MISSOURI PUBLIC SERVICE COMMISSION

STAFF REPORT ON

AMERENUE'S

INTEGRATED RESOURCE PLANNING

COMPLIANCE FILING

CASE NO. EO-2006-0240

MAY 19, 2006

JEFFERSON CITY, MISSOURI

** Denotes Highly Confidential **

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Appendix A

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Summary of the Staff's Review

On December 5, 2005, Union Electric Company d/b/a AmerenUE (AmerenUE) filed the first resource plan filing by an investor-owned utility since the Commission approved waivers in June 1999 from Chapter 22, Electric Utility Resource Planning. In the six years between when the waivers were granted and December 5, 2005, when AmerenUE filed its resource plan, some aspects of resource planning have remained the same while some have evolved.

Because of these changes over the time that the rules were suspended, AmerenUE filed, and the Commission Staff (Staff) reviewed AmerenUE's filing considering, the "intent" of the rules. The Staff based its view of the "intent" of the rules on discussions with the individuals on the Staff that wrote the rules, the rules themselves, and the discussions at the Commission's roundtable on Integrated Resource Planning (IRP) held on May 20, 2005. At this roundtable, utility and industry participants joined the Staff in discussing potential changes to Chapter 22. The Staff does not believe that its expectations regarding what AmerenUE should have filed and what the other electric utilities subject to Chapter 22 should file is overly demanding or in any manner unreasonable.

The Staff's review consisted of a review of the 17 documents that AmerenUE filed in this case and participation in four meetings: one meeting each in the areas of (a) load analysis and forecasting; (b) supply-side analysis; (c) demand-side analysis; and (d) integration and risk analysis. These meetings were held at Ameren's General Office Building in St. Louis. The Staff also reviewed the responses to informal requests for information and formal data requests issued by all parties to this case.

What follows is a summary of AmerenUE's Preferred Resource Plan, the Staff's overall view of this filing, a brief list of deficiencies in AmerenUE's resource planning process and a list of remedies for these deficiencies. The remainder of the report details areas of concern respecting AmerenUE's filing relating to the major components of resource planning that generally correspond with the requirements rules 4 CSR 240-22.020 through 22.070 of the Electric Utility Resource Planning chapter.

Summary of AmerenUE's Preferred Resource Plan

One of the difficulties in reviewing AmerenUE's filing was finding a summary of the AmerenUE Preferred Resource Plan that resulted from the Chapter 22 resource plan process. Nowhere in AmerenUE's 3,409 page filing is there a summary of the AmerenUE Preferred Resource Plan that lays out the demand-side and supply-side resources that AmerenUE expects to use to meet its forecasted peak loads. The Staff asked for such a summary and received such a summary on January 24, 2006. The Staff has revised this summary with information that it received subsequently and has attached this summary as Table 1.

The top of Table 1 shows the current capacity owned by AmerenUE. This includes the 640 megawatts (MW) of combustion turbine generator (CTG) capacity recently purchased by AmerenUE at the former NRG facility in Audrain County, 450 MW of CTG capacity recently purchased by AmerenUE at the former Aquila, Inc. (Aquila) facility at Goose Creek and 300 MW of CTG capacity recently purchased by AmerenUE at the former Aquila facility at Raccoon Creek. The Staff removed from its capacity balance calculation the capacity of ** _____

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Pages 3 and 4

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Just below the current capacity, the Staff has listed on Table 1 the new generation that is in the AmerenUE 2005 Preferred Resource Plan. This table shows that with the addition of the 1,390 MW of capacity early this year, AmerenUE does not need any additional capacity until ** _____

_____ **

After AmerenUE's generation resources, Table 1 lists AmerenUE's capacity transactions. These are AmerenUE's firm, long-term purchases and sales. These capacity transactions and the generation resources comprise AmerenUE's Total System Capacity.

Listed next in Table 1 is System Peaks and Reserves. AmerenUE's peak forecast grows by a constant ** _____ ** per year over the time horizon, which is shown as 20 years in Table 1. AmerenUE has added no additional demand-side resources to its Preferred Resource Plan. The demand-response shown in Table 1 is due to current demand-side programs. There is no reduction shown in the AmerenUE peak demand due to energy efficiency demand-side programs in the Preferred Resource Plan.

At the bottom of Table 1 is a section that shows the capacity needs of AmerenUE. Because of AmerenUE's purchase of the 1390 MW of CTG capacity, AmerenUE will have more capacity than it needs and has a positive capacity balance until ** ____ **. AmerenUE states in its implementation plan, which is described in Document 3, *Integrated Resource Analysis*, on pages 192 - 193, that this excess capacity gives it time to analyze what type of capacity to add past ** ____ **.

Overview of the Staff's Review

The Staff finds that AmerenUE is not in compliance with the intent of portions of the Commission's Electric Utility Resource Planning Chapter 22 Rules. However, because of AmerenUE's recent purchase of 1390 MW of CTG capacity at a price substantially below the cost to build such new capacity, the Staff believes that excess capacity balance resulting from these purchases mitigates the Staff's concerns about the ultimate end result of deficiencies in AmerenUE's resource planning processes and provides AmerenUE another opportunity to meet the intent of the Commission's resource planning Chapter 22 in December 2008, without existing deficiencies having immediate term bad consequences.

In July 2005, the Staff and AmerenUE personnel had discussions regarding possible waivers from portions of Chapter 22. On the basis of those discussions the Staff thought that AmerenUE would either file in late summer 2005 for waivers from portions of Chapter 22 or include as part of its December 5, 2005 filing a request for waivers from various sections of Chapter 22. However, AmerenUE chose not to file a request for any waivers. When asked in a Staff data request why it did not file a request for waivers, AmerenUE responded:

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> We believe that AmerenUE's filing is materially in compliance with the Commission's IRP rules and no variance is necessary, particularly since the IRP rules themselves contemplate a process for the Staff and other parties to identify any deficiencies they believe may exist, and provides a process for correcting any deficiencies. Moreover, as a practical matter we believed that the Commission and all parties would be better served if AmerenUE devoted its limited resources to completing the filing in the best manner it could, rather than debating over whether a waiver might or might not be necessary for a filing that was not yet completed.

The Staff views the waiver process as requiring a utility to explain why it is not complying with clear requirements of Chapter 22. The Staff does not view the waiver process as an opportunity for a utility to dismissively assert that it is "materially" complying or complying "in spirit," without even providing an explanation as to why and how it is "materially" complying or complying "in spirit." With AmerenUE's filing, the Staff has found itself in the process of not only trying to determine whether or not AmerenUE has followed the intent of the rule, but also whether or not AmerenUE followed any resource planning process set out in Chapter 22.

In some areas of the rules where AmerenUE discussed in July 2005 the possibility of needing waivers, the rules allow for the utility to vary from the procedure or process defined in that section or subsection of the rule, if the utility provides a reason for the deviation from what is set out in that section or subsection. What the Staff found in reviewing AmerenUE's filing was not an explanation for why it did not do what is prescribed in the rule, but often merely a statement by AmerenUE that it did not do what the rule requires.

Thus, the Staff found it difficult to review how AmerenUE met the requirements of Chapter 22. The Staff appreciates that AmerenUE filed a large amount of information in 17 documents. However, there were inconsistencies across the documents filed by

AmerenUE. Often a filing document would reference another large document for additional information on a topic but not give any specifics where in the other document more information regarding the topic could be found. This caused the Staff to spend a considerable amount of time searching for this information and not being certain that it had found the information that AmerenUE was directing the reviewer to.

Another example of the difficulty the Staff had reviewing this filing was the review of the peak forecast used. The peak forecast in Document 5, *Load Forecasting Data and Methodology,* was not the same as the peak forecast in Document 3, *Integrated Resource Analysis,* which was not the same as the peak forecast in the summary table provided to the Staff on January 24, 2006. Nowhere in the filing was there an explanation of why there were differences between the peak forecasts or how to reconcile the different peak forecasts. The Load Analysis and Forecasting section of this report will give more details on the peak forecasts and the confusion that they caused.

Overall Recommendation

The Staff recommends that AmerenUE, in its next filing on December 6, 2008, file a resource plan which includes (1) a summary of its filing and (2) a preferred resource plan and documentation that are consistent with each other. AmerenUE stated several times during the review process that it was rushed in completing this filing. It is the intent of the Electric Utility Resource Planning chapter that resource planning be a continuous process, and thus, even though a utility would not begin writing the next report for some time, as soon as a utility finishes one filing, it will begin work on the next filing. If AmerenUE begins now to work on its resource plan to be filed on December 6, 2008, AmerenUE should have the time it needs to have a process that can account for all

aspects of integrated planning and be well documented. The Staff recommends that until that filing AmerenUE meet with the parties to this case every six months to discuss its progress on the implementation of a truly integrated resource planning process.

What follows this summary is a rule by rule review of the Staff's review of AmerenUE's filing and explanation of deficiencies with recommendations in each of the sections.

List of Deficiencies

The proposed remedies should be incorporated into AmerenUE's planning process and be reflected in their next resource plan filing. AmerenUE should update the parties of its incorporation of the proposed remedies during the meetings that the Staff proposes occur every six months.

1. Peak Load Forecast Used in Integration Runs - 4 CSR 240-22.030(5): AmerenUE provided several peak load forecasts.
Proposed Remedy: The peak load forecast described in the filing documentation should be the same as the peak load forecast used in the integration analysis.

2. Provision of Data - 4 CSR 240-22.080(7): Data provision made review difficult.
Proposed Remedy: AmerenUE should provide all applicable workpapers in electronic format with all formulas intact to allow the Staff and other parties the opportunity to review AmerenUE's method.

3. Planning Horizon - 4 CSR 240-22.020(43): The information that the load analysis and forecasting filing provided only covered a time line of nine (9) years.
Proposed Remedy: AmerenUE should provide the results of its full 20-year planning horizon in its next filing.

4. Weather Normalization - 4 CSR 240-22.030(1)(B) and (C): AmerenUE indicated that weather normalized data did not exist and is only being investigated at this time.
Proposed Remedy: AmerenUE should use weather normalized data in both its load analysis and forecasting in its next filing.

5. Analysis of Load Profiles - 4 CSR 240-22.030(4): AmerenUE did not perform this analysis, but instead simply stated that it is investigating whether or not the calibration in its conversion to MetrixLT can be accomplished.
Proposed Remedy: AmerenUE should calibrate its major class load profiles to its net system load profiles.

6. Availability of Workpapers – 4 CSR 240-22.080(7): Forecasting workpapers were not readily available to the Staff.
Proposed Remedy: Workpapers should be ready at the time the compliance filing is made.

7. Transmission Issues - 4 CSR 240-22.040(3), (6) and (7): Did not provide any analysis of transmission system as per rule.
Proposed Remedy: AmerenUE should investigate possible new supply-side resources outside the MISO footprint if those resources could reduce costs. AmerenUE should include discussions in the AmerenUE planning process for any distribution system upgrade costs needed for importing power throughout its load area.

8. Long-Term Purchase Analysis - 4 CSR 240-22.040(5): Did not provide any analysis of long-term firm purchases as per rule.
Proposed Remedy: AmerenUE should investigate the capacity purchase market for products that might delay the need for new capacity construction if there is an overall cost savings that result from such purchases.

9. ** _____ **- 4 CSR 240-22.040(4): ** _____
_____ **
Proposed Remedy: ** _____
_____ **

10. Existing Plant Upgrades - 4 CSR 240-22.040(4) and (8): Did not include timing of plant upgrades in analysis.
Proposed Remedy: Those projects showing a favorable result should be incorporated into the resource plan in order to determine a realistic time to add capacity,

11. Wind Project Constraints - 4 CSR 240-22.040(2): Did not include wind projects as separate resource.
Proposed Remedy: AmerenUE should investigate adding wind generation on an energy basis and not just as part of a capacity project.

12. Environmental Emission Integration - 4 CSR 240-22.040(2): Did not include costs of planned environmental projects in all scenarios.
Proposed Remedy: AmerenUE should integrate the work done on environmental emissions planning into the resource planning process.

13. Long-Term Sales Analysis - 4 CSR 240-22.040(5): Did not provide any analysis of long-term firm sales as per rule.
Proposed Remedy: AmerenUE should investigate the capacity sales market for opportunities that might reduce any excess capacity available due to the timing of the construction or purchase of large generation plants.

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14. Demand-Side Programs Identification - 4 CSR 240-22.050(1), (3), and (6): The number of potential demand-side programs identified for screening was limited.
Proposed Remedy: AmerenUE should screen a wider variety of potential demand-side programs.

15. AmerenUE Specific Market Research - 4 CSR 240-22.050(5): AmerenUE is relying on the results of the American Council for an Energy Efficient Economy (ACEEE) report in place of the market research studies, customer surveys, pilot demand-side programs, test marketing programs and other activities specified in the rule.
Proposed Remedy: AmerenUE needs to conduct market research studies, customer surveys, pilot programs, test marketing programs and other activities to help assure that demand-side programs from other states are applicable to AmerenUE.

16. End-Use Screening - 4 CSR 240-22.050(1): Instead of filing for a waiver from the sections of the demand-side analysis rule that require prescriptive end-use measure screening, AmerenUE chose to file the end-use measure screening that it conducted and filed in its 1995 and 1997 resource planning evaluations.
Proposed Remedy: AmerenUE should either follow the rule or file a waiver and receive a waiver from the rule.

17. Calculation of Avoided Costs - 4 CSR 240-22.050(2)(A)1., (2)(C)2.A., and (2)(C)2.B.: AmerenUE used marginal costs instead of avoided costs in its analysis.
Proposed Remedy: AmerenUE should either follow the rule or file a waiver and receive a waiver from the rule.

18. Demand-Side Programs Passed to Integration - 4 CSR 240-22.050(7)(B): A very limited number of demand-side programs were passed to integration.
Proposed Remedy: AmerenUE needs to analyze why so few programs were cost effective for its service territory and not repeat the same mistakes in the next filing.

19. Load-Building Program Evaluation - 4 CSR 240-22.050(10): AmerenUE did not analyze the load-building potential of its residential new construction demand-side program.
Proposed Remedy: AmerenUE's demand-side programs should be carefully evaluated as to whether they could result in load-building and if they could, whether or not the load-building negatively impacts AmerenUE.

20. Development of Alternative Resource Plans - 4 CSR 240-22.060(3): Deficiencies from Supply-side and Demand-side Analysis affect the development of alternative resource plans.
Proposed Remedy: To the extent that the proposed supply-side and demand-side remedies are adopted by AmerenUE, this deficiency will be remedied.

21. Alternative Resource Plan Analysis - 4 CSR 240-22.060(4): Only one alternative resource plan included the preferred near-term resource which limited AmerenUE's

ability to analyze the relative performance of long-term resources. Future decisions should be reevaluated since the purchase of 1390 MWs of CTGs has been completed.
Proposed Remedy: AmerenUE should redevelop and re-analyze its alternative resource plans given the purchase of the 1390 MWs of CTGs.

22. Analysis of Load-Building Programs - 4 CSR 240-22.060(5): Directly related to the deficiency titled Load-Building Program Evaluation 4 CSR 240-22-050(10).
Proposed Remedy: AmerenUE's demand-side programs should be carefully evaluated as to whether they could result in load-building and if they could, whether or not the load-building negatively impacts AmerenUE.

23. Decision-Makers Assessment of Risk - 4 CSR 240-22.070(1): The resource planning process should reflect AmerenUE decision-makers' assessment of risk.
Proposed Remedy: AmerenUE should insure that its resource planning process reflects its decision-makers' assessment of risk.

24. Expected Value of Better Information - 4 CSR 240-22.070(8): AmerenUE's expected value of better information places a lower value on information than expected.
Proposed Remedy: AmerenUE should continue to improve the process for its assessment of the value of information.

25. Environmental Compliance and Strategy Selection - 4 CSR 240-22.070(10): Ameren has publicly stated that it will cost between $2.1 to $2.9 to comply with existing environmental regulations and this should be a significant part of the resource planning process.
Proposed Remedy: AmerenUE should continue to keep Staff informed regarding its environmental analysis as a substitute for the reporting of a change in circumstances that is required by the reporting requirement in 4 CSR 240-22.080(10).

26. Contingency Analysis 4 CSR 240-22.070(10): AmerenUE did not develop an adequate set of contingency options.
Proposed Remedy: AmerenUE should continue to develop its contingency options analysis.

27. Demand-Side Implementation Plan - 4 CSR 240-22.010(A): Demand-side resources were not considered on an equal basis with supply-side resources.
Proposed Remedy: AmerenUE should evaluate and implement demand-side resources on an equal basis with supply-side resources.

4 CSR 240-22.030 Load Analysis and Forecasting

Summary of the Staff Findings

In the Staff's limited review of the method for forecasting customer class energy requirements described by AmerenUE in its current filing, the Staff has determined that the method used by AmerenUE is reasonable. AmerenUE uses a Statistically Adjusted End-Use modeling methodology to forecast its monthly sales. The strength of utilizing this approach is the ability to identify end-use factors that are driving energy use. For example, to forecast residential sales, a model is developed such that usage is equal to the sum of energy used by heating equipment, cooling equipment, and other equipment.

In the Staff's limited review of the method which AmerenUE has told the Staff that it fully anticipates utilizing in the future, the Staff believes that this model will also be a reasonable method for forecasting customer class and system peaks. This method has been developed by Itron, a leading energy forecaster (the Staff does not necessarily endorse Itron over other energy forecasters). This model constructs a bottom-up load forecast and will calibrate the forecast to actual system load or short-term hourly load forecasts. AmerenUE's Document 5 from its initial filing on December 5, 2005 provides a description of how this future bottom-up forecast will work.

As indicated above AmerenUE did not utilize this method in estimating its current peak demand forecast. According to AmerenUE response to the Staff Data Request No. 8, submitted on February 21, 2006, and responded to on March 10, 2006, AmerenUE stated that since the approach, as described above, has not yet been deemed credible through thorough analysis, AmerenUE has defaulted to its traditional approach to peak forecasting. This traditional approach, combined with judgment based on many factors,

has lead AmerenUE to its peak forecast. This traditional approach has been described by AmerenUE in its errata sheets filed on March 24, 2006.

Deficiencies

Difficulty in Determining Peak Forecast Used in Integration Runs - 4 CSR 240-22.030(5)

According to page one of AmerenUE's Executive Summary, one of the main components of the resource plan was the part of the filing entitled "Load Forecast Data and Methodology" (also labeled and referred to as "Document 5"). This particular component of AmerenUE's filing is described by AmerenUE as a summary document of its sales and peak demand forecasts, including detailed discussions of forecast models and techniques. Within Document 5, after a short discussion of the national and regional economic outlook, there is a detailed description of AmerenUE's peak demand forecast. Only after receiving AmerenUE's Preferred Resource Plan summary table described in the "Summary of AmerenUE's Resource Plan" section of the Staff's summary above, did the Staff realize that the peak forecast described in Document 5 was not the peak forecast used in AmerenUE's resource analysis. AmerenUE's rationale for using a different peak forecast is that the method described in Document 5 is still under development and therefore AmerenUE defaulted to its traditional approach of peak forecasting until the new method is deemed credible through analysis[1]. The Staff discovered this fact in a meeting with AmerenUE on February 17, 2006, which was also verified in AmerenUE's response to the Staff Data Request Nos. 8 and 11 received on March 10, 2006. These responses also included certain workpapers in support of AmerenUE's actual forecast.

[1] The actual peak demand forecast used by AmerenUE in its December 5, 2005 filing was developed at some time in the past by a former AmerenUE employee.

Even when the supporting data was provided, it did not go into enough detail to provide the Staff with a great level of comfort of AmerenUE's method and result. The Staff was eventually able to determine that AmerenUE's load forecast consisted of projected growth of ** _____ ** each year. The Staff does not believe that the resulting forecast of a flat amount of MW growth over 20 years (i.e., the same amount of growth every year for the next 20 years) is highly unlikely and considers AmerenUE deficient with respect to the peak forecast used in plans that the Staff evaluated. The peak load forecast described in the filing documentation should be the same as the peak load forecast used in the integration analysis.

Provision of Data - 4 CSR 240-22.080(7)

Spreadsheets provided to the Staff often had "hard numbers" in cells where formulas had originally been causing the Staff considerable work in determining what AmerenUE had done. "Hard numbers" is a term referring to cells in a Microsoft Excel spreadsheet. Where an analyst would expect to see a formula or reference to how a particular number was derived, there is only the number, hard coded into the cell. This makes it difficult for the analyst to review how the model works. Hard coding numbers also makes it difficult for the analyst to determine the origin of the number. AmerenUE should provide all applicable workpapers in electronic format with all formulas intact to allow the Staff and other parties the opportunity to review AmerenUE's method.

Planning Horizon - 4 CSR 240-22.020(43)

Within the definitions of the Electric Utility Resource planning rule, the planning horizon is defined as a future time period of at least 20 years' duration (4 CSR 240-22.020 (43). The supporting information provided in AmerenUE's filing as of December

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5, only covered a time line of nine years. The filing was in 2005, the last year of forecasted data provided was through 2014. It should be pointed out that on page 3 of Document 3: *Integrated Resource Analysis*, Table 1.1 does show AmerenUE's resource needs through 2025. AmerenUE should provide the results of its full 20-year planning horizon in its next filing. Through the discovery process, the Staff was able to acquire the appropriate planning horizon data. The Staff should not have had to obtain this information through discovery. In its next Chapter 22 filing, AmerenUE should provide this information with its filing.

Weather Normalization - 4 CSR 240-22.030(1)(B) and (C)

The intent of the rule was for the companies to use actual and weather normalized data in the development of its forecast. AmerenUE, in its current filing, has indicated that weather normalized data, i.e., major class hourly demands and hourly net system load, did not exist and is only being investigated at this time and therefore should be available in future analysis. AmerenUE did not give an explanation as to why weather normalized loads were not deemed important enough to have been developed and utilized in general by it and specifically by it in this filing. AmerenUE should use weather normalized data in both its load analysis and forecasting in its next Chapter 22 filing.

Analysis of Load Profiles - 4 CSR 240-22.030(4)

The rule intends for all major class load profiles to be calibrated to sum to the net system load profiles. AmerenUE did not do this analysis, but instead simply stated that it is investigating whether or not the calibration in its conversion to *MetrixLT* can be accomplished. AmerenUE should calibrate its major class load profiles to its net system

load profiles. AmerenUE has done this in the past with software other than *MetrixLT*. Software is not an appropriate justification for not meeting this requirement.

Availability of Workpapers - 4 CSR 240-22.080(7)

Forecasting workpapers were not readily available to the Staff. The energy and peak load forecast workpapers for the original filing were not available 39 days after the original filing, even though the filing requirements rule 4 CSR 240-22.080(7) requires all workpapers to be available. The workpapers for this new forecast were not submitted to the Staff until March 10, 2006. Workpapers should be ready at the time the compliance filing is made.

4 CSR 240-22.040 Supply-Side Resource Analysis

Summary of the Staff Findings

AmerenUE has in place a supply-side planning framework that reflects the intent of the Supply-Side Resource Analysis rule. AmerenUE has purchased three existing combustion turbine facilities (Audrain, Goose Creek, and Raccoon Creek) within the Midwest Independent Transmission System Operator, Inc. (MISO) footprint with a combined total nominal rating of 1390 MW. The acquisition of these three facilities was announced on December 16, 2005, and completed by April 1, 2006. With the acquisition of these resources, no other resources are needed by AmerenUE until ** ____ **, given the current AmerenUE load forecast.

Deficiencies

The Staff found no major deficiencies in the supply-side resource analysis. However, the Staff did identify several areas of concern that the Staff believes would not change the results of this resource plan, but need to be further addressed in AmerenUE's next resource plan filing. These areas of concern are:

Transmission Issues - 4 CSR 240-22.040(3), (6) and (7)

AmerenUE provided information different from the filing requirements regarding transmission issues, explaining that MISO has changed how transmission is planned, upgraded and used. AmerenUE stated that a new resource would be considered if it was within the MISO control area thereby allowing for access to the existing MISO transmission system. The Staff believes that AmerenUE should investigate possible new supply-side resources outside the MISO footprint if those resources could reduce costs.

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AmerenUE should include discussions in the AmerenUE planning process for any distribution system upgrade costs needed for importing power throughout its load area.

Long-Term Purchase Analysis - 4 CSR 240-22.040(5)

AmerenUE did not provide any long-term purchase analysis, stating that purchases were not a viable option compared to or in lieu of building capacity. AmerenUE should investigate the capacity purchase market for products that might delay the need for new capacity construction if there is an overall cost savings that result from such purchases.

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Existing Plant Upgrades - 4 CSR 240-22.040(4) and (8)

AmerenUE identified possible non-nuclear unit upgrade projects; however, several of these projects had no schedule for completion. AmerenUE should continue to evaluate possible unit upgrades and integrate those projects which show a favorable result

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into the resource planning process. Those projects showing a favorable result should be incorporated into the resource plan in order determine a realistic time to add capacity.

Wind Project Constraints - 4 CSR 240-22.040(2)

AmerenUE analyzed the economics of adding 100 MW of wind in Missouri in combination with CTG, coal, and pumped storage projects. AmerenUE should investigate adding wind generation on an energy basis and not just as part of a capacity project. Wind generation energy can reduce the amount of gas and coal fuels burned thereby reducing the amount of carbon dioxide released into the atmosphere. If in the future there is a CO2 tax, wind could displace thermal resource energy and reduce the costs of the tax to AmerenUE.

Environmental Emission Integration - 4 CSR 240-22.040(2)

AmerenUE should continue to review all environmental emission requirements, the options available to meet those requirements, and the costs of the options to ensure proper compliance with sufficient time necessary to complete the work to meet the emissions restrictions. The Staff is aware of the planning AmerenUE is currently doing to meet the environmental emission requirements on its coal plants. AmerenUE has used the interim costs results of this environmental planning in the IRP analysis as an alternative to meeting the required environmental emission reductions by only purchasing SO2 and NOx allowances. The Staff believes that AmerenUE should integrate this work done outside of this IRP planning process, when completed, into the resource plans process. The costs of the environmental upgrades are large enough to possibly change the economic order of the resource options in AmerenUE's planning process.

Long-Term Sales Analysisn - 4 CSR 240-22.040(5)

AmerenUE did not provide any long-term capacity sale analysis. AmerenUE should investigate the capacity sales market for opportunities that might reduce any excess capacity due to the timing of the construction or purchase of large generating plants. Using capacity sales in the resource analysis could change the economics of a particular resource.

4 CSR 240-22.050 Demand-Side Resource Analysis

Summary of the Staff Findings

The intent of the demand-side rule is for Missouri jurisdictional electric utilities to develop a wide variety of demand-side programs that will enable them to give equal consideration to demand-side and supply-side resources in their plans for serving their customers.

AmerenUE has incorporated its experience and expertise along with current evaluation tools in its analysis. AmerenUE has implemented and funded a number of small demand-side programs since 2002, when pursuant to a Stipulation And Agreement accepted by the Commission in resolution of the Staff's excess earnings/revenues complaint case against AmerenUE, Case No. EC-2002-1, a collaborative was established to identify programs to be implemented. AmerenUE will provide four million dollars in funding to be spent over five years for residential and commercial energy efficiency programs. This collaborative has given AmerenUE an additional breadth of experience with demand-side programs beyond the programs evaluated and implemented as a result of its 1993, 1995, and 1997 Resource Plans. AmerenUE's demand-side analysis experience is reflected in the five energy efficiency programs which it chose for screening analysis.

In addition, AmerenUE selected five demand response programs for screening analysis in Chapter 22 filing. The demand response programs selected by AmerenUE also reflect AmerenUE's experience with demand response programs from its previous resource plans.

AmerenUE relied on best-practice reports[2] to identify potential demand-side programs. Best-practice reports provide guidance about demand-side programs that have been successful at other utilities. AmerenUE then selected a subset of programs from the ** _____ _____ ** This subset selected by AmerenUE included two residential low-income programs and eight residential programs which included programs for improving air conditioning, lighting, new construction, and appliance recycling. For small commercial customers, two programs were selected to improve energy efficiency. For larger commercial/industrial customers, six programs were selected including programs for lighting, energy design assistance, and HVAC (heating, ventilation, and air conditioning) efficiency. One comprehensive demand-side/energy efficiency program from a municipal electric utility was selected. These programs are from several different states and utilities of several different sizes. The residential programs are from the ** _____ ** The small commercial programs are from the ** _____ ** The large commercial/industrial programs are from the ** _____ ** Finally, the comprehensive municipal program is from ** _____ **

Deficiencies

Demand-Side Program Identification - 4 CSR 240-22.050(1), (3), and (6)

The demand-side resource planning rule is very prescriptive in the screening of end-use measures. When the rule was written there was not a lot of experience with demand-side programs and careful screening was necessary to make sure that the rate-

[2] Energy Trust of Oregon, Wisconsin Focus on Energy, 3/31/2003, and *America's Best: Profiles of America's Leading Energy Efficiency Programs*, (York, Dan and Martin Kushler, American Council for an Energy Efficient Economy (ACEEE), Report No. U032, 284 pp., 2003)

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payers money was wisely spent. The practice of careful screening has proven in itself to be expensive. Since the rules were written, demand-side programs have been implemented by utilities across the nation. Given this experience, it is now more cost-effective to look at end-use measure in programs that have been implemented by other utilities.

The Staff is not opposed to relying on best practices from other utilities in other states to identify demand-side programs for screening and program design. The Staff believes that the demand-side analysis rule needs to be updated to allow for identification of demand-side programs through this method. ** _____ _____ ** The Staff believes that there are more programs that should have been screened. The intent of the demand-side analysis rule is for the utility to screen a number of programs that cover the major customer classes (which AmerenUE does), a wide range of end-uses and wide variety of decision makers. AmerenUE should screen a wider variety of potential demand-side programs.

AmerenUE Specific Market Research - 4 CSR 240-22.050(5)

Determining the choice of programs on the basis of successful programs in other states has the benefit of demonstrated success, but there is no guarantee that these programs will adequately transfer to or serve AmerenUE's market segments. AmerenUE is relying on the results ** _____ ** in place of the market research studies, customer surveys, pilot demand-side programs, test marketing programs and other activities as necessary to successfully transfer these programs. ** _____ _____ ** programs from across the U. S. and Missouri saturations are not

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identifiable in this information. An energy efficiency market survey is currently being conducted by AmerenUE along with the other investor-owned and major municipal electric utilities in Missouri as part of the Energy Efficiency Collaborative. The results of this study may be useful in the implementation of the programs selected. AmerenUE needs to conduct market research studies, customer surveys, pilot programs, test marketing programs and other activities to help assure that demand-side programs from other states are applicable to AmerenUE.

End-Use Screening - 4 CSR 240-22.050(1)

Instead of filing for a waiver from the sections of the demand-side analysis rule that requires this prescriptive end-use measure screening, AmerenUE chose to file the end-use measure screening that it conducted and filed for its 1995 and 1997 resource planning evaluations. These screenings were very comprehensive and generally met the filing requirements in 1995 and 1997. Although AmerenUE did not update the end-use analysis for its December 5, 2005 filing, it did not use these analyses in anyway in the programs that it chose for screening in its December 5, 2005 filing, so it really did not make any difference. This matter is an example of a lack of internal consistency in the filing. AmerenUE should have either followed the rule and combined these end-uses into programs for screening, as the rule requires, or filed for a waiver, explaining why it thought it unnecessary to perform end-use screening. Such a waiver request could have been a good basis to start a re-write of the demand-side analysis rule.

Calculation of Avoided Costs - 4 CSR 240-22.050(2)(A)1 and (2)(A)2., (2)(C)2.A., and (2)(C)2.B.

Ameren provided two alternative scenarios of expected hourly marginal energy costs over the next twenty years, one based on the potential Clean Air Interstate Rule

(CAIR) which sets parameters for future emissions from fossil fueled power plants, and one based on the potential Greenhouse Gas Emissions restrictions. This analysis provided Summer Peak, Summer Mid-peak, Summer Off-peak, Winter Peak, and Winter Off-peak marginal costs. These were developed by Laurits R. Christensen Associates, Inc. (LCA). These values ranged from ** _____ ** in 2005 to ** _____ ** in 2020. AmerenUE's estimate of the price for acquiring (or selling) capacity to meet reliability reserve requirements of MAIN, the local NERC region, was benchmarked at ** _____ **-summer 2005.

The second element of capacity costs is estimating the benefits to providers and customers from load response which may not be reflected in the implicit pricing of reserves. AmerenUE used a representative cost of installing a CTG - ** _____ ** per year for 20 percent share of this capacity value. This procedure addresses some aspects of estimating future avoided costs in the demand-side evaluation process, but it is not a result of implementing the procedures prescribed in the rule.

The Staff made AmerenUE aware that the marginal cost that it was using was not the avoided cost as required by the rule. This notification was included in a letter the Staff sent to AmerenUE regarding the waiver discussion in August 2005. AmerenUE did not file for a waiver from this requirement prior to its filing and the Staff could not find in its filing a discussion on the benefits of using marginal costs instead of the avoided costs as prescribed by the rule. Consequently, AmerenUE is not in compliance with the rule. AmerenUE should have either followed the rule and used avoided costs in its screening as the rule requires or filed for a waiver, explaining why it thought using marginal costs was preferable to using avoided costs in screening demand-side programs.

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Demand-Side Programs Passed to Integration - 4 CSR 240-22.050(7)(B)

The actual number of demand-side programs that AmerenUE passed on to an integrated analysis of demand-side and supply-side options for the future, the next phase of the resource planning process, was an even smaller subset of the program screened. Only four energy efficiency programs passed the program screening. These programs have an emphasis on energy efficiency lighting.

AmerenUE's demand-response programs were based more on its own experience with demand-response programs. Five of the seven demand-response programs screened were passed on to the integration process.

Based on the program screening done by Kansas City Power & Light Company for its experimental regulatory plan, Case No. EO-2005-0329, the Staff believes that there are more energy efficiency programs that would be cost-effective for AmerenUE. AmerenUE needs to analyze why so few programs are cost effective for its service territory and not repeat the same mistakes next filing.

Load-Building Program Evaluation - 4 CSR 240-22.050(10)

AmerenUE did not analyze the load-building potential of its residential new construction demand-side program. AmerenUE's residential new construction demand-side program should be carefully evaluated as to whether it could result in load-building and if, it is load-building whether or not it negatively impacts AmerenUE. It has been analyzed only as a program that provides incentives to homebuilders to encourage more energy efficient construction.

4 CSR 240-22.060 Integrated Resource Analysis

Summary of the Staff Analysis

This portion of the Electric Utility Resource Planning Rules requires the utility to design alternative resource plans to meet the planning objectives and set minimum standards for the scope and level of detail required in resource plan analysis. AmerenUE created a large number of portfolios but the variation occurred mostly in the type and timing of supply-side resources. The portfolios were generally grouped by AmerenUE as follows:

A. Supply-Side Portfolios – Under this grouping, 12 alternative resource plans were designed by AmerenUE. Eight contained the same supply-side resources for the years 2006-2012, while only one contained the near-term resource strategy ultimately chosen by AmerenUE. No additional demand-side resources are identified in these portfolios.

B. Renewable Resources Portfolios – Under this grouping, three alternative resource plans were designed by AmerenUE. The resource planning rules do not view renewable resources as being separate and distinct from other supply-side resources. Instead, the Supply-Side Resource Analysis rule discusses a variety of potential supply-side resource options, which would include renewable resources. All three of the renewable resource plans designed by AmerenUE include the same renewable resource - 100 MW of wind turbines - but varied the supply-side resources beyond ** ____** between natural gas-fired, coal-fired and pumped storage supply-side resources. No demand-side resources are identified in these portfolios.

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C. Demand Response and Energy Efficiency Portfolios – Under this grouping, three alternative resource plans were designed by AmerenUE. These three plans included the same demand-side resources with programs beginning in 2007 and 2010. AmerenUE varied the supply-side resources beyond ** ____** between natural gas-fired, coal-fired and pumped storage supply-side resources.

AmerenUE listed five general guidelines that it used in developing its 18 portfolios. These five general guidelines are:

1) More emphasis on first 10 years of planning horizon and standardized supply-side resources with CTGs for the out years (2016 and beyond).
2) Base load resources earliest possible online date is 2013 due to long lead times.
3) CTGs will be installed in groups of two or more units due to economic realities.
4) Timing of units based on ** __** percent planning reserve margin and new units are brought on line when roughly half of that capacity is needed to meet the planning reserve margin.
5) Targeted ratio of various CTGs is 25% aero-derivatives, 25% small frame and 50% large frame.

While some guidelines are prudent in developing resource plans, these guidelines, if strictly followed, could result in a strategy that is imprudent and therefore should only be used as general guidelines. Indeed, although AmerenUE states that it used five general guidelines in developing its 18 portfolios, AmerenUE did not follow all of these guidelines. For example, AmerenUE's ultimate preferred resource plan strategy, the purchase of 1390 MW of existing large frame CTGs, significantly affects the mix of

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CTGs and therefore doesn't follow guideline 5. Also, the addition of 1390 MW of CTGs, when ** ___ ** MW of capacity is needed in 2006, does not follow guideline 4 above.

Deficiencies

Development of Alternative Resource Plans - 4 CSR 240-22.060(3)

The many deficiencies listed for the Supply-side Analysis and Demand-side Analysis will have a direct effect on the development of alternative resource plans. For example, the supply-side deficiency, Callaway Life Extension, would significantly alter the timing and resource choices in the development of alternative resource plans if different extension assumptions were made. Similarly, demand-side deficiencies, like the Demand-Side Programs Passed to Integration, limit the development of alternative resource plans with varying levels of demand-side resources.

Alternative Resource Plan Analysis - 4 CSR 240-22.060(4)

Although AmerenUE could not have known its preferred strategy prior to performing the analysis, the fact that the purchase of 1390 MW was included in only one of the eighteen portfolios certainly raises questions about future capacity and energy decisions It is the Staff's belief that AmerenUE was constrained by the relatively short amount of time between June 2005, when AmerenUE issued an RFP to purchase peaking capacity, and December 5, 2005, when AmerenUE filed its resource plan. However, the Staff maintains that future capacity and energy decisions are an important part of the planning horizon, especially now that the purchase of 1390 MW of CTG capacity has been completed.

The addition of 1390 MW of CTGs significantly alters the assumptions under which most of the alternative resource plans were developed. These 1390 MW of CTGs

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represents an 80% increase in AmerenUE's CTG capacity which was 1680 MW when the alternative resource plans were being developed. It not only represents a significant increase in the AmerenUE's CTG capacity but it also represents a significant change in the resource mix that AmerenUE contemplated when it developed its alternative resource plan. To show the impact on the resource mix, consider the fact that only four of the eighteen portfolios developed by AmerenUE add at least 1390 MW of CTGs during the entire 20 year planning horizon. Said another way, most of AmerenUE's alternative resource plans would not have added the amount of CTGs in the next 20 years that AmerenUE purchased in the last 6 months.

In fact, the Staff believes many of the alternative resource plans that AmerenUE developed were specifically designed to analyze various future resource decisions, especially base load resources. Clearly, the addition of these peaking units will be a consideration on the timing of a future base load resource.

Analysis of Load-Building Programs - 4 CSR 240-22.060(5)

This deficiency is directly related to the earlier deficiency titled Load-Building Program Evaluation 4 CSR 240-22.050(10) and the fact that the integration analysis is dependent on the work done in the demand-side analysis section.

4 CSR 240-22.070 Risk Analysis and Strategy Selection

Summary of the Staff Analysis

The intent of this rule is for the utility to look at the risks and uncertainties associated with the portfolios identified in the integration rule, select a preferred plan, an implementation plan for that preferred plan and contingency options for that preferred plan.

AmerenUE complied with parts of this rule and did not comply with other parts. It used stochastic analysis to comply with portions of this rule and an estimate of the value of perfect information was given. However, the demand-side implementation was deficient as was the contingency plans.

Deficiencies

Decision-Makers Assessment of Risk - 4 CSR 240-22.070(1)

A stochastic simulation process was used for five key simulation variables: natural gas costs, coal costs, SO2 costs, peak demand and energy. While this analysis is interesting and could be considered cutting edge technology in the area of risk analysis, it should not be a substitute for the judgment of the decision makers. It appears that AmerenUE's simulation results for the percentiles of 95%, 50% and 5% were viewed as the high, base, and low case for each variable. What was not clear was if the decision-makers considered these results and made the determination that these represented reasonable assessments of these uncertainties. In its next filing, AmerenUE should include a discussion of the rationale used by the utility decision-makers to judge the appropriate tradeoffs between competing planning guidelines, expected performance and risk.

Expected Value of Better Information - 4 CSR 240-22.070(8)

AmerenUE states in Table 1 on page 48 of the Filing Requirements section, the value of perfect information from its Risk Simulations is between $176 million and $304 million for the five variables listed above. The Staff maintains that the value of perfect information regarding natural gas costs, coal costs, SO2 costs, peak demand and energy is significantly higher than these estimates. This can be easily illustrated by considering the recent fluctuations in natural gas costs and realizing that perfect knowledge about gas costs for the next 20 years would be worth much more than $304 million to a utility like AmerenUE and that is just for one of the 5 critical uncertain factors included in this table. Despite the Staff's view that the values assigned to perfect information for critical uncertain factors, AmerenUE's estimates of the expected value of better information still illustrates that better information does have a significant value. AmerenUE should reassess the value of better information in its next resource filing.

Environmental Compliance and Strategy Selection - 4 CSR 240-22.070(10)

Although the decision to purchase 1390 MW of CTG capacity was a major decision for AmerenUE, AmerenUE's press releases stated that the cost was $290 million. In contrast, Ameren estimates that the cost to comply with sulfur dioxide, nitrogen oxide and mercury regulations will be between $2.1 and $2.9 billion by 2016. While these costs include both AmerenUE units and the units owned by AmerenUE affiliates, it is clear that AmerenUE faces larger decisions than the purchase of 1390 MW of CTG. However, as stated on page 183 of the Integrated Resource Analysis section of the filing, AmerenUE performed an environmental compliance strategy analysis separate from the resource planning process. AmerenUE did include interim results in the filing

but this topic was not discussed in AmerenUE's strategy selection. In addition, AmerenUE also shows that the value of perfect information regarding a carbon tax is between $206 million and $1,099 million for the Preferred Resource Plan. Although this also seems to be a relatively low value for perfect information about future carbon legislation, it still highlights the importance of following this legislation. As stated in the deficiency titled Environmental Emission Integration 4 CSR 240-22.040(2), AmerenUE should integrate the environmental work done outside of this planning process into the resource planning process and should be included in its next resource planning filing. In addition, AmerenUE should continue to keep the Staff informed regarding its environmental work as a substitute for the reporting of a change in circumstances that was contemplated by the reporting requirement in 4 CSR 240-22.080(10).

Contingency Analysis - 4 CSR 240-22.070(10)

"UE did not develop an adequate set of contingency options." While the name of the utility has changed, the above quote from the Staff's Report dated April 5, 1994 still is relevant. Nine days after AmerenUE filed its resource plan, the Taum Sauk Dam breach occurred. While one can debate if this should have been an identified risk, recent experience for electric utilities in the state of Missouri shows that it is reasonable to plan for major long-term outages for one of AmerenUE's larger generating units. In addition to the Taum Sauk incident, the loss of Kansas City Power and Light Company's Hawthorn 5 plant illustrates the need for a strategy and contingency options to plan for the risk of the loss of a major generating unit. AmerenUE should address this risk and the related contingencies in its next resource filing.

Demand-Side Implementation Plan - 4 CSR 240-22.010(A)

AmerenUE proposes in its demand-side implementation plan that the Commission establish a statewide forum with several working groups to discuss ways to develop demand-side resources. AmerenUE sets out dates for the Commission and these working groups to have products completed. AmerenUE then discusses a national Demand Response Coordinating Committee that Ameren Corporation joined in 2005. AmerenUE ends its discussion of its demand-side implementation plan by saying that there needs to be a discussion of the rate treatment for demand response and energy efficiency programs. AmerenUE in its filing does not propose any rate treatment for its programs.

The Staff believes that neither the Commission nor the electric utilities that the Commission regulates can efficiently perform demand-side planning and implementation through Commission forums/roundtables or even utility specific stakeholder collaboratives. Nonetheless, that process has occurred at the Commission because of the unwillingness of Missouri investor-owned electric utilities to seriously engage in demand-side planning and implementation on their own. In no way will demand-side resource planning be treated on an equal basis with a supply-side resource planning in the procedural manner proposed by AmerenUE. Before building a generation plant, Missouri utilities have not asked the Commission to establish forums to gather all interested parties in order to reach a consensus on what type of power plants each Missouri utility should build. The utility is responsible for screening the choices, running the forecasted loads, looking at and evaluating the risks and the costs, and so forth. While stakeholder input should be a part of the process, it should not drive the process as AmerenUE is proposing in its demand-side implementation plan. The Staff will work

with AmerenUE and will provide input, but it does not have time or resources for the implementation plan proposed by AmerenUE.