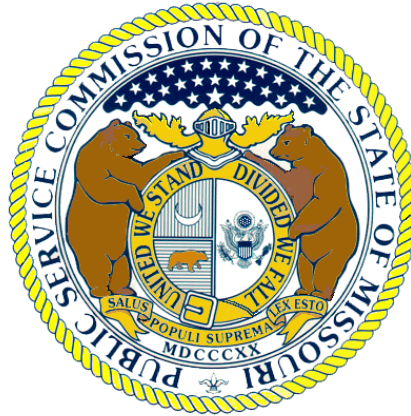


# BEFORE THE PUBLIC SERVICE COMMISSION OF THE STATE OF MISSOURI



In re: Union Electric Company's 2011  
Utility Resource Filing Pursuant to  
4 CSR 240 – Chapter 22.

)  
)  
)

**File No. EO-2011-0271**

---

## REPORT AND ORDER

---

**Issue Date: March 28, 2012**

**Effective Date: April 27, 2012**

# BEFORE THE PUBLIC SERVICE COMMISSION OF THE STATE OF MISSOURI

In re: Union Electric Company's 2011  
Utility Resource Filing Pursuant to  
4 CSR 240 – Chapter 22.

)  
)  
)

**File No. EO-2011-0271**

## REPORT AND ORDER

### APPEARANCES

**Thomas M. Byrne**, Managing Associate General Counsel, and **Wendy K. Tatro**, Associate General Counsel, Ameren Services Company, P.O. Box 66149, 1901 Chouteau Ave., St. Louis, Missouri 63103;

For Union Electric Company, d/b/a Ameren Missouri.

**Nathan Williams**, Deputy Counsel, and **John Borgmeyer**, Legal Counsel, P.O. Box 360, 200 Madison Street, Jefferson City, Missouri 65102

For the Staff of the Missouri Public Service Commission.

**Lewis R. Mills, Jr.**, Public Counsel, P.O. Box 2230, 200 Madison Street, Suite 650, Jefferson City, Missouri 65102

For the Office of the Public Counsel and the Public.

**Jennifer Frazier**, Assistant Attorney General, P.O. Box 899, Jefferson City, Missouri 65102

For the Missouri Department of Natural Resources.

**Diana Vuylsteke**, Attorney at Law, Bryan Cave, LLP, 211 N. Broadway, Suite 3600, St. Louis, Missouri 63102

For Missouri Industrial Energy Consumers.

**Henry B. Robertson**, Great Rivers Environmental Law Center, 705 Olive Street, Suite 614, St. Louis, Missouri 63101.

**Shannon Fisk**, Counsel, Natural Resources Defense Council, 2 North Riverside Plaza, Suite 2250, Chicago, Illinois 60606

For the Natural Resources Defense Council, Sierra Club, Renew Missouri, Mid-Missouri Peaceworks, and the Great Rivers Environmental Law Center.

**CHIEF REGULATORY LAW JUDGE: Morris L. Woodruff**

**Table of Contents**

Appearances .....	2
Findings of Fact.....	4
Procedural History .....	4
Alleged Deficiencies.....	6
Minimization of Present Worth of Long-Run Utility Costs as the “Primary Selection Criteria” .....	6
Ameren Missouri’s Adoption of a New Preferred Resource Plan.....	10
Need for Capacity Used as the Basis for Alternative Resource Plans.....	11
Use of Assumed Two-Year Rate Case Cycle .....	12
Rejection of MAP .....	13
Life Expectancy and Costs of Continuing to Operate the Meramec Plant .....	14
Consideration of the Cost of Environmental Retrofits at the Labadie and Rush Island Coal-Fired Plants .....	15
High Natural Gas Price Assumptions .....	16
Analysis of Future Coal Prices.....	17
Analysis of Accuracy of Previous CRA Forecasts .....	18
Potential Opportunities for Long-Term Power Purchases and Sales.....	19
Analysis of Wind Resources .....	20
Analysis of Nuclear Units.....	23
Modeling of Non-Dispatchable Demand Response (NDDR) in Evaluation of Industrial Demand Response Programs .....	25
Insufficient and Inaccurate Information to Board of Directors .....	25

Conclusions of Law .....	26
Decision .....	28
Ordered Paragraphs.....	30

The Missouri Public Service Commission, having considered all the competent and substantial evidence upon the whole record, makes the following findings of fact and conclusions of law. The positions and arguments of all of the parties have been considered by the Commission in making this decision. Failure to specifically address a piece of evidence, position, or argument of any party does not indicate that the Commission has failed to consider relevant evidence, but indicates rather that the omitted material was not dispositive of this decision.

## **FINDINGS OF FACT**

### **PROCEDURAL HISTORY**

On February 23, 2011, Union Electric Company, d/b/a Ameren Missouri, filed its 2011 Integrated Resource Planning (IRP) filing, as it was required to do by the Commission's Integrated Resource Planning Rule, 4 CSR 240-22.080(1). The IRP rule requires investor-owned electric utilities, such as Ameren Missouri, to engage in a resource planning process that considers all options, including demand side efficiency and energy management measures, to provide safe, reliable, and efficient electric service to the public at reasonable rates, in a manner that serves the public interest. The purpose of the IRP filing is to demonstrate that Ameren Missouri has engaged in a planning process that complies with the requirements of the rule.

Ameren Missouri made its 2011 IRP filing pursuant to the terms of the Commission's IRP rules as they existed in February 2011. Subsequently, the Commission promulgated

revised IRP rules that took effect on June 30, 2011. For purposes of its consideration of Ameren Missouri's 2011 IRP filing, the Commission will apply the rules that were in effect at the time Ameren Missouri made that filing. Unless otherwise indicated, all citations are to the old rules.

As required by the IRP rule, the Commission gave notice of Ameren Missouri's IRP filing and invited interested parties to intervene. The Commission allowed the following parties to intervene: the Missouri Department of Natural Resources (DNR); the Missouri Industrial Energy Consumers (MIEC); the Sierra Club, Missouri Coalition for the Environment, The Missouri Nuclear Weapons Education Fund, operating as Mid-Missouri Peaceworks, and the Natural Resources Defense Council (collectively NRDC); the Missouri Energy Group (MEG); Grain Belt Express Clean Line LLC; and the Missouri Joint Municipal Electrical Utility Commission (MJMEUC).

The IRP rule establishes a process by which the Commission gathers information to allow it to determine whether the electric utility's IRP filing complies with the requirements of the IRP rule. The first step in that process requires the Commission's Staff to review the utility's IRP compliance filing and to file a report describing any deficiencies in the utility's compliance with the IRP rule. Staff filed its report, in which it identified several deficiencies in Ameren Missouri's IRP filing, on June 23, 2011. The IRP rule also allows the Office of the Public Counsel and any intervenors to file their own reports describing deficiencies in the utility's IRP filing. Public Counsel, DNR, Grain Belt Express, and NRDC filed such reports on June 23, 2011.

On August 22, 2011, Ameren Missouri filed a detailed response to the alleged deficiencies. The filing of that response is the last procedural step mandated by the

Commission's IRP rule. Thereafter, Commission Rule 4 CSR 240-22.080(9) states: "[t]he commission will issue an order which indicates on what items, if any, a hearing will be held and which establishes a procedural schedule."

Following a procedural conference held on September 12, 2011, the Commission established a procedural schedule that required the parties to prefile testimony and scheduled a hearing. That hearing took place on December 15 and 16, 2011. Thereafter, the parties filed briefs on January 20, 2012, and February 21, 2012.

In addition to the February 23, 2011 IRP filing, on October 25, 2011, Ameren Missouri filed a notice of change in its preferred 2011 utility resource plan as it is allowed to do under the Commission's rules. The Commission assigned File Number EO-2012-0127 to that filing and on December 21, 2011, consolidated that file into this one. As a result, the Commission will address Ameren Missouri's October 25, 2011 filing along with the other issues in this report and order.

This case is about the Commission's determination of whether Ameren Missouri has adequately planned for the future. To that end, the various parties have set before the Commission various alleged deficiencies in Ameren Missouri's planning efforts. The Commission will examine the substance of those alleged deficiencies.

### **The Alleged Deficiencies**

#### **Minimization of the Present Worth of Long-Run Utility Costs as the "Primary Selection Criteria"**

This alleged deficiency is at the heart of the objections to Ameren Missouri's IRP plan. The section of the IRP rule in question is part of the Policy Objectives portion of the rule. After establishing that the fundamental objective of the resource planning process is

to “provide the public with energy services that are safe, reliable and efficient, at just and reasonable rates, in a manner that serves the public interest”, the rule requires the electric utility to “use minimization of the present worth of long-run utility costs as the primary selection criterion in choosing the preferred resource plan.”<sup>1</sup> The parties generally refer to the concept of “minimization of present worth of long-run utility costs” as “present value of revenue requirement,” or PVRR.

PVRR simply means the revenue requirement associated with a given plan, on a present value basis, over the 20-year span of the planning period. PVRR is determined by quantifying the revenue required to cover all utility costs, including the allowed rate of return. It does not consider whether the company will be able to actually earn the required revenue. Specifically, it reflects no impact from revenue the company may lose when it sells less energy because of the successful implementation of energy efficiency measures.<sup>2</sup> Ameren Missouri refers to this loss of revenue as the throughput disincentive.

In its IRP study, Ameren Missouri claims that it used PVRR as its primary selection criteria in that it gave PVRR a weight of 30 percent in evaluating the various resource plans. Ameren Missouri gave each of four other criteria a weight of between 10 and 20 percent.<sup>3</sup>

Ameren Missouri’s initial evaluation pointed to its demand-side management (DSM) only options as resulting in the lowest PVRRs.<sup>4</sup> Based solely on PVRR, Ameren Missouri’s study indicated the preferred resource plan should be the realistic achievable potential (RAP) DSM plan. The company indicated that if the RAP DSM plan were adopted, “no

---

<sup>1</sup> Commission Rule 4 CSR 240-22.010(2)(B).

<sup>2</sup> Michels Surrebuttal, Ex. 5, Page 13, Lines 22-23.

<sup>3</sup> Michels Surrebuttal, Ex. 5, Page 18, Lines 3-5.

<sup>4</sup> Ameren Missouri’s 2011 IRP, Ex. 1, Chapter 9, Page 24.

supply-side resources would be needed in the planning horizon, even with the retirement of Meramec (an existing coal-fired plant), assuming customer response to program incentives is consistent with our estimates.”<sup>5</sup> However, Ameren Missouri did not adopt the RAP plan as its preferred resource plan. Instead, the company concluded the RAP plan was impractical at that time because of “financial implementation barriers posed by existing state policies”.<sup>6</sup> Instead, Ameren Missouri adopted the low-risk DSM plan, a less aggressive plan that has a higher PVRR than the RAP plan. Under that plan, Ameren Missouri would continue operating the Meramec coal-fired plant and would install a new gas-fired combined cycle plant in 2029.<sup>7</sup>

Furthermore, on October 25, 2011, Ameren Missouri notified the Commission that it was modifying its preferred resource plan to eliminate investment in DSM programs after June 30, 2012, unless it receives favorable treatment from the Commission of its filing under the Missouri Energy Efficiency Investment Act (MEEIA).<sup>8</sup> That Notice of Change created File Number EO-2012-0127, which has been consolidated with this file.

Staff, Public Counsel, and the intervening parties object that by adopting a preferred resource plan that does not minimize PVRR, and then modifying that plan in a manner that further increases PVRR, Ameren Missouri has ignored the requirement of the IRP regulation that it use minimization of PVRR as the “primary selection criterion” in choosing the preferred resource plan.<sup>9</sup>

---

<sup>5</sup> Ameren Missouri’s 2011 IRP, Ex. 1, Chapter 10, Page 17.

<sup>6</sup> Ameren Missouri’s 2011 IRP, Ex 1, Chapter 10, Page 16.

<sup>7</sup> Ameren Missouri’s Response, Ex. 2, Exhibit A, Page 3.

<sup>8</sup> The Commission is currently considering Ameren Missouri’s MEEIA filing in File Number EO-2012-0142.

<sup>9</sup> 4 CSR 240-22.010(2)(B).



Ameren Missouri explains that it gave minimization of PVRR primary consideration when it evaluated various available resource plans. However, it points to another provision of the rule to explain why it ultimately chose a preferred resource plan that does not minimize PVRR. Section 4 CSR 240-22.010(2)(C) requires the electric utility to:

explicitly identify and, where possible, quantitatively analyze any other considerations which are critical to meeting the fundamental objective of the resource planning process, but which may constrain or limit the minimization of the present worth of expected utility costs....

Ameren Missouri's IRP explains that the company did not choose a preferred resource plan that minimizes PVRR through energy efficiency because of the uncertainty it perceives regarding its ability to recover the substantial costs associated with energy efficiency because of the throughput disincentive.<sup>10</sup>

Ameren Missouri used the minimization of PVRR as the primary selection criterion when evaluating possible resource plans within the meaning of the rule as written. For the Commission to interpret the rule to require that minimizing PVRR be accorded a specific weight in that evaluation process, for example requiring that it be given a weight of at least 51 percent, would not change the company's choice of preferred resource plan in this case and might not be appropriate when considering the different circumstances that may be presented in a future IRP case.

In any event, the meaning of "primary" is not the real concern of any party. What, Staff, Public Counsel, and the intervening parties would really like is for the Commission to order Ameren Missouri to choose a different preferred resource plan that emphasizes the public's interest in maximizing energy efficiency. But that action is not within the

---

<sup>10</sup> Ameren Missouri's witness testified that because of the throughput disincentive the company has already lost approximately \$24.8 million in 2009-2011 because of decreased sales resulting from its previous energy efficiency spending. The company expected to lose an additional \$27.9 million in 2012-2014 due to what it has already spent on energy efficiency. Transcript, Page 50, Lines 1-6.

Commission's authority in *this* proceeding regarding compliance with the IRP rule. For purposes of *this* case, the Commission determines that the company has sufficiently explained why it chose the preferred resource plan that it did and has therefore complied with the rule. The Commission's determination of whether Ameren Missouri is in fact "providing the public with energy services that are safe, reliable and efficient, at just and reasonable rates, in a manner that serves the public interest"<sup>11</sup> must wait for the appropriate rate case in which the Commission can consider all relevant factors. Ultimately, the Commission may find that Ameren has adopted an imprudent resource plan, with financial consequences for the company flowing from that determination. But the IRP process is not the proper forum for that determination.

#### **Ameren Missouri's Adoption of a New Preferred Resource Plan**

The Commission's rule requires an electric utility to notify the Commission in writing within sixty days if "the utility's business plan or acquisition strategy becomes materially inconsistent with the preferred resource plan, or if the utility determines that the preferred resource plan or acquisition strategy is no longer appropriate."<sup>12</sup> On October 25, 2011, Ameren Missouri filed a notice indicating that on or about 60 days before the filing, it had determined that the preferred resource plan it described in its 2011 IRP filing was no longer appropriate. Ameren Missouri indicated it took that step because of its uncertainty of being able to obtain Commission approval of a mechanism under MEEIA by which the company can avoid the throughput disincentive to spending on energy efficiency. For that reason,

---

<sup>11</sup> 4 CSR 240-22.010(2)(A).

<sup>12</sup> 4 CSR 240-22.080(12). (Because Ameren Missouri made its update filing after the revised rule went into effect, this reference is to the Commission's current Chapter 22 rule. The specific language in the former rule was different, but the substance and intent of the rule has not changed.)

Ameren Missouri informed the Commission that it was adopting a preferred resource plan in which it would not commit to future spending on energy efficiency.

There is no provision in the Commission's IRP rules that would require, or allow, the Commission to accept, reject, or in any other way act upon Ameren Missouri's notice of its adoption of a new preferred resource plan. That is entirely consistent with the previously discussed fact that the rule does not give the Commission authority to approve or reject the company's resource plans, resource acquisition strategies or investment decisions. Therefore, the Commission will take no further action regarding Ameren Missouri's notice of its adoption of a new preferred resource plan.

The other deficiencies described by Staff, Public Counsel and the intervening parties are more specific in nature. Ameren Missouri suggests that it is not necessary for the Commission to address those alleged deficiencies in detail. The Commission disagrees. Although the purpose of the IRP filing is not to pre-approve the utility's preferred resource plan or to mandate adoption of a particular resource plan, it is important that the utility undertake an appropriate planning process and that the planning process be transparent to the Commission and the public. Therefore, the Commission will address the other identified deficiencies.

### **Need for Capacity Used as the Basis for Alternative Resource Plans**

The Commission's rule requires Ameren Missouri to "consider and analyze demand-side efficiency and energy management measures on an equivalent basis with supply-side alternatives in the resource planning process."<sup>13</sup> In its analysis, Ameren Missouri considered the use of demand side efficiency and energy management measures only in

---

<sup>13</sup> 4 CSR 240-22.020(2)(A).

circumstances where it had identified a capacity shortfall.<sup>14</sup> When it determined that it would need additional capacity, it treated demand-side and supply-side resources equivalently. However, Ameren Missouri did not evaluate whether existing supply-side resources could be replaced with less costly demand-side resources. In other words, demand-side resources were not allowed to compete on the basis of PVRR with existing supply-side resources.<sup>15</sup>

That is an important distinction because Ameren Missouri is considering the possible retirement of part of its coal-fired generation fleet and is considering very expensive environmental upgrades to the portion of its fleet that is not retired. If it would be more effective to retire those plants and replace them with cheaper demand-side resources, that possibility should be considered in the planning process.

The Commission agrees that the rule requires that demand-side resources be allowed to compete on the basis of PVRR with existing supply-side resources as part of the IRP process. Ameren Missouri's IRP failed to undertake that comparison and, therefore, it is deficient.

### **Use of Assumed Two-Year Rate Case Cycle**

Commission Rule 4 CSR 240-22.060(4)(B) requires the electric utility to model the financial impact of various alternative resource plans based on the assumption that rates will be adjusted annually, in a manner consistent with Missouri law. Ameren Missouri explained that in an effort to capture the effects of regulatory lag, it analyzed the various

---

<sup>14</sup> Transcript, Pages 241-242, Lines 10-25, 1-7.

<sup>15</sup> Mosenthal Rebuttal, Ex. 28, Pages 5-6

alternative resource plans assuming a two-year rate case cycle with a historic test year lag resulting in 18 months of overall effective regulatory lag.<sup>16</sup>

Ameren Missouri's assumption of 18 months of regulatory lag is inconsistent with the regulation's required assumption of annual rate adjustments. Ameren Missouri's assumption is significant because it tends to decrease the attractiveness of DSM alternatives. The assumption of annual rate adjustments is a part of the rule and cannot be ignored. Furthermore, Ameren Missouri did not request a waiver of that requirement of the rule. To the extent that it assumes 18 months of regulatory lag, Ameren Missouri's IRP is deficient.

### **Rejection of MAP**

Ameren Missouri considered an alternative resource plan based on maximum achievable potential (MAP) DSM savings. After performing its analysis of MAP, Ameren Missouri concluded that there was more risk associated with attempting to achieve the savings associated with MAP and instead decided that, after accounting for that risk, RAP had the lower risk-adjusted PVRR.<sup>17</sup> Ameren Missouri further explained that MAP is, by definition, "a hypothetical upper-boundary of achievable savings potential simply because it presumes conditions that are ideal and not typically observed in real-world experience."<sup>18</sup> For those reasons, Ameren Missouri did not further consider MAP as an alternative resource plan.

The NRDC parties contend Ameren Missouri's study should have given further consideration to the MAP alternative because the energy savings described in that

---

<sup>16</sup> 2011 IRP, Ex. 1, Chapter 10.1, Page 2-3. See also, Ameren Missouri's Response to Comments, Ex. 2, Exhibit A, Page 13.

<sup>17</sup> Ameren Missouri's 2011 IRP, Ex. 1, Chapter 9, Page 20.

<sup>18</sup> Ameren Missouri's Response, Ex. 2, Exhibit A, Page 12.

alternative are achievable and because the unadjusted PVRR for MAP is lower than the RAP alternative. The Commission finds that the NRDC parties have described a disagreement with Ameren Missouri's study, not a deficiency in that study.

Ameren Missouri's study adequately explains why it concluded that the risk of not attaining the maximum energy savings contemplated in the MAP plan made that plan more risky than the RAP alternative. The NRDC parties are welcome to disagree with Ameren Missouri's conclusion, but as previously indicated, in reviewing Ameren Missouri's IRP, the Commission is not approving the conclusions reached by the study and is not pre-approving the resource plan that Ameren Missouri has adopted as a result of that study. There is no deficiency.

### **Life Expectancy and Costs of Continuing to Operate the Meramec Plant**

Among many other requirements, Commission rule 4 CSR 240-22.040 requires an electric utility to analyze "life extension and refurbishment at existing generating plants" and "enhancement of the emission controls at existing or new generating plants." The Meramec plant is the oldest and least efficient coal-fired plant in Ameren Missouri's generation fleet. Ameren Missouri's IRP sought to evaluate whether that plant would need to be retired or undergo extensive renovation, including installation of environmental controls, during the 20-year planning horizon. In some scenarios, depending largely upon future environmental requirements, Ameren Missouri would retire the Meramec plant as early as 2016. In other scenarios, Meramec would continue to operate throughout the planning horizon.

The NRDC parties contend the Meramec plant will be too old by 2030 to reasonably assume that it could remain in operation. However, Ameren Missouri offered a detailed

response to the criticisms that persuasively defended the assumptions used in the IRP.<sup>19</sup> The Commission concludes that Ameren Missouri's evaluation of its options regarding the Meramec plant complies with the requirements of the Commission's IRP rules. There is no deficiency.

### **Consideration of the Cost of Environmental Retrofits at the Labadie and Rush Island Coal-Fired Plants**

As previously indicated, Meramec is the oldest and least efficient coal-fired plant in Ameren Missouri's generation fleet. As a simplifying assumption for the purposes of its IRP study, Ameren Missouri only evaluated the future costs associated with continuing to operate the Meramec plant throughout the planning horizon. It assumed that if the study showed that it was economical to continue to operate Meramec, it must also be economical to continue to operate the newer and more efficient Labadie and Rush Island coal-fired plants.<sup>20</sup>

The NRDC parties complain that in analyzing the cost of environmental retrofits only for the Meramec plant, Ameren Missouri has analyzed those costs for the one electric plant it does not plan to retrofit. Since the cost of retrofitting the Labadie and Rush Island plants would be substantially higher than the cost of retrofitting Meramec,<sup>21</sup> they claim it is unreasonable to use Meramec as the test case for environmental retrofits.

The Commission finds the argument offered by the NRDC parties unpersuasive. Ameren Missouri's study showed that under an aggressive environmental scenario the cost results for Meramec represented a virtual toss-up when evaluating the options of pollution

---

<sup>19</sup> Ameren Missouri's Response, Ex. 2, Exhibit A, Pages 41-55.

<sup>20</sup> Ameren Missouri's Response, Ex. 2, Exhibit A, Page 43.

<sup>21</sup> Transcript, Pages 165-167.

control retrofits, conversion to gas-fired boiler operation, and retirement.<sup>22</sup> Even though the costs to retrofit Labadie and Rush Island were higher in absolute terms, because those plants are more efficient, the cost per kilowatt to make those retrofits for those plants was significantly lower than the cost per kilowatt to retrofit Meramec.<sup>23</sup> As a result, for purposes of this study, it was reasonable for Ameren Missouri to assume that a study of Meramec's costs would yield similar results for Rush Island and Labadie. There is no deficiency.

### **High Natural Gas Price Assumptions**

The assumed price of natural gas played a role in the IRP study's determination of whether and when it would be expedient to retire the Meramec coal-fired generating plant.<sup>24</sup> If all other factors are held constant, lower natural gas prices would tend to result in lower electric power prices, which would diminish the value of continuing to operate the Meramec plant. As a result, the study is more likely to indicate that Ameren Missouri should retire that plant.<sup>25</sup>

After Ameren Missouri performed its study, natural gas price forecasts decreased dramatically. However, there was no indication that the forecasted natural gas prices were unreasonable at the time Ameren Missouri incorporated them into its study.

The NRDC parties suggest that this change in forecasted natural gas prices invalidates the entire study and suggest that Ameren Missouri be required to re-perform the study using more up-to-date natural gas price forecasts. Ameren Missouri acknowledged

---

<sup>22</sup> Michels Surrebuttal, Ex. 5, Page 64, Lines 13-15.

<sup>23</sup> Transcript, Page 172, 8-12.

<sup>24</sup> Transcript, Page 199, Lines 15-17.

<sup>25</sup> Transcript, Page 201, Lines 2-11.



the forecasted decrease in natural gas prices and indicated it would incorporate those changes in its upcoming 2012 IRP annual update.<sup>26</sup>

This issue illustrates the snapshot nature of Ameren Missouri's IRP study. That study is designed to capture a picture of the company's planning process at a particular moment in time. That planning process is on going and of course, the company's plans will change as circumstances change. It also illustrates the extensive amount of effort that must be put into preparing an IRP. Some aspects of the study must be prepared before subsequent aspects can be completed. As a result, it is not possible to keep all aspects of the study current until the date the study is filed with the Commission. For that reason, a change in circumstances that occurs during the study process does not mean that the study is deficient. It is appropriate for Ameren Missouri to update its IRP to take into account reduced natural gas prices. However, Ameren Missouri's failure to foresee those reduced natural gas prices does not create a deficiency in the 2011 IRP filing.

### **Analysis of Future Coal Prices**

Commission Rule 4 CSR 240-22.040(8) requires an electric utility to "develop ranges of values and probabilities for several important uncertain factors related to supply resources." One uncertain factor the rule requires the utility to analyze is fuel price forecasts, which would include forecasts about the future cost of coal. MDNR contends Ameren Missouri's IRP is deficient in that it failed to analyze future coal prices as an uncertain critical factor. In particular, MDNR claims Ameren Missouri's analysis leaves out

---

<sup>26</sup> Transcript, Page 200, Lines 2-13.

the uncertainty that coal transportation costs and coal production costs would have on the possible range of future coal prices.<sup>27</sup>

Ameren Missouri's response to MDNR asserts that "by including coal prices based on the ten scenarios modeled by CRA in its analysis of risk associated with candidate resource plans, the Company has considered the effects of coal price uncertainty on the performance of candidate resource plans."<sup>28</sup> Ameren Missouri further explains that it will more extensively evaluate coal price uncertainty as a "special contemporary issue" in its IRP annual update, which is to be filed in March 2012.

After reviewing MDNR's concerns about Ameren Missouri's analysis of coal price uncertainty, the Commission accepts Ameren Missouri's response and finds that Ameren Missouri's analysis is not deficient.

### **Analysis of Accuracy of Previous CRA Forecasts**

Commission Rule 4 CSR 240-22.040(8)(A)2, in establishing the basis for a utility's analysis of important uncertain factors, states: "[t]he utility shall consider the accuracy of previous forecasts as an important criterion in selecting providers of fuel price forecasts." Ameren Missouri's IRP study relied on the fuel price forecasts prepared by Charles River Associates (CRA). MDNR contends Ameren Missouri's IRP is deficient in that it does not provide any specific information about how it determined that CRA's previous fuel price forecasts were accurate.

Ameren Missouri counters MDNR's allegation by pointing to the IRP study's explanation that the forecasting model used by CRA has been extensively peer-reviewed

---

<sup>27</sup> Noller Rebuttal (Revised), Ex. 23, Page 30, Lines 1-12.

<sup>28</sup> Michels Surrebuttal, Ex. 5, Page 70, Lines 18-20.

and has been found to be reliable.<sup>29</sup> The utility further explains that, as CRA's model is "used to simulate myriad potential futures under a range of economic and political conditions for numerous clients and for various purposes, there is no single forecast that could be compared to historic prices."<sup>30</sup>

The Commission finds that the purpose of the rule's requirement is to require the electric utility to consider the reliability of the fuel-price forecasts offered by the expert analysts it employs. Ameren Missouri has accomplished that purpose by examining the reputation and reliability of the forecast model used by CRA. There is no deficiency.

### **Potential Opportunities for New Long-Term Power Purchases and Sales**

Commission Rule 4 CSR 240-22.040(5) requires an electric utility to "identify and evaluate potential opportunities for new long-term power purchases and sales, both firm and nonfirm, that are likely to be available over all or part of the planning horizon." Ameren Missouri explained that its experience from preparing its 2008 IRP filing revealed that it was difficult to obtain reliable information from potential trading partners for assessing potential long-term purchased power opportunities because potential trading partners were "reluctant to indicate terms and pricing through such generic means and with no probable prospects for signing a contract."<sup>31</sup> Instead, Ameren Missouri inquired of its affiliated trading organization and was told that there are no reasonable opportunities for long-term purchased power agreements to be included in the supply side analysis.<sup>32</sup> Thereupon, Ameren Missouri eliminated the option of long-term purchased power agreements from further consideration.

---

<sup>29</sup> Ameren Missouri's 2011 IRP, Chapter 2, Page 19.

<sup>30</sup> Ameren Missouri's Response, Ex. 2, Exhibit A, Page 86.

<sup>31</sup> Ameren Missouri's Response, Ex. 2, Exhibit A, Page 76.

<sup>32</sup> Ameren Missouri's Response, Ex. 2, Exhibit A, Page 76.

MDNR alleged that the purchased power agreement aspect of the IRP filing was deficient because Ameren Missouri did not provide a sufficient explanation of the basis for its decision to provide no further analysis of long-term purchased power options.<sup>33</sup> MDNR also complains that Ameren Missouri's October 25, 2011 change of its preferred resource plan makes the company reliant on purchased power agreements that it said were not available in its initial IRP filing.

The Commission finds that while Ameren Missouri did not provide a detailed analysis of the availability of long-term purchased power agreements, its explanation of why detailed information about hypothetical long-term agreements is not available was reasonable and satisfies the requirements of the regulation. Furthermore, MDNR's comment about Ameren Missouri's October 25, 2011 change of its preferred resource plan misunderstands the difference between long-term purchased power agreements and the short-term purchases and sales in the market upon which the company intends to rely under its revised preferred resource plan. There is no deficiency.

### **Analysis of Wind Resources**

Both Public Counsel and MDNR take issue with aspects of Ameren Missouri's analysis of potential wind resources. Public Counsel identified what it contends are three significant problems with the assumptions that Ameren Missouri used to model the potential for wind resources. All three problems are closely related.

First, in its model, Ameren Missouri allegedly overstates the cost of new wind resources by assuming that 346 MW of simple cycle combustion gas turbines (CTs) must

---

<sup>33</sup> Smith Rebuttal, Ex. 24, Page 4, Lines 49-60.

be built along with every 800 MW of wind facilities to maintain sufficient capacity reserves.<sup>34</sup> Second, Ameren Missouri applies a 205 MW (accredited capacity) build threshold to wind resources, allegedly ignoring the potential benefits of adding smaller wind resources to the system sooner.<sup>35</sup> In other words, Ameren Missouri's model does not consider adding additional wind resources to its system until that system requires an additional 205 MW of capacity. Third, Ameren Missouri modeled a single, average estimate of wind resource costs and capacity factors, resulting in a limited analysis of wind resource potential that may not optimize that potential.<sup>36</sup>

Ameren Missouri explains that it made its assumptions about wind energy because MISO currently credits wind generation at only 8 percent of its nameplate rating for capacity purposes. Ameren Missouri chose to model 800 MW of wind power, but that would only give it credit for 64 MW of capacity. For that reason, it also modeled an additional 346 MW of CT capacity to provide 400 MW of capacity for planning purposes.<sup>37</sup>

The Commission finds that the problem with Ameren Missouri's assumptions are that, as the Commission has previously found in this order, the need for additional capacity should not be the only basis for modeling additional wind power, other renewable energy resources, or energy efficiency measures. Wind resources may significantly reduce energy costs and thus may be able to reduce PVRR even when additional capacity is not needed for reliability purposes.<sup>38</sup>

---

<sup>34</sup> Woolf Rebuttal, Ex. 47, Page 19, Lines 16-20.

<sup>35</sup> Woolf Rebuttal, Ex. 47, Page 22.

<sup>36</sup> Woolf Rebuttal, Ex. 47, Page 23, Lines 5-20.

<sup>37</sup> Michels Surrebuttal, Ex. 5, Page 79, Lines 1-21.

<sup>38</sup> Woolf Rebuttal, Ex. 47, Page 20, Lines 26-29.

The models may not indicate the advisability of adding wind generation capacity, and Ameren Missouri may still choose not to add wind resources for other reasons, but it is important that wind resources be appropriately modeled so that Ameren Missouri has access to all relevant facts when it makes its decisions. Ameren Missouri's modeling of wind resources is deficient.

MDNR also alleges that Ameren Missouri's modeling of wind resources is deficient, but bases its concerns on the stipulation and agreement that resolved some of the alleged deficiencies in Ameren Missouri's 2008 IRP filing. That stipulation and agreement in File No. EO-2007-0409, which Ameren Missouri signed, requires the company to take the following actions in preparing its 2011 IRP:

- Demonstrate that its assumptions regarding capacity factors are consistent with the most recent data on capacity factors for the best commercially available wind sites;
- Demonstrate that its assumptions regarding the timing of transmission capacity upgrades, and the allocation of the costs associated with those upgrades, are based on the most recent system planning studies and currently effective transmission cost allocation principles;
- Present scenarios for acquiring wind resources that identify the region being considered utilizing multi-county areas, with a characterization of the wind resources available for each. To make a meaningful comparison of the regions under consideration, the information presented should include estimates at various turbine hub heights (e.g. 80, 100 or 120 meters, where practical) of wind density, transmission upgrades required and the levelized cost of energy per MWh under a Purchase Power Agreement and/or an ownership arrangement.<sup>39</sup>

MDNR contends Ameren Missouri did not fulfill the requirements of the stipulation and agreement.

In particular, MDNR complains that Ameren Missouri modeled an average of capacity factors across several Midwest states rather than considering the *best*

---

<sup>39</sup> Joint Filing and Partial Stipulation and Agreement, Case No. EO-2007-0409, Paragraph 14, Pages 3-4, August 12, 2008.

commercially available wind sites, as it was required to do by the stipulation and agreement. According to MDNR, this generic modeling prevents Ameren Missouri from reliably analyzing all available wind resources.<sup>40</sup>

The testimony offered by Richard Hasselman of GDS Associates on behalf of MDNR<sup>41</sup> persuasively explains how Ameren Missouri's analysis of potential wind energy resources is overly generic and fails to comply with the more detailed requirements of the stipulation and agreement. Ameren Missouri failed to effectively rebut Hasselman's explanation. The Commission finds that Ameren Missouri has failed to comply with the requirements of the stipulation and agreement.

### **Analysis of Nuclear Units**

Commission rule 4 CSR 240-22.040(8) requires the electric utility to "develop ranges of values and probabilities for several important uncertain factors related to supply resources," before developing alternative resource plans and performing the integrated resource analysis. More specifically, 4 CSR 240-22.070(2)(F) requires the electric utility to assess uncertain factors related to "[c]onstruction costs and schedules for new generation and generation-related transmission facilities." Public Counsel and NRDC contend Ameren Missouri has seriously underestimated the likelihood of cost overruns associated with the possible construction of a second nuclear generating unit at the Callaway Plant.

Ameren Missouri's analysis assumed \$4,222/kw as the base value for the capital cost of building the unit, with \$3,563/kw as the low value and \$5,000/kw as the top of the

---

<sup>40</sup> GDS Review of Ameren Missouri's IRP, Ex. 19, Pages 23-28. See *also*, Hasselman Rebuttal, Ex. 21, Pages 3-9.

<sup>41</sup> Hasselman Rebuttal, Ex. 21, Pages 3-9.

likely range. The company also assumed it would take eight years to construct the unit.<sup>42</sup> Public Counsel and NRDC are concerned that these assumptions understate the risk that construction costs would far exceed the current estimates.

The problem with Ameren Missouri's assumptions is that there is no reliable track record by which Ameren Missouri, or any utility, can estimate the cost to construct a nuclear unit with any assurance of accuracy. No nuclear power plant with the design Ameren Missouri is considering has yet been completed anywhere in the world. Without such experience to draw upon, the estimated cost to construct a new nuclear unit is highly uncertain.<sup>43</sup> Furthermore, the history of cost overruns associated with the construction of nuclear power plants is not reassuring. For the last generation of nuclear plants constructed in the 1960s and 1970s, the average cost overrun for 75 nuclear units was 207 percent.<sup>44</sup> Even for the current generation of nuclear power plants currently under construction, cost overruns of 70 percent have already been reported.<sup>45</sup> Yet, Ameren Missouri's study assumes that there is less than a 0.1 percent chance that the project would over-run its original budget by 50 percent or more.<sup>46</sup>

This is not just a disagreement about how much a new nuclear plant will cost, the question is whether Ameren Missouri has properly evaluated the degree of risk that costs will soar far above current estimates. The commission has no basis in the record to say that Ameren Missouri's cost estimates are wrong. Therefore, the Commission cannot find

---

<sup>42</sup> Ameren Missouri Response, Ex. 2, Exhibit A, Page 73.

<sup>43</sup> Comments of NRDC, et al, Ex. 31, Page 52.

<sup>44</sup> Comments of NRDC et al, Ex. 31, Page 54.

<sup>45</sup> Comment of NRDC et al, Ex. 31, Page 55.

<sup>46</sup> Woolf Rebuttal, Ex. 47, Page 19, Lines 3-9.



that this aspect of the IRP is deficient. However, this is an area of genuine concern that the company will need to address in its next filing.

### **Modeling of Non-Dispatchable Demand Response (NDDR) in Evaluation of Industrial Demand Response Programs**

Non-dispatchable demand response (NDDR) programs are those that are aimed at providing a better price signal to customers to encourage them to use electricity more efficiently. It would include ideas such as time-of-use pricing.<sup>47</sup> Public Counsel accuses Ameren Missouri of failing to comply with the Commission's order in the previous IRP case, EO-2007-0409, to realistically evaluate its industrial demand response programs because it failed to model NDDR programs and instead examined only direct load control programs.<sup>48</sup> Ameren Missouri responded by stating that it in fact included NDDR programs in models for both its RAP and MAP portfolios.<sup>49</sup> The Commission accepts Ameren Missouri's explanation. There is no basis for any finding of deficiency in this area.

### **Insufficient and Inaccurate Information to Board of Directors**

Public Counsel complains that Ameren Missouri displayed a bias against energy efficiency in its presentations to the Union Electric Board of Directors and the Ameren Board of Directors regarding the choice of a preferred resource plan.<sup>50</sup> Public Counsel argues that the Commission should cite the alleged bias as a contributing factor in a finding that Ameren Missouri's IRP fails to meet the policy objectives set forth in the rule. Ameren Missouri denied that it had mislead either board of directors, explaining that the actual

---

<sup>47</sup> Ameren Missouri's 2011 IRP, Ex. 1, Chapter 7, Pages 46-47.

<sup>48</sup> Initial Post-Hearing Brief of the Office of the Public Counsel, Page 11.

<sup>49</sup> Ameren Missouri's Response, Ex. 2, Exhibit A, Page 22.

<sup>50</sup> Public Counsel's Technical Report, Ex. 43, Page 9. See also, Kind, Rebuttal, Ex. 48, Pages 18-21.

decision about a choice of a preferred resource plan was made by Ameren Missouri's senior management and simply presented to the boards for their approval.<sup>51</sup>

The fundamental problem with Public Counsel's argument is that there is nothing in the Commission's IRP rule that would give the Commission authority to evaluate the interactions between Ameren Missouri's management and its board of directors. If the boards for Ameren Missouri and Union Electric believe that the management of those companies has misled them, they are quite capable of dealing with that problem without any involvement by this Commission. There is no basis for a finding of deficiency.

## **CONCLUSIONS OF LAW**

The requirement that Missouri's investor-owned electric utilities engage in a formalized integrated resource planning process is entirely a creation of the Commission's rules. The applicable rules are found in Chapter 22, specifically 4 CSR 240-22.010 through 22.080.

The first section of Chapter 22, 4 CSR 240-22.010(1), explains that the Commission's policy goal embodied in the chapter is "to set minimum standards to govern the scope and objectives of the resource planning process ... to ensure that the public interest is adequately served." That section further states "[c]ompliance with these rules shall not be construed to result in commission approval of the utility's resource plans, resource acquisition strategies or investment decisions." In other words, the regulations require the utility to undertake a planning process. It does not require the utility to reach a particular result or even a result of which the Commission would approve.

---

<sup>51</sup> Michels Surrebuttal, Ex. 5, Pages 43-46.

The second section of Chapter 22, 4 CSR 240-22.010(2), requires that the “fundamental objective of the resource planning process at electric utilities shall be to provide the public with energy services that are safe, reliable and efficient, at just and reasonable rates, in a manner that serves the public interest.” The remaining provisions of Chapter 22 provide detailed guidelines for how an electric utility is to collect and analyze information to meet that fundamental objective.

At the end of the process set forth in Chapter 22, the final provision of the regulation, 4 CSR 240-22.080(13), states:

[t]he commission will issue an order which contains findings that the electric utility’s filing pursuant to this rule either does or does not demonstrate compliance with the requirements of this chapter, and that the utility’s resource acquisition strategy either does or does not meet the requirements stated in 4 CSR 240-22.010(2)(A)-(C), (the fundamental objectives of the planning process) ...

However, the planning process does not end with the issuance of this order. The old version of Chapter 22 in effect at the time Ameren Missouri made this IRP filing, required each electric utility to make a new IRP filing every three years.<sup>52</sup> Therefore, the planning requirement is ongoing. The revised chapter 22 rules now in effect further emphasize the ongoing obligation to continue planning by requiring each electric utility to file annual updates by April 1 of each year in addition to the triennial IRP filing.<sup>53</sup> Ameren Missouri’s next triennial IRP filing is due on April 1, 2014 and its next annual update is due by April 1, 2012.

---

<sup>52</sup> 4 CSR 240-22.080(1).

<sup>53</sup> 4 CSR 240-22.080(1) and (3).

Although the Commission has held a hearing regarding Ameren Missouri's IRP filing, this is not a contested case as defined by Section 536.010(4), RSMo (Supp. 2010).<sup>54</sup> The decision to hold a hearing to receive a more detailed analysis of Ameren Missouri's 2011 IRP filing was undertaken at the discretion of the Commission and was not required by the rule or any other provision of law.<sup>55</sup>

## DECISION

The most important thing to understand about this case is what the Commission is not doing. The Commission's IRP rule clearly and emphatically provides that in reviewing Ameren Missouri's IRP filing, the Commission is not preapproving Ameren Missouri's "resource plans, resource acquisition strategies or investment decisions."<sup>56</sup> Instead, the purpose of the IRP rule is to "set minimum standards to govern the scope and objectives of the resource planning process ... to ensure that the public interest is adequately served."<sup>57</sup> As the Commission indicated in its Order of Rulemaking by which with rule was promulgated, "the focus of the rules should appropriately be on the planning process itself rather than on the particular plans or decisions that result from the process."<sup>58</sup>

The IRP rule states that the fundamental objective of the electric utility's planning process must be to "provide the public with energy services that are safe, reliable and efficient, at just and reasonable rates, in a manner that serves the public interest."<sup>59</sup> In other words, the rule requires Missouri's investor-owned electric utilities to adequately plan

---

<sup>54</sup> "'Contested case' means a proceeding before an agency in which legal rights, duties or privileges of specific parties are required by law to be determined after hearing."

<sup>55</sup> Commission Rule 4 CSR 240-22.080(9).

<sup>56</sup> Commission Rule 4 CSR 240-22.010(1).

<sup>57</sup> Commission Rule 4 CSR 240-22.010(1).

<sup>58</sup> Missouri Register, Vol. 18, No. 1, Page 91 (January 4, 1993).

<sup>59</sup> Commission Rule 4 CSR 240-22.010(2).

for the future. However, the rule does not attempt to give the Commission authority to take over management of the electric utility to dictate the manner in which the company meets that fundamental objective.

That means Ameren Missouri may satisfy the planning requirements of the rule even if it reaches a decision at the conclusion of the planning process that is not to the liking of outside parties, or even to the liking of the Commission. Nevertheless, the utility must live with the consequences of its planning decisions, and is without the protection it would be afforded if the Commission were to pre-approve its resource planning decisions. In a future rate proceeding, Ameren Missouri may be called to task by the Commission, and may face financial consequences, if its resource planning decisions do not result in just and reasonable rates or do not serve the public interest. But those matters are not before the Commission in this case and cannot be resolved at this time.

In examining the alleged deficiencies set forth by Staff, Public Counsel, and the other interested parties, the Commission has found that Ameren Missouri could have done a better job in certain particulars of its planning process. Specifically, the Commission found that Ameren Missouri's analysis should have allowed demand-side resources to compete on the basis of PVRR with existing supply-side resources as part of the IRP process. The Commission further found that Ameren Missouri's assumption of 18 months of regulatory lag was inconsistent with the one-year assumption required by the rule. In addition, the Commission found fault with Ameren Missouri's modeling of potential wind energy resources. Finally, the Commission found that Ameren Missouri's analysis of the cost uncertainties associated with building a new nuclear unit was flawed.

Thus, the Commission finds that Ameren Missouri's IRP plan is not flawless and should be improved. Planning and failure to plan have real world consequences that may affect both the public interest and the company's ability to recover future costs. Ameren Missouri must improve its planning process, but the question is how and when it must make those improvements.

Ameren Missouri's obligation to plan and the regulation's requirement that it report on those planning efforts are both ongoing. Some parties suggest the Commission require Ameren Missouri to go back and redo its 2011 IRP filing to correct the identified deficiencies. The Commission will not do so. Despite the deficiencies in Ameren Missouri 2011 IRP filing, it would be a waste of resources to require Ameren Missouri to look backward to use pre-2011 data to rerun its analysis to revise that filing. Instead, the Commission will direct Ameren Missouri to take the steps necessary to improve both its 2014 triennial IRP filing and the annual updates that will be due before then.

**THE COMMISSION ORDERS THAT:**

1. The Commission finds that the 2011 Integrated Resource Planning filing submitted by Union Electric Company, d/b/a Ameren Missouri, does not demonstrate compliance with the requirements of Commission Rule 4 CSR 240-22 in certain respects described in the body of this order. Union Electric Company, d/b/a Ameren Missouri, shall correct those deficiencies in its 2014 triennial integrated resource planning filing and in upcoming annual updates as appropriate.

2. This order shall become effective on April 27, 2012.

**BY THE COMMISSION**

( S E A L )



Steven C. Reed  
Secretary

Gunn, Chm., Jarrett and Kenney, CC., concur;  
and certify compliance with the  
provisions of Section 536.080, RSMo.

Dated at Jefferson City, Missouri,  
on this 28<sup>th</sup> day of March, 2012