BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MISSOURI

In the Matter of the Resource Plan of Aquila, Inc., d/b/a Aquila Networks – MPS and Aquila Networks - L&P Pursuant to 4 CSR 240-22	)))	Case No. EO-2007-0298

STAFF REPORT

COMES NOW the Staff ("Staff") of the Missouri Public Service Commission ("Commission") and files its Report regarding the Chapter 22 Electric Utility Resource Planning compliance filing made by Aquila, Inc. ("Aquila") on February 5, 2007[1]. In support thereof, the Staff respectfully states as follows:

1. 4 CSR 240-22.080(5) provides that the Staff shall review each utility's compliance filing and shall file, no less than 120 days after each utility's scheduled electric resource plan filing date, a report that identifies, among other things, any deficiencies in the electric utility's compliance with the provisions of Chapter 22 of the Commission's rules.

2. 4 CSR 240-22.080((6) provides that the Office of the Public Counsel ("Public Counsel") and any intervenor may file, no later than 120 days after each utility's scheduled electric resource plan filing date, a report (or comments) that identifies, among other things, any deficiencies in the electric utility's compliance with the provisions of Chapter 22 of the Commission's rules.

3. On June 5, 2007, the Commission granted Public Counsel's June 1, 2007 request for a two-week extension (until June 19, 2007) of the time for the parties to file responses Aquila's aforementioned compliance fling.

[1] The Staff Report is public, with the exception of Table 1 attached thereto. Table 1 is highly confidential in its entirety and is being filed separately.

4. The Staff Report accompanying this pleading (Appendix A) identifies, among other things, deficiencies in Aquila's February 5, 2007 compliance filing relating to the provisions of Chapter 22 of the Commission's rules.

WHEREFORE, the Staff herewith files its Staff Report concerning its review of Aquila's February 5, 2007 compliance filing regarding the Commission's Chapter 22 Electric Utility Resource Planning rules.

Respectfully submitted,

/s/ Dennis L. Frey

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Certificate of Service

I hereby certify that copies of the foregoing have been mailed, hand-delivered, transmitted by facsimile or electronically mailed to all counsel of record this 19th day of June 2007.

/s/ Dennis L. Frey

EO-2007-0298

Resource Plan of Aquila, Inc.

d/b/a

Aquila Networks – MPS and Aquila Networks – L&P

Staff Report

Aquila, Inc. (Aquila) d/b/a Aquila Networks – MPS (MPS) and Aquila Networks – L&P (L&P) filed certain information in compliance with Chapter 22 Electric Utility Resource Planning Rules in Case No. EO-2007-0298 on February 5, 2007. Aquila filed no waiver request from any of the rules in Chapter 22.

Although Aquila forecasts energy and peak demand by its MPS and L&P divisions, it plans to meet these forecasted needs as one electric utility. Aquila's Preferred Resource Plan is summarized in a Capacity Balance table attached as Table 1[1]. Its preferred resource plan consists of demand-side resources that increase from 10 megawatts (MW) in 2007 to 215 MW by 2026. Aquila did not estimate any changes in the capacity of its current supply-side resources over the time span of 2007 through 2026. The preferred plan includes Aquila's participation in Iatan 2. It adds 225 MW of Combustion Turbines in 2010, 250 MW of Combine Cycle in 2013, 200 MW of participation in coal generation in 2017 and 300 MW participation in nuclear generation in 2022. Capacity purchases are used to meet Aquila's needs prior to 2010, which is the year that Iatan 2 is scheduled to come on line.

Despite the voluminous amount of material filed, Aquila's resource plan filing was well organized. Aquila provided information that was very helpful in finding not only the filing requirements associated with each rule but also where in the filing it documented the analysis used to meet different aspects of the rule. Aquila employees were also willing to help Staff and the other parties in their review in whatever way requested.

[1] This information was found in Appendix 5-D of Aquila's filing.

Staff greatly appreciates Aquila's willingness to answer questions as well as its organized filing.

With this report, Staff meets the requirement of 4 CSR 240-22.080 to file a report identifying the deficiencies it found in its limited review of the compliance filing. In addition to identifying deficiencies, Staff will point out inconsistencies that led Staff to question the validity of the load analysis and energy and peak forecasts. The demand-side analysis filing documents a comprehensive analysis. However, the analysis does not meet all the requirements of the rule. If Aquila had requested waivers from these sections of the demand-side analysis rule, explained what it is doing and why it believes that its approach is better than the approach contemplated by the rule, Staff would have likely recommend to the Commission that waivers be granted. However, since Aquila failed to explain why it deviated from the requirements of the rule, Staff is compelled to point out these deficiencies.

Aquila's compliance filing with respect to the supply-side analysis rule met many of the requirements of the rule. Perhaps the most obvious requirement that was not met was the review of Aquila's current capacity for life extension and refurbishment of its current generating plants. Aquila has stated that it has hired Black & Veatch to conduct such a study in 2007.

The requirements of the Integrated Resource Analysis (4 CSR 240-22.060) and Risk Analysis and Strategy Selection (4 CSR 240-22.070) rules are the most difficult to meet but Staff believes that they are the most important. On page 22 of Part 5, Risk Analysis and Strategy Selection of Aquila's filing, Aquila does acknowledge "The integrated resource analysis produced not only a preferred plan, but also a substantial insight into possible alternative supply-side resource opportunities." Aquila's filing shows that, although it did integration and risk analysis and met the filing requirements, Aquila still needs to improve in these areas.

The Staff would also note that Aquila's filing requests nontraditional accounting procedures and information regarding any associated ratemaking treatment for demand-side resources, as permitted by 4 CSR 240-22.080 (2) . Staff did not address this request in its Report since this issue was addressed in the Stipulation and Agreement as to Certain Issues in Aquila's recent rate case, Case No. ER-2007-0004, which was approved by the Commission in its Report and Order issued May 17, 2007.

In the sections of Staff's Report that follow, Staff lists concerns with Aquila's filing and identifies the requirements that were not met by Aquila. A brief description of these concerns and deficiencies is listed below.

STAFF CONCERNS

1) Inconsistent actual 2006 peak demand and forecasted peak demand.
2) Inconsistency in actual and estimated growth in energy
3) No low or high energy or peak forecasts through 2009
4) Relationship of economic indicators to growth
5) Service area growth
6) Energy forecast discrepancies
7) Hourly load discrepancies
8) Class level peak demand forecasts

DEFICIENCIES

1) Lack of subclass detail. 4 CSR 240-22.030 (1)(A)1.
2) Lack of subclasses. 4 CSR 240-22.030 (1)(A)2.
3) Data base used did not meet the requirements of the rule. 4 CSR 240-22.030(1)(D)
4) Lack of end-use information. 4 CSR 240-22.030 (3)(A)1.,
5) Lack of schedule to acquire end-use information. 4 CSR 240-22.030 (3)(A)2.
6) Lack of end-use data. 4 CSR 240-22.030 (3)(A)4.

7) Lack of survey data concerning saturation and efficiency levels. 4 CSR 240-22.030 (3)(B)1.

8) Lack of end-use monthly estimates. 4 CSR 240-22.030 (3)(B)2.

9) Lack of end-use load profiles. 4 CSR 240-22.030 (4)(A)

10) No end-use load profile calibration. 4 CSR 240.030 (4)(B)

11) Lack of end-use forecasted monthly energy demand at time of summer and winter peaks. 4 CSR 240-22.030 (5)(B)2.B.

12) Lack of measures of stock of energy using capital by end-use. 4 CSR 240-22.030 (5)(B)2.C.

13) Aquila did not provide all required costs for the supply side resources. 4 CSR 240-22.040(1)(A-L)

14) Aquila did not show that it analyzed all supply side options identified. 4 CSR 240-22.040(1)(A-L)

15) Aquila provided incomplete information on levelized costs of resources. 4 CSR 240-22.040(2)(A)

16) Aquila provided incomplete information on environmental mitigation. 4 CSR 240-22.040(2)(B)

17) Aquila provided no documentation of its analysis of existing and planned interconnection of potential resource options. 4 CSR 240-22.040(3)(A-C)

18) Aquila provided no documentation of any analysis of life extension and refurbishment of existing plants. 4 CSR 240-22.040(4)

19) Aquila provided incomplete information on purchase power agreements. 4 CSR 240-22.040(5)(A-G)

20) Aquila provided incomplete information on transmission costs for all resources. 4 CSR 240-22.040(6)

21) Aquila provided no information regarding existing distribution facilities. 4 CSR 240-22.040(7)

22) Aquila provided incomplete information regarding the fuel forecasts. 4 CSR 240-22.040(8)(A)

23) Aquila provided incomplete information for capital costs. 4 CSR 240-040(8)(B)

24) Aquila provided incomplete information for annual fixed and variable operation and maintenance costs. 4 CSR 240-040(8)(C)

25) Aquila provided no information for leased or rented facilities. 4 CSR 240-040(8)(E)

26) Avoided costs were not calculated according to the rule. 4 CSR 240-22.050(2)

27) Aquila did not screen end-use measures. 4 CSR 240-22.050(3)

28) Technical potential of end-use measures was not evaluated. 4 CSR 240-22.050(4)

29) Aquila did not conduct market research specific to its Missouri territory. 4 CSR 240-22.050(5)

30) Limited Demand-Side Programs were passed to integration. 4 CSR 240-22.050(7)(B)

31) Aquila did not evaluate programs for load-building potential. 4 CSR 240-22.050(10)

32) Deficiencies in supply-side and demand-side analysis limit the development of alternative resource plans. 4 CSR 240-22.060(3)

33) Aquila did not treat supply-side and demand-side resources on a logically consistent and economically equivalent basis. 4 CSR 240-22.060(4)(D)

34) Aquila provided no documentation that it did any analysis of load building programs. 4 CSR 240-22.060(5)

35) Aquila provided limited documentation to show that the resource acquisition strategy was formally approved. 4 CSR 240-22.070(10)

36) Aquila did not set out the range of critical uncertain factors for which the preferred resource plan or a contingency option is appropriate. 4 CSR 240-22.070(10)(C),(D)

37) Aquila did not develop a process for monitoring and reporting on critical uncertain factors 4 CSR 240-22.070(10)(E)

4 CSR 240-22.030 Load Analysis and Forecasting

SUMMARY

This section of Staff's Report provides Staff's review of the Aquila's load analysis and energy and demand forecasts. In its review, Staff has found some areas that seem to be inconsistent and will point out these apparent inconsistencies to the Commission. While Aquila may be able to explain them,, these inconsistencies raise concerns regarding the thoroughness of Aquila's review of the results of its work. Unless otherwise noted, all page references are to Part 1, Energy and Demand Forecast, of Aquila's filing.

CONCERNS

1) Inconsistent actual 2006 peak demand and forecasted peak demand. On page 2, Aquila's filing states that the actual summer peak demand for 2006 for Aquila Networks – Missouri was 1,967 MW. The filing further states that MPS had a peak of 1,521 at that time and L&P had a peak of 446 MW. These peaks occurred on hour 18 on 8/9/2006 for both divisions.

On the same page, in Table 1-1, Load Forecast Summary (Base-Case) (Annual Energy GWH and Summer Peak Demand MW), the 2006 forecasted summer peak is listed as 1,851 MW for Aquila, 1,439 MW for MPS and 412 MW for L&P. The Table only included actual data through 2005. The forecast shown for 2006 – 2025 does not indicate that Aquila will reach a peak demand higher than the actual peak of 2006 until 2009, when the forecasted peak is 1,979 MW. Further, MPS does not reach a forecasted peak demand of 1,521 MW until 2009 and L&P does not reach a forecasted summer peak demand of 446 MW until 2011.

Since 2006 is considered the starting point of Aquila's long-range forecast, Staff is concerned that the starting point for the forecast is far below the actual data. This may indicate that Aquila's overall forecast for summer peak demand is too low.

2) Inconsistency in actual and estimated growth in energy. Also, on Table 1-1 on page 2, actual growth in energy for the years 1999 through 2005 was 3% for Aquila MO. However, forecasted company-wide growth in energy for the period 2006-2025 is only estimated to be 2.5%. Aquila does not explain why energy is forecasted to grow at a slower pace in the future than what occurred in the previous six years. This is especially puzzling considering, as Aquila points out in its report, that in 2001, sales declined due to US economic recession and lower economic growth and loss of large wholesale customers for MPS during that time frame as well. While this may be due to the economic drivers used as inputs in the forecast, Aquila does not explain why it uses economic drivers that produce results that are inconsistent with its most recent history.

Adding to the confusion, the actual growth in the summer peaks of both divisions combined is shown as 1.6%. The forecasted growth of 2.0% in summer peaks is higher than the growth in the actual peaks. While it is expected that the growth in peaks would be different from the growth in energy, a difference not only of this magnitude but also direction should be an indication that the forecasts should be checked for accuracy. Nowhere in its documentation does Aquila describe its review of these inconsistencies or provide an explanation as to why these inconsistencies do not indicate fallacies in its forecasts.

3) No low or high energy or peak forecasts through 2009. On page 3, Table 1-2, Load Forecast Summary (High-Case and Low-Case) (Annual Energy GWH and Summer Peak Demand MW), Staff has identified another area of concern. For the short-term (i.e., the years of 2006 – 2009), where Aquila used its budget forecast, the base, low, and high case forecasts of energy, summer peak, and load factor in each year are the same. It seems as if Aquila has taken its budget forecast for those years and used that for all three scenarios. Depending upon the assumptions made, there should be differences between the base, low, and high forecasts even in the short-run. Nowhere in the filed document does Aquila explain why it believes that low and high forecasts are not necessary for the short-term.

Again, since this short-term forecast is the starting point for the forecast for the long-term (2010 – 2025), Staff questions the accuracy of the low-case and high-case energy and peak forecasts of Aquila.

4) Economic indicators' relationship to growth. On page 5, Table 1-5, Economic Growth Trends, the data in the table seem to contradict the explanation given by Aquila on that same page. The filing states, "Electric utility energy sales typically grow in correlation to service area real GDP." However, the table indicates that for MPS, real GDP was 1.9% in the years 1996 – 2005. Aquila's corresponding sales increase is 3.2%. The forecast of real GDP for 2006 – 2025 is expected to increase by 2.1%, a greater level of growth, which, if Aquila's statement regarding the correlation between GDP and sales growth is correct, should lead to a greater level of growth in sales. However, the forecasted growth for sales is only 2.7%, which is less than the historical growth of 3.2%, even though Aquila's filing indicates that real GDP is forecasted to grow at a greater rate. There is a similar discrepancy in the L&P forecast in comparing the 2006 – 2009 and the 2006 – 2025 forecasts for sales and economic growth. Nowhere in the report does Aquila explain why it believes that GDP is correlated to growth even though its forecast does not show a similar correlation.

5) Service area growth. On page 6, in its discussion of its service area growth, Aquila makes the statement that "residential customer growth in the MPS service area over the 2006 – 2025 period is projected at 2.0% annually, compared to household growth of 0.5% annually. On the other hand, the projections for residential customers and households for the L&P area seem much more consistent. Residential customer growth is forecasted to be 0.5% annually compared to household growth of 0.7% annually. Staff was unable to find in Aquila's documentation an explanation of how residential customer growth in the MPS territory can be quadruple the growth in households.

6) Energy forecast discrepancies. Tables 1-11 and 1-12 on pages 11 and 12, are titled MPS Energy Sales Forecast and SJLP Energy Sales Forecast, respectively.

However, the total sales for both MPS and SJLP do not match the sales found in Table 1-1 on page 2, even taking into account that one table uses gigawatt-hours (GWH) (Table 1-1) while the other two show the forecast in megawatt-hours (MWH). This discrepancy causes Staff to question the source of data used by Aquila in its forecasts and which results are the correct ones.

7) Hourly load discrepancies. Aquila shows the class hourly load profiles for MPS and L&P in Tables 1-16 and 1-19, on pages 16 and 19, respectively. However, in these tables, the class loads at the system peak hour do not total the system peak for that hour. For instance, Table 1-16 shows a system peak of 1,422 MW on the 17th hour on 7/22/2005 for MPS. During that same hour, the sum of the residential, commercial, industrial, wholesale, and other classes (746 MW + 375 MW + 116 MW + 8 MW + 92 MW) equals 1,337 MW. The same inconsistency is true for L&P on page 19, Table 1-19. This discrepancy was not explained.

8) Class level peak demand forecasts. Tables 1-17 and 1-20, found on pages 17 and 20, respectively, also include inconsistencies that cause Staff to have concerns about the summer peak forecast. In both cases, the system forecast seems reasonable. However, Staff has noted an unexplained pattern in the class summer peak forecasts for both MPS and L&P. The attached graphs show these patterns. Both forecasts indicate that after approximately four years of steady growth for all classes, there is a sudden spike in the residential forecasted peak, followed by a sudden decline in the next year's forecasted summer peak. Coincidentally, when the residential class forecast spike occurs, the forecasted commercial and industrial classes peaks fall at the exact same time. This results in an overall system forecast that is smooth. Staff has concerns regarding Aquila's class peak forecasts, especially since Aquila offered no explanation in its filing.

DEFICIENCIES

1) Lack of subclass detail. 4 CSR 240-22.030 (1)(A)1. states that the utility shall determine what level of subclass detail is required for forecasting and what methods to use in gathering subclass information for each major class. Aquila did not use any

subclass detail in its forecast, even though it estimates hourly loads and weather normalizes usage data at a more detailed level commonly referred to as Class Cost of Service (CCOS) customer classes. These classes were developed because the groups of customers had similar usage amounts and patterns. In order to fulfill the rule at the major class level, Aquila had to divide the data for each non-residential CCOS class into Commercial and Industrial data, and then sum the CCOS data across customer size and usage pattern to create the Commercial and Industrial classes that it used. In doing its aggregation, Aquila assumed that the small customer's usage (e.g., a convenience store) would grow at the same rate as the large commercial customer (e.g., a large hospital) and that the small customer has the same usage pattern as the large customer.

While the rule only requires that a substantial amount of the analysis be completed at the major class level, Staff believes that in removing the detail from its data, Aquila is losing information that would make its forecast and load analysis more accurate. In its filing, Aquila indicates that, in lieu of subclasses, it used a SAE (statistically-adjusted end-use) method instead. Staff believes Aquila is deficient in meeting the requirements of this rule.

2) Lack of subclasses. **4 CSR 240-22.030 (1)(A)2.** states in part that the utility should consider certain categories of subclasses. As noted above, Aquila did not use subclasses in its forecast and therefore is deficient in meeting the requirements of this rule.

3) Data base used did not meet the requirements of the rule. 4 CSR 240-22.030(1)(D) requires the use of actual and weather normalized energy and net system loads to 1982 and estimated actual and weather normalized class and system peak demands from 1990. Although Aquila had the data, it used a less extensive history in its analysis.

4) Lack of end-use information. 4 CSR 240-22.030 (3)(A)1. states in part that where applicable for each major class, end-use information shall be developed at least for

lighting, process equipment, space cooling, space heating, water heating and refrigeration. Aquila states that the model it used in its energy forecast utilizes cooling, heating, and non-weather sensitive variables. Since it does not develop end-use information for all items listed above, Aquila is deficient in meeting the requirements of this rule.

5) Lack of schedule to acquire end-use information. 4 CSR 240-22.030 (3)(A)2. states that for each major class, if information is not available, the utility shall provide a schedule for acquiring this end-use information, or demonstrate either that the expected costs of acquisition was found to outweigh the expected benefits over the planning horizon, or that gathering the end-use information has proven to be infeasible. Aquila in its filing discusses that it uses EIA (Energy Information Administration) end-use data based on regional information (West North Central). This data is not Missouri specific and in fact, includes states that do not necessarily mirror Missouri consumer usage (e.g., Minnesota). Therefore, since Aquila does not discuss how the data it used fits its customers' profiles, Aquila is deficient in meeting the requirements of this rule.

6) Lack of end-use data. 4 CSR 240-22.030 (3)(A)4. states that the difference between the total load of a major class and all end uses for which the utility has acquired end-use information shall be designated as an end-use for that major class. Aquila did not do this and therefore is deficient in meeting the requirements of this rule.

7) Lack of survey data concerning saturation and efficiency levels. 4 CSR 240-22.030 (3)(B)1. states in part that for each major class and end use, the utility shall implement a procedure to develop and maintain survey data on the energy-related characteristics of the building, appliances, and equipment stock, including saturation levels, efficiency levels and sizes where applicable. Aquila does not discuss how it will maintain this survey data, or that it necessarily even used the above characteristics in its forecast. Therefore, Aquila is deficient in meeting the requirements of this rule.

8) Lack of end-use monthly estimates. 4 CSR 240-22.030 (3)(B)2. states that the utility shall estimate end-use monthly energies and demands at time of monthly system peaks and shall calibrate these energies and demands to equal the weather-normalized monthly energies and demands at time of monthly peaks for each major class for the most recently available data. Since Aquila did not develop the end-use data as described above, Aquila is deficient in meeting the requirements of this rule.

9) Lack of end-use load profiles. 4 CSR 240-22.030 (4)(A) states that load profiles for each day type shall be developed for each end-use, for each major class and for the net system load. Due to the lack of end-use data, Aquila is deficient in meeting the requirements of this rule.

10) No end-use load profile calibration. 4 CSR 240.030 (4)(B) states that for each day type, the estimated end-use load profiles shall be calibrated to sum to the estimated major class load profiles, and the estimated major class load profiles shall be calibrated to sum to the net system load profiles. Due to the lack of end-use data, Aquila is deficient in meeting the requirements of this rule.

11) Lack of end-use forecasted monthly energy demand at time of summer and winter peaks. 4 CSR 240-22.030 (5)(B)2B. states that, for each major class and for each end-use, the utility shall forecast both monthly energy use and demands at time of the summer and winter system peaks. Due to the lack of end-use data, Aquila is deficient in meeting the requirements of this rule.

12) Lack of measures of stock of energy using capital goods by end-use. 4 CSR 240-22.030(5)(B)2C. states that, for each end-use for which the utility has developed measures of the stock of energy-using capital goods, and where the utility has determined that forecasting the use of electricity associated with these energy-using capital goods is cost-effective and feasible, it shall forecast those measures and document the relationship between the forecasts of the measures and the forecasts of end-use energy and demands at time of the summer and winter system peaks. The values of the driver variables used to

generate forecasts of the measures of the stock of energy-using capital goods shall be specified and clearly documented. Aquila did not develop the measure of the stock of energy-using capital goods. Therefore, Aquila is deficient in meeting the requirements of this rule.

4 CSR 240-22.040 Supply-Side Resource Analysis

SUMMARY

This rule requires the utility to review alternative resources and determine cost estimates for each type of resource in order to include these resources in determining a Preferred Resource Plan. Aquila's filing identifies the Preferred Resource Plan as follows: up to 300 MW of purchased power agreements (PPAs) starting in 2007, 225 MW of combustion turbines in 2010, 250 MW of combined cycle unit in 2013, 200 MW of participation in a coal unit in 2017, and 300 MW of participation in a nuclear unit in 2022.

Aquila started its review with information from the Electric Power Research Institute (EPRI) Technical Assessment Guide (TAG). In this document, 251 specific technologies were identified along with estimates of the yearly operating costs associated with different capacity factors for each technology. These technologies were first screened using the base forecasts, probable environmental costs, mid-range fuel costs, mid-range capital costs, and mid-range cost of capital.

The resulting technologies that passed this screening were divided into four categories: baseload (pulverized coal, atmospheric fluidized bed, coal gasification, geothermal, nuclear, and waste burning); intermediate (combustion turbine, combined cycle, and fuel cells); peaking (combustion turbine, internal combustion engine, small combustion turbine, and energy storage); and non-dispatchable (solar photovoltaic, solar thermal, and wind).

The technologies eliminated for non-economical reasons (e.g., unproven technology, not applicable to Aquila territory) were geothermal, solar photovoltaic, solar thermal, and waste burning.

In addition to the screening for this resource planning filing, Aquila states that Black & Veatch has been hired to perform a study of opportunities for generating unit additions,

retirements, and modifications of existing units at existing plants, to be completed in the spring/summer of 2007.

DEFICENCIES

13) Aquila did not provide all required information for the supply side resources. 4 CSR 240-22.040(1)(A-L) Information for waste generation (4 CSR 240-22.040(1)(K)(2)), water impacts (4 CSR 240-22.040(1)(K)(3)), or siting impacts (4 CSR 240-22.040(1)(K)(4)) was not included in the filing for any of the technologies.

14) Aquila did not show that it analyzed all supply side options identified. 4 CSR 240-22.040(1)(A-L) The documents Aquila supplied do not include analysis of the following potential supply-side resource options: life extension and refurbishments at existing plants; enhancement of the emission controls at existing plants; purchased power from utility sources, cogenerators, or independent power producers; efficiency improvements; and upgrading transmission and distribution systems to reduce power and energy losses. While enhancement of the emission controls at existing plants is discussed in the filing, it was not treated as a potential supply–side resource option. Instead of considering enhancement of the emission controls at existing plants as a potential supply-side resource option, the purchase of emission allowances for existing units was modeled throughout the analysis.

Aquila states that Black & Veatch has been hired to perform a study of opportunities for generating unit additions, retirements, and modifications of existing units at existing plants, to be completed in the spring/summer of 2007.

15) Aquila provided incomplete information on levelized costs of resources. 4 CSR 240-22.040(2)(A) Aquila only provided levelized costs over the study period for combustion turbines, combined cycle units, and pulverized coal units.

16) Aquila provided incomplete information on environmental mitigation. 4 CSR 240-22.040(2)(B) Aquila did not provide any analysis of two levels of mitigation above

the existing requirements, which are judged to have a nonzero probability of being imposed at some point within the planning horizon.

17) Aquila provided no documentation of its analysis of existing and planned interconnection of potential resource options. 4 CSR 240-22.040(3)(A-C)

18) Aquila provided no documentation of any analysis of life extension and refurbishment of existing plants. 4 CSR 240-22.040(4) Aquila states that Black & Veatch has been hired to perform a study of opportunities for generating unit additions, retirements, and modifications of existing units at existing plants, to be completed in the spring/summer of 2007.

19) Aquila provided incomplete information on purchase power agreements. 4 CSR 240-22.040(5)(A-G) Aquila states that it intends to meet its power supply requirements for 2007 through 2009 with purchased power agreements. Only one specific purchased power agreement was modeled using a capacity price, a variable O&M price and a heat rate. No information was provided for subparts (A),(D),(E),(F) or (G) of the rule for the purchased power agreements.

20) Aquila provided incomplete information on transmission costs for all resources. 4 CSR 240-22.040(6) Aquila did not provide transmission facility costs associated with new resources, except for self-build resource options.

21) Aquila provided no information regarding existing distribution facilities. 4 CSR 240-22.040(7)

22) Aquila provided incomplete information regarding the fuel forecasts. 4 CSR 240-22.040(8)(A) No information was included for the requirements of present reserves, usage rates, and discovery rates (4 CSR 240-22.040(8)(A)(1)(A)); profitability and financial condition of producers (4 CSR 240-22.040(8) (A)(1)(B)); potential effect of environmental factors, competition, and government regulations on producers (4 CSR

240-22.040(8) (A)(1)(C)); capacity, profitability and expansion potential of present and potential fuel transportation options (4 CSR 240-22.040(8) (A)(1)(D)); potential effects of government regulations, competition and environmental legislation on fuel transporters (4 CSR 240-22.040(8) (A)(1)(E)); and potential for governmental restrictions on the use of the fuel for electricity production (4 CSR 240-22.040(8) (A)(1)(G)).

23) Aquila provided incomplete information for capital costs. 4 CSR 240-040(8)(B) No critical uncertain factors were identified. No ranges of estimated costs were provided with a subjective probability distribution that reflects the uncertainty. (4 CSR 240-22.040(8) (B)(2).

24) Aquila provided incomplete information for annual fixed and variable operation and maintenance costs. 4 CSR 240-040(8)(C) No critical uncertain factors were identified. No ranges of estimated costs were provided with a subjective probability distribution that reflects the uncertainty. (4 CSR 240-22.040(8) (C)(2).

25) Aquila provided no information for leased or rented facilities. 4 CSR 240-040(8)(E)

4 CSR 240-22.050 Demand Side Analysis

SUMMARY

In this section Aquila and its consultant, Quantec, LLC (Quantec), have investigated and evaluated a number of demand-side management (DSM) programs which include energy efficiency, demand response and affordability programs.

Beginning in January 2004, Aquila and Quantec conducted demand-side analysis review meetings with Staff, Public Counsel, Department of Natural Resources – Energy Center and other interested entities. This meeting process is referred to as the Advisory Group. The role of the Advisory Group was to provide feedback on the design and implementation of energy affordability, energy efficiency, and demand response programs.

In this filing, Aquila estimates that funding for cost-effective DSM would amount to approximately $50 million over five years (2007 – 2011). The combination of the demand-side analysis workshops since 2004 and Aquila's experience in other jurisdictions has given it a breadth of experience with demand-side management/energy efficiency programs beyond the programs evaluated and implemented as a result of its 1994 and subsequent Resource Plans. Aquila's DSM experience is reflected in the wide range of programs which it reviewed and evaluated. The programs cover a broad range of customer classes and target energy efficiency, demand side management, and energy affordability. These programs were the basis for the DSM section of the Aquila 2007 IRP filing. In addition, in the filing, Aquila documented how it selected DSM programs for screening analysis. However, Aquila's filing does not meet the demand-side analysis requirements of 4 CSR 240-22.050, and it did not asked for waivers from the specific requirements that it has not met.

The procedures contained in the demand-side analysis rule are detailed and cohesive. If the procedures are followed, the process of identifying, determining costs, screening end-use measures and demand-side programs, applying the cost tests, and designing an

evaluation is a self-documenting process. The information in Aquila's DSM section of its IRP report indicates the range of programs that were identified, evaluated, and screened; but the processes are not appropriately documented. This lack of documentation does not allow Staff to thoroughly evaluate compliance with the requirements of the various steps of the demand-side resource analysis process.

DEFICIENCIES

26) Avoided costs were not calculated according to the rule. 4 CSR 240-22.050(2) The only description that Staff found of the development of avoided costs was that Aquila calculated the avoided cost using the MIDAS model of the least-cost supply side plan. These hourly values were provided in the filing. However, the rule requires that avoided cost be calculated using a different methodology. Aquila did not seek a waiver from this requirement.

27) Aquila did not screen end-use measures. 4 CSR 240-22.050(3) Aquila grouped end-use measures into "blocks" for screening instead of screening individual measures as required by the rule. Aquila did not seek a waiver from this requirement.

28) Technical potential of end-use measures was not evaluated. 4 CSR 240-22.050(4) Aquila estimated the technical potential of "blocks" of measures, rather than the individual end-use measures as required by the rule. Aquila did not seek a waiver from this requirement.

29) Aquila did not conduct market research specific to its Missouri territory. 4 CSR 240-22.050(5) An energy efficiency market survey has been conducted by Aquila along with the other investor-owned a electric utilities in Missouri and several large municipal electric utilities (Springfield, Independence, and Columbia). The results of this study may be useful in the implementation of the programs selected. Aquila needs to conduct additional market research studies, customer surveys, pilot programs, test marketing programs and other activities to help assure that it can develop and implement cost-effective demand-side programs.

30) Limited Demand-Side Programs were passed to integration. 4 CSR 240-22.050(7)(B) Based on documents on program screening previously submitted to Staff by Aquila, Staff believes that there are more energy efficiency programs that would be cost-effective. Aquila needs to analyze why there are not more cost effective programs for its service territory than its analysis has shown to date.

31) Aquila did not evaluate programs for load-building potential. 4 CSR 240-22.050(10) Aquila did not analyze the load-building potential of its residential Energy Star Homes new construction demand-side program. Aquila'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 Aquila. 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

This rule requires the utility to design alternative resource plans with appropriate combinations of candidate demand-side and supply-side resources. Aquila states that demand-side management programs were modeled individually and one program, the direct load control (DLC) program, was determined not to be cost effective. The remaining programs were included in each alternative resource plan with no variations in level and timing of the demand-side resource. In addition to the primary planning objective stated in the rule, minimization of the present value of revenue requirements, Aquila defined two additional resource planning objectives: minimize CO_2 production and minimize dependence on natural gas.

Aquila developed five (5) alternative resource plans. "No Coal" is a plan that does not include any new coal additions during the planning horizon. Similarly, "No Gas" is a plan that does not include any new natural gas additions, neither combustion turbines (CT) nor combined cycle (CC), during the planning horizon. "PPAs through 2009" and "PPAs through 2012" are plans that assume that no purchased power agreements will be available after the years 2009 and 2012, respectively. "Green" is a plan that includes wind resources through purchased power agreements and coal units that capture CO_2.

DEFICIENCIES

32) Deficiencies in supply-side and demand-side analysis limits the development of alternative resource plans. 4 CSR 240-22.060(3) Many of the deficiencies listed for the Supply-Side Resource Analysis (4 CSR 240-22.040) and Demand-Side Resource Analysis (4 CSR 240-22.050) will have a direct effect on the development of alternative resource plans. For example, the supply-side deficiency, life extension and refurbishment of existing plans, 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 could limit the development of alternative resource plans with varying levels of demand-side resources.

33) Aquila did not treat supply-side and demand-side resources on a logically consistent and economically equivalent basis. 4 CSR 240-22.060(4)(D) Aquila determined the demand-side programs that were included in each alternative resource plan based on the avoided cost of a single plan, the optimal supply-side plan developed in its earlier analysis. Since the demand-side programs did not have to directly compete with the supply-side options that varied with each alternative plan, some programs may be included in an alternative plan but might not be cost-effective when compared to the actual supply-side resources chosen. Alternatively, the direct load control program may have been cost-effective when compared to some of the supply side resources chosen for alternative resource plans. Since the level and timing of the demand-side resources was held constant for all alternative resource plans, the value of changing the level and timing of demand-side programs was not assessed.

34) Aquila provided no documentation that it did any analysis of load building programs. 4 CSR 240-22.060(5)

4 CSR 240-22.070 Risk Analysis and Strategy Selection

SUMMARY

This rule requires the utility to identify the critical uncertain factors that affect the performance of resource plans and to specify and officially adopt a resource acquisition strategy. The rule also establishes minimum standards for the methods used to assess the risks associated with these uncertainties. Aquila used sensitivity analysis to determine that all of the resource plans are most sensitive to the emissions costs (CO_2 tax). Aquila also determined that there was significant sensitivity to the cost of capital, the cost of construction and the price of natural gas. Aquila then used scenario analysis to evaluate the robustness and flexibility of the optimal plan under these scenarios. Aquila then defined its preferred plan and provided a short discussion of its acquisition strategy.

DEFICIENCIES

35) Aquila provided limited documentation to show that the resource acquisition strategy was formally approved. 4 CSR 240-22.070(10) Although the filing included a signed statement by Scott H. Heidtbrink, Vice President – Power Generation/Energy Resources and H. Davis Rooney, Director – Resource Planning and Commodity Analysis, it did not clearly indicate that these persons had been delegated the authority to commit the utility to the course of action described in the resource acquisition strategy. The rule states that the "resource acquisition strategy shall be formally approved by the board of directors, a committee of senior management, an officer of the company or other responsible party who has been delegated the authority to commit the utility to the course of action described in the resource acquisition strategy."

36) Aquila did not set out the range of critical uncertain factors for which the preferred resource plan or a contingency option is appropriate. 4 CSR 240-22.070(10)(C),(D) Aquila generally discussed the importance of its recently issued RFPs for PPAs and wind generation. It also discussed the importance of the Black & Veatch study to determine the potential for utilizing existing sites for new generation and the potential need for unit retirement. However, this did not set out the ranges required in 4

CSR 240-22.070(10)(C) or the contingency options required in 4 CSR 240-22.070(10)(D).

37) Aquila did not develop a process for monitoring and reporting on critical uncertain factors. 4 CSR 240-22.070(10)(E) Aquila stated that the Aquila Networks – Missouri (ANM) electric planning group will monitor several critical uncertain factors and that ANM will undertake various activities in the 2008-2012 timeframe. However, that does not meet the requirements of 4 CSR 240-22.070(10)(E). Aquila did not develop a process for monitoring critical uncertain factors on a continuous basis and reporting significant changes to those managers or officers who have authority to direct the implementation of contingency options when the specified limits for uncertain factors are exceeded.

Table 1-1
Has been
Deemed
Highly
Confidential
In its
Entirety

Table 1-2
Has been
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Highly
Confidential
In its
Entirety

BEFORE THE PUBLIC SERVICE COMMISSION

OF THE STATE OF MISSOURI

In the Matter or the Resource Plan of Aquila, Inc., d/b/a Aquila Networks-MPS and Aquila Networks-L & P pursuant to 4 CSR 240 – Chapter 22	)))	Case No. EO-2007-0298

AFFIDAVIT OF DANIEL I. BECK

STATE OF MISSOURI)
) **ss**
COUNTY OF COLE)

Daniel I. Beck, of lawful age, on his oath states: that he has participated in the preparation of the foregoing Staff Report, pages 21 to 24; that he has knowledge of the matters set forth in such Report; and that such matters are true to the best of his knowledge and belief.

Daniel I. Beck

Subscribed and sworn to before me this 19th day of June, 2007

NOTARY PUBLIC NOTARY SEAL STATE OF MISSOURI

DAWN L. HAKE
My Commission Expires
March 16, 2009
Cole County
Commission #05407643

Notary Public

BEFORE THE PUBLIC SERVICE COMMISSION

OF THE STATE OF MISSOURI

In the Matter or the Resource Plan of Aquila, Inc., d/b/a Aquila Networks-MPS and Aquila Networks-L & P pursuant to 4 CSR 240 – Chapter 22	)))	Case No. EO-2007-0298

AFFIDAVIT OF JAMES A. BUSCH

STATE OF MISSOURI)
) **ss**
COUNTY OF COLE)

James A. Busch, of lawful age, on his oath states: that he has participated in the preparation of the foregoing Staff Report, pages 6 to 13; that he has knowledge of the matters set forth in such Report; and that such matters are true to the best of his knowledge and belief.

James A. Busch

Subscribed and sworn to before me this 19th day of June, 2007

NOTARY PUBLIC NOTARY SEAL STATE OF MISSOURI

DAWN L. HAKE
My Commission Expires
March 16, 2009
Cole County
Commission #05407643

Dawn L. Hake
Notary Public

BEFORE THE PUBLIC SERVICE COMMISSION

OF THE STATE OF MISSOURI

In the Matter or the Resource Plan of Aquila, Inc., d/b/a Aquila Networks-MPS and Aquila Networks-L & P pursuant to 4 CSR 240 – Chapter 22	)))	Case No. EO-2007-0298

AFFIDAVIT OF DAVID W. ELLIOTT

STATE OF MISSOURI)
) ss
COUNTY OF COLE)

David W. Elliott, of lawful age, on his oath states: that he has participated in the preparation of the foregoing Staff Report, pages 14 to 17; that he has knowledge of the matters set forth in such Report; and that such matters are true to the best of his knowledge and belief.

David W. Elliott

Subscribed and sworn to before me this 19th day of June, 2007

NOTARY PUBLIC NOTARY SEAL STATE OF MISSOURI

DAWN L. HAKE
My Commission Expires
March 16, 2009
Cole County
Commission #05407643

Notary Public