16 is only a one year commitment that preserves the companies' current

status and avoids unnecessary disruption. Additional capacity will be required in PY 15/16 for these companies to elect the FRR option. APCo, I&M and KPCo have several options for obtaining the necessary capacity that would permit them to elect the FRR alternative for PY 15/16.

Recommendation

Recommend that Ohio Power elect RPM for PY 15/16.
Recommend that APCo, I&M and KPCo collectively elect FRR for PY 15/16.

Support for Recommendation

1) Recognizing that OPCo will continue to pursue corporate separation and removal from the East Pool, RPM will give the Company the most options for implementing a full transition to market. The RPM construct also simplifies the capacity issues surrounding retail customer choice. Additionally an RPM election (versus continued FRR participation with the other AEP East Companies) will provide the Company with more flexibility regarding the ultimate disposition of its capacity resources.

2) At this time it is still beneficial for bundled, regulated utilities such as APCo, I&M and KPCo to self-supply their PJM capacity obligations collectively through an FRR plan. This recommendation is based upon the benefits of spreading capacity resource performance risk over a larger portfolio of resources and greater operating company resource planning flexibility. Since APCo, I&M and KPCo have elected FRR for the past eight PJM planning years, this election will only be for one planning year. Otherwise, if the Companies were to elect RPM it would be for a minimum of five PJM planning years.

Minutes of the March 6, 2012 Meeting of the AEP Interconnection Agreement Operating Committee

Present: Committee Representatives
Richard Munczinski – Pool Manager
Charles Patton – Appalachian Power Company

Counsel/Secretary
John Crespo, Esq.

Absent: Committee Representatives
Paul Chodak III – Indiana Michigan Power Company
Gregory Pauley – Kentucky Power Company
Joseph Hamrock – Ohio Power Company

The meeting was called to order at approximately 5:30 p.m. with Mr. Munczinski presiding.

Mr. Munczinski identified one proposal for Operating Committee ("Committee") consideration that was previously distributed to all of the Committee Members:

1) 2015/2016 PJM FRR / RPM Capacity Election (Attachment I)

The Committee Representatives present reviewed the proposal and approved the recommendation by voice vote.

The meeting was adjourned at approximately 5:45 p.m.

Pre-Meeting Note: Mr. Chodak and Mr. Pauley, due to their inability to attend the meeting, reviewed and approved the proposal by e-mail message prior to the meeting.

Post-Meeting Note: Following the meeting, Mr. Joseph Hamrock was also apprised of the Operating Committee action and indicated his approval of the proposal by e-mail message.

Kentucky Power Company

REQUEST

Page 8 of Exhibit SCW-1 states that Table 1-3 (Reserve Margin Table) was prepared assuming that the Company would continue to elect to participate in PJM's capacity auction construct as a self-planning entity. Please supply a revised table along with an explanation of all changes that would have to be made assuming a decision was made to participate in the PJM-RPM under the capacity auction construct.

RESPONSE

Please see KIUC 1-19 Attachment 1 for the requested revised table.

The primary change was the reflection of an updated RPM Installed Reserve Margin ("IRM") value that was established based on the projected capacity value pricing from the AEP Fundamental Analysis group. As detailed in KIUC 1-19 Attachment 2, this implied IRM was calculated to be higher than the "fixed" IRM of 15.4% that was assumed for purpose of establishing an FRR-based KPCo capacity position in Exhibit SCW-1, Table 1-3, as-filed. The result being that the long-term MW capacity deficit position for KPCo was determined to be greater under a PJM-RPM construct versus FRR.

WITNESS: Scott C Weaver

(UPDATED) Exhibit SCW-1, "Table 1-3" to reflect an RPM election beginning with the 2016/17 planning year (as opposed to FRR)

KENTUCKY POWER COMPANY

Projected Resource Capacity, Load/Peak Demands, and PJM UCAP Reserve Margins ("CLR")--PJM FRR & RPM Planning Perspective

Based on September 2012 Load Forecast

(2012/2013 - 2030/2031 PJM Planning Years)

"Going-In" Capacity Position (No New Resource Additions or Purchases)

(Assuming U.S. EPA MATS Rulemaking and NSR Consent Decree)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
				=(1)+(3)				=((4)-((5)*(6)))*(7)		=(8)+(9)						=(11)-(12)+Sum(14)+(15)		=(16)*(1-(17))	=((11)-(12)+(15))*(1-(17))-(10)	=(18)-(10)
Planning Year		Obligation to PJM: Internal Demand (a)	DSM (b)	Projected DSM Impact (c)	Net Internal Demand	Interruptible Demand Response (d)	Demand Response Factor	Forecast Pool Req't (e)	UCAP Obligation	Net UCAP Market Obligation (f)	Total UCAP Obligation	Resources: Existing Capacity & Planned Changes (g)	Net Capacity Sales (h)	Planned Capacity Additions: Units	Planned Capacity Additions: MW (i)	Annual Purchases	Net ICAP	AEP EFORd (j)	Available UCAP	KPCo Position (MW): Net Position w/o New Capacity	KPCo Position (MW): Net Position w/ New Capacity
2012 /13	(k)	1,167	(3)	(1)	1,166	4	0.954	1.087	1,263	0	1,263	1,470	67				1,403	7.85%	1,293	30	30
2013 /14	(k)	1,173	(4)	(1)	1,172	4	0.956	1.086	1,269	0	1,269	1,470	54				1,416	4.65%	1,350	81	81
2014 /15	(k)	1,197	(6)	(1)	1,196	11	0.955	1.086	1,288	0	1,288	1,470	0				1,470	8.27%	1,348	60	60
2015 /16	(k)	1,221	(8)	(2)	1,219	18	0.955	1.086	1,306	0	1,306	392	0				392	5.95%	369	(937)	(937)
2016 /17		1,199	(12)	(3)	1,196	26	0.955	1.105	1,294	0	1,294	398	0				398	5.95%	374	(920)	(920)
2017 /18		1,201	(16)	(4)	1,197	35	0.955	1.112	1,293	0	1,293	398	0				398	5.95%	374	(919)	(919)
2018 /19		1,208	(17)	(6)	1,202	36	0.955	1.116	1,303	0	1,303	398	(9)				407	5.95%	383	(920)	(920)
2019 /20		1,215	(19)	(8)	1,208	36	0.955	1.113	1,305	0	1,305	398	(9)				407	5.95%	383	(922)	(922)
2020 /21		1,221	(20)	(12)	1,208	37	0.955	1.109	1,301	0	1,301	404	(6)				410	5.95%	386	(915)	(915)
2021 /22		1,231	(21)	(16)	1,216	38	0.955	1.106	1,305	0	1,305	404	(4)				408	5.95%	384	(921)	(921)
2022 /23		1,240	(21)	(17)	1,223	39	0.955	1.103	1,308	0	1,308	404	(3)				407	5.95%	383	(925)	(925)
2023 /24		1,242	(21)	(19)	1,223	39	0.955	1.101	1,304	0	1,304	409	(2)				411	5.95%	387	(917)	(917)
2024 /25		1,248	(21)	(20)	1,228	40	0.955	1.097	1,305	0	1,305	409	0				409	5.95%	385	(920)	(920)
2025 /26		1,259	(21)	(21)	1,239	41	0.955	1.094	1,312	0	1,312	409	0				409	5.95%	385	(927)	(927)
2026 /27		1,269	(21)	(21)	1,248	41	0.955	1.091	1,319	0	1,319	409	0				409	5.95%	385	(934)	(934)
2027 /28		1,279	(22)	(21)	1,258	41	0.955	1.089	1,327	0	1,327	409	0				409	5.95%	385	(942)	(942)
2028 /29		1,286	(22)	(21)	1,264	41	0.955	1.087	1,332	0	1,332	409	0				409	5.95%	385	(947)	(947)
2029 /30		1,291	(21)	(21)	1,270	41	0.955	1.087	1,338	0	1,338	409	0				409	5.95%	385	(953)	(953)
2030 /31		1,301	(22)	(21)	1,279	41	0.955	1.087	1,348	0	1,348	409	0				409	5.95%	385	(963)	(963)

Notes: (a) Based on (September 2012) Load Forecast (with implied PJM diversity factor)

(b) Existing plus approved and projected "Passive" EE, and IVV
(note: these values & timing are for reference only and are not reflected in position determination)

(c) For PJM planning purposes, the ultimate impact of new DSM is 'delayed' ~4 years to represent the ultimate recognition of these amounts through the PJM-originated load forecast process

(d) Demand Response approved by PJM in the prior planning year plus forecasted "Active" DR

(e) Installed Reserve Margin (IRM) = 15.6%(2012), 15.4%(2013-2030)
Forecast Pool Requirement (FPR) = (1 + IRM) * (1 - PJM EFORd)

(f) Includes company MLR share of:
FRR & RPM view of obligations only

(g) Reflects the members ownership ratio of following summer capability assumptions:
Wind Farm PPAs (Where Applicable)

(g) continued
EFFICIENCY IMPROVEMENTS:
2015/16: Rockport 1: 35 MW (valve)
2016/17: Rockport 1: 36 MW (turbine)
2020/21: Rockport 2: 36 MW (turbine)
2023/24: Rockport 2: 35 MW (valve)
FGD DERATES:
2015/16: Rockport A: 35 MW
DSI DERATES:
2015/16: Rockport B: 0 MW
('Going In") RETIREMENTS:
2015/16: Big Sandy 1
2015/16: Big Sandy 2

(h) Includes company MLR share of:
Contractual share of remaining Mone capacity
Ceredo/Darby/Glen Lyn Sale to AMPO,ATSI, and IM
Sale of 12 MW in 2012/13 and 13 MW in 2013/14 to
Sale of 210 MW 2012/13 to EMMT
RPM Auction Sales 2012/13 - 2013/14 (646, 700)(M
3.6 MW capacity credit from SEPA's Philpot Dam vi

Plus: Estimated I&M nominations for PJM EE ('passive' D
--reflected as a UCAP '<resource>'-- as part of PJM'
auction products (eff: 2014/15)

(i) New wind and solar capacity value is assumed to be 1

(j) Beginning 2008/09, based on 12-month avg. AEP EF(
as of twelve months ended 9/30 of the previous year

(k) Actual PJM forecast

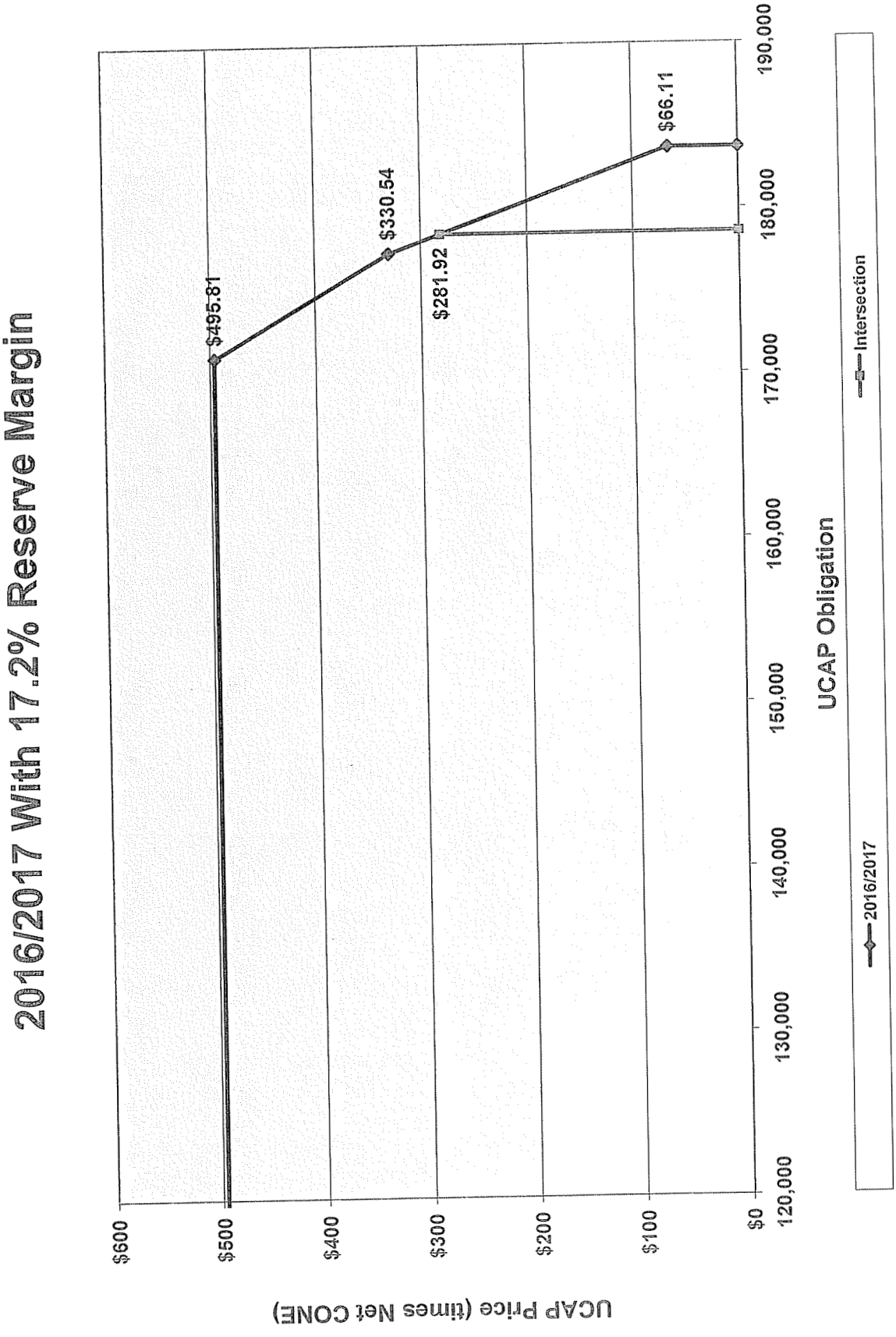
(*) Combustion Turbines (CT) added to maintain Black Si

Effective 1-1-2014, remaining capacity that was previc
allocated as follows:
1) Remaining Mone Share => 100% to OF
2) SEPA => 100% to APCo

Note: o Through the 2015/16 PJM Planning Year, KPCo operates under the auspices of a ('4-Company) "FRR" capacity declaration that was inclusive of (former) AEP Pool Member Cos. APCo, I&M and OPCo
o Starting with the 2016/17 PJM Planning Year begins the potential that --under the proposed PCA-- KPCo would largely become self-sufficient for its capacity needs (i.e., a 'stand-alone' entity) and would
o elect to become a PJM RPM participant

KPSC Case No. 2012-00578
KIUC's First Set of Data Requests
Dated February 6, 2013
Item No. 19
Attachment 1
Page 1 of 1

C:\Temp\notes00239E\~4488010.xls,Tab: SCW 1-C_KPCo 'Going-In' PJM Cap


2016/2017 With 17.2% Reserve Margin
UCAP Price (times Net CONE)
$600
$500
$400
$300
$200
$100
$0
120,000
130,000
140,000
150,000
160,000
170,000
180,000
190,000
UCAP Obligation
$495.81
$330.54
$281.92
$66.11
2016/2017
Intersection

UCAP Price $/MW-Day-Point (a)	$495.81
UCAP Price. $/MW-Day-Point (b)	$330.54
UCAP Price. $/MW-Day-Point (c)	$66.11
Unforced Capacity Level. MW-Point (a)	171,157
Unforced Capacity Level. MW-Point (b)	177,398
Unforced Capacity Level. MW-Point (c)	183,638

From (a) to (b)	From (a) to (b)	From (b) to (c)
Y = MX+B	$495.81	$330.54
B =	$495.81	$330.54
M =	-0.02648	-0.04237
X =	0	0
X =	171,157	0

	Capacity Value (PJM-RTO RPM)		Offset Capacity Needed (Per 2016/17 VRR Curve)		Total Capacity Needed (Per 2016/17 VRR Curve)		Calculated IRM
	From (a) to (b)	From (b) to (c)	From (a) to (b)	From (b) to (c)	From (a) to (b)	From (b) to (c)	From (a) to (c)
2016		$281 9		1.148		178.545	17 2%
2017		$236 0		2.231		179.629	17 9%
2018		$200 4		3,071		180.469	18.3%
2019		$224 6		2 500		179.898	18.0%
2020		$253 5		1.818		179.216	17 6%
2021		$280 0		1,193		178.590	17 3%
2022		$304 2		622		178.019	17.0%
2023		$325 7		114		177 512	16.7%
2024	$344 6		5.710		176,867		16 3%
2025	$360 6		5.105		176.263		16 0%
2026	$373 6		4 615		175,772		15 7%
2027	$383 5		4.241		175.398		15 5%
2028	$390 1		3.991		175.149		15.3%
2029	$392 9		3.886		175.043		15.3%
2030	$392.2		3,912		175,069		15.3%

	Capacity Cost	Capacity Needed	Calculated IRM
2016	$281.9	178.545	17.2%

2016	$281 9	178.545
2017	$235.0	179.629
2018	$200 4	180.469
2019	$224 6	179.898
2020	$253.5	179.216
2021	$280 0	178 590
2022	$304 2	178 019
2023	$325 7	177.512
2024	$344 6	176.867
2025	$360 6	176.263
2026	$373.6	175.772
2027	$383.5	175 398
2028	$390 1	175 149
2029	$392 9	175 043
2030	$392.2	175,069

RTO VRR Curve 2007-2008 with FRR Adjustment	Curve Auction	Included AEP Load In VRR Curve			No	
	2016/2017	2016/2017	2017/2018	2018/2019	2019/2020	Estimate
Parameters	1					
Installed Reserve Margin (IRM)	15.6%	15.6%				
Pool Wide 5-Year Average EFORd	5.69%	5.69%				
Demand Resource (DR) Factor	0.955	0.955				
Forecast Pool Requirement (FPR)	1.0902	1.0902				
Reliability Requirement, MW						
PJM Preliminary Forecast Peak Load	165,425	165,425				
PJM Preliminary Forecast Peak Load-Non-Zone Load	0	0				
PJM Preliminary Forecast Peak Load incl. Non-Zone Load	165,425	165,425	0	0	0	0
PJM Reliability Requirement prior to FRR Adjustment	180,346	180,346	0	0	0	0
FRR Preliminary UCAP Obligation [AEP]	0	0				
PJM Reliability Requirement after FRR Adjustment	180,346	180,346	0	0	0	0
PJM ILR Forecast (Short-Term Resource Procurement Target Post 2011) MW	4,330	4,330				
Forecast RTO ILR Obligation, MW	4,509	4,509	0	0	0	0
FRR Demand Resources UCAP Value, MW	0	0				
Variable Resource Requirement (VRR)						
Cost of New Entry (CONE), $/MW-Year	$139,392	$139,392				
Cost of New Entry (CONE), $/MW-Day	$381.90	$381.90	$0.00	$0.00	$0.00	$0.00
Energy & Ancillary Services, $/MW-year	$25,614	$25,614				
Energy & Ancillary Services, $/MW-Day	$70.17	$70.17	$0.00	$0.00	$0.00	$0.00
Net CONE, $/MW-Day	$311.73	$311.73	$0.00	$0.00	$0.00	$0.00
UCAP Price, $/MW-Day-Point (a)	$495.81	$495.81	$0.00	$0.00	$0.00	$0.00
UCAP Price, $/MW-Day-Point (b)	$330.54	$330.54	$0.00	$0.00	$0.00	$0.00
UCAP Price, $/MW-Day-Point (c)	$66.11	$66.11	$0.00	$0.00	$0.00	$0.00
Unforced Capacity Level, MW-Point (a)	171,157	171,157	0	0	0	0
Unforced Capacity Level, MW-Point (b)	177,398	177,398	0	0	0	0
Unforced Capacity Level, MW-Point (c)	183,638	183,638	0	0	0	0
Cleared Capacity, MW						
RPM Cleared Capacity (UCAP)		178,545				
AEP Capacity Up To Load (UCAP)		0	0	0	0	0
Total Available AEP Capacity (UCAP)		-				
Remaining AEP Capacity (UCAP)		#VALUE!	0	0	0	0
Total Adjusted Cleared Capacity	178,545	178,545	0	0	0	0
Resource Clearing Price ($/MW Day)	$281.92	$281.92				
Resource Clearing Price ($/MW Day) W/ AEP Load and Capacity	$0.00					
Calculated Reserve Margin	17.2%	17.2%	0.0%	0.0%	0.0%	0.0%

Variable Resource Requirement (VRR) Graph	2016/2017
UCAP Price, $/MW-Day-Point (a)	$495.81
UCAP Price, $/MW-Day-Point (b)	$330.54
UCAP Price, $/MW-Day-Point (c)	$66.11
Unforced Capacity Level, MW-Point (a)	171,157
Unforced Capacity Level, MW-Point (b)	177,398
Unforced Capacity Level, MW-Point (c)	183,638
Resource Clearing Price ($/MW Day)	$281.92

Summary of Long-Term Commodity Price Forecast Scenarios Used in Strategist® Modeling

(Source: AEP Fundamental Analysis)

Unless otherwise note, all Annual-Average pricing is represented in 'Nominal' Dollars

NATURAL GAS (Henry Hub)

($/MMBtu)

	'BASE' Fleet Transition: CSAPR Carbon In 2022	Alternative Scenarios: FT-CSAPR: HIGHER Band Carbon In 2022	FT-CSAPR: LOWER Band Carbon In 2022	FT-CSAPR: Early Carbon Carbon In 2017	FT-CSAPR: No Carbon
2012	4.48	4.48	3.94	4.48	4.48
2013	4.94	5.43	4.35	4.94	4.94
2014	5.38	6.02	4.73	5.38	5.38
2015	5.52	6.29	4.86	5.52	5.52
2016	5.99	6.94	5.27	5.99	5.99
2017	6.13	7.23	5.39	6.42	6.13
2018	6.32	7.46	5.56	6.60	6.32
2019	6.46	7.62	5.68	6.73	6.46
2020	6.52	7.69	5.73	6.78	6.52
2021	6.75	7.97	5.94	7.06	6.60
2022	7.07	8.34	6.22	7.22	6.68
2023	7.26	8.57	6.39	7.35	6.86
2024	7.51	8.86	6.61	7.51	7.10
2025	7.75	9.14	6.82	7.75	7.32
2026	7.85	9.26	6.91	7.85	7.42
2027	8.04	9.49	7.08	8.04	7.60
2028	8.22	9.78	7.23	8.22	7.77
2029	8.41	10.08	7.40	8.41	7.94
2030	8.52	10.48	7.50	8.52	8.05

CO2

($/Metric Tonne)

	'BASE' Fleet Transition: CSAPR Carbon In 2022	Alternative Scenarios: FT-CSAPR: HIGHER Band Carbon In 2022	FT-CSAPR: LOWER Band Carbon In 2022	FT-CSAPR: Early Carbon Carbon In 2017	FT-CSAPR: No Carbon
2012	0.00	0.00	0.00	0.00	0.00
2013	0.00	0.00	0.00	0.00	0.00
2014	0.00	0.00	0.00	0.00	0.00
2015	0.00	0.00	0.00	0.00	0.00
2016	0.00	0.00	0.00	0.00	0.00
2017	0.00	0.00	0.00	15.08	0.00
2018	0.00	0.00	0.00	15.28	0.00
2019	0.00	0.00	0.00	15.47	0.00
2020	0.00	0.00	0.00	15.68	0.00
2021	0.00	0.00	0.00	15.88	0.00
2022	15.08	15.48	15.48	16.08	0.00
2023	15.28	15.67	15.67	16.29	0.00
2024	15.48	15.88	15.88	16.50	0.00
2025	15.67	16.08	16.08	16.72	0.00
2026	15.88	16.29	16.29	16.94	0.00
2027	16.08	16.50	16.50	17.16	0.00
2028	16.29	16.72	16.72	17.38	0.00
2029	16.50	16.94	16.94	17.60	0.00
2030	16.72	17.12	17.16	17.84	0.00

NAPP (6.0#)

($/Ton-FOB Mine)

	'BASE' Fleet Transition: CSAPR Carbon In 2022	Alternative Scenarios: FT-CSAPR: HIGHER Band Carbon In 2022	FT-CSAPR: LOWER Band Carbon In 2022	FT-CSAPR: Early Carbon Carbon In 2017	FT-CSAPR: No Carbon
2012	56.75	64.13	53.91	56.75	56.75
2013	58.00	66.70	53.36	58.00	58.00
2014	60.00	69.00	53.40	60.00	60.00
2015	62.36	72.34	55.50	62.36	62.36
2016	64.72	75.08	57.60	64.72	64.72
2017	65.92	76.47	58.67	64.00	65.92
2018	67.18	77.93	59.79	65.22	67.18
2019	68.45	79.40	60.92	66.46	68.45
2020	69.71	80.87	62.05	67.68	69.71
2021	71.18	82.57	63.35	69.10	71.18
2022	70.90	82.24	63.10	70.55	72.67
2023	72.37	83.95	64.41	72.02	74.18
2024	73.87	85.69	65.74	73.51	75.71
2025	75.38	87.44	67.09	75.01	77.26
2026	76.91	89.22	68.45	76.54	78.84
2027	78.46	91.02	69.83	78.08	80.43
2028	80.04	92.85	71.24	79.65	82.04
2029	81.65	94.71	72.66	81.25	83.69
2030	83.27	96.60	74.11	82.87	85.36

CAPP (1.6#)

($/Ton-FOB Mine)

	'BASE' Fleet Transition: CSAPR Carbon In 2022	Alternative Scenarios: FT-CSAPR: HIGHER Band Carbon In 2022	FT-CSAPR: LOWER Band Carbon In 2022	FT-CSAPR: Early Carbon Carbon In 2017	FT-CSAPR: No Carbon
2012	79.97	91.46	75.97	79.97	79.97
2013	83.46	97.95	75.11	83.46	83.46
2014	84.83	101.44	74.65	84.83	84.83
2015	85.21	102.25	74.98	85.21	85.21
2016	85.52	102.62	75.26	85.52	85.52
2017	85.31	102.37	75.07	82.83	85.31
2018	86.94	104.33	76.51	84.41	86.94
2019	88.58	106.30	77.95	86.00	88.58
2020	90.22	108.26	79.39	87.59	90.22
2021	92.07	110.48	81.02	89.38	92.07
2022	91.66	109.99	80.66	91.21	93.95
2023	93.52	112.22	82.30	93.07	95.86
2024	95.41	114.49	83.96	94.94	97.79
2025	97.31	116.77	85.63	96.84	99.74
2026	99.24	119.09	87.33	98.76	101.72
2027	101.19	121.43	89.05	100.70	103.72
2028	103.18	123.81	90.80	102.68	105.76
2029	105.19	126.23	92.57	104.68	107.82
2030	107.24	128.69	94.37	106.72	109.92

NATURAL GAS (Henry Hub) (REAL, 2010 $)

($/MMBtu)

	'BASE' Fleet Transition: CSAPR Carbon In 2022	Alternative Scenarios: FT-CSAPR: HIGHER Band Carbon In 2022	FT-CSAPR: LOWER Band Carbon In 2022	FT-CSAPR: Early Carbon Carbon In 2017	FT-CSAPR: No Carbon
2012	4.22	4.22	3.71	4.22	4.22
2013	4.57	5.03	4.02	4.57	4.57
2014	4.84	5.42	4.26	4.84	4.84
2015	4.86	5.54	4.27	4.86	4.86
2016	5.18	6.01	4.56	5.18	5.18
2017	5.22	6.16	4.60	5.47	5.22
2018	5.30	6.26	4.67	5.54	5.30
2019	5.34	6.30	4.70	5.56	5.34
2020	5.31	6.26	4.67	5.52	5.31
2021	5.42	6.39	4.77	5.67	5.30
2022	5.59	6.59	4.92	5.70	5.28
2023	5.66	6.68	4.98	5.73	5.35
1	5.76	6.80	5.07	5.76	5.45
	5.86	6.91	5.15	5.86	5.53
	5.85	6.90	5.15	5.85	5.53
27	5.90	6.96	5.19	5.90	5.58
2028	5.94	7.07	5.23	5.94	5.62
2029	5.99	7.18	5.27	5.99	5.66
2030	5.99	7.36	5.27	5.99	5.66

ON-Peak Energy (PJM-AEP Gen Hub)

($/Mwh)

	'BASE' Fleet Transition: CSAPR Carbon In 2022	Alternative Scenarios: FT-CSAPR: HIGHER Band Carbon In 2022	FT-CSAPR: LOWER Band Carbon In 2022	FT-CSAPR: Early Carbon Carbon In 2017	FT-CSAPR: No Carbon
2012	50.57	55.16	47.59	49.73	50.30
2013	50.14	55.48	44.98	48.59	47.85
2014	54.24	62.03	49.26	54.28	54.45
2015	56.71	65.49	53.60	56.42	56.79
2016	63.56	71.80	58.75	62.42	63.74
2017	63.48	71.72	59.20	71.84	64.41
2018	64.18	73.15	60.06	72.73	65.25
2019	65.44	74.08	60.90	73.21	66.31
2020	66.33	75.16	60.86	73.82	66.55
2021	67.64	77.00	62.38	75.75	67.28
2022	76.79	85.88	72.64	77.34	68.31
2023	78.33	87.97	74.25	78.43	70.32
2024	80.34	89.78	74.99	79.55	71.04
2025	82.18	92.27	76.25	81.48	73.07
2026	83.23	93.67	77.71	82.70	73.94
2027	84.57	95.54	79.22	84.24	75.28
2028	86.25	98.14	80.55	86.25	76.51
2029	87.64	100.30	81.53	87.32	77.70
2030	89.34	103.70	82.78	88.75	78.95

OFF-Peak Energy (PJM-AEP Gen Hub)

($/Mwh)

	'BASE' Fleet Transition: CSAPR Carbon In 2022	Alternative Scenarios: FT-CSAPR: HIGHER Band Carbon In 2022	FT-CSAPR: LOWER Band Carbon In 2022	FT-CSAPR: Early Carbon Carbon In 2017	FT-CSAPR: No Carbon
2012	30.92	33.66	29.07	30.33	30.27
2013	30.55	35.01	28.55	30.15	29.97
2014	33.26	38.84	31.15	32.95	33.34
2015	33.89	40.47	32.16	33.73	34.34
2016	39.57	45.94	36.16	38.65	40.12
2017	41.57	48.09	38.59	51.00	41.67
2018	42.57	49.48	39.25	52.03	42.70
2019	43.60	50.18	40.01	52.82	43.47
2020	44.18	51.40	40.52	53.54	44.35
2021	45.76	53.01	41.76	55.14	45.22
2022	55.93	63.44	52.41	56.56	46.22
2023	56.84	65.25	53.42	57.35	47.67
2024	58.85	66.65	54.17	58.69	48.94
2025	60.37	68.79	55.93	60.38	50.72
2026	61.06	70.11	56.67	61.28	51.59
2027	62.64	72.07	58.15	62.85	53.19
2028	64.05	74.08	59.05	64.56	54.40
2029	65.66	76.20	60.20	65.80	55.78
2030	67.49	78.87	61.12	66.82	56.65

Capacity Value (PJM-RTO RPM) *

($/MW-Day)

	'BASE' Fleet Transition: CSAPR Carbon In 2022	Alternative Scenarios: FT-CSAPR: HIGHER Band Carbon In 2022	FT-CSAPR: LOWER Band Carbon In 2022	FT-CSAPR: Early Carbon Carbon In 2017	FT-CSAPR: No Carbon
2012	55.44	55.44	55.44	55.44	55.44
2013	23.03	23.03	23.03	23.03	23.03
2014	85.05	85.05	85.05	85.05	85.05
2015	215.25	215.25	215.25	215.25	215.25
2016	281.92	281.92	281.92	281.92	281.92
2017	235.98	199.63	230.85	210.98	240.98
2018	200.39	166.43	179.76	180.39	205.39
2019	224.57	211.40	186.64	214.57	230.57
2020	253.47	253.86	212.57	243.47	261.47
2021	280.05	293.65	238.70	265.05	295.05
2022	304.18	330.64	264.71	289.18	322.18
2023	325.73	364.68	288.14	310.73	345.73
2024	344.58	391.96	308.40	329.58	364.58
2025	360.58	405.21	325.58	345.58	380.58
2026	373.61	411.28	340.04	358.61	394.61
2027	383.50	417.45	350.60	363.50	405.50
2028	390.13	423.72	358.23	370.13	413.13
2029	392.94	430.07	362.96	372.94	416.94
2030	392.16	436.27	361.29	372.16	418.16

* Represents forecasted PJM-RTO Base Residual Auction UCAP clearing prices for those respective XXXX/(XXXX+1) forward PJM Planning Years

2016-2017 RPM Base Residual Auction Planning Parameters						2/1/2013	734653-v3		
	RTO	Notes:							
Installed Reserve Margin (IRM)	15.6%	1. Load data: from 2013 Load Report.							
Pool-Wide Average EFORd	5.69%	2. Adjustments were made in the Zonal Peak Load Forecast of AEP, DEOK, and EKPC to account for EKPC integration							
Forecast Pool Requirement (FPR)	1.0902	3. Parameters will updated after the 3/13/13 FRR election deadline to reflect FRR load							
Demand Resource (DR) Factor	0.955	4. See "Net CONE" worksheet for Net CONE calculations.							
Preliminary Forecast Peak Load	165,424.9								
Short-Term Resource Procurement Target	2.5%								
Pre-Clearing BRA Credit Rate, $/MW	$36,193.04								

		LOCATIONAL DELIVERABILITY AREA (LDA)								
	RTO	MAAC	EMAAC	SWMAAC	PS	PS NORTH	DPL SOUTH	PEPCO	ATSI	ATSI-Cleveland
CETO	NA	5,220.0	6,140.0	5,840.0	6,450.0	2,450.0	1,580.0	2,730.0	5,390.0	3,800.0
CETL	NA	6,495.0	8,916.0	8,342.0	6,581.0	2,936.0	1,864.0	6,655.0	7,881.0	5,245.0
Reliability Requirement	180,346.2	72,299.0	39,694.0	17,316.0	12,870.0	6,440.0	3,160.0	9,012.0	16,255.0	6,164.0
Total Peak Load of FRR Entities	0.0	0	0	0	0	0	0	0	0	0
Preliminary FRR Obligation	0.0	0	0	0	0	0	0	0	0	0
Reliability Requirement adjusted for FRR	**180,346.2**	**72,299.0**	**39,694.0**	**17,316.0**	**12,870.0**	**6,440.0**	**3,160.0**	**9,012.0**	**16,255.0**	**6,164.0**
Short-Term Resource Procurement Target	4,508.7	1,664.8	907.6	384.0	288.9	140.1	66.5	185.3	362.4	124.3
Net CONE, $/MW-Day (UCAP Price)	**$330.53**	**$276.90**	**$329.94**	**$276.90**	**$329.94**	**$329.94**	**$329.94**	**$276.90**	**$362.64**	**$362.64**
Variable Resource Requirement Curve:										
Point (a) UCAP Price, $/MW-Day	$495.80	$415.35	$494.91	$415.35	$494.91	$494.91	$494.91	$415.35	$543.96	$543.96
Point (b) UCAP Price, $/MW-Day	$330.53	$276.90	$329.94	$276.90	$329.94	$329.94	$329.94	$276.90	$362.64	$362.64
Point (c) UCAP Price, $/MW-Day	$66.11	$55.38	$65.99	$55.38	$65.99	$65.99	$65.99	$55.38	$72.53	$72.53
Point (a) UCAP Level, MW	171,157.2	68,758.0	37,756.3	16,482.7	12,247.1	6,132.8	3,011.5	8,592.8	15,470.8	5,879.7
Point (b) UCAP Level, MW	177,397.6	71,259.7	39,129.8	17,081.8	12,692.4	6,355.6	3,120.9	8,904.6	16,033.3	6,093.0
Point (c) UCAP Level, MW	183,637.9	73,761.4	40,503.3	17,681.0	13,137.8	6,578.4	3,230.2	9,216.5	16,595.7	6,306.3
Participant-Funded ICTRs Awarded	NA	159.0	NA	NA	NA	NA	NA	NA	NA	NA
Post-Clearing BRA Credit Rate (LMT), $/MW										
Post-Clearing BRA Credit Rate (ES), $/MW										
Post-Clearing BRA Credit Rate (ANL), $/MW										
Min Ext Summer Resource Req'ment, MW	171,734.7	61,861.2	28,559.2	7,947.3	5,483.4	3,113.3	1,151.3	1,903.9	7,668.1	676.8
Min Annual Resource Req'ment, MW	162,262.0	58,109.3	24,606.9	6,627.2	4,214.2	2,503.1	940.5	941.0	6,200.8	0.0
FRR Load Requirements:										
Min % Internal Resource Req'ment	NA	98.8%	84.8%	58.4%	54.4%	62.5%	48.7%	31.8%	57.8%	18.5%
Min % Ext Summer Resource Req'ment	95.2%	85.6%	71.9%	45.9%	42.6%	48.3%	36.4%	21.1%	47.2%	11.0%
Min % Annual Resource Req'ment	90.0%	80.4%	62.0%	38.3%	32.7%	38.9%	29.8%	10.4%	38.1%	0.0%

LDA CETO/CETL Data; Zonal Peak Loads, Base Zonal FRR Scaling Factors, and Zonal Short-Term Resource Procurement Target.

* (Asterisk) – LDA has adequate internal resources to meet the reliability criterion.

ATSI, DPL and PS Zonal peak loads and Short-Term Resource Procurement Targets include the corresponding sub-zonal values.

LDA/Zone	CETO	CETL (Changes shown in red)	CETL to CETO Ratio	2012 Zonal W/N Coincident Peak Loads	Preliminary Zonal Peak Load Forecast	Base Zonal FRR Scaling Factor	Short-Term Resource Procurement Target	FRR Portion of the Preliminary Peak Load Forecast	Preliminary Zonal Peak Load Forecast less FRR load**
RTO	NA	NA	NA	**154,514.8**	**165,424.9**	NA	**4,508.7**	0	**165,424.9**
AE	1,030	> 1185	> 115%	2,600.0	2,782.0	1.07000	75.8	0	2,782.0
AEP	2,110	> 2427	> 115%	22,663.9	24,007.6	1.05929	654.3	0	24,007.6
APS	1,970	> 2266	> 115%	8,210.0	8,786.0	1.07016	239.5	0	8,786.0
ATSI	5,390	7,881	146%	12,660.0	13,295.0	1.05016	362.4	0	13,295.0
ATSI-CLEVELAND	3,800	5,245	138%	NA	4,562.3	NA	124.3	0	4,562.3
BGE	5,130	> 5900	> 115%	6,870.0	7,288.0	1.06084	198.6	0	7,288.0
COMED	1,330	> 1530	> 115%	21,650.0	23,504.0	1.08564	640.6	0	23,504.0
DAYTON	960	> 1104	> 115%	3,230.0	3,556.0	1.10093	96.9	0	3,556.0
DEOK	3,800	> 4370	> 115%	5,246.5	5,572.2	1.06208	151.9	0	5,572.2
DLCO	1,350	> 1553	> 115%	2,800.0	2,996.0	1.07000	81.7	0	2,996.0
DOM	-70	*	*	18,570.0	20,415.0	1.09935	556.4	0	20,415.0
DPL	1,000	> 1150	> 115%	3,950.0	4,212.0	1.06633	114.8	0	4,212.0
DPL SOUTH	1,580	1,864	118%	NA	2,438.7	NA	66.5	0	2,438.7
EKPC	580	> 667	> 115%	2,109.4	2,213.1	1.04916	60.3	0	2,213.1
JCPL	3,300	> 3795	> 115%	5,960.0	6,381.0	1.07064	173.9	0	6,381.0
METED	1,170	> 1346	> 115%	2,820.0	3,068.0	1.08794	83.6	0	3,068.0
PECO	2,860	> 3289	> 115%	8,320.0	8,908.0	1.07067	242.8	0	8,908.0
PENLC	1,300	> 1495	> 115%	2,740.0	3,044.0	1.11095	83.0	0	3,044.0
PEPCO	2,730	6,655	244%	6,540.0	6,800.0	1.03976	185.3	0	6,800.0
PL (incl. UGI)	1,360	> 1564	> 115%	7,075.0	7,581.0	1.07152	206.6	0	7,581.0
PS	6,450	6,581	102%	10,100.0	10,600.0	1.04950	288.9	0	10,600.0
PS NORTH	2,450	2,936	120%	NA	5,141.0	NA	140.1	0	5,141.0
RECO	NA	NA	NA	400.0	416.0	1.04000	11.3	0	416.0
EMAAC	6,140	8,916	145%	NA	33,299.0	NA	907.6	0	** Used to allocate Short-Term Resource Procurement Target to Zones
SWMAAC	5,840	8,342	143%	NA	14,088.0	NA	384.0	0	
Western MAAC	-3,840	*	*	NA	13,693.0	NA	373.2	0	
MAAC	5,220	6,495	124%	NA	61,080.0	NA	1,664.8	0	
Western PJM	5,940	> 6831	> 115%	NA	83,929.9	NA	2,287.5	0	

Limiting conditions at the CETL for modeled LDAs:	
LDA	Violation/Limiting Facility
MAAC	Thermal/Sandy Spring - High Ridge 230 kV
EMAAC	Voltage/Loss of Keeney - Rock Springs 500 kV
SWMAAC	Thermal/Edwards Ferry - Dickerson 230 kV
PS	Thermal/Roseland - Cedar Grove 230 kV F
PSNORTH	Thermal/Cedar Grove F - Clifton K 230 kV line.
DPLSOUTH	Thermal/Wye Mill - Long Wood 69 kV line.
PEPCO	Thermal/Conastone - Northwest 230 kV
ATSI	Thermal/Ashtabula 345/138 kV transformer
ATSI-CLEVELAND	Thermal/Ashtabula 345/138 kV transformer

RPM CONE and E&AS Values for 2016/2017 Base Residual Auction

CONE values are as filed on November 21, 2012, in Docket No. ER12-513-000 and approved by FERC January 31, 2013.

ICAP to UCAP Conversion Factor:	
UCAP Price = ICAP Price/(1 - Pool-Wide Average EFORd)	
Pool-Wide Average EFORd for 2016/2017 =	**5.69%**

CONE Area 1: AE, DPL, JCPL, PECO, PS, RECO
CONE Area 2: BGE, PEPCO
CONE Area 3: AEP, APS, ATSI, ComEd, Dayton, DEOK, Duquesne (DLCo), EKPC
CONE Area 4: MetEd, Penelec, PPL
CONE Area 5: Dominion
MAAC CONE used is the lowest of the three CONE Areas 1, 2, and 4.

	CONE Area 1	CONE Area 2	CONE Area 3	CONE Area 4	CONE Area 5	MAAC: Used Area 2 CONE	RTO
Settlement CONE (2015/2016) approved by FERC: Levelized Revenue Requirement, $/MW-Year	$140,000	$130,600	$127,500	$134,500	$114,500	$130,600	$128,000
12 Months Handy Whitman Index (July 1, 2012)	8.9%	8.9%	9.4%	8.9%	9.1%	8.9%	8.9%
Region basis for the Handy Whitman Index	North Atlantic	North Atlantic	North Central	North Atlantic	South Atlantic	North Atlantic	North Atlantic
2016/2017 BRA CONE, escalated by Handy Whitman Index, $/MW-Year	$152,460	$142,223	$139,485	$146,471	$124,920	$142,223	$139,392
Historic (2010-2012) Net Energy Revenue Offset, $/MW-Year for the Zone in the CONE Area Specified	$36,686	$44,707	$12,453	$32,929	$34,129	$44,707	$23,415
Zonal LMP used for Net Energy Offset Calculation	AE Zonal LMP	BGE Zonal LMP	ComEd Zonal LMP	MetEd Zonal LMP	Dominion Zonal LMP	BGE Zonal LMP	PJM Average LMP
Ancillary Services Offset, $/MW-Year per Tariff	$2,199	$2,199	$2,199	$2,199	$2,199	$2,199	$2,199
Net CONE, $/MW-Day, ICAP Price	$311.16	$261.14	$342.01	$305.05	$242.72	$261.14	$311.72
Net CONE, $/MW-Day, UCAP Price	**$329.94**	**$276.90**	**$362.64**	**$323.45**	**$257.36**	**$276.90**	**$330.53**

Kentucky Power Company

REQUEST

Please explain why column 17 (EFORd values) of Table 1-3 and Table 1-4 are different. Also, please supply Tables 1-3 and 1-4 electronically with all formulas intact and no pasted in values.

RESPONSE

EFORd values are developed based on the expected performance of the units that make up the Company's portfolio. For Table 1-3, both Big Sandy units are retired and not replaced, so they are not included in the EFORd calculation. In Table 1-4, both Big Sandy units are retired and replaced with the Mitchell units, so the Mitchell unit EFORd is included in the EFORd calculation. Please see file WP_Ex SCW-1C&D (KPCo_PJM Going-in Capacity Position (Sep-2012 Fcst))(With Formulas).xls on the enclosed CD.

WITNESS: Scott C Weaver

Kentucky Power Company

REQUEST

Table 1-4 in Exhibit SCW-1 page 10 of 15 indicates in 2026 a 300 MW CC unit was added in 2026. However, SCW-5a page 1 of 2, Option 6 indicates that a 381MW BFCC unit was added in 2026. Please explain why the two tables are different.

RESPONSE

In Exhibit SCW-1 Table 1-4, the 300 MW CC unit added in 2026 is an approximate placeholder for a reasonably like-sized NG-CC capacity addition in that year based on the assumptions used in the analysis. More importantly, as 2026 approaches, KPCo will make the decision on the type and size of capacity that best meets its capacity and energy needs in the 2026 time frame using the best available assumptions at that time.

WITNESS: Scott C Weaver

Kentucky Power Company

REQUEST

Please explain how the important characteristics (capacity, heat rate, fuel cost, availability assumptions, environmental, duct firing, etc) and costs (capital cost per kW, capital cost dollars, capital revenue requirements, cap adds, cap add revenue requirements, O&M) of all of the types of CTs and CC units modeled in the study were developed. Please provide a copy of all source documents and all workpapers in which the characteristics and costs were developed, and supply any revenue requirement models with all input assumptions and output results included. Please supply these workpapers electronically with all formulas intact and no pasted in values. Note that there are several examples of different types of CC units to compare including the 762 MW BFCC unit in Option 2, the 745 MW repowered CC unit in Option 3, the 352 MW CC unit added in 2021 in Option 4, the 381 MW BFCC unit added in 2026 also in Option 4, and the 300 MW CC unit included in Table 1-4 of Exhibit SCW-1.

RESPONSE

The cost and performance values shown for the generic CT and CC are prepared for use in initial screenings of generation technology options and for general discussions regarding typical cost and performance characteristics of these options. The values represent managements' opinion regarding these technology options and are not site specific. The values have been developed over time and the sources for the values are numerous. Examples of sources utilized are the Electric Power Research Institute's Technical Assessment Guide, Manufacturers' information, Industry Press Releases, Gas Turbine World Handbook, IHS CERA Capital Cost for New Units and Internal Studies.

Please see file 2012 IRP Cost Model Simple & Combined Cycle Options 11_08_12 Options Studied DR22.xls on the enclosed CD.

Also see on the enclosed CD:

Big Sandy CC BB Cost Est Study Final Summary Report_V1_05-31-11.pdf
Confidential - BS CC BB Cost Est Study Final Backup Data_V2_05-20-11_Book 1.pdf
Confidential - BS CC BB Cost Est Study Final Backup Data_V2_05-20-11_Book 2.pdf
Confidential - BS CC BB Cost Est Study Final Backup Data_V2_05-20-11_Book 3.pdf
Confidential - BS CC BB Cost Est Study Final Backup Data_V2_05-20-11_Book 4.pdf
BS CC BB Cost Est Study F-Class Iteration Executive Summary_06-20-11.pdf
BS1 Repowering Cost Est Study Final Summary Report_09-16-11.pdf
BS1 Repowering Cost Est Study Final Summary Report_09-16-11_(Exhibits and Attachments).pdf

WITNESS: Scott C Weaver

Kentucky Power Company

REQUEST

Please explain why the Mitsubishi 2x1 M-501 GAC was selected as opposed to GE or Siemens CC units for Options 2 or 3 as discussed at page 19 of Mr. Weaver's testimony

RESPONSE

The design basis identified the use of MHI501GAC combustion turbines for the singular purpose of developing the cost estimate for a 2x2x1 combined cycle plant of approximately 800 MW in size. The M-501GAC technology was developed jointly by Mitsubishi and Westinghouse. Siemens obtained this technology as a result of their subsequent take-over of Westinghouse. The Siemens and Mitsubishi offerings, for the purposes of the study, were considered equivalent; therefore, the Mitsubishi offering was chosen for evaluation as it would be representative of a Siemens offering, and would allow the opportunity to obtain a competitive bid should the project proceed. To obtain an equivalent output using the available General Electric machines would have required a configuration more complex than the 2x2x1 configuration and would have been more costly on a $/KW basis. It was therefore not pursued.

WITNESS: Scott C Weaver

Kentucky Power Company

REQUEST

Concerning Table 3 on page 22 of Mr. Weaver's testimony, please supply the workpapers that were used to create that table, electronically with all formulas attached. Also, supply any other reports, analyses, and documentation of any type that was used to develop the data found in that table. Also, please supply all analyses performed to develop revenue requirements associated with these capital costs.

RESPONSE

Please see the response to KIUC 1-12 and KPSC 1-1.

WITNESS: Scott C Weaver

Kentucky Power Company

REQUEST

If the Company developed any spending curve analyses, any busbar cost analyses, any screening curve analyses associated with different resource options it evaluated, please supply that information. Please supply these workpapers electronically with all formulas intact and no pasted in values.

RESPONSE

The Company did not develop any screening curve type analyses to evaluate the options, but relied on Strategist to perform the economic comparisons of those options.

WITNESS: Scott C Weaver

Kentucky Power Company

REQUEST

At page 31 of Mr. Weaver's testimony, he states "for every +/- $100 million CPW difference between any two options, there is a +/- $2.00 per Mwh levelized annual impact on KPCo's generation cost/revenue requirement over the subsequent economic life cycle analyzed-expressed in 2011 dollars." Please provide workpapers electronically, with all formulas intact and no pasted in values, demonstrating how these results were derived.

RESPONSE

Please see the response to KPSC 1-52.

WITNESS: Scott C Weaver

Kentucky Power Company

REQUEST

KIUC is in the process of acquiring a Strategist license, and requests the Company to supply, electronically, the following for each option the Company ran to produce the results found in Exhibit SCW-5:

a. All workpapers, models, spreadsheets, revenue requirement studies, and any other analyses of any kind used to create the data assumptions and results.

b. LFA, GAF, and Proview output reports for each case.

c. All Strategist databases (input files and output files), containing input assumptions and output results. This includes any .LFA, .GAF, .PRV, .SAV, .FSV, .INP, .OUT, REP, .DIA, etc that the Company created to produce the study results. These files should allow KIUC to replicate the results for each of the 11 unit disposition options that the Company developed and reported in Exhibit SCW-5.

RESPONSE

a. Please see response to KPSC 1-1.

b. Please see response to AG 1-12.

c. The information above will be provided once KIUC has provided proof to the Company that they have acquired a Strategist license and the Company has verified that license with Ventyx. See the Company's response to SC 1-50.

WITNESS: Mark A Becker

Kentucky Power Company

REQUEST

For all tables and graphs found in Exhibit SCW-5 (parts a through e) provide all workpapers, documentation, emails, memos, letters, reports or analyses of any kind that were used to create the tables and graphs. Please provide this information electronically with all formulas intact and no pasted in values.

RESPONSE

Please refer to response to KPSC 1-55.

WITNESS: Scott C Weaver

Kentucky Power Company

REQUEST

For all of the STRATEGIST analyses, please provide the workpapers, analyses, assumptions, reasons for the inputs, etc., created to produce the following assumptions that were entered.

a. Minimum reserve margin target, if different than 15.4% found in Table 1-3 in Exhibit SCW-1.

b. Any other reserve margin, emergency energy, energy margin, LOLH, constraints modeled.

c. Emergency energy cost.

d. Explain the end effects treatment selected and why the approach was selected.

RESPONSE

a. The minimum Installed Reserve Margin (IRM) in STRATEGIST was 15.4% for this simulation period. However, PJM participants calculate their capacity obligation by multiplying their forecasted demand by the Forecasted Pool Requirement (FPR). The FPR is approximately equal to 1.086 for this simulation period.

Forecast Pool Requirement (FPR) = (1 + IRM) * (1 - PJM EFORd)

b. No other reserve margins, emergency energy, energy margin, or LOLH constraints were modeled in the analyses.

c. The emergency energy costs used in the analyses are based on the monthly peak PJM market energy price for each commodity price forecast. The peak PJM market energy price was used under the assumption that the need for emergency energy would occur during peak load periods. See KIUC 1-29 Attachment 1 for the emergency energy costs for each commodity price scenario.

d. No end-effects were used in the analysis under the assumption that beyond 2011-2040 planning period any differences between the cases would be minimized because of the significant present value discounting of any cost differences.

WITNESS: Mark A Becker

Paste as Values Only					max	average	
RDAT71	RDAT	7	1	1	0.00	0.00	2
RDAT72	RDAT	7	2	2	0.00	0.00	2
RDAT73	RDAT	7	3	3	0.00	0.00	2
RDAT74	RDAT	7	4	4	0.00	0.00	2
RDAT75	RDAT	7	5	5	0.00	0.00	2
RDAT76	RDAT	7	6	6	0.00	0.00	2
RDAT77	RDAT	7	7	7	0.00	0.00	2
RDAT78	RDAT	7	8	8	0.00	0.00	2
RDAT79	RDAT	7	9	9	0.00	0.00	2
RDAT710	RDAT	7	10	10	0.00	0.00	2
RDAT711	RDAT	7	11	11	0.00	0.00	2
RDAT712	RDAT	7	12	12	0.00	0.00	2
RDAT81	RDAT	8	1	1	0.00	0.00	2
RDAT82	RDAT	8	2	2	0.00	0.00	2
RDAT83	RDAT	8	3	3	0.00	0.00	2
RDAT84	RDAT	8	4	4	0.00	0.00	2
RDAT85	RDAT	8	5	5	0.00	0.00	2
RDAT86	RDAT	8	6	6	0.00	0.00	2
RDAT87	RDAT	8	7	7	0.00	0.00	2
RDAT88	RDAT	8	8	8	0.00	0.00	2
RDAT89	RDAT	8	9	9	0.00	0.00	2
RDAT810	RDAT	8	10	10	0.00	0.00	2
RDAT811	RDAT	8	11	11	0.00	0.00	2
RDAT812	RDAT	8	12	12	0.00	0.00	2
RDAT91	RDAT	9	1	1	0.00	0.00	2
RDAT92	RDAT	9	2	2	0.00	0.00	2
RDAT93	RDAT	9	3	3	0.00	0.00	2
RDAT94	RDAT	9	4	4	0.00	0.00	2
RDAT95	RDAT	9	5	5	0.00	0.00	2
RDAT96	RDAT	9	6	6	0.00	0.00	2
RDAT97	RDAT	9	7	7	0.00	0.00	2
RDAT98	RDAT	9	8	8	0.00	0.00	2
RDAT99	RDAT	9	9	9	0.00	0.00	2
RDAT910	RDAT	9	10	10	0.00	0.00	2
RDAT911	RDAT	9	11	11	0.00	0.00	2
RDAT912	RDAT	9	12	12	0.00	0.00	2
RDAT101	RDAT	10	1	1	0.00	0.00	2
RDAT102	RDAT	10	2	2	0.00	0.00	2
RDAT103	RDAT	10	3	3	0.00	0.00	2
RDAT104	RDAT	10	4	4	0.00	0.00	2
RDAT105	RDAT	10	5	5	0.00	0.00	2
RDAT106	RDAT	10	6	6	0.00	0.00	2
RDAT107	RDAT	10	7	7	0.00	0.00	2
RDAT108	RDAT	10	8	8	0.00	0.00	2
RDAT109	RDAT	10	9	9	0.00	0.00	2
RDAT1010	RDAT	10	10	10	0.00	0.00	2
RDAT1011	RDAT	10	11	11	0.00	0.00	2
RDAT1012	RDAT	10	12	12	0.00	0.00	2
RDAT111	RDAT	11	1	1	73.16	39.92	2
RDAT112	RDAT	11	2	2	57.64	35.37	2
RDAT113	RDAT	11	3	3	60.37	35.69	2

max	RDAT	88.43	92.14	101.97	108.27
year		11	12	13	14
	Emergency Energy Monthly Scalar				
1	RDAT	0.8273	0.8859	0.7878	0.8205
2	RDAT	0.6518	0.7040	0.6803	0.6911
3	RDAT	0.6826	0.7255	0.6566	0.6683
4	RDAT	0.5975	0.6324	0.5865	0.5867
5	RDAT	0.5508	0.6376	0.5511	0.5632
6	RDAT	0.7990	1.0000	0.7861	0.8366
7	RDAT	0.8618	0.9840	0.9211	0.8985
8	RDAT	1.0000	0.9825	1.0000	1.0000
9	RDAT	0.6235	0.7423	0.7655	0.7361
10	RDAT	0.6630	0.7093	0.6132	0.6320
11	RDAT	0.7646	0.7954	0.7569	0.7707
12	RDAT	0.7954	0.8901	0.8162	0.8428
	GAF INDEX	465	466	467	468

	Emg. Eng Annual Peak Price ($/MWh)
2011	88.43
2012	92.14
2013	101.97
2014	108.27
2015	119.97
2016	134.65
2017	130.38
2018	137.69
2019	140.70
2020	148.61
2021	141.38
2022	160.73
2023	165.14
2024	168.72
2025	174.95
2026	172.17
2027	176.62
2028	176.22
2029	184.81
2030	184.75
2031	188.09
2032	193.08
2033	208.03
2034	226.48
2035	243.38
2036	261.95
2037	282.74
2038	305.33
2039	329.04
2040	354.85

RDAT114	RDAT	11	4	4	52.84	34.20	2
RDAT115	RDAT	11	5	5	48.70	32.91	2
RDAT116	RDAT	11	6	6	70.65	39.31	2
RDAT117	RDAT	11	7	7	76.21	41.27	2
RDAT118	RDAT	11	8	8	88.43	43.86	2
RDAT119	RDAT	11	9	9	55.14	35.63	2
RDAT1110	RDAT	11	10	10	58.63	34.28	2
RDAT1111	RDAT	11	11	11	67.61	35.10	2
RDAT1112	RDAT	11	12	12	70.34	36.77	2
RDAT121	RDAT	12	1	1	81.62	44.31	2
RDAT122	RDAT	12	2	2	64.87	40.48	2
RDAT123	RDAT	12	3	3	66.85	40.68	2
RDAT124	RDAT	12	4	4	58.27	37.69	2
RDAT125	RDAT	12	5	5	58.75	37.61	2
RDAT126	RDAT	12	6	6	92.14	49.05	2
RDAT127	RDAT	12	7	7	90.67	51.96	2
RDAT128	RDAT	12	8	8	90.53	47.11	2
RDAT129	RDAT	12	9	9	68.39	41.02	2
RDAT1210	RDAT	12	10	10	65.35	38.64	2
RDAT1211	RDAT	12	11	11	73.29	39.90	2
RDAT1212	RDAT	12	12	12	82.01	41.26	2
RDAT131	RDAT	13	1	1	80.33	43.13	2
RDAT132	RDAT	13	2	2	69.37	41.24	2
RDAT133	RDAT	13	3	3	66.95	40.15	2
RDAT134	RDAT	13	4	4	59.80	38.37	2
RDAT135	RDAT	13	5	5	56.19	37.95	2
RDAT136	RDAT	13	6	6	80.16	43.48	2
RDAT137	RDAT	13	7	7	93.92	46.92	2
RDAT138	RDAT	13	8	8	101.97	51.25	2
RDAT139	RDAT	13	9	9	78.06	44.74	2
RDAT1310	RDAT	13	10	10	62.53	37.81	2
RDAT1311	RDAT	13	11	11	77.18	39.03	2
RDAT1312	RDAT	13	12	12	83.22	41.44	2
RDAT141	RDAT	14	1	1	88.83	47.86	2
RDAT142	RDAT	14	2	2	74.82	45.03	2
RDAT143	RDAT	14	3	3	72.35	44.05	2
RDAT144	RDAT	14	4	4	63.53	41.70	2
RDAT145	RDAT	14	5	5	60.98	40.35	2
RDAT146	RDAT	14	6	6	90.58	47.87	2
RDAT147	RDAT	14	7	7	97.28	51.28	2
RDAT148	RDAT	14	8	8	108.27	52.11	2
RDAT149	RDAT	14	9	9	79.70	46.19	2
RDAT1410	RDAT	14	10	10	68.43	41.24	2
RDAT1411	RDAT	14	11	11	83.44	42.46	2
RDAT1412	RDAT	14	12	12	91.26	45.97	2
RDAT151	RDAT	15	1	1	93.52	49.64	2
RDAT152	RDAT	15	2	2	77.60	46.26	2
RDAT153	RDAT	15	3	3	74.80	44.55	2
RDAT154	RDAT	15	4	4	63.31	42.06	2
RDAT155	RDAT	15	5	5	62.69	40.89	2
RDAT156	RDAT	15	6	6	94.53	49.96	2
RDAT157	RDAT	15	7	7	106.09	54.15	2

RDAT158	RDAT	15	8	8	119.97	56.45	2
RDAT159	RDAT	15	9	9	84.43	46.87	2
RDAT1510	RDAT	15	10	10	68.31	41.40	2
RDAT1511	RDAT	15	11	11	87.34	44.16	2
RDAT1512	RDAT	15	12	12	94.10	47.64	2
RDAT161	RDAT	16	1	1	102.37	56.58	2
RDAT162	RDAT	16	2	2	84.20	51.65	2
RDAT163	RDAT	16	3	3	81.50	49.99	2
RDAT164	RDAT	16	4	4	66.60	45.75	2
RDAT165	RDAT	16	5	5	67.42	44.19	2
RDAT166	RDAT	16	6	6	109.24	58.66	2
RDAT167	RDAT	16	7	7	128.55	65.53	2
RDAT168	RDAT	16	8	8	134.65	66.14	2
RDAT169	RDAT	16	9	9	89.38	50.57	2
RDAT1610	RDAT	16	10	10	74.88	46.01	2
RDAT1611	RDAT	16	11	11	96.75	49.98	2
RDAT1612	RDAT	16	12	12	102.57	53.29	2
RDAT171	RDAT	17	1	1	99.96	57.73	
RDAT172	RDAT	17	2	2	84.76	53.79	
RDAT173	RDAT	17	3	3	79.84	51.43	
RDAT174	RDAT	17	4	4	67.80	47.75	
RDAT175	RDAT	17	5	5	68.31	45.14	
RDAT176	RDAT	17	6	6	111.52	59.12	
RDAT177	RDAT	17	7	7	127.29	65.27	
RDAT178	RDAT	17	8	8	130.38	66.48	
RDAT179	RDAT	17	9	9	83.11	50.61	
RDAT1710	RDAT	17	10	10	76.92	47.58	
RDAT1711	RDAT	17	11	11	91.99	51.11	
RDAT1712	RDAT	17	12	12	98.85	54.30	
RDAT181	RDAT	18	1	1	100.49	57.24	
RDAT182	RDAT	18	2	2	87.97	56.13	
RDAT183	RDAT	18	3	3	80.61	53.02	
RDAT184	RDAT	18	4	4	70.86	48.26	
RDAT185	RDAT	18	5	5	71.15	47.10	
RDAT186	RDAT	18	6	6	103.78	55.77	
RDAT187	RDAT	18	7	7	129.55	64.08	
RDAT188	RDAT	18	8	8	137.69	69.85	
RDAT189	RDAT	18	9	9	94.69	54.80	
RDAT1810	RDAT	18	10	10	78.54	47.97	
RDAT1811	RDAT	18	11	11	92.06	51.88	
RDAT1812	RDAT	18	12	12	108.37	55.17	
RDAT191	RDAT	19	1	1	101.95	57.93	
RDAT192	RDAT	19	2	2	88.57	56.66	
RDAT193	RDAT	19	3	3	82.93	53.72	
RDAT194	RDAT	19	4	4	70.90	49.31	
RDAT195	RDAT	19	5	5	67.31	48.09	
RDAT196	RDAT	19	6	6	106.77	57.45	
RDAT197	RDAT	19	7	7	132.61	66.12	
RDAT198	RDAT	19	8	8	140.70	70.68	
RDAT199	RDAT	19	9	9	96.77	57.09	
RDAT1910	RDAT	19	10	10	77.43	49.28	
RDAT1911	RDAT	19	11	11	97.22	52.38	

RDAT1912	RDAT	19	12	12	106.81	56.30
RDAT201	RDAT	20	1	1	102.20	58.92
RDAT202	RDAT	20	2	2	89.58	56.95
RDAT203	RDAT	20	3	3	83.98	54.09
RDAT204	RDAT	20	4	4	71.52	49.88
RDAT205	RDAT	20	5	5	69.86	48.79
RDAT206	RDAT	20	6	6	112.51	60.79
RDAT207	RDAT	20	7	7	128.12	67.07
RDAT208	RDAT	20	8	8	148.61	69.91
RDAT209	RDAT	20	9	9	93.43	56.28
RDAT2010	RDAT	20	10	10	77.13	49.75
RDAT2011	RDAT	20	11	11	100.39	53.75
RDAT2012	RDAT	20	12	12	107.73	57.36
RDAT211	RDAT	21	1	1	103.50	61.09
RDAT212	RDAT	21	2	2	90.71	58.24
RDAT213	RDAT	21	3	3	85.90	55.75
RDAT214	RDAT	21	4	4	72.71	51.02
RDAT215	RDAT	21	5	5	70.78	49.97
RDAT216	RDAT	21	6	6	116.40	62.80
RDAT217	RDAT	21	7	7	138.42	69.95
RDAT218	RDAT	21	8	8	141.38	69.91
RDAT219	RDAT	21	9	9	98.51	56.37
RDAT2110	RDAT	21	10	10	81.20	51.42
RDAT2111	RDAT	21	11	11	102.69	55.27
RDAT2112	RDAT	21	12	12	107.66	59.01
RDAT221	RDAT	22	1	1	115.80	69.82
RDAT222	RDAT	22	2	2	102.31	67.12
RDAT223	RDAT	22	3	3	95.27	63.95
RDAT224	RDAT	22	4	4	82.93	60.56
RDAT225	RDAT	22	5	5	81.37	59.20
RDAT226	RDAT	22	6	6	130.17	71.99
RDAT227	RDAT	22	7	7	157.51	83.73
RDAT228	RDAT	22	8	8	160.73	80.97
RDAT229	RDAT	22	9	9	111.80	65.75
RDAT2210	RDAT	22	10	10	93.90	61.23
RDAT2211	RDAT	22	11	11	116.11	64.31
RDAT2212	RDAT	22	12	12	121.51	67.80
RDAT231	RDAT	23	1	1	116.48	70.86
RDAT232	RDAT	23	2	2	104.60	68.26
RDAT233	RDAT	23	3	3	97.18	65.24
RDAT234	RDAT	23	4	4	84.73	61.86
RDAT235	RDAT	23	5	5	83.44	60.34
RDAT236	RDAT	23	6	6	138.28	75.03
RDAT237	RDAT	23	7	7	157.16	82.62
RDAT238	RDAT	23	8	8	165.14	82.82
RDAT239	RDAT	23	9	9	113.48	67.14
RDAT2310	RDAT	23	10	10	95.05	62.56
RDAT2311	RDAT	23	11	11	118.08	65.51
RDAT2312	RDAT	23	12	12	122.71	68.83
RDAT241	RDAT	24	1	1	117.72	71.32
RDAT242	RDAT	24	2	2	108.64	71.04
RDAT243	RDAT	24	3	3	100.64	67.66

RDAT244	RDAT	24	4	4	87.40	63.85
RDAT245	RDAT	24	5	5	85.73	62.49
RDAT246	RDAT	24	6	6	130.66	73.20
RDAT247	RDAT	24	7	7	162.43	84.54
RDAT248	RDAT	24	8	8	168.72	87.34
RDAT249	RDAT	24	9	9	128.56	74.35
RDAT2410	RDAT	24	10	10	97.49	63.57
RDAT2411	RDAT	24	11	11	120.21	66.79
RDAT2412	RDAT	24	12	12	124.52	69.92
RDAT251	RDAT	25	1	1	121.52	73.72
RDAT252	RDAT	25	2	2	109.60	72.09
RDAT253	RDAT	25	3	3	103.75	69.81
RDAT254	RDAT	25	4	4	89.09	65.38
RDAT255	RDAT	25	5	5	88.29	64.42
RDAT256	RDAT	25	6	6	136.25	75.96
RDAT257	RDAT	25	7	7	161.21	85.73
RDAT258	RDAT	25	8	8	174.95	88.45
RDAT259	RDAT	25	9	9	128.79	74.45
RDAT2510	RDAT	25	10	10	99.61	65.13
RDAT2511	RDAT	25	11	11	123.19	68.82
RDAT2512	RDAT	25	12	12	128.63	72.21
RDAT261	RDAT	26	1	1	123.19	74.96
RDAT262	RDAT	26	2	2	111.89	73.28
RDAT263	RDAT	26	3	3	104.76	70.50
RDAT264	RDAT	26	4	4	90.64	66.32
RDAT265	RDAT	26	5	5	89.43	65.32
RDAT266	RDAT	26	6	6	140.10	77.88
RDAT267	RDAT	26	7	7	166.92	86.24
RDAT268	RDAT	26	8	8	172.17	88.45
RDAT269	RDAT	26	9	9	126.65	73.50
RDAT2610	RDAT	26	10	10	101.70	66.86
RDAT2611	RDAT	26	11	11	125.41	70.15
RDAT2612	RDAT	26	12	12	128.38	72.53
RDAT271	RDAT	27	1	1	125.69	76.69
RDAT272	RDAT	27	2	2	112.97	74.36
RDAT273	RDAT	27	3	3	105.91	71.32
RDAT274	RDAT	27	4	4	92.29	67.67
RDAT275	RDAT	27	5	5	92.44	66.53
RDAT276	RDAT	27	6	6	142.93	79.68
RDAT277	RDAT	27	7	7	170.27	89.54
RDAT278	RDAT	27	8	8	176.62	89.87
RDAT279	RDAT	27	9	9	124.13	73.64
RDAT2710	RDAT	27	10	10	103.73	68.27
RDAT2711	RDAT	27	11	11	127.59	71.36
RDAT2712	RDAT	27	12	12	132.48	74.66
RDAT281	RDAT	28	1	1	127.50	77.81
RDAT282	RDAT	28	2	2	114.59	75.57
RDAT283	RDAT	28	3	3	107.49	72.63
RDAT284	RDAT	28	4	4	94.52	69.11
RDAT285	RDAT	28	5	5	92.87	67.71
RDAT286	RDAT	28	6	6	152.67	84.43
RDAT287	RDAT	28	7	7	176.22	92.12

RDAT288	RDAT	28	8	8	176.01	90.04
RDAT289	RDAT	28	9	9	122.81	73.29
RDAT2810	RDAT	28	10	10	104.99	69.50
RDAT2811	RDAT	28	11	11	130.70	73.20
RDAT2812	RDAT	28	12	12	135.18	76.27
RDAT291	RDAT	29	1	1	128.44	78.67
RDAT292	RDAT	29	2	2	117.88	77.79
RDAT293	RDAT	29	3	3	111.86	74.74
RDAT294	RDAT	29	4	4	98.94	70.86
RDAT295	RDAT	29	5	5	96.33	69.80
RDAT296	RDAT	29	6	6	142.65	80.57
RDAT297	RDAT	29	7	7	175.94	92.83
RDAT298	RDAT	29	8	8	184.81	95.42
RDAT299	RDAT	29	9	9	133.80	78.70
RDAT2910	RDAT	29	10	10	106.46	70.01
RDAT2911	RDAT	29	11	11	130.75	73.31
RDAT2912	RDAT	29	12	12	137.63	77.66
RDAT301	RDAT	30	1	1	132.02	80.78
RDAT302	RDAT	30	2	2	120.03	79.26
RDAT303	RDAT	30	3	3	113.43	75.90
RDAT304	RDAT	30	4	4	98.94	71.31
RDAT305	RDAT	30	5	5	97.84	70.66
RDAT306	RDAT	30	6	6	146.73	83.23
RDAT307	RDAT	30	7	7	182.08	98.51
RDAT308	RDAT	30	8	8	184.75	95.76
RDAT309	RDAT	30	9	9	139.72	81.36
RDAT3010	RDAT	30	10	10	108.10	71.44
RDAT3011	RDAT	30	11	11	133.11	75.07
RDAT3012	RDAT	30	12	12	138.39	78.56
RDAT311	RDAT	31	1	1	134.34	82.31
RDAT312	RDAT	31	2	2	122.16	80.84
RDAT313	RDAT	31	3	3	116.06	77.32
RDAT314	RDAT	31	4	4	101.23	72.63
RDAT315	RDAT	31	5	5	100.08	72.07
RDAT316	RDAT	31	6	6	148.62	84.70
RDAT317	RDAT	31	7	7	186.11	101.98
RDAT318	RDAT	31	8	8	188.09	97.73
RDAT319	RDAT	31	9	9	143.33	83.52
RDAT3110	RDAT	31	10	10	109.77	72.64
RDAT3111	RDAT	31	11	11	135.11	76.36
RDAT3112	RDAT	31	12	12	141.02	80.14
RDAT321	RDAT	32	1	1	136.60	83.79
RDAT322	RDAT	32	2	2	124.57	82.55
RDAT323	RDAT	32	3	3	119.17	78.90
RDAT324	RDAT	32	4	4	103.63	73.93
RDAT325	RDAT	32	5	5	102.10	73.54
RDAT326	RDAT	32	6	6	150.26	86.09
RDAT327	RDAT	32	7	7	193.08	105.49
RDAT328	RDAT	32	8	8	191.11	99.85
RDAT329	RDAT	32	9	9	148.67	86.24
RDAT3210	RDAT	32	10	10	111.33	73.78
RDAT3211	RDAT	32	11	11	137.07	77.67

RDAT3212	RDAT	32	12	12	143.25	81.58
RDAT331	RDAT	33	1	1	138.97	85.36
RDAT332	RDAT	33	2	2	127.21	84.40
RDAT333	RDAT	33	3	3	122.53	80.56
RDAT334	RDAT	33	4	4	106.32	75.19
RDAT335	RDAT	33	5	5	104.55	75.08
RDAT336	RDAT	33	6	6	149.76	86.57
RDAT337	RDAT	33	7	7	208.03	109.33
RDAT338	RDAT	33	8	8	195.12	102.52
RDAT339	RDAT	33	9	9	156.00	89.88
RDAT3310	RDAT	33	10	10	112.98	74.89
RDAT3311	RDAT	33	11	11	138.71	78.83
RDAT3312	RDAT	33	12	12	145.34	82.97
RDAT341	RDAT	34	1	1	141.74	87.12
RDAT342	RDAT	34	2	2	129.65	86.14
RDAT343	RDAT	34	3	3	125.35	82.09
RDAT344	RDAT	34	4	4	108.26	76.32
RDAT345	RDAT	34	5	5	106.71	76.46
RDAT346	RDAT	34	6	6	151.61	88.16
RDAT347	RDAT	34	7	7	226.48	114.16
RDAT348	RDAT	34	8	8	197.79	104.39
RDAT349	RDAT	34	9	9	162.12	92.95
RDAT3410	RDAT	34	10	10	114.67	76.17
RDAT3411	RDAT	34	11	11	140.78	80.28
RDAT3412	RDAT	34	12	12	147.34	84.35
RDAT351	RDAT	35	1	1	144.29	88.79
RDAT352	RDAT	35	2	2	132.18	87.96
RDAT353	RDAT	35	3	3	128.53	83.72
RDAT354	RDAT	35	4	4	110.73	77.63
RDAT355	RDAT	35	5	5	109.06	77.99
RDAT356	RDAT	35	6	6	152.85	89.45
RDAT357	RDAT	35	7	7	243.38	118.62
RDAT358	RDAT	35	8	8	201.20	106.69
RDAT359	RDAT	35	9	9	168.27	96.11
RDAT3510	RDAT	35	10	10	116.38	77.40
RDAT3511	RDAT	35	11	11	142.77	81.64
RDAT3512	RDAT	35	12	12	149.67	85.87
RDAT361	RDAT	36	1	1	146.89	90.48
RDAT362	RDAT	36	2	2	134.91	89.83
RDAT363	RDAT	36	3	3	131.86	85.40
RDAT364	RDAT	36	4	4	113.25	78.93
RDAT365	RDAT	36	5	5	111.43	79.55
RDAT366	RDAT	36	6	6	153.93	90.70
RDAT367	RDAT	36	7	7	261.95	123.39
RDAT368	RDAT	36	8	8	204.62	109.08
RDAT369	RDAT	36	9	9	175.17	99.57
RDAT3610	RDAT	36	10	10	118.09	78.64
RDAT3611	RDAT	36	11	11	145.43	83.03
RDAT3612	RDAT	36	12	12	151.91	87.37
RDAT371	RDAT	37	1	1	149.58	92.24
RDAT372	RDAT	37	2	2	137.91	91.76
RDAT373	RDAT	37	3	3	135.24	87.11

RDAT374	RDAT	37	4	4	115.79	80.24
RDAT375	RDAT	37	5	5	113.89	81.14
RDAT376	RDAT	37	6	6	156.71	91.91
RDAT377	RDAT	37	7	7	282.74	128.56
RDAT378	RDAT	37	8	8	208.14	111.53
RDAT379	RDAT	37	9	9	182.52	103.25
RDAT3710	RDAT	37	10	10	119.85	79.90
RDAT3711	RDAT	37	11	11	148.24	84.43
RDAT3712	RDAT	37	12	12	154.16	88.89
RDAT381	RDAT	38	1	1	152.36	94.05
RDAT382	RDAT	38	2	2	140.93	93.70
RDAT383	RDAT	38	3	3	138.62	88.83
RDAT384	RDAT	38	4	4	118.29	81.55
RDAT385	RDAT	38	5	5	116.36	82.73
RDAT386	RDAT	38	6	6	160.32	93.31
RDAT387	RDAT	38	7	7	305.33	134.11
RDAT388	RDAT	38	8	8	211.53	113.93
RDAT389	RDAT	38	9	9	189.83	106.92
RDAT3810	RDAT	38	10	10	121.63	81.21
RDAT3811	RDAT	38	11	11	151.16	85.89
RDAT3812	RDAT	38	12	12	156.45	90.44
RDAT391	RDAT	39	1	1	155.14	95.88
RDAT392	RDAT	39	2	2	144.05	95.69
RDAT393	RDAT	39	3	3	142.15	90.61
RDAT394	RDAT	39	4	4	120.94	82.92
RDAT395	RDAT	39	5	5	118.91	84.39
RDAT396	RDAT	39	6	6	163.88	94.66
RDAT397	RDAT	39	7	7	329.04	139.87
RDAT398	RDAT	39	8	8	215.11	116.47
RDAT399	RDAT	39	9	9	197.48	110.75
RDAT3910	RDAT	39	10	10	123.43	82.52
RDAT3911	RDAT	39	11	11	154.10	87.36
RDAT3912	RDAT	39	12	12	158.81	92.03
RDAT401	RDAT	40	1	1	157.98	97.74
RDAT402	RDAT	40	2	2	147.24	97.73
RDAT403	RDAT	40	3	3	145.78	92.42
RDAT404	RDAT	40	4	4	123.64	84.30
RDAT405	RDAT	40	5	5	121.51	86.07
RDAT406	RDAT	40	6	6	167.51	96.02
RDAT407	RDAT	40	7	7	354.85	146.01
RDAT408	RDAT	40	8	8	218.74	119.07
RDAT409	RDAT	40	9	9	205.55	114.78
RDAT4010	RDAT	40	10	10	125.27	83.86
RDAT4011	RDAT	40	11	11	157.09	88.85
RDAT4012	RDAT	40	12	12	161.18	93.64

119.97	134.65	130.38	137.69	140.70	148.61	141.38	160.73	165.14	168.72	174.95
15	16	17	18	19	20	21	22	23	24	25
0.7795	0.7602	0.7667	0.7298	0.7245	0.6877	0.7321	0.7205	0.7054	0.6977	0.6946
0.6468	0.6254	0.6501	0.6389	0.6295	0.6028	0.6416	0.6366	0.6334	0.6439	0.6265
0.6235	0.6053	0.6123	0.5854	0.5894	0.5651	0.6076	0.5927	0.5885	0.5965	0.5930
0.5277	0.4946	0.5200	0.5146	0.5039	0.4813	0.5143	0.5160	0.5131	0.5180	0.5092
0.5226	0.5007	0.5240	0.5168	0.4784	0.4701	0.5006	0.5063	0.5053	0.5081	0.5047
0.7880	0.8113	0.8554	0.7537	0.7588	0.7571	0.8233	0.8099	0.8374	0.7744	0.7788
0.8843	0.9547	0.9763	0.9409	0.9425	0.8621	0.9791	0.9800	0.9517	0.9627	0.9215
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.7038	0.6638	0.6375	0.6877	0.6878	0.6287	0.6968	0.6956	0.6872	0.7619	0.7361
0.5694	0.5561	0.5900	0.5704	0.5503	0.5190	0.5743	0.5842	0.5756	0.5778	0.5693
0.7280	0.7185	0.7055	0.6686	0.6910	0.6756	0.7263	0.7224	0.7151	0.7124	0.7041
0.7844	0.7618	0.7581	0.7870	0.7591	0.7249	0.7615	0.7560	0.7431	0.7380	0.7352
469	470	471	472	473	474	475	476	477	478	479

172.17	176.62	176.22	184.81	184.75	188.09	193.08	208.03	226.48	243.38	261.95
26	27	28	29	30	31	32	33	34	35	36
0.7155	0.7117	0.7235	0.6950	0.7146	0.7142	0.7074	0.6680	0.6258	0.5928	0.5608
0.6499	0.6396	0.6503	0.6379	0.6497	0.6495	0.6452	0.6115	0.5725	0.5431	0.5150
0.6085	0.5997	0.6100	0.6052	0.6139	0.6170	0.6172	0.5890	0.5535	0.5281	0.5034
0.5265	0.5225	0.5363	0.5354	0.5355	0.5382	0.5367	0.5111	0.4780	0.4550	0.4323
0.5194	0.5234	0.5270	0.5212	0.5296	0.5321	0.5288	0.5026	0.4712	0.4481	0.4254
0.8137	0.8093	0.8664	0.7719	0.7942	0.7902	0.7782	0.7199	0.6694	0.6280	0.5877
0.9695	0.9641	1.0000	0.9520	0.9855	0.9895	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	0.9988	1.0000	1.0000	1.0000	0.9898	0.9379	0.8733	0.8267	0.7811
0.7356	0.7028	0.6969	0.7240	0.7562	0.7620	0.7700	0.7499	0.7158	0.6914	0.6687
0.5907	0.5873	0.5958	0.5761	0.5851	0.5836	0.5766	0.5431	0.5063	0.4782	0.4508
0.7284	0.7224	0.7417	0.7075	0.7205	0.7184	0.7099	0.6668	0.6216	0.5866	0.5552
0.7457	0.7501	0.7671	0.7447	0.7491	0.7498	0.7419	0.6987	0.6505	0.6149	0.5799
480	481	482	483	484	485	486	487	488	489	490

282.74	305.33	329.04	354.85
37	38	39	40
0.5290	0.4990	0.4715	0.4452
0.4877	0.4616	0.4378	0.4149
0.4783	0.4540	0.4320	0.4108
0.4095	0.3874	0.3676	0.3484
0.4028	0.3811	0.3614	0.3424
0.5543	0.5251	0.4980	0.4721
1.0000	1.0000	1.0000	1.0000
0.7361	0.6928	0.6538	0.6164
0.6455	0.6217	0.6002	0.5793
0.4239	0.3984	0.3751	0.3530
0.5243	0.4951	0.4683	0.4427
0.5452	0.5124	0.4826	0.4542
491	492	493	494

Paste as Values Only					max	average	
RDAT71	RDAT	7	1	1	0.00	0.00	2
RDAT72	RDAT	7	2	2	0.00	0.00	2
RDAT73	RDAT	7	3	3	0.00	0.00	2
RDAT74	RDAT	7	4	4	0.00	0.00	2
RDAT75	RDAT	7	5	5	0.00	0.00	2
RDAT76	RDAT	7	6	6	0.00	0.00	2
RDAT77	RDAT	7	7	7	0.00	0.00	2
RDAT78	RDAT	7	8	8	0.00	0.00	2
RDAT79	RDAT	7	9	9	0.00	0.00	2
RDAT710	RDAT	7	10	10	0.00	0.00	2
RDAT711	RDAT	7	11	11	0.00	0.00	2
RDAT712	RDAT	7	12	12	0.00	0.00	2
RDAT81	RDAT	8	1	1	0.00	0.00	2
RDAT82	RDAT	8	2	2	0.00	0.00	2
RDAT83	RDAT	8	3	3	0.00	0.00	2
RDAT84	RDAT	8	4	4	0.00	0.00	2
RDAT85	RDAT	8	5	5	0.00	0.00	2
RDAT86	RDAT	8	6	6	0.00	0.00	2
RDAT87	RDAT	8	7	7	0.00	0.00	2
RDAT88	RDAT	8	8	8	0.00	0.00	2
RDAT89	RDAT	8	9	9	0.00	0.00	2
RDAT810	RDAT	8	10	10	0.00	0.00	2
RDAT811	RDAT	8	11	11	0.00	0.00	2
RDAT812	RDAT	8	12	12	0.00	0.00	2
RDAT91	RDAT	9	1	1	0.00	0.00	2
RDAT92	RDAT	9	2	2	0.00	0.00	2
RDAT93	RDAT	9	3	3	0.00	0.00	2
RDAT94	RDAT	9	4	4	0.00	0.00	2
RDAT95	RDAT	9	5	5	0.00	0.00	2
RDAT96	RDAT	9	6	6	0.00	0.00	2
RDAT97	RDAT	9	7	7	0.00	0.00	2
RDAT98	RDAT	9	8	8	0.00	0.00	2
RDAT99	RDAT	9	9	9	0.00	0.00	2
RDAT910	RDAT	9	10	10	0.00	0.00	2
RDAT911	RDAT	9	11	11	0.00	0.00	2
RDAT912	RDAT	9	12	12	0.00	0.00	2
RDAT101	RDAT	10	1	1	0.00	0.00	2
RDAT102	RDAT	10	2	2	0.00	0.00	2
RDAT103	RDAT	10	3	3	0.00	0.00	2
RDAT104	RDAT	10	4	4	0.00	0.00	2
RDAT105	RDAT	10	5	5	0.00	0.00	2
RDAT106	RDAT	10	6	6	0.00	0.00	2
RDAT107	RDAT	10	7	7	0.00	0.00	2
RDAT108	RDAT	10	8	8	0.00	0.00	2
RDAT109	RDAT	10	9	9	0.00	0.00	2
RDAT1010	RDAT	10	10	10	0.00	0.00	2
RDAT1011	RDAT	10	11	11	0.00	0.00	2
RDAT1012	RDAT	10	12	12	0.00	0.00	2
RDAT111	RDAT	11	1	1	73.16	39.92	2
RDAT112	RDAT	11	2	2	57.64	35.37	2
RDAT113	RDAT	11	3	3	60.37	35.69	2

max	RDAT	88.43	88.27	101.22	109.35
year		11	12	13	14
	Emergency Energy Monthly Scalar				
1	RDAT	0.8273	0.8661	0.8252	0.7935
2	RDAT	0.6518	0.6840	0.6692	0.6620
3	RDAT	0.6826	0.7122	0.6559	0.6421
4	RDAT	0.5975	0.6205	0.5837	0.5643
5	RDAT	0.5508	0.6043	0.5442	0.5375
6	RDAT	0.7990	1.0000	0.7973	0.8327
7	RDAT	0.8618	0.9268	0.8847	0.8881
8	RDAT	1.0000	0.9975	1.0000	1.0000
9	RDAT	0.6235	0.7006	0.7893	0.7064
10	RDAT	0.6630	0.6586	0.6311	0.6254
11	RDAT	0.7646	0.7578	0.7683	0.7753
12	RDAT	0.7954	0.8659	0.8227	0.8320
	GAF INDEX	465	466	467	468

	Emg. Eng Annual Peak Price ($/MWh)
2011	88.43
2012	88.27
2013	101.22
2014	109.35
2015	112.93
2016	114.76
2017	116.90
2018	126.58
2019	132.17
2020	138.96
2021	134.14
2022	151.44
2023	157.27
2024	162.45
2025	161.53
2026	165.17
2027	166.29
2028	168.93
2029	171.24
2030	174.73
2031	177.21
2032	180.04
2033	182.94
2034	185.99
2035	188.92
2036	191.97
2037	195.07
2038	198.23
2039	201.41
2040	204.78

Low Band

RDAT114	RDAT	11	4	4	52.84	34.20	2
RDAT115	RDAT	11	5	5	48.70	32.91	2
RDAT116	RDAT	11	6	6	70.65	39.31	2
RDAT117	RDAT	11	7	7	76.21	41.27	2
RDAT118	RDAT	11	8	8	88.43	43.86	2
RDAT119	RDAT	11	9	9	55.14	35.63	2
RDAT1110	RDAT	11	10	10	58.63	34.28	2
RDAT1111	RDAT	11	11	11	67.61	35.10	2
RDAT1112	RDAT	11	12	12	70.34	36.77	2
RDAT121	RDAT	12	1	1	76.45	41.12	2
RDAT122	RDAT	12	2	2	60.37	37.33	2
RDAT123	RDAT	12	3	3	62.87	37.39	2
RDAT124	RDAT	12	4	4	54.77	35.30	2
RDAT125	RDAT	12	5	5	53.34	33.99	2
RDAT126	RDAT	12	6	6	88.27	46.72	2
RDAT127	RDAT	12	7	7	81.81	43.45	2
RDAT128	RDAT	12	8	8	88.05	44.93	2
RDAT129	RDAT	12	9	9	61.84	36.76	2
RDAT1210	RDAT	12	10	10	58.14	34.91	2
RDAT1211	RDAT	12	11	11	66.89	36.71	2
RDAT1212	RDAT	12	12	12	76.43	38.05	2
RDAT131	RDAT	13	1	1	83.53	44.50	2
RDAT132	RDAT	13	2	2	67.74	41.24	2
RDAT133	RDAT	13	3	3	66.39	40.47	2
RDAT134	RDAT	13	4	4	59.08	38.58	2
RDAT135	RDAT	13	5	5	55.08	37.49	2
RDAT136	RDAT	13	6	6	80.71	43.84	2
RDAT137	RDAT	13	7	7	89.55	44.86	2
RDAT138	RDAT	13	8	8	101.22	49.39	2
RDAT139	RDAT	13	9	9	79.89	44.62	2
RDAT1310	RDAT	13	10	10	63.88	38.81	2
RDAT1311	RDAT	13	11	11	77.77	39.96	2
RDAT1312	RDAT	13	12	12	83.28	42.29	2
RDAT141	RDAT	14	1	1	86.77	46.90	2
RDAT142	RDAT	14	2	2	72.39	44.18	2
RDAT143	RDAT	14	3	3	70.21	43.33	2
RDAT144	RDAT	14	4	4	61.70	40.95	2
RDAT145	RDAT	14	5	5	58.78	39.21	2
RDAT146	RDAT	14	6	6	91.06	47.82	2
RDAT147	RDAT	14	7	7	97.11	50.02	2
RDAT148	RDAT	14	8	8	109.35	52.56	2
RDAT149	RDAT	14	9	9	77.25	45.61	2
RDAT1410	RDAT	14	10	10	68.39	40.93	2
RDAT1411	RDAT	14	11	11	84.78	42.97	2
RDAT1412	RDAT	14	12	12	90.98	45.56	2
RDAT151	RDAT	15	1	1	94.06	50.00	2
RDAT152	RDAT	15	2	2	74.25	44.84	2
RDAT153	RDAT	15	3	3	71.70	43.46	2
RDAT154	RDAT	15	4	4	61.51	41.50	2
RDAT155	RDAT	15	5	5	60.90	40.50	2
RDAT156	RDAT	15	6	6	93.01	48.82	2
RDAT157	RDAT	15	7	7	101.69	51.73	2

Low Band

RDAT158	RDAT	15	8	8	112.93	53.11	2
RDAT159	RDAT	15	9	9	82.24	46.34	2
RDAT1510	RDAT	15	10	10	68.25	41.76	2
RDAT1511	RDAT	15	11	11	84.28	43.38	2
RDAT1512	RDAT	15	12	12	89.64	46.06	2
RDAT161	RDAT	16	1	1	89.56	48.43	2
RDAT162	RDAT	16	2	2	74.26	44.36	2
RDAT163	RDAT	16	3	3	72.40	43.29	2
RDAT164	RDAT	16	4	4	60.13	40.60	2
RDAT165	RDAT	16	5	5	60.49	39.35	2
RDAT166	RDAT	16	6	6	94.21	49.46	2
RDAT167	RDAT	16	7	7	108.60	53.65	2
RDAT168	RDAT	16	8	8	114.76	54.58	2
RDAT169	RDAT	16	9	9	78.58	45.32	2
RDAT1610	RDAT	16	10	10	67.75	40.89	2
RDAT1611	RDAT	16	11	11	87.76	43.74	2
RDAT1612	RDAT	16	12	12	89.33	45.63	2
RDAT171	RDAT	17	1	1	93.17	50.60	
RDAT172	RDAT	17	2	2	76.07	45.87	
RDAT173	RDAT	17	3	3	72.36	44.36	
RDAT174	RDAT	17	4	4	62.29	41.60	
RDAT175	RDAT	17	5	5	62.46	39.51	
RDAT176	RDAT	17	6	6	102.20	52.53	
RDAT177	RDAT	17	7	7	110.20	56.68	
RDAT178	RDAT	17	8	8	116.90	57.93	
RDAT179	RDAT	17	9	9	73.20	43.10	
RDAT1710	RDAT	17	10	10	70.49	41.87	
RDAT1711	RDAT	17	11	11	83.80	44.27	
RDAT1712	RDAT	17	12	12	90.78	47.48	
RDAT181	RDAT	18	1	1	97.94	52.32	
RDAT182	RDAT	18	2	2	82.16	50.09	
RDAT183	RDAT	18	3	3	76.31	47.76	
RDAT184	RDAT	18	4	4	65.83	42.97	
RDAT185	RDAT	18	5	5	66.37	41.77	
RDAT186	RDAT	18	6	6	103.36	53.67	
RDAT187	RDAT	18	7	7	123.25	59.56	
RDAT188	RDAT	18	8	8	126.58	62.70	
RDAT189	RDAT	18	9	9	88.74	49.38	
RDAT1810	RDAT	18	10	10	72.85	42.81	
RDAT1811	RDAT	18	11	11	86.25	46.56	
RDAT1812	RDAT	18	12	12	102.12	49.80	
RDAT191	RDAT	19	1	1	97.85	53.38	
RDAT192	RDAT	19	2	2	83.74	51.74	
RDAT193	RDAT	19	3	3	78.49	49.05	
RDAT194	RDAT	19	4	4	67.04	44.95	
RDAT195	RDAT	19	5	5	62.93	43.50	
RDAT196	RDAT	19	6	6	102.92	54.15	
RDAT197	RDAT	19	7	7	128.37	61.80	
RDAT198	RDAT	19	8	8	132.17	64.86	
RDAT199	RDAT	19	9	9	89.09	50.86	
RDAT1910	RDAT	19	10	10	73.28	45.19	
RDAT1911	RDAT	19	11	11	92.03	48.26	

RDAT1912	RDAT	19	12	12	101.14	51.67
RDAT201	RDAT	20	1	1	101.64	56.28
RDAT202	RDAT	20	2	2	83.60	52.34
RDAT203	RDAT	20	3	3	79.20	50.10
RDAT204	RDAT	20	4	4	67.79	46.05
RDAT205	RDAT	20	5	5	65.62	44.76
RDAT206	RDAT	20	6	6	110.99	58.72
RDAT207	RDAT	20	7	7	126.02	64.95
RDAT208	RDAT	20	8	8	138.96	64.98
RDAT209	RDAT	20	9	9	89.80	52.10
RDAT2010	RDAT	20	10	10	72.83	46.16
RDAT2011	RDAT	20	11	11	93.53	49.45
RDAT2012	RDAT	20	12	12	101.29	53.14
RDAT211	RDAT	21	1	1	97.23	56.43
RDAT212	RDAT	21	2	2	84.93	53.54
RDAT213	RDAT	21	3	3	80.72	51.31
RDAT214	RDAT	21	4	4	69.57	47.56
RDAT215	RDAT	21	5	5	66.37	45.85
RDAT216	RDAT	21	6	6	116.35	60.51
RDAT217	RDAT	21	7	7	132.57	66.99
RDAT218	RDAT	21	8	8	134.14	65.74
RDAT219	RDAT	21	9	9	91.94	51.20
RDAT2110	RDAT	21	10	10	76.26	47.36
RDAT2111	RDAT	21	11	11	96.22	51.24
RDAT2112	RDAT	21	12	12	100.57	54.41
RDAT221	RDAT	22	1	1	108.51	64.59
RDAT222	RDAT	22	2	2	96.68	62.10
RDAT223	RDAT	22	3	3	89.42	59.30
RDAT224	RDAT	22	4	4	77.73	56.40
RDAT225	RDAT	22	5	5	76.09	55.29
RDAT226	RDAT	22	6	6	129.67	69.93
RDAT227	RDAT	22	7	7	151.41	78.76
RDAT228	RDAT	22	8	8	151.44	76.62
RDAT229	RDAT	22	9	9	108.81	63.37
RDAT2210	RDAT	22	10	10	88.47	57.45
RDAT2211	RDAT	22	11	11	106.95	59.13
RDAT2212	RDAT	22	12	12	114.09	62.83
RDAT231	RDAT	23	1	1	110.77	66.03
RDAT232	RDAT	23	2	2	98.12	63.36
RDAT233	RDAT	23	3	3	92.28	60.88
RDAT234	RDAT	23	4	4	80.37	57.92
RDAT235	RDAT	23	5	5	77.73	56.21
RDAT236	RDAT	23	6	6	132.21	71.31
RDAT237	RDAT	23	7	7	153.06	79.96
RDAT238	RDAT	23	8	8	157.27	78.93
RDAT239	RDAT	23	9	9	106.67	63.42
RDAT2310	RDAT	23	10	10	92.65	59.79
RDAT2311	RDAT	23	11	11	110.24	60.71
RDAT2312	RDAT	23	12	12	115.80	63.89
RDAT241	RDAT	24	1	1	111.07	66.19
RDAT242	RDAT	24	2	2	102.55	65.89
RDAT243	RDAT	24	3	3	94.89	62.85

Low Band

RDAT244	RDAT	24	4	4	81.85	59.50
RDAT245	RDAT	24	5	5	80.28	58.32
RDAT246	RDAT	24	6	6	128.21	70.38
RDAT247	RDAT	24	7	7	152.19	79.29
RDAT248	RDAT	24	8	8	162.45	82.07
RDAT249	RDAT	24	9	9	112.03	66.12
RDAT2410	RDAT	24	10	10	91.14	59.48
RDAT2411	RDAT	24	11	11	112.99	62.09
RDAT2412	RDAT	24	12	12	118.40	65.28
RDAT251	RDAT	25	1	1	114.31	68.21
RDAT252	RDAT	25	2	2	103.25	66.67
RDAT253	RDAT	25	3	3	97.21	64.54
RDAT254	RDAT	25	4	4	84.63	61.11
RDAT255	RDAT	25	5	5	82.28	60.05
RDAT256	RDAT	25	6	6	130.65	72.29
RDAT257	RDAT	25	7	7	156.21	82.69
RDAT258	RDAT	25	8	8	161.53	82.16
RDAT259	RDAT	25	9	9	117.95	68.22
RDAT2510	RDAT	25	10	10	93.61	60.73
RDAT2511	RDAT	25	11	11	115.84	64.10
RDAT2512	RDAT	25	12	12	122.41	67.44
RDAT261	RDAT	26	1	1	116.95	69.80
RDAT262	RDAT	26	2	2	105.13	67.93
RDAT263	RDAT	26	3	3	98.21	65.17
RDAT264	RDAT	26	4	4	84.72	61.34
RDAT265	RDAT	26	5	5	83.15	60.58
RDAT266	RDAT	26	6	6	133.51	73.74
RDAT267	RDAT	26	7	7	157.90	82.46
RDAT268	RDAT	26	8	8	165.17	84.04
RDAT269	RDAT	26	9	9	117.76	70.72
RDAT2610	RDAT	26	10	10	95.65	62.48
RDAT2611	RDAT	26	11	11	117.31	65.00
RDAT2612	RDAT	26	12	12	122.94	68.07
RDAT271	RDAT	27	1	1	118.87	71.25
RDAT272	RDAT	27	2	2	106.75	68.95
RDAT273	RDAT	27	3	3	99.49	66.02
RDAT274	RDAT	27	4	4	86.41	62.66
RDAT275	RDAT	27	5	5	85.58	61.86
RDAT276	RDAT	27	6	6	138.30	75.94
RDAT277	RDAT	27	7	7	160.85	84.12
RDAT278	RDAT	27	8	8	166.29	84.52
RDAT279	RDAT	27	9	9	118.08	68.86
RDAT2710	RDAT	27	10	10	97.12	63.53
RDAT2711	RDAT	27	11	11	119.96	66.21
RDAT2712	RDAT	27	12	12	124.37	69.23
RDAT281	RDAT	28	1	1	119.80	72.06
RDAT282	RDAT	28	2	2	108.06	70.02
RDAT283	RDAT	28	3	3	100.61	67.26
RDAT284	RDAT	28	4	4	88.74	64.19
RDAT285	RDAT	28	5	5	86.57	62.99
RDAT286	RDAT	28	6	6	147.06	80.09
RDAT287	RDAT	28	7	7	168.74	88.50

Low Band

RDAT288	RDAT	28	8	8	168.93	85.78
RDAT289	RDAT	28	9	9	122.34	72.23
RDAT2810	RDAT	28	10	10	98.61	64.70
RDAT2811	RDAT	28	11	11	121.84	67.56
RDAT2812	RDAT	28	12	12	126.78	70.60
RDAT291	RDAT	29	1	1	120.55	72.75
RDAT292	RDAT	29	2	2	111.13	72.20
RDAT293	RDAT	29	3	3	104.66	69.69
RDAT294	RDAT	29	4	4	90.35	65.58
RDAT295	RDAT	29	5	5	88.93	64.92
RDAT296	RDAT	29	6	6	136.18	76.29
RDAT297	RDAT	29	7	7	163.55	87.37
RDAT298	RDAT	29	8	8	171.24	87.44
RDAT299	RDAT	29	9	9	125.80	73.28
RDAT2910	RDAT	29	10	10	100.09	65.20
RDAT2911	RDAT	29	11	11	122.21	67.85
RDAT2912	RDAT	29	12	12	128.61	71.86
RDAT301	RDAT	30	1	1	124.32	74.80
RDAT302	RDAT	30	2	2	111.96	73.12
RDAT303	RDAT	30	3	3	105.08	70.30
RDAT304	RDAT	30	4	4	91.36	66.18
RDAT305	RDAT	30	5	5	89.63	65.74
RDAT306	RDAT	30	6	6	141.89	78.86
RDAT307	RDAT	30	7	7	165.97	88.96
RDAT308	RDAT	30	8	8	174.73	89.34
RDAT309	RDAT	30	9	9	131.13	76.89
RDAT3010	RDAT	30	10	10	101.59	66.54
RDAT3011	RDAT	30	11	11	124.41	69.49
RDAT3012	RDAT	30	12	12	131.37	73.28
RDAT311	RDAT	31	1	1	126.24	76.11
RDAT312	RDAT	31	2	2	113.75	74.49
RDAT313	RDAT	31	3	3	106.88	71.65
RDAT314	RDAT	31	4	4	93.10	67.45
RDAT315	RDAT	31	5	5	91.50	67.11
RDAT316	RDAT	31	6	6	144.28	80.26
RDAT317	RDAT	31	7	7	168.12	90.72
RDAT318	RDAT	31	8	8	177.21	90.72
RDAT319	RDAT	31	9	9	134.72	78.59
RDAT3110	RDAT	31	10	10	103.13	67.59
RDAT3111	RDAT	31	11	11	126.26	70.66
RDAT3112	RDAT	31	12	12	133.57	74.65
RDAT321	RDAT	32	1	1	128.16	77.38
RDAT322	RDAT	32	2	2	115.57	75.95
RDAT323	RDAT	32	3	3	108.83	73.14
RDAT324	RDAT	32	4	4	94.85	68.71
RDAT325	RDAT	32	5	5	93.24	68.51
RDAT326	RDAT	32	6	6	146.02	81.46
RDAT327	RDAT	32	7	7	170.06	92.50
RDAT328	RDAT	32	8	8	180.04	92.34
RDAT329	RDAT	32	9	9	139.25	81.26
RDAT3210	RDAT	32	10	10	104.69	68.65
RDAT3211	RDAT	32	11	11	127.89	71.83

Low Band

RDAT3212	RDAT	32	12	12	135.98	76.07
RDAT331	RDAT	33	1	1	130.35	78.77
RDAT332	RDAT	33	2	2	117.53	77.52
RDAT333	RDAT	33	3	3	111.00	74.70
RDAT334	RDAT	33	4	4	96.45	69.90
RDAT335	RDAT	33	5	5	95.21	69.97
RDAT336	RDAT	33	6	6	145.90	81.87
RDAT337	RDAT	33	7	7	170.43	93.58
RDAT338	RDAT	33	8	8	182.94	94.06
RDAT339	RDAT	33	9	9	143.83	83.72
RDAT3310	RDAT	33	10	10	106.27	69.68
RDAT3311	RDAT	33	11	11	129.45	72.94
RDAT3312	RDAT	33	12	12	138.39	77.51
RDAT341	RDAT	34	1	1	132.92	80.35
RDAT342	RDAT	34	2	2	119.19	78.91
RDAT343	RDAT	34	3	3	112.65	76.01
RDAT344	RDAT	34	4	4	98.11	71.03
RDAT345	RDAT	34	5	5	96.85	71.29
RDAT346	RDAT	34	6	6	148.46	83.33
RDAT347	RDAT	34	7	7	172.19	95.22
RDAT348	RDAT	34	8	8	185.99	95.80
RDAT349	RDAT	34	9	9	148.74	86.57
RDAT3410	RDAT	34	10	10	107.88	70.85
RDAT3411	RDAT	34	11	11	131.33	74.28
RDAT3412	RDAT	34	12	12	140.95	79.00
RDAT351	RDAT	35	1	1	135.17	81.81
RDAT352	RDAT	35	2	2	121.92	80.44
RDAT353	RDAT	35	3	3	114.62	77.51
RDAT354	RDAT	35	4	4	99.88	72.29
RDAT355	RDAT	35	5	5	98.77	72.75
RDAT356	RDAT	35	6	6	150.15	84.50
RDAT357	RDAT	35	7	7	174.42	96.88
RDAT358	RDAT	35	8	8	188.92	97.49
RDAT359	RDAT	35	9	9	153.51	89.18
RDAT3510	RDAT	35	10	10	109.51	71.97
RDAT3511	RDAT	35	11	11	133.12	75.53
RDAT3512	RDAT	35	12	12	143.45	80.50
RDAT361	RDAT	36	1	1	137.50	83.30
RDAT362	RDAT	36	2	2	124.80	82.00
RDAT363	RDAT	36	3	3	116.65	79.06
RDAT364	RDAT	36	4	4	101.65	73.56
RDAT365	RDAT	36	5	5	100.68	74.24
RDAT366	RDAT	36	6	6	151.66	85.60
RDAT367	RDAT	36	7	7	180.18	98.51
RDAT368	RDAT	36	8	8	191.97	99.26
RDAT369	RDAT	36	9	9	158.61	92.06
RDAT3610	RDAT	36	10	10	111.17	73.11
RDAT3611	RDAT	36	11	11	134.89	76.80
RDAT3612	RDAT	36	12	12	146.03	82.03
RDAT371	RDAT	37	1	1	139.94	84.86
RDAT372	RDAT	37	2	2	127.73	83.59
RDAT373	RDAT	37	3	3	118.75	80.61

Low Band

RDAT374	RDAT	37	4	4	103.43	74.83
RDAT375	RDAT	37	5	5	102.68	75.75
RDAT376	RDAT	37	6	6	153.11	86.67
RDAT377	RDAT	37	7	7	185.95	100.11
RDAT378	RDAT	37	8	8	195.07	101.08
RDAT379	RDAT	37	9	9	163.86	94.98
RDAT3710	RDAT	37	10	10	112.85	74.27
RDAT3711	RDAT	37	11	11	136.70	78.10
RDAT3712	RDAT	37	12	12	148.66	83.59
RDAT381	RDAT	38	1	1	142.44	86.45
RDAT382	RDAT	38	2	2	130.70	85.19
RDAT383	RDAT	38	3	3	121.38	82.17
RDAT384	RDAT	38	4	4	105.25	76.11
RDAT385	RDAT	38	5	5	104.65	77.27
RDAT386	RDAT	38	6	6	154.97	87.92
RDAT387	RDAT	38	7	7	192.01	101.84
RDAT388	RDAT	38	8	8	198.23	102.92
RDAT389	RDAT	38	9	9	169.30	98.04
RDAT3810	RDAT	38	10	10	114.55	75.47
RDAT3811	RDAT	38	11	11	139.18	79.45
RDAT3812	RDAT	38	12	12	151.35	85.19
RDAT391	RDAT	39	1	1	144.93	88.05
RDAT392	RDAT	39	2	2	133.77	86.84
RDAT393	RDAT	39	3	3	124.10	83.78
RDAT394	RDAT	39	4	4	107.16	77.44
RDAT395	RDAT	39	5	5	106.69	78.84
RDAT396	RDAT	39	6	6	156.65	89.11
RDAT397	RDAT	39	7	7	198.30	103.59
RDAT398	RDAT	39	8	8	201.41	104.78
RDAT399	RDAT	39	9	9	174.87	101.14
RDAT3910	RDAT	39	10	10	116.29	76.67
RDAT3911	RDAT	39	11	11	142.02	80.81
RDAT3912	RDAT	39	12	12	154.07	86.81
RDAT401	RDAT	40	1	1	147.48	89.69
RDAT402	RDAT	40	2	2	136.91	88.53
RDAT403	RDAT	40	3	3	126.89	85.43
RDAT404	RDAT	40	4	4	109.21	78.79
RDAT405	RDAT	40	5	5	108.77	80.45
RDAT406	RDAT	40	6	6	158.31	90.31
RDAT407	RDAT	40	7	7	204.78	105.38
RDAT408	RDAT	40	8	8	204.67	106.69
RDAT409	RDAT	40	9	9	180.67	104.39
RDAT4010	RDAT	40	10	10	118.05	77.90
RDAT4011	RDAT	40	11	11	144.94	82.19
RDAT4012	RDAT	40	12	12	156.85	88.47

112.93	114.76	116.90	126.58	132.17	138.96	134.14	151.44	157.27	162.45	161.53
15	16	17	18	19	20	21	22	23	24	25
0.8329	0.7804	0.7970	0.7737	0.7404	0.7314	0.7249	0.7165	0.7043	0.6837	0.7077
0.6575	0.6471	0.6508	0.6491	0.6336	0.6016	0.6332	0.6384	0.6239	0.6313	0.6392
0.6349	0.6308	0.6190	0.6029	0.5939	0.5700	0.6018	0.5905	0.5867	0.5841	0.6018
0.5447	0.5239	0.5328	0.5201	0.5073	0.4879	0.5187	0.5133	0.5110	0.5039	0.5239
0.5393	0.5271	0.5343	0.5243	0.4761	0.4722	0.4948	0.5025	0.4943	0.4942	0.5094
0.8236	0.8209	0.8743	0.8166	0.7787	0.7988	0.8674	0.8562	0.8406	0.7892	0.8088
0.9005	0.9463	0.9427	0.9737	0.9713	0.9069	0.9883	0.9998	0.9732	0.9368	0.9671
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.7282	0.6847	0.6262	0.7011	0.6741	0.6462	0.6855	0.7185	0.6783	0.6896	0.7302
0.6044	0.5904	0.6031	0.5756	0.5545	0.5241	0.5686	0.5842	0.5891	0.5610	0.5795
0.7464	0.7647	0.7169	0.6814	0.6963	0.6731	0.7173	0.7062	0.7009	0.6955	0.7171
0.7938	0.7783	0.7766	0.8068	0.7653	0.7289	0.7498	0.7534	0.7363	0.7289	0.7578
469	470	471	472	473	474	475	476	477	478	479

165.17	166.29	168.93	171.24	174.73	177.21	180.04	182.94	185.99	188.92	191.97
26	27	28	29	30	31	32	33	34	35	36
0.7080	0.7148	0.7092	0.7040	0.7115	0.7124	0.7118	0.7125	0.7147	0.7155	0.7162
0.6365	0.6420	0.6397	0.6490	0.6408	0.6419	0.6419	0.6425	0.6409	0.6454	0.6501
0.5946	0.5982	0.5956	0.6112	0.6014	0.6032	0.6045	0.6068	0.6057	0.6067	0.6076
0.5129	0.5196	0.5253	0.5276	0.5228	0.5254	0.5268	0.5272	0.5275	0.5287	0.5295
0.5034	0.5147	0.5125	0.5193	0.5130	0.5164	0.5179	0.5204	0.5207	0.5228	0.5245
0.8083	0.8317	0.8706	0.7953	0.8121	0.8142	0.8110	0.7976	0.7982	0.7948	0.7901
0.9559	0.9672	0.9989	0.9551	0.9499	0.9488	0.9446	0.9316	0.9258	0.9233	0.9386
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.7130	0.7100	0.7242	0.7347	0.7505	0.7603	0.7734	0.7862	0.7997	0.8126	0.8262
0.5791	0.5840	0.5838	0.5845	0.5814	0.5820	0.5815	0.5809	0.5800	0.5797	0.5791
0.7102	0.7214	0.7213	0.7137	0.7120	0.7125	0.7103	0.7076	0.7061	0.7046	0.7027
0.7443	0.7479	0.7505	0.7510	0.7519	0.7538	0.7553	0.7565	0.7578	0.7593	0.7607
480	481	482	483	484	485	486	487	488	489	490

Low Band

195.07	198.23	201.41	204.78
37	38	39	40
0.7174	0.7186	0.7196	0.7202
0.6548	0.6594	0.6641	0.6686
0.6088	0.6123	0.6162	0.6196
0.5302	0.5310	0.5320	0.5333
0.5264	0.5279	0.5297	0.5312
0.7849	0.7818	0.7777	0.7731
0.9532	0.9686	0.9846	1.0000
1.0000	1.0000	1.0000	0.9995
0.8400	0.8541	0.8682	0.8823
0.5785	0.5779	0.5774	0.5765
0.7008	0.7021	0.7051	0.7078
0.7621	0.7635	0.7649	0.7659
491	492	493	494

Paste as Values Only					max	average	
RDAT71	RDAT	7	1	1	0.00	0.00	2
RDAT72	RDAT	7	2	2	0.00	0.00	2
RDAT73	RDAT	7	3	3	0.00	0.00	2
RDAT74	RDAT	7	4	4	0.00	0.00	2
RDAT75	RDAT	7	5	5	0.00	0.00	2
RDAT76	RDAT	7	6	6	0.00	0.00	2
RDAT77	RDAT	7	7	7	0.00	0.00	2
RDAT78	RDAT	7	8	8	0.00	0.00	2
RDAT79	RDAT	7	9	9	0.00	0.00	2
RDAT710	RDAT	7	10	10	0.00	0.00	2
RDAT711	RDAT	7	11	11	0.00	0.00	2
RDAT712	RDAT	7	12	12	0.00	0.00	2
RDAT81	RDAT	8	1	1	0.00	0.00	2
RDAT82	RDAT	8	2	2	0.00	0.00	2
RDAT83	RDAT	8	3	3	0.00	0.00	2
RDAT84	RDAT	8	4	4	0.00	0.00	2
RDAT85	RDAT	8	5	5	0.00	0.00	2
RDAT86	RDAT	8	6	6	0.00	0.00	2
RDAT87	RDAT	8	7	7	0.00	0.00	2
RDAT88	RDAT	8	8	8	0.00	0.00	2
RDAT89	RDAT	8	9	9	0.00	0.00	2
RDAT810	RDAT	8	10	10	0.00	0.00	2
RDAT811	RDAT	8	11	11	0.00	0.00	2
RDAT812	RDAT	8	12	12	0.00	0.00	2
RDAT91	RDAT	9	1	1	0.00	0.00	2
RDAT92	RDAT	9	2	2	0.00	0.00	2
RDAT93	RDAT	9	3	3	0.00	0.00	2
RDAT94	RDAT	9	4	4	0.00	0.00	2
RDAT95	RDAT	9	5	5	0.00	0.00	2
RDAT96	RDAT	9	6	6	0.00	0.00	2
RDAT97	RDAT	9	7	7	0.00	0.00	2
RDAT98	RDAT	9	8	8	0.00	0.00	2
RDAT99	RDAT	9	9	9	0.00	0.00	2
RDAT910	RDAT	9	10	10	0.00	0.00	2
RDAT911	RDAT	9	11	11	0.00	0.00	2
RDAT912	RDAT	9	12	12	0.00	0.00	2
RDAT101	RDAT	10	1	1	0.00	0.00	2
RDAT102	RDAT	10	2	2	0.00	0.00	2
RDAT103	RDAT	10	3	3	0.00	0.00	2
RDAT104	RDAT	10	4	4	0.00	0.00	2
RDAT105	RDAT	10	5	5	0.00	0.00	2
RDAT106	RDAT	10	6	6	0.00	0.00	2
RDAT107	RDAT	10	7	7	0.00	0.00	2
RDAT108	RDAT	10	8	8	0.00	0.00	2
RDAT109	RDAT	10	9	9	0.00	0.00	2
RDAT1010	RDAT	10	10	10	0.00	0.00	2
RDAT1011	RDAT	10	11	11	0.00	0.00	2
RDAT1012	RDAT	10	12	12	0.00	0.00	2
RDAT111	RDAT	11	1	1	73.16	39.92	2
RDAT112	RDAT	11	2	2	57.64	35.37	2
RDAT113	RDAT	11	3	3	60.37	35.69	2

max	RDAT	88.43	86.97	94.02	111.14
year		11	12	13	14
	Emergency Energy Monthly Scalar				
1	RDAT	0.8273	0.9710	0.8415	0.7835
2	RDAT	0.6518	0.7554	0.7333	0.6688
3	RDAT	0.6826	0.7645	0.7082	0.6439
4	RDAT	0.5975	0.6717	0.6364	0.5763
5	RDAT	0.5508	0.6885	0.5901	0.5431
6	RDAT	0.7990	0.9736	0.8323	0.8192
7	RDAT	0.8618	0.9507	0.9496	0.8822
8	RDAT	1.0000	1.0000	1.0000	1.0000
9	RDAT	0.6235	0.7893	0.7567	0.7172
10	RDAT	0.6630	0.7378	0.6610	0.6341
11	RDAT	0.7646	0.8404	0.7993	0.7455
12	RDAT	0.7954	0.9583	0.8720	0.8035
	GAF INDEX	465	466	467	468

	Emg. Eng Annual Peak Price ($/MWh)
2011	88.43
2012	86.97
2013	94.02
2014	111.14
2015	118.35
2016	130.34
2017	142.25
2018	151.39
2019	152.88
2020	154.26
2021	155.61
2022	161.73
2023	161.19
2024	167.69
2025	168.98
2026	168.81
2027	175.07
2028	176.92
2029	182.78
2030	184.76
2031	189.00
2032	192.66
2033	196.84
2034	200.52
2035	204.67
2036	208.79
2037	213.03
2038	217.29
2039	221.70
2040	226.17

RDAT114	RDAT	11	4	4	52.84	34.20	2
RDAT115	RDAT	11	5	5	48.70	32.91	2
RDAT116	RDAT	11	6	6	70.65	39.31	2
RDAT117	RDAT	11	7	7	76.21	41.27	2
RDAT118	RDAT	11	8	8	88.43	43.86	2
RDAT119	RDAT	11	9	9	55.14	35.63	2
RDAT1110	RDAT	11	10	10	58.63	34.28	2
RDAT1111	RDAT	11	11	11	67.61	35.10	2
RDAT1112	RDAT	11	12	12	70.34	36.77	2
RDAT121	RDAT	12	1	1	84.45	45.34	2
RDAT122	RDAT	12	2	2	65.70	40.83	2
RDAT123	RDAT	12	3	3	66.49	40.10	2
RDAT124	RDAT	12	4	4	58.42	37.96	2
RDAT125	RDAT	12	5	5	59.88	38.06	2
RDAT126	RDAT	12	6	6	84.67	46.09	2
RDAT127	RDAT	12	7	7	82.69	46.05	2
RDAT128	RDAT	12	8	8	86.97	47.25	2
RDAT129	RDAT	12	9	9	68.65	40.43	2
RDAT1210	RDAT	12	10	10	64.17	38.33	2
RDAT1211	RDAT	12	11	11	73.09	39.61	2
RDAT1212	RDAT	12	12	12	83.35	41.46	2
RDAT131	RDAT	13	1	1	79.12	42.72	2
RDAT132	RDAT	13	2	2	68.94	41.13	2
RDAT133	RDAT	13	3	3	66.59	40.11	2
RDAT134	RDAT	13	4	4	59.84	38.35	2
RDAT135	RDAT	13	5	5	55.48	37.64	2
RDAT136	RDAT	13	6	6	78.25	42.62	2
RDAT137	RDAT	13	7	7	89.29	45.77	2
RDAT138	RDAT	13	8	8	94.02	47.15	2
RDAT139	RDAT	13	9	9	71.14	41.80	2
RDAT1310	RDAT	13	10	10	62.15	37.72	2
RDAT1311	RDAT	13	11	11	75.15	38.31	2
RDAT1312	RDAT	13	12	12	81.99	40.90	2
RDAT141	RDAT	14	1	1	87.08	47.31	2
RDAT142	RDAT	14	2	2	74.33	44.90	2
RDAT143	RDAT	14	3	3	71.56	43.71	2
RDAT144	RDAT	14	4	4	64.05	41.71	2
RDAT145	RDAT	14	5	5	60.36	40.21	2
RDAT146	RDAT	14	6	6	91.05	47.46	2
RDAT147	RDAT	14	7	7	98.06	51.03	2
RDAT148	RDAT	14	8	8	111.14	53.15	2
RDAT149	RDAT	14	9	9	79.72	46.16	2
RDAT1410	RDAT	14	10	10	70.47	41.66	2
RDAT1411	RDAT	14	11	11	82.85	42.08	2
RDAT1412	RDAT	14	12	12	89.30	45.02	2
RDAT151	RDAT	15	1	1	92.75	49.17	2
RDAT152	RDAT	15	2	2	77.13	46.03	2
RDAT153	RDAT	15	3	3	74.70	44.36	2
RDAT154	RDAT	15	4	4	63.23	41.85	2
RDAT155	RDAT	15	5	5	62.58	41.19	2
RDAT156	RDAT	15	6	6	94.27	49.71	2
RDAT157	RDAT	15	7	7	104.11	53.12	2

RDAT158	RDAT	15	8	8	118.35	56.02	2
RDAT159	RDAT	15	9	9	84.83	46.90	2
RDAT1510	RDAT	15	10	10	67.51	40.97	2
RDAT1511	RDAT	15	11	11	87.17	44.05	2
RDAT1512	RDAT	15	12	12	94.83	47.85	2
RDAT161	RDAT	16	1	1	100.85	55.97	2
RDAT162	RDAT	16	2	2	83.10	51.25	2
RDAT163	RDAT	16	3	3	80.51	49.67	2
RDAT164	RDAT	16	4	4	66.09	45.48	2
RDAT165	RDAT	16	5	5	66.73	44.09	2
RDAT166	RDAT	16	6	6	106.69	56.65	2
RDAT167	RDAT	16	7	7	122.20	61.92	2
RDAT168	RDAT	16	8	8	130.34	62.92	2
RDAT169	RDAT	16	9	9	88.70	49.81	2
RDAT1610	RDAT	16	10	10	74.68	45.81	2
RDAT1611	RDAT	16	11	11	96.11	49.58	2
RDAT1612	RDAT	16	12	12	101.89	52.89	2
RDAT171	RDAT	17	1	1	111.30	65.77	
RDAT172	RDAT	17	2	2	95.26	61.98	
RDAT173	RDAT	17	3	3	89.20	59.40	
RDAT174	RDAT	17	4	4	80.40	56.90	
RDAT175	RDAT	17	5	5	78.99	54.31	
RDAT176	RDAT	17	6	6	125.07	68.49	
RDAT177	RDAT	17	7	7	142.25	75.83	
RDAT178	RDAT	17	8	8	140.07	74.39	
RDAT179	RDAT	17	9	9	97.28	60.82	
RDAT1710	RDAT	17	10	10	88.53	56.59	
RDAT1711	RDAT	17	11	11	104.59	59.66	
RDAT1712	RDAT	17	12	12	113.14	63.19	
RDAT181	RDAT	18	1	1	113.43	65.74	
RDAT182	RDAT	18	2	2	100.12	64.61	
RDAT183	RDAT	18	3	3	90.22	61.14	
RDAT184	RDAT	18	4	4	81.06	57.18	
RDAT185	RDAT	18	5	5	82.58	56.27	
RDAT186	RDAT	18	6	6	115.87	64.97	
RDAT187	RDAT	18	7	7	144.65	74.32	
RDAT188	RDAT	18	8	8	151.39	78.75	
RDAT189	RDAT	18	9	9	108.20	65.08	
RDAT1810	RDAT	18	10	10	92.24	57.87	
RDAT1811	RDAT	18	11	11	106.64	60.14	
RDAT1812	RDAT	18	12	12	122.18	63.34	
RDAT191	RDAT	19	1	1	114.66	66.36	
RDAT192	RDAT	19	2	2	99.65	64.85	
RDAT193	RDAT	19	3	3	92.96	61.95	
RDAT194	RDAT	19	4	4	80.14	58.08	
RDAT195	RDAT	19	5	5	77.62	57.08	
RDAT196	RDAT	19	6	6	118.63	66.54	
RDAT197	RDAT	19	7	7	144.77	75.58	
RDAT198	RDAT	19	8	8	152.88	77.82	
RDAT199	RDAT	19	9	9	104.65	64.79	
RDAT1910	RDAT	19	10	10	88.68	58.31	
RDAT1911	RDAT	19	11	11	110.39	61.18	

RDAT1912	RDAT	19	12	12	120.23	64.75
RDAT201	RDAT	20	1	1	114.62	67.18
RDAT202	RDAT	20	2	2	100.09	64.87
RDAT203	RDAT	20	3	3	93.72	62.28
RDAT204	RDAT	20	4	4	80.90	58.61
RDAT205	RDAT	20	5	5	80.50	57.83
RDAT206	RDAT	20	6	6	124.67	69.62
RDAT207	RDAT	20	7	7	138.00	76.38
RDAT208	RDAT	20	8	8	154.26	76.67
RDAT209	RDAT	20	9	9	106.02	65.34
RDAT2010	RDAT	20	10	10	88.70	58.89
RDAT2011	RDAT	20	11	11	111.70	61.81
RDAT2012	RDAT	20	12	12	120.51	65.70
RDAT211	RDAT	21	1	1	114.37	68.90
RDAT212	RDAT	21	2	2	101.68	66.39
RDAT213	RDAT	21	3	3	96.05	64.10
RDAT214	RDAT	21	4	4	83.05	60.32
RDAT215	RDAT	21	5	5	81.91	59.27
RDAT216	RDAT	21	6	6	124.19	69.92
RDAT217	RDAT	21	7	7	150.02	79.35
RDAT218	RDAT	21	8	8	155.61	79.06
RDAT219	RDAT	21	9	9	113.12	66.07
RDAT2110	RDAT	21	10	10	95.34	61.54
RDAT2111	RDAT	21	11	11	115.54	63.84
RDAT2112	RDAT	21	12	12	120.75	67.30
RDAT221	RDAT	22	1	1	116.81	70.77
RDAT222	RDAT	22	2	2	103.88	67.98
RDAT223	RDAT	22	3	3	97.22	65.11
RDAT224	RDAT	22	4	4	84.14	61.56
RDAT225	RDAT	22	5	5	82.88	60.29
RDAT226	RDAT	22	6	6	132.06	72.87
RDAT227	RDAT	22	7	7	154.97	81.28
RDAT228	RDAT	22	8	8	161.73	81.87
RDAT229	RDAT	22	9	9	110.31	66.28
RDAT2210	RDAT	22	10	10	95.30	62.28
RDAT2211	RDAT	22	11	11	116.69	64.91
RDAT2212	RDAT	22	12	12	122.47	68.44
RDAT231	RDAT	23	1	1	117.11	71.48
RDAT232	RDAT	23	2	2	104.99	68.79
RDAT233	RDAT	23	3	3	98.33	65.94
RDAT234	RDAT	23	4	4	86.17	62.72
RDAT235	RDAT	23	5	5	83.74	60.76
RDAT236	RDAT	23	6	6	135.41	74.68
RDAT237	RDAT	23	7	7	159.54	82.97
RDAT238	RDAT	23	8	8	161.19	82.15
RDAT239	RDAT	23	9	9	112.54	67.08
RDAT2310	RDAT	23	10	10	96.79	63.42
RDAT2311	RDAT	23	11	11	118.18	65.76
RDAT2312	RDAT	23	12	12	123.89	69.31
RDAT241	RDAT	24	1	1	118.72	71.81
RDAT242	RDAT	24	2	2	108.56	71.02
RDAT243	RDAT	24	3	3	100.78	67.87

RDAT244	RDAT	24	4	4	87.67	64.12
RDAT245	RDAT	24	5	5	86.01	62.71
RDAT246	RDAT	24	6	6	129.26	72.88
RDAT247	RDAT	24	7	7	153.98	81.66
RDAT248	RDAT	24	8	8	167.69	85.99
RDAT249	RDAT	24	9	9	124.44	72.14
RDAT2410	RDAT	24	10	10	98.27	64.08
RDAT2411	RDAT	24	11	11	118.82	66.40
RDAT2412	RDAT	24	12	12	123.98	69.80
RDAT251	RDAT	25	1	1	122.02	73.98
RDAT252	RDAT	25	2	2	110.02	72.31
RDAT253	RDAT	25	3	3	103.70	69.90
RDAT254	RDAT	25	4	4	89.71	65.64
RDAT255	RDAT	25	5	5	89.02	64.77
RDAT256	RDAT	25	6	6	132.95	75.22
RDAT257	RDAT	25	7	7	162.17	85.17
RDAT258	RDAT	25	8	8	168.98	86.86
RDAT259	RDAT	25	9	9	122.27	71.68
RDAT2510	RDAT	25	10	10	100.03	65.33
RDAT2511	RDAT	25	11	11	123.05	68.95
RDAT2512	RDAT	25	12	12	128.36	72.23
RDAT261	RDAT	26	1	1	123.12	75.10
RDAT262	RDAT	26	2	2	111.64	73.34
RDAT263	RDAT	26	3	3	104.47	70.42
RDAT264	RDAT	26	4	4	91.22	66.62
RDAT265	RDAT	26	5	5	89.44	65.29
RDAT266	RDAT	26	6	6	137.75	77.11
RDAT267	RDAT	26	7	7	166.61	86.93
RDAT268	RDAT	26	8	8	168.81	86.79
RDAT269	RDAT	26	9	9	122.50	72.79
RDAT2610	RDAT	26	10	10	102.34	67.08
RDAT2611	RDAT	26	11	11	125.43	70.23
RDAT2612	RDAT	26	12	12	128.60	72.74
RDAT271	RDAT	27	1	1	125.67	76.73
RDAT272	RDAT	27	2	2	113.36	74.56
RDAT273	RDAT	27	3	3	105.71	71.34
RDAT274	RDAT	27	4	4	92.51	67.77
RDAT275	RDAT	27	5	5	92.83	66.82
RDAT276	RDAT	27	6	6	139.79	78.72
RDAT277	RDAT	27	7	7	169.69	89.60
RDAT278	RDAT	27	8	8	175.07	89.16
RDAT279	RDAT	27	9	9	124.17	74.23
RDAT2710	RDAT	27	10	10	103.47	68.29
RDAT2711	RDAT	27	11	11	127.01	71.34
RDAT2712	RDAT	27	12	12	131.81	74.53
RDAT281	RDAT	28	1	1	127.94	78.18
RDAT282	RDAT	28	2	2	115.03	75.92
RDAT283	RDAT	28	3	3	107.82	73.05
RDAT284	RDAT	28	4	4	95.02	69.45
RDAT285	RDAT	28	5	5	93.70	68.08
RDAT286	RDAT	28	6	6	149.18	82.95
RDAT287	RDAT	28	7	7	176.92	92.83

RDAT288	RDAT	28	8	8	176.85	90.67
RDAT289	RDAT	28	9	9	124.84	74.98
RDAT2810	RDAT	28	10	10	105.39	69.87
RDAT2811	RDAT	28	11	11	128.86	72.68
RDAT2812	RDAT	28	12	12	134.82	76.22
RDAT291	RDAT	29	1	1	129.00	78.97
RDAT292	RDAT	29	2	2	118.09	77.95
RDAT293	RDAT	29	3	3	111.43	75.00
RDAT294	RDAT	29	4	4	99.31	71.10
RDAT295	RDAT	29	5	5	97.26	70.08
RDAT296	RDAT	29	6	6	141.64	80.78
RDAT297	RDAT	29	7	7	172.47	90.89
RDAT298	RDAT	29	8	8	182.78	95.01
RDAT299	RDAT	29	9	9	134.24	78.98
RDAT2910	RDAT	29	10	10	106.59	70.25
RDAT2911	RDAT	29	11	11	130.17	73.20
RDAT2912	RDAT	29	12	12	136.32	77.29
RDAT301	RDAT	30	1	1	131.61	80.72
RDAT302	RDAT	30	2	2	120.32	79.60
RDAT303	RDAT	30	3	3	113.59	76.06
RDAT304	RDAT	30	4	4	99.29	71.63
RDAT305	RDAT	30	5	5	98.02	70.86
RDAT306	RDAT	30	6	6	145.34	82.62
RDAT307	RDAT	30	7	7	174.37	91.97
RDAT308	RDAT	30	8	8	184.76	95.17
RDAT309	RDAT	30	9	9	136.65	79.72
RDAT3010	RDAT	30	10	10	108.46	71.67
RDAT3011	RDAT	30	11	11	133.09	75.23
RDAT3012	RDAT	30	12	12	138.95	78.85
RDAT311	RDAT	31	1	1	133.83	82.19
RDAT312	RDAT	31	2	2	122.59	81.26
RDAT313	RDAT	31	3	3	116.41	77.55
RDAT314	RDAT	31	4	4	101.48	72.94
RDAT315	RDAT	31	5	5	100.30	72.33
RDAT316	RDAT	31	6	6	147.44	84.11
RDAT317	RDAT	31	7	7	176.42	93.31
RDAT318	RDAT	31	8	8	189.00	97.42
RDAT319	RDAT	31	9	9	140.49	81.59
RDAT3110	RDAT	31	10	10	110.05	72.87
RDAT3111	RDAT	31	11	11	135.08	76.55
RDAT3112	RDAT	31	12	12	141.67	80.45
RDAT321	RDAT	32	1	1	136.03	83.62
RDAT322	RDAT	32	2	2	125.02	83.03
RDAT323	RDAT	32	3	3	119.59	79.19
RDAT324	RDAT	32	4	4	103.90	74.30
RDAT325	RDAT	32	5	5	102.27	73.79
RDAT326	RDAT	32	6	6	149.55	85.57
RDAT327	RDAT	32	7	7	178.20	94.29
RDAT328	RDAT	32	8	8	192.66	99.64
RDAT329	RDAT	32	9	9	144.95	83.59
RDAT3210	RDAT	32	10	10	111.76	74.07
RDAT3211	RDAT	32	11	11	137.18	77.91

RDAT3212	RDAT	32	12	12	144.25	82.01
RDAT331	RDAT	33	1	1	138.54	85.04
RDAT332	RDAT	33	2	2	128.00	84.91
RDAT333	RDAT	33	3	3	122.81	80.80
RDAT334	RDAT	33	4	4	106.26	75.57
RDAT335	RDAT	33	5	5	104.54	75.30
RDAT336	RDAT	33	6	6	149.71	86.28
RDAT337	RDAT	33	7	7	178.54	94.67
RDAT338	RDAT	33	8	8	196.84	102.05
RDAT339	RDAT	33	9	9	150.50	85.94
RDAT3310	RDAT	33	10	10	113.42	75.16
RDAT3311	RDAT	33	11	11	139.35	79.28
RDAT3312	RDAT	33	12	12	146.71	83.53
RDAT341	RDAT	34	1	1	141.27	86.64
RDAT342	RDAT	34	2	2	130.99	86.75
RDAT343	RDAT	34	3	3	125.84	82.33
RDAT344	RDAT	34	4	4	108.08	76.74
RDAT345	RDAT	34	5	5	106.45	76.67
RDAT346	RDAT	34	6	6	151.81	87.72
RDAT347	RDAT	34	7	7	180.09	95.64
RDAT348	RDAT	34	8	8	200.52	103.90
RDAT349	RDAT	34	9	9	154.88	87.79
RDAT3410	RDAT	34	10	10	115.19	76.44
RDAT3411	RDAT	34	11	11	141.74	80.89
RDAT3412	RDAT	34	12	12	149.43	85.17
RDAT351	RDAT	35	1	1	143.99	88.19
RDAT352	RDAT	35	2	2	134.08	88.64
RDAT353	RDAT	35	3	3	129.10	83.98
RDAT354	RDAT	35	4	4	110.40	78.07
RDAT355	RDAT	35	5	5	108.68	78.19
RDAT356	RDAT	35	6	6	153.47	89.05
RDAT357	RDAT	35	7	7	181.56	96.59
RDAT358	RDAT	35	8	8	204.67	106.21
RDAT359	RDAT	35	9	9	159.81	89.96
RDAT3510	RDAT	35	10	10	116.94	77.69
RDAT3511	RDAT	35	11	11	144.01	82.37
RDAT3512	RDAT	35	12	12	152.17	86.83
RDAT361	RDAT	36	1	1	146.76	89.75
RDAT362	RDAT	36	2	2	137.27	90.59
RDAT363	RDAT	36	3	3	132.49	85.68
RDAT364	RDAT	36	4	4	112.75	79.41
RDAT365	RDAT	36	5	5	110.88	79.74
RDAT366	RDAT	36	6	6	155.02	90.34
RDAT367	RDAT	36	7	7	182.86	97.43
RDAT368	RDAT	36	8	8	208.79	108.53
RDAT369	RDAT	36	9	9	165.05	92.21
RDAT3610	RDAT	36	10	10	118.73	78.94
RDAT3611	RDAT	36	11	11	146.92	83.90
RDAT3612	RDAT	36	12	12	154.92	88.51
RDAT371	RDAT	37	1	1	149.57	91.36
RDAT372	RDAT	37	2	2	140.53	92.58
RDAT373	RDAT	37	3	3	135.93	87.39

RDAT374	RDAT	37	4	4	115.09	80.75
RDAT375	RDAT	37	5	5	113.14	81.30
RDAT376	RDAT	37	6	6	156.42	91.58
RDAT377	RDAT	37	7	7	184.05	98.23
RDAT378	RDAT	37	8	8	213.03	110.88
RDAT379	RDAT	37	9	9	170.50	94.53
RDAT3710	RDAT	37	10	10	120.54	80.21
RDAT3711	RDAT	37	11	11	149.90	85.47
RDAT3712	RDAT	37	12	12	157.71	90.21
RDAT381	RDAT	38	1	1	152.46	93.01
RDAT382	RDAT	38	2	2	143.85	94.61
RDAT383	RDAT	38	3	3	139.43	89.12
RDAT384	RDAT	38	4	4	117.41	82.10
RDAT385	RDAT	38	5	5	115.40	82.88
RDAT386	RDAT	38	6	6	158.14	92.96
RDAT387	RDAT	38	7	7	185.45	99.14
RDAT388	RDAT	38	8	8	217.29	113.21
RDAT389	RDAT	38	9	9	175.91	96.83
RDAT3810	RDAT	38	10	10	122.39	81.53
RDAT3811	RDAT	38	11	11	153.02	87.09
RDAT3812	RDAT	38	12	12	160.59	91.97
RDAT391	RDAT	39	1	1	155.40	94.68
RDAT392	RDAT	39	2	2	147.26	96.69
RDAT393	RDAT	39	3	3	143.06	90.91
RDAT394	RDAT	39	4	4	119.86	83.50
RDAT395	RDAT	39	5	5	117.76	84.51
RDAT396	RDAT	39	6	6	159.77	94.32
RDAT397	RDAT	39	7	7	186.82	100.04
RDAT398	RDAT	39	8	8	221.70	115.68
RDAT399	RDAT	39	9	9	181.60	99.26
RDAT3910	RDAT	39	10	10	124.26	82.86
RDAT3911	RDAT	39	11	11	156.14	88.72
RDAT3912	RDAT	39	12	12	163.51	93.75
RDAT401	RDAT	40	1	1	158.39	96.38
RDAT402	RDAT	40	2	2	150.76	98.82
RDAT403	RDAT	40	3	3	146.78	92.73
RDAT404	RDAT	40	4	4	122.36	84.91
RDAT405	RDAT	40	5	5	120.15	86.18
RDAT406	RDAT	40	6	6	162.18	95.70
RDAT407	RDAT	40	7	7	188.16	100.92
RDAT408	RDAT	40	8	8	226.17	118.18
RDAT409	RDAT	40	9	9	187.51	101.75
RDAT4010	RDAT	40	10	10	126.16	84.20
RDAT4011	RDAT	40	11	11	159.33	90.39
RDAT4012	RDAT	40	12	12	166.48	95.57

118.35	130.34	142.25	151.39	152.88	154.26	155.61	161.73	161.19	167.69	168.98
15	16	17	18	19	20	21	22	23	24	25
0.7837	0.7738	0.7824	0.7492	0.7500	0.7430	0.7350	0.7223	0.7266	0.7080	0.7221
0.6517	0.6375	0.6697	0.6613	0.6518	0.6489	0.6534	0.6423	0.6514	0.6474	0.6511
0.6312	0.6177	0.6271	0.5959	0.6080	0.6076	0.6172	0.6011	0.6101	0.6010	0.6137
0.5343	0.5071	0.5652	0.5355	0.5242	0.5244	0.5337	0.5203	0.5346	0.5228	0.5309
0.5288	0.5120	0.5553	0.5455	0.5077	0.5219	0.5264	0.5125	0.5195	0.5129	0.5268
0.7966	0.8186	0.8792	0.7654	0.7760	0.8082	0.7981	0.8166	0.8401	0.7708	0.7868
0.8797	0.9375	1.0000	0.9555	0.9470	0.8946	0.9640	0.9582	0.9898	0.9182	0.9597
1.0000	1.0000	0.9846	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.7168	0.6805	0.6838	0.7147	0.6845	0.6873	0.7269	0.6821	0.6982	0.7421	0.7235
0.5704	0.5730	0.6224	0.6093	0.5801	0.5750	0.6127	0.5893	0.6005	0.5860	0.5920
0.7366	0.7374	0.7352	0.7044	0.7221	0.7241	0.7425	0.7216	0.7332	0.7086	0.7282
0.8013	0.7817	0.7954	0.8071	0.7864	0.7812	0.7760	0.7573	0.7686	0.7394	0.7596
469	470	471	472	473	474	475	476	477	478	479

168.81	175.07	176.92	182.78	184.76	189.00	192.66	196.84	200.52	204.67	208.79
26	27	28	29	30	31	32	33	34	35	36
0.7294	0.7178	0.7231	0.7057	0.7123	0.7081	0.7061	0.7038	0.7045	0.7035	0.7029
0.6614	0.6475	0.6502	0.6461	0.6512	0.6486	0.6489	0.6503	0.6533	0.6551	0.6574
0.6189	0.6038	0.6094	0.6096	0.6148	0.6159	0.6207	0.6239	0.6275	0.6308	0.6346
0.5404	0.5284	0.5371	0.5433	0.5374	0.5369	0.5393	0.5398	0.5390	0.5394	0.5400
0.5298	0.5303	0.5296	0.5321	0.5305	0.5307	0.5308	0.5311	0.5309	0.5310	0.5310
0.8160	0.7985	0.8432	0.7749	0.7866	0.7801	0.7762	0.7606	0.7570	0.7498	0.7425
0.9870	0.9693	1.0000	0.9435	0.9438	0.9335	0.9249	0.9070	0.8981	0.8871	0.8758
1.0000	1.0000	0.9996	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.7257	0.7093	0.7056	0.7344	0.7396	0.7433	0.7523	0.7646	0.7724	0.7808	0.7905
0.6063	0.5910	0.5957	0.5831	0.5870	0.5823	0.5801	0.5762	0.5745	0.5713	0.5686
0.7430	0.7255	0.7283	0.7122	0.7203	0.7147	0.7120	0.7079	0.7069	0.7036	0.7036
0.7618	0.7529	0.7620	0.7458	0.7520	0.7496	0.7487	0.7453	0.7452	0.7435	0.7420
480	481	482	483	484	485	486	487	488	489	490

213.03	217.29	221.70	226.17
37	38	39	40
0.7021	0.7017	0.7009	0.7003
0.6596	0.6620	0.6642	0.6665
0.6381	0.6417	0.6453	0.6490
0.5402	0.5403	0.5407	0.5410
0.5311	0.5311	0.5312	0.5312
0.7342	0.7278	0.7207	0.7171
0.8639	0.8535	0.8427	0.8319
1.0000	1.0000	1.0000	1.0000
0.8003	0.8096	0.8192	0.8290
0.5658	0.5633	0.5605	0.5578
0.7036	0.7042	0.7043	0.7044
0.7403	0.7391	0.7375	0.7361
491	492	493	494

Paste as Values Only					max	average	
RDAT71	RDAT	7	1	1	0.00	0.00	2
RDAT72	RDAT	7	2	2	0.00	0.00	2
RDAT73	RDAT	7	3	3	0.00	0.00	2
RDAT74	RDAT	7	4	4	0.00	0.00	2
RDAT75	RDAT	7	5	5	0.00	0.00	2
RDAT76	RDAT	7	6	6	0.00	0.00	2
RDAT77	RDAT	7	7	7	0.00	0.00	2
RDAT78	RDAT	7	8	8	0.00	0.00	2
RDAT79	RDAT	7	9	9	0.00	0.00	2
RDAT710	RDAT	7	10	10	0.00	0.00	2
RDAT711	RDAT	7	11	11	0.00	0.00	2
RDAT712	RDAT	7	12	12	0.00	0.00	2
RDAT81	RDAT	8	1	1	0.00	0.00	2
RDAT82	RDAT	8	2	2	0.00	0.00	2
RDAT83	RDAT	8	3	3	0.00	0.00	2
RDAT84	RDAT	8	4	4	0.00	0.00	2
RDAT85	RDAT	8	5	5	0.00	0.00	2
RDAT86	RDAT	8	6	6	0.00	0.00	2
RDAT87	RDAT	8	7	7	0.00	0.00	2
RDAT88	RDAT	8	8	8	0.00	0.00	2
RDAT89	RDAT	8	9	9	0.00	0.00	2
RDAT810	RDAT	8	10	10	0.00	0.00	2
RDAT811	RDAT	8	11	11	0.00	0.00	2
RDAT812	RDAT	8	12	12	0.00	0.00	2
RDAT91	RDAT	9	1	1	0.00	0.00	2
RDAT92	RDAT	9	2	2	0.00	0.00	2
RDAT93	RDAT	9	3	3	0.00	0.00	2
RDAT94	RDAT	9	4	4	0.00	0.00	2
RDAT95	RDAT	9	5	5	0.00	0.00	2
RDAT96	RDAT	9	6	6	0.00	0.00	2
RDAT97	RDAT	9	7	7	0.00	0.00	2
RDAT98	RDAT	9	8	8	0.00	0.00	2
RDAT99	RDAT	9	9	9	0.00	0.00	2
RDAT910	RDAT	9	10	10	0.00	0.00	2
RDAT911	RDAT	9	11	11	0.00	0.00	2
RDAT912	RDAT	9	12	12	0.00	0.00	2
RDAT101	RDAT	10	1	1	0.00	0.00	2
RDAT102	RDAT	10	2	2	0.00	0.00	2
RDAT103	RDAT	10	3	3	0.00	0.00	2
RDAT104	RDAT	10	4	4	0.00	0.00	2
RDAT105	RDAT	10	5	5	0.00	0.00	2
RDAT106	RDAT	10	6	6	0.00	0.00	2
RDAT107	RDAT	10	7	7	0.00	0.00	2
RDAT108	RDAT	10	8	8	0.00	0.00	2
RDAT109	RDAT	10	9	9	0.00	0.00	2
RDAT1010	RDAT	10	10	10	0.00	0.00	2
RDAT1011	RDAT	10	11	11	0.00	0.00	2
RDAT1012	RDAT	10	12	12	0.00	0.00	2
RDAT111	RDAT	11	1	1	73.16	39.92	2
RDAT112	RDAT	11	2	2	57.64	35.37	2
RDAT113	RDAT	11	3	3	60.37	35.69	2

max	RDAT	88.43	89.10	89.31	112.51
year		11	12	13	14
	Emergency Energy Monthly Scalar				
1	RDAT	0.8273	0.9439	0.8956	0.7799
2	RDAT	0.6518	0.7431	0.7726	0.6716
3	RDAT	0.6826	0.7438	0.7528	0.6429
4	RDAT	0.5975	0.6439	0.6729	0.5719
5	RDAT	0.5508	0.6764	0.6258	0.5485
6	RDAT	0.7990	0.9686	0.8699	0.7854
7	RDAT	0.8618	0.9721	0.9386	0.8821
8	RDAT	1.0000	1.0000	1.0000	1.0000
9	RDAT	0.6235	0.8067	0.7619	0.6980
10	RDAT	0.6630	0.7343	0.6968	0.6056
11	RDAT	0.7646	0.8199	0.8332	0.7424
12	RDAT	0.7954	0.9093	0.9019	0.8122
	GAF INDEX	465	466	467	468

	Emg. Eng Annual Peak Price ($/MWh)
2011	88.43
2012	89.10
2013	89.31
2014	112.51
2015	119.56
2016	134.49
2017	131.29
2018	138.66
2019	143.35
2020	148.27
2021	142.77
2022	147.03
2023	151.90
2024	153.13
2025	157.05
2026	158.79
2027	161.11
2028	161.69
2029	168.07
2030	172.83
2031	176.54
2032	180.64
2033	185.73
2034	190.43
2035	195.11
2036	200.06
2037	205.23
2038	210.42
2039	215.74
2040	221.24

RDAT114	RDAT	11	4	4	52.84	34.20	2
RDAT115	RDAT	11	5	5	48.70	32.91	2
RDAT116	RDAT	11	6	6	70.65	39.31	2
RDAT117	RDAT	11	7	7	76.21	41.27	2
RDAT118	RDAT	11	8	8	88.43	43.86	2
RDAT119	RDAT	11	9	9	55.14	35.63	2
RDAT1110	RDAT	11	10	10	58.63	34.28	2
RDAT1111	RDAT	11	11	11	67.61	35.10	2
RDAT1112	RDAT	11	12	12	70.34	36.77	2
RDAT121	RDAT	12	1	1	84.10	45.09	2
RDAT122	RDAT	12	2	2	66.21	40.94	2
RDAT123	RDAT	12	3	3	66.28	40.27	2
RDAT124	RDAT	12	4	4	57.37	37.57	2
RDAT125	RDAT	12	5	5	60.26	38.04	2
RDAT126	RDAT	12	6	6	86.30	47.23	2
RDAT127	RDAT	12	7	7	86.62	47.25	2
RDAT128	RDAT	12	8	8	89.10	46.42	2
RDAT129	RDAT	12	9	9	71.88	41.93	2
RDAT1210	RDAT	12	10	10	65.43	38.65	2
RDAT1211	RDAT	12	11	11	73.05	39.78	2
RDAT1212	RDAT	12	12	12	81.02	41.02	2
RDAT131	RDAT	13	1	1	79.99	42.96	2
RDAT132	RDAT	13	2	2	69.00	41.28	2
RDAT133	RDAT	13	3	3	67.23	40.17	2
RDAT134	RDAT	13	4	4	60.09	39.00	2
RDAT135	RDAT	13	5	5	55.89	37.54	2
RDAT136	RDAT	13	6	6	77.69	42.83	2
RDAT137	RDAT	13	7	7	83.82	43.30	2
RDAT138	RDAT	13	8	8	89.31	45.48	2
RDAT139	RDAT	13	9	9	68.05	40.57	2
RDAT1310	RDAT	13	10	10	62.23	37.30	2
RDAT1311	RDAT	13	11	11	74.41	38.09	2
RDAT1312	RDAT	13	12	12	80.55	40.39	2
RDAT141	RDAT	14	1	1	87.75	47.49	2
RDAT142	RDAT	14	2	2	75.56	45.26	2
RDAT143	RDAT	14	3	3	72.33	43.96	2
RDAT144	RDAT	14	4	4	64.35	42.13	2
RDAT145	RDAT	14	5	5	61.72	40.65	2
RDAT146	RDAT	14	6	6	88.36	47.09	2
RDAT147	RDAT	14	7	7	99.25	51.99	2
RDAT148	RDAT	14	8	8	112.51	53.99	2
RDAT149	RDAT	14	9	9	78.54	46.23	2
RDAT1410	RDAT	14	10	10	68.14	40.78	2
RDAT1411	RDAT	14	11	11	83.53	42.28	2
RDAT1412	RDAT	14	12	12	91.39	45.95	2
RDAT151	RDAT	15	1	1	94.29	50.20	2
RDAT152	RDAT	15	2	2	76.79	46.21	2
RDAT153	RDAT	15	3	3	75.12	44.85	2
RDAT154	RDAT	15	4	4	63.40	42.09	2
RDAT155	RDAT	15	5	5	63.01	41.43	2
RDAT156	RDAT	15	6	6	94.22	50.25	2
RDAT157	RDAT	15	7	7	109.02	55.51	2

No Carbon

RDAT158	RDAT	15	8	8	119.56	56.63	2
RDAT159	RDAT	15	9	9	84.09	46.37	2
RDAT1510	RDAT	15	10	10	67.78	41.49	2
RDAT1511	RDAT	15	11	11	86.19	44.35	2
RDAT1512	RDAT	15	12	12	94.24	47.68	2
RDAT161	RDAT	16	1	1	103.03	57.09	2
RDAT162	RDAT	16	2	2	85.41	52.57	2
RDAT163	RDAT	16	3	3	81.21	50.18	2
RDAT164	RDAT	16	4	4	66.66	45.95	2
RDAT165	RDAT	16	5	5	67.27	44.67	2
RDAT166	RDAT	16	6	6	111.10	59.43	2
RDAT167	RDAT	16	7	7	127.14	65.45	2
RDAT168	RDAT	16	8	8	134.49	65.95	2
RDAT169	RDAT	16	9	9	88.64	50.62	2
RDAT1610	RDAT	16	10	10	75.97	46.64	2
RDAT1611	RDAT	16	11	11	97.75	50.73	2
RDAT1612	RDAT	16	12	12	102.73	53.57	2
RDAT171	RDAT	17	1	1	100.62	57.96	
RDAT172	RDAT	17	2	2	85.13	53.92	
RDAT173	RDAT	17	3	3	79.76	51.44	
RDAT174	RDAT	17	4	4	68.29	47.75	
RDAT175	RDAT	17	5	5	68.98	45.52	
RDAT176	RDAT	17	6	6	113.71	59.67	
RDAT177	RDAT	17	7	7	131.29	67.11	
RDAT178	RDAT	17	8	8	129.89	65.96	
RDAT179	RDAT	17	9	9	86.92	52.21	
RDAT1710	RDAT	17	10	10	78.28	48.21	
RDAT1711	RDAT	17	11	11	93.32	51.67	
RDAT1712	RDAT	17	12	12	100.97	54.87	
RDAT181	RDAT	18	1	1	102.23	57.87	
RDAT182	RDAT	18	2	2	88.57	56.50	
RDAT183	RDAT	18	3	3	81.46	53.42	
RDAT184	RDAT	18	4	4	71.43	48.53	
RDAT185	RDAT	18	5	5	72.29	47.27	
RDAT186	RDAT	18	6	6	106.40	57.22	
RDAT187	RDAT	18	7	7	132.92	65.29	
RDAT188	RDAT	18	8	8	138.66	70.01	
RDAT189	RDAT	18	9	9	97.54	55.49	
RDAT1810	RDAT	18	10	10	79.06	48.43	
RDAT1811	RDAT	18	11	11	93.46	52.38	
RDAT1812	RDAT	18	12	12	110.92	55.78	
RDAT191	RDAT	19	1	1	104.51	58.73	
RDAT192	RDAT	19	2	2	89.67	57.12	
RDAT193	RDAT	19	3	3	83.89	54.10	
RDAT194	RDAT	19	4	4	71.52	49.58	
RDAT195	RDAT	19	5	5	68.03	48.43	
RDAT196	RDAT	19	6	6	111.20	59.00	
RDAT197	RDAT	19	7	7	134.11	66.07	
RDAT198	RDAT	19	8	8	143.35	70.77	
RDAT199	RDAT	19	9	9	93.56	55.44	
RDAT1910	RDAT	19	10	10	78.58	49.80	
RDAT1911	RDAT	19	11	11	99.88	53.45	

No Carbon

RDAT1912	RDAT	19	12	12	107.52	56.67
RDAT201	RDAT	20	1	1	103.33	59.34
RDAT202	RDAT	20	2	2	90.44	57.14
RDAT203	RDAT	20	3	3	84.25	54.23
RDAT204	RDAT	20	4	4	72.04	50.00
RDAT205	RDAT	20	5	5	70.57	49.07
RDAT206	RDAT	20	6	6	113.42	61.46
RDAT207	RDAT	20	7	7	129.89	67.24
RDAT208	RDAT	20	8	8	148.27	70.98
RDAT209	RDAT	20	9	9	90.98	55.35
RDAT2010	RDAT	20	10	10	77.78	49.97
RDAT2011	RDAT	20	11	11	99.66	53.56
RDAT2012	RDAT	20	12	12	108.06	57.43
RDAT211	RDAT	21	1	1	103.03	60.60
RDAT212	RDAT	21	2	2	90.16	57.63
RDAT213	RDAT	21	3	3	85.07	55.12
RDAT214	RDAT	21	4	4	72.46	50.94
RDAT215	RDAT	21	5	5	70.02	49.44
RDAT216	RDAT	21	6	6	116.22	62.14
RDAT217	RDAT	21	7	7	140.01	71.22
RDAT218	RDAT	21	8	8	142.77	69.92
RDAT219	RDAT	21	9	9	95.25	54.56
RDAT2110	RDAT	21	10	10	81.00	50.97
RDAT2111	RDAT	21	11	11	100.86	54.48
RDAT2112	RDAT	21	12	12	106.95	58.34
RDAT221	RDAT	22	1	1	103.74	61.72
RDAT222	RDAT	22	2	2	90.35	58.34
RDAT223	RDAT	22	3	3	85.20	55.55
RDAT224	RDAT	22	4	4	72.98	51.70
RDAT225	RDAT	22	5	5	70.73	49.64
RDAT226	RDAT	22	6	6	119.15	63.24
RDAT227	RDAT	22	7	7	141.39	72.15
RDAT228	RDAT	22	8	8	147.03	71.71
RDAT229	RDAT	22	9	9	98.22	56.28
RDAT2210	RDAT	22	10	10	82.39	52.04
RDAT2211	RDAT	22	11	11	101.67	55.28
RDAT2212	RDAT	22	12	12	108.90	59.40
RDAT231	RDAT	23	1	1	105.91	63.03
RDAT232	RDAT	23	2	2	92.83	59.79
RDAT233	RDAT	23	3	3	86.96	56.96
RDAT234	RDAT	23	4	4	74.95	52.93
RDAT235	RDAT	23	5	5	73.07	50.92
RDAT236	RDAT	23	6	6	124.04	65.78
RDAT237	RDAT	23	7	7	148.74	75.16
RDAT238	RDAT	23	8	8	151.90	74.50
RDAT239	RDAT	23	9	9	100.88	58.23
RDAT2310	RDAT	23	10	10	83.75	53.42
RDAT2311	RDAT	23	11	11	104.90	56.77
RDAT2312	RDAT	23	12	12	109.38	60.25
RDAT241	RDAT	24	1	1	105.14	62.80
RDAT242	RDAT	24	2	2	96.26	62.14
RDAT243	RDAT	24	3	3	89.09	58.86

No Carbon

RDAT244	RDAT	24	4	4	77.00	54.59
RDAT245	RDAT	24	5	5	74.51	53.10
RDAT246	RDAT	24	6	6	118.03	64.17
RDAT247	RDAT	24	7	7	144.21	72.66
RDAT248	RDAT	24	8	8	153.13	77.05
RDAT249	RDAT	24	9	9	111.27	62.40
RDAT2410	RDAT	24	10	10	85.33	54.08
RDAT2411	RDAT	24	11	11	105.56	57.67
RDAT2412	RDAT	24	12	12	110.75	61.08
RDAT251	RDAT	25	1	1	109.90	65.50
RDAT252	RDAT	25	2	2	97.11	63.14
RDAT253	RDAT	25	3	3	92.14	60.90
RDAT254	RDAT	25	4	4	79.08	56.09
RDAT255	RDAT	25	5	5	76.76	54.69
RDAT256	RDAT	25	6	6	121.98	66.59
RDAT257	RDAT	25	7	7	148.56	75.06
RDAT258	RDAT	25	8	8	157.05	79.04
RDAT259	RDAT	25	9	9	112.95	63.65
RDAT2510	RDAT	25	10	10	88.20	55.81
RDAT2511	RDAT	25	11	11	107.88	59.57
RDAT2512	RDAT	25	12	12	113.61	63.10
RDAT261	RDAT	26	1	1	109.24	65.94
RDAT262	RDAT	26	2	2	98.81	64.31
RDAT263	RDAT	26	3	3	92.58	61.36
RDAT264	RDAT	26	4	4	79.67	56.90
RDAT265	RDAT	26	5	5	78.06	55.62
RDAT266	RDAT	26	6	6	127.08	68.66
RDAT267	RDAT	26	7	7	150.75	76.28
RDAT268	RDAT	26	8	8	158.79	79.31
RDAT269	RDAT	26	9	9	110.68	63.22
RDAT2610	RDAT	26	10	10	89.10	57.18
RDAT2611	RDAT	26	11	11	109.83	60.71
RDAT2612	RDAT	26	12	12	114.95	63.91
RDAT271	RDAT	27	1	1	111.86	67.65
RDAT272	RDAT	27	2	2	100.17	65.36
RDAT273	RDAT	27	3	3	93.96	62.29
RDAT274	RDAT	27	4	4	81.83	58.40
RDAT275	RDAT	27	5	5	78.66	56.45
RDAT276	RDAT	27	6	6	128.51	70.40
RDAT277	RDAT	27	7	7	157.30	80.34
RDAT278	RDAT	27	8	8	161.11	80.64
RDAT279	RDAT	27	9	9	110.27	63.81
RDAT2710	RDAT	27	10	10	90.58	58.41
RDAT2711	RDAT	27	11	11	111.07	61.67
RDAT2712	RDAT	27	12	12	117.71	65.71
RDAT281	RDAT	28	1	1	113.38	68.83
RDAT282	RDAT	28	2	2	101.11	66.18
RDAT283	RDAT	28	3	3	94.75	63.35
RDAT284	RDAT	28	4	4	82.14	58.90
RDAT285	RDAT	28	5	5	80.80	57.73
RDAT286	RDAT	28	6	6	137.48	74.41
RDAT287	RDAT	28	7	7	159.77	82.28

RDAT288	RDAT	28	8	8	161.69	80.44
RDAT289	RDAT	28	9	9	109.26	63.70
RDAT2810	RDAT	28	10	10	92.18	59.57
RDAT2811	RDAT	28	11	11	113.72	63.23
RDAT2812	RDAT	28	12	12	118.86	66.68
RDAT291	RDAT	29	1	1	113.60	69.34
RDAT292	RDAT	29	2	2	103.58	68.14
RDAT293	RDAT	29	3	3	96.89	65.33
RDAT294	RDAT	29	4	4	84.50	61.35
RDAT295	RDAT	29	5	5	82.44	59.80
RDAT296	RDAT	29	6	6	127.03	70.33
RDAT297	RDAT	29	7	7	161.94	82.63
RDAT298	RDAT	29	8	8	168.07	84.36
RDAT299	RDAT	29	9	9	119.48	68.81
RDAT2910	RDAT	29	10	10	93.31	59.98
RDAT2911	RDAT	29	11	11	113.99	63.39
RDAT2912	RDAT	29	12	12	120.66	67.89
RDAT301	RDAT	30	1	1	116.55	71.00
RDAT302	RDAT	30	2	2	105.17	69.49
RDAT303	RDAT	30	3	3	98.61	66.39
RDAT304	RDAT	30	4	4	85.33	61.55
RDAT305	RDAT	30	5	5	83.49	60.56
RDAT306	RDAT	30	6	6	130.80	72.40
RDAT307	RDAT	30	7	7	161.22	81.87
RDAT308	RDAT	30	8	8	172.83	86.12
RDAT309	RDAT	30	9	9	120.83	69.40
RDAT3010	RDAT	30	10	10	94.41	60.99
RDAT3011	RDAT	30	11	11	116.60	65.31
RDAT3012	RDAT	30	12	12	122.32	69.08
RDAT311	RDAT	31	1	1	118.46	72.33
RDAT312	RDAT	31	2	2	106.82	70.85
RDAT313	RDAT	31	3	3	100.79	67.72
RDAT314	RDAT	31	4	4	86.81	62.78
RDAT315	RDAT	31	5	5	84.90	61.88
RDAT316	RDAT	31	6	6	131.94	73.45
RDAT317	RDAT	31	7	7	163.97	83.37
RDAT318	RDAT	31	8	8	176.54	87.94
RDAT319	RDAT	31	9	9	123.62	71.08
RDAT3110	RDAT	31	10	10	95.79	61.98
RDAT3111	RDAT	31	11	11	118.37	66.52
RDAT3112	RDAT	31	12	12	124.24	70.44
RDAT321	RDAT	32	1	1	120.18	73.55
RDAT322	RDAT	32	2	2	108.75	72.31
RDAT323	RDAT	32	3	3	103.96	69.16
RDAT324	RDAT	32	4	4	88.11	63.95
RDAT325	RDAT	32	5	5	86.98	63.32
RDAT326	RDAT	32	6	6	133.01	74.32
RDAT327	RDAT	32	7	7	165.69	84.15
RDAT328	RDAT	32	8	8	180.64	89.89
RDAT329	RDAT	32	9	9	127.30	73.07
RDAT3210	RDAT	32	10	10	97.14	62.91
RDAT3211	RDAT	32	11	11	120.27	67.80

RDAT3212	RDAT	32	12	12	125.93	71.68
RDAT331	RDAT	33	1	1	121.94	74.79
RDAT332	RDAT	33	2	2	111.72	73.93
RDAT333	RDAT	33	3	3	107.31	70.71
RDAT334	RDAT	33	4	4	90.29	65.29
RDAT335	RDAT	33	5	5	89.63	64.82
RDAT336	RDAT	33	6	6	132.03	74.36
RDAT337	RDAT	33	7	7	167.22	84.64
RDAT338	RDAT	33	8	8	185.73	92.44
RDAT339	RDAT	33	9	9	132.33	75.66
RDAT3310	RDAT	33	10	10	98.42	63.78
RDAT3311	RDAT	33	11	11	121.97	69.00
RDAT3312	RDAT	33	12	12	127.76	72.99
RDAT341	RDAT	34	1	1	124.13	76.22
RDAT342	RDAT	34	2	2	114.60	75.46
RDAT343	RDAT	34	3	3	110.24	72.12
RDAT344	RDAT	34	4	4	92.22	66.32
RDAT345	RDAT	34	5	5	91.80	66.15
RDAT346	RDAT	34	6	6	133.32	75.42
RDAT347	RDAT	34	7	7	168.57	85.16
RDAT348	RDAT	34	8	8	190.43	94.58
RDAT349	RDAT	34	9	9	135.76	77.49
RDAT3410	RDAT	34	10	10	99.74	64.77
RDAT3411	RDAT	34	11	11	124.06	70.48
RDAT3412	RDAT	34	12	12	129.60	74.33
RDAT351	RDAT	35	1	1	126.10	77.58
RDAT352	RDAT	35	2	2	117.52	77.04
RDAT353	RDAT	35	3	3	113.49	73.64
RDAT354	RDAT	35	4	4	94.85	67.58
RDAT355	RDAT	35	5	5	94.26	67.63
RDAT356	RDAT	35	6	6	133.96	76.22
RDAT357	RDAT	35	7	7	170.46	86.01
RDAT358	RDAT	35	8	8	195.11	96.83
RDAT359	RDAT	35	9	9	139.78	79.67
RDAT3510	RDAT	35	10	10	101.12	65.75
RDAT3511	RDAT	35	11	11	125.99	71.85
RDAT3512	RDAT	35	12	12	131.49	75.71
RDAT361	RDAT	36	1	1	128.09	78.96
RDAT362	RDAT	36	2	2	120.56	78.68
RDAT363	RDAT	36	3	3	116.91	75.20
RDAT364	RDAT	36	4	4	97.55	68.84
RDAT365	RDAT	36	5	5	96.80	69.16
RDAT366	RDAT	36	6	6	134.47	76.94
RDAT367	RDAT	36	7	7	172.12	86.68
RDAT368	RDAT	36	8	8	200.06	99.19
RDAT369	RDAT	36	9	9	144.14	81.98
RDAT3610	RDAT	36	10	10	102.50	66.73
RDAT3611	RDAT	36	11	11	127.98	73.25
RDAT3612	RDAT	36	12	12	133.37	77.09
RDAT371	RDAT	37	1	1	130.58	80.37
RDAT372	RDAT	37	2	2	123.72	80.37
RDAT373	RDAT	37	3	3	120.39	76.80

RDAT374	RDAT	37	4	4	100.32	70.13
RDAT375	RDAT	37	5	5	99.43	70.71
RDAT376	RDAT	37	6	6	134.85	77.63
RDAT377	RDAT	37	7	7	173.77	87.33
RDAT378	RDAT	37	8	8	205.23	101.67
RDAT379	RDAT	37	9	9	148.70	84.39
RDAT3710	RDAT	37	10	10	103.89	67.73
RDAT3711	RDAT	37	11	11	129.98	74.69
RDAT3712	RDAT	37	12	12	135.30	78.52
RDAT381	RDAT	38	1	1	133.16	81.84
RDAT382	RDAT	38	2	2	126.92	82.07
RDAT383	RDAT	38	3	3	123.91	78.41
RDAT384	RDAT	38	4	4	103.00	71.39
RDAT385	RDAT	38	5	5	102.05	72.27
RDAT386	RDAT	38	6	6	135.56	78.48
RDAT387	RDAT	38	7	7	175.44	88.02
RDAT388	RDAT	38	8	8	210.42	104.13
RDAT389	RDAT	38	9	9	153.11	86.73
RDAT3810	RDAT	38	10	10	105.31	68.75
RDAT3811	RDAT	38	11	11	132.49	76.19
RDAT3812	RDAT	38	12	12	137.25	79.97
RDAT391	RDAT	39	1	1	135.79	83.31
RDAT392	RDAT	39	2	2	130.20	83.81
RDAT393	RDAT	39	3	3	127.59	80.07
RDAT394	RDAT	39	4	4	105.89	72.73
RDAT395	RDAT	39	5	5	104.79	73.90
RDAT396	RDAT	39	6	6	136.13	79.28
RDAT397	RDAT	39	7	7	177.21	88.75
RDAT398	RDAT	39	8	8	215.74	106.66
RDAT399	RDAT	39	9	9	157.79	89.21
RDAT3910	RDAT	39	10	10	106.75	69.79
RDAT3911	RDAT	39	11	11	135.42	77.69
RDAT3912	RDAT	39	12	12	139.24	81.45
RDAT401	RDAT	40	1	1	138.45	84.81
RDAT402	RDAT	40	2	2	133.58	85.60
RDAT403	RDAT	40	3	3	131.39	81.78
RDAT404	RDAT	40	4	4	108.84	74.08
RDAT405	RDAT	40	5	5	107.60	75.56
RDAT406	RDAT	40	6	6	136.67	80.09
RDAT407	RDAT	40	7	7	178.93	89.46
RDAT408	RDAT	40	8	8	221.24	109.28
RDAT409	RDAT	40	9	9	162.64	91.78
RDAT4010	RDAT	40	10	10	108.20	70.83
RDAT4011	RDAT	40	11	11	138.43	79.23
RDAT4012	RDAT	40	12	12	141.24	82.96

119.56	134.49	131.29	138.66	143.35	148.27	142.77	147.03	151.90	153.13	157.05
15	16	17	18	19	20	21	22	23	24	25
0.7886	0.7661	0.7664	0.7373	0.7290	0.6969	0.7217	0.7055	0.6973	0.6866	0.6998
0.6423	0.6351	0.6485	0.6388	0.6255	0.6100	0.6315	0.6145	0.6111	0.6286	0.6184
0.6283	0.6038	0.6075	0.5875	0.5852	0.5682	0.5959	0.5795	0.5725	0.5818	0.5867
0.5302	0.4956	0.5202	0.5151	0.4989	0.4859	0.5075	0.4964	0.4934	0.5028	0.5035
0.5270	0.5002	0.5254	0.5213	0.4746	0.4760	0.4904	0.4811	0.4810	0.4866	0.4888
0.7880	0.8261	0.8661	0.7674	0.7757	0.7650	0.8140	0.8104	0.8166	0.7708	0.7767
0.9118	0.9453	1.0000	0.9586	0.9356	0.8760	0.9806	0.9616	0.9792	0.9417	0.9460
1.0000	1.0000	0.9894	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.7033	0.6591	0.6621	0.7035	0.6527	0.6136	0.6671	0.6680	0.6641	0.7266	0.7192
0.5669	0.5649	0.5963	0.5702	0.5482	0.5246	0.5673	0.5603	0.5514	0.5573	0.5616
0.7209	0.7269	0.7108	0.6740	0.6968	0.6722	0.7064	0.6915	0.6906	0.6893	0.6869
0.7882	0.7639	0.7691	0.8000	0.7501	0.7288	0.7491	0.7407	0.7201	0.7232	0.7234
469	470	471	472	473	474	475	476	477	478	479

158.79	161.11	161.69	168.07	172.83	176.54	180.64	185.73	190.43	195.11	200.06
26	27	28	29	30	31	32	33	34	35	36
0.6879	0.6943	0.7012	0.6760	0.6744	0.6710	0.6653	0.6566	0.6518	0.6463	0.6403
0.6223	0.6217	0.6254	0.6163	0.6085	0.6051	0.6020	0.6015	0.6018	0.6023	0.6027
0.5830	0.5832	0.5860	0.5765	0.5705	0.5709	0.5755	0.5778	0.5789	0.5816	0.5844
0.5017	0.5079	0.5080	0.5028	0.4937	0.4917	0.4878	0.4861	0.4843	0.4862	0.4876
0.4916	0.4882	0.4997	0.4905	0.4831	0.4809	0.4815	0.4826	0.4820	0.4831	0.4839
0.8003	0.7976	0.8503	0.7559	0.7568	0.7474	0.7363	0.7109	0.7001	0.6866	0.6722
0.9494	0.9763	0.9881	0.9635	0.9328	0.9288	0.9172	0.9003	0.8852	0.8736	0.8604
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.6970	0.6844	0.6757	0.7109	0.6992	0.7002	0.7047	0.7125	0.7129	0.7164	0.7205
0.5611	0.5622	0.5701	0.5552	0.5463	0.5426	0.5377	0.5299	0.5238	0.5183	0.5124
0.6917	0.6894	0.7033	0.6782	0.6747	0.6705	0.6658	0.6567	0.6514	0.6457	0.6397
0.7239	0.7306	0.7351	0.7179	0.7078	0.7037	0.6971	0.6879	0.6806	0.6739	0.6667
480	481	482	483	484	485	486	487	488	489	490

205.23	210.42	215.74	221.24
37	38	39	40
0.6363	0.6328	0.6294	0.6258
0.6028	0.6032	0.6035	0.6038
0.5866	0.5889	0.5914	0.5939
0.4888	0.4895	0.4908	0.4920
0.4845	0.4850	0.4857	0.4864
0.6570	0.6442	0.6310	0.6178
0.8467	0.8338	0.8214	0.8088
1.0000	1.0000	1.0000	1.0000
0.7246	0.7276	0.7314	0.7352
0.5062	0.5005	0.4948	0.4891
0.6333	0.6296	0.6277	0.6257
0.6593	0.6523	0.6454	0.6384
491	492	493	494

Paste as Values Only					max	average	
RDAT71	RDAT	7	1	1	0.00	0.00	2
RDAT72	RDAT	7	2	2	0.00	0.00	2
RDAT73	RDAT	7	3	3	0.00	0.00	2
RDAT74	RDAT	7	4	4	0.00	0.00	2
RDAT75	RDAT	7	5	5	0.00	0.00	2
RDAT76	RDAT	7	6	6	0.00	0.00	2
RDAT77	RDAT	7	7	7	0.00	0.00	2
RDAT78	RDAT	7	8	8	0.00	0.00	2
RDAT79	RDAT	7	9	9	0.00	0.00	2
RDAT710	RDAT	7	10	10	0.00	0.00	2
RDAT711	RDAT	7	11	11	0.00	0.00	2
RDAT712	RDAT	7	12	12	0.00	0.00	2
RDAT81	RDAT	8	1	1	0.00	0.00	2
RDAT82	RDAT	8	2	2	0.00	0.00	2
RDAT83	RDAT	8	3	3	0.00	0.00	2
RDAT84	RDAT	8	4	4	0.00	0.00	2
RDAT85	RDAT	8	5	5	0.00	0.00	2
RDAT86	RDAT	8	6	6	0.00	0.00	2
RDAT87	RDAT	8	7	7	0.00	0.00	2
RDAT88	RDAT	8	8	8	0.00	0.00	2
RDAT89	RDAT	8	9	9	0.00	0.00	2
RDAT810	RDAT	8	10	10	0.00	0.00	2
RDAT811	RDAT	8	11	11	0.00	0.00	2
RDAT812	RDAT	8	12	12	0.00	0.00	2
RDAT91	RDAT	9	1	1	0.00	0.00	2
RDAT92	RDAT	9	2	2	0.00	0.00	2
RDAT93	RDAT	9	3	3	0.00	0.00	2
RDAT94	RDAT	9	4	4	0.00	0.00	2
RDAT95	RDAT	9	5	5	0.00	0.00	2
RDAT96	RDAT	9	6	6	0.00	0.00	2
RDAT97	RDAT	9	7	7	0.00	0.00	2
RDAT98	RDAT	9	8	8	0.00	0.00	2
RDAT99	RDAT	9	9	9	0.00	0.00	2
RDAT910	RDAT	9	10	10	0.00	0.00	2
RDAT911	RDAT	9	11	11	0.00	0.00	2
RDAT912	RDAT	9	12	12	0.00	0.00	2
RDAT101	RDAT	10	1	1	0.00	0.00	2
RDAT102	RDAT	10	2	2	0.00	0.00	2
RDAT103	RDAT	10	3	3	0.00	0.00	2
RDAT104	RDAT	10	4	4	0.00	0.00	2
RDAT105	RDAT	10	5	5	0.00	0.00	2
RDAT106	RDAT	10	6	6	0.00	0.00	2
RDAT107	RDAT	10	7	7	0.00	0.00	2
RDAT108	RDAT	10	8	8	0.00	0.00	2
RDAT109	RDAT	10	9	9	0.00	0.00	2
RDAT1010	RDAT	10	10	10	0.00	0.00	2
RDAT1011	RDAT	10	11	11	0.00	0.00	2
RDAT1012	RDAT	10	12	12	0.00	0.00	2
RDAT111	RDAT	11	1	1	73.16	39.92	2
RDAT112	RDAT	11	2	2	57.64	35.37	2
RDAT113	RDAT	11	3	3	60.37	35.69	2

max	RDAT	88.43	97.55	109.94	125.67
year		11	12	13	14
	Emergency Energy Monthly Scalar				
1	RDAT	0.8273	0.9090	0.8082	0.8023
2	RDAT	0.6518	0.7118	0.7108	0.6830
3	RDAT	0.6826	0.7425	0.6755	0.6372
4	RDAT	0.5975	0.6697	0.5999	0.5716
5	RDAT	0.5508	0.6759	0.5687	0.5473
6	RDAT	0.7990	0.9627	0.7980	0.8310
7	RDAT	0.8618	1.0000	0.9041	0.8841
8	RDAT	1.0000	0.9865	1.0000	1.0000
9	RDAT	0.6235	0.7528	0.7709	0.7024
10	RDAT	0.6630	0.7484	0.6589	0.6195
11	RDAT	0.7646	0.8283	0.7810	0.7862
12	RDAT	0.7954	0.9681	0.8492	0.8306
	GAF INDEX	465	466	467	468

	Emg. Eng Annual Peak Price ($/MWh)
2011	88.43
2012	97.55
2013	109.94
2014	125.67
2015	136.81
2016	147.23
2017	143.76
2018	152.75
2019	156.75
2020	162.26
2021	162.24
2022	176.25
2023	179.75
2024	187.45
2025	191.05
2026	195.20
2027	194.96
2028	200.78
2029	208.33
2030	213.15
2031	217.92
2032	224.07
2033	230.32
2034	236.17
2035	242.31
2036	248.83
2037	255.44
2038	262.14
2039	269.07
2040	276.21

RDAT114	RDAT	11	4	4	52.84	34.20	2
RDAT115	RDAT	11	5	5	48.70	32.91	2
RDAT116	RDAT	11	6	6	70.65	39.31	2
RDAT117	RDAT	11	7	7	76.21	41.27	2
RDAT118	RDAT	11	8	8	88.43	43.86	2
RDAT119	RDAT	11	9	9	55.14	35.63	2
RDAT1110	RDAT	11	10	10	58.63	34.28	2
RDAT1111	RDAT	11	11	11	67.61	35.10	2
RDAT1112	RDAT	11	12	12	70.34	36.77	2
RDAT121	RDAT	12	1	1	88.68	48.04	2
RDAT122	RDAT	12	2	2	69.43	43.84	2
RDAT123	RDAT	12	3	3	72.43	43.87	2
RDAT124	RDAT	12	4	4	65.34	42.07	2
RDAT125	RDAT	12	5	5	65.94	41.67	2
RDAT126	RDAT	12	6	6	93.92	52.07	2
RDAT127	RDAT	12	7	7	97.55	53.52	2
RDAT128	RDAT	12	8	8	96.23	51.22	2
RDAT129	RDAT	12	9	9	73.44	43.68	2
RDAT1210	RDAT	12	10	10	73.01	42.86	2
RDAT1211	RDAT	12	11	11	80.80	43.81	2
RDAT1212	RDAT	12	12	12	94.44	46.58	2
RDAT131	RDAT	13	1	1	88.86	48.25	2
RDAT132	RDAT	13	2	2	78.14	46.82	2
RDAT133	RDAT	13	3	3	74.27	45.03	2
RDAT134	RDAT	13	4	4	65.95	42.99	2
RDAT135	RDAT	13	5	5	62.52	42.53	2
RDAT136	RDAT	13	6	6	87.73	48.50	2
RDAT137	RDAT	13	7	7	99.40	51.47	2
RDAT138	RDAT	13	8	8	109.94	54.42	2
RDAT139	RDAT	13	9	9	84.75	49.28	2
RDAT1310	RDAT	13	10	10	72.44	43.37	2
RDAT1311	RDAT	13	11	11	85.87	44.18	2
RDAT1312	RDAT	13	12	12	93.36	47.19	2
RDAT141	RDAT	14	1	1	100.83	54.67	2
RDAT142	RDAT	14	2	2	85.83	51.82	2
RDAT143	RDAT	14	3	3	80.08	49.49	2
RDAT144	RDAT	14	4	4	71.83	47.29	2
RDAT145	RDAT	14	5	5	68.78	45.81	2
RDAT146	RDAT	14	6	6	104.43	55.47	2
RDAT147	RDAT	14	7	7	111.10	58.93	2
RDAT148	RDAT	14	8	8	125.67	60.47	2
RDAT149	RDAT	14	9	9	88.27	52.70	2
RDAT1410	RDAT	14	10	10	77.85	46.78	2
RDAT1411	RDAT	14	11	11	98.80	50.02	2
RDAT1412	RDAT	14	12	12	104.38	52.37	2
RDAT151	RDAT	15	1	1	110.84	58.68	2
RDAT152	RDAT	15	2	2	89.97	53.99	2
RDAT153	RDAT	15	3	3	84.90	51.29	2
RDAT154	RDAT	15	4	4	72.86	48.52	2
RDAT155	RDAT	15	5	5	71.62	47.53	2
RDAT156	RDAT	15	6	6	111.20	59.27	2
RDAT157	RDAT	15	7	7	121.74	63.66	2

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RDAT158	RDAT	15	8	8	136.81	65.09	2
RDAT159	RDAT	15	9	9	97.81	54.25	2
RDAT1510	RDAT	15	10	10	77.40	47.70	2
RDAT1511	RDAT	15	11	11	100.45	51.35	2
RDAT1512	RDAT	15	12	12	105.86	54.26	2
RDAT161	RDAT	16	1	1	115.65	64.32	2
RDAT162	RDAT	16	2	2	95.12	58.92	2
RDAT163	RDAT	16	3	3	91.10	56.63	2
RDAT164	RDAT	16	4	4	76.19	52.52	2
RDAT165	RDAT	16	5	5	76.40	50.79	2
RDAT166	RDAT	16	6	6	124.47	66.75	2
RDAT167	RDAT	16	7	7	146.49	75.35	2
RDAT168	RDAT	16	8	8	147.23	73.34	2
RDAT169	RDAT	16	9	9	101.15	57.35	2
RDAT1610	RDAT	16	10	10	84.00	52.44	2
RDAT1611	RDAT	16	11	11	108.67	56.71	2
RDAT1612	RDAT	16	12	12	115.51	60.29	2
RDAT171	RDAT	17	1	1	109.70	64.51	
RDAT172	RDAT	17	2	2	96.12	61.22	
RDAT173	RDAT	17	3	3	90.34	58.58	
RDAT174	RDAT	17	4	4	78.09	54.63	
RDAT175	RDAT	17	5	5	78.66	52.05	
RDAT176	RDAT	17	6	6	126.34	67.34	
RDAT177	RDAT	17	7	7	143.76	75.26	
RDAT178	RDAT	17	8	8	142.28	73.24	
RDAT179	RDAT	17	9	9	94.65	57.36	
RDAT1710	RDAT	17	10	10	86.94	54.31	
RDAT1711	RDAT	17	11	11	104.01	58.20	
RDAT1712	RDAT	17	12	12	111.47	61.60	
RDAT181	RDAT	18	1	1	113.99	65.24	
RDAT182	RDAT	18	2	2	99.76	63.97	
RDAT183	RDAT	18	3	3	91.10	60.60	
RDAT184	RDAT	18	4	4	82.03	55.77	
RDAT185	RDAT	18	5	5	82.62	54.27	
RDAT186	RDAT	18	6	6	119.91	64.92	
RDAT187	RDAT	18	7	7	146.13	73.32	
RDAT188	RDAT	18	8	8	152.75	77.80	
RDAT189	RDAT	18	9	9	107.86	63.05	
RDAT1810	RDAT	18	10	10	89.64	54.87	
RDAT1811	RDAT	18	11	11	104.76	59.26	
RDAT1812	RDAT	18	12	12	122.32	62.71	
RDAT191	RDAT	19	1	1	114.66	65.64	
RDAT192	RDAT	19	2	2	100.08	64.47	
RDAT193	RDAT	19	3	3	93.87	61.31	
RDAT194	RDAT	19	4	4	81.60	56.65	
RDAT195	RDAT	19	5	5	77.63	55.25	
RDAT196	RDAT	19	6	6	121.81	66.33	
RDAT197	RDAT	19	7	7	149.60	74.61	
RDAT198	RDAT	19	8	8	156.75	78.09	
RDAT199	RDAT	19	9	9	105.72	63.43	
RDAT1910	RDAT	19	10	10	88.53	56.34	
RDAT1911	RDAT	19	11	11	110.32	59.87	

RDAT1912	RDAT	19	12	12	119.28	63.61
RDAT201	RDAT	20	1	1	114.07	66.43
RDAT202	RDAT	20	2	2	100.75	64.45
RDAT203	RDAT	20	3	3	95.91	61.96
RDAT204	RDAT	20	4	4	81.76	56.93
RDAT205	RDAT	20	5	5	80.60	56.15
RDAT206	RDAT	20	6	6	129.08	70.80
RDAT207	RDAT	20	7	7	145.75	77.86
RDAT208	RDAT	20	8	8	162.26	78.27
RDAT209	RDAT	20	9	9	106.16	64.12
RDAT2010	RDAT	20	10	10	88.05	56.94
RDAT2011	RDAT	20	11	11	112.71	60.78
RDAT2012	RDAT	20	12	12	120.43	64.78
RDAT211	RDAT	21	1	1	116.07	69.15
RDAT212	RDAT	21	2	2	103.28	66.46
RDAT213	RDAT	21	3	3	98.01	63.77
RDAT214	RDAT	21	4	4	83.55	58.58
RDAT215	RDAT	21	5	5	81.65	57.65
RDAT216	RDAT	21	6	6	135.37	72.79
RDAT217	RDAT	21	7	7	154.35	80.14
RDAT218	RDAT	21	8	8	162.24	79.97
RDAT219	RDAT	21	9	9	109.92	63.22
RDAT2110	RDAT	21	10	10	93.03	58.79
RDAT2111	RDAT	21	11	11	115.24	62.72
RDAT2112	RDAT	21	12	12	120.11	66.63
RDAT221	RDAT	22	1	1	127.83	77.95
RDAT222	RDAT	22	2	2	114.64	75.30
RDAT223	RDAT	22	3	3	107.72	72.17
RDAT224	RDAT	22	4	4	94.08	68.30
RDAT225	RDAT	22	5	5	92.22	66.98
RDAT226	RDAT	22	6	6	148.42	81.91
RDAT227	RDAT	22	7	7	173.54	93.08
RDAT228	RDAT	22	8	8	176.25	89.90
RDAT229	RDAT	22	9	9	123.86	73.59
RDAT2210	RDAT	22	10	10	105.12	68.63
RDAT2211	RDAT	22	11	11	128.78	71.85
RDAT2212	RDAT	22	12	12	134.77	75.74
RDAT231	RDAT	23	1	1	129.70	79.44
RDAT232	RDAT	23	2	2	117.01	76.77
RDAT233	RDAT	23	3	3	110.52	73.84
RDAT234	RDAT	23	4	4	96.71	70.19
RDAT235	RDAT	23	5	5	94.37	68.21
RDAT236	RDAT	23	6	6	154.20	84.97
RDAT237	RDAT	23	7	7	176.78	95.86
RDAT238	RDAT	23	8	8	179.75	92.03
RDAT239	RDAT	23	9	9	127.19	75.58
RDAT2310	RDAT	23	10	10	107.55	70.58
RDAT2311	RDAT	23	11	11	132.18	73.64
RDAT2312	RDAT	23	12	12	138.28	77.48
RDAT241	RDAT	24	1	1	132.03	80.42
RDAT242	RDAT	24	2	2	121.66	79.99
RDAT243	RDAT	24	3	3	113.89	76.64

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RDAT244	RDAT	24	4	4	99.54	72.31
RDAT245	RDAT	24	5	5	97.36	70.76
RDAT246	RDAT	24	6	6	146.98	82.77
RDAT247	RDAT	24	7	7	176.91	94.38
RDAT248	RDAT	24	8	8	187.45	96.19
RDAT249	RDAT	24	9	9	136.59	79.92
RDAT2410	RDAT	24	10	10	110.21	71.65
RDAT2411	RDAT	24	11	11	135.04	75.40
RDAT2412	RDAT	24	12	12	139.70	78.66
RDAT251	RDAT	25	1	1	138.71	83.99
RDAT252	RDAT	25	2	2	123.70	81.56
RDAT253	RDAT	25	3	3	117.21	79.05
RDAT254	RDAT	25	4	4	101.90	74.24
RDAT255	RDAT	25	5	5	100.68	73.33
RDAT256	RDAT	25	6	6	152.01	85.62
RDAT257	RDAT	25	7	7	179.32	96.04
RDAT258	RDAT	25	8	8	191.05	97.80
RDAT259	RDAT	25	9	9	140.35	82.39
RDAT2510	RDAT	25	10	10	112.89	73.67
RDAT2511	RDAT	25	11	11	138.69	77.90
RDAT2512	RDAT	25	12	12	143.75	81.25
RDAT261	RDAT	26	1	1	138.63	84.73
RDAT262	RDAT	26	2	2	126.00	83.04
RDAT263	RDAT	26	3	3	118.65	79.95
RDAT264	RDAT	26	4	4	103.84	75.48
RDAT265	RDAT	26	5	5	101.86	74.06
RDAT266	RDAT	26	6	6	154.99	87.55
RDAT267	RDAT	26	7	7	186.55	99.34
RDAT268	RDAT	26	8	8	195.20	100.08
RDAT269	RDAT	26	9	9	136.86	81.39
RDAT2610	RDAT	26	10	10	114.73	75.43
RDAT2611	RDAT	26	11	11	141.16	79.40
RDAT2612	RDAT	26	12	12	145.41	82.33
RDAT271	RDAT	27	1	1	140.99	86.62
RDAT272	RDAT	27	2	2	128.09	84.51
RDAT273	RDAT	27	3	3	120.03	80.96
RDAT274	RDAT	27	4	4	105.17	76.83
RDAT275	RDAT	27	5	5	105.58	75.60
RDAT276	RDAT	27	6	6	163.21	91.38
RDAT277	RDAT	27	7	7	191.04	103.28
RDAT278	RDAT	27	8	8	194.96	100.49
RDAT279	RDAT	27	9	9	139.61	83.08
RDAT2710	RDAT	27	10	10	117.36	77.28
RDAT2711	RDAT	27	11	11	144.09	81.02
RDAT2712	RDAT	27	12	12	149.15	84.42
RDAT281	RDAT	28	1	1	144.42	88.59
RDAT282	RDAT	28	2	2	130.59	86.33
RDAT283	RDAT	28	3	3	123.26	83.37
RDAT284	RDAT	28	4	4	108.52	79.10
RDAT285	RDAT	28	5	5	106.62	77.59
RDAT286	RDAT	28	6	6	175.75	97.44
RDAT287	RDAT	28	7	7	195.41	104.47

RDAT288	RDAT	28	8	8	200.78	103.16
RDAT289	RDAT	28	9	9	135.76	82.53
RDAT2810	RDAT	28	10	10	119.71	79.39
RDAT2811	RDAT	28	11	11	147.77	83.27
RDAT2812	RDAT	28	12	12	154.12	87.15
RDAT291	RDAT	29	1	1	147.61	90.28
RDAT292	RDAT	29	2	2	134.69	89.32
RDAT293	RDAT	29	3	3	129.20	86.50
RDAT294	RDAT	29	4	4	114.12	81.72
RDAT295	RDAT	29	5	5	110.93	80.32
RDAT296	RDAT	29	6	6	164.63	93.60
RDAT297	RDAT	29	7	7	198.59	106.68
RDAT298	RDAT	29	8	8	208.33	106.94
RDAT299	RDAT	29	9	9	151.02	89.48
RDAT2910	RDAT	29	10	10	123.06	80.94
RDAT2911	RDAT	29	11	11	149.51	84.18
RDAT2912	RDAT	29	12	12	155.87	88.72
RDAT301	RDAT	30	1	1	153.75	94.46
RDAT302	RDAT	30	2	2	140.50	92.88
RDAT303	RDAT	30	3	3	134.28	89.36
RDAT304	RDAT	30	4	4	115.50	84.03
RDAT305	RDAT	30	5	5	115.23	82.94
RDAT306	RDAT	30	6	6	174.83	98.53
RDAT307	RDAT	30	7	7	202.37	107.50
RDAT308	RDAT	30	8	8	213.15	110.05
RDAT309	RDAT	30	9	9	153.92	91.82
RDAT3010	RDAT	30	10	10	127.11	83.75
RDAT3011	RDAT	30	11	11	155.77	88.10
RDAT3012	RDAT	30	12	12	161.27	91.93
RDAT311	RDAT	31	1	1	158.20	97.07
RDAT312	RDAT	31	2	2	144.85	95.53
RDAT313	RDAT	31	3	3	138.81	91.89
RDAT314	RDAT	31	4	4	119.11	86.32
RDAT315	RDAT	31	5	5	118.86	85.34
RDAT316	RDAT	31	6	6	180.45	101.59
RDAT317	RDAT	31	7	7	206.53	109.68
RDAT318	RDAT	31	8	8	217.92	112.71
RDAT319	RDAT	31	9	9	158.71	94.70
RDAT3110	RDAT	31	10	10	130.41	85.98
RDAT3111	RDAT	31	11	11	159.66	90.44
RDAT3112	RDAT	31	12	12	165.51	94.51
RDAT321	RDAT	32	1	1	163.00	99.88
RDAT322	RDAT	32	2	2	149.80	98.51
RDAT323	RDAT	32	3	3	144.19	94.86
RDAT324	RDAT	32	4	4	123.17	88.88
RDAT325	RDAT	32	5	5	122.44	87.97
RDAT326	RDAT	32	6	6	185.32	104.43
RDAT327	RDAT	32	7	7	210.60	111.37
RDAT328	RDAT	32	8	8	224.07	116.00
RDAT329	RDAT	32	9	9	164.08	97.94
RDAT3210	RDAT	32	10	10	133.90	88.31
RDAT3211	RDAT	32	11	11	163.83	92.97

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RDAT3212	RDAT	32	12	12	169.89	97.22
RDAT331	RDAT	33	1	1	168.22	102.93
RDAT332	RDAT	33	2	2	155.24	101.83
RDAT333	RDAT	33	3	3	150.04	97.98
RDAT334	RDAT	33	4	4	127.74	91.52
RDAT335	RDAT	33	5	5	126.76	90.79
RDAT336	RDAT	33	6	6	188.01	106.33
RDAT337	RDAT	33	7	7	214.58	113.19
RDAT338	RDAT	33	8	8	230.32	119.46
RDAT339	RDAT	33	9	9	172.16	102.27
RDAT3310	RDAT	33	10	10	137.71	90.69
RDAT3311	RDAT	33	11	11	168.12	95.58
RDAT3312	RDAT	33	12	12	174.08	99.93
RDAT341	RDAT	34	1	1	173.82	106.38
RDAT342	RDAT	34	2	2	160.91	105.23
RDAT343	RDAT	34	3	3	155.76	101.09
RDAT344	RDAT	34	4	4	131.40	94.16
RDAT345	RDAT	34	5	5	131.06	93.62
RDAT346	RDAT	34	6	6	194.38	109.80
RDAT347	RDAT	34	7	7	218.78	114.92
RDAT348	RDAT	34	8	8	236.17	122.83
RDAT349	RDAT	34	9	9	177.91	105.76
RDAT3410	RDAT	34	10	10	141.64	93.32
RDAT3411	RDAT	34	11	11	173.13	98.68
RDAT3412	RDAT	34	12	12	178.97	102.95
RDAT351	RDAT	35	1	1	179.24	109.59
RDAT352	RDAT	35	2	2	166.46	108.57
RDAT353	RDAT	35	3	3	161.66	104.26
RDAT354	RDAT	35	4	4	135.72	96.88
RDAT355	RDAT	35	5	5	135.36	96.51
RDAT356	RDAT	35	6	6	199.62	112.82
RDAT357	RDAT	35	7	7	223.09	116.87
RDAT358	RDAT	35	8	8	242.31	126.26
RDAT359	RDAT	35	9	9	184.49	109.57
RDAT3510	RDAT	35	10	10	145.53	95.88
RDAT3511	RDAT	35	11	11	177.77	101.52
RDAT3512	RDAT	35	12	12	183.69	105.91
RDAT361	RDAT	36	1	1	184.94	112.97
RDAT362	RDAT	36	2	2	172.36	112.11
RDAT363	RDAT	36	3	3	167.95	107.61
RDAT364	RDAT	36	4	4	140.23	99.72
RDAT365	RDAT	36	5	5	139.84	99.53
RDAT366	RDAT	36	6	6	204.72	115.83
RDAT367	RDAT	36	7	7	227.43	118.76
RDAT368	RDAT	36	8	8	248.83	129.90
RDAT369	RDAT	36	9	9	191.57	113.65
RDAT3610	RDAT	36	10	10	149.59	98.53
RDAT3611	RDAT	36	11	11	182.61	104.51
RDAT3612	RDAT	36	12	12	188.54	108.98
RDAT371	RDAT	37	1	1	190.87	116.51
RDAT372	RDAT	37	2	2	178.52	115.80
RDAT373	RDAT	37	3	3	174.49	111.07

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RDAT374	RDAT	37	4	4	144.86	102.64
RDAT375	RDAT	37	5	5	144.57	102.66
RDAT376	RDAT	37	6	6	209.89	118.87
RDAT377	RDAT	37	7	7	231.85	120.71
RDAT378	RDAT	37	8	8	255.44	133.63
RDAT379	RDAT	37	9	9	199.15	117.97
RDAT3710	RDAT	37	10	10	153.79	101.28
RDAT3711	RDAT	37	11	11	187.74	107.62
RDAT3712	RDAT	37	12	12	193.52	112.14
RDAT381	RDAT	38	1	1	197.00	120.18
RDAT382	RDAT	38	2	2	184.87	119.59
RDAT383	RDAT	38	3	3	181.20	114.62
RDAT384	RDAT	38	4	4	149.49	105.63
RDAT385	RDAT	38	5	5	149.40	105.88
RDAT386	RDAT	38	6	6	215.76	122.24
RDAT387	RDAT	38	7	7	236.38	122.69
RDAT388	RDAT	38	8	8	262.14	137.44
RDAT389	RDAT	38	9	9	206.54	122.27
RDAT3810	RDAT	38	10	10	158.10	104.11
RDAT3811	RDAT	38	11	11	193.62	110.86
RDAT3812	RDAT	38	12	12	198.72	115.43
RDAT391	RDAT	39	1	1	203.27	123.91
RDAT392	RDAT	39	2	2	191.40	123.48
RDAT393	RDAT	39	3	3	188.20	118.29
RDAT394	RDAT	39	4	4	154.39	108.71
RDAT395	RDAT	39	5	5	154.38	109.19
RDAT396	RDAT	39	6	6	221.46	125.57
RDAT397	RDAT	39	7	7	241.00	124.73
RDAT398	RDAT	39	8	8	269.07	141.36
RDAT399	RDAT	39	9	9	214.40	126.80
RDAT3910	RDAT	39	10	10	162.51	107.01
RDAT3911	RDAT	39	11	11	199.55	114.15
RDAT3912	RDAT	39	12	12	203.99	118.79
RDAT401	RDAT	40	1	1	209.77	127.79
RDAT402	RDAT	40	2	2	198.21	127.53
RDAT403	RDAT	40	3	3	195.49	122.09
RDAT404	RDAT	40	4	4	159.46	111.90
RDAT405	RDAT	40	5	5	159.55	112.63
RDAT406	RDAT	40	6	6	227.29	128.99
RDAT407	RDAT	40	7	7	245.70	126.80
RDAT408	RDAT	40	8	8	276.21	145.42
RDAT409	RDAT	40	9	9	222.61	131.52
RDAT4010	RDAT	40	10	10	167.06	109.99
RDAT4011	RDAT	40	11	11	205.69	117.55
RDAT4012	RDAT	40	12	12	209.41	122.25

136.81	147.23	143.76	152.75	156.75	162.26	162.24	176.25	179.75	187.45	191.05
15	16	17	18	19	20	21	22	23	24	25
0.8102	0.7855	0.7631	0.7463	0.7314	0.7030	0.7155	0.7253	0.7215	0.7043	0.7260
0.6576	0.6461	0.6686	0.6531	0.6384	0.6209	0.6366	0.6504	0.6509	0.6490	0.6474
0.6206	0.6188	0.6284	0.5964	0.5988	0.5911	0.6041	0.6111	0.6149	0.6076	0.6135
0.5325	0.5175	0.5432	0.5371	0.5206	0.5039	0.5150	0.5338	0.5380	0.5310	0.5334
0.5235	0.5189	0.5472	0.5409	0.4952	0.4967	0.5033	0.5232	0.5250	0.5194	0.5270
0.8128	0.8454	0.8788	0.7850	0.7771	0.7955	0.8344	0.8421	0.8579	0.7841	0.7957
0.8898	0.9950	1.0000	0.9567	0.9544	0.8982	0.9514	0.9846	0.9835	0.9438	0.9386
1.0000	1.0000	0.9897	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.7149	0.6870	0.6584	0.7061	0.6744	0.6543	0.6775	0.7027	0.7076	0.7286	0.7346
0.5658	0.5705	0.6047	0.5869	0.5648	0.5426	0.5734	0.5964	0.5983	0.5880	0.5909
0.7342	0.7381	0.7235	0.6858	0.7038	0.6946	0.7103	0.7307	0.7353	0.7204	0.7259
0.7738	0.7845	0.7754	0.8008	0.7609	0.7422	0.7404	0.7647	0.7693	0.7452	0.7524
469	470	471	472	473	474	475	476	477	478	479

High Band

195.20	194.96	200.78	208.33	213.15	217.92	224.07	230.32	236.17	242.31	248.83
26	27	28	29	30	31	32	33	34	35	36
0.7102	0.7232	0.7193	0.7085	0.7213	0.7260	0.7274	0.7304	0.7360	0.7397	0.7432
0.6455	0.6570	0.6504	0.6465	0.6592	0.6647	0.6685	0.6740	0.6813	0.6870	0.6927
0.6078	0.6156	0.6139	0.6202	0.6300	0.6370	0.6435	0.6514	0.6595	0.6672	0.6750
0.5320	0.5395	0.5405	0.5478	0.5419	0.5466	0.5497	0.5546	0.5564	0.5601	0.5636
0.5218	0.5416	0.5310	0.5325	0.5406	0.5454	0.5464	0.5504	0.5550	0.5586	0.5620
0.7940	0.8371	0.8754	0.7902	0.8202	0.8281	0.8271	0.8163	0.8231	0.8238	0.8228
0.9557	0.9799	0.9733	0.9532	0.9494	0.9478	0.9399	0.9317	0.9264	0.9207	0.9140
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.7011	0.7161	0.6762	0.7249	0.7221	0.7283	0.7323	0.7475	0.7533	0.7614	0.7699
0.5878	0.6020	0.5962	0.5907	0.5963	0.5985	0.5976	0.5979	0.5997	0.6006	0.6012
0.7232	0.7391	0.7360	0.7177	0.7308	0.7327	0.7311	0.7299	0.7331	0.7336	0.7339
0.7449	0.7650	0.7676	0.7482	0.7566	0.7595	0.7582	0.7558	0.7578	0.7581	0.7577
480	481	482	483	484	485	486	487	488	489	490

255.44	262.14	269.07	276.21
37	38	39	40
0.7472	0.7515	0.7555	0.7595
0.6989	0.7052	0.7114	0.7176
0.6831	0.6913	0.6994	0.7078
0.5671	0.5703	0.5738	0.5773
0.5660	0.5699	0.5738	0.5776
0.8217	0.8231	0.8231	0.8229
0.9077	0.9017	0.8957	0.8895
1.0000	1.0000	1.0000	1.0000
0.7796	0.7879	0.7968	0.8060
0.6021	0.6031	0.6040	0.6048
0.7350	0.7386	0.7416	0.7447
0.7576	0.7581	0.7581	0.7581
491	492	493	494

Kentucky Power Company

REQUEST

For each of the 11 unit disposition options that the Company developed, please provide the workpapers, analyses, assumptions, reason for the inputs, etc, created to produce the following assumptions that were entered into STRATEGIST.

a. First and last year available.

b. Cumulative Minimum, Cumulative Maximum, Incremental Number to Add, Minimum Number to Add

c. Restricted combinations

RESPONSE

a. Please see response to AG 1-12 for the first and last year available inputs used in trategist for the 11 unit disposition options the Company analyzed. These inputs were determined by the expected in-service date for each option.

b. Please see response to AG 1-12 for the cumulative minimum and maximum, incremental and minimum number to add inputs used in Strategist for the 11 unit disposition options the Company analyzed. These inputs were determined by the number of each of these options that were available to the Company.

c. Individual optimization runs were created for each of the 11 unit disposition options so no restricted combinations were necessary to limit the 11 options from combining with each other.

WITNESS: Mark A Becker

Kentucky Power Company

REQUEST

Please supply all workpapers containing the development of the capital costs/revenue requirements necessary to prepare those data assumptions for entry into STRATEGIST. Please provide this information electronically, with all formulas intact and no pasted in values.

RESPONSE

See files BS2 DFGD STRAT INPUT DATA4.xls, BS 1 Gas Conversion STRAT INPUT DATA2.xls, BS 1 Repower Strategist Input Data for SCW.xls, BS Brownfield CC Strategist Input Data for SCW.xls, ML12 Transfer STRAT INPUT DATA4.xls on the enclosed CD.

WITNESS: Mark A Becker

Kentucky Power Company

REQUEST

It appears Mr. Weaver received commodity forecasts from Mr. Bletzacker in the Fundamental Analysis Group. Please provide all workpapers and analyses that were performed to convert the data that was received from Mr. Bletzacker into the format found in Exhibit SCW-3 and along with the analyses, provide Exhibit SCW-3 electronically. Provide all analyses electronically, with all formulas intact and no pasted in values.

RESPONSE

See KPSC 1-29.

WITNESS: Karl R Bletzacker

Kentucky Power Company

REQUEST

Please supply the workpapers that were used to convert all commodity forecasts received from Mr. Bletzacker into Strategist inputs for the Mitchell acquisition study. Please provide this information electronically, with all formulas intact and no pasted in values.

RESPONSE

See KIUC 1-33.zip on the enclosed CD.

WITNESS: Mark A Becker

Kentucky Power Company

REQUEST

This concerns the Company's more recent forecasts. Please provide all models, workpapers, documentation, assumptions, emails, memos, letters, reports, or analyses of any kind that have been used to create more recent commodity forecasts than those that are found in Exhibit SCW-3. KIUC believes it likely that the Company/AEP has developed a more recent set of commodity forecasts, and seeks to acquire that information in the same format. Please provide this information electronically, with all formulas intact and no pasted in values. This should include Low, Base, High, No Carbon, and Early Carbon forecasts.

RESPONSE

The Company has not updated its commodity price forecast beyond that found in Exhibit SCW-3.

WITNESS: Scott C Weaver

Kentucky Power Company

REQUEST

Please supply workpapers that may have been used to convert the more recent commodity forecasts into Strategist inputs. Please provide this information electronically, with all formulas intact and no pasted in values.

RESPONSE

Please see the response to KIUC 1-34.

WITNESS: Mark A Becker

Kentucky Power Company

REQUEST

Please provide the Strategist databases (this includes any .LFA, .GAF, .PRV, .SAV, .FSV, .INP, .OUT, .REP, .DIA files, etc) that may have been created using the more recent commodity forecasts. Also, please provide a narrative description of the purpose of the Strategist analyses that were performed using the more recent commodity price forecasts. Finally, please supply a list of data changes that were made to create these Strategist databases compared to the Strategist databases used in the Mitchell acquisition studies. Please provide this information electronically, with all formulas intact and no pasted in values.

RESPONSE

Please see the response to KIUC 1-34.

WITNESS: Mark A Becker

Kentucky Power Company

REQUEST

On page 38 of his testimony, Mr. Weaver mentions that the Company believes there would be greater potential for a successful competitive solicitation of replacement baseload capacity and energy if the tranche-size were closer to 250 MW, roughly the size of Big Sandy 1. Given the Company's stated concerns about conducting an RFP, what basis does it have for suggesting that a 250 MW tranche size might be successful?

RESPONSE

A smaller tranche size would allow prospective bidders to offer portions of larger units in response to the RFP. A larger tranche size would limit the number of bidders with adequate capacity to fulfill the request.

WITNESS: Scott C Weaver

Kentucky Power Company

REQUEST

On page 41 of Mr. Weaver's testimony he discussed an additional Strategist based analysis that was performed to determine the amount that the Combined Cycle unit would have to be decreased in order for the CC option to be a less expensive alternative than option 6. Please provide an explanation of the step by step process performed to develop the results, and provide a copy of all analyses, electronically with all formulas intact, performed to develop the results. Please be sure to provide the calculations that led to the numbers on lines 9, 10, 20, and 21.

RESPONSE

As summarized in the KIUC 1-38 spreadsheet file on the enclosed CD, the steps involved in determining a break-even cost of a new CC necessary to achieve an economic point-of-indifference with the recommended Option #6 included:

1. Determine the cumulative present worth (CPW) of the carrying charge (life-cycle) stream for a (replacement) new CC-build.

2. Divide that CPW cost stream into $100 million to determine the 'percentage change' in the CC cost that would have to occur to have an impact of $100 million.

3. Multiply that percentage by the 'multiples' of $100 million that represent the overall CPW differentials (vs. Option #6) found on Weaver direct testimony Exhibit SCW-4.

4. This product equates to the total change required to the cost of a new-build CC that would result in the CPW differential (vs. Option #6) being zero (i.e., break-even cost).

WITNESS: Mark A Becker

Kentucky Power Company

REQUEST

Please explain how 100 risk iterations were generated for the Aurora analyses. Please explain fully. Also, when the 11 options are each run through the Aurora model, are the 100 cases exactly the same for each of the 11 options performed? Is there a way to identify the 100 cases that were performed for each of the 11 options? Please explain.

RESPONSE

The 100 risk iterations were generated randomly by Aurora utilizing the correlations shown in the Company's response to SC 1-32. The 100 cases run for each of the 11 options are not exactly the same in each run because the Aurora model selects the correlated inputs randomly. The results of the 100 cases can be identified by name in file KPCo 2012-00578 Stochastics 12-10-12.xlsx provided in the Company's response to KIUC question 1-41.

WITNESS: Karl R Bletzacker

Kentucky Power Company

REQUEST

Please provide all files containing input assumptions and output reports from Aurora used to create the commodity forecasts (coal, CO2, on-peak/off-peak PJM energy prices, natural gas prices, capacity values), which KIUC understands are named:

a. PriceJForecast_Nominal_FTCA_CSAPR2.xls and

b. Price_Forecast_Real_ FTCA_CSAPR2.xls

RESPONSE

a. Please see file: Price_Forecast_Nominal_FTCA_CSAPR2_2011_11_22.xls on the enclosed CD.

b. Please see file: Price_Forecast_Real_FTCA_CSAPR2_2011_11_22.xls on the enclosed CD.

WITNESS: Karl R Bletzacker

Kentucky Power Company

REQUEST

Please provide all files containing input assumptions and output reports from Aurora used to create the Monte Carlo Risk Assessment that Mr. Weaver discusses at page 42 of his testimony, which KIUC understands are named:

a. KPCOStochastics.xls.

RESPONSE

Please see file KPCO 2012-00578 Stochastics 12-10-12.xlsx on the enclosed CD.

WITNESS: Karl R Bletzacker

Kentucky Power Company

REQUEST

For every table in Exhibit SCW-1 between pages 9 and 15, please provide the workpapers, spreadsheets, analyses of any type that led to the tables and graphs found in the Exhibit. Please provide this information electronically with all formulas intact and no pasted in values.

RESPONSE

See files KIUC 1-42 Attachment 1 (Ex SCW-1, Table 1-3).xls, KIUC 1-42 Attachment 2 (Ex SCW-1, Table 1-4).xls, KIUC 1-42 Attachment 3 (Ex SCW-1, Figure 1-1&2).xls, KIUC 1-42 Attachment 4 (Ex SCW-1, Figure 1-3).xls on the enclosed CD.

WITNESS: Scott C Weaver

Kentucky Power Company

REQUEST

For all tables and graphs found in Exhibit SCW-6 provide all workpapers, documentation, emails, memos, letters, reports analyses of any kind that were used to create the tables and graphs. Please provide this information electronically with all formulas intact.

RESPONSE

Please see the response to KIUC 1-42 (Attachments 3 and 4).

WITNESS: Scott C Weaver

Kentucky Power Company

REQUEST

Provide the following historic annual data separately for Mitchell 1 and 2 covering 2000 through 2011 in electronic spreadsheet format:

a. Generation
b. Capacity Factor
c. MBTUs
d. Fuel Cost
e. Forced Outage Rate
f. O&M Expense
g. Capital Additions cost

RESPONSE

a c, e. Please see KIUC 1-44 Attachment 1. Confidential treatment is being sought for portions of Attachment 1.

d, f g. Please see KIUC 1-44 Attachment 2

WITNESS: Jeffery D LaFleur

a.

Generation (Net MWh)	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Mitchell 1													
Mitchell 2													

b.

Net Capacity Factor MWh(%)	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Mitchell 1													
Mitchell 2													

c.

MBTU	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Mitchell 1													
Mitchell 2													

e.

Forced Outage Rate	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Mitchell 1	4.43%	7.67%	5.92%	6.14%	9.23%	13.93%	15.86%	12.17%	4.31%	3.84%	7.81%	9.62%	7.14%
Mitchell 2	8.41%	4.08%	3.92%	5.60%	4.21%	13.80%	8.85%	14.41%	5.49%	1.48%	5.59%	7.78%	5.86%

		Year[1, 3, 4]											
Unit	Bud Cat	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Mitchell 0	Capital[2, 5, 6]		$1,034,895	$11,495,177	$12,922,082	$2,253,058	$23,614,826	$16,403,264	$11,502,024	$8,738,612	$5,184,061	$20,360,308	$58,791,555
	Fuel Cost[7]	$120,315,961	$130,920,783	$132,887,015	$137,087,335	$120,481,365	$5,458,774	$3,759,747	($65,989,503)	$6,779,837	$7,163,527	$7,637,808	$8,237,358
	O&M Expense	$23,193,219	$22,990,640	$25,690,890	$29,209,731	$48,718,478	$11,839,791	$13,642,713	$14,651,983	$18,217,925	$17,957,182	$18,841,948	$23,810,441
Mitchell 1	Capital[6]						$223,843,083	$117,380,814	$28,551,940	$6,120,934	$3,120,282	$14,730,181	$8,876,292
	Fuel Cost[7]						$68,895,475	$61,678,079	$100,828,672	$114,981,990	$126,613,273	$106,860,362	$122,109,584
	O&M Expense						$18,633,194	$19,796,772	$7,564,108	$6,414,031	$7,524,106	$13,839,659	$8,526,810
Mitchell 2	Capital[6]						$208,508,825	$77,089,375	$9,097,538	$15,202,356	$4,342,433	$5,283,293	$11,976,945
	Fuel Cost[7]						$65,618,780	$84,020,225	$118,353,275	$111,936,304	$128,845,393	$135,178,602	$100,022,651
	O&M Expense						$15,134,425	$6,225,533	$3,587,807	$8,516,716	$6,466,595	$6,629,536	$14,407,484

Notes:

1 FERC Form 1 data unavailable for year 2000
2 Unable to calculate 2001 Capital due to lack of 2000 data
3 FERC Form 1 data for 2001-2005 by plant, not unit
4 2006-2012 data from OPCo post-allocated actuals
5 Capital amounts are Capital Additons for 2002-2005
6 Capital amounts are actuals charged to 107xxxx accounts in OPCo for 2006-2012
7 Fuel Costs include consumables

KPSC Case No. 2012-00578
KIUC's First Set of Data Requests
Item No. 44 d, f, g
Attachment 2
Page 1 of 1

Kentucky Power Company

REQUEST

Please provide the following historic annual fuel price purchase information for any consequential coal purchases the Company has made covering 2000 through 2011 in electronic spreadsheet format:

a. Name and characteristics of coal contract
b. Delivered coal price by coal contract
c. Tons of coal delivered by coal contract
d. MBTUs of coal delivered by coal contract

RESPONSE

Please see KIUC 1-45 Attachment 1 on the enclosed CD for a listing of all consequential coal purchases made by the Company from 2000 to 2011.

WITNESS: Ranie K Wohnhas

Kentucky Power Company

REQUEST

Please proved historic annual natural gas price information based on purchases of gas the Company has made over the period 2000 through 2011. Provide the purchase quantity in MBTUs and the price paid for the purchases.

RESPONSE

Kentucky Power Company did not made any gas purchases during the period of 2000 through 2011.

WITNESS: Ranie K Wohnhas

Kentucky Power Company

REQUEST

Please provide coal price indices from a reliable source that the Company has followed and has in its possession covering CAPP, NAPP, and Powder River Basin coal, such as from Platt's or some other source the Company follows. Provide the forecasts that the Company has collected going back as far as 1990 if possible. If numerous forecasts are available each year, it is sufficient to provide one from the summer period, and one from the winter period of each year.

RESPONSE

Please see KIUC 1-47 Attachment 1 for Prompt Year Forward forecast pricing information from an external source going back as far as data is available. Confidential treatment is being sought for Attachment 1.

WITNESS: Ranie K Wohnhas

Coal Forecast - Argus

Forecast*	Central Appalachian (CAPP)	Northern Appalachian (NAPP)	Powder River Basin (PRB)
Summer 2004	[redacted]		
Winter 2005			
Summer 2005			
Winter 2006			
Summer 2006			
Winter 2007			
Summer 2007			
Winter 2008			
Summer 2008			
Winter 2009			
Summer 2009			
Winter 2010			
Summer 2010			
Winter 2011			
Summer 2011			
Winter 2012			
Summer 2012			

*Forecast in Summer was mid-July, Forecast in Winter was mid-January.

Kentucky Power Company

REQUEST

Provide the same information as requested in the prior question but for Henry Hub natural gas.

RESPONSE

Please see KIUC 1-48 Attachment 1 for Daily Prompt Year Forward natural gas prices and see KIUC 1-48 Attachment 2 for an annual forecast of monthly natural gas prices. These prices are provided by NYMEX for the Henry Hub. The pricing information goes back historically as far as systems allow.

WITNESS: Ranie K Wohnhas

NYMEX Henry Hub Natural Gas Daily Prices

Dates	NYMEX: Henry Hub Natural Gas Prices
4/3/1990	1.64
4/4/1990	1.62
4/5/1990	1.62
4/6/1990	1.63
4/9/1990	1.64
4/10/1990	1.62
4/11/1990	1.61
4/12/1990	1.60
4/16/1990	1.60
4/17/1990	1.59
4/18/1990	1.58
4/19/1990	1.57
4/20/1990	1.54
4/23/1990	1.56
4/24/1990	1.56
4/25/1990	1.55
4/26/1990	1.56
4/27/1990	1.56
4/30/1990	1.57
5/1/1990	1.57
5/2/1990	1.58
5/3/1990	1.58
5/4/1990	1.58
5/7/1990	1.58
5/8/1990	1.58
5/9/1990	1.58
5/10/1990	1.57
5/11/1990	1.57
5/14/1990	1.56
5/15/1990	1.55
5/16/1990	1.57
5/17/1990	1.57
5/18/1990	1.55
5/21/1990	1.56
5/22/1990	1.61
5/23/1990	1.60
5/24/1990	1.60
5/25/1990	1.59
5/29/1990	1.59
5/30/1990	1.59
5/31/1990	1.59
6/1/1990	1.59
6/4/1990	1.58
6/5/1990	1.57
6/6/1990	1.56
6/7/1990	1.57
6/8/1990	1.58
6/11/1990	1.57
6/12/1990	1.56
6/13/1990	1.55
6/14/1990	1.55
6/15/1990	1.55
6/18/1990	1.54
6/19/1990	1.54
6/20/1990	1.51
6/21/1990	1.53
6/22/1990	1.52
6/25/1990	1.52
6/26/1990	1.51
6/27/1990	1.50
6/28/1990	1.52
6/29/1990	1.52
7/2/1990	1.52
7/3/1990	1.53
7/5/1990	1.51
7/6/1990	1.50
7/9/1990	1.49
7/10/1990	1.50
7/11/1990	1.50
7/12/1990	1.50
7/13/1990	1.50
7/16/1990	1.50

Dates	NYMEX: Henry Hub Natural Gas Prices
7/17/1990	1.46
7/18/1990	1.45
7/19/1990	1.45
7/20/1990	1.43
7/23/1990	1.46
7/24/1990	1.44
7/25/1990	1.44
7/26/1990	1.44
7/27/1990	1.44
7/30/1990	1.43
7/31/1990	1.41
8/1/1990	1.40
8/2/1990	1.43
8/3/1990	1.51
8/6/1990	1.59
8/7/1990	1.48
8/8/1990	1.48
8/9/1990	1.47
8/10/1990	1.49
8/14/1990	1.45
8/15/1990	1.43
8/16/1990	1.43
8/17/1990	1.44
8/20/1990	1.42
8/21/1990	1.42
8/22/1990	1.43
8/23/1990	1.55
8/24/1990	1.53
8/27/1990	1.50
8/28/1990	1.50
8/29/1990	1.51
8/30/1990	1.54
8/31/1990	1.50
9/4/1990	1.51
9/5/1990	1.51
9/6/1990	1.53
9/7/1990	1.51
9/10/1990	1.53
9/11/1990	1.53
9/12/1990	1.54
9/13/1990	1.54
9/14/1990	1.52
9/17/1990	1.54
9/18/1990	1.56
9/19/1990	1.56
9/20/1990	1.85
9/21/1990	1.87
9/24/1990	1.94
9/25/1990	1.93
9/26/1990	1.95
9/27/1990	1.94
9/28/1990	1.94
10/1/1990	1.91
10/2/1990	1.88
10/3/1990	1.92
10/4/1990	1.90
10/5/1990	1.94
10/8/1990	1.93
10/9/1990	1.94
10/10/1990	1.94
10/11/1990	1.96
10/12/1990	1.95
10/15/1990	1.90
10/16/1990	1.91
10/17/1990	1.90
10/18/1990	1.89
10/19/1990	1.90
10/22/1990	1.97
10/23/1990	2.52
10/24/1990	2.44
10/25/1990	2.45
10/26/1990	2.45
10/29/1990	2.43

Dates	NYMEX: Henry Hub Natural Gas Prices
10/30/1990	2.41
10/31/1990	2.36
11/1/1990	2.35
11/2/1990	2.36
11/5/1990	2.39
11/6/1990	2.38
11/7/1990	2.45
11/8/1990	2.44
11/9/1990	2.43
11/12/1990	2.41
11/13/1990	2.41
11/14/1990	2.43
11/15/1990	2.40
11/16/1990	2.34
11/19/1990	2.35
11/20/1990	2.38
11/21/1990	2.61
11/23/1990	2.61
11/26/1990	2.62
11/27/1990	2.54
11/28/1990	2.51
11/29/1990	2.49
11/30/1990	2.45
12/3/1990	2.48
12/4/1990	2.44
12/5/1990	2.40
12/6/1990	2.35
12/7/1990	2.35
12/10/1990	2.36
12/11/1990	2.29
12/12/1990	2.20
12/13/1990	2.22
12/14/1990	2.26
12/17/1990	2.18
12/18/1990	2.05
12/19/1990	1.90
12/20/1990	1.92
12/21/1990	1.96
12/26/1990	2.00
12/27/1990	1.96
12/28/1990	1.95
12/31/1990	1.95
1/2/1991	1.83
1/3/1991	1.78
1/4/1991	1.74
1/7/1991	1.79
1/8/1991	1.79
1/9/1991	1.73
1/10/1991	1.70
1/11/1991	1.70
1/14/1991	1.73
1/15/1991	1.72
1/16/1991	1.72
1/17/1991	1.62
1/18/1991	1.57
1/21/1991	1.57
1/22/1991	1.54
1/23/1991	1.39
1/24/1991	1.38
1/25/1991	1.40
1/28/1991	1.38
1/29/1991	1.39
1/30/1991	1.38
1/31/1991	1.38
2/1/1991	1.38
2/4/1991	1.37
2/5/1991	1.37
2/6/1991	1.37
2/7/1991	1.38
2/8/1991	1.37
2/11/1991	1.35
2/12/1991	1.35
2/13/1991	1.35

Dates	NYMEX: Henry Hub Natural Gas Prices
2/14/1991	1.37
2/15/1991	1.39
2/19/1991	1.40
2/20/1991	1.36
2/21/1991	1.33
2/22/1991	1.35
2/25/1991	1.35
2/26/1991	1.36
2/27/1991	1.36
2/28/1991	1.37
3/1/1991	1.36
3/4/1991	1.36
3/5/1991	1.36
3/6/1991	1.36
3/7/1991	1.36
3/8/1991	1.36
3/11/1991	1.36
3/12/1991	1.38
3/13/1991	1.40
3/14/1991	1.38
3/15/1991	1.39
3/18/1991	1.39
3/19/1991	1.39
3/20/1991	1.38
3/21/1991	1.40
3/22/1991	1.39
3/25/1991	1.39
3/26/1991	1.40
3/27/1991	1.40
3/28/1991	1.41
4/1/1991	1.42
4/2/1991	1.42
4/3/1991	1.42
4/4/1991	1.40
4/5/1991	1.40
4/8/1991	1.40
4/9/1991	1.39
4/10/1991	1.38
4/11/1991	1.38
4/12/1991	1.38
4/15/1991	1.38
4/16/1991	1.38
4/17/1991	1.38
4/18/1991	1.38
4/19/1991	1.36
4/22/1991	1.35
4/23/1991	1.39
4/24/1991	1.38
4/25/1991	1.38
4/26/1991	1.37
4/29/1991	1.37
4/30/1991	1.38
5/1/1991	1.38
5/2/1991	1.37
5/3/1991	1.36
5/6/1991	1.36
5/7/1991	1.35
5/8/1991	1.35
5/9/1991	1.35
5/10/1991	1.35
5/13/1991	1.35
5/14/1991	1.35
5/15/1991	1.35
5/16/1991	1.35
5/17/1991	1.34
5/20/1991	1.33
5/21/1991	1.33
5/22/1991	1.34
5/23/1991	1.33
5/24/1991	1.34
5/28/1991	1.33
5/29/1991	1.34
5/30/1991	1.34

Dates	NYMEX: Henry Hub Natural Gas Prices
5/31/1991	1.33
6/3/1991	1.33
6/4/1991	1.33
6/5/1991	1.32
6/6/1991	1.30
6/7/1991	1.28
6/10/1991	1.29
6/11/1991	1.28
6/12/1991	1.27
6/13/1991	1.29
6/14/1991	1.29
6/17/1991	1.26
6/18/1991	1.25
6/19/1991	1.22
6/20/1991	1.17
6/21/1991	1.20
6/24/1991	1.12
6/25/1991	1.12
6/26/1991	1.14
6/27/1991	1.18
6/28/1991	1.21
7/1/1991	1.19
7/2/1991	1.17
7/3/1991	1.19
7/5/1991	1.18
7/8/1991	1.20
7/9/1991	1.18
7/10/1991	1.16
7/11/1991	1.16
7/12/1991	1.17
7/15/1991	1.17
7/16/1991	1.21
7/17/1991	1.24
7/18/1991	1.25
7/19/1991	1.25
7/22/1991	1.22
7/23/1991	1.20
7/24/1991	1.22
7/25/1991	1.25
7/26/1991	1.24
7/29/1991	1.23
7/30/1991	1.24
7/31/1991	1.26
8/1/1991	1.26
8/2/1991	1.26
8/5/1991	1.28
8/6/1991	1.29
8/7/1991	1.29
8/8/1991	1.29
8/9/1991	1.29
8/12/1991	1.29
8/13/1991	1.29
8/14/1991	1.28
8/15/1991	1.29
8/16/1991	1.28
8/19/1991	1.29
8/20/1991	1.29
8/21/1991	1.31
8/22/1991	1.42
8/23/1991	1.52
8/26/1991	1.59
8/27/1991	1.58
8/28/1991	1.58
8/29/1991	1.57
8/30/1991	1.56
9/3/1991	1.56
9/4/1991	1.57
9/5/1991	1.59
9/6/1991	1.62
9/9/1991	1.63
9/10/1991	1.68
9/11/1991	1.63
9/12/1991	1.60

Dates	NYMEX: Henry Hub Natural Gas Prices
9/13/1991	1.59
9/16/1991	1.60
9/17/1991	1.60
9/18/1991	1.61
9/19/1991	1.67
9/20/1991	1.74
9/23/1991	1.80
9/24/1991	1.89
9/25/1991	1.90
9/26/1991	1.92
9/27/1991	1.92
9/30/1991	1.94
10/1/1991	1.91
10/2/1991	1.89
10/3/1991	1.89
10/4/1991	1.90
10/7/1991	1.91
10/8/1991	1.94
10/9/1991	1.97
10/10/1991	1.96
10/11/1991	1.96
10/14/1991	1.98
10/15/1991	1.99
10/16/1991	2.00
10/17/1991	2.01
10/18/1991	2.03
10/21/1991	2.01
10/22/1991	1.91
10/23/1991	1.89
10/24/1991	1.77
10/25/1991	2.08
10/28/1991	2.11
10/29/1991	2.09
10/30/1991	2.07
10/31/1991	2.05
11/1/1991	2.08
11/4/1991	2.12
11/5/1991	2.07
11/6/1991	2.06
11/7/1991	2.08
11/8/1991	2.08
11/11/1991	2.07
11/12/1991	2.06
11/13/1991	2.04
11/14/1991	2.00
11/15/1991	2.04
11/18/1991	2.00
11/19/1991	1.91
11/20/1991	1.99
11/21/1991	2.09
11/22/1991	2.09
11/25/1991	2.08
11/26/1991	2.07
11/27/1991	2.11
11/29/1991	2.09
12/2/1991	2.10
12/3/1991	2.10
12/4/1991	2.08
12/5/1991	2.02
12/6/1991	1.98
12/9/1991	1.94
12/10/1991	1.93
12/11/1991	1.85
12/12/1991	1.87
12/13/1991	1.84
12/16/1991	1.83
12/17/1991	1.83
12/18/1991	1.77
12/19/1991	1.71
12/20/1991	1.70
12/23/1991	1.40
12/24/1991	1.40
12/26/1991	1.38

Dates	NYMEX: Henry Hub Natural Gas Prices
12/27/1991	1.38
12/30/1991	1.38
12/31/1991	1.34
1/2/1992	1.31
1/3/1992	1.30
1/6/1992	1.28
1/7/1992	1.30
1/8/1992	1.29
1/9/1992	1.26
1/10/1992	1.21
1/13/1992	1.23
1/14/1992	1.25
1/15/1992	1.29
1/16/1992	1.35
1/17/1992	1.25
1/20/1992	1.23
1/21/1992	1.23
1/22/1992	1.15
1/23/1992	1.08
1/24/1992	1.05
1/27/1992	1.22
1/28/1992	1.18
1/29/1992	1.18
1/30/1992	1.17
1/31/1992	1.18
2/3/1992	1.18
2/4/1992	1.20
2/5/1992	1.19
2/6/1992	1.18
2/7/1992	1.19
2/10/1992	1.20
2/11/1992	1.13
2/12/1992	1.14
2/13/1992	1.12
2/14/1992	1.08
2/18/1992	1.08
2/19/1992	1.14
2/20/1992	1.15
2/21/1992	1.25
2/24/1992	1.18
2/25/1992	1.18
2/26/1992	1.18
2/27/1992	1.16
2/28/1992	1.17
3/2/1992	1.17
3/3/1992	1.17
3/4/1992	1.19
3/5/1992	1.18
3/6/1992	1.17
3/9/1992	1.18
3/10/1992	1.19
3/11/1992	1.18
3/12/1992	1.20
3/13/1992	1.21
3/16/1992	1.23
3/17/1992	1.25
3/18/1992	1.25
3/19/1992	1.25
3/20/1992	1.27
3/23/1992	1.35
3/24/1992	1.42
3/25/1992	1.38
3/26/1992	1.32
3/27/1992	1.33
3/30/1992	1.33
3/31/1992	1.36
4/1/1992	1.38
4/2/1992	1.35
4/3/1992	1.32
4/6/1992	1.32
4/7/1992	1.29
4/8/1992	1.31
4/9/1992	1.31

Dates	NYMEX: Henry Hub Natural Gas Prices
4/10/1992	1.29
4/13/1992	1.27
4/14/1992	1.28
4/15/1992	1.34
4/16/1992	1.36
4/20/1992	1.42
4/21/1992	1.47
4/22/1992	1.57
4/23/1992	1.60
4/24/1992	1.39
4/27/1992	1.38
4/28/1992	1.41
4/29/1992	1.45
4/30/1992	1.42
5/1/1992	1.43
5/4/1992	1.46
5/5/1992	1.53
5/6/1992	1.50
5/7/1992	1.48
5/8/1992	1.48
5/11/1992	1.49
5/12/1992	1.54
5/13/1992	1.56
5/14/1992	1.62
5/15/1992	1.66
5/18/1992	1.68
5/19/1992	1.75
5/20/1992	1.79
5/21/1992	1.69
5/22/1992	1.55
5/26/1992	1.63
5/27/1992	1.59
5/28/1992	1.62
5/29/1992	1.63
6/1/1992	1.66
6/2/1992	1.65
6/3/1992	1.59
6/4/1992	1.61
6/5/1992	1.65
6/8/1992	1.63
6/9/1992	1.63
6/10/1992	1.62
6/11/1992	1.59
6/12/1992	1.54
6/15/1992	1.56
6/16/1992	1.60
6/17/1992	1.61
6/18/1992	1.59
6/19/1992	1.56
6/22/1992	1.55
6/23/1992	1.52
6/24/1992	1.52
6/25/1992	1.53
6/26/1992	1.52
6/29/1992	1.51
6/30/1992	1.52
7/1/1992	1.55
7/2/1992	1.58
7/6/1992	1.58
7/7/1992	1.60
7/8/1992	1.63
7/9/1992	1.64
7/10/1992	1.65
7/13/1992	1.72
7/14/1992	1.69
7/15/1992	1.73
7/16/1992	1.70
7/17/1992	1.71
7/20/1992	1.75
7/21/1992	1.77
7/22/1992	1.81
7/23/1992	1.80
7/24/1992	1.94

Dates	NYMEX: Henry Hub Natural Gas Prices
7/27/1992	1.86
7/28/1992	1.84
7/29/1992	1.88
7/30/1992	1.93
7/31/1992	1.89
8/3/1992	1.86
8/4/1992	1.86
8/5/1992	1.85
8/6/1992	1.88
8/7/1992	1.89
8/10/1992	1.92
8/11/1992	1.92
8/12/1992	1.91
8/13/1992	1.85
8/14/1992	1.83
8/17/1992	1.76
8/18/1992	1.85
8/19/1992	1.84
8/20/1992	1.85
8/21/1992	1.85
8/24/1992	1.99
8/25/1992	1.93
8/26/1992	1.88
8/27/1992	1.94
8/28/1992	2.12
8/31/1992	2.11
9/1/1992	2.08
9/2/1992	2.05
9/3/1992	2.13
9/4/1992	2.15
9/8/1992	2.04
9/9/1992	2.08
9/10/1992	2.13
9/11/1992	2.15
9/14/1992	2.18
9/15/1992	2.24
9/16/1992	2.27
9/17/1992	2.23
9/18/1992	2.33
9/21/1992	2.45
9/22/1992	2.65
9/23/1992	2.74
9/24/1992	2.46
9/25/1992	2.47
9/28/1992	2.44
9/29/1992	2.51
9/30/1992	2.52
10/1/1992	2.52
10/2/1992	2.51
10/5/1992	2.38
10/6/1992	2.44
10/7/1992	2.39
10/8/1992	2.30
10/9/1992	2.29
10/12/1992	2.23
10/13/1992	2.15
10/14/1992	2.33
10/15/1992	2.43
10/16/1992	2.45
10/19/1992	2.57
10/20/1992	2.57
10/21/1992	2.49
10/22/1992	2.40
10/23/1992	2.50
10/26/1992	2.28
10/27/1992	2.30
10/28/1992	2.36
10/29/1992	2.31
10/30/1992	2.30
11/2/1992	2.42
11/3/1992	2.44
11/4/1992	2.40
11/5/1992	2.38

Dates	NYMEX: Henry Hub Natural Gas Prices
11/6/1992	2.35
11/9/1992	2.35
11/10/1992	2.42
11/11/1992	2.40
11/12/1992	2.44
11/13/1992	2.42
11/16/1992	2.41
11/17/1992	2.41
11/18/1992	2.38
11/19/1992	2.33
11/20/1992	2.16
11/23/1992	2.11
11/24/1992	2.04
11/25/1992	2.03
11/30/1992	2.09
12/1/1992	1.90
12/2/1992	1.93
12/3/1992	1.98
12/4/1992	1.99
12/7/1992	1.96
12/8/1992	1.97
12/9/1992	2.04
12/10/1992	2.11
12/11/1992	2.09
12/14/1992	2.03
12/15/1992	2.10
12/16/1992	2.07
12/17/1992	2.09
12/18/1992	2.09
12/21/1992	2.03
12/22/1992	2.00
12/23/1992	1.87
12/28/1992	1.74
12/29/1992	1.70
12/30/1992	1.70
12/31/1992	1.69
1/4/1993	1.55
1/5/1993	1.58
1/6/1993	1.58
1/7/1993	1.60
1/8/1993	1.56
1/11/1993	1.61
1/12/1993	1.60
1/13/1993	1.61
1/14/1993	1.65
1/15/1993	1.65
1/18/1993	1.60
1/19/1993	1.55
1/20/1993	1.63
1/21/1993	1.68
1/22/1993	1.63
1/25/1993	1.57
1/26/1993	1.59
1/27/1993	1.58
1/28/1993	1.59
1/29/1993	1.60
2/1/1993	1.63
2/2/1993	1.57
2/3/1993	1.58
2/4/1993	1.62
2/5/1993	1.68
2/8/1993	1.74
2/9/1993	1.69
2/10/1993	1.71
2/11/1993	1.75
2/12/1993	1.71
2/16/1993	1.77
2/17/1993	1.80
2/18/1993	1.87
2/19/1993	1.91
2/22/1993	1.85
2/23/1993	1.84
2/24/1993	1.85

Dates	NYMEX: Henry Hub Natural Gas Prices
2/25/1993	1.89
2/26/1993	1.86
3/2/1993	1.83
3/3/1993	1.76
3/4/1993	1.80
3/5/1993	1.79
3/8/1993	1.82
3/9/1993	1.92
3/10/1993	1.93
3/11/1993	1.95
3/12/1993	1.92
3/15/1993	1.97
3/16/1993	1.91
3/17/1993	2.01
3/18/1993	2.03
3/19/1993	2.09
3/22/1993	2.04
3/23/1993	2.12
3/24/1993	2.22
3/25/1993	2.02
3/26/1993	1.98
3/29/1993	2.03
3/30/1993	2.04
3/31/1993	2.07
4/1/1993	2.04
4/2/1993	2.03
4/5/1993	2.09
4/6/1993	2.15
4/7/1993	2.15
4/8/1993	2.23
4/12/1993	2.34
4/13/1993	2.32
4/14/1993	2.36
4/15/1993	2.36
4/16/1993	2.39
4/19/1993	2.41
4/20/1993	2.44
4/21/1993	2.63
4/22/1993	2.73
4/23/1993	2.76
4/26/1993	2.32
4/27/1993	2.32
4/28/1993	2.35
4/29/1993	2.37
4/30/1993	2.37
5/3/1993	2.29
5/4/1993	2.32
5/5/1993	2.22
5/6/1993	2.17
5/7/1993	2.16
5/10/1993	2.08
5/11/1993	2.16
5/12/1993	2.22
5/13/1993	2.27
5/14/1993	2.26
5/17/1993	2.31
5/18/1993	2.35
5/19/1993	2.32
5/20/1993	2.32
5/21/1993	2.12
5/24/1993	2.01
5/25/1993	2.08
5/26/1993	2.09
5/27/1993	2.10
5/28/1993	2.14
6/1/1993	2.18
6/2/1993	2.11
6/3/1993	2.11
6/4/1993	2.11
6/7/1993	2.04
6/8/1993	2.13
6/9/1993	2.17
6/10/1993	2.14

Dates	NYMEX: Henry Hub Natural Gas Prices
6/11/1993	2.18
6/14/1993	2.20
6/15/1993	2.15
6/16/1993	2.19
6/17/1993	2.24
6/18/1993	2.26
6/21/1993	2.20
6/22/1993	2.09
6/23/1993	1.92
6/24/1993	2.16
6/25/1993	2.16
6/28/1993	2.20
6/29/1993	2.17
6/30/1993	2.18
7/1/1993	2.12
7/2/1993	2.10
7/6/1993	2.14
7/7/1993	2.16
7/8/1993	2.13
7/9/1993	2.15
7/12/1993	2.09
7/13/1993	2.08
7/14/1993	2.03
7/15/1993	2.03
7/16/1993	2.07
7/19/1993	2.02
7/20/1993	2.03
7/21/1993	2.10
7/22/1993	2.10
7/23/1993	2.12
7/26/1993	2.12
7/27/1993	2.11
7/28/1993	2.14
7/29/1993	2.18
7/30/1993	2.22
8/2/1993	2.22
8/3/1993	2.19
8/4/1993	2.20
8/5/1993	2.23
8/6/1993	2.20
8/9/1993	2.18
8/10/1993	2.22
8/11/1993	2.25
8/12/1993	2.30
8/13/1993	2.30
8/16/1993	2.36
8/17/1993	2.35
8/18/1993	2.41
8/19/1993	2.39
8/20/1993	2.46
8/23/1993	2.42
8/24/1993	2.40
8/25/1993	2.38
8/26/1993	2.43
8/27/1993	2.45
8/30/1993	2.40
8/31/1993	2.38
9/1/1993	2.37
9/2/1993	2.41
9/3/1993	2.39
9/7/1993	2.27
9/8/1993	2.28
9/9/1993	2.26
9/10/1993	2.20
9/13/1993	2.20
9/14/1993	2.16
9/15/1993	2.12
9/16/1993	2.09
9/17/1993	2.17
9/20/1993	2.19
9/21/1993	2.24
9/22/1993	2.16
9/23/1993	2.07

Dates	NYMEX: Henry Hub Natural Gas Prices
9/24/1993	2.26
9/27/1993	2.26
9/28/1993	2.30
9/29/1993	2.32
9/30/1993	2.29
10/1/1993	2.28
10/4/1993	2.20
10/5/1993	2.18
10/6/1993	2.17
10/7/1993	2.12
10/8/1993	2.14
10/11/1993	2.19
10/12/1993	2.15
10/13/1993	2.21
10/14/1993	2.17
10/15/1993	2.17
10/18/1993	2.13
10/19/1993	2.17
10/20/1993	2.12
10/21/1993	2.13
10/22/1993	2.16
10/25/1993	2.31
10/26/1993	2.31
10/27/1993	2.36
10/28/1993	2.39
10/29/1993	2.37
11/1/1993	2.43
11/2/1993	2.41
11/3/1993	2.44
11/4/1993	2.45
11/5/1993	2.44
11/8/1993	2.39
11/9/1993	2.38
11/10/1993	2.32
11/11/1993	2.30
11/12/1993	2.23
11/15/1993	2.26
11/16/1993	2.25
11/17/1993	2.30
11/18/1993	2.34
11/19/1993	2.39
11/22/1993	2.40
11/23/1993	2.35
11/24/1993	2.36
11/29/1993	2.28
11/30/1993	2.24
12/1/1993	2.20
12/2/1993	2.14
12/3/1993	2.15
12/6/1993	2.03
12/7/1993	2.05
12/8/1993	1.98
12/9/1993	1.92
12/10/1993	1.95
12/13/1993	1.89
12/14/1993	2.02
12/15/1993	2.01
12/16/1993	2.08
12/17/1993	2.11
12/20/1993	2.17
12/21/1993	2.00
12/22/1993	2.02
12/23/1993	1.96
12/27/1993	2.09
12/28/1993	2.08
12/29/1993	2.05
12/30/1993	2.00
1/3/1994	1.93
1/4/1994	1.96
1/5/1994	2.09
1/6/1994	2.09
1/7/1994	2.16
1/10/1994	2.16

Dates	NYMEX: Henry Hub Natural Gas Prices
1/11/1994	2.22
1/12/1994	2.24
1/13/1994	2.19
1/14/1994	2.27
1/17/1994	2.36
1/18/1994	2.32
1/19/1994	2.25
1/20/1994	2.25
1/21/1994	2.31
1/24/1994	2.47
1/25/1994	2.25
1/26/1994	2.36
1/27/1994	2.42
1/28/1994	2.53
1/31/1994	2.55
2/1/1994	2.64
2/2/1994	2.59
2/3/1994	2.38
2/4/1994	2.37
2/7/1994	2.35
2/8/1994	2.41
2/9/1994	2.36
2/10/1994	2.37
2/11/1994	2.36
2/14/1994	2.25
2/15/1994	2.25
2/16/1994	2.35
2/17/1994	2.39
2/18/1994	2.42
2/22/1994	2.30
2/23/1994	2.23
2/24/1994	2.25
2/25/1994	2.29
2/28/1994	2.21
3/1/1994	2.18
3/2/1994	2.17
3/3/1994	2.15
3/4/1994	2.19
3/7/1994	2.17
3/8/1994	2.20
3/9/1994	2.16
3/10/1994	2.12
3/11/1994	2.10
3/14/1994	2.05
3/15/1994	2.10
3/16/1994	2.16
3/17/1994	2.12
3/18/1994	2.10
3/21/1994	2.06
3/22/1994	2.11
3/23/1994	2.08
3/24/1994	1.98
3/25/1994	2.07
3/28/1994	2.07
3/29/1994	2.06
3/30/1994	2.06
3/31/1994	2.08
4/4/1994	2.14
4/5/1994	2.07
4/6/1994	2.10
4/7/1994	2.09
4/8/1994	2.07
4/11/1994	2.07
4/12/1994	2.09
4/13/1994	2.13
4/14/1994	2.16
4/15/1994	2.19
4/18/1994	2.16
4/19/1994	2.13
4/20/1994	2.14
4/21/1994	2.13
4/22/1994	2.08
4/25/1994	2.15

Dates	NYMEX: Henry Hub Natural Gas Prices
4/26/1994	2.10
4/28/1994	2.07
4/29/1994	2.07
5/2/1994	2.01
5/3/1994	2.00
5/4/1994	2.03
5/5/1994	2.04
5/6/1994	2.04
5/9/1994	1.99
5/10/1994	1.99
5/11/1994	1.95
5/12/1994	1.95
5/13/1994	1.92
5/16/1994	1.91
5/17/1994	1.95
5/18/1994	1.94
5/19/1994	1.96
5/20/1994	1.90
5/23/1994	1.85
5/24/1994	1.88
5/25/1994	1.84
5/26/1994	1.86
5/27/1994	1.84
5/31/1994	1.92
6/1/1994	1.89
6/2/1994	1.98
6/3/1994	1.97
6/6/1994	1.97
6/7/1994	2.02
6/8/1994	2.09
6/9/1994	2.05
6/10/1994	2.13
6/13/1994	2.12
6/14/1994	2.13
6/15/1994	2.17
6/16/1994	2.13
6/17/1994	2.09
6/20/1994	2.13
6/21/1994	2.08
6/22/1994	2.02
6/23/1994	1.97
6/24/1994	2.13
6/27/1994	2.14
6/28/1994	2.20
6/29/1994	2.18
6/30/1994	2.18
7/1/1994	2.22
7/5/1994	2.13
7/6/1994	2.12
7/7/1994	2.07
7/8/1994	2.02
7/11/1994	2.03
7/12/1994	2.01
7/13/1994	2.00
7/14/1994	1.98
7/15/1994	1.95
7/18/1994	1.95
7/19/1994	1.96
7/20/1994	1.90
7/21/1994	1.84
7/22/1994	1.79
7/25/1994	1.85
7/26/1994	1.87
7/27/1994	1.84
7/28/1994	1.86
7/29/1994	1.89
8/1/1994	1.88
8/2/1994	1.82
8/3/1994	1.74
8/4/1994	1.76
8/5/1994	1.72
8/8/1994	1.67
8/9/1994	1.70

Dates	NYMEX: Henry Hub Natural Gas Prices
8/10/1994	1.77
8/11/1994	1.69
8/12/1994	1.72
8/15/1994	1.75
8/16/1994	1.79
8/17/1994	1.84
8/18/1994	1.73
8/19/1994	1.67
8/22/1994	1.61
8/23/1994	1.53
8/24/1994	1.48
8/25/1994	1.62
8/26/1994	1.62
8/29/1994	1.66
8/30/1994	1.60
8/31/1994	1.59
9/1/1994	1.60
9/2/1994	1.56
9/6/1994	1.60
9/7/1994	1.63
9/8/1994	1.66
9/9/1994	1.64
9/12/1994	1.69
9/13/1994	1.68
9/14/1994	1.68
9/15/1994	1.63
9/16/1994	1.63
9/19/1994	1.63
9/20/1994	1.56
9/21/1994	1.49
9/22/1994	1.45
9/23/1994	1.41
9/26/1994	1.72
9/27/1994	1.72
9/28/1994	1.70
9/29/1994	1.71
9/30/1994	1.66
10/3/1994	1.68
10/4/1994	1.69
10/5/1994	1.66
10/6/1994	1.65
10/7/1994	1.62
10/10/1994	1.66
10/11/1994	1.66
10/12/1994	1.64
10/13/1994	1.61
10/14/1994	1.63
10/17/1994	1.65
10/18/1994	1.64
10/19/1994	1.59
10/20/1994	1.56
10/21/1994	1.60
10/24/1994	1.68
10/25/1994	1.95
10/26/1994	2.03
10/27/1994	2.01
10/28/1994	1.99
10/31/1994	1.95
11/1/1994	1.94
11/2/1994	1.87
11/3/1994	1.86
11/4/1994	1.86
11/7/1994	1.76
11/8/1994	1.75
11/9/1994	1.78
11/10/1994	1.74
11/11/1994	1.74
11/14/1994	1.70
11/15/1994	1.74
11/16/1994	1.66
11/17/1994	1.62
11/18/1994	1.69
11/21/1994	1.66

Dates	NYMEX: Henry Hub Natural Gas Prices
11/22/1994	1.87
11/23/1994	1.88
11/28/1994	1.87
11/29/1994	1.77
11/30/1994	1.70
12/1/1994	1.65
12/2/1994	1.64
12/5/1994	1.73
12/6/1994	1.69
12/7/1994	1.78
12/8/1994	1.85
12/9/1994	1.84
12/12/1994	1.91
12/13/1994	1.77
12/14/1994	1.71
12/15/1994	1.72
12/16/1994	1.69
12/19/1994	1.58
12/20/1994	1.57
12/21/1994	1.59
12/22/1994	1.64
12/23/1994	1.57
12/27/1994	1.69
12/28/1994	1.69
12/29/1994	1.69
12/30/1994	1.73
1/3/1995	1.68
1/4/1995	1.62
1/5/1995	1.55
1/6/1995	1.50
1/9/1995	1.45
1/10/1995	1.44
1/11/1995	1.44
1/12/1995	1.34
1/13/1995	1.32
1/16/1995	1.39
1/17/1995	1.43
1/18/1995	1.34
1/19/1995	1.36
1/20/1995	1.43
1/23/1995	1.39
1/24/1995	1.42
1/25/1995	1.36
1/26/1995	1.38
1/27/1995	1.39
1/30/1995	1.38
1/31/1995	1.35
2/1/1995	1.39
2/2/1995	1.44
2/3/1995	1.48
2/6/1995	1.54
2/7/1995	1.42
2/8/1995	1.44
2/9/1995	1.49
2/10/1995	1.47
2/13/1995	1.39
2/14/1995	1.39
2/15/1995	1.39
2/16/1995	1.40
2/17/1995	1.42
2/21/1995	1.43
2/22/1995	1.43
2/23/1995	1.46
2/24/1995	1.47
2/27/1995	1.43
2/28/1995	1.48
3/1/1995	1.48
3/2/1995	1.48
3/3/1995	1.45
3/6/1995	1.43
3/7/1995	1.43
3/8/1995	1.45
3/9/1995	1.44

Dates	NYMEX: Henry Hub Natural Gas Prices
3/10/1995	1.46
3/13/1995	1.46
3/14/1995	1.47
3/15/1995	1.51
3/16/1995	1.62
3/17/1995	1.57
3/20/1995	1.52
3/21/1995	1.51
3/22/1995	1.55
3/23/1995	1.57
3/24/1995	1.57
3/27/1995	1.66
3/28/1995	1.64
3/29/1995	1.66
3/30/1995	1.69
3/31/1995	1.69
4/3/1995	1.68
4/4/1995	1.69
4/5/1995	1.65
4/6/1995	1.64
4/7/1995	1.62
4/10/1995	1.60
4/11/1995	1.62
4/12/1995	1.62
4/13/1995	1.62
4/17/1995	1.66
4/18/1995	1.68
4/19/1995	1.72
4/20/1995	1.69
4/21/1995	1.67
4/24/1995	1.71
4/25/1995	1.69
4/26/1995	1.67
4/27/1995	1.65
4/28/1995	1.66
5/1/1995	1.70
5/2/1995	1.67
5/3/1995	1.67
5/4/1995	1.65
5/5/1995	1.65
5/8/1995	1.66
5/9/1995	1.68
5/10/1995	1.68
5/11/1995	1.65
5/12/1995	1.66
5/15/1995	1.73
5/16/1995	1.72
5/17/1995	1.70
5/18/1995	1.74
5/19/1995	1.74
5/22/1995	1.73
5/23/1995	1.76
5/24/1995	1.81
5/25/1995	1.78
5/26/1995	1.77
5/30/1995	1.72
5/31/1995	1.72
6/1/1995	1.74
6/2/1995	1.69
6/5/1995	1.73
6/6/1995	1.69
6/7/1995	1.69
6/8/1995	1.70
6/9/1995	1.70
6/12/1995	1.71
6/13/1995	1.71
6/14/1995	1.70
6/15/1995	1.67
6/16/1995	1.63
6/19/1995	1.62
6/20/1995	1.60
6/21/1995	1.57
6/22/1995	1.57

Dates	NYMEX: Henry Hub Natural Gas Prices
6/23/1995	1.53
6/26/1995	1.56
6/27/1995	1.57
6/28/1995	1.53
6/29/1995	1.52
6/30/1995	1.53
7/5/1995	1.47
7/6/1995	1.47
7/7/1995	1.50
7/10/1995	1.57
7/11/1995	1.53
7/12/1995	1.54
7/13/1995	1.49
7/14/1995	1.51
7/17/1995	1.49
7/18/1995	1.53
7/19/1995	1.50
7/20/1995	1.46
7/21/1995	1.44
7/24/1995	1.39
7/25/1995	1.43
7/26/1995	1.47
7/27/1995	1.49
7/28/1995	1.52
7/31/1995	1.61
8/1/1995	1.46
8/2/1995	1.42
8/3/1995	1.43
8/4/1995	1.46
8/7/1995	1.48
8/8/1995	1.47
8/9/1995	1.54
8/10/1995	1.50
8/11/1995	1.50
8/14/1995	1.55
8/15/1995	1.56
8/16/1995	1.53
8/17/1995	1.53
8/18/1995	1.58
8/21/1995	1.62
8/22/1995	1.57
8/23/1995	1.57
8/24/1995	1.58
8/25/1995	1.69
8/28/1995	1.66
8/29/1995	1.69
8/30/1995	1.70
8/31/1995	1.75
9/1/1995	1.74
9/5/1995	1.70
9/6/1995	1.64
9/7/1995	1.63
9/8/1995	1.64
9/11/1995	1.66
9/12/1995	1.65
9/13/1995	1.72
9/14/1995	1.65
9/15/1995	1.66
9/18/1995	1.60
9/19/1995	1.59
9/20/1995	1.60
9/21/1995	1.61
9/22/1995	1.64
9/25/1995	1.76
9/26/1995	1.76
9/27/1995	1.73
9/28/1995	1.75
9/29/1995	1.75
10/2/1995	1.89
10/3/1995	1.81
10/4/1995	1.83
10/5/1995	1.80
10/6/1995	1.80

Dates	NYMEX: Henry Hub Natural Gas Prices
10/9/1995	1.85
10/10/1995	1.80
10/11/1995	1.76
10/12/1995	1.74
10/13/1995	1.75
10/16/1995	1.71
10/17/1995	1.72
10/18/1995	1.73
10/19/1995	1.72
10/20/1995	1.75
10/23/1995	1.76
10/24/1995	1.77
10/25/1995	1.81
10/26/1995	1.83
10/27/1995	1.84
10/30/1995	1.85
10/31/1995	1.87
11/1/1995	1.85
11/2/1995	1.84
11/3/1995	1.83
11/6/1995	1.82
11/7/1995	1.84
11/8/1995	1.87
11/9/1995	1.86
11/10/1995	1.90
11/13/1995	1.91
11/14/1995	1.91
11/15/1995	1.92
11/16/1995	1.97
11/17/1995	2.02
11/20/1995	2.16
11/21/1995	2.24
11/22/1995	2.11
11/27/1995	2.09
11/28/1995	2.02
11/29/1995	2.03
11/30/1995	2.02
12/1/1995	2.07
12/4/1995	2.12
12/5/1995	2.23
12/6/1995	2.21
12/7/1995	2.21
12/8/1995	2.22
12/11/1995	2.19
12/12/1995	2.24
12/13/1995	2.29
12/14/1995	2.35
12/15/1995	2.36
12/18/1995	2.50
12/19/1995	2.87
12/20/1995	3.07
12/21/1995	3.45
12/22/1995	2.37
12/26/1995	2.47
12/27/1995	2.87
12/28/1995	2.51
12/29/1995	2.62
1/2/1996	2.86
1/3/1996	2.99
1/4/1996	2.96
1/5/1996	2.92
1/9/1996	2.93
1/10/1996	2.81
1/11/1996	2.49
1/12/1996	2.32
1/15/1996	2.02
1/16/1996	2.07
1/17/1996	2.34
1/18/1996	2.26
1/19/1996	2.17
1/22/1996	2.13
1/23/1996	2.45
1/24/1996	2.49

Dates	NYMEX: Henry Hub Natural Gas Prices
1/25/1996	2.34
1/26/1996	2.13
1/29/1996	2.34
1/30/1996	2.50
1/31/1996	2.66
2/1/1996	2.50
2/2/1996	2.47
2/5/1996	2.17
2/6/1996	2.45
2/7/1996	2.51
2/8/1996	2.47
2/9/1996	2.55
2/12/1996	2.46
2/13/1996	2.66
2/14/1996	2.58
2/15/1996	2.58
2/16/1996	2.44
2/20/1996	2.32
2/21/1996	2.45
2/22/1996	2.62
2/23/1996	2.75
2/26/1996	2.34
2/27/1996	2.33
2/28/1996	2.31
2/29/1996	2.24
3/1/1996	2.16
3/4/1996	2.24
3/5/1996	2.17
3/6/1996	2.19
3/7/1996	2.13
3/8/1996	2.10
3/11/1996	2.18
3/12/1996	2.17
3/13/1996	2.24
3/14/1996	2.25
3/15/1996	2.33
3/18/1996	2.51
3/19/1996	2.52
3/20/1996	2.57
3/21/1996	2.74
3/22/1996	2.86
3/25/1996	2.78
3/26/1996	2.27
3/27/1996	2.34
3/28/1996	2.34
3/29/1996	2.34
4/1/1996	2.29
4/2/1996	2.29
4/3/1996	2.30
4/4/1996	2.34
4/8/1996	2.37
4/9/1996	2.37
4/10/1996	2.34
4/11/1996	2.33
4/12/1996	2.41
4/15/1996	2.34
4/16/1996	2.32
4/17/1996	2.34
4/18/1996	2.33
4/19/1996	2.36
4/22/1996	2.36
4/23/1996	2.28
4/24/1996	2.21
4/25/1996	2.26
4/26/1996	2.21
4/29/1996	2.22
4/30/1996	2.22
5/1/1996	2.23
5/2/1996	2.19
5/3/1996	2.13
5/6/1996	2.15
5/7/1996	2.19
5/8/1996	2.19

Dates	NYMEX: Henry Hub Natural Gas Prices
5/9/1996	2.21
5/10/1996	2.20
5/13/1996	2.29
5/14/1996	2.27
5/15/1996	2.30
5/16/1996	2.30
5/17/1996	2.28
5/20/1996	2.32
5/21/1996	2.30
5/22/1996	2.33
5/23/1996	2.34
5/24/1996	2.36
5/28/1996	2.42
5/29/1996	2.44
5/30/1996	2.40
5/31/1996	2.41
6/3/1996	2.41
6/4/1996	2.36
6/5/1996	2.38
6/6/1996	2.36
6/7/1996	2.40
6/10/1996	2.39
6/11/1996	2.43
6/12/1996	2.43
6/13/1996	2.49
6/14/1996	2.51
6/17/1996	2.54
6/18/1996	2.61
6/19/1996	2.63
6/20/1996	2.62
6/21/1996	2.64
6/24/1996	2.65
6/25/1996	2.67
6/26/1996	2.69
6/27/1996	2.79
6/28/1996	2.91
7/1/1996	2.76
7/2/1996	2.81
7/3/1996	2.84
7/8/1996	2.83
7/9/1996	2.74
7/10/1996	2.78
7/11/1996	2.70
7/12/1996	2.76
7/15/1996	2.77
7/16/1996	2.76
7/17/1996	2.64
7/18/1996	2.43
7/19/1996	2.36
7/22/1996	2.18
7/23/1996	2.39
7/24/1996	2.36
7/25/1996	2.32
7/26/1996	2.19
7/29/1996	2.05
7/30/1996	2.14
7/31/1996	2.16
8/1/1996	2.28
8/2/1996	2.32
8/5/1996	2.22
8/6/1996	2.12
8/7/1996	2.09
8/8/1996	2.07
8/9/1996	2.10
8/12/1996	2.07
8/13/1996	2.06
8/14/1996	2.09
8/15/1996	2.04
8/16/1996	2.14
8/19/1996	2.19
8/20/1996	2.05
8/21/1996	2.03
8/22/1996	1.92

Dates	NYMEX: Henry Hub Natural Gas Prices
8/23/1996	1.95
8/26/1996	1.85
8/27/1996	1.88
8/28/1996	1.87
8/29/1996	1.91
8/30/1996	1.86
9/3/1996	1.82
9/4/1996	1.76
9/5/1996	1.81
9/6/1996	1.86
9/9/1996	1.90
9/10/1996	1.79
9/11/1996	1.81
9/12/1996	1.81
9/13/1996	1.86
9/16/1996	1.97
9/17/1996	1.93
9/18/1996	1.97
9/19/1996	2.06
9/20/1996	1.97
9/23/1996	1.87
9/24/1996	1.83
9/25/1996	2.10
9/26/1996	2.14
9/27/1996	2.18
9/30/1996	2.21
10/1/1996	2.19
10/2/1996	2.18
10/3/1996	2.35
10/4/1996	2.40
10/7/1996	2.37
10/8/1996	2.44
10/9/1996	2.47
10/10/1996	2.37
10/11/1996	2.35
10/14/1996	2.30
10/15/1996	2.46
10/16/1996	2.44
10/17/1996	2.43
10/18/1996	2.40
10/21/1996	2.48
10/22/1996	2.63
10/23/1996	2.58
10/24/1996	2.49
10/25/1996	2.65
10/28/1996	2.73
10/29/1996	2.80
10/30/1996	2.86
10/31/1996	2.73
11/1/1996	2.66
11/4/1996	2.57
11/5/1996	2.67
11/6/1996	2.68
11/7/1996	2.64
11/8/1996	2.67
11/11/1996	2.73
11/12/1996	2.65
11/13/1996	2.65
11/14/1996	2.79
11/15/1996	2.91
11/18/1996	2.98
11/19/1996	3.31
11/20/1996	3.63
11/21/1996	3.90
11/22/1996	3.44
11/25/1996	3.49
11/26/1996	3.58
11/27/1996	3.50
12/2/1996	3.25
12/3/1996	3.36
12/4/1996	3.51
12/5/1996	3.78
12/6/1996	3.49

Dates	NYMEX: Henry Hub Natural Gas Prices
12/9/1996	3.22
12/10/1996	3.40
12/11/1996	3.49
12/12/1996	3.53
12/13/1996	3.85
12/16/1996	4.47
12/17/1996	4.17
12/18/1996	4.08
12/19/1996	4.41
12/20/1996	4.57
12/23/1996	4.19
12/24/1996	4.00
12/26/1996	3.38
12/27/1996	2.98
12/30/1996	2.68
12/31/1996	2.76
1/2/1997	2.89
1/3/1997	3.11
1/6/1997	3.64
1/7/1997	3.33
1/8/1997	3.51
1/9/1997	3.48
1/10/1997	3.32
1/13/1997	3.25
1/14/1997	3.39
1/15/1997	3.61
1/16/1997	3.34
1/17/1997	3.26
1/20/1997	3.07
1/21/1997	2.92
1/22/1997	2.91
1/23/1997	2.79
1/24/1997	2.82
1/27/1997	2.99
1/28/1997	2.55
1/29/1997	2.44
1/30/1997	2.49
1/31/1997	2.39
2/3/1997	2.31
2/4/1997	2.50
2/5/1997	2.43
2/6/1997	2.36
2/7/1997	2.18
2/10/1997	2.17
2/11/1997	2.22
2/12/1997	2.09
2/13/1997	2.00
2/14/1997	1.97
2/18/1997	1.96
2/19/1997	2.02
2/20/1997	1.92
2/21/1997	1.94
2/24/1997	1.78
2/25/1997	1.87
2/26/1997	1.87
2/27/1997	1.84
2/28/1997	1.82
3/3/1997	1.80
3/4/1997	1.94
3/5/1997	1.84
3/6/1997	1.89
3/7/1997	1.95
3/10/1997	1.94
3/11/1997	1.92
3/12/1997	1.96
3/13/1997	1.94
3/14/1997	1.96
3/17/1997	1.91
3/18/1997	1.90
3/19/1997	1.90
3/20/1997	1.89
3/21/1997	1.84
3/24/1997	1.81

Dates	NYMEX: Henry Hub Natural Gas Prices
3/25/1997	1.88
3/26/1997	1.88
3/27/1997	1.93
3/31/1997	1.93
4/1/1997	1.88
4/2/1997	1.87
4/3/1997	1.91
4/4/1997	1.94
4/7/1997	1.95
4/8/1997	1.92
4/9/1997	1.90
4/10/1997	1.90
4/11/1997	1.93
4/14/1997	1.95
4/15/1997	1.94
4/16/1997	2.01
4/17/1997	2.07
4/18/1997	2.08
4/21/1997	2.06
4/22/1997	2.11
4/23/1997	2.06
4/24/1997	2.12
4/25/1997	2.13
4/28/1997	2.08
4/29/1997	2.14
4/30/1997	2.18
5/1/1997	2.24
5/2/1997	2.27
5/5/1997	2.22
5/6/1997	2.31
5/7/1997	2.35
5/8/1997	2.27
5/9/1997	2.24
5/12/1997	2.22
5/13/1997	2.19
5/14/1997	2.28
5/15/1997	2.20
5/16/1997	2.25
5/19/1997	2.22
5/20/1997	2.19
5/21/1997	2.21
5/22/1997	2.20
5/23/1997	2.29
5/27/1997	2.36
5/28/1997	2.35
5/29/1997	2.25
5/30/1997	2.24
6/2/1997	2.11
6/3/1997	2.10
6/4/1997	2.16
6/5/1997	2.18
6/6/1997	2.19
6/9/1997	2.14
6/10/1997	2.12
6/11/1997	2.07
6/12/1997	2.08
6/13/1997	2.15
6/16/1997	2.15
6/17/1997	2.16
6/18/1997	2.17
6/19/1997	2.22
6/20/1997	2.24
6/23/1997	2.25
6/24/1997	2.29
6/25/1997	2.23
6/26/1997	2.15
6/27/1997	2.14
6/30/1997	2.14
7/1/1997	2.11
7/2/1997	2.07
7/3/1997	2.10
7/7/1997	2.07
7/8/1997	2.12

Dates	NYMEX: Henry Hub Natural Gas Prices
7/9/1997	2.10
7/10/1997	2.12
7/11/1997	2.09
7/14/1997	2.15
7/15/1997	2.16
7/16/1997	2.17
7/17/1997	2.18
7/18/1997	2.17
7/21/1997	2.09
7/22/1997	2.12
7/23/1997	2.15
7/24/1997	2.18
7/25/1997	2.15
7/28/1997	2.18
7/29/1997	2.16
7/30/1997	2.16
7/31/1997	2.18
8/1/1997	2.24
8/4/1997	2.37
8/5/1997	2.37
8/6/1997	2.35
8/7/1997	2.44
8/8/1997	2.50
8/11/1997	2.59
8/12/1997	2.48
8/13/1997	2.47
8/14/1997	2.43
8/15/1997	2.43
8/18/1997	2.43
8/19/1997	2.53
8/20/1997	2.45
8/21/1997	2.37
8/22/1997	2.45
8/25/1997	2.49
8/26/1997	2.51
8/27/1997	2.52
8/28/1997	2.66
8/29/1997	2.71
9/2/1997	2.79
9/3/1997	2.81
9/4/1997	2.68
9/5/1997	2.70
9/8/1997	2.69
9/9/1997	2.70
9/10/1997	2.70
9/11/1997	2.77
9/12/1997	2.80
9/15/1997	2.79
9/16/1997	2.72
9/17/1997	2.68
9/18/1997	2.89
9/19/1997	2.84
9/22/1997	2.99
9/23/1997	3.05
9/24/1997	3.02
9/25/1997	3.30
9/26/1997	3.35
9/29/1997	3.02
9/30/1997	3.08
10/1/1997	3.12
10/2/1997	3.11
10/3/1997	3.13
10/6/1997	2.98
10/7/1997	2.88
10/8/1997	2.92
10/9/1997	2.93
10/10/1997	3.08
10/13/1997	3.03
10/14/1997	3.01
10/15/1997	3.04
10/16/1997	3.25
10/17/1997	3.29
10/20/1997	3.39

Dates	NYMEX: Henry Hub Natural Gas Prices
10/21/1997	3.40
10/22/1997	3.54
10/23/1997	3.43
10/24/1997	3.55
10/27/1997	3.79
10/28/1997	3.47
10/29/1997	3.27
10/30/1997	3.48
10/31/1997	3.55
11/3/1997	3.37
11/4/1997	3.42
11/5/1997	3.47
11/6/1997	3.39
11/7/1997	3.26
11/10/1997	3.43
11/11/1997	3.50
11/12/1997	3.48
11/13/1997	3.25
11/14/1997	3.03
11/17/1997	2.97
11/18/1997	2.95
11/19/1997	2.86
11/20/1997	2.71
11/21/1997	2.76
11/24/1997	2.58
11/25/1997	2.66
11/26/1997	2.58
12/1/1997	2.77
12/2/1997	2.72
12/3/1997	2.61
12/4/1997	2.46
12/5/1997	2.45
12/8/1997	2.42
12/9/1997	2.53
12/10/1997	2.35
12/11/1997	2.34
12/12/1997	2.36
12/15/1997	2.31
12/16/1997	2.41
12/17/1997	2.44
12/18/1997	2.41
12/19/1997	2.47
12/22/1997	2.37
12/23/1997	2.22
12/24/1997	2.25
12/26/1997	2.25
12/29/1997	2.31
12/30/1997	2.24
12/31/1997	2.26
1/2/1998	2.15
1/5/1998	2.21
1/6/1998	2.18
1/7/1998	2.15
1/8/1998	2.05
1/9/1998	2.05
1/12/1998	2.00
1/13/1998	2.01
1/14/1998	2.02
1/15/1998	2.09
1/16/1998	2.18
1/20/1998	2.12
1/21/1998	2.08
1/22/1998	2.16
1/23/1998	2.12
1/26/1998	2.06
1/27/1998	2.04
1/28/1998	2.00
1/29/1998	2.10
1/30/1998	2.26
2/2/1998	2.33
2/3/1998	2.31
2/4/1998	2.30
2/5/1998	2.38

Dates	NYMEX: Henry Hub Natural Gas Prices
2/6/1998	2.36
2/9/1998	2.22
2/10/1998	2.27
2/11/1998	2.24
2/12/1998	2.29
2/13/1998	2.21
2/17/1998	2.17
2/18/1998	2.24
2/19/1998	2.22
2/20/1998	2.20
2/23/1998	2.18
2/24/1998	2.22
2/25/1998	2.29
2/26/1998	2.28
2/27/1998	2.32
3/2/1998	2.29
3/3/1998	2.24
3/4/1998	2.23
3/5/1998	2.14
3/6/1998	2.13
3/9/1998	2.17
3/10/1998	2.14
3/11/1998	2.17
3/12/1998	2.13
3/13/1998	2.14
3/16/1998	2.16
3/17/1998	2.16
3/18/1998	2.24
3/19/1998	2.30
3/20/1998	2.34
3/23/1998	2.35
3/24/1998	2.33
3/25/1998	2.37
3/26/1998	2.34
3/27/1998	2.30
3/30/1998	2.41
3/31/1998	2.52
4/1/1998	2.50
4/2/1998	2.56
4/3/1998	2.56
4/6/1998	2.54
4/7/1998	2.67
4/8/1998	2.69
4/9/1998	2.66
4/13/1998	2.48
4/14/1998	2.50
4/15/1998	2.52
4/16/1998	2.48
4/17/1998	2.48
4/20/1998	2.47
4/21/1998	2.56
4/22/1998	2.40
4/23/1998	2.33
4/24/1998	2.34
4/27/1998	2.27
4/28/1998	2.26
4/29/1998	2.30
4/30/1998	2.22
5/1/1998	2.20
5/4/1998	2.26
5/5/1998	2.22
5/6/1998	2.14
5/7/1998	2.16
5/8/1998	2.17
5/11/1998	2.22
5/12/1998	2.26
5/13/1998	2.20
5/14/1998	2.20
5/15/1998	2.18
5/18/1998	2.13
5/19/1998	2.15
5/20/1998	2.17
5/21/1998	2.07

Dates	NYMEX: Henry Hub Natural Gas Prices
5/22/1998	2.09
5/26/1998	2.10
5/27/1998	2.02
5/28/1998	2.07
5/29/1998	2.17
6/1/1998	2.19
6/2/1998	2.16
6/3/1998	2.11
6/4/1998	2.02
6/5/1998	2.03
6/8/1998	1.98
6/9/1998	1.94
6/10/1998	1.93
6/11/1998	1.97
6/12/1998	2.04
6/15/1998	2.10
6/16/1998	1.99
6/17/1998	2.17
6/18/1998	2.14
6/19/1998	2.28
6/22/1998	2.36
6/23/1998	2.39
6/24/1998	2.34
6/25/1998	2.36
6/26/1998	2.36
6/29/1998	2.39
6/30/1998	2.47
7/1/1998	2.45
7/2/1998	2.44
7/6/1998	2.37
7/7/1998	2.37
7/8/1998	2.37
7/9/1998	2.35
7/10/1998	2.31
7/13/1998	2.25
7/14/1998	2.27
7/15/1998	2.23
7/16/1998	2.13
7/17/1998	2.17
7/20/1998	2.10
7/21/1998	1.95
7/22/1998	1.93
7/23/1998	1.95
7/24/1998	2.03
7/27/1998	1.97
7/28/1998	1.95
7/29/1998	1.94
7/30/1998	1.91
7/31/1998	1.84
8/3/1998	1.87
8/4/1998	1.90
8/5/1998	1.87
8/6/1998	1.83
8/7/1998	1.83
8/10/1998	1.90
8/11/1998	1.81
8/12/1998	1.82
8/13/1998	1.82
8/14/1998	1.88
8/17/1998	2.04
8/18/1998	1.98
8/19/1998	1.92
8/20/1998	1.95
8/21/1998	1.95
8/24/1998	1.93
8/25/1998	1.83
8/26/1998	1.76
8/27/1998	1.67
8/28/1998	1.66
8/31/1998	1.75
9/1/1998	1.79
9/2/1998	1.65
9/3/1998	1.71

Dates	NYMEX: Henry Hub Natural Gas Prices
9/4/1998	1.78
9/8/1998	1.87
9/9/1998	1.83
9/10/1998	1.96
9/11/1998	1.88
9/14/1998	1.95
9/15/1998	2.12
9/16/1998	2.24
9/17/1998	2.14
9/18/1998	2.26
9/21/1998	2.19
9/22/1998	2.19
9/23/1998	2.13
9/24/1998	2.18
9/25/1998	2.18
9/28/1998	2.03
9/29/1998	2.35
9/30/1998	2.43
10/1/1998	2.41
10/2/1998	2.43
10/5/1998	2.39
10/6/1998	2.35
10/7/1998	2.39
10/8/1998	2.25
10/9/1998	2.19
10/12/1998	2.09
10/13/1998	2.08
10/14/1998	2.04
10/15/1998	2.10
10/16/1998	2.11
10/19/1998	2.14
10/20/1998	2.20
10/21/1998	2.18
10/22/1998	2.18
10/23/1998	2.16
10/26/1998	2.30
10/27/1998	2.11
10/28/1998	1.97
10/29/1998	2.35
10/30/1998	2.28
11/2/1998	2.39
11/3/1998	2.44
11/4/1998	2.40
11/5/1998	2.55
11/6/1998	2.55
11/9/1998	2.44
11/10/1998	2.48
11/11/1998	2.43
11/12/1998	2.39
11/13/1998	2.46
11/16/1998	2.31
11/17/1998	2.28
11/18/1998	2.20
11/19/1998	2.21
11/20/1998	2.16
11/23/1998	2.10
11/24/1998	2.15
11/25/1998	2.20
11/30/1998	1.98
12/1/1998	1.96
12/2/1998	1.89
12/3/1998	1.96
12/4/1998	1.98
12/7/1998	2.10
12/8/1998	1.91
12/9/1998	1.85
12/10/1998	1.84
12/11/1998	1.86
12/14/1998	1.95
12/15/1998	1.95
12/16/1998	1.99
12/17/1998	2.06
12/18/1998	2.07

Dates	NYMEX: Henry Hub Natural Gas Prices
12/21/1998	1.95
12/22/1998	1.93
12/23/1998	1.91
12/24/1998	1.88
12/28/1998	1.79
12/29/1998	1.77
12/30/1998	1.89
12/31/1998	1.95
1/4/1999	2.07
1/5/1999	1.98
1/6/1999	1.93
1/7/1999	1.84
1/8/1999	1.83
1/11/1999	1.78
1/12/1999	1.82
1/13/1999	1.77
1/14/1999	1.81
1/15/1999	1.80
1/19/1999	1.82
1/20/1999	1.83
1/21/1999	1.89
1/22/1999	1.78
1/25/1999	1.71
1/26/1999	1.71
1/27/1999	1.81
1/28/1999	1.86
1/29/1999	1.78
2/1/1999	1.74
2/2/1999	1.82
2/3/1999	1.77
2/4/1999	1.83
2/5/1999	1.80
2/8/1999	1.82
2/9/1999	1.84
2/10/1999	1.78
2/11/1999	1.84
2/12/1999	1.81
2/16/1999	1.80
2/17/1999	1.78
2/18/1999	1.75
2/19/1999	1.75
2/22/1999	1.70
2/23/1999	1.71
2/24/1999	1.67
2/25/1999	1.66
2/26/1999	1.63
3/1/1999	1.70
3/2/1999	1.70
3/3/1999	1.72
3/4/1999	1.76
3/5/1999	1.85
3/8/1999	1.86
3/9/1999	1.93
3/10/1999	1.94
3/11/1999	1.82
3/12/1999	1.76
3/15/1999	1.72
3/16/1999	1.72
3/17/1999	1.75
3/18/1999	1.69
3/19/1999	1.70
3/22/1999	1.77
3/23/1999	1.75
3/24/1999	1.76
3/25/1999	1.84
3/26/1999	1.85
3/29/1999	1.85
3/30/1999	1.98
3/31/1999	2.01
4/1/1999	2.04
4/5/1999	2.03
4/6/1999	2.01
4/7/1999	2.02

Dates	NYMEX: Henry Hub Natural Gas Prices
4/8/1999	2.07
4/9/1999	2.10
4/12/1999	2.13
4/13/1999	2.14
4/14/1999	2.10
4/15/1999	2.14
4/16/1999	2.12
4/19/1999	2.17
4/20/1999	2.14
4/21/1999	2.17
4/22/1999	2.23
4/23/1999	2.23
4/26/1999	2.30
4/27/1999	2.33
4/28/1999	2.35
4/29/1999	2.34
4/30/1999	2.25
5/3/1999	2.31
5/4/1999	2.36
5/5/1999	2.36
5/6/1999	2.30
5/7/1999	2.27
5/10/1999	2.30
5/11/1999	2.24
5/12/1999	2.19
5/13/1999	2.28
5/14/1999	2.29
5/17/1999	2.34
5/18/1999	2.26
5/19/1999	2.25
5/20/1999	2.22
5/21/1999	2.23
5/24/1999	2.18
5/25/1999	2.20
5/26/1999	2.23
5/27/1999	2.28
5/28/1999	2.36
6/1/1999	2.34
6/2/1999	2.41
6/3/1999	2.40
6/4/1999	2.44
6/7/1999	2.44
6/8/1999	2.39
6/9/1999	2.46
6/10/1999	2.36
6/11/1999	2.38
6/14/1999	2.37
6/15/1999	2.37
6/16/1999	2.33
6/17/1999	2.29
6/18/1999	2.31
6/21/1999	2.24
6/22/1999	2.24
6/23/1999	2.26
6/24/1999	2.30
6/25/1999	2.26
6/28/1999	2.26
6/29/1999	2.40
6/30/1999	2.39
7/1/1999	2.31
7/2/1999	2.29
7/6/1999	2.19
7/7/1999	2.14
7/8/1999	2.16
7/9/1999	2.16
7/12/1999	2.14
7/13/1999	2.18
7/14/1999	2.15
7/15/1999	2.18
7/16/1999	2.19
7/19/1999	2.21
7/20/1999	2.20
7/21/1999	2.25

Dates	NYMEX: Henry Hub Natural Gas Prices
7/22/1999	2.40
7/23/1999	2.53
7/26/1999	2.54
7/27/1999	2.57
7/28/1999	2.60
7/29/1999	2.57
7/30/1999	2.54
8/2/1999	2.58
8/3/1999	2.60
8/4/1999	2.64
8/5/1999	2.65
8/6/1999	2.70
8/9/1999	2.72
8/10/1999	2.75
8/11/1999	2.70
8/12/1999	2.72
8/13/1999	2.75
8/16/1999	2.70
8/17/1999	2.71
8/18/1999	2.79
8/19/1999	2.90
8/20/1999	2.94
8/23/1999	3.06
8/24/1999	3.06
8/25/1999	3.03
8/26/1999	2.95
8/27/1999	2.91
8/30/1999	2.97
8/31/1999	2.83
9/1/1999	2.74
9/2/1999	2.47
9/3/1999	2.56
9/7/1999	2.68
9/8/1999	2.61
9/9/1999	2.85
9/10/1999	2.80
9/13/1999	2.78
9/14/1999	2.64
9/15/1999	2.63
9/16/1999	2.55
9/17/1999	2.61
9/20/1999	2.52
9/21/1999	2.43
9/22/1999	2.43
9/23/1999	2.70
9/24/1999	2.63
9/27/1999	2.63
9/28/1999	2.56
9/29/1999	2.82
9/30/1999	2.74
10/1/1999	2.79
10/4/1999	2.63
10/5/1999	2.59
10/6/1999	2.60
10/7/1999	2.64
10/8/1999	2.69
10/11/1999	2.83
10/12/1999	2.93
10/13/1999	2.97
10/14/1999	2.83
10/15/1999	2.98
10/18/1999	2.92
10/19/1999	3.01
10/20/1999	2.98
10/21/1999	3.06
10/22/1999	3.07
10/25/1999	3.02
10/26/1999	3.01
10/27/1999	3.09
10/28/1999	2.97
10/29/1999	2.96
11/1/1999	2.91
11/2/1999	2.84

Dates	NYMEX: Henry Hub Natural Gas Prices
11/3/1999	2.87
11/4/1999	2.83
11/5/1999	2.88
11/8/1999	2.67
11/9/1999	2.64
11/10/1999	2.66
11/11/1999	2.52
11/12/1999	2.65
11/15/1999	2.52
11/16/1999	2.45
11/17/1999	2.46
11/18/1999	2.50
11/19/1999	2.43
11/22/1999	2.20
11/23/1999	2.19
11/24/1999	2.12
11/29/1999	2.35
11/30/1999	2.30
12/1/1999	2.39
12/2/1999	2.46
12/3/1999	2.33
12/6/1999	2.22
12/7/1999	2.27
12/8/1999	2.29
12/9/1999	2.29
12/10/1999	2.45
12/13/1999	2.51
12/14/1999	2.59
12/15/1999	2.49
12/16/1999	2.64
12/17/1999	2.66
12/20/1999	2.63
12/21/1999	2.52
12/22/1999	2.44
12/23/1999	2.40
12/27/1999	2.27
12/28/1999	2.34
12/29/1999	2.39
12/30/1999	2.33
1/4/2000	2.18
1/5/2000	2.17
1/6/2000	2.20
1/7/2000	2.17
1/10/2000	2.22
1/11/2000	2.26
1/12/2000	2.24
1/13/2000	2.25
1/14/2000	2.32
1/18/2000	2.38
1/19/2000	2.42
1/20/2000	2.56
1/21/2000	2.49
1/24/2000	2.53
1/25/2000	2.62
1/26/2000	2.52
1/27/2000	2.61
1/28/2000	2.53
1/31/2000	2.66
2/1/2000	2.70
2/2/2000	2.76
2/3/2000	2.66
2/4/2000	2.74
2/7/2000	2.56
2/8/2000	2.50
2/9/2000	2.54
2/10/2000	2.59
2/11/2000	2.57
2/14/2000	2.54
2/15/2000	2.62
2/16/2000	2.56
2/17/2000	2.67
2/18/2000	2.63
2/22/2000	2.52

Dates	NYMEX: Henry Hub Natural Gas Prices
2/23/2000	2.53
2/24/2000	2.55
2/25/2000	2.60
2/28/2000	2.69
2/29/2000	2.76
3/1/2000	2.82
3/2/2000	2.78
3/3/2000	2.83
3/6/2000	2.85
3/7/2000	2.80
3/8/2000	2.71
3/9/2000	2.79
3/10/2000	2.77
3/13/2000	2.86
3/14/2000	2.81
3/15/2000	2.87
3/16/2000	2.85
3/17/2000	2.79
3/20/2000	2.71
3/21/2000	2.75
3/22/2000	2.79
3/23/2000	2.85
3/24/2000	2.84
3/27/2000	2.91
3/28/2000	2.96
3/29/2000	2.90
3/30/2000	2.87
3/31/2000	2.95
4/3/2000	2.89
4/4/2000	2.82
4/5/2000	2.89
4/6/2000	2.96
4/7/2000	2.97
4/10/2000	2.97
4/11/2000	2.95
4/12/2000	3.02
4/13/2000	3.09
4/14/2000	3.08
4/17/2000	3.16
4/18/2000	3.10
4/19/2000	3.06
4/20/2000	3.07
4/24/2000	3.14
4/25/2000	3.11
4/26/2000	3.09
4/27/2000	3.06
4/28/2000	3.14
5/1/2000	3.22
5/2/2000	3.22
5/3/2000	3.13
5/4/2000	3.11
5/5/2000	3.03
5/8/2000	3.17
5/9/2000	3.18
5/10/2000	3.32
5/11/2000	3.35
5/12/2000	3.35
5/15/2000	3.40
5/16/2000	3.45
5/17/2000	3.69
5/18/2000	3.71
5/19/2000	3.83
5/22/2000	3.75
5/23/2000	3.81
5/24/2000	4.07
5/25/2000	4.24
5/26/2000	4.41
5/30/2000	4.35
5/31/2000	4.36
6/1/2000	4.06
6/2/2000	4.04
6/5/2000	4.40
6/6/2000	4.29

Dates	NYMEX: Henry Hub Natural Gas Prices
6/7/2000	3.95
6/8/2000	4.13
6/9/2000	4.16
6/12/2000	4.21
6/13/2000	4.16
6/14/2000	4.26
6/15/2000	4.46
6/16/2000	4.49
6/19/2000	4.06
6/20/2000	4.11
6/21/2000	4.38
6/22/2000	4.55
6/23/2000	4.45
6/26/2000	4.56
6/27/2000	4.69
6/28/2000	4.37
6/29/2000	4.42
6/30/2000	4.48
7/5/2000	4.11
7/6/2000	4.07
7/7/2000	4.26
7/10/2000	4.23
7/11/2000	4.26
7/12/2000	4.03
7/13/2000	4.17
7/14/2000	4.15
7/17/2000	4.00
7/18/2000	4.04
7/19/2000	3.88
7/20/2000	3.86
7/21/2000	3.83
7/24/2000	3.72
7/25/2000	3.66
7/26/2000	3.76
7/27/2000	3.82
7/28/2000	3.85
7/31/2000	3.77
8/1/2000	3.99
8/2/2000	4.21
8/3/2000	4.25
8/4/2000	4.30
8/7/2000	4.35
8/8/2000	4.41
8/9/2000	4.42
8/10/2000	4.47
8/11/2000	4.48
8/14/2000	4.32
8/15/2000	4.23
8/16/2000	4.41
8/17/2000	4.41
8/18/2000	4.44
8/21/2000	4.75
8/22/2000	4.52
8/23/2000	4.61
8/24/2000	4.54
8/25/2000	4.63
8/28/2000	4.69
8/29/2000	4.62
8/30/2000	4.80
8/31/2000	4.78
9/1/2000	4.84
9/5/2000	4.95
9/6/2000	5.07
9/7/2000	5.00
9/8/2000	4.88
9/11/2000	5.01
9/12/2000	5.01
9/13/2000	5.06
9/14/2000	5.20
9/15/2000	5.21
9/18/2000	5.30
9/19/2000	5.36
9/20/2000	5.32

Dates	NYMEX: Henry Hub Natural Gas Prices
9/21/2000	5.29
9/22/2000	5.13
9/25/2000	5.28
9/26/2000	5.32
9/27/2000	5.31
9/28/2000	5.12
9/29/2000	5.19
10/2/2000	5.35
10/3/2000	5.35
10/4/2000	5.29
10/5/2000	5.15
10/6/2000	5.01
10/9/2000	5.15
10/10/2000	5.13
10/11/2000	5.51
10/12/2000	5.63
10/13/2000	5.54
10/16/2000	5.36
10/17/2000	5.44
10/18/2000	5.23
10/19/2000	4.95
10/20/2000	4.94
10/23/2000	5.07
10/24/2000	4.82
10/25/2000	4.66
10/26/2000	4.66
10/27/2000	4.54
10/30/2000	4.49
10/31/2000	4.49
11/1/2000	4.69
11/2/2000	4.76
11/3/2000	4.93
11/6/2000	4.85
11/7/2000	5.08
11/8/2000	5.34
11/9/2000	5.45
11/10/2000	5.46
11/13/2000	5.70
11/14/2000	6.02
11/15/2000	6.27
11/16/2000	5.80
11/17/2000	6.10
11/20/2000	6.25
11/21/2000	6.41
11/22/2000	6.58
11/27/2000	6.37
11/28/2000	6.02
11/29/2000	6.18
11/30/2000	6.59
12/1/2000	6.67
12/4/2000	7.43
12/5/2000	7.38
12/6/2000	8.49
12/7/2000	8.37
12/8/2000	8.58
12/11/2000	9.41
12/12/2000	8.15
12/13/2000	7.54
12/14/2000	7.41
12/15/2000	8.40
12/18/2000	8.53
12/19/2000	9.10
12/20/2000	9.33
12/21/2000	9.83
12/22/2000	9.58
12/26/2000	9.81
12/27/2000	9.98
12/28/2000	9.26
12/29/2000	9.78
1/2/2001	8.36
1/3/2001	8.19
1/4/2001	8.97
1/5/2001	9.26

Dates	NYMEX: Henry Hub Natural Gas Prices
1/8/2001	9.69
1/9/2001	9.82
1/10/2001	9.13
1/11/2001	8.71
1/12/2001	8.47
1/16/2001	8.10
1/17/2001	6.91
1/18/2001	7.14
1/19/2001	7.46
1/22/2001	7.46
1/23/2001	6.95
1/24/2001	7.12
1/25/2001	7.27
1/26/2001	7.26
1/29/2001	6.29
1/30/2001	6.10
1/31/2001	5.71
2/1/2001	6.38
2/2/2001	6.74
2/5/2001	5.71
2/6/2001	5.76
2/7/2001	6.24
2/8/2001	6.16
2/9/2001	6.21
2/12/2001	5.82
2/13/2001	6.02
2/14/2001	5.52
2/15/2001	5.59
2/16/2001	5.57
2/20/2001	5.28
2/21/2001	5.15
2/22/2001	5.14
2/23/2001	5.13
2/26/2001	5.00
2/27/2001	5.28
2/28/2001	5.24
3/1/2001	5.19
3/2/2001	5.27
3/5/2001	5.34
3/6/2001	5.32
3/7/2001	5.35
3/8/2001	5.29
3/9/2001	5.07
3/12/2001	5.16
3/13/2001	5.01
3/14/2001	4.91
3/15/2001	4.93
3/16/2001	5.04
3/19/2001	5.06
3/20/2001	5.29
3/21/2001	5.04
3/22/2001	5.21
3/23/2001	5.27
3/26/2001	5.32
3/27/2001	5.62
3/28/2001	5.38
3/29/2001	5.27
3/30/2001	5.03
4/2/2001	5.10
4/3/2001	5.12
4/4/2001	5.18
4/5/2001	5.42
4/6/2001	5.39
4/9/2001	5.48
4/10/2001	5.56
4/11/2001	5.39
4/12/2001	5.38
4/16/2001	5.52
4/17/2001	5.25
4/18/2001	5.15
4/19/2001	5.10
4/20/2001	5.13
4/23/2001	5.13

Dates	NYMEX: Henry Hub Natural Gas Prices
4/24/2001	5.08
4/25/2001	4.98
4/26/2001	4.89
4/27/2001	4.87
4/30/2001	4.70
5/1/2001	4.64
5/2/2001	4.48
5/3/2001	4.53
5/4/2001	4.49
5/7/2001	4.24
5/8/2001	4.28
5/9/2001	4.20
5/10/2001	4.35
5/11/2001	4.28
5/14/2001	4.39
5/15/2001	4.65
5/16/2001	4.30
5/17/2001	4.25
5/18/2001	4.29
5/21/2001	4.11
5/22/2001	4.12
5/23/2001	4.11
5/24/2001	4.05
5/25/2001	3.97
5/29/2001	3.74
5/30/2001	3.98
5/31/2001	3.91
6/1/2001	3.93
6/4/2001	4.07
6/5/2001	3.89
6/6/2001	3.80
6/7/2001	3.79
6/8/2001	3.92
6/11/2001	4.18
6/12/2001	4.30
6/13/2001	4.11
6/14/2001	4.04
6/15/2001	3.98
6/18/2001	3.94
6/19/2001	3.98
6/20/2001	3.73
6/21/2001	3.75
6/22/2001	3.74
6/25/2001	3.45
6/26/2001	3.40
6/27/2001	3.18
6/28/2001	3.28
6/29/2001	3.10
7/2/2001	3.12
7/3/2001	3.20
7/5/2001	3.14
7/6/2001	3.22
7/9/2001	3.15
7/10/2001	3.28
7/11/2001	3.34
7/12/2001	3.43
7/13/2001	3.25
7/16/2001	3.07
7/17/2001	3.17
7/18/2001	3.09
7/19/2001	2.94
7/20/2001	2.96
7/23/2001	2.98
7/24/2001	2.97
7/25/2001	3.28
7/26/2001	3.13
7/27/2001	3.17
7/30/2001	3.35
7/31/2001	3.30
8/1/2001	3.08
8/2/2001	3.19
8/3/2001	2.97
8/6/2001	3.03

Dates	NYMEX: Henry Hub Natural Gas Prices
8/7/2001	2.97
8/8/2001	3.04
8/9/2001	2.96
8/10/2001	3.04
8/13/2001	3.00
8/14/2001	3.09
8/15/2001	3.47
8/16/2001	3.37
8/17/2001	3.30
8/20/2001	3.19
8/21/2001	3.17
8/22/2001	2.85
8/23/2001	2.81
8/24/2001	2.71
8/27/2001	2.54
8/28/2001	2.42
8/29/2001	2.30
8/30/2001	2.40
8/31/2001	2.38
9/4/2001	2.36
9/5/2001	2.42
9/6/2001	2.44
9/7/2001	2.50
9/10/2001	2.39
9/14/2001	2.55
9/17/2001	2.37
9/18/2001	2.23
9/19/2001	2.10
9/20/2001	2.14
9/21/2001	2.10
9/24/2001	1.91
9/25/2001	1.93
9/26/2001	1.83
9/27/2001	2.25
9/28/2001	2.24
10/1/2001	2.21
10/2/2001	2.27
10/3/2001	2.32
10/4/2001	2.41
10/5/2001	2.23
10/8/2001	2.27
10/9/2001	2.39
10/10/2001	2.48
10/11/2001	2.53
10/12/2001	2.43
10/15/2001	2.38
10/16/2001	2.59
10/17/2001	2.42
10/18/2001	2.49
10/19/2001	2.68
10/22/2001	2.81
10/23/2001	2.68
10/24/2001	2.98
10/25/2001	2.94
10/26/2001	3.04
10/29/2001	3.20
10/30/2001	3.18
10/31/2001	3.29
11/1/2001	3.29
11/2/2001	3.25
11/5/2001	2.92
11/6/2001	2.88
11/7/2001	2.87
11/8/2001	2.96
11/9/2001	2.93
11/12/2001	2.73
11/13/2001	2.80
11/14/2001	2.68
11/15/2001	2.55
11/16/2001	2.64
11/19/2001	2.79
11/20/2001	2.85
11/21/2001	2.81

Dates	NYMEX: Henry Hub Natural Gas Prices
11/26/2001	2.70
11/27/2001	2.61
11/28/2001	2.32
11/29/2001	2.56
11/30/2001	2.70
12/3/2001	2.63
12/4/2001	2.56
12/5/2001	2.49
12/6/2001	2.57
12/7/2001	2.57
12/10/2001	2.75
12/11/2001	2.80
12/12/2001	2.72
12/13/2001	2.76
12/14/2001	2.85
12/17/2001	2.69
12/18/2001	2.66
12/19/2001	2.62
12/20/2001	2.69
12/21/2001	2.90
12/26/2001	2.91
12/27/2001	2.56
12/28/2001	2.77
12/31/2001	2.57
1/2/2002	2.47
1/3/2002	2.27
1/4/2002	2.28
1/7/2002	2.27
1/8/2002	2.28
1/9/2002	2.23
1/10/2002	2.19
1/11/2002	2.20
1/14/2002	2.25
1/15/2002	2.29
1/16/2002	2.39
1/17/2002	2.25
1/18/2002	2.24
1/22/2002	2.11
1/23/2002	2.08
1/24/2002	2.05
1/25/2002	2.04
1/28/2002	1.91
1/29/2002	2.01
1/30/2002	2.08
1/31/2002	2.14
2/1/2002	2.14
2/4/2002	2.12
2/5/2002	2.07
2/6/2002	2.10
2/7/2002	2.15
2/8/2002	2.19
2/11/2002	2.29
2/12/2002	2.31
2/13/2002	2.25
2/14/2002	2.19
2/15/2002	2.21
2/19/2002	2.40
2/20/2002	2.39
2/21/2002	2.43
2/22/2002	2.45
2/25/2002	2.31
2/26/2002	2.39
2/27/2002	2.43
2/28/2002	2.36
3/1/2002	2.36
3/4/2002	2.49
3/5/2002	2.47
3/6/2002	2.57
3/7/2002	2.76
3/8/2002	2.80
3/11/2002	3.02
3/12/2002	3.02
3/13/2002	2.87

Dates	*NYMEX: Henry Hub* Natural Gas Prices
3/14/2002	2.92
3/15/2002	3.08
3/18/2002	3.31
3/19/2002	3.26
3/20/2002	3.11
3/21/2002	3.43
3/22/2002	3.33
3/25/2002	3.46
3/26/2002	3.47
3/27/2002	3.29
3/28/2002	3.28
4/1/2002	3.53
4/2/2002	3.65
4/3/2002	3.51
4/4/2002	3.33
4/5/2002	3.28
4/8/2002	3.33
4/9/2002	3.20
4/10/2002	3.18
4/11/2002	3.10
4/12/2002	3.13
4/15/2002	3.43
4/16/2002	3.29
4/17/2002	3.48
4/18/2002	3.49
4/19/2002	3.53
4/22/2002	3.60
4/23/2002	3.59
4/24/2002	3.42
4/25/2002	3.30
4/26/2002	3.32
4/29/2002	3.56
4/30/2002	3.80
5/1/2002	3.74
5/2/2002	3.68
5/3/2002	3.75
5/6/2002	3.60
5/7/2002	3.67
5/8/2002	3.75
5/9/2002	3.72
5/10/2002	3.75
5/13/2002	3.78
5/14/2002	3.86
5/15/2002	3.64
5/16/2002	3.61
5/17/2002	3.60
5/20/2002	3.49
5/21/2002	3.40
5/22/2002	3.46
5/23/2002	3.44
5/24/2002	3.35
5/28/2002	3.28
5/29/2002	3.42
5/30/2002	3.22
5/31/2002	3.22
6/3/2002	3.24
6/4/2002	3.33
6/5/2002	3.26
6/6/2002	3.18
6/7/2002	3.20
6/10/2002	3.14
6/11/2002	3.13
6/12/2002	3.06
6/13/2002	3.21
6/14/2002	3.34
6/17/2002	3.38
6/18/2002	3.31
6/19/2002	3.31
6/20/2002	3.22
6/21/2002	3.24
6/24/2002	3.43
6/25/2002	3.45
6/26/2002	3.28

Dates	NYMEX: Henry Hub Natural Gas Prices
6/27/2002	3.24
6/28/2002	3.25
7/1/2002	3.19
7/2/2002	3.15
7/3/2002	3.14
7/8/2002	2.94
7/9/2002	2.99
7/10/2002	2.86
7/11/2002	2.83
7/12/2002	2.79
7/15/2002	2.78
7/16/2002	2.86
7/17/2002	2.84
7/18/2002	2.94
7/19/2002	2.93
7/22/2002	2.95
7/23/2002	2.89
7/24/2002	3.04
7/25/2002	2.90
7/26/2002	2.94
7/29/2002	2.98
7/30/2002	2.89
7/31/2002	2.95
8/1/2002	2.84
8/2/2002	2.86
8/5/2002	2.68
8/6/2002	2.72
8/7/2002	2.66
8/8/2002	2.75
8/9/2002	2.76
8/12/2002	2.97
8/13/2002	2.98
8/14/2002	2.91
8/15/2002	3.13
8/16/2002	3.15
8/19/2002	3.27
8/20/2002	3.17
8/21/2002	3.27
8/22/2002	3.52
8/23/2002	3.49
8/26/2002	3.62
8/27/2002	3.48
8/28/2002	3.29
8/29/2002	3.25
8/30/2002	3.30
9/3/2002	3.13
9/4/2002	3.19
9/5/2002	3.34
9/6/2002	3.27
9/9/2002	3.40
9/10/2002	3.36
9/11/2002	3.25
9/12/2002	3.33
9/13/2002	3.47
9/16/2002	3.51
9/17/2002	3.68
9/18/2002	3.79
9/19/2002	3.86
9/20/2002	3.76
9/23/2002	3.98
9/24/2002	3.74
9/25/2002	3.49
9/26/2002	3.69
9/27/2002	4.04
9/30/2002	4.14
10/1/2002	4.07
10/2/2002	4.16
10/3/2002	3.72
10/4/2002	3.74
10/7/2002	3.74
10/8/2002	3.86
10/9/2002	3.92
10/10/2002	3.83

Dates	NYMEX: Henry Hub Natural Gas Prices
10/11/2002	4.15
10/14/2002	4.30
10/15/2002	4.25
10/16/2002	4.23
10/17/2002	4.30
10/18/2002	4.24
10/21/2002	4.16
10/22/2002	4.11
10/23/2002	4.26
10/24/2002	4.13
10/25/2002	4.03
10/28/2002	4.18
10/29/2002	4.13
10/30/2002	4.39
10/31/2002	4.16
11/1/2002	4.06
11/4/2002	3.86
11/5/2002	3.88
11/6/2002	3.85
11/7/2002	3.83
11/8/2002	3.90
11/11/2002	3.78
11/12/2002	3.87
11/13/2002	3.88
11/14/2002	3.87
11/15/2002	3.98
11/18/2002	4.26
11/19/2002	4.26
11/20/2002	4.25
11/21/2002	4.35
11/22/2002	4.26
11/25/2002	4.26
11/26/2002	4.14
11/27/2002	4.20
12/2/2002	4.32
12/3/2002	4.23
12/4/2002	4.30
12/5/2002	4.41
12/6/2002	4.38
12/9/2002	4.36
12/10/2002	4.64
12/11/2002	4.71
12/12/2002	5.09
12/13/2002	5.28
12/16/2002	5.34
12/17/2002	5.24
12/18/2002	5.28
12/19/2002	5.05
12/20/2002	5.18
12/23/2002	5.12
12/24/2002	5.15
12/26/2002	4.96
12/27/2002	4.99
12/30/2002	4.80
12/31/2002	4.79
1/2/2003	5.25
1/3/2003	5.34
1/6/2003	4.94
1/7/2003	5.13
1/8/2003	5.16
1/9/2003	5.30
1/10/2003	5.14
1/13/2003	5.25
1/14/2003	5.11
1/15/2003	5.43
1/16/2003	5.65
1/17/2003	5.54
1/21/2003	5.43
1/22/2003	5.67
1/23/2003	5.46
1/24/2003	5.52
1/27/2003	5.40
1/28/2003	5.44

Dates	NYMEX: Henry Hub Natural Gas Prices
1/29/2003	5.66
1/30/2003	5.58
1/31/2003	5.61
2/3/2003	5.77
2/4/2003	5.76
2/5/2003	5.64
2/6/2003	5.83
2/7/2003	6.04
2/10/2003	5.85
2/11/2003	5.98
2/12/2003	5.79
2/13/2003	5.74
2/14/2003	5.85
2/18/2003	5.91
2/19/2003	6.13
2/20/2003	6.16
2/21/2003	6.61
2/24/2003	9.14
2/25/2003	9.58
2/26/2003	9.13
2/27/2003	7.49
2/28/2003	8.10
3/3/2003	7.16
3/4/2003	7.04
3/5/2003	7.02
3/6/2003	6.84
3/7/2003	6.99
3/10/2003	6.52
3/11/2003	5.94
3/12/2003	5.87
3/13/2003	5.36
3/14/2003	5.43
3/17/2003	5.51
3/18/2003	5.34
3/19/2003	5.28
3/20/2003	5.31
3/21/2003	5.13
3/24/2003	5.25
3/25/2003	5.08
3/26/2003	5.10
3/27/2003	5.15
3/28/2003	5.15
3/31/2003	5.06
4/1/2003	5.13
4/2/2003	5.07
4/3/2003	4.92
4/4/2003	4.94
4/7/2003	5.13
4/8/2003	5.11
4/9/2003	5.20
4/10/2003	5.42
4/11/2003	5.41
4/14/2003	5.55
4/15/2003	5.65
4/16/2003	5.68
4/17/2003	5.71
4/21/2003	5.71
4/22/2003	5.65
4/23/2003	5.57
4/24/2003	5.47
4/25/2003	5.48
4/28/2003	5.12
4/29/2003	5.24
4/30/2003	5.39
5/1/2003	5.27
5/2/2003	5.26
5/5/2003	5.69
5/6/2003	5.57
5/7/2003	5.66
5/8/2003	5.77
5/9/2003	5.81
5/12/2003	5.98
5/13/2003	6.31

Dates	NYMEX: Henry Hub Natural Gas Prices
5/14/2003	6.31
5/15/2003	6.13
5/16/2003	6.12
5/19/2003	6.02
5/20/2003	6.06
5/21/2003	6.20
5/22/2003	6.04
5/23/2003	6.12
5/27/2003	5.90
5/28/2003	5.95
5/29/2003	6.07
5/30/2003	6.25
6/2/2003	6.41
6/3/2003	6.36
6/4/2003	6.38
6/5/2003	6.52
6/6/2003	6.51
6/9/2003	6.31
6/10/2003	6.33
6/11/2003	6.21
6/12/2003	5.61
6/13/2003	5.68
6/16/2003	5.71
6/17/2003	5.71
6/18/2003	5.58
6/19/2003	5.94
6/20/2003	5.81
6/23/2003	5.86
6/24/2003	5.70
6/25/2003	5.76
6/26/2003	5.29
6/27/2003	5.36
6/30/2003	5.41
7/1/2003	5.32
7/2/2003	5.20
7/3/2003	5.23
7/7/2003	5.38
7/8/2003	5.50
7/9/2003	5.52
7/10/2003	5.26
7/11/2003	5.15
7/14/2003	5.10
7/15/2003	5.02
7/16/2003	4.93
7/17/2003	5.05
7/18/2003	5.02
7/21/2003	5.11
7/22/2003	4.87
7/23/2003	4.88
7/24/2003	4.73
7/25/2003	4.71
7/28/2003	4.70
7/29/2003	4.69
7/30/2003	4.67
7/31/2003	4.72
8/1/2003	4.87
8/4/2003	4.63
8/5/2003	4.68
8/6/2003	4.75
8/7/2003	5.08
8/8/2003	5.04
8/11/2003	5.13
8/12/2003	5.22
8/13/2003	5.18
8/14/2003	4.89
8/15/2003	4.85
8/18/2003	4.88
8/19/2003	4.96
8/20/2003	5.12
8/21/2003	5.28
8/22/2003	5.28
8/25/2003	5.08
8/26/2003	5.04

Dates	NYMEX: Henry Hub Natural Gas Prices
8/27/2003	4.93
8/28/2003	4.94
8/29/2003	4.73
9/2/2003	4.64
9/3/2003	4.69
9/4/2003	4.81
9/5/2003	4.77
9/8/2003	4.66
9/9/2003	4.73
9/10/2003	4.97
9/11/2003	4.74
9/12/2003	4.77
9/15/2003	4.69
9/16/2003	4.66
9/17/2003	4.64
9/18/2003	4.47
9/19/2003	4.48
9/22/2003	4.49
9/23/2003	4.51
9/24/2003	4.59
9/25/2003	4.54
9/26/2003	4.43
9/29/2003	4.90
9/30/2003	4.83
10/1/2003	4.68
10/2/2003	4.69
10/3/2003	4.77
10/6/2003	4.90
10/7/2003	5.14
10/8/2003	5.15
10/9/2003	5.49
10/10/2003	5.65
10/13/2003	5.55
10/14/2003	5.48
10/15/2003	5.43
10/16/2003	5.41
10/17/2003	5.04
10/20/2003	4.77
10/21/2003	4.88
10/22/2003	4.92
10/23/2003	4.91
10/24/2003	4.79
10/27/2003	4.51
10/28/2003	4.49
10/29/2003	4.46
10/30/2003	4.71
10/31/2003	4.89
11/3/2003	4.71
11/4/2003	4.73
11/5/2003	4.90
11/6/2003	4.66
11/7/2003	4.71
11/10/2003	4.71
11/11/2003	4.87
11/12/2003	4.74
11/13/2003	4.80
11/14/2003	5.11
11/17/2003	4.76
11/18/2003	4.87
11/19/2003	4.74
11/20/2003	4.62
11/21/2003	4.63
11/24/2003	4.68
11/25/2003	4.86
11/26/2003	4.93
12/1/2003	5.28
12/2/2003	5.58
12/3/2003	5.76
12/4/2003	6.34
12/5/2003	6.14
12/8/2003	6.90
12/9/2003	6.72
12/10/2003	6.71

Dates	NYMEX: Henry Hub Natural Gas Prices
12/11/2003	6.62
12/12/2003	7.22
12/15/2003	6.95
12/16/2003	6.75
12/17/2003	6.99
12/18/2003	7.12
12/19/2003	6.98
12/22/2003	6.32
12/23/2003	6.14
12/24/2003	6.38
12/29/2003	6.15
12/30/2003	6.60
12/31/2003	6.19
1/5/2004	6.83
1/6/2004	7.08
1/7/2004	6.88
1/8/2004	7.09
1/9/2004	7.29
1/12/2004	6.91
1/13/2004	6.33
1/14/2004	6.39
1/15/2004	5.85
1/16/2004	5.94
1/20/2004	6.29
1/21/2004	6.15
1/22/2004	5.83
1/23/2004	6.06
1/26/2004	5.73
1/27/2004	5.72
1/28/2004	5.78
1/29/2004	5.66
1/30/2004	5.40
2/2/2004	5.57
2/3/2004	5.65
2/4/2004	5.65
2/5/2004	5.40
2/6/2004	5.35
2/9/2004	5.35
2/10/2004	5.40
2/11/2004	5.26
2/12/2004	5.45
2/13/2004	5.54
2/17/2004	5.32
2/18/2004	5.36
2/19/2004	5.24
2/20/2004	5.19
2/23/2004	5.13
2/24/2004	5.08
2/25/2004	5.15
2/26/2004	5.39
2/27/2004	5.42
3/1/2004	5.55
3/2/2004	5.57
3/3/2004	5.38
3/4/2004	5.46
3/5/2004	5.44
3/8/2004	5.39
3/9/2004	5.44
3/10/2004	5.40
3/11/2004	5.64
3/12/2004	5.60
3/15/2004	5.72
3/16/2004	5.69
3/17/2004	5.72
3/18/2004	5.63
3/19/2004	5.58
3/22/2004	5.55
3/23/2004	5.53
3/24/2004	5.43
3/25/2004	5.34
3/26/2004	5.40
3/29/2004	5.37
3/30/2004	5.75

Dates	NYMEX: Henry Hub Natural Gas Prices
3/31/2004	5.93
4/1/2004	5.77
4/2/2004	5.81
4/5/2004	5.80
4/6/2004	5.81
4/7/2004	5.87
4/8/2004	5.94
4/12/2004	6.01
4/13/2004	5.79
4/14/2004	5.74
4/15/2004	5.73
4/16/2004	5.61
4/19/2004	5.51
4/20/2004	5.55
4/21/2004	5.58
4/22/2004	5.62
4/23/2004	5.57
4/26/2004	5.76
4/27/2004	5.87
4/28/2004	5.94
4/29/2004	5.92
4/30/2004	5.86
5/3/2004	6.23
5/4/2004	6.27
5/5/2004	6.31
5/6/2004	6.22
5/7/2004	6.29
5/10/2004	6.18
5/11/2004	6.39
5/12/2004	6.41
5/13/2004	6.48
5/14/2004	6.40
5/17/2004	6.42
5/18/2004	6.15
5/19/2004	6.46
5/20/2004	6.32
5/21/2004	6.35
5/24/2004	6.71
5/25/2004	6.68
5/26/2004	6.68
5/27/2004	6.57
5/28/2004	6.44
6/1/2004	6.68
6/2/2004	6.52
6/3/2004	6.36
6/4/2004	6.26
6/7/2004	6.21
6/8/2004	6.12
6/9/2004	6.08
6/10/2004	6.18
6/14/2004	6.24
6/15/2004	6.30
6/16/2004	6.49
6/17/2004	6.58
6/18/2004	6.52
6/21/2004	6.34
6/22/2004	6.41
6/23/2004	6.42
6/24/2004	6.49
6/25/2004	6.35
6/28/2004	6.14
6/29/2004	6.12
6/30/2004	6.16
7/1/2004	6.22
7/2/2004	6.15
7/6/2004	6.42
7/7/2004	6.37
7/8/2004	6.19
7/9/2004	6.14
7/12/2004	5.86
7/13/2004	5.91
7/14/2004	5.98
7/15/2004	5.85

Dates	NYMEX: Henry Hub Natural Gas Prices
7/16/2004	5.89
7/19/2004	5.82
7/20/2004	5.84
7/21/2004	5.93
7/22/2004	6.15
7/23/2004	6.13
7/26/2004	5.96
7/27/2004	5.99
7/28/2004	6.05
7/29/2004	6.18
7/30/2004	6.11
8/2/2004	5.81
8/3/2004	5.82
8/4/2004	5.66
8/5/2004	5.71
8/6/2004	5.59
8/9/2004	5.69
8/10/2004	5.79
8/11/2004	5.61
8/12/2004	5.44
8/13/2004	5.53
8/16/2004	5.38
8/17/2004	5.37
8/18/2004	5.38
8/19/2004	5.51
8/20/2004	5.55
8/23/2004	5.31
8/24/2004	5.34
8/25/2004	5.30
8/26/2004	5.19
8/27/2004	5.08
8/30/2004	5.23
8/31/2004	5.07
9/1/2004	4.97
9/2/2004	4.77
9/3/2004	4.68
9/7/2004	4.79
9/8/2004	4.63
9/9/2004	4.66
9/10/2004	4.57
9/13/2004	4.85
9/14/2004	4.93
9/15/2004	4.82
9/16/2004	4.72
9/17/2004	5.11
9/20/2004	5.25
9/21/2004	5.61
9/22/2004	5.63
9/23/2004	5.56
9/24/2004	5.39
9/27/2004	5.26
9/28/2004	5.72
9/29/2004	6.91
9/30/2004	6.80
10/1/2004	6.77
10/4/2004	6.73
10/5/2004	7.16
10/6/2004	7.05
10/7/2004	7.26
10/8/2004	7.16
10/11/2004	6.99
10/12/2004	6.64
10/13/2004	6.85
10/14/2004	6.80
10/15/2004	6.71
10/18/2004	6.81
10/19/2004	7.12
10/20/2004	7.62
10/21/2004	7.70
10/22/2004	8.11
10/25/2004	7.89
10/26/2004	8.40
10/27/2004	7.63

Dates	NYMEX: Henry Hub Natural Gas Prices
10/28/2004	8.68
10/29/2004	8.73
11/1/2004	8.72
11/2/2004	8.57
11/3/2004	8.75
11/4/2004	8.20
11/5/2004	7.95
11/8/2004	7.60
11/9/2004	7.47
11/10/2004	7.68
11/11/2004	7.24
11/12/2004	7.18
11/15/2004	7.44
11/16/2004	7.12
11/17/2004	7.28
11/18/2004	6.87
11/19/2004	7.12
11/22/2004	6.76
11/23/2004	6.79
11/24/2004	7.98
11/29/2004	7.84
11/30/2004	7.62
12/1/2004	7.41
12/2/2004	6.81
12/3/2004	6.80
12/6/2004	6.92
12/7/2004	6.62
12/8/2004	6.68
12/9/2004	6.89
12/10/2004	6.84
12/13/2004	7.17
12/14/2004	7.33
12/15/2004	7.24
12/16/2004	7.00
12/17/2004	7.46
12/20/2004	6.95
12/21/2004	6.86
12/22/2004	6.82
12/23/2004	6.67
12/27/2004	6.16
12/28/2004	6.21
12/29/2004	6.40
12/30/2004	6.15
1/3/2005	5.79
1/4/2005	5.90
1/5/2005	5.83
1/6/2005	6.05
1/7/2005	6.00
1/10/2005	6.16
1/11/2005	6.10
1/12/2005	5.94
1/13/2005	6.45
1/14/2005	6.40
1/18/2005	6.14
1/19/2005	6.29
1/20/2005	6.31
1/21/2005	6.24
1/24/2005	6.48
1/25/2005	6.40
1/26/2005	6.39
1/27/2005	6.29
1/28/2005	6.26
1/31/2005	6.32
2/1/2005	6.32
2/2/2005	6.38
2/3/2005	6.15
2/4/2005	6.10
2/7/2005	5.97
2/8/2005	6.16
2/9/2005	6.17
2/10/2005	6.16
2/11/2005	6.09
2/14/2005	6.09

Dates	NYMEX: Henry Hub Natural Gas Prices
2/15/2005	6.18
2/16/2005	6.11
2/17/2005	5.92
2/18/2005	5.91
2/22/2005	6.10
2/23/2005	6.31
2/24/2005	6.30
2/25/2005	6.72
2/28/2005	6.73
3/1/2005	6.68
3/2/2005	6.72
3/3/2005	6.66
3/4/2005	6.74
3/7/2005	6.71
3/8/2005	6.85
3/9/2005	6.88
3/10/2005	6.77
3/11/2005	6.77
3/14/2005	7.14
3/15/2005	7.18
3/16/2005	7.19
3/17/2005	7.24
3/18/2005	7.27
3/21/2005	7.32
3/22/2005	7.25
3/23/2005	7.14
3/24/2005	7.06
3/28/2005	7.00
3/29/2005	7.32
3/30/2005	7.46
3/31/2005	7.65
4/1/2005	7.75
4/4/2005	7.59
4/5/2005	7.57
4/6/2005	7.56
4/7/2005	7.37
4/8/2005	7.24
4/11/2005	7.31
4/12/2005	7.09
4/13/2005	6.98
4/14/2005	7.07
4/15/2005	7.00
4/18/2005	6.95
4/19/2005	7.05
4/20/2005	7.06
4/21/2005	7.03
4/22/2005	7.20
4/25/2005	7.15
4/26/2005	7.12
4/27/2005	6.75
4/28/2005	6.75
4/29/2005	6.59
5/2/2005	6.70
5/3/2005	6.52
5/4/2005	6.63
5/5/2005	6.69
5/6/2005	6.62
5/9/2005	6.67
5/10/2005	6.69
5/11/2005	6.68
5/12/2005	6.51
5/13/2005	6.54
5/16/2005	6.45
5/17/2005	6.48
5/18/2005	6.39
5/19/2005	6.36
5/20/2005	6.34
5/23/2005	6.41
5/24/2005	6.35
5/25/2005	6.32
5/26/2005	6.12
5/27/2005	6.37
5/31/2005	6.38

Dates	NYMEX: Henry Hub Natural Gas Prices
6/1/2005	6.79
6/2/2005	6.82
6/3/2005	6.88
6/6/2005	7.12
6/7/2005	7.13
6/8/2005	7.00
6/9/2005	7.05
6/10/2005	6.93
6/13/2005	7.26
6/14/2005	7.23
6/15/2005	7.44
6/16/2005	7.61
6/17/2005	7.69
6/20/2005	7.67
6/21/2005	7.47
6/22/2005	7.44
6/23/2005	7.47
6/24/2005	7.36
6/27/2005	7.14
6/28/2005	6.98
6/29/2005	7.09
6/30/2005	6.98
7/1/2005	7.17
7/5/2005	7.48
7/6/2005	7.69
7/7/2005	7.40
7/8/2005	7.47
7/11/2005	7.50
7/12/2005	7.89
7/13/2005	7.90
7/14/2005	7.84
7/15/2005	7.85
7/18/2005	7.65
7/19/2005	7.59
7/20/2005	7.55
7/21/2005	7.30
7/22/2005	7.38
7/25/2005	7.28
7/26/2005	7.43
7/27/2005	7.65
7/28/2005	7.69
7/29/2005	7.89
8/1/2005	8.15
8/2/2005	8.38
8/3/2005	8.35
8/4/2005	8.47
8/5/2005	8.70
8/8/2005	8.68
8/9/2005	8.65
8/10/2005	9.07
8/11/2005	9.30
8/12/2005	9.59
8/15/2005	9.54
8/16/2005	9.75
8/17/2005	9.39
8/18/2005	8.93
8/19/2005	9.11
8/22/2005	9.56
8/23/2005	9.68
8/24/2005	9.98
8/25/2005	9.77
8/26/2005	9.79
8/29/2005	10.85
8/30/2005	11.66
8/31/2005	11.47
9/1/2005	11.76
9/2/2005	11.69
9/6/2005	11.66
9/7/2005	11.20
9/8/2005	11.35
9/9/2005	11.26
9/12/2005	11.03
9/13/2005	10.76

Dates	NYMEX: Henry Hub Natural Gas Prices
9/14/2005	11.17
9/15/2005	11.34
9/16/2005	11.14
9/19/2005	12.66
9/20/2005	12.49
9/21/2005	12.59
9/22/2005	12.79
9/23/2005	12.32
9/26/2005	12.44
9/27/2005	12.66
9/28/2005	13.91
9/29/2005	14.20
9/30/2005	13.92
10/3/2005	14.02
10/4/2005	14.22
10/5/2005	14.18
10/6/2005	13.38
10/7/2005	13.23
10/10/2005	12.98
10/11/2005	13.52
10/12/2005	13.52
10/13/2005	13.10
10/14/2005	13.22
10/17/2005	13.89
10/18/2005	13.42
10/19/2005	13.55
10/20/2005	12.98
10/21/2005	12.87
10/24/2005	13.00
10/25/2005	14.34
10/26/2005	14.04
10/27/2005	13.83
10/28/2005	13.06
10/31/2005	12.21
11/1/2005	11.86
11/2/2005	11.60
11/3/2005	11.69
11/4/2005	11.42
11/7/2005	11.87
11/8/2005	11.79
11/9/2005	11.67
11/10/2005	11.38
11/11/2005	11.71
11/14/2005	11.61
11/15/2005	11.56
11/16/2005	12.33
11/17/2005	11.94
11/18/2005	11.41
11/21/2005	11.33
11/22/2005	11.61
11/23/2005	11.62
11/28/2005	11.18
11/29/2005	11.74
11/30/2005	12.59
12/1/2005	13.03
12/2/2005	13.93
12/5/2005	13.66
12/6/2005	13.49
12/7/2005	13.70
12/8/2005	14.99
12/9/2005	14.31
12/12/2005	14.84
12/13/2005	15.38
12/14/2005	14.68
12/15/2005	13.78
12/16/2005	13.63
12/19/2005	14.04
12/20/2005	14.08
12/21/2005	14.27
12/22/2005	12.92
12/23/2005	12.28
12/27/2005	11.02
12/28/2005	11.43

Dates	NYMEX: Henry Hub Natural Gas Prices
12/29/2005	11.22
12/30/2005	11.23
1/3/2006	10.63
1/4/2006	10.20
1/5/2006	9.50
1/6/2006	9.63
1/9/2006	9.36
1/10/2006	9.34
1/11/2006	9.24
1/12/2006	8.94
1/13/2006	8.79
1/17/2006	9.17
1/18/2006	8.69
1/19/2006	8.91
1/20/2006	9.28
1/23/2006	8.57
1/24/2006	8.68
1/25/2006	8.46
1/26/2006	8.23
1/27/2006	8.40
1/30/2006	9.39
1/31/2006	9.32
2/1/2006	8.72
2/2/2006	8.35
2/3/2006	8.61
2/6/2006	8.00
2/7/2006	7.86
2/8/2006	7.74
2/9/2006	7.48
2/10/2006	7.32
2/13/2006	7.24
2/14/2006	7.11
2/15/2006	7.07
2/16/2006	7.13
2/17/2006	7.18
2/21/2006	7.73
2/22/2006	7.28
2/23/2006	7.46
2/24/2006	7.11
2/27/2006	6.79
2/28/2006	6.71
3/1/2006	6.73
3/2/2006	6.76
3/3/2006	6.79
3/6/2006	6.55
3/7/2006	6.68
3/8/2006	6.65
3/9/2006	6.60
3/10/2006	6.65
3/13/2006	7.01
3/14/2006	7.17
3/15/2006	7.14
3/16/2006	7.27
3/17/2006	7.05
3/20/2006	6.84
3/21/2006	6.87
3/22/2006	6.95
3/23/2006	7.33
3/24/2006	7.29
3/27/2006	7.07
3/28/2006	7.21
3/29/2006	7.23
3/30/2006	7.49
3/31/2006	7.21
4/3/2006	7.24
4/4/2006	7.07
4/5/2006	7.07
4/6/2006	6.97
4/7/2006	6.74
4/10/2006	6.88
4/11/2006	6.91
4/12/2006	6.81
4/13/2006	7.14

Dates	NYMEX: Henry Hub Natural Gas Prices
4/17/2006	7.58
4/18/2006	8.01
4/19/2006	8.19
4/20/2006	8.06
4/21/2006	7.98
4/24/2006	7.56
4/25/2006	7.25
4/26/2006	7.20
4/27/2006	6.81
4/28/2006	6.56
5/1/2006	6.70
5/2/2006	6.75
5/3/2006	6.61
5/4/2006	6.91
5/5/2006	6.78
5/8/2006	6.70
5/9/2006	6.58
5/10/2006	6.90
5/11/2006	6.65
5/12/2006	6.28
5/15/2006	6.12
5/16/2006	6.25
5/17/2006	6.13
5/18/2006	6.00
5/19/2006	5.96
5/22/2006	6.28
5/23/2006	6.26
5/24/2006	5.96
5/25/2006	5.98
5/26/2006	5.93
5/30/2006	6.12
5/31/2006	6.38
6/1/2006	6.45
6/2/2006	6.62
6/5/2006	6.46
6/6/2006	6.39
6/7/2006	5.97
6/8/2006	6.19
6/9/2006	6.17
6/12/2006	6.22
6/13/2006	6.16
6/14/2006	6.59
6/15/2006	7.21
6/16/2006	7.19
6/19/2006	6.89
6/20/2006	6.50
6/21/2006	6.59
6/22/2006	6.44
6/23/2006	6.23
6/26/2006	5.97
6/27/2006	6.11
6/28/2006	5.89
6/29/2006	6.14
6/30/2006	6.10
7/5/2006	5.77
7/6/2006	5.66
7/7/2006	5.52
7/10/2006	5.61
7/11/2006	5.63
7/12/2006	5.78
7/13/2006	6.13
7/14/2006	6.35
7/17/2006	5.78
7/18/2006	5.56
7/19/2006	5.86
7/20/2006	6.09
7/21/2006	6.14
7/24/2006	6.61
7/25/2006	6.41
7/26/2006	6.89
7/27/2006	7.04
7/28/2006	7.18
7/31/2006	8.21

Dates	NYMEX: Henry Hub Natural Gas Prices
8/1/2006	7.57
8/2/2006	7.80
8/3/2006	7.29
8/4/2006	7.25
8/7/2006	6.91
8/8/2006	7.16
8/9/2006	7.65
8/10/2006	7.53
8/11/2006	7.27
8/14/2006	6.91
8/15/2006	6.86
8/16/2006	6.77
8/17/2006	6.69
8/18/2006	6.73
8/21/2006	6.62
8/22/2006	7.01
8/23/2006	6.88
8/24/2006	7.08
8/25/2006	7.16
8/28/2006	6.47
8/29/2006	6.82
8/30/2006	6.29
8/31/2006	6.05
9/1/2006	5.88
9/5/2006	6.04
9/6/2006	5.99
9/7/2006	5.72
9/8/2006	5.68
9/11/2006	5.67
9/12/2006	5.57
9/13/2006	5.45
9/14/2006	4.89
9/15/2006	4.98
9/18/2006	4.94
9/19/2006	5.01
9/20/2006	4.93
9/21/2006	4.78
9/22/2006	4.63
9/25/2006	4.48
9/26/2006	4.53
9/27/2006	4.20
9/28/2006	5.39
9/29/2006	5.62
10/2/2006	5.64
10/3/2006	5.76
10/4/2006	6.00
10/5/2006	6.30
10/6/2006	6.43
10/9/2006	6.43
10/10/2006	6.47
10/11/2006	6.15
10/12/2006	5.78
10/13/2006	5.66
10/16/2006	6.44
10/17/2006	6.44
10/18/2006	6.81
10/19/2006	7.13
10/20/2006	7.24
10/23/2006	6.88
10/24/2006	7.09
10/25/2006	7.69
10/26/2006	7.50
10/27/2006	7.15
10/30/2006	7.42
10/31/2006	7.53
11/1/2006	7.71
11/2/2006	7.81
11/3/2006	7.88
11/6/2006	7.49
11/7/2006	7.76
11/8/2006	7.82
11/9/2006	7.96
11/10/2006	7.79

Dates	NYMEX: Henry Hub Natural Gas Prices
11/13/2006	7.89
11/14/2006	7.98
11/15/2006	8.12
11/16/2006	7.76
11/17/2006	8.18
11/20/2006	8.02
11/21/2006	7.99
11/22/2006	7.72
11/27/2006	8.00
11/28/2006	8.32
11/29/2006	8.87
11/30/2006	8.84
12/1/2006	8.42
12/4/2006	7.81
12/5/2006	7.69
12/6/2006	7.73
12/7/2006	7.67
12/8/2006	7.56
12/11/2006	7.43
12/12/2006	7.43
12/13/2006	7.67
12/14/2006	7.56
12/15/2006	7.41
12/18/2006	7.08
12/19/2006	7.08
12/20/2006	6.77
12/21/2006	6.80
12/22/2006	6.64
12/26/2006	6.11
12/27/2006	5.84
12/28/2006	6.25
12/29/2006	6.30
1/2/2007	6.30
1/3/2007	6.16
1/4/2007	6.16
1/5/2007	6.18
1/8/2007	6.38
1/9/2007	6.63
1/10/2007	6.76
1/11/2007	6.29
1/12/2007	6.60
1/16/2007	6.64
1/17/2007	6.23
1/18/2007	6.32
1/19/2007	6.89
1/22/2007	7.32
1/23/2007	7.60
1/24/2007	7.42
1/25/2007	6.91
1/26/2007	7.18
1/29/2007	6.92
1/30/2007	7.74
1/31/2007	7.67
2/1/2007	7.53
2/2/2007	7.48
2/5/2007	7.63
2/6/2007	7.62
2/7/2007	7.71
2/8/2007	7.87
2/9/2007	7.83
2/12/2007	7.23
2/13/2007	7.37
2/14/2007	7.24
2/15/2007	7.29
2/16/2007	7.50
2/20/2007	7.59
2/21/2007	7.65
2/22/2007	7.73
2/23/2007	7.76
2/26/2007	7.55
2/27/2007	7.53
2/28/2007	7.30
3/1/2007	7.29

Dates	NYMEX: Henry Hub Natural Gas Prices
3/2/2007	7.24
3/5/2007	7.25
3/6/2007	7.47
3/7/2007	7.37
3/8/2007	7.24
3/9/2007	7.08
3/12/2007	6.91
3/13/2007	6.89
3/14/2007	7.08
3/15/2007	6.96
3/16/2007	6.92
3/19/2007	6.85
3/20/2007	6.91
3/21/2007	7.16
3/22/2007	7.32
3/23/2007	7.27
3/26/2007	7.25
3/27/2007	7.50
3/28/2007	7.56
3/29/2007	7.61
3/30/2007	7.73
4/2/2007	7.67
4/3/2007	7.43
4/4/2007	7.52
4/5/2007	7.61
4/9/2007	7.55
4/10/2007	7.87
4/11/2007	7.86
4/12/2007	7.92
4/13/2007	7.80
4/16/2007	7.53
4/17/2007	7.42
4/18/2007	7.50
4/19/2007	7.49
4/20/2007	7.38
4/23/2007	7.56
4/24/2007	7.60
4/25/2007	7.69
4/26/2007	7.51
4/27/2007	7.83
4/30/2007	7.86
5/1/2007	7.72
5/2/2007	7.73
5/3/2007	7.95
5/4/2007	7.94
5/7/2007	7.78
5/8/2007	7.64
5/9/2007	7.72
5/10/2007	7.73
5/11/2007	7.90
5/14/2007	7.95
5/15/2007	7.86
5/16/2007	7.89
5/17/2007	8.08
5/18/2007	7.94
5/21/2007	7.91
5/22/2007	7.80
5/23/2007	7.76
5/24/2007	7.68
5/25/2007	7.64
5/29/2007	7.59
5/30/2007	7.94
5/31/2007	7.94
6/1/2007	7.88
6/4/2007	8.19
6/5/2007	8.06
6/6/2007	8.08
6/7/2007	7.83
6/8/2007	7.66
6/11/2007	7.61
6/12/2007	7.68
6/13/2007	7.61
6/14/2007	7.81

Dates	NYMEX: Henry Hub Natural Gas Prices
6/15/2007	7.92
6/18/2007	7.69
6/19/2007	7.52
6/20/2007	7.39
6/21/2007	7.35
6/22/2007	7.13
6/25/2007	6.94
6/26/2007	6.88
6/27/2007	6.93
6/28/2007	6.66
6/29/2007	6.77
7/2/2007	6.76
7/3/2007	6.75
7/5/2007	6.62
7/6/2007	6.44
7/9/2007	6.41
7/10/2007	6.70
7/11/2007	6.60
7/12/2007	6.50
7/13/2007	6.66
7/16/2007	6.38
7/17/2007	6.31
7/18/2007	6.53
7/19/2007	6.71
7/20/2007	6.45
7/23/2007	6.04
7/24/2007	5.86
7/25/2007	5.93
7/26/2007	5.94
7/27/2007	6.11
7/30/2007	6.50
7/31/2007	6.19
8/1/2007	6.35
8/2/2007	6.11
8/3/2007	6.09
8/6/2007	6.21
8/7/2007	6.20
8/8/2007	6.22
8/9/2007	6.59
8/10/2007	6.82
8/13/2007	6.79
8/14/2007	6.94
8/15/2007	6.86
8/16/2007	6.88
8/17/2007	7.01
8/20/2007	6.04
8/21/2007	5.82
8/22/2007	5.58
8/23/2007	5.62
8/24/2007	5.52
8/27/2007	5.38
8/28/2007	5.59
8/29/2007	5.43
8/30/2007	5.64
8/31/2007	5.47
9/4/2007	5.63
9/5/2007	5.81
9/6/2007	5.65
9/7/2007	5.50
9/10/2007	5.89
9/11/2007	5.93
9/12/2007	6.44
9/13/2007	6.03
9/14/2007	6.28
9/17/2007	6.65
9/18/2007	6.57
9/19/2007	6.18
9/20/2007	6.01
9/21/2007	6.08
9/24/2007	6.37
9/25/2007	6.36
9/26/2007	6.42
9/27/2007	6.92

Dates	NYMEX: Henry Hub Natural Gas Prices
9/28/2007	6.87
10/1/2007	7.05
10/2/2007	7.43
10/3/2007	7.28
10/4/2007	7.41
10/5/2007	7.07
10/8/2007	6.85
10/9/2007	6.86
10/10/2007	7.01
10/11/2007	6.88
10/12/2007	6.97
10/15/2007	7.45
10/16/2007	7.37
10/17/2007	7.46
10/18/2007	7.37
10/19/2007	7.04
10/22/2007	6.89
10/23/2007	6.76
10/24/2007	6.97
10/25/2007	7.19
10/26/2007	7.22
10/29/2007	7.27
10/30/2007	8.02
10/31/2007	8.33
11/1/2007	8.64
11/2/2007	8.42
11/5/2007	8.00
11/6/2007	7.86
11/7/2007	7.62
11/8/2007	7.71
11/9/2007	7.90
11/12/2007	7.96
11/13/2007	7.95
11/14/2007	7.84
11/15/2007	7.70
11/16/2007	8.00
11/19/2007	7.79
11/20/2007	7.48
11/21/2007	7.55
11/23/2007	7.70
11/26/2007	7.72
11/27/2007	7.56
11/28/2007	7.20
11/29/2007	7.45
11/30/2007	7.30
12/3/2007	7.21
12/4/2007	7.16
12/5/2007	7.19
12/6/2007	7.33
12/7/2007	7.16
12/10/2007	7.03
12/11/2007	7.09
12/12/2007	7.41
12/13/2007	7.19
12/14/2007	7.03
12/17/2007	7.04
12/18/2007	7.14
12/19/2007	7.18
12/20/2007	7.14
12/21/2007	7.19
12/24/2007	7.03
12/26/2007	7.05
12/27/2007	7.17
12/28/2007	7.39
12/31/2007	7.48
1/2/2008	7.85
1/3/2008	7.67
1/4/2008	7.84
1/7/2008	7.88
1/8/2008	7.97
1/9/2008	8.10
1/10/2008	8.26
1/11/2008	8.21

Dates	NYMEX: Henry Hub Natural Gas Prices
1/14/2008	8.35
1/15/2008	8.20
1/16/2008	8.13
1/17/2008	8.08
1/18/2008	7.99
1/22/2008	7.67
1/23/2008	7.62
1/24/2008	7.80
1/25/2008	7.98
1/28/2008	8.10
1/29/2008	8.00
1/30/2008	8.05
1/31/2008	8.07
2/1/2008	7.74
2/4/2008	7.87
2/5/2008	7.94
2/6/2008	7.99
2/7/2008	8.10
2/8/2008	8.30
2/11/2008	8.53
2/12/2008	8.44
2/13/2008	8.39
2/14/2008	8.77
2/15/2008	8.66
2/19/2008	8.98
2/20/2008	8.97
2/21/2008	8.89
2/22/2008	9.15
2/25/2008	9.19
2/26/2008	9.21
2/27/2008	8.93
2/28/2008	9.44
2/29/2008	9.37
3/3/2008	9.35
3/4/2008	9.35
3/5/2008	9.74
3/6/2008	9.74
3/7/2008	9.77
3/10/2008	10.02
3/11/2008	10.00
3/12/2008	10.01
3/13/2008	10.23
3/14/2008	9.87
3/17/2008	9.10
3/18/2008	9.41
3/19/2008	9.02
3/20/2008	9.07
3/24/2008	9.33
3/25/2008	9.42
3/26/2008	9.57
3/27/2008	9.58
3/28/2008	9.80
3/31/2008	10.10
4/1/2008	9.72
4/2/2008	9.83
4/3/2008	9.42
4/4/2008	9.32
4/7/2008	9.79
4/8/2008	9.70
4/9/2008	10.06
4/10/2008	10.10
4/11/2008	9.90
4/14/2008	10.05
4/15/2008	10.21
4/16/2008	10.43
4/17/2008	10.38
4/18/2008	10.59
4/21/2008	10.73
4/22/2008	10.61
4/23/2008	10.78
4/24/2008	10.79
4/25/2008	10.96
4/28/2008	11.28

Dates	NYMEX: Henry Hub Natural Gas Prices
4/29/2008	10.84
4/30/2008	10.84
5/1/2008	10.56
5/2/2008	10.78
5/5/2008	11.18
5/6/2008	11.15
5/7/2008	11.33
5/8/2008	11.26
5/9/2008	11.54
5/12/2008	11.30
5/13/2008	11.42
5/14/2008	11.60
5/15/2008	11.40
5/16/2008	11.09
5/19/2008	10.95
5/20/2008	11.37
5/21/2008	11.64
5/22/2008	11.70
5/23/2008	11.86
5/27/2008	11.80
5/28/2008	11.92
5/29/2008	11.47
5/30/2008	11.70
6/2/2008	11.97
6/3/2008	12.22
6/4/2008	12.38
6/5/2008	12.52
6/6/2008	12.69
6/9/2008	12.60
6/10/2008	12.44
6/11/2008	12.66
6/12/2008	12.80
6/13/2008	12.63
6/16/2008	12.93
6/17/2008	12.95
6/18/2008	13.21
6/19/2008	12.86
6/20/2008	12.99
6/23/2008	13.20
6/24/2008	13.01
6/25/2008	12.75
6/26/2008	13.11
6/27/2008	13.20
6/30/2008	13.35
7/1/2008	13.51
7/2/2008	13.39
7/3/2008	13.58
7/7/2008	12.98
7/8/2008	12.37
7/9/2008	12.01
7/10/2008	12.30
7/11/2008	11.90
7/14/2008	11.96
7/15/2008	11.48
7/16/2008	11.40
7/17/2008	10.54
7/18/2008	10.57
7/21/2008	10.51
7/22/2008	10.07
7/23/2008	9.79
7/24/2008	9.32
7/25/2008	9.08
7/28/2008	9.16
7/29/2008	9.22
7/30/2008	9.25
7/31/2008	9.12
8/1/2008	9.39
8/4/2008	8.73
8/5/2008	8.73
8/6/2008	8.77
8/7/2008	8.57
8/8/2008	8.25
8/11/2008	8.35

Dates	NYMEX: Henry Hub Natural Gas Prices
8/12/2008	8.33
8/13/2008	8.46
8/14/2008	8.14
8/15/2008	8.09
8/18/2008	7.89
8/19/2008	7.98
8/20/2008	8.08
8/21/2008	8.25
8/22/2008	7.84
8/25/2008	7.83
8/26/2008	8.28
8/27/2008	8.39
8/28/2008	8.05
8/29/2008	7.94
9/2/2008	7.26
9/3/2008	7.26
9/4/2008	7.32
9/5/2008	7.45
9/8/2008	7.53
9/9/2008	7.54
9/10/2008	7.39
9/11/2008	7.25
9/12/2008	7.37
9/15/2008	7.37
9/16/2008	7.28
9/17/2008	7.91
9/18/2008	7.62
9/19/2008	7.53
9/22/2008	7.66
9/23/2008	7.93
9/24/2008	7.68
9/25/2008	7.72
9/26/2008	7.47
9/29/2008	7.22
9/30/2008	7.44
10/1/2008	7.73
10/2/2008	7.48
10/3/2008	7.36
10/6/2008	6.84
10/7/2008	6.77
10/8/2008	6.74
10/9/2008	6.83
10/10/2008	6.54
10/13/2008	6.69
10/14/2008	6.73
10/15/2008	6.59
10/16/2008	6.70
10/17/2008	6.79
10/20/2008	6.74
10/21/2008	6.84
10/22/2008	6.78
10/23/2008	6.42
10/24/2008	6.24
10/27/2008	6.12
10/28/2008	6.19
10/29/2008	6.47
10/30/2008	6.43
10/31/2008	6.78
11/3/2008	6.84
11/4/2008	7.22
11/5/2008	7.25
11/6/2008	6.98
11/7/2008	6.76
11/10/2008	7.25
11/11/2008	6.71
11/12/2008	6.41
11/13/2008	6.32
11/14/2008	6.31
11/17/2008	6.53
11/18/2008	6.52
11/19/2008	6.74
11/20/2008	6.32
11/21/2008	6.48

Dates	NYMEX: Henry Hub Natural Gas Prices
11/24/2008	6.89
11/25/2008	6.39
11/26/2008	6.88
11/28/2008	6.51
12/1/2008	6.60
12/2/2008	6.42
12/3/2008	6.35
12/4/2008	6.02
12/5/2008	5.74
12/8/2008	5.57
12/9/2008	5.58
12/10/2008	5.69
12/11/2008	5.60
12/12/2008	5.49
12/15/2008	5.65
12/16/2008	5.75
12/17/2008	5.62
12/18/2008	5.55
12/19/2008	5.33
12/22/2008	5.29
12/23/2008	5.74
12/24/2008	5.91
12/26/2008	5.83
12/29/2008	6.14
12/30/2008	5.86
12/31/2008	5.62
1/2/2009	5.97
1/5/2009	6.07
1/6/2009	5.98
1/7/2009	5.87
1/8/2009	5.58
1/9/2009	5.52
1/12/2009	5.54
1/13/2009	5.18
1/14/2009	4.97
1/15/2009	4.84
1/16/2009	4.80
1/20/2009	4.64
1/21/2009	4.78
1/22/2009	4.68
1/23/2009	4.52
1/26/2009	4.49
1/27/2009	4.50
1/28/2009	4.48
1/29/2009	4.58
1/30/2009	4.42
2/2/2009	4.56
2/3/2009	4.51
2/4/2009	4.60
2/5/2009	4.64
2/6/2009	4.77
2/9/2009	4.81
2/10/2009	4.54
2/11/2009	4.53
2/12/2009	4.49
2/13/2009	4.45
2/17/2009	4.20
2/18/2009	4.21
2/19/2009	4.08
2/20/2009	4.01
2/23/2009	4.10
2/24/2009	4.24
2/25/2009	4.06
2/26/2009	4.08
2/27/2009	4.20
3/2/2009	4.15
3/3/2009	4.28
3/4/2009	4.34
3/5/2009	4.09
3/6/2009	3.95
3/9/2009	3.87
3/10/2009	3.84
3/11/2009	3.80

Dates	NYMEX: Henry Hub Natural Gas Prices
3/12/2009	4.00
3/13/2009	3.93
3/16/2009	3.85
3/17/2009	3.81
3/18/2009	3.68
3/19/2009	4.17
3/20/2009	4.23
3/23/2009	4.29
3/24/2009	4.35
3/25/2009	4.33
3/26/2009	3.95
3/27/2009	3.63
3/30/2009	3.74
3/31/2009	3.78
4/1/2009	3.70
4/2/2009	3.78
4/3/2009	3.80
4/6/2009	3.73
4/7/2009	3.56
4/8/2009	3.63
4/9/2009	3.61
4/13/2009	3.63
4/14/2009	3.69
4/15/2009	3.69
4/16/2009	3.60
4/17/2009	3.73
4/20/2009	3.54
4/21/2009	3.51
4/22/2009	3.53
4/23/2009	3.41
4/24/2009	3.30
4/27/2009	3.25
4/28/2009	3.32
4/29/2009	3.40
4/30/2009	3.37
5/1/2009	3.55
5/4/2009	3.73
5/5/2009	3.62
5/6/2009	3.89
5/7/2009	4.08
5/8/2009	4.31
5/11/2009	4.30
5/12/2009	4.45
5/13/2009	4.33
5/14/2009	4.29
5/15/2009	4.10
5/18/2009	4.14
5/19/2009	3.91
5/20/2009	3.97
5/21/2009	3.60
5/22/2009	3.52
5/26/2009	3.54
5/27/2009	3.54
5/28/2009	3.96
5/29/2009	3.84
6/1/2009	4.25
6/2/2009	4.12
6/3/2009	3.77
6/4/2009	3.81
6/5/2009	3.87
6/8/2009	3.73
6/9/2009	3.73
6/10/2009	3.71
6/11/2009	3.93
6/12/2009	3.86
6/15/2009	4.18
6/16/2009	4.13
6/17/2009	4.25
6/18/2009	4.09
6/19/2009	4.03
6/22/2009	3.93
6/23/2009	3.88
6/24/2009	3.76

Dates	NYMEX: Henry Hub Natural Gas Prices
6/25/2009	3.84
6/26/2009	3.95
6/29/2009	3.94
6/30/2009	3.84
7/1/2009	3.80
7/2/2009	3.62
7/6/2009	3.49
7/7/2009	3.43
7/8/2009	3.35
7/9/2009	3.41
7/10/2009	3.37
7/13/2009	3.26
7/14/2009	3.43
7/15/2009	3.28
7/16/2009	3.67
7/17/2009	3.67
7/20/2009	3.69
7/21/2009	3.71
7/22/2009	3.79
7/23/2009	3.55
7/24/2009	3.70
7/27/2009	3.60
7/28/2009	3.54
7/29/2009	3.38
7/30/2009	3.74
7/31/2009	3.65
8/3/2009	4.03
8/4/2009	4.00
8/5/2009	4.04
8/6/2009	3.74
8/7/2009	3.67
8/10/2009	3.64
8/11/2009	3.54
8/12/2009	3.48
8/13/2009	3.34
8/14/2009	3.24
8/17/2009	3.16
8/18/2009	3.10
8/19/2009	3.12
8/20/2009	2.95
8/21/2009	2.80
8/24/2009	2.92
8/25/2009	2.88
8/26/2009	2.91
8/27/2009	2.84
8/28/2009	3.03
8/31/2009	2.98
9/1/2009	2.82
9/2/2009	2.72
9/3/2009	2.51
9/4/2009	2.73
9/8/2009	2.81
9/9/2009	2.83
9/10/2009	3.26
9/11/2009	2.96
9/14/2009	3.30
9/15/2009	3.32
9/16/2009	3.76
9/17/2009	3.46
9/18/2009	3.78
9/21/2009	3.58
9/22/2009	3.61
9/23/2009	3.86
9/24/2009	3.96
9/25/2009	3.99
9/28/2009	3.73
9/29/2009	4.88
9/30/2009	4.84
10/1/2009	4.47
10/2/2009	4.72
10/5/2009	4.99
10/6/2009	4.88
10/7/2009	4.90

Dates	NYMEX: Henry Hub Natural Gas Prices
10/8/2009	4.96
10/9/2009	4.77
10/12/2009	4.88
10/13/2009	4.59
10/14/2009	4.44
10/15/2009	4.48
10/16/2009	4.78
10/19/2009	4.84
10/20/2009	5.16
10/21/2009	5.10
10/22/2009	4.95
10/23/2009	4.79
10/26/2009	4.51
10/27/2009	4.56
10/28/2009	4.29
10/29/2009	5.06
10/30/2009	5.05
11/2/2009	4.82
11/3/2009	4.92
11/4/2009	4.73
11/5/2009	4.78
11/6/2009	4.60
11/9/2009	4.67
11/10/2009	4.47
11/11/2009	4.50
11/12/2009	4.37
11/13/2009	4.39
11/16/2009	4.61
11/17/2009	4.53
11/18/2009	4.25
11/19/2009	4.34
11/20/2009	4.42
11/23/2009	4.47
11/24/2009	4.49
11/25/2009	5.16
11/27/2009	5.19
11/30/2009	4.85
12/1/2009	4.76
12/2/2009	4.53
12/3/2009	4.46
12/4/2009	4.59
12/7/2009	4.97
12/8/2009	5.11
12/9/2009	4.90
12/10/2009	5.30
12/11/2009	5.16
12/14/2009	5.33
12/15/2009	5.52
12/16/2009	5.46
12/17/2009	5.77
12/18/2009	5.78
12/21/2009	5.67
12/22/2009	5.72
12/23/2009	5.82
12/24/2009	5.64
12/28/2009	5.99
12/29/2009	5.81
12/30/2009	5.71
12/31/2009	5.57
1/4/2010	5.88
1/5/2010	5.64
1/6/2010	6.01
1/7/2010	5.81
1/8/2010	5.75
1/11/2010	5.45
1/12/2010	5.59
1/13/2010	5.73
1/14/2010	5.59
1/15/2010	5.69
1/19/2010	5.56
1/20/2010	5.50
1/21/2010	5.62
1/22/2010	5.82

Dates	*NYMEX:* Henry Hub Natural Gas Prices
1/25/2010	5.72
1/26/2010	5.49
1/27/2010	5.27
1/28/2010	5.14
1/29/2010	5.13
2/1/2010	5.43
2/2/2010	5.45
2/3/2010	5.42
2/4/2010	5.42
2/5/2010	5.52
2/8/2010	5.40
2/9/2010	5.29
2/10/2010	5.29
2/11/2010	5.40
2/12/2010	5.47
2/16/2010	5.31
2/17/2010	5.39
2/18/2010	5.17
2/19/2010	5.04
2/22/2010	4.90
2/23/2010	4.78
2/24/2010	4.82
2/25/2010	4.77
2/26/2010	4.81
3/1/2010	4.68
3/2/2010	4.71
3/3/2010	4.76
3/4/2010	4.58
3/5/2010	4.59
3/8/2010	4.53
3/9/2010	4.52
3/10/2010	4.56
3/11/2010	4.44
3/12/2010	4.40
3/15/2010	4.39
3/16/2010	4.35
3/17/2010	4.30
3/18/2010	4.09
3/19/2010	4.17
3/22/2010	4.08
3/23/2010	4.13
3/24/2010	4.11
3/25/2010	3.98
3/26/2010	3.87
3/29/2010	3.84
3/30/2010	3.97
3/31/2010	3.87
4/1/2010	4.09
4/5/2010	4.28
4/6/2010	4.10
4/7/2010	4.02
4/8/2010	3.91
4/9/2010	4.07
4/12/2010	4.01
4/13/2010	4.16
4/14/2010	4.20
4/15/2010	3.99
4/16/2010	4.04
4/19/2010	3.94
4/20/2010	3.98
4/21/2010	3.96
4/22/2010	4.13
4/23/2010	4.26
4/26/2010	4.26
4/27/2010	4.22
4/28/2010	4.27
4/29/2010	3.98
4/30/2010	3.92
5/3/2010	4.00
5/4/2010	4.01
5/5/2010	3.99
5/6/2010	3.93
5/7/2010	4.02

Dates	NYMEX: Henry Hub Natural Gas Prices
5/10/2010	4.17
5/11/2010	4.13
5/12/2010	4.28
5/13/2010	4.34
5/14/2010	4.31
5/17/2010	4.40
5/18/2010	4.34
5/19/2010	4.16
5/20/2010	4.11
5/21/2010	4.04
5/24/2010	4.02
5/25/2010	4.05
5/26/2010	4.16
5/27/2010	4.29
5/28/2010	4.34
6/1/2010	4.25
6/2/2010	4.42
6/3/2010	4.69
6/4/2010	4.80
6/7/2010	4.92
6/8/2010	4.81
6/9/2010	4.68
6/10/2010	4.65
6/11/2010	4.78
6/14/2010	5.01
6/15/2010	5.19
6/16/2010	4.98
6/17/2010	5.16
6/18/2010	5.00
6/21/2010	4.87
6/22/2010	4.76
6/23/2010	4.80
6/24/2010	4.75
6/25/2010	4.86
6/28/2010	4.72
6/29/2010	4.55
6/30/2010	4.62
7/1/2010	4.85
7/2/2010	4.69
7/6/2010	4.68
7/7/2010	4.57
7/8/2010	4.40
7/9/2010	4.40
7/12/2010	4.39
7/13/2010	4.35
7/14/2010	4.31
7/15/2010	4.59
7/16/2010	4.52
7/19/2010	4.51
7/20/2010	4.59
7/21/2010	4.51
7/22/2010	4.64
7/23/2010	4.58
7/26/2010	4.61
7/27/2010	4.68
7/28/2010	4.77
7/29/2010	4.83
7/30/2010	4.92
8/2/2010	4.70
8/3/2010	4.64
8/4/2010	4.74
8/5/2010	4.60
8/6/2010	4.47
8/9/2010	4.31
8/10/2010	4.30
8/11/2010	4.33
8/12/2010	4.30
8/13/2010	4.33
8/16/2010	4.23
8/17/2010	4.27
8/18/2010	4.24
8/19/2010	4.17
8/20/2010	4.12

Dates	NYMEX: Henry Hub Natural Gas Prices
8/23/2010	4.07
8/24/2010	4.04
8/25/2010	3.87
8/26/2010	3.82
8/27/2010	3.65
8/30/2010	3.81
8/31/2010	3.82
9/1/2010	3.76
9/2/2010	3.75
9/3/2010	3.94
9/7/2010	3.85
9/8/2010	3.81
9/9/2010	3.77
9/10/2010	3.88
9/13/2010	3.94
9/14/2010	3.97
9/15/2010	4.00
9/16/2010	4.06
9/17/2010	4.02
9/20/2010	3.82
9/21/2010	3.92
9/22/2010	3.97
9/23/2010	4.02
9/24/2010	3.88
9/27/2010	3.80
9/28/2010	3.84
9/29/2010	3.96
9/30/2010	3.87
10/1/2010	3.80
10/4/2010	3.73
10/5/2010	3.74
10/6/2010	3.87
10/7/2010	3.62
10/8/2010	3.65
10/11/2010	3.60
10/12/2010	3.63
10/13/2010	3.70
10/14/2010	3.66
10/15/2010	3.54
10/18/2010	3.43
10/19/2010	3.51
10/20/2010	3.54
10/21/2010	3.37
10/22/2010	3.33
10/25/2010	3.32
10/26/2010	3.35
10/27/2010	3.29
10/28/2010	3.89
10/29/2010	4.04
11/1/2010	3.83
11/2/2010	3.87
11/3/2010	3.84
11/4/2010	3.86
11/5/2010	3.94
11/8/2010	4.09
11/9/2010	4.21
11/10/2010	4.05
11/11/2010	3.93
11/12/2010	3.80
11/15/2010	3.85
11/16/2010	3.82
11/17/2010	4.03
11/18/2010	4.01
11/19/2010	4.16
11/22/2010	4.27
11/23/2010	4.26
11/24/2010	4.27
11/26/2010	4.40
11/29/2010	4.21
11/30/2010	4.18
12/1/2010	4.27
12/2/2010	4.34
12/3/2010	4.35

Dates	*NYMEX: Henry Hub* Natural Gas Prices
12/6/2010	4.49
12/7/2010	4.39
12/8/2010	4.61
12/9/2010	4.44
12/10/2010	4.42
12/13/2010	4.42
12/14/2010	4.26
12/15/2010	4.22
12/16/2010	4.05
12/17/2010	4.07
12/20/2010	4.24
12/21/2010	4.06
12/22/2010	4.15
12/23/2010	4.08
12/27/2010	4.11
12/28/2010	4.22
12/29/2010	4.29
12/30/2010	4.34
12/31/2010	4.41
1/3/2011	4.65
1/4/2011	4.67
1/5/2011	4.47
1/6/2011	4.43
1/7/2011	4.42
1/10/2011	4.40
1/11/2011	4.48
1/12/2011	4.53
1/13/2011	4.41
1/14/2011	4.48
1/18/2011	4.43
1/19/2011	4.56
1/20/2011	4.70
1/21/2011	4.74
1/24/2011	4.58
1/25/2011	4.47
1/26/2011	4.49
1/27/2011	4.32
1/28/2011	4.32
1/31/2011	4.42
2/1/2011	4.35
2/2/2011	4.43
2/3/2011	4.34
2/4/2011	4.31
2/7/2011	4.10
2/8/2011	4.04
2/9/2011	4.04
2/10/2011	3.99
2/11/2011	3.91
2/14/2011	3.93
2/15/2011	3.98
2/16/2011	3.92
2/17/2011	3.87
2/18/2011	3.88
2/22/2011	3.87
2/23/2011	3.90
2/24/2011	3.79
2/25/2011	4.01
2/28/2011	4.04
3/1/2011	3.87
3/2/2011	3.82
3/3/2011	3.78
3/4/2011	3.81
3/7/2011	3.93
3/8/2011	3.86
3/9/2011	3.93
3/10/2011	3.83
3/11/2011	3.89
3/14/2011	3.91
3/15/2011	3.94
3/16/2011	3.94
3/17/2011	4.16
3/18/2011	4.17
3/21/2011	4.16

Dates	NYMEX: Henry Hub Natural Gas Prices
3/22/2011	4.25
3/23/2011	4.34
3/24/2011	4.24
3/25/2011	4.40
3/28/2011	4.37
3/29/2011	4.24
3/30/2011	4.36
3/31/2011	4.39
4/1/2011	4.36
4/4/2011	4.29
4/5/2011	4.23
4/6/2011	4.15
4/7/2011	4.06
4/8/2011	4.04
4/11/2011	4.11
4/12/2011	4.10
4/13/2011	4.14
4/14/2011	4.21
4/15/2011	4.20
4/18/2011	4.14
4/19/2011	4.26
4/20/2011	4.31
4/21/2011	4.41
4/25/2011	4.39
4/26/2011	4.39
4/27/2011	4.38
4/28/2011	4.57
4/29/2011	4.70
5/2/2011	4.69
5/3/2011	4.67
5/4/2011	4.58
5/5/2011	4.26
5/6/2011	4.24
5/9/2011	4.15
5/10/2011	4.25
5/11/2011	4.18
5/12/2011	4.19
5/13/2011	4.25
5/16/2011	4.32
5/17/2011	4.18
5/18/2011	4.20
5/19/2011	4.09
5/20/2011	4.23
5/23/2011	4.35
5/24/2011	4.35
5/25/2011	4.38
5/26/2011	4.33
5/27/2011	4.52
5/31/2011	4.67
6/1/2011	4.63
6/2/2011	4.79
6/3/2011	4.71
6/6/2011	4.83
6/7/2011	4.83
6/8/2011	4.85
6/9/2011	4.67
6/10/2011	4.76
6/13/2011	4.65
6/14/2011	4.58
6/15/2011	4.58
6/16/2011	4.41
6/17/2011	4.33
6/20/2011	4.32
6/21/2011	4.39
6/22/2011	4.32
6/23/2011	4.19
6/24/2011	4.23
6/27/2011	4.26
6/28/2011	4.36
6/29/2011	4.32
6/30/2011	4.37
7/1/2011	4.31
7/5/2011	4.36

Dates	NYMEX: Henry Hub Natural Gas Prices
7/6/2011	4.22
7/7/2011	4.13
7/8/2011	4.21
7/11/2011	4.29
7/12/2011	4.33
7/13/2011	4.40
7/14/2011	4.38
7/15/2011	4.55
7/18/2011	4.55
7/19/2011	4.53
7/20/2011	4.50
7/21/2011	4.40
7/22/2011	4.40
7/25/2011	4.39
7/26/2011	4.37
7/27/2011	4.37
7/28/2011	4.24
7/29/2011	4.15
8/1/2011	4.19
8/2/2011	4.16
8/3/2011	4.09
8/4/2011	3.94
8/5/2011	3.94
8/8/2011	3.94
8/9/2011	3.99
8/10/2011	4.00
8/11/2011	4.11
8/12/2011	4.06
8/15/2011	4.02
8/16/2011	3.93
8/17/2011	3.93
8/18/2011	3.89
8/19/2011	3.94
8/22/2011	3.89
8/23/2011	3.99
8/24/2011	3.92
8/25/2011	3.93
8/26/2011	3.93
8/29/2011	3.86
8/30/2011	3.91
8/31/2011	4.05
9/1/2011	4.05
9/2/2011	3.87
9/6/2011	3.94
9/7/2011	3.94
9/8/2011	3.98
9/9/2011	3.92
9/12/2011	3.89
9/13/2011	3.98
9/14/2011	4.04
9/15/2011	3.88
9/16/2011	3.81
9/19/2011	3.83
9/20/2011	3.80
9/21/2011	3.73
9/22/2011	3.71
9/23/2011	3.70
9/26/2011	3.78
9/27/2011	3.83
9/28/2011	3.76
9/29/2011	3.75
9/30/2011	3.67
10/3/2011	3.62
10/4/2011	3.64
10/5/2011	3.57
10/6/2011	3.60
10/7/2011	3.48
10/10/2011	3.54
10/11/2011	3.62
10/12/2011	3.49
10/13/2011	3.53
10/14/2011	3.70
10/17/2011	3.69

Dates	NYMEX: Henry Hub Natural Gas Prices
10/18/2011	3.55
10/19/2011	3.59
10/20/2011	3.63
10/21/2011	3.63
10/24/2011	3.60
10/25/2011	3.66
10/26/2011	3.59
10/27/2011	3.52
10/28/2011	3.92
10/31/2011	3.93
11/1/2011	3.78
11/2/2011	3.75
11/3/2011	3.78
11/4/2011	3.78
11/7/2011	3.70
11/8/2011	3.75
11/9/2011	3.65
11/10/2011	3.65
11/11/2011	3.58
11/14/2011	3.46
11/15/2011	3.40
11/16/2011	3.34
11/17/2011	3.41
11/18/2011	3.32
11/21/2011	3.40
11/22/2011	3.42
11/23/2011	3.46
11/25/2011	3.54
11/28/2011	3.36
11/29/2011	3.63
11/30/2011	3.55
12/1/2011	3.65
12/2/2011	3.58
12/5/2011	3.46
12/6/2011	3.49
12/7/2011	3.42
12/8/2011	3.46
12/9/2011	3.32
12/12/2011	3.25
12/13/2011	3.28
12/14/2011	3.14
12/15/2011	3.13
12/16/2011	3.13
12/19/2011	3.10
12/20/2011	3.13
12/21/2011	3.16
12/22/2011	3.17
12/23/2011	3.11
12/27/2011	3.11
12/28/2011	3.08
12/29/2011	3.03
12/30/2011	2.99
1/3/2012	2.99
1/4/2012	3.10
1/5/2012	2.98
1/6/2012	3.06
1/9/2012	3.01
1/10/2012	2.94
1/11/2012	2.77
1/12/2012	2.70
1/13/2012	2.67
1/17/2012	2.49
1/18/2012	2.47
1/19/2012	2.32
1/20/2012	2.34
1/23/2012	2.53
1/24/2012	2.55
1/25/2012	2.73
1/26/2012	2.61
1/27/2012	2.68
1/30/2012	2.71
1/31/2012	2.50
2/1/2012	2.38

Dates	NYMEX: Henry Hub Natural Gas Prices
2/2/2012	2.55
2/3/2012	2.50
2/6/2012	2.55
2/7/2012	2.47
2/8/2012	2.45
2/9/2012	2.48
2/10/2012	2.48
2/13/2012	2.43
2/14/2012	2.53
2/15/2012	2.43
2/16/2012	2.57
2/17/2012	2.68
2/21/2012	2.63
2/22/2012	2.64
2/23/2012	2.62
2/24/2012	2.55
2/27/2012	2.45
2/28/2012	2.52
2/29/2012	2.62
3/1/2012	2.46
3/2/2012	2.48
3/5/2012	2.36
3/6/2012	2.36
3/7/2012	2.30
3/8/2012	2.27
3/9/2012	2.32
3/12/2012	2.27
3/13/2012	2.30
3/14/2012	2.28
3/15/2012	2.28
3/16/2012	2.33
3/19/2012	2.35
3/20/2012	2.34
3/21/2012	2.36
3/22/2012	2.27
3/23/2012	2.28
3/26/2012	2.23
3/27/2012	2.21
3/28/2012	2.19
3/29/2012	2.15
3/30/2012	2.13
4/2/2012	2.15
4/3/2012	2.19
4/4/2012	2.14
4/5/2012	2.09
4/9/2012	2.11
4/10/2012	2.03
4/11/2012	1.98
4/12/2012	1.98
4/13/2012	1.98
4/16/2012	2.02
4/17/2012	1.95
4/18/2012	1.95
4/19/2012	1.91
4/20/2012	1.93
4/23/2012	2.01
4/24/2012	1.98
4/25/2012	2.07
4/26/2012	2.04
4/27/2012	2.19
4/30/2012	2.29
5/1/2012	2.37
5/2/2012	2.25
5/3/2012	2.34
5/4/2012	2.28
5/7/2012	2.34
5/8/2012	2.39
5/9/2012	2.47
5/10/2012	2.49
5/11/2012	2.51
5/14/2012	2.43
5/15/2012	2.50
5/16/2012	2.62

Dates	*NYMEX: Henry Hub* Natural Gas Prices
5/17/2012	2.59
5/18/2012	2.74
5/21/2012	2.61
5/22/2012	2.71
5/23/2012	2.74
5/24/2012	2.65
5/25/2012	2.57
5/29/2012	2.43
5/30/2012	2.42
5/31/2012	2.42
6/1/2012	2.33
6/4/2012	2.42
6/5/2012	2.45
6/6/2012	2.42
6/7/2012	2.27
6/8/2012	2.30
6/11/2012	2.22
6/12/2012	2.23
6/13/2012	2.19
6/14/2012	2.50
6/15/2012	2.47
6/18/2012	2.64
6/19/2012	2.55
6/20/2012	2.52
6/21/2012	2.58
6/22/2012	2.63
6/25/2012	2.69
6/26/2012	2.77
6/27/2012	2.77
6/28/2012	2.72
6/29/2012	2.82
7/2/2012	2.82
7/3/2012	2.90
7/5/2012	2.95
7/6/2012	2.78
7/9/2012	2.88
7/10/2012	2.74
7/11/2012	2.85
7/12/2012	2.87
7/13/2012	2.87
7/16/2012	2.80
7/17/2012	2.80
7/18/2012	2.97
7/19/2012	3.00
7/20/2012	3.08
7/23/2012	3.12
7/24/2012	3.19
7/25/2012	3.07
7/26/2012	3.11
7/27/2012	3.01
7/30/2012	3.21
7/31/2012	3.21
8/1/2012	3.17
8/2/2012	2.92
8/3/2012	2.88
8/6/2012	2.91
8/7/2012	2.96
8/8/2012	2.93
8/9/2012	2.95
8/10/2012	2.77
8/13/2012	2.73
8/14/2012	2.83
8/15/2012	2.75
8/16/2012	2.72
8/17/2012	2.72
8/20/2012	2.78
8/21/2012	2.78
8/22/2012	2.83
8/23/2012	2.80
8/24/2012	2.70
8/27/2012	2.65
8/28/2012	2.61
8/29/2012	2.63

Dates	NYMEX: Henry Hub Natural Gas Prices
8/30/2012	2.75
8/31/2012	2.80
9/4/2012	2.85
9/5/2012	2.80
9/6/2012	2.78
9/7/2012	2.68
9/10/2012	2.81
9/11/2012	2.99
9/12/2012	3.06
9/13/2012	3.04
9/14/2012	2.94
9/17/2012	2.87
9/18/2012	2.77
9/19/2012	2.76
9/20/2012	2.80
9/21/2012	2.89
9/24/2012	2.84
9/25/2012	2.92
9/26/2012	3.02
9/27/2012	3.30
9/28/2012	3.32
10/1/2012	3.48
10/2/2012	3.53
10/3/2012	3.40
10/4/2012	3.41
10/5/2012	3.40
10/8/2012	3.40
10/9/2012	3.47
10/10/2012	3.48
10/11/2012	3.60
10/12/2012	3.61
10/15/2012	3.49
10/16/2012	3.44
10/17/2012	3.47
10/18/2012	3.59
10/19/2012	3.62
10/22/2012	3.45
10/23/2012	3.54
10/24/2012	3.45
10/25/2012	3.43
10/26/2012	3.40
10/29/2012	3.47
10/30/2012	3.69
10/31/2012	3.69
11/1/2012	3.70
11/2/2012	3.55
11/5/2012	3.55
11/6/2012	3.62
11/7/2012	3.58
11/8/2012	3.61
11/9/2012	3.50
11/12/2012	3.57
11/13/2012	3.74
11/14/2012	3.76
11/15/2012	3.70
11/16/2012	3.79
11/19/2012	3.72
11/20/2012	3.83
11/21/2012	3.90
11/23/2012	3.90
11/26/2012	3.73
11/27/2012	3.77
11/28/2012	3.70
11/29/2012	3.65
11/30/2012	3.56
12/3/2012	3.59
12/4/2012	3.54
12/5/2012	3.70
12/6/2012	3.67
12/7/2012	3.55
12/10/2012	3.46
12/11/2012	3.41
12/12/2012	3.38

Dates	NYMEX: Henry Hub Natural Gas Prices
12/13/2012	3.35
12/14/2012	3.31
12/17/2012	3.36
12/18/2012	3.42
12/19/2012	3.32
12/20/2012	3.46
12/21/2012	3.45
12/24/2012	3.35
12/26/2012	3.39
12/27/2012	3.35
12/28/2012	3.47
12/31/2012	3.35

NYMEX Henry Hub Forecast Data

Date	Mar-03	Apr-03	May-03	Jun-03	Jul-03	Aug-03	Sep-03	Oct-03	Nov-03	Dec-03	Jan-04	Feb-04
Feb 2003	5.78	5.56	5.32	5.20	5.16	5.12	5.07	5.07	5.22	5.38	5.45	5.31
	Mar-04	Apr-04	May-04	Jun-04	Jul-04	Aug-04	Sep-04	Oct-04	Nov-04	Dec-04	Jan-05	Feb-05
Feb 2004	5.45	5.38	5.34	5.35	5.36	5.37	5.33	5.33	5.49	5.66	5.78	5.73
	Mar-05	Apr-05	May-05	Jun-05	Jul-05	Aug-05	Sep-05	Oct-05	Nov-05	Dec-05	Jan-06	Feb-06
Feb 2005	6.09	6.17	6.24	6.30	6.36	6.40	6.40	6.42	6.75	7.07	7.29	7.26
	Mar-06	Apr-06	May-06	Jun-06	Jul-06	Aug-06	Sep-06	Oct-06	Nov-06	Dec-06	Jan-07	Feb-07
Feb 2006	7.24	7.43	7.58	7.71	7.84	7.92	7.98	8.06	8.93	9.76	10.30	10.31
	Mar-07	Apr-07	May-07	Jun-07	Jul-07	Aug-07	Sep-07	Oct-07	Nov-07	Dec-07	Jan-08	Feb-08
Feb 2007	7.23	7.33	7.42	7.52	7.63	7.72	7.78	7.89	8.48	9.01	9.32	9.32
	Mar-08	Apr-08	May-08	Jun-08	Jul-08	Aug-08	Sep-08	Oct-08	Nov-08	Dec-08	Jan-09	Feb-09
Feb 2008	8.44	8.48	8.53	8.59	8.67	8.73	8.74	8.81	9.12	9.46	9.69	9.69
	Mar-09	Apr-09	May-09	Jun-09	Jul-09	Aug-09	Sep-09	Oct-09	Nov-09	Dec-09	Jan-10	Feb-10
Feb 2009	4.49	4.50	4.60	4.74	4.88	4.97	5.01	5.11	5.66	6.23	6.49	6.50
	Mar-10	Apr-10	May-10	Jun-10	Jul-10	Aug-10	Sep-10	Oct-10	Nov-10	Dec-10	Jan-11	Feb-11
Feb 2010	5.47	5.45	5.49	5.56	5.64	5.69	5.73	5.82	6.12	6.43	6.65	6.61
	Mar-11	Apr-11	May-11	Jun-11	Jul-11	Aug-11	Sep-11	Oct-11	Nov-11	Dec-11	Jan-12	Feb-12
Feb 2011	3.91	3.98	4.05	4.12	4.19	4.22	4.23	4.28	4.47	4.71	4.84	4.83
	Mar-12	Apr-12	May-12	Jun-12	Jul-12	Aug-12	Sep-12	Oct-12	Nov-12	Dec-12		
Feb 2012	2.43	2.62	2.75	2.85	2.93	2.97	2.98	3.04	3.22	3.53		

Kentucky Power Company

REQUEST

Please provide the Company's historic load shape by hour for each hour in 2011. Please supply this electronically.

RESPONSE

See KP_hourly_110101_111231.xls on the enclosed CD.

WITNESS: Ranie K. Wohnhas

Kentucky Power Company

REQUEST

Regarding off-system sales, for the period of 2000 – 2011:

a. Please discuss the different categories of off-system sales that KPCo has.

b. Please provide off-system energy by category by year. Include separately, capacity (MWs), energy (MWHs) and sales revenue ($) by year and by category. Please supply this information electronically in spreadsheet format.

c. For each category of off-system sales, please explain any sharing mechanism that exists between ratepayers and shareholders, and provide a citation to the authority for any sharing mechanism that may exist, and explain the mechanism.

d. If a sharing mechanism exists, for the revenue received in part b above, please identify what portion of the revenue is allocated to the Shareholders and what part is allocated to ratepayers.

e. Please explain how the Company identifies what portion of the revenue is profit and what portion is fuel and other cost recovery.

RESPONSE

a. There are no "categories" of off-system sales. Under the Company's Tariff S.S.C. (System Sales Clause), off-system sales are described as all sales to non-associated utilities.

b. & d. Please see KIUC 1-50 Attachment 1 for the requested information.

c. KPCo's current Tariff S.S.C. was set in KPSC Case No. 2009-00459. The mechanism establishes a monthly base net revenue for customers, with a 60/40 sharing of amounts above (or below) the monthly base net revenue.

c. OSS margins are the net profit that results after taking the total revenue from all sales made to non-affiliated counterparties, and subtracting out the variable costs of making those sales. For example, sales to non-affiliated counterparties may include the sale of electricity from KPCo generating units, the re-sale of purchased power, or margins from financial products. Variable costs include the cost of fuel, variable operating and maintenance, purchased power or costs associated with entering into a financial product. The variable fuel and other costs associated with off-system sales are included in the Company's System Sales Clause.

WITNESS: Ranie K Wohnhas

KPCo OSS Margins* by Year - 2000 through 2011
Company Sharing Amount ($) and Percentage of Total OSS Margins Also Provided

	System Sales Net Revenues**	Customer Base Net Revenue	Customer Share Above(Below) Monthly Credit	Customer Total Share	Company Total Share	Customer Sharing %	Company Sharing %
2011	$20,475,905	$15,290,363	$3,111,325	$18,401,688	$2,074,217	90%	10%
2010	$18,665,237	$26,296,365	($5,196,308)	$21,100,057	($2,434,820)	113%	-13%
2009	$17,123,251	$24,855,326	($5,569,481)	$19,285,845	($2,166,763)	113%	-13%
2008	$45,353,156	$24,855,326	$13,753,162	$38,608,488	$6,744,668	85%	15%
2007	$51,285,093	$24,855,326	$17,242,935	$42,098,261	$9,186,832	82%	18%
2006	$49,891,758	$22,355,360	$17,392,879	$39,748,239	$10,143,519	80%	20%
2005	$27,644,757	$11,315,336	$8,164,713	$19,480,049	$8,164,708	70%	30%
2004	$30,035,161	$11,315,336	$9,359,915	$20,675,251	$9,359,915	69%	31%
2003	$33,348,856	$11,315,336	$11,016,763	$22,332,099	$11,016,763	67%	33%
2002	$19,021,201	$11,315,336	$3,852,935	$15,168,271	$3,852,935	80%	20%
2001	$26,000,508	$11,315,336	$7,342,587	$18,657,923	$7,342,587	72%	28%
2000	$34,882,824	$11,315,336	$11,784,246	$23,099,582	$11,784,246	66%	34%

*Due to the various instruments used to optimize OSS margins (including heat-rate transactions and financial SWAPs), and as a result of netting of various OSS transactions (for example, book-out transactions), MWhs and sales revenue are not available.

**The only capacity related margins in OSS are the result of AEP sales into the PJM RPM market, which began in 2008, and are included in the 'System Sales Net Revenues' totals shown in the table. KPCo's share of those capacity sales was; $4,397,794 (2011), $4,296,178 (2010), $1,862,345 (2009), and $335,064 (2008).

Kentucky Power Company

REQUEST

For the Mitchell modeling analyses performed using Strategist and Aurora:

a. How were the same categories of off-system sales reflected in the modeling performed for the Mitchell analysis? If they were not modeled, please explain why not. Please provide separate explanations for Strategist and Aurora.

b. How were the OSS margins reflected in Strategist and Aurora? If the Company did not share the OSS margins between shareholders and customers in the analyses, then please explain why not. Please provide separate explanations for Strategist and Aurora.

c. Please provide all calculations showing the sharing of OSS margins between shareholders and customers in each of the analyses.

RESPONSE

a. For Strategist, see response to SC 1-33 d. Aurora is an electric market price forecasting and long-term capacity expansion tool for the North American power market. It does not model off-system sales.

b. For Strategist, see response to SC 1-33 e. and f. For Aurora, please refer to "a." above.

c. For Strategist, see response to SC 1-33 f.

WITNESS: Scott C Weaver

Kentucky Power Company

REQUEST

Please provide a description of all actual attempts and all attempts that were considered by AEP to sell the Mitchell generating units or the entire plant to one or more non-affiliated entities at any time during the last 3 years. Please describe the current status of each such attempt.

RESPONSE

There has been no attempt to sell the Mitchell generating units or the entire plant to non-affiliated entities during the last three years.

WITNESS: Ranie K Wohnhas

Kentucky Power Company

REQUEST

Please provide a copy of all studies, analyses, and/or offers/solicitations by AEP to sell the Mitchell generating units or the entire plant to one or more non-affiliated entities at any time during the last 3 years. Please describe the purpose of each such study, analysis, and/or offer/solicitation, how AEP and who at AEP considered the results or recommendations of each such study, analysis, and/or offer/solicitation, and provide the reasons why the option was or was not pursued, and if pursued, the manner in which it was pursued.

RESPONSE

See the Company's response to KIUC 1-52.

WITNESS: Ranie K. Wohnhas

Kentucky Power Company

REQUEST

At page 3 of his testimony, Mr. Bletzacker describes what a fundamental analysis is and what it is used for, and he states that AEPSC primarily develops these analyses for use by the regulated operating companies for long-term planning.

a. What else besides long-term planning are these used for (power prices, and other commodity forecasts)?

b. How often are these types of commodity forecasts developed?

c. Please provide any documentation that exists concerning AEP's policy for the development and use of these commodity forecasts. For example, is there a policy requirement that these be created monthly, quarterly, etc, and is there any requirement that the Operating Companies make use of the same forecasts for planning studies. Please provide the documentation and explain in detail.

d. Did AEP use the same forecasts for evaluating Mitchell in Virginia and West Virginia as was used in Kentucky? If not please provide the commodity forecasts that were used in studies in those states, electronically with all formulas intact and no pasted in values. Please describe the studies that were performed in those states using these forecasts to evaluate Mitchell and explain why different forecasts were prepared for the studies in the different states.

e. Please list all departments within any AEP or any Operating Company that received any commodity forecast used for any studies performed to evaluate the benefits of acquiring the Mitchell units, including the Operating Companies in Kentucky, Virginia, and West Virginia, etc.

f. Please provide the 3 most recent commodity price forecasts, used for any purpose, for all of the commodities including on and off-peak energy prices, capacity prices, CO2 costs, natural gas prices, and coal prices produced by AEPSC. Please explain the purpose that these 3 forecasts have been used for and the major assumptions that were used to create the forecasts. Please provide the information electronically with all formulas intact and no pasted in values.

RESPONSE

a. Fundamentals analysis is used in strategic planning and assessments, such as asset analysis, asset valuation, technology impact analysis, transmission project analysis, fuel forecasts, allowance trading strategy, environmental policy impact analysis, and barge loading analysis.

b. The commodity Long-Term Forecast is revised whenever long-term structural changes in the power related energy sector warrant the re-evaluation of an existing Long-Term Forecast for the creation a new Long-Term Forecast.

c. There is no formal policy, or documentation, concerning the development and use of the Long-Term Forecast.

d. The same forecasts were used in the evaluation of the Mitchell Units for Kentucky, West Virginia, and Virginia

e. Anyone within AEP Service Corporation with access to AEP's internal website "AEPNow" can view the Long-Term Forecast. AEP Service Corporation Integrated Resource Planning Group performed the studies to evaluate each jurisdictions acquisition of the Mitchell units.

f. Please see files Price_Forecast_Nominal_Fleet_Transition_2011_03_22.xls, Price_Forecast_Nominal_Fleet_Transition_Carbon_Adjusted_2011_04_25.xls, and Price_Forecast_Nominal_FTCA_CSAPR_2011_09_23.xls on the enclosed CD. The primary use of these forecasts has been for Integrated Resource Planning. These forecasts are also used for the purposes described in response "a." above. The purpose and major assumptions in the forecast dated 9-23-11 was to capture the initial CSAPR provision. The forecast dated 4-25-11 placed the initial year of CO2 values in 2022 from 2017. The forecast dated 3-22-11 placed the initial year of CO2 values in 2017.

WITNESS: Karl R Bletzacker

Kentucky Power Company

REQUEST

At page 4, line 20 of his testimony, Mr. Bletzacker provides a discussion of how the gas price forecast is developed. He states it begins with an analysis of the consultancies' supply, demand and price relationship - which produces a price elasticity of supply over time. Please supply each of those consultancies "supply, demand and price relationships". Please provide all reports, analyses, workpapers, letters, documentation of any kind, for each consultancy electronically, with all formulas intact and no pasted in values.

RESPONSE

Please refer to the Company's response to KIUC 1-56.

The "price elasticity of supply over time" is the mathematical formula that represents the correlation between increases and decreases in natural gas consumption and natural gas prices. It can be expressed as the ratio of the % change in consumption to the % change in price. The development of this ratio did not necessitate the creation of workpapers. Please see KPSC 1-31d.

WITNESS: Karl R Bletzacker

Kentucky Power Company

REQUEST

Please supply the workpapers used to develop elasticities that are then applied to the Aurora model and provide a narrative description of how these elasticities were developed.

RESPONSE

Please refer to Bletzacker's Direct Testimony at pages 4 and 5. The development of elasticies in this context does not require workpapers. It is a basic ratio of the % change in consumption to the % change in price, which can be derived by hand or calculator.

WITNESS: Karl R Bletzacker

Kentucky Power Company

REQUEST

Mr. Bletzacker also states on page 4 at line 23 that the elasticities are applied to the AuroraXMP natural gas burns, and that produces a corresponding change in gas prices. Then those prices are run through AuroraXMP which results in a change in gas burn. The process is iterative and the ultimate goal appears to determine the prices as which the gas burn change is de minimus. Please supply additional detailed documentation or a narrative description explaining more about how this process works.

RESPONSE

Please refer to Bletzacker Direct Testimony at page 4 and the Appendix at page 15. It is expected that an increase in the consumption of natural gas results in an increase in natural gas price. This expectation is based on the assumption that the cost of natural gas supply is determined by its marginal cost and there is no concurrent rapid drop in marginal cost. In other words, it is expected that if demand increases and supply remains unchanged, a shortage occurs, leading to a higher equilibrium price.

WITNESS: Karl R Bletzacker

Kentucky Power Company

REQUEST

Please supply the workpapers and analyses that led to the development of the graph found on page 5 of Mr. Bletzacker's testimony. Please supply those analyses electronically, with all formulas intact and no pasted in values.

RESPONSE

The consultancies' natural gas price forecasts captured in the graph on Bletzacker Direct Testimony at page 5 are:

1) Cambridge Energy Research Associates (CERA), base case, May 2011,
2) PIRA, base case, May 2011,
3) Energy Information Administration (EIA), base case, May 2011, and
4) American Electric Power, Fleet Transition-CSAPR case, November 2011.

Pursuant to licensing provisions, CERA and PIRA forecasts cannot be distributed to non-licensees.

The EIA base case is available at:

http://www.eia.gov/forecasts/archive/aeo11/index.cfm

Please refer to KIUC 1-40 for the American Electric Power, Fleet Transition-CSAPR case.

WITNESS: Karl R Bletzacker

Kentucky Power Company

REQUEST

Provide all analyses, input assumptions, outputs, models etc, used in the development of the forecast gas prices based on the price elasticity-fuel burn-AuroraXMP approach. Please supply those analyses electronically, with all formulas intact and no pasted in values.

RESPONSE

Other than the forecast natural gas prices based upon the natural gas fuel burn in the Long-Term Forecast output files, other iterations of the natural gas price elasticity are not recorded.

WITNESS: Karl R Bletzacker

Kentucky Power Company

REQUEST

What changes were made to data assumptions to derive the high band gas price forecast versus the low band forecast and what methodology was used to derive those forecasts? Also to derive the No Carbon and Early Carbon forecasts? Provide all analyses, input assumptions, outputs, models etc, used in the development of these gas price forecasts (low, high, No Carbon, and Early Carbon) forecasts. Please supply those analyses electronically, with all formulas intact and no pasted in values.

RESPONSE

To capture a low and a high case, a statistical distribution analysis was used. Five years of gas price and coal price history were used to compute one standard deviation from the mean. Plausible cases were built around these high and low fossil fuel prices.

Please refer to KPSC 1-29 for the requested files.

WITNESS: Karl R Bletzacker

Kentucky Power Company

REQUEST

Was a similar price elasticity approach used to derive the coal price forecast or the CO_2 price forecasts? If not, what approach was used to derive the coal and CO_2 price forecast? Provide all analyses, input assumptions, outputs, models etc., used in the development of all of the coal and CO_2 forecasts. Please supply those analyses electronically, with all formulas intact and no pasted in values.

RESPONSE

No. A similar price elasticity approach was not used to derive the coal price forecast or the CO_2 value assumptions. Please refer to Bletzacker's Direct Testimony at page 12 for the approach used to derive the CO_2 price forecast. Please refer to the Company's response to KPSC 1-31 for the approach used to derive the coal price forecast.

WITNESS: Karl R Bletzacker

Kentucky Power Company

REQUEST

Was a price elasticity approach used to derive the on-peak and off-peak market price forecast? Please provide a detailed explanation how the forecasts were developed for all of the cases (Low, Base, High, No Carbon, Early Carbon). Provide all analyses, input assumptions, outputs, models etc, used in the development of all of the coal and CO_2 forecasts. Please supply those analyses electronically, with all formulas intact and no pasted in values.

RESPONSE

No. A price elasticity approach was not used to derive the on-peak and off-peak market price forecast. Instead, the on-peak and off-peak power price forecast is the final output of the AuroraXMP model upon completion of all iterative steps involving the price elasticity of supply.

To capture a low and a high case, a statistical distribution analysis was used. Five years of gas price and coal price history were used to compute one standard deviation from the mean. Plausible cases were built around these high and low fossil fuel prices. Additionally, a "no CO_2" and an accelerated CO_2 implementation (2017) were created to frame these uncertainties.

Please see KPSC 1-29 for the output files.

WITNESS: Karl R Bletzacker

Kentucky Power Company

REQUEST

Does the Company believe that if it first had a Base Case fuel forecast, and wanted to create either a high or low gas price forecast, that it would be necessary to make similar large changes to coal fuels as well? In other words, would the development of a high gas forecast case necessarily require the creation of a correlated (high) coal price forecast? Please explain.

RESPONSE

No. Although the prices of gas and coal may be interrelated at times, they are not correlated in such a way that it would be necessary to make similar large changes to forecasted coal prices in order to develop a high or low gas price forecast. Other factors may cause the price of either coal or gas to go up, down, or remain unchanged independently of the price of the other fuel.

WITNESS: Karl R Bletzacker

Kentucky Power Company

REQUEST

Does the Company believe that natural gas prices and coal prices have historically moved in the same direction and with similar changes? In other words, historically, when there have been large movements in natural gas prices, have there also been similar large movements in coal prices, either up or down? Please supply evidence to support this answer.

RESPONSE

The Company's economic modeling (including stochastics) supporting the application assumes that there is a direct correlation. No formal studies have been done by the Company to determine and support a direct positive correlation between natural gas and coal prices, however, it is likely that such a study would reveal considerably lesser movement in coal prices when compared to a large movement in natural gas prices.

WITNESS: Karl R Bletzacker

Kentucky Power Company

REQUEST

Mr. Bletzacker's testimony, at page 8, line 9 explains how natural gas will remain volatile while coal will be more stable. Doesn't that suggest that gas prices might be volatile and increase rapidly, while coal prices might be more stable? Please discuss.

RESPONSE

No. The context of Bletzacker's direct testimony on page 8, line 9 is to connect the volatility of nearby natural gas prices with the vagaries of weather and natural gas storage inventory and did not include commentary about associated coal prices.

WITNESS: Karl R Bletzacker

Kentucky Power Company

REQUEST

At page 11 of Bletzacker's testimony, he equates a $10/tonne allowance price to a $10/MWH increase in plant operating costs. Please supply the calculations and assumptions that led to that relationship.

RESPONSE

The relationship described in Bletzacker's Direct Testimony at page 11 can be expressed in the following formula:

(a) 213 lbs CO2/mmBtu * (b) 1 tonne/2,205 lbs * (c) $10/tonne * (d) 10.128 Btu/MWh = (e) $9.78/MWh

where

(a) is the CO2 emission rate by bituminous coal,
(b) is how many pounds there are in a metric tonne,
(c) is the example allowance price,
(d) is the average heat rate of a bituminous coal power plant,
(e) is the corresponding plant operating cost.

WITNESS: Karl R Bletzacker

Kentucky Power Company

REQUEST

Please describe all reviews that Dr. McDermott performed of the Company's fuel forecasts. For each such review, please supply all documentation, workpapers, analyses, etc. Please supply these analyses electronically, with all formulas intact and no pasted in values.

RESPONSE

Dr. McDermott did not specifically review the fuel forecasts as part of his assignment in this case. Dr. McDermott provided a qualitative evaluation of the Company's approach. See response to AG 1-27.

WITNESS: Karl McDermott

Kentucky Power Company

REQUEST

Refer to page 11 starting at line 4 of Dr. McDermott's Direct Testimony. Other than discussions with the Company, what analyses did Mr. McDermott perform to conclude that the projections of market prices that Mr. Weaver used were reasonable, and that they represented the lower bound of bid prices that bidders in an RFP might submit if in fact KPCo were to conduct an RFP? Please supply all documentation, workpapers, analyses etc performed by Dr. McDermott to reach this conclusion. Please supply these analyses electronically, with all formulas intact and no pasted in values.

RESPONSE

Dr. McDermott's opinion is based on economic reasoning suggesting that sellers will generally be unwilling to sell at below their opportunity cost (or, at a minimum, Dr. McDermott does not believe one can assume that sellers would be willing to sell below their opportunity cost). The opportunity cost is either the cost to build and operate a new plant or the price that can be obtained in the market place (whichever is larger). There is good reason to believe that long-term contracts carry additional risk premiums above the financial costs of building or producing. The literature and practical experience with this is widespread and well-known. Dr. McDermott can provide citations to this literature and practice if asked.

WITNESS: Karl McDermott

Kentucky Power Company

REQUEST

Refer to the Direct Testimony of Dr. McDermott.

a. Please provide a copy of all documentation, such as an engagement agreement, letter, or email correspondence, that describes the scope of review for which AEP retained Dr. McDermott.

b. Refer to page 2 line 20 through page 3 line 1 regarding the scope of Dr. McDermott's review on behalf of AEP. Please list, source, and describe the traditional regulatory principles.

c. Refer to page 3 lines 4 - 7 regarding the scope of Dr. McDermott's review on behalf of AEP. Please list, source, and describe the regulatory policies.

d. Please provide a copy of all independent quantitative analyses performed by Dr. McDermott. If none, then please so state.

RESPONSE

a. Dr. McDermott was retained by in-house counsel, during a telephone interview, to provide advice and services (including testimony) relating to this proceeding and similar APCo proceedings in Virginia and West Virginia. The agreement has not been reduced to writing. The Company will supplement the response when the engagement letter is executed.

b. See response to AG 1-26. This refers to Dr. McDermott's testimony as a whole as it concerns regulatory principles (as opposed to, for example, the technical aspects of the analysis).

c. See response to AG 1-27. This refers to Dr. McDermott's testimony as a whole as it concerns regulatory policy (as opposed to, for example, the technical aspects of the analysis).

d. Dr. McDermott did not perform any independent quantitative analyses. Also see response to AG 1-27.

WITNESS: Karl McDermott

Kentucky Power Company

REQUEST

Please describe in detail the scope of Dr. McDermott's review of the quantitative analyses performed by AEP using Strategist and Aurora and described in the Direct Testimony of Mr. Weaver, including, but not limited to, the sources and assumptions used for fuel prices and market prices, the costs of constructing new generation, and the operating characteristics and performance of the Company's proposed alternative generation portfolios. Provide a copy of all notes and other documentation of the review performed by Dr. McDermott. If none, then please so state.

RESPONSE

Dr. McDermott's analysis is contained in his direct testimony. He has no other documentation or notes associated with this analysis. See response to AG 1-26 and 1-27; also see response to KIUC 1-67.

WITNESS: Karl McDermott

Kentucky Power Company

REQUEST

Please describe in detail the scope of Dr. McDermott's review of all alternative generation portfolios that were not considered or modeled by AEP. If none, then please so state.

RESPONSE

Dr. McDermott's review did not undertake an analysis of alternative generation portfolios that were not considered or modeled by AEP.

WITNESS: Karl McDermott

Kentucky Power Company

REQUEST

Refer to page 3 line 19 through page 4 line 2 of Dr. McDermott's Direct Testimony wherein he states: "It is unnecessary for Kentucky Power to conduct a full RFP process since the analysis conducted by the Company includes evaluations that approximate price bids that would result from an RFP process."

a. Please provide all quantitative or other independent analyses performed by or relied on by Dr. McDermott in support of the conclusion that the Company's "evaluations" approximate price bids that would result from an RFP process." If none, then please so state.

b. Please explain how Dr. McDermott can be certain that the Company's "evaluations" approximate price bids that would result from an RFP process."

c. Does Dr. McDermott agree that the best test of whether the Company's "evaluations" approximate price bids that would result from an RFP process would be to conduct an RFP process? Please explain your response.

d. Please provide all reasons why Dr. McDermott would oppose an actual RFP to determine the prices that would result from an RFP process. Please provide support for all assertions or claims, including, but not limited to, studies, information provided by AEP, and industry data.

e. Did Dr. McDermott or KPCo conduct any type of market survey to identify potential resources that might bid into a KPCo RFP if KPCo were to conduct one? If not, why not, if so, please supply all documentation, workpapers, analyses etc performed. If so, please supply these analyses electronically, with all formulas intact and no pasted in values.

RESPONSE

a. Dr. McDermott did not undertake or rely upon such analyses. See also KIUC 1-68.

b. The question misstates Dr. McDermott's testimony. See also KIUC 1-68; McDermott Direct, Page 11, lines 4-16.

c. No. Such processes are costly and take time, and if one believes that no additional information will be gained from such a process than running an RFP is not the best way to make this determination. Even, however, if the RFP process were costless to run, if it is expected to not produce any additional useful information then it still may not be the best way to verify the Company's evaluations. The best way in those circumstances would be to critically review the Company's data and analysis to be sure that it was including the appropriate costs in its estimates.

d. The reasons are set forth in Dr. McDermott's direct testimony. See McDermott Direct, page 11, line 4 – page 12, line 4.

e. Dr. McDermott did not undertake an independent analysis, but he did review this with AEP personnel to understand if AEP had taken these issues into account in their analysis. See the Company's response to KIUC 1-73.

WITNESS: Karl A McDermott

Kentucky Power Company

REQUEST

Assuming that no market surveys were conducted, what formal or informal analyses were performed by Dr. McDermott and/or any other relevant AEP or KPCo employees regarding conducting an RFP:

a. The name of specific entities and resources that might bid into an RFP if one was held, whether just for 250 MW or up to 800 MW. If no specific resources were considered explain what generic kinds of resources known to exist in PJM were considered?

b. What profit margin would be necessary for the bidders to recover in order for them to be willing to submit a bid?

c. What capital structure would they likely have?

d. What length of time would they be willing to supply their resources for?

e. In general what assumptions did they consider that a bidder would have to make in order to be willing to submit a bid?

f. If no consideration formal or informal was made, please provide an answer to the questions above, based on Mr. McDermott's or AEP's experience.

RESPONSE

Company witness Weaver, at page 37 of his prefiled direct testimony, describes the Company's analysis and underlying economic basis supporting the expected results of an RFP. Specifically, Company witness Weaver states "Option # 2 (Retire and Replace Big Sandy 2 with a New Build CC option) provides a market proxy." Company witness Weaver further states "it is very reasonable to assume that a *long-term* (minimum, 10-20 year term) competitive purchase power agreement ("PPA") solicitation—for not only up to as much as 1,100 MW of replacement capacity, but for the largely baseload energy also being replaced—would likely be offered/priced at the cost of a new-build combined cycle in response to such an RFP."

a.) The Company objects to this request as seeking unknown or speculative information. Without waiving this objection the Company believes that each RFP is unique and expected results would be specific to the nature of the requested proposal. Entities or resources that might bid into such an RFP could potentially include, but not be limited to the following: 1) existing generating units within or external to PJM; 2) yet to be built generating units within or external to PJM; or 3) market sourced solutions with or without supporting physical assets. As Company witness Weaver describes, at page 37 of his prefiled direct testimony, a long-term PPA "would likely be offered/priced at the cost of a new-build combined cycle."

b.) The Company objects to this request as seeking unknown or speculative information. Without waiving this objection, Company witness Weaver describes, at page 37 of his prefiled direct testimony, that a long-term PPA "would likely be offered/priced at the cost of a new-build combined cycle." The profit margin embedded in a specific bid is unnecessary to reach this conclusion.

c.) The Company objects to this request as seeking unknown or speculative information. Without waiving this objection, Company witness Weaver describes, at page 37 of his prefiled direct testimony, that a long-term PPA "would likely be offered/priced at the cost of a new-build combined cycle." The capital structure embedded in a specific bid is unnecessary to reach this conclusion.

d) The Company would expect the bidders to conform to the terms of the RFP.

e.) The Company objects to this request as seeking unknown or speculative information. Without waiving this objection, Company witness Weaver describes, at page 37 of his prefiled direct testimony, that a long-term PPA "would likely be offered/priced at the cost of a new-build combined cycle." The general assumptions embedded in a specific bid is unnecessary to reach this conclusion.

(f) Dr. McDermott's experienced is summarized in his testimony. (McDermott, Dir., p. 11 lines 8-9, lines 12-15, and lines 17-22 and page 12 lines 1-4) At these cites Dr. McDermott suggests that (1) it is almost certain that contracts of a longer duration carry a risk premium; (2) gas-fired plants are likely to the fuel of choice for any new build; and (3) Louisville Gas and Electric recently solicited bids that were not cost-effective.

Dr. McDermott made these conclusions based on (1) documents and conclusions from the Commission (for the LG&E conclusion) and (2) his experience from 1998-2004 working on several generation related projects that included bidding, auctions for short-term and long-term contracts, and certificates of public convenience for independent power producers, as well as his experience observing the outcomes of various bid-based procurement methods since 2005 (e.g., Illinois, New Jersey, and Maryland in particular). That experience included areas of MISO, PJM, and the Southwest Power Pool. While this general experience did include several of the issues raised in these questions and this general experience informed Dr. McDermott's opinion, he has not formulated any specific answers to the questions asked here.

N/A on behalf of the Company.

WITNESS: Karl A.McDermott/Scott C. Weaver/Ranie K. Wohnhas

Kentucky Power Company

REQUEST

Mr. Becker's testimony discusses that AEP compared its commodity forecasts to those in its possession from other companies including CERA, PIRA, and Wood Mackenzie. Please provide all forecasts from these consultants and comparisons that were performed with these forecasts and any other forecasts such as NYMEX or EIA forecasts. Please provide this information electronically with all formulas intact and no pasted in values.

RESPONSE

Pursuant to licensing provisions, CERA, PIRA and WoodMackenzie forecasts cannot be distributed to non-licensees. NYMEX futures prices can be found at:

http://www.cmegroup.com/trading/energy/natural-gas/natural-gas.html.

EIA forecasts can be found at:

http://www.eia.gov/forecasts/archive/aeo12/index.cfm

WITNESS: Karl R Bletzacker

Kentucky Power Company

REQUEST

Refer to RKW – Exhibit 4. Please provide a copy of all assumptions, calculations, and workpapers, including electronic workpapers in live format with cell formulas intact and all workpapers used to develop inputs to these workpapers in live format with cell formulas intact. Also, please provide a copy of all source documents relied on for the assumptions or other inputs to the calculations and workpapers. Provide the source documents in live format with cell formulas intact, to the extent live versions of these source documents are available.

RESPONSE

Please see the Company's response to KPSC 1-12 for the requested information.

WITNESS: Ranie K Wohnhas

Kentucky Power Company

REQUEST

Refer to RKW – Exhibit 4. Please provide the actual amount of each revenue and expense line item for 2007 through 2010 quantified on a basis similar to the amounts reflected for each line item in the "current" column for 2011.

RESPONSE

The Company objects to this request as being overly broad and unduly burdensome. Notwithstanding this objection, the Company has not performed the requested analysis.

WITNESS: Ranie K Wohnhas

Kentucky Power Company

REQUEST

Refer to RKW – Exhibit 4. Please provide the actual amount of each revenue and expense line item for 2012 quantified on a basis similar to the amounts reflected for each line item in the "current" column for 2011.

RESPONSE

Please see the Company's response to AG 1-37.

WITNESS: Ranie K. Wohnhas

Kentucky Power Company

REQUEST

Refer to RKW – Exhibit 4. Please describe in detail how the Company calculated each of the line item amounts in the column entitled "Asset Transfers and Pool Elimination."

RESPONSE

Kentucky Power computed each line item through the following process:
Line 2 - OSS Revenues were computed by taking the MWh output of Kentucky Power's resources for each hour of 2011 and comparing it to the hourly Kentucky Power internal load. For those hours which Kentucky Power would have been long, the product of the MWh surplus and the PJM hourly spot market energy price was the hourly revenue, and these revenues were added for all hours of the year.
Lines 3 & 4 - These lines were taken to zero due to the pool termination.
Line 8 - The Interim Allowance Agreement (IAA) was assumed eliminated for 2011. Consequently, the IAA transactions that would have occurred in December 2011, including the Gavin reallocation, primary transfers and the system allowance bank were eliminated.
Line 10 & 11 - These lines were taken to zero due to the pool termination.
Line 12 - Reflects market purchases when the hourly internal load of Kentucky Power exceeds the output of its generation resources, including the asset transfer. This is determined by taking the hourly MWh shortfall for hours Kentucky Power was energy deficit multiplied by the hourly spot market energy price and summing the annual total.
Line 13 - Reflects modifying the PJM bill components from Kentucky Power receiving its Member Load Ratio allocation of the total charges and credits under the current case to Kentucky Power receiving a direct assignment of these charges and credits as though it were stand alone in PJM.
Lines 17 through 20 - reflect the actual cost of 50% of Mitchell plant utilizing its actual costs incurred during 2011 except for its return requirement which was determined using Kentucky Power's rate of return.

WITNESS: Ranie K Wohnhas

Kentucky Power Company

REQUEST

Refer to RKW – Exhibit 4 line 20. Please provide the weighted cost of capital and the weighted grossed-up cost of capital used for the calculations of the amount on this line by component. Provide all assumptions and all calculations, including electronic workpapers in live format with cell formulas intact and a copy of all source documents relied on for the assumptions or other inputs to the calculations and workpapers.

RESPONSE

Please see the Company's response to KPSC 1-12, Attachment 1, for the requested information.

WITNESS: Ranie K. Wohnhas

Kentucky Power Company

REQUEST

Refer to RKW – Exhibit 4. Please provide an updated version of this exhibit using 2012 actual results for the "Current" column and updating the "Asset Transfers and Pool Elimination" accordingly. Provide all assumptions and all calculations, including electronic workpapers in live format with cell formulas intact and a copy of all source documents relied on for the assumptions or other inputs to the calculations and workpapers.

RESPONSE

Please see the Company's response to AG 1-37.

WITNESS: Ranie K Wohnhas

Kentucky Power Company

REQUEST

Refer to RKW – Exhibit 4. Please provide a version of this exhibit based on the Company's 2013 budgeted/projected results. Provide all assumptions and all calculations, including electronic workpapers in live format with cell formulas intact and a copy of all source documents relied on for the assumptions or other inputs to the calculations and workpapers.

RESPONSE

The Company objects to this request as being overly broad and unduly burdensome. Notwithstanding this objection, the Company has not performed the requested analysis.

WITNESS: Ranie K Wohnhas

Kentucky Power Company

REQUEST

Refer to RKW – Exhibit 4. Please provide a version of this exhibit based on the Company's 2014 budgeted/projected results. Provide all assumptions and all calculations, including electronic workpapers in live format with cell formulas intact and a copy of all source documents relied on for the assumptions or other inputs to the calculations and workpapers.

RESPONSE

The Company objects to this request as being overly broad and unduly burdensome. Notwithstanding this objection, the Company has not performed the requested analysis.

WITNESS: Ranie K. Wohnhas

Kentucky Power Company

REQUEST

Refer to RKW – Exhibit 4. Please provide the amount of additional OSS revenues and margins due to the acquisition of Mitchell reflected in the "Change" column. Provide the amounts of the additional OSS margins that will be retained by the Company. Provide all assumptions, calculations, and workpapers, including electronic workpapers in live format with cell formulas intact and a copy of all source documents relied on for the assumptions or other inputs to the calculations and workpapers.

RESPONSE

The Company has not performed the requested analysis. RKW-Exhibit 4 shows the change in OSS due to the acquisition of the Mitchell plant and the Pool elimination. The OSS revenues are shown in RKW-Exhibit 4.

WITNESS: Ranie K Wohnhas

Kentucky Power Company

REQUEST

Refer to RKW – Exhibit 4. Please disaggregate the "Change" column into the effects on each form of ratemaking recovery, i.e., base rates, FAC, and ECR, and provide all calculations and workpapers, including electronic spreadsheets with formulas intact.

RESPONSE

The requested analysis has not been performed.

WITNESS: Ranie K. Wohnhas

Kentucky Power Company

REQUEST

Please provide a copy of the Company's 2013 and 2014 operating budgets and/or forecasts.

RESPONSE

The Company's 2013 and 2014 O&M and Capital budgets are as follows:

2013 Earnings Guidance - KPCo ($000s)
O&M & Capital Expenditures

	O&M		Capital	
	2013	2014	2013	2014
Generation	24,221	43,980	8,300	67,300
Transmission	15,545	22,938	18,000	19,500
Distribution	37,023	39,901	43,120	39,700
All Other	27,729	28,963	2,580	2,122
Total	104,518	135,782	72,000	128,622

WITNESS: Ranie K Wohnhas

Kentucky Power Company

REQUEST

Refer to RKW – Exhibit 4 and the 2011 Form 1 for the Company. Please reconcile the amounts for Pool Energy Sales reported in the "current" column on RKW-Exhibit 4 of $30,830,000 with the amount reported in the Form 1 on page 327 of $67,170,302.

RESPONSE

Page 327 of the Form 1 reports purchases, not sales.

WITNESS: Ranie K. Wohnhas

Kentucky Power Company

REQUEST

Refer to RKW – Exhibit 4 and the 2011 Form 1 for the Company. Please reconcile the amounts for Pool Energy Purchases reported in the "current" column on RKW-Exhibit 4 of $15,290,000 with the amount reported in the Form 1 on page 327 of $60,726,313.

RESPONSE

RKW-Exhibit 4, line 11 purchases of $15.29 Million represents pool primary purchases made by Kentucky Power to satisfy its internal load requirements only. The Form 1 amount represents all pool purchases, including those purchases from the pool Kentucky Power made to cover off system sales.

WITNESS: Ranie K Wohnhas

Kentucky Power Company

REQUEST

Please provide the amount of the Company's capacity equalization payments pursuant to the Interconnection Agreement included in existing base rates. Provide all assumptions and all calculations, including electronic workpapers in live format with cell formulas intact and a copy of all source documents relied on for the assumptions or other inputs to the calculations and workpapers.

RESPONSE

The Company's most recent base rate case, Case No. 2009-00459 was settled; therefore, the amount of the Company's capacity equalization payments included in the existing base rates cannot be determined.

However, KIUC 1-88, Attachment 1 on the enclosed CD demonstrates the capacity equalization payments included in the test year ended September 30, 2009.

The corresponding monthly Interchange Power Statements for the test year ended September 30, 2009, are included as KIUC 1-88, Attachment 2 on the enclosed CD.

WITNESS: Ranie K. Wohnhas

Kentucky Power Company

REQUEST

Please provide the amount of the Company's capacity equalization payments pursuant to the Interconnection Agreement by month for the period January 2011 through the most recent month for which actual information is available. Provide all assumptions and all calculations, including electronic workpapers in live format with cell formulas intact and a copy of all source documents relied on for the assumptions or other inputs to the calculations and workpapers. Please consider this request continuing in nature and supplement the response each month as actual information for that month is available.

RESPONSE

Please see the Company's response to KPSC 1-7, for the amount of the Company's capacity equalization payments pursuant to the Interconnection Agreement by month for the period January 2011 through December 2012, as calculated and recorded in the monthly Interchange Power Statements. Please see the Company's response to KIUC 1-93 for the respective Interchange Power Statements.

WITNESS: Ranie K Wohnhas

Kentucky Power Company

REQUEST

Please provide the amount of the Company's capacity equalization payments pursuant to the Interconnection Agreement included in ECR rates by month for the period January 2011 through the most recent month for which actual information is available. Provide all assumptions and all calculations, including electronic workpapers in live format with cell formulas intact and a copy of all source documents relied on for the assumptions or other inputs to the calculations and workpapers. Please consider this request continuing in nature and supplement the response each month as actual information for that month is available.

RESPONSE

Please see KIUC 1-90 Attachment 1 on the enclosed CD for the Company's capacity payments pursuant to the Interconnection Agreement included in the ECR rates for January 2011 through December 2012.

WITNESS: Ranie K. Wohnhas

MITCHELL PLANT MONTHLY ENVIRONMENTAL CAPACITY COSTS TO KENTUCKY POWER

Date	Capacity Costs
Jan-11	$ 647,640
Feb-11	621,876
Mar-11	622,155
Apr-11	626,675
May-11	626,675
Jun-11	644,580
Jul-11	648,161
Aug-11	553,605
Sep-11	504,900
Oct-11	487,050
Nov-11	484,500
Dec-11	504,900
Jan-12	256,375
Feb-12	316,758
Mar-12	311,922
Apr-12	144,780
May-12	151,620
Jun-12	152,760
Jul-12	150,480
Aug-12	200,904
Sep-12	197,860
Oct-12	202,027
Nov-12	205,065
Dec-12	210,256

KENTUCKY POWER COMPANY - ENVIRONMENTAL SURCHARGE REPORT
CURRENT PERIOD REVENUE REQUIREMENT
OHIO POWER COMPANY (OPCo) - MITCHELL PLANT (UNITS 1 & 2)

For the Expense Month of January 2011

LINE NO.	COST	AMOUNTS
1	Utility Plant at Original Cost	$1,143,093,101
2	Member Primary Capacity Investment Rate (16.44% / 12)	1.37%
3	Total Rate Base	$15,660,375
	Operations :	
4	Disposal (5010000)	($25,105)
5	Urea (5020002)	$578,879
6	Trona (5020003)	$39,990
7	Lime Stone (5020004)	$791,911
8	Polymer (5020005)	$0
9	Lime Hydrate (5020007)	$0
10	Steam Exp (5020025)	$0
11	Air Emission Fee	$12,128
12	Total Operations (Lines 4 thru 8)	$1,397,803
	Maintenance :	
13	FDG (5120000)	$53,576
14	SCR Maintenance (5120000)	$12,846
15	1/2 of Maintenance (10 + 11) * 50%	$33,211
16	Fixed O&M (9) + (12)	$1,431,014
	Total Revenue Requirement,	
17	Cost Associated with Mitchell Plant (3) + (13)	$17,091,389
18	Ohio Power Company's Percentage Ownership	100.00%
19	OPCo's Share of Cost Associated with Mitchell Plant (14) X (15)	$17,091,389
20	Ohio Power Company Steam Capacity (kw)	8,458,000
21	Mitchell Plant ($/kw)	$2.02
22	Ohio Power Surplus Weighing	89.00%
23	Portion of Weighted Average Capacity Rate Attributed to Mitchell Plant ($/kw) (18) X (19)	$1.80
	Mitchell Plant Costs to Kentucky Power :	
24	Mitchell Plant Portion ($/kw) (20)	$1.80
25	Kentucky Power Capacity Deficit (kw)	359,800
26	Mitchell Plant Environmental Cost to Kentucky Power (21) * (22) (ES FORM 3.14, Page 1 of 10, Line 5)	$647,640

KENTUCKY POWER COMPANY - ENVIRONMENTAL SURCHARGE REPORT
CURRENT PERIOD REVENUE REQUIREMENT
OHIO POWER COMPANY (OPCo) - MITCHELL PLANT (UNITS 1 & 2)

For the Expense Month of February 2011

LINE NO.	COST	AMOUNTS
1	Utility Plant at Original Cost	$1,143,093,101
2	Member Primary Capacity Investment Rate (16.44% / 12)	1.37%
3	Total Rate Base	$15,660,375
	Operations :	
4	Disposal (5010000)	($62,084)
5	Urea (5020002)	$343,368
6	Trona (5020003)	($146,808)
7	Lime Stone (5020004)	$442,749
8	Polymer (5020005)	$0
9	Lime Hydrate (5020007)	$0
10	Steam Exp (5020025)	$0
11	Air Emission Fee	$12,128
12	Total Operations (Lines 4 thru 8)	$589,353
	Maintenance :	
13	FDG (5120000)	$420,839
14	SCR Maintenance (5120000)	$11,805
15	1/2 of Maintenance (10 + 11) * 50%	$216,322
16	Fixed O&M (9) + (12)	$805,675
	Total Revenue Requirement,	
17	Cost Associated with Mitchell Plant (3) + (13)	$16,466,050
18	Ohio Power Company's Percentage Ownership	100.00%
19	OPCo's Share of Cost Associated with Mitchell Plant (14) X (15)	$16,466,050
20	Ohio Power Company Steam Capacity (kw)	8,440,000
21	Mitchell Plant ($/kw)	$1.95
22	Ohio Power Surplus Weighing	89.00%
23	Portion of Weighted Average Capacity Rate	
	Attributed to Mitchell Plant ($/kw) (18) X (19)	$1.74
	Mitchell Plant Costs to Kentucky Power :	
24	Mitchell Plant Portion ($/kw) (20)	$1.74
25	Kentucky Power Capacity Deficit (kw)	357,400
	Mitchell Plant Environmental Cost to Kentucky Power (21) * (22)	
26	(ES FORM 3.14, Page 1 of 10, Line 5)	$621,876

KENTUCKY POWER COMPANY - ENVIRONMENTAL SURCHARGE REPORT
CURRENT PERIOD REVENUE REQUIREMENT
OHIO POWER COMPANY (OPCo) - MITCHELL PLANT (UNITS 1 & 2)

For the Expense Month of March 2011

LINE NO.	COST	AMOUNTS
1	Utility Plant at Original Cost	$1,143,093,101
2	Member Primary Capacity Investment Rate (16.44% / 12)	1.37%
3	Total Rate Base	$15,660,375
	Operations :	
4	Disposal (5010000)	$31,924
5	Urea (5020002)	$404,888
6	Trona (5020003)	$30,176
7	Lime Stone (5020004)	$483,039
8	Polymer (5020005)	$0
9	Lime Hydrate (5020007)	$0
10	Steam Exp (5020025)	$0
11	Air Emission Fee	$12,128
12	Total Operations (Lines 4 thru 8)	$962,155
	Maintenance :	
13	SCR Maintenance (5120000)	$12,076
14	FDG (5120000)	$272,125
15	1/2 of Maintenance (10 + 11) * 50%	$142,101
16	Fixed O&M (9) + (12)	$1,104,256
	Total Revenue Requirement,	
17	Cost Associated with Mitchell Plant (3) + (13)	$16,764,631
18	Ohio Power Company's Percentage Ownership	100.00%
19	OPCo's Share of Cost Associated with Mitchell Plant (14) X (15)	$16,764,631
20	Ohio Power Company Steam Capacity (kw)	8,440,000
21	Mitchell Plant ($/kw)	$1.99
22	Ohio Power Surplus Weighing	89.00%
23	Portion of Weighted Average Capacity Rate Attributed to Mitchell Plant ($/kw) (18) X (19)	$1.77
	Mitchell Plant Costs to Kentucky Power :	
24	Mitchell Plant Portion ($/kw) (20)	$1.77
25	Kentucky Power Capacity Deficit (kw)	351,500
26	Mitchell Plant Environmental Cost to Kentucky Power (21) * (22) (ES FORM 3.14, Page 1 of 10, Line 5)	$622,155

KENTUCKY POWER COMPANY - ENVIRONMENTAL SURCHARGE REPORT
CURRENT PERIOD REVENUE REQUIREMENT
OHIO POWER COMPANY (OPCo) - MITCHELL PLANT (UNITS 1 & 2)

For the Expense Month of April 2011

LINE NO.	COST	AMOUNTS
1	Utility Plant at Original Cost	$1,143,093,101
2	Member Primary Capacity Investment Rate (16.44% / 12)	1.37%
3	Total Rate Base	$15,660,375
	Operations :	
4	Disposal (5010000)	($18,726)
5	Urea (5020002)	$323,525
6	Trona (5020003)	$55,744
7	Lime Stone (5020004)	$449,681
8	Polymer (5020005)	$0
9	Lime Hydrate (5020007)	$0
10	Steam Exp (5020025)	$0
11	Air Emission Fee	$12,128
12	Total Operations (Lines 4 thru 8)	$822,352
	Maintenance :	
13	SCR Maintenance (5120000)	$2,495
14	FDG (5120000)	$343,945
15	1/2 of Maintenance (10 + 11) * 50%	$173,220
16	Fixed O&M (9) + (12)	$995,572
	Total Revenue Requirement,	
17	Cost Associated with Mitchell Plant (3) + (13)	$16,655,947
18	Ohio Power Company's Percentage Ownership	100.00%
19	OPCo's Share of Cost Associated with Mitchell Plant (14) X (15)	$16,655,947
20	Ohio Power Company Steam Capacity (kw)	8,440,000
21	Mitchell Plant ($/kw)	$1.97
22	Ohio Power Surplus Weighing	89.00%
23	Portion of Weighted Average Capacity Rate Attributed to Mitchell Plant ($/kw) (18) X (19)	$1.75
	Mitchell Plant Costs to Kentucky Power :	
24	Mitchell Plant Portion ($/kw) (20)	$1.75
25	Kentucky Power Capacity Deficit (kw)	358,100
26	Mitchell Plant Environmental Cost to Kentucky Power (21) * (22) (ES FORM 3.14, Page 1 of 10, Line 5)	$626,675

KENTUCKY POWER COMPANY - ENVIRONMENTAL SURCHARGE REPORT
CURRENT PERIOD REVENUE REQUIREMENT
OHIO POWER COMPANY (OPCo) - MITCHELL PLANT (UNITS 1 & 2)

For the Expense Month of May 2011

LINE NO.	COST	AMOUNTS
1	Utility Plant at Original Cost	$1,143,093,101
2	Member Primary Capacity Investment Rate (16.44% / 12)	1.37%
3	Total Rate Base	$15,660,375
	Operations :	
4	Disposal (5010000)	$37,772
5	Urea (5020002)	$278,570
6	Trona (5020003)	$59,435
7	Lime Stone (5020004)	$361,973
8	Polymer (5020005)	$0
9	Lime Hydrate (5020007)	$0
10	Steam Exp (5020025)	$0
11	Air Emission Fee	$12,128
12	Total Operations (Lines 4 thru 8)	$749,878
	Maintenance :	
13	SCR Maintenance (5120000)	$1,397
14	FDG (5120000)	$484,587
15	1/2 of Maintenance (10 + 11) * 50%	$242,992
16	Fixed O&M (9) + (12)	$992,870
	Total Revenue Requirement,	
17	Cost Associated with Mitchell Plant (3) + (13)	$16,653,245
18	Ohio Power Company's Percentage Ownership	100.00%
19	OPCo's Share of Cost Associated with Mitchell Plant (14) X (15)	$16,653,245
20	Ohio Power Company Steam Capacity (kw)	8,440,000
21	Mitchell Plant ($/kw)	$1.97
22	Ohio Power Surplus Weighing	89.00%
23	Portion of Weighted Average Capacity Rate	
	Attributed to Mitchell Plant ($/kw) (18) X (19)	$1.75
	Mitchell Plant Costs to Kentucky Power :	
24	Mitchell Plant Portion ($/kw) (20)	$1.75
25	Kentucky Power Capacity Deficit (kw)	358,100
	Mitchell Plant Environmental Cost to Kentucky Power (21) * (22)	
26	(ES FORM 3.14, Page 1 of 10, Line 5)	$626,675

KENTUCKY POWER COMPANY - ENVIRONMENTAL SURCHARGE REPORT
CURRENT PERIOD REVENUE REQUIREMENT
OHIO POWER COMPANY (OPCo) - MITCHELL PLANT (UNITS 1 & 2)

For the Expense Month of June 2011

LINE NO.	COST	AMOUNT
1	Utility Plant at Original Cost	$1,143,093,101
2	Member Primary Capacity Investment Rate (16.44% / 12)	1.37%
3	Total Rate Base	$15,660,375
	Operations :	
4	Disposal (5010000)	$78,042
5	Urea (5020002)	$497,952
6	Trona (5020003)	$102,868
7	Lime Stone (5020004)	$663,842
8	Polymer (5020005)	$0
9	Lime Hydrate (5020007)	$0
10	Steam Exp (5020025)	$0
11	Air Emission Fee	$12,128
12	Total Operations (Lines 4 thru 8)	$1,354,832
	Maintenance :	
13	SCR Maintenance (5120000)	$1,342
14	FDG (5120000)	$100,444
15	1/2 of Maintenance (10 + 11) * 50%	$50,893
16	Fixed O&M (9) + (12)	$1,405,725
	Total Revenue Requirement,	
17	Cost Associated with Mitchell Plant (3) + (13)	$17,066,100
18	Ohio Power Company's Percentage Ownership	100.00%
19	OPCo's Share of Cost Associated with Mitchell Plant (14) X (15)	$17,066,100
20	Ohio Power Company Steam Capacity (kw)	8,440,000
21	Mitchell Plant ($/kw)	$2.02
22	Ohio Power Surplus Weighing	89.00%
23	Portion of Weighted Average Capacity Rate Attributed to Mitchell Plant ($/kw) (18) X (19)	$1.80
	Mitchell Plant Costs to Kentucky Power :	
24	Mitchell Plant Portion ($/kw) (20)	$1.80
25	Kentucky Power Capacity Deficit (kw)	358,100
26	Mitchell Plant Environmental Cost to Kentucky Power (21) * (22) (ES FORM 3.14, Page 1 of 10, Line 5)	$644,580

KENTUCKY POWER COMPANY - ENVIRONMENTAL SURCHARGE REPORT
CURRENT PERIOD REVENUE REQUIREMENT
OHIO POWER COMPANY (OPCo) - MITCHELL PLANT (UNITS 1 & 2)

For the Expense Month of July 2011

LINE NO.	COST	AMOUNT
1	Utility Plant at Original Cost	$1,143,093,101
2	Member Primary Capacity Investment Rate (16.44% / 12)	1.37%
3	Total Rate Base	$15,660,375
	Operations :	
4	Disposal (5010000)	$77,757
5	Urea (5020002)	$455,838
6	Trona (5020003)	$122,056
7	Lime Stone (5020004)	$766,304
8	Polymer (5020005)	$0
9	Lime Hydrate (5020007)	$0
10	Steam Exp (5020025)	$0
11	Air Emission Fee	$12,128
12	Total Operations (Lines 4 thru 8)	$1,434,083
	Maintenance :	
13	SCR Maintenance (5120000)	$5,247
14	FDG (5120000)	$59,922
15	1/2 of Maintenance (10 + 11) * 50%	$32,585
16	Fixed O&M (9) + (12)	$1,466,668
	Total Revenue Requirement,	
17	Cost Associated with Mitchell Plant (3) + (13)	$17,127,043
18	Ohio Power Company's Percentage Ownership	100.00%
19	OPCo's Share of Cost Associated with Mitchell Plant (14) X (15)	$17,127,043
20	Ohio Power Company Steam Capacity (kw)	8,440,000
21	Mitchell Plant ($/kw)	$2.03
22	Ohio Power Surplus Weighing	89.00%
23	Portion of Weighted Average Capacity Rate Attributed to Mitchell Plant ($/kw) (18) X (19)	$1.81
	Mitchell Plant Costs to Kentucky Power :	
24	Mitchell Plant Portion ($/kw) (20)	$1.81
25	Kentucky Power Capacity Deficit (kw)	358,100
26	Mitchell Plant Environmental Cost to Kentucky Power (21) * (22) (ES FORM 3.14, Page 1 of 10, Line 5)	$648,161

KENTUCKY POWER COMPANY - ENVIRONMENTAL SURCHARGE REPORT
CURRENT PERIOD REVENUE REQUIREMENT
OHIO POWER COMPANY (OPCo) - MITCHELL PLANT (UNITS 1 & 2)

For the Expense Month of August 2011

LINE NO.	COST	AMOUNT
1	Utility Plant at Original Cost	$1,143,093,101
2	Member Primary Capacity Investment Rate (16.44% / 12)	1.37%
3	Total Rate Base	$15,660,375
	Operations :	
4	Disposal (5010000)	$45,452
5	Urea (5020002)	$537,383
6	Trona (5020003)	$112,775
7	Lime Stone (5020004)	$694,811
8	Polymer (5020005)	$0
9	Lime Hydrate (5020007)	$0
10	Steam Exp (5020025)	$0
11	Air Emission Fee	$12,128
12	Total Operations (Lines 4 thru 8)	$1,402,549
	Maintenance :	
13	SCR Maintenance (5120000)	$1,816
14	FDG (5120000)	$193,574
15	1/2 of Maintenance (10 + 11) * 50%	$97,695
16	Fixed O&M (9) + (12)	$1,500,244
	Total Revenue Requirement,	
17	Cost Associated with Mitchell Plant (3) + (13)	$17,160,619
18	Ohio Power Company's Percentage Ownership	100.00%
19	OPCo's Share of Cost Associated with Mitchell Plant (14) X (15)	$17,160,619
20	Ohio Power Company Steam Capacity (kw)	8,440,000
21	Mitchell Plant ($/kw)	$2.03
22	Ohio Power Surplus Weighing	96.00%
23	Portion of Weighted Average Capacity Rate Attributed to Mitchell Plant ($/kw) (18) X (19)	$1.95
	Mitchell Plant Costs to Kentucky Power :	
24	Mitchell Plant Portion ($/kw) (20)	$1.95
25	Kentucky Power Capacity Deficit (kw)	283,900
26	Mitchell Plant Environmental Cost to Kentucky Power (21) * (22) (ES FORM 3.14, Page 1 of 10, Line 5)	$553,605

KENTUCKY POWER COMPANY - ENVIRONMENTAL SURCHARGE REPORT
CURRENT PERIOD REVENUE REQUIREMENT
OHIO POWER COMPANY (OPCo) - MITCHELL PLANT (UNITS 1 & 2)

For the Expense Month of September 2011

LINE NO.	COST	AMOUNT
1	Utility Plant at Original Cost	$1,143,093,101
2	Member Primary Capacity Investment Rate (16.44% / 12)	1.37%
3	Total Rate Base	$15,660,375
	Operations :	
4	Disposal (5010000)	$26,051
5	Urea (5020002)	$667,963
6	Trona (5020003)	$56,503
7	Lime Stone (5020004)	$933,479
8	Polymer (5020005)	$0
9	Lime Hydrate (5020007)	$0
10	Steam Exp (5020025)	$0
11	Air Emission Fee	$12,128
12	Total Operations (Lines 4 thru 8)	$1,696,124
	Maintenance :	
13	SCR Maintenance (5120000)	$5,358
14	FDG (5120000)	$137,858
15	1/2 of Maintenance (10 + 11) * 50%	$71,608
16	Fixed O&M (9) + (12)	$1,767,732
	Total Revenue Requirement,	
17	Cost Associated with Mitchell Plant (3) + (13)	$17,428,107
18	Ohio Power Company's Percentage Ownership	100.00%
19	OPCo's Share of Cost Associated with Mitchell Plant (14) X (15)	$17,428,107
20	Ohio Power Company Steam Capacity (kw)	8,003,000
21	Mitchell Plant ($/kw)	$2.18
22	Ohio Power Surplus Weighing	91.00%
23	Portion of Weighted Average Capacity Rate Attributed to Mitchell Plant ($/kw) (18) X (19)	$1.98
	Mitchell Plant Costs to Kentucky Power :	
24	Mitchell Plant Portion ($/kw) (20)	$1.98
25	Kentucky Power Capacity Deficit (kw)	255,000
26	Mitchell Plant Environmental Cost to Kentucky Power (21) * (22) (ES FORM 3.14, Page 1 of 10, Line 5)	$504,900

KENTUCKY POWER COMPANY - ENVIRONMENTAL SURCHARGE REPORT
CURRENT PERIOD REVENUE REQUIREMENT
OHIO POWER COMPANY (OPCo) - MITCHELL PLANT (UNITS 1 & 2)

For the Expense Month of October 2011

LINE NO.	COST	AMOUNT
1	Utility Plant at Original Cost	$1,143,093,101
2	Member Primary Capacity Investment Rate (16.44% / 12)	1.37%
3	Total Rate Base	$15,660,375
	Operations :	
4	Disposal (5010000)	($80,518)
5	Urea (5020002)	$504,654
6	Trona (5020003)	$77,002
7	Lime Stone (5020004)	$555,015
8	Polymer (5020005)	$0
9	Lime Hydrate (5020007)	$0
10	Steam Exp (5020025)	$0
11	Air Emission Fee	$12,128
12	Total Operations (Lines 4 thru 8)	$1,068,281
	Maintenance :	
13	SCR Maintenance (5120000)	$800
14	FDG (5120000)	$189,563
15	1/2 of Maintenance (10 + 11) * 50%	$95,182
16	Fixed O&M (9) + (12)	$1,163,463
	Total Revenue Requirement,	
17	Cost Associated with Mitchell Plant (3) + (13)	$16,823,838
18	Ohio Power Company's Percentage Ownership	100.00%
19	OPCo's Share of Cost Associated with Mitchell Plant (14) X (15)	$16,823,838
20	Ohio Power Company Steam Capacity (kw)	8,003,000
21	Mitchell Plant ($/kw)	$2.10
22	Ohio Power Surplus Weighing	91.00%
23	Portion of Weighted Average Capacity Rate	
	Attributed to Mitchell Plant ($/kw) (18) X (19)	$1.91
	Mitchell Plant Costs to Kentucky Power :	
24	Mitchell Plant Portion ($/kw) (20)	$1.91
25	Kentucky Power Capacity Deficit (kw)	255,000
	Mitchell Plant Environmental Cost to Kentucky Power (21) * (22)	
26	(ES FORM 3.14, Page 1 of 10, Line 5)	$487,050

KENTUCKY POWER COMPANY - ENVIRONMENTAL SURCHARGE REPORT
CURRENT PERIOD REVENUE REQUIREMENT
OHIO POWER COMPANY (OPCo) - MITCHELL PLANT (UNITS 1 & 2)

For the Expense Month of November 2011

LINE NO.	COST	AMOUNTS
1	Utility Plant at Original Cost	$1,143,093,101
2	Member Primary Capacity Investment Rate (16.44% / 12)	1.37%
3	Total Rate Base	$15,660,375
	Operations :	
4	Disposal (5010000)	$46,368
5	Urea (5020002)	$477,738
6	Trona (5020003)	$51,921
7	Lime Stone (5020004)	$535,910
8	Air Emission Fee	$12,128
9	Total Operations (Lines 4 thru 8)	$1,124,065
	Maintenance :	
10	SCR Maintenance (5120000)	$1,888
11	FDG (5120000)	($122,819)
12	1/2 of Maintenance (10 + 11) * 50%	($60,466)
13	Fixed O&M (9) + (12)	$1,063,600
	Total Revenue Requirement,	
14	Cost Associated with Mitchell Plant (3) + (13)	$16,723,975
15	Ohio Power Company's Percentage Ownership	100.00%
16	OPCo's Share of Cost Associated with Mitchell Plant (14) X (15)	$16,723,975
17	Ohio Power Company Steam Capacity (kw)	8,003,000
18	Mitchell Plant ($/kw)	$2.09
19	Ohio Power Surplus Weighing	91.00%
20	Portion of Weighted Average Capacity Rate Attributed to Mitchell Plant ($/kw) (18) X (19)	$1.90
	Mitchell Plant Costs to Kentucky Power :	
21	Mitchell Plant Portion ($/kw) (20)	$1.90
22	Kentucky Power Capacity Deficit (kw)	255,000
23	Mitchell Plant Environmental Cost to Kentucky Power (21) * (22) (ES FORM 3.14, Page 1 of 10, Line 5)	$484,500

ES FORM 3.14
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KENTUCKY POWER COMPANY - ENVIRONMENTAL SURCHARGE REPORT
CURRENT PERIOD REVENUE REQUIREMENT
OHIO POWER COMPANY (OPCo) - MITCHELL PLANT (UNITS 1 & 2)

For the Expense Month of December 2011

LINE NO.	COST	AMOUNTS
1	Utility Plant at Original Cost	$1,143,093,101
2	Member Primary Capacity Investment Rate (16.44% / 12)	1.37%
3	Total Rate Base	$15,660,375
	Operations :	
4	Disposal (5010000)	$4,804
5	Urea (5020002)	$651,904
6	Trona (5020003)	$108,808
7	Lime Stone (5020004)	$798,261
8	Air Emission Fee	$12,128
9	Total Operations (Lines 4 thru 8)	$1,575,905
	Maintenance :	
10	SCR Maintenance (5120000)	$2,721
11	FDG (5120000)	$366,036
12	1/2 of Maintenance (10 + 11) * 50%	$184,379
13	Fixed O&M (9) + (12)	$1,760,284
	Total Revenue Requirement,	
14	Cost Associated with Mitchell Plant (3) + (13)	$17,420,659
15	Ohio Power Company's Percentage Ownership	100.00%
16	OPCo's Share of Cost Associated with Mitchell Plant (14) X (15)	$17,420,659
17	Ohio Power Company Steam Capacity (kw)	8,003,000
18	Mitchell Plant ($/kw)	$2.18
19	Ohio Power Surplus Weighing	91.00%
20	Portion of Weighted Average Capacity Rate Attributed to Mitchell Plant ($/kw) (18) X (19)	$1.98
	Mitchell Plant Costs to Kentucky Power :	
21	Mitchell Plant Portion ($/kw) (20)	$1.98
22	Kentucky Power Capacity Deficit (kw)	255,000
23	Mitchell Plant Environmental Cost to Kentucky Power (21) * (22) (ES FORM 3.14, Page 1 of 10, Line 5)	$504,900

ES FORM 3.14
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KENTUCKY POWER COMPANY - ENVIRONMENTAL SURCHARGE REPORT
CURRENT PERIOD REVENUE REQUIREMENT
OHIO POWER COMPANY (OPCo) - MITCHELL PLANT (UNITS 1 & 2)

For the Expense Month of January 2012

LINE NO.	COST	AMOUNTS
1	Utility Plant at Original Cost	$1,149,819,326
2	Member Primary Capacity Investment Rate (16.44% / 12)	1.37%
3	Total Rate Base	$15,752,525
	Operations :	
4	Disposal (5010000)	$45,175
5	Urea (5020002)	$568,415
6	Trona (5020003)	$53,251
7	Lime Stone (5020004)	$607,609
8	Air Emission Fee	$18,559
9	Total Operations (Lines 4 thru 8)	$1,293,009
	Maintenance :	
10	SCR Maintenance (5120000)	$134
11	FDG (5120000)	$13,521
12	1/2 of Maintenance (10 + 11) * 50%	$6,828
13	Fixed O&M (9) + (12)	$1,299,837
	Total Revenue Requirement,	
14	Cost Associated with Mitchell Plant (3) + (13)	$17,052,362
15	Ohio Power Company's Percentage Ownership	100.00%
16	OPCo's Share of Cost Associated with Mitchell Plant (14) X (15)	$17,052,362
17	Ohio Power Company Steam Capacity (kw)	12,860,000
18	Mitchell Plant ($/kw)	$1.33
19	Ohio Power Surplus Weighing	94.00%
20	Portion of Weighted Average Capacity Rate	
	Attributed to Mitchell Plant ($/kw) (18) X (19)	$1.25
	Mitchell Plant Costs to Kentucky Power :	
21	Mitchell Plant Portion ($/kw) (20)	$1.25
22	Kentucky Power Capacity Deficit (kw)	205,100
	Mitchell Plant Environmental Cost to Kentucky Power (21) * (22)	
23	(ES FORM 3.14, Page 1 of 10, Line 5)	$256,375

KENTUCKY POWER COMPANY - ENVIRONMENTAL SURCHARGE REPORT
CURRENT PERIOD REVENUE REQUIREMENT
OHIO POWER COMPANY (OPCo) - MITCHELL PLANT (UNITS 1 & 2)

For the Expense Month of February 2012

LINE NO.	COST	AMOUNTS
1	Utility Plant at Original Cost	$1,149,819,326
2	Member Primary Capacity Investment Rate (16.44% / 12)	1.37%
3	Total Rate Base	$15,752,525
	Operations :	
4	Disposal (5010000)	($70,813)
5	Urea (5020002)	$405,585
6	Trona (5020003)	$61,278
7	Lime Stone (5020004)	$543,368
8	Air Emission Fee	$18,559
9	Total Operations (Lines 4 thru 8)	$957,977
	Maintenance :	
10	SCR Maintenance (5120000)	$408
11	FDG (5120000)	$130,930
12	1/2 of Maintenance (10 + 11) * 50%	$65,669
13	Fixed O&M (9) + (12)	$1,023,646
	Total Revenue Requirement,	
14	Cost Associated with Mitchell Plant (3) + (13)	$16,776,171
15	Ohio Power Company's Percentage Ownership	100.00%
16	OPCo's Share of Cost Associated with Mitchell Plant (14) X (15)	$16,776,171
17	Ohio Power Company Steam Capacity (kw)	12,851,000
18	Mitchell Plant ($/kw)	$1.31
19	Ohio Power Surplus Weighing	100.00%
20	Portion of Weighted Average Capacity Rate	
	Attributed to Mitchell Plant ($/kw) (18) X (19)	$1.31
	Mitchell Plant Costs to Kentucky Power :	
21	Mitchell Plant Portion ($/kw) (20)	$1.31
22	Kentucky Power Capacity Deficit (kw)	241,800
	Mitchell Plant Environmental Cost to Kentucky Power (21) * (22)	
23	(ES FORM 3.14, Page 1 of 10, Line 5)	$316,758

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KENTUCKY POWER COMPANY - ENVIRONMENTAL SURCHARGE REPORT
CURRENT PERIOD REVENUE REQUIREMENT
OHIO POWER COMPANY (OPCo) - MITCHELL PLANT (UNITS 1 & 2)

For the Expense Month of March 2012

LINE NO.	COST	AMOUNTS
1	Utility Plant at Original Cost	$1,149,819,326
2	Member Primary Capacity Investment Rate (16.44% / 12)	1.37%
3	Total Rate Base	$15,752,525
	Operations :	
4	Disposal (5010000)	($137,565)
5	Urea (5020002)	$187,758
6	Trona (5020003)	$48,654
7	Lime Stone (5020004)	$397,138
8	Air Emission Fee	$18,559
9	Total Operations (Lines 4 thru 8)	$514,544
	Maintenance :	
10	SCR Maintenance (5120000)	$0
11	FDG (5120000)	$501,407
12	1/2 of Maintenance (10 + 11) * 50%	$250,704
13	Fixed O&M (9) + (12)	$765,248
	Total Revenue Requirement,	
14	Cost Associated with Mitchell Plant (3) + (13)	$16,517,773
15	Ohio Power Company's Percentage Ownership	100.00%
16	OPCo's Share of Cost Associated with Mitchell Plant (14) X (15)	$16,517,773
17	Ohio Power Company Steam Capacity (kw)	12,851,000
18	Mitchell Plant ($/kw)	$1.29
19	Ohio Power Surplus Weighing	100.00%
20	Portion of Weighted Average Capacity Rate Attributed to Mitchell Plant ($/kw) (18) X (19)	$1.29
	Mitchell Plant Costs to Kentucky Power :	
21	Mitchell Plant Portion ($/kw) (20)	$1.29
22	Kentucky Power Capacity Deficit (kw)	241,800
23	Mitchell Plant Environmental Cost to Kentucky Power (21) * (22) (ES FORM 3.14, Page 1 of 10, Line 5)	$311,922

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KENTUCKY POWER COMPANY - ENVIRONMENTAL SURCHARGE REPORT
CURRENT PERIOD REVENUE REQUIREMENT
OHIO POWER COMPANY (OPCo) - MITCHELL PLANT (UNITS 1 & 2)

For the Expense Month of April 2012

LINE NO.	COST	AMOUNTS
1	Utility Plant at Original Cost	$1,149,819,326
2	Member Primary Capacity Investment Rate (16.44% / 12)	1.37%
3	Total Rate Base	$15,752,525
	Operations :	
4	Disposal (5010000)	($245,285)
5	Urea (5020002)	$289,012
6	Trona (5020003)	$33,548
7	Lime Stone (5020004)	$458,559
8	Air Emission Fee	$18,559
9	Total Operations (Lines 4 thru 8)	$554,393
	Maintenance :	
10	SCR Maintenance (5120000)	$18,675
11	FDG (5120000)	$24,647
12	1/2 of Maintenance (10 + 11) * 50%	$21,661
13	Fixed O&M (9) + (12)	$576,054
	Total Revenue Requirement,	
14	Cost Associated with Mitchell Plant (3) + (13)	$16,328,579
15	Ohio Power Company's Percentage Ownership	100.00%
16	OPCo's Share of Cost Associated with Mitchell Plant (14) X (15)	$16,328,579
17	Ohio Power Company Steam Capacity (kw)	12,851,000
18	Mitchell Plant ($/kw)	$1.27
19	Ohio Power Surplus Weighing	100.00%
20	Portion of Weighted Average Capacity Rate Attributed to Mitchell Plant ($/kw) (18) X (19)	$1.27
	Mitchell Plant Costs to Kentucky Power :	
21	Mitchell Plant Portion ($/kw) (20)	$1.27
22	Kentucky Power Capacity Deficit (kw)	114,000
23	Mitchell Plant Environmental Cost to Kentucky Power (21) * (22) (ES FORM 3.14, Page 1 of 10, Line 5)	$144,780

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KENTUCKY POWER COMPANY - ENVIRONMENTAL SURCHARGE REPORT
CURRENT PERIOD REVENUE REQUIREMENT
OHIO POWER COMPANY (OPCo) - MITCHELL PLANT (UNITS 1 & 2)

For the Expense Month of May 2012

LINE NO.	COST	AMOUNTS
1	Utility Plant at Original Cost	$1,149,819,326
2	Member Primary Capacity Investment Rate (16.44% / 12)	1.37%
3	Total Rate Base	$15,752,525
	Operations :	
4	Disposal (5010000)	$38,647
5	Urea (5020002)	$311,779
6	Trona (5020003)	$82,123
7	Lime Stone (5020004)	$564,915
8	Air Emission Fee	$18,559
9	Total Operations (Lines 4 thru 8)	$1,016,023
	Maintenance :	
10	SCR Maintenance (5120000)	$505
11	FDG (5120000)	$636,804
12	1/2 of Maintenance (10 + 11) * 50%	$318,655
13	Fixed O&M (9) + (12)	$1,334,678
	Total Revenue Requirement,	
14	Cost Associated with Mitchell Plant (3) + (13)	$17,087,203
15	Ohio Power Company's Percentage Ownership	100.00%
16	OPCo's Share of Cost Associated with Mitchell Plant (14) X (15)	$17,087,203
17	Ohio Power Company Steam Capacity (kw)	12,851,000
18	Mitchell Plant ($/kw)	$1.33
19	Ohio Power Surplus Weighing	100.00%
20	Portion of Weighted Average Capacity Rate	
	Attributed to Mitchell Plant ($/kw) (18) X (19)	$1.33
	Mitchell Plant Costs to Kentucky Power :	
21	Mitchell Plant Portion ($/kw) (20)	$1.33
22	Kentucky Power Capacity Deficit (kw)	114,000
	Mitchell Plant Environmental Cost to Kentucky Power (21) * (22)	
23	(ES FORM 3.14, Page 1 of 10, Line 5)	$151,620

KENTUCKY POWER COMPANY - ENVIRONMENTAL SURCHARGE REPORT
CURRENT PERIOD REVENUE REQUIREMENT
OHIO POWER COMPANY (OPCo) - MITCHELL PLANT (UNITS 1 & 2)

For the Expense Month of June 2012

LINE NO.	COST	AMOUNTS
1	Utility Plant at Original Cost	$1,149,819,326
2	Member Primary Capacity Investment Rate (16.44% / 12)	1.37%
3	Total Rate Base	$15,752,525
	Operations :	
4	Disposal (5010000)	$175,243
5	Urea (5020002)	$410,461
6	Trona (5020003)	$80,593
7	Lime Stone (5020004)	$619,693
8	Air Emission Fee	$18,559
9	Total Operations (Lines 4 thru 8)	$1,304,549
	Maintenance :	
10	SCR Maintenance (5120000)	$47,997
11	FDG (5120000)	$349,747
12	1/2 of Maintenance (10 + 11) * 50%	$198,872
13	Fixed O&M (9) + (12)	$1,503,421
	Total Revenue Requirement,	
14	Cost Associated with Mitchell Plant (3) + (13)	$17,255,946
15	Ohio Power Company's Percentage Ownership	100.00%
16	OPCo's Share of Cost Associated with Mitchell Plant (14) X (15)	$17,255,946
17	Ohio Power Company Steam Capacity (kw)	12,851,000
18	Mitchell Plant ($/kw)	$1.34
19	Ohio Power Surplus Weighing	100.00%
20	Portion of Weighted Average Capacity Rate Attributed to Mitchell Plant ($/kw) (18) X (19)	$1.34
	Mitchell Plant Costs to Kentucky Power :	
21	Mitchell Plant Portion ($/kw) (20)	$1.34
22	Kentucky Power Capacity Deficit (kw)	114,000
23	Mitchell Plant Environmental Cost to Kentucky Power (21) * (22) (ES FORM 3.14, Page 1 of 11, Line 5)	$152,760

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KENTUCKY POWER COMPANY - ENVIRONMENTAL SURCHARGE REPORT
CURRENT PERIOD REVENUE REQUIREMENT
OHIO POWER COMPANY (OPCo) - MITCHELL PLANT (UNITS 1 & 2)

For the Expense Month of July 2012

LINE NO.	COST	AMOUNTS
1	Utility Plant at Original Cost	$1,149,819,326
2	Member Primary Capacity Investment Rate (16.44% / 12)	1.37%
3	Total Rate Base	$15,752,525
	Operations :	
4	Disposal (5010000)	$38,587
5	Urea (5020002)	$435,540
6	Trona (5020003)	$117,540
7	Lime Stone (5020004)	$680,151
8	Air Emission Fee	$18,559
9	Total Operations (Lines 4 thru 8)	$1,290,377
	Maintenance :	
10	SCR Maintenance (5120000)	$3,495
11	FDG (5120000)	($254,749)
12	1/2 of Maintenance (10 + 11) * 50%	($125,627)
13	Fixed O&M (9) + (12)	$1,164,750
	Total Revenue Requirement,	
14	Cost Associated with Mitchell Plant (3) + (13)	$16,917,275
15	Ohio Power Company's Percentage Ownership	100.00%
16	OPCo's Share of Cost Associated with Mitchell Plant (14) X (15)	$16,917,275
17	Ohio Power Company Steam Capacity (kw)	12,851,000
18	Mitchell Plant ($/kw)	$1.32
19	Ohio Power Surplus Weighing	100.00%
20	Portion of Weighted Average Capacity Rate Attributed to Mitchell Plant ($/kw) (18) X (19)	$1.32
	Mitchell Plant Costs to Kentucky Power :	
21	Mitchell Plant Portion ($/kw) (20)	$1.32
22	Kentucky Power Capacity Deficit (kw)	114,000
23	Mitchell Plant Environmental Cost to Kentucky Power (21) * (22) (ES FORM 3.14, Page 1 of 11, Line 5)	$150,480

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KENTUCKY POWER COMPANY - ENVIRONMENTAL SURCHARGE REPORT
CURRENT PERIOD REVENUE REQUIREMENT
OHIO POWER COMPANY (OPCo) - MITCHELL PLANT (UNITS 1 & 2)

For the Expense Month of August 2012

LINE NO.	COST	AMOUNTS
1	Utility Plant at Original Cost	$1,149,819,326
2	Member Primary Capacity Investment Rate (16.44% / 12)	1.37%
3	Total Rate Base	$15,752,525
	Operations :	
4	Disposal (5010000)	$88,112
5	Urea (5020002)	$325,453
6	Trona (5020003)	$116,641
7	Lime Stone (5020004)	$531,437
8	Air Emission Fee	$18,559
9	Total Operations (Lines 4 thru 8)	$1,080,202
	Maintenance :	
10	SCR Maintenance (5120000)	$31,728
11	FDG (5120000)	$172,339
12	1/2 of Maintenance (10 + 11) * 50%	$102,034
13	Fixed O&M (9) + (12)	$1,182,236
	Total Revenue Requirement,	
14	Cost Associated with Mitchell Plant (3) + (13)	$16,934,761
15	Ohio Power Company's Percentage Ownership	100.00%
16	OPCo's Share of Cost Associated with Mitchell Plant (14) X (15)	$16,934,761
17	Ohio Power Company Steam Capacity (kw)	12,851,000
18	Mitchell Plant ($/kw)	$1.32
19	Ohio Power Surplus Weighing	100.00%
20	Portion of Weighted Average Capacity Rate Attributed to Mitchell Plant ($/kw) (18) X (19)	$1.32
	Mitchell Plant Costs to Kentucky Power :	
21	Mitchell Plant Portion ($/kw) (20)	$1.32
22	Kentucky Power Capacity Deficit (kw)	152,200
23	Mitchell Plant Environmental Cost to Kentucky Power (21) * (22) (ES FORM 3.14, Page 1 of 11, Line 5)	$200,904

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KENTUCKY POWER COMPANY - ENVIRONMENTAL SURCHARGE REPORT
CURRENT PERIOD REVENUE REQUIREMENT
OHIO POWER COMPANY (OPCo) - MITCHELL PLANT (UNITS 1 & 2)

For the Expense Month of September 2012

LINE NO.	COST	AMOUNTS
1	Utility Plant at Original Cost	$1,149,819,326
2	Member Primary Capacity Investment Rate (16.44% / 12)	1.37%
3	Total Rate Base	$15,752,525
	Operations :	
4	Disposal (5010000)	($291,532)
5	Urea (5020002)	$484,174
6	Trona (5020003)	$134,755
7	Lime Stone (5020004)	$582,931
8	Air Emission Fee	$18,559
9	Total Operations (Lines 4 thru 8)	$928,887
	Maintenance :	
10	SCR Maintenance (5120000)	$27,459
11	FDG (5120000)	$99,968
12	1/2 of Maintenance (10 + 11) * 50%	$63,714
13	Fixed O&M (9) + (12)	$992,601
	Total Revenue Requirement,	
14	Cost Associated with Mitchell Plant (3) + (13)	$16,745,126
15	Ohio Power Company's Percentage Ownership	100.00%
16	OPCo's Share of Cost Associated with Mitchell Plant (14) X (15)	$16,745,126
17	Ohio Power Company Steam Capacity (kw)	12,851,000
18	Mitchell Plant ($/kw)	$1.30
19	Ohio Power Surplus Weighing	100.00%
20	Portion of Weighted Average Capacity Rate Attributed to Mitchell Plant ($/kw) (18) X (19)	$1.30
	Mitchell Plant Costs to Kentucky Power :	
21	Mitchell Plant Portion ($/kw) (20)	$1.30
22	Kentucky Power Capacity Deficit (kw)	152,200
23	Mitchell Plant Environmental Cost to Kentucky Power (21) * (22) (ES FORM 3.14, Page 1 of 11, Line 5)	$197,860

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KENTUCKY POWER COMPANY - ENVIRONMENTAL SURCHARGE REPORT
CURRENT PERIOD REVENUE REQUIREMENT
OHIO POWER COMPANY (OPCo) - MITCHELL PLANT (UNITS 1 & 2)

For the Expense Month of October 2012

LINE NO.	COST	AMOUNTS
1	Utility Plant at Original Cost	$1,149,819,326
2	Member Primary Capacity Investment Rate (16.44% / 12)	1.37%
3	Total Rate Base	$15,752,525
	Operations :	
4	Disposal (5010000)	($78,378)
5	Urea (5020002)	$644,375
6	Trona (5020003)	$154,507
7	Lime Stone (5020004)	$497,536
8	Air Emission Fee	$18,559
9	Total Operations (Lines 4 thru 8)	$1,236,599
	Maintenance :	
10	SCR Maintenance (5120000)	$33,041
11	FDG (5120000)	$128,499
12	1/2 of Maintenance (10 + 11) * 50%	$80,770
13	Fixed O&M (9) + (12)	$1,317,369
	Total Revenue Requirement,	
14	Cost Associated with Mitchell Plant (3) + (13)	$17,069,894
15	Ohio Power Company's Percentage Ownership	100.00%
16	OPCo's Share of Cost Associated with Mitchell Plant (14) X (15)	$17,069,894
17	Ohio Power Company Steam Capacity (kw)	12,851,000
18	Mitchell Plant ($/kw)	$1.33
19	Ohio Power Surplus Weighing	100.00%
20	Portion of Weighted Average Capacity Rate	
	Attributed to Mitchell Plant ($/kw) (18) X (19)	$1.33
	Mitchell Plant Costs to Kentucky Power :	
21	Mitchell Plant Portion ($/kw) (20)	$1.33
22	Kentucky Power Capacity Deficit (kw)	151,900
	Mitchell Plant Environmental Cost to Kentucky Power (21) * (22)	
23	(ES FORM 3.14, Page 1 of 11, Line 5)	$202,027

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KENTUCKY POWER COMPANY - ENVIRONMENTAL SURCHARGE REPORT
CURRENT PERIOD REVENUE REQUIREMENT
OHIO POWER COMPANY (OPCo) - MITCHELL PLANT (UNITS 1 & 2)

For the Expense Month of November 2012

LINE NO.	COST	AMOUNTS
1	Utility Plant at Original Cost	$1,149,819,326
2	Member Primary Capacity Investment Rate (16.44% / 12)	1.37%
3	Total Rate Base	$15,752,525
	Operations :	
4	Disposal (5010000)	($76,749)
5	Urea (5020002)	$728,321
6	Trona (5020003)	$200,473
7	Lime Stone (5020004)	$581,127
8	Air Emission Fee	$18,559
9	Total Operations (Lines 4 thru 8)	$1,451,731
	Maintenance :	
10	SCR Maintenance (5120000)	$20,915
11	FDG (5120000)	$310,848
12	1/2 of Maintenance (10 + 11) * 50%	$165,882
13	Fixed O&M (9) + (12)	$1,617,613
	Total Revenue Requirement,	
14	Cost Associated with Mitchell Plant (3) + (13)	$17,370,138
15	Ohio Power Company's Percentage Ownership	100.00%
16	OPCo's Share of Cost Associated with Mitchell Plant (14) X (15)	$17,370,138
17	Ohio Power Company Steam Capacity (kw)	12,851,000
18	Mitchell Plant ($/kw)	$1.35
19	Ohio Power Surplus Weighing	100.00%
20	Portion of Weighted Average Capacity Rate Attributed to Mitchell Plant ($/kw) (18) X (19)	$1.35
	Mitchell Plant Costs to Kentucky Power :	
21	Mitchell Plant Portion ($/kw) (20)	$1.35
22	Kentucky Power Capacity Deficit (kw)	151,900
23	Mitchell Plant Environmental Cost to Kentucky Power (21) * (22) (ES FORM 3.14, Page 1 of 11, Line 5)	$205,065

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KENTUCKY POWER COMPANY - ENVIRONMENTAL SURCHARGE REPORT
CURRENT PERIOD REVENUE REQUIREMENT
OHIO POWER COMPANY (OPCo) - MITCHELL PLANT (UNITS 1 & 2)

For the Expense Month of December 2012

LINE NO.	COST	AMOUNTS
1	Utility Plant at Original Cost	$1,149,819,326
2	Member Primary Capacity Investment Rate (16.44% / 12)	1.37%
3	Total Rate Base	$15,752,525
	Operations :	
4	Disposal (5010000)	$105,923
5	Urea (5020002)	$570,937
6	Trona (5020003)	$145,421
7	Lime Stone (5020004)	$623,198
8	Air Emission Fee	$18,559
9	Total Operations (Lines 4 thru 8)	$1,464,038
	Maintenance :	
10	SCR Maintenance (5120000)	$57,572
11	FDG (5120000)	$399,830
12	1/2 of Maintenance (10 + 11) * 50%	$228,701
13	Fixed O&M (9) + (12)	$1,692,739
	Total Revenue Requirement,	
14	Cost Associated with Mitchell Plant (3) + (13)	$17,445,264
15	Ohio Power Company's Percentage Ownership	100.00%
16	OPCo's Share of Cost Associated with Mitchell Plant (14) X (15)	$17,445,264
17	Ohio Power Company Steam Capacity (kw)	12,851,000
18	Mitchell Plant ($/kw)	$1.36
19	Ohio Power Surplus Weighing	100.00%
20	Portion of Weighted Average Capacity Rate	
	Attributed to Mitchell Plant ($/kw) (18) X (19)	$1.36
	Mitchell Plant Costs to Kentucky Power :	
21	Mitchell Plant Portion ($/kw) (20)	$1.36
22	Kentucky Power Capacity Deficit (kw)	154,600
	Mitchell Plant Environmental Cost to Kentucky Power (21) * (22)	
23	(ES FORM 3.14, Page 1 of 11, Line 5)	$210,256

Kentucky Power Company

REQUEST

Please provide the Company's budgeted capacity equalization payments pursuant to the Interconnection Agreement by month for calendar year 2013. Provide all assumptions and all calculations, including electronic workpapers in live format with cell formulas intact and a copy of all source documents relied on for the assumptions or other inputs to the calculations and workpapers. Please consider this request continuing in nature and supplement the response each month as actual information for that month is available.

RESPONSE

Please see 2013 Control Budget Capacity Settlement.2.19.13.xlsx on the enclosed CD for the budgeted capacity equalization payments and all support.

WITNESS: Ranie K. Wohnhas

Kentucky Power Company

REQUEST

Please provide the Company's budgeted capacity equalization payments pursuant to the Interconnection Agreement by month for calendar year 2013 that are recoverable through the ECR. Provide all assumptions and all calculations, including electronic workpapers in live format with cell formulas intact and a copy of all source documents relied on for the assumptions or other inputs to the calculations and workpapers. Please consider this request continuing in nature and supplement the response each month as actual information for that month is available.

RESPONSE

KPCo does not budget to this level of detail. Actual information for Calendar Year 2013 will be provided as it becomes available and in accordance with the Company's response to KIUC 1-90.

WITNESS: Ranie K. Wohnhas

Kentucky Power Company

REQUEST

Please provide a copy of the AEP monthly reports detailing the Interconnection Agreement allocations and payments and receipts for the period January 2011 through the most recent month for which the reports are available.

RESPONSE

Please see KIUC 1-93, Attachment 1 on the enclosed CD.

WITNESS: Ranie K Wohnhas

Kentucky Power Company

REQUEST

Refer to paragraphs 66 through 70 of the Company's Application and the repeated references to the "Phase I investigation."

a. Please define the term "Phase I investigation" and explain its significance.

b. Please identify the time period covered by the "Phase I" in the term "Phase I investigation."

c. Has there been a Phase II investigation? If not, what events or circumstances would trigger a Phase II investigation?

RESPONSE

a. The AEP project plan process utilizes a three phase approach to executing large projects. This process is detailed in the direct testimony of Robert L. Walton in Case No. 2011-00401, specifically on pages 5 through 7 of his direct testimony. See KIUC 1-94 Attachment 1.

   The phased approach begins with Phase I (or Phase I Investigation), where the project is initiated, project planning and conceptual engineering are completed, and a Project Charter and Project Plan with an execution strategy for engineering, design, procurement, permitting, construction, startup and commissioning are developed.

b. As stated in paragraph 68 of the application, the referenced Phase I Investigation began in 2004 and was suspended in 2006. Paragraph 68 incorrectly stated that the Phase 1 investigation restarted in October 2011; rather, the Phase 1 investigation was reinitiated in first quarter 2010 to evaluate available FGD technologies in support of the Company's application in Case No. 2011-00401. The incorrect date of October 2011 was also used in response to KPSC 1-24 in Case No. 2011-00401.

c. There was no Phase II investigation. A Phase II investigation would begin at the conclusion of the Phase I investigation pending formal approval by AEPSC and KPCo management.

WITNESS: Ranie K. Wohnhas

phase to the next. A graphical timeline showing the phased approach as well as major project milestones is provided in Exhibit RLW-1.

Since 2004, AEP has implemented this phased approach in the installation of FGD systems on over 8,400 MW of generation and SCR systems on approximately 2,400 MW. At the height of construction activity in 2007, *Engineering News-Record* identified AEP's overall construction program as the largest in the utility industry and the second largest in the nation, based on capital invested. The Big Sandy Unit 2 FGD retrofit will positively benefit from years of valuable lessons learned and best practices.

This past experience will be invaluable, as the timeline for installing the FGD system on Big Sandy Unit 2 to meet the requirements of the Cross State Air Pollution Rule (CSAPR) and Electric Generating Unit Maximum Achievable Control Technology (EGU MACT) Rule will be challenging as discussed by Company witness McManus.

Q. IN WHAT PHASE IS THE BIG SANDY UNIT 2 FGD PROJECT CURRENTLY?

A. The project is currently in Phase I. The project has been initiated and the project planning and conceptual engineering required to support this filing have been completed. Next, a Project Charter and a Project Plan will be developed which will include a detailed execution strategy for the engineering, design, procurement, permitting, construction, startup and commissioning of the FGD system.

Q. PLEASE DESCRIBE THE ACTIVITIES THAT OCCUR DURING PHASE I.

A. The formal process begins with the preparation and approval of a Capital Improvement Requisition (CI) after which an architect/engineer (A/E) is engaged to perform the engineering, design, and feasibility studies for Phase I and the ensuing phases of the project. The intent of the Phase I feasibility studies is to investigate the technical options

and factors driving the project cost and schedule. During Phase I, the architect/engineer, with input from a team of AEPSC engineers and managers, defines the scope of the project, prepares work plans, and develops a budgetary cost estimate and schedule for implementation. In addition, preliminary environmental permitting activities begin and the FGD supplier is released to begin conceptual engineering. The results of the Phase I conceptual engineering and feasibility studies are presented to senior management and authorization is sought to proceed to Phase IIa via a Phase IIa CI revision. Formal approval of the CI revision by AEPSC and KPCo management allows the project to proceed to Phase IIa.

Q. **PLEASE DESCRIBE THE ACTIVITIES THAT TAKE PLACE IN PHASE IIA.**

A. Phase IIa consists of preliminary engineering, design, permitting and procurement work. During this phase, we finalize the project scope, refine the cost estimate and schedule, award the Original Equipment Manufacturer (OEM) contract, procure long lead time equipment, and develop drawings to the point that detailed design work can begin. During Phase IIa, modifications to existing air, water and waste environmental permits are submitted to the Kentucky Department for Environmental Protection to begin the review and approval process and we assemble the construction and site management teams to begin design reviews to ensure that the proposed scope of work is optimized for constructability. We also define site preparation plans, determine which, if any, facilities will need to be relocated, select a site preparation contractor, and complete studies to support the various permitting activities that will be required. Upon completion of Phase IIa, the project is again reviewed and a Phase IIb CI is prepared for approval by AEPSC and KPCo management.

Q. PLEASE DESCRIBE PHASE IIB OF THE PROJECT PROCESS.

A. Phase IIb consists of detailed engineering, design, contracting and initial site construction work. During this phase, as detailed design progresses, construction bid packages are prepared and major equipment is specified, bid, and purchased. The construction and site management teams are mobilized and begin site construction work, including the development of new access roads, contractor parking areas and material storage areas, as well as the relocation of existing underground piping and electrical utilities to facilitate the installation of new foundations and equipment pads. We proceed through the process of selecting and awarding the major construction contracts. Upon completion of Phase IIb, the project is reviewed once again, and a Phase III CI is prepared for approval by AEPSC and KPCo management.

Q. WHAT TAKES PLACE DURING PHASE III?

A. Phase III consists of the full-scale construction and startup and commissioning of the project. Construction, start-up, testing, check out and commissioning are the key activities associated with Phase III. The principal construction contractors mobilize and begin the major construction effort. Engineering and design continues in support of the project throughout the construction and testing activities, including the validation of the design, the preparation of as-built drawings, and the evaluation and approval of necessary design changes. Phase III is complete when the project is complete and the equipment is commissioned and placed in service.

Q. WHAT ARE THE MAJOR BENEFITS DERIVED FROM THIS PHASED APPROACH TO CONSTRUCTION PROJECTS?

A. The phased approach provides structured control of the project scope and costs. It

Kentucky Power Company

REQUEST

Please provide a schedule showing the amounts incurred for the Phase I investigation by month from the date the first costs were incurred through the most recent month for which actual information is available. Please provide these amounts by FERC account as they were booked and specifically show any transfers from one FERC account to another, if any.

RESPONSE

Please see the response to KPSC 1-16.

WITNESS: Ranie K Wohnhas

Kentucky Power Company

REQUEST

Please explain why the Company never sought approval from the Commission to defer the Phase I investigation costs or to recover those costs prior to Case No. 2011-00401.

RESPONSE

The Phase I investigation was not completed until August 2012 (December 2012 for the landfill). The Company continued to evaluate the disposition of the Big Sandy units (and continues to investigate the disposition of Big Sandy Unit 2) in light of the Consent Decree and the various EPS regulations affecting Big Sandy. Given the ongoing nature of the investigation, the Company did not think it prudent to seek approval to recover the costs through the environmental surcharge until December 2011 when it filed its Application in Case No. 2011-00401.

WITNESS: Ranie K. Wohnhas

Kentucky Power Company

REQUEST

Please provide the amount of revenues and after tax income the Company lost from RTP rates versus the standard tariff rates by month during each month October 2011 through December 2012. Please provide all assumptions, data, and calculations, including, but not limited to, all electronic spreadsheets with formulas intact.

RESPONSE

Kentucky Power objects to this data request as seeking information that is irrelevant and not reasonably calculated to lead to the discovery of admissible evidence. Kentucky Power is not seeking in this proceeding to recover the amount of revenues or after tax income the Company lost as a result of the ten customers taking service under Tariff RTP contrary to the terms of the tariff.

WITNESS: Ranie K Wohnhas

Kentucky Power Company

REQUEST

Does the transferor plan to indemnify the Company against liability for the transferor's acts and omissions related to the Mitchell plant that originated prior to the transfer? If not, please explain why not. If so, then please identify the specific provisions of each draft agreement wherein such indemnification is addressed.

RESPONSE

This answer assumes that the "transferor" referred to in the question is AEP Generation Resources Inc. The transfer of the 50% undivided interest in the Mitchell plant from Ohio Power Company to AEP Generation Resources Inc. and the subsequent transfer of the Mitchell plant from AEP Generation Resources Inc. to NEWCO Kentucky will occur on the same day, with the transfer to NEWCO Kentucky immediately following the transfer to AEP Generation Resources Inc. AEP Generation Resources Inc. is simply an intermediary in the process of transferring the Mitchell plant to NEWCO Kentucky and will not perform any acts or have any omissions relating to the Mitchell plant prior to the transfer to NEWCO Kentucky. Therefore, the transferor is not providing an indemnity to the Company for its acts and omissions related to the Mitchell plant that originated prior to the transfer.

WITNESS: Gregory G Pauley

Kentucky Power Company

REQUEST

Does the transferor plan to indemnify the Company against liability for the transferor's acts and omissions related to the Mitchell plant that originated prior to the transfer? If not, please explain why not. If so, then please identify the specific provisions of each draft agreement wherein such indemnification is addressed.

RESPONSE

This answer assumes that the "transferor" referred to in the question is AEP Generation Resources Inc. The transfer of the 50% undivided interest in the Mitchell plant from Ohio Power Company to AEP Generation Resources Inc. and the subsequent transfer of the Mitchell plant from AEP Generation Resources Inc. to NEWCO Kentucky will occur on the same day, with the transfer to NEWCO Kentucky immediately following the transfer to AEP Generation Resources Inc. AEP Generation Resources Inc. is simply an intermediary in the process of transferring the Mitchell plant to NEWCO Kentucky and will not perform any acts or have any omissions relating to the Mitchell plant prior to the transfer to NEWCO Kentucky. Therefore, the transferor is not providing an indemnity to the Company for its acts and omissions related to the Mitchell plant that originated prior to the transfer.

WITNESS: Gregory G Pauley

Kentucky Power Company

REQUEST

Is it the intent of the transferor that the Company assume the liability for transferor's acts and omissions related to the Mitchell plant that originated prior to the transfer? If so, what is the basis for this proposition? Please identify the specific provisions of each draft agreement wherein the assumption of liability is addressed. If none, then please so state.

RESPONSE

See the Company's response to KIUC 1-98.

WITNESS: Gregory G Pauley

Kentucky Power Company

REQUEST

Refer to page 5 lines 6-10 of Mr. Pauley's Direct Testimony wherein he states: "the request to defer and create a regulatory asset in connection with the Big Sandy Unit 2 Phase I investigation expenditures were in the best interest of the Company and its customers." Please provide all reasons why the Company considers the deferral and creation of a regulatory asset for the "Phase I investigation expenditures" to be in the best interest of customers.

RESPONSE

Please refer to the direct testimony of Company witness Wohnhas on pages 9-11, specifically page 11, lines 4-19 for reasons that the Commission should approve the deferral request.

WITNESS: Ranie K Wohnhas

Kentucky Power Company

REQUEST

Refer to page 6 lines 8-18 of Mr. Pauley's Direct Testimony.

a. On what date did AEP and/or Kentucky Power Company make the decision to transfer 50% of the Mitchell units to Kentucky Power and to make the Section 203 filing with the FERC to implement that decision? Please provide all documentation in support of the date provided in this response.

b. On what date did AEP and/or Kentucky Power Company make the decision to reverse its decision to retire Big Sandy 2 announced in July 2011 and instead retrofit it with environmental controls? Please provide all documentation in support of the date provided in this response.

RESPONSE

a. August/September 2012 - Decision was made to proceed with a FERC and State filing, subject to later validation, to transfer a 50% interest in the Mitchell units based upon indications that the Mitchell transfer was the least cost alternative.

November 2012 - After receiving the final analysis which indicated the Mitchell transfer was the least cost alternative, the decision was made to file with the KPSC for a 50% interest in the Mitchell units and retire Big Sandy Unit 2.

b. As explained in response to SC 2-10 in Case No. 2011-00401, Big Sandy Unit 2 was considered for retirement when based upon preliminary analysis the option to repower Big Sandy Unit 1 could be the least cost alternative. The press release indicated that this course was "a plan" and was not necessarily the final plan as the Company was in the process of completing a more detailed engineering analysis of the cost to repower Big Sandy Unit 1. There was no final decision to retire Big Sandy Unit 2 and thus no reversal.

WITNESS: Gregory G Pauley

Kentucky Power Company

REQUEST

Refer to page 4 lines 4-10 of Mr. Pauley's Direct Testimony. Please identify and provide a copy of all documents reviewed, relied upon, and/or prepared by Mr. Pauley to make the decision and/or communicate the decision to acquire 50% of the Mitchell units.

RESPONSE

See KIUC 1-102 Attachment 1.

WITNESS: Gregory G Pauley

Scott C Weaver /OR4/AEPIN
06/18/2012 09:34 AM

To Gregory G Pauley/OR3/AEPIN@AEPIN, Ranie K Wohnhas/OR3/AEPIN@AEPIN
cc
bcc
Subject Fw: KPCo resource option 're-analysis'

Please take a look at this modified strawman for the KPCo re-analysis... Does this seem reasonable to you, or are you looking for something else?

KPCo_CPCN-Resource Need 'Re-analysis' (June 2012)_Modeling Overview.ppt

Scott C. Weaver
AEP Audinet: 200-1373
Outside: (614) 716-1373

----- Forwarded by Scott C Weaver/OR4/AEPIN on 06/18/2012 09:31 AM -----

Scott C Weaver /OR4/AEPIN
06/14/2012 01:31 PM

To Gregory G Pauley/OR3/AEPIN, Ranie K Wohnhas/OR3/AEPIN
cc
Subject KPCo resource option 're-analysis'

Gentlemen,

This is a KPCo resource option "re-analysis" straw-man I put together... I'd like to confer with you on this prior to meeting next Tues.... Now I realize that this meeting could certainly result in recommendations of yet other options --or combinations of options-- to be explored, but wanted to throw something out up-front to work off of.

For instance, I'm not sure that we'd want (or need) to continue to assess the Big Sandy "CC" replacement options (#2 and #3) that we assessed in the BS filing, but thought I'd continue to reflect for purpose of this 're-analysis' exercise. The only add'l option, not ID'd here, that I think is a non-starter would be ---as Rich alluded to--- the notion that we would seek any capacity transfers/sales from the Ohio-G *over-and-above* the "Mitchell (and Amos 3 for APCo) take" represented here.

If you have questions here, or you believe I've missed something, please give me a call.

[attachment "KPCo_Resource Requirement Study (June 2012)_Overview.ppt" deleted by Scott C Weaver/OR4/AEPIN]

Scott C. Weaver
AEP Audinet: 200-1373
Outside: (614) 716-1373

KPCo Capacity Resource Need "Re-analysis"

Resource Options

Option	*Unit Dispositions* Big Sandy 2	Big Sandy 1	Approx. Resulting KPCo Capacity Need (MW)	*BS2 Replacement*	*BS1 Replacement*	*Overall KPCo Portfolio Replacement Strategy...*
From the recent (Big Sandy) CPCN Filing (Docket No. 2011-00401)...						
#1	**Retrofit** (DFGD; 6/2016)	**Retire** (2015)	**300+**	*n/a*	**Market** (to 2025) OR Mitchell @20% [312-MW] (2014)	o (PJM) Capacity & Energy Market Purchases (or bi-lateral Capacity & Energy PPA) to 2025; then new-build CC capacity
#2	**Retire** (2015)	**Retire** (2015)	**1,100**	**CC (Brownfield)** (1/2016)	**Market** (to 2025) OR Mitchell @20% [312-MW] (2014)	o Brownfield CC (@BS), Mitsubishi 501-A 2x2x1 @ 904 MW w/ Duct-Firing o (PJM) Market Purchases (200-300 MW) (or bi-lateral PPA) to 2025; then new-build CC capacity added
#3	**Retire** (2015)	**(CC) Repower** (2015)	**300+**	**CC (BS1 Repower)** (1/2016)	**Market** (to 2025) OR Mitchell @20% [312-MW] (2014)	o BS1 Repower as CC, Mitsubishi 501-A 2x2x1 @ 780 MW w/ Duct-Firing o (PJM) Market Purchases (300-400 MW) (or bi-lateral PPA) to 2025; then new-build CC capacity added
~~**#4(A)**~~	~~**Retire** (2015)~~	~~**Retire** (2015)~~	~~**1,100**~~	~~**Market** (to 2020)~~	~~**Market** (to 2025)~~	~~o 5-Year (PJM) Market Purchases to 2020~~ ~~o Generic CC by 1/2020, ~900 MW w/ Duct-Firing; with additional CC capacity added in 2025~~
Other views NOT considered in that filing...						
#4	**Retire** (2015)	**Convert to Gas** (1/2016)	**800+**	**Mitchell @50% [780-MW]** (1/2014)	*n/a*	o (PJM) Capacity & Energy Market Purchases (or a bi-lateral Capacity & Energy PPA)
#5	**Retire** (2015)	**Retire** (2015)	**1,100**	**Mitchell @50% [780-MW]** (1/2014)	**Market** (to 2020)	o 5-Year (PJM) Market Purchases (or a bi-lateral PPA); then new-build CC capacity in 2020
#6	***same as #5 except...***				**Market** (to 2025)	o 10-Year (PJM) Market Purchases (or a bi-lateral PPA); then new-build CC capacity in 2025
#7	***same as #5 except...***				**Market** (to 2025)	o In lieu of 'full' ~300 MW Capacity & Energy PPA, supplement w/ "non-traditional" resources (EE/DR, VVO, Renewables)

Others?... Re-assessment of Riverside?... Other existing facilities?

(Strategist®) Modeling Parameter/Data Requirements

Modeling "G" annual revenue requirements thru 2040... discounted to current$ @ KPCo WACC

Commodity Prices, Load, CSAPR:

- Continue to use latest AEP-FA suite of L/T fundamental pricing ("Fleet Transition-CSAPR")... with suite of: "HIGHER Band", "LOWER Band", "Early (2017) Carbon" and "No Carbon" pricing scenarios.
- Continue to use latest (Fall '11) AEP-EF load & peak demand forecast for KPCo.
- Continue to model to achieve company CSAPR SO_2 unit alloc (+ Assurance Prov) limits (KPCo = 7.7k per yr., eff: 2014)

'Option-specific' parameters...

Option #1 (BS2 Retrofit):

1)In-service date remain @ 6/2016?... Later? (unit would be idled in interim)

2)Update to DFGD installed cost ($839M excl AFUDC w/ 20% contingency adder) due to compressed schedule?

3)Confirm NID removal efficiency (98.5%)... removal cost (~$300/ton SO2)

4)Confirm 'on-going' BS2 capex & FOM *(in-progress... to be forwarded by Generation)*

5)Confirm 15-year Retrofit recovery period; 25-year operating life (thru '40)

6)Confirm ultimate (BS1) CC-replacement constrained/delayed until 2025

Modeling Parameter/Data Requirements (con't)

Option #2 (Brownfield CC):

1)In-service date remain @ 1/2016?... Later?

2)Update to CC installed cost (per S&L/Kiewet April/May '11 estimates... w/ 10% contingency adder)?

3)Confirm 30-year CC recovery period & operating life

Option #3 (BS1 CC Repower):

1)In-service date remain @ 1/2016?... Later?

2)Updated CC-Repower cost (per S&L July/Aug '11 estimates... w/ 20% contingency adder)?

3)Confirm 20-year CC-Repower recovery period, w/ 25-year operating life (thru '40)

Option #4 (BS1 Gas Conv; 50% Mitchell; 5 / 10 Yrs. Market for balance of need):

1)Est. capital cost of BS1 gas conversion, derate (if any), min load, heat rate (@ min & max load)

2)Mitchell "transfer value" @ 1/2014 *(in progress... to be forwarded by Reg Accounting & Tax... will include budgeted increm. Capex thru 12/2013)*

- Such value to be net of ADFIT (i.e., rate base)?... If so, will be necessary to modify levelized carrying cost rate in model

2)Confirm 'on-going' ML capex & FOM *(in-progress... to be forwarded by Generation)*

Option #7 (50% Mitchell, 5 Yrs. Market and/or 'Alternative' Resources for balance of need):

1)___ % increase to current DSM (DR/EE) (current CLR reflects 64 MW by '20); reflect 33 MW (151 circuits @ ~$37M by '17) of increment VVO (volt/var) projects; reflect ___ (nameplate) wind resources... *i.e., similar to the "Clean Energy Standard" (proxy) portfolio reflected in the most recent APCo (Virginia) IRP*

Modeling Parameter/Data Requirements (con't)

- **ALL Options**: "Bilateral" (intermediated-term) capacity & energy PPA (2016-2020... or, 2016-2025):
  - AEP Generation Resources Cost-based? (slice of system?... unit-specific?)
    OR
  - Market-based? (*valuation-basis:* 'fundamentals'-based?... some other (equivalent transaction) proxy?)