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Kansas Corporation Commission
/S/ Susan K. Duffy

STATE CORPORATION COMMISSION

DEC 21 2007

 Docket
Room

**BEFORE THE
KANSAS CORPORATION COMMISSION**

PREPARED DIRECT TESTIMONY OF

TED J KELLY

ON BEHALF OF

MIDWEST ENERGY, INC.

1 **DIRECT TESTIMONY OF TED J. KELLY**

2 **Q: Please state your name and business address.**

3 A: Ted J. Kelly; 9400 Ward Parkway; Kansas City, Missouri 64114.

4 **Q: What is your occupation?**

5 A: I am a Principal at the firm Burns & McDonnell. I serve as Senior Project Manager
6 and Principal in the company's Business and Technology Services Division.

7 **Q: How long have you been associated with the firm Burns & McDonnell?**

8 A: I have been with the firm continuously since July 1998. Prior to that, I was employed
9 with another major consulting firm from January 1978 to July 1998. During the
10 period August 1981 to May 1983, I was a full time student at Indiana University.

11 **Q: What is your educational background?**

12 A: I am a graduate of the University of Missouri at Rolla, with a Bachelor of Science
13 Degree in Economics and a minor in Engineering Management. I am also a graduate
14 of Indiana University with a Masters Degree in Business Administration in Utility
15 Regulation and Management.

16 **Q: What is your professional experience?**

17 A: I have been responsible for numerous engagements involving electric, gas, telephone,
18 water, wastewater, and stormwater utility services including analysis of utility
19 operations and finance, management, organizations, and business planning. Clients
20 served include both publicly owned and investor owned utilities; cooperative utilities,
21 customers of such utilities; and regulatory agencies. During the course of these
22 engagements, I have been responsible for the preparation and presentation of studies
23 involving the condition of existing assets, the evaluation of the expected useful life,

1 facility operations and maintenance, and organization, management, and staffing
2 studies.

3 **Q: Please describe something of the nature of the firm Burns & McDonnell.**

4 A: Burns & McDonnell is a full-service engineering, architecture, construction,
5 environmental and consulting solutions firm. Our multi-disciplined staff of more than
6 2,500 employee-owners includes engineers, architects, construction experts, planners,
7 estimators, economists, technicians and scientists, representing virtually all design
8 disciplines. We plan, design, permit, construct and manage facilities all over the
9 world.

10 **Q: For whom are you testifying in this proceeding?**

11 A: I am testifying on behalf of Midwest Energy, Inc. (Midwest Energy). Burns &
12 McDonnell was engaged by Midwest Energy to evaluate its existing generation assets.

13 **Q: What is the purpose of the study completed by Burns & McDonnell?**

14 A: The purpose of the study is to evaluate the condition of the generating assets and to
15 make a recommendation to Midwest Energy on the future operation and maintenance
16 of the generating units and future level of investment in the maintenance of the
17 facilities.

18 **Q: What were the steps taken to complete the review of existing generating assets?**

19 A: Burns & McDonnell performed the following tasks:

- 20 1. Gathered data and information related to current staffing in the generation
21 operation and maintenance group of Midwest Energy.
- 22 2. Obtained information on the operating history and records for the generation
23 assets.

- 1 3. Reviewed the data and information provided.
- 2 4. Compared the performance statistics of Midwest Energy's generation units to
- 3 performance statistics of other similar equipment operated by other utilities.
- 4 5. Completed site inspections of the Midwest Energy generation units and
- 5 conducted interviews with key operations and maintenance personnel.
- 6 6. Developed projections for the remaining life of the generation units and
- 7 prepared a list of expected operating and maintenance requirements.
- 8 7. Prepared recommendations regarding the future operation of the Midwest
- 9 Energy existing generation units and for alternatives for obtaining necessary
- 10 peaking capacity.

11 **Q: Did you conduct site inspections of the Midwest Energy generation units?**

12 A: Mr. Gary Groninger, project engineer, and I visited the Midwest Energy plant sites on
13 January 26th and 27th of 2006. Mr. Bob Bieker, Midwest Energy Maintenance
14 Supervisor, accompanied us on the tour of the plant sites and answered questions on
15 operations and maintenance at each of the Colby, Great Bend, and Bird City facilities.

16 **Q: Please describe the Colby Plant.**

17 A: The Colby plant, located in Colby, Kansas, consists of a Westinghouse model W-191-
18 G gas turbine which has a total installed capacity of 16.32 MW and net continuous
19 plant capability of 18 MW. The fuel supply for the plant is natural gas and No. 2 fuel
20 oil, with its main fuel source being natural gas. The Colby Plant was originally
21 constructed in 1970 and has been primarily used for peaking energy requirements
22 during the summer season.

23 **Q: What is the operating philosophy for the Colby Plant?**

1 A: The Colby Plant's primary function is to operate as a peaking plant during summer
2 months. The expected dispatch is during summer daytime hours when customers load
3 requirements increases the demand for power in the region. In recent years, the Colby
4 Plant has only been called upon when the market price for power has exceeded the
5 variable fuel cost per MWh of operating this unit or when Midwest Energy is unable
6 to obtain energy from any other source. The Colby Plant can generally be started
7 fairly quickly and only requires one person to operate. However, it is one of Midwest
8 Energy's most expensive resources and thus is used as a last option.

9 **Q: What were your findings regarding operations at the Colby Plant?**

10 A: The Colby Plant has been dispatched very little over the past five years. The
11 maximum annual generation occurred in 2000 when the unit generated approximately
12 796 MWh. Since that time generation has decreased significantly. Net generation at
13 the plant in 2001, 2002, and 2003 was negative due to auxiliary power usage.
14 As an older unit with a poor heat rate and high fuel costs, the Colby Plant can provide
15 capacity to the system when Midwest Energy is unable to obtain energy from other
16 resources, but it is not a source of on-peak energy that is generally competitive with
17 other generating units or market energy alternatives. As such, the unit provides
18 accredited capacity, but is generally dispatched as a last resort.

19 **Q: What maintenance has been performed at the Colby Plant in recent years?**

20 A: Since the late 1990s, Midwest Energy has completed routine maintenance at the Colby
21 Plant on a regular basis. New control system upgrades were added at the plant in the
22 late 1990s. In 2005, computer components and transducers were repaired and

1 replaced. In the spring of 2006, Midwest Energy installed a new PC and PLC along
2 with other associated equipment.

3 **Q: What are the basic maintenance strategies at the Colby Plant?**

4 A: The basic maintenance items expected to be completed at the Colby Plant include
5 rework on the cooling system on the diesel engine to eliminate overheating, cleaning
6 fuel nozzles for diesel fuel operation of the turbine, overhauling all air compressors,
7 and purchasing spare PLC card, power supply, and I/O boards.

8 **Q: What are the major maintenance strategies at the Colby Plant?**

9 A: Major maintenance items expected at the Colby Plant include installing a new diesel
10 auxiliary cooling system, installing new fuel nozzles for oil operation reliability,
11 cleaning the lube oil reservoir and installing 1800 gallons of new oil, and replacing air
12 compressors.

13 **Q: Please describe the Great Bend Plant.**

14 A: The Great Bend Plant, located in Great Bend, Kansas, consists of three 1 MW
15 Worthington dual fuel internal combustion engines and two 3 MW Hamilton internal
16 combustion engines giving the facility a total installed capacity of approximately 9
17 MW . The preferred fuel supply for the units is a mixture of 95 percent natural gas
18 and 5 percent No. 2 fuel oil. The generating units at Great Bend were originally
19 constructed between 1948 and 1956 and have been primarily used for peaking energy
20 requirements in the summer months.

21 **Q: What is the operating philosophy for the Great Bend Plant?**

22 A: The Great Bend Plant's primary function is to operate as a peaking plant. As a
23 peaking plant, the expected dispatch is during summer daytime hours when

1 customers' load requirements increase the demand for power in the region. Recently,
2 the plant has only dispatched when the market price for power has been high, or when
3 Midwest Energy is unable to obtain energy from any other source.

4 **Q: What were your findings regarding operations at the Great Bend Plant?**

5 A: The plant has been dispatched very little over the past five years. The maximum
6 generation achieved was 673 MWh in 2000. The plant was originally used as a source
7 of base load generation in the summer months, but has shifted its role to only provide
8 peaking energy requirements due to increasing fuel costs and more competitive
9 markets.

10 **Q: What maintenance has been performed at the Great Bend Plant in recent years?**

11 A: Currently, the Great Bend Plant does not have an operator or mechanic on site. Basic
12 maintenance is handled on a contract basis for an annual fee. This maintenance
13 includes activities such as filling the cooling system, checking the engines for leaks,
14 circulating water through the towers and heat exchangers, cleaning heat exchangers on
15 an as needed basis, and winterizing the plant.

16 **Q: What are the basic maintenance strategies at the Great Bend Plant?**

17 A: The basic maintenance expected to be completed at the Great Bend Plant is to
18 continue the maintenance contract and the activities currently being completed.

19 **Q: What are the major maintenance strategies at the Great Bend Plant?**

20 A: If Midwest Energy decides to continue to operate the Great Bend Plant as a peaking
21 unit it will be necessary to complete several major maintenance items. This
22 maintenance includes the installation of new water lines on the cooling tower,

1 installation of new contactors and motor starters on tower 4, replacement of
2 intercoolers on two large engines, and a complete overhaul of engine number one.

3 **Q: Please describe the Bird City Plant.**

4 A: The Bird City Plant, located in Bird City, Kansas, consists of two 2 MW Electro-
5 Motive internal combustion engines giving the facility a total installed capacity of
6 approximately 4 MW. The fuel supply for the units is No. 2 fuel oil. The generating
7 units at Bird City were originally constructed in the mid 1960's and have been
8 primarily used for peaking energy requirements in the summer months.

9 **Q: Is the Bird City Plant operating at full capacity?**

10 A: One of the two units at Bird City recently sustained damage due to water incursion
11 into the cylinders and a significant investment is required to return the unit to active
12 service. The plant is currently only rated for 2 MW of accredited capacity.

13 **Q: What is the operating philosophy at the Bird City Plant?**

14 A: The plant's primary function is to be used as a peaking plant. As a peaking plant, the
15 expected dispatch is during summer daytime hours when customers' load
16 requirements increase the demand for power in the region. The Bird City Plant is the
17 most expensive plant to operate so it is used sparingly as a last resort.

18 **Q: What were your findings regarding operations at the Bird City Plant?**

19 A: The Bird City Plant has been dispatched very little over the past five years. The
20 maximum annual generation occurred in 2000 with 87 MWh of output. As an older
21 unit with high fuel costs, the Bird City Plant can provide capacity to the system when
22 Midwest Energy is unable to obtain energy from other resources, but it is not a source
23 of on-peak energy that is competitive with other generating units or market energy

1 alternatives. As such, the unit provides accredited capacity, but is generally
2 dispatched as a last resort.

3 The Bird City Plant is usually unmanned throughout the year except for routine
4 maintenance and when the unit is dispatched. The plant was originally constructed in
5 the mid 1960's. Historically, the Bird City Plant has been a reliable source of on-peak
6 energy and has not required a significant amount of maintenance. In 2004, one of the
7 units was taken out of service due to 10 bad pistons and one bent connecting rod.

8 **Q: What maintenance has been performed at the Bird City Plant in recent years?**

9 A: Midwest Energy has performed routine maintenance including changing oil filters
10 and air filters on the engines, servicing the fuel system and servicing the starting
11 batteries.

12 **Q: What are the basic maintenance strategies at the Bird City Plant?**

13 A: The basic maintenance strategies include continuing the practices currently being
14 completed and completing liner inspections and cleaning out the air boxes and
15 replacing the starting batteries.

16 **Q: What are the major maintenance strategies at the Bird City Plant?**

17 A: If Midwest Energy decides to continue to operate the Bird City Plant several major
18 maintenance items will need to be completed. These items include the installation of
19 10 new pistons and a new connecting rod, installation of 16 new fuel injectors,
20 installing new water pumps on unit number 2, and overhauling the turbocharger on
21 both units.

22 **Q: Did Burns & McDonnell evaluate the possibility of Midwest Energy installing a**
23 **new generation alternative?**

1 A: Burns & McDonnell assisted Midwest Energy in evaluating the possibility of
2 installing new generation units for Midwest Energy. Midwest Energy asked Burns &
3 McDonnell to assist with a power supply evaluation including purchases and
4 installation of a new generation unit. Mr. Gary Groninger is submitting testimony
5 pertaining to the study completed.

6 **Q: Did you complete a comparison of Midwest Energy's existing generation units to**
7 **other similar units?**

8 A: Yes.

9 **Q: What were the results of the comparisons?**

10 A: The benchmarking analysis for Midwest Energy's plants is summarized as follows:

- 11 1. Plants in the Colby Plant's peer group averaged higher capacity factors, higher
12 total non-fuel operation and maintenance costs, and a greater number of
13 employees between 1999 and 2003. The Colby Plant's average heat rate was
14 comparable to other plants in the peer group.
- 15 2. Plants in the Great Bend Plant's peer group averaged higher capacity factors, and
16 higher heat rates between 1999 and 2003. The Great Bend's average total non-
17 fuel operation and maintenance costs were higher than other plants in the peer
18 group. This could be a result of the Great Bend Plant's comparatively older age
19 and need for additional repairs.
- 20 3. Plants in the Bird City Plant's peer group averaged higher capacity factors, and
21 higher operation and maintenance costs between 1999 and 2003. Heat rates for
22 plants of this size were not available.

23 Q: Did you evaluation operations and staffing at the Midwest Energy plants?

1 A: Yes.

2 **Q: What were your findings?**

3 A: The Midwest Energy plants are usually unmanned throughout the year except for
4 routine maintenance and when the units are dispatched. When dispatched, a nearby
5 lineman or maintenance technician must drive to the plant to start it and ensure it is
6 operating adequately. This occasionally causes a problem, especially during summer
7 months when Midwest Energy staff is dedicated to maintaining substations, meters,
8 and completing various other construction projects.

9 Currently, Midwest Energy's staff is limited on their ability to operate and perform
10 maintenance on the generation assets since most of the employees that were dedicated
11 to the assets have been reduced over the years through attrition. To ensure continued
12 stability and flexibility in maintaining and operating the existing generation assets, a
13 Midwest Energy maintenance technician should be trained to operate and maintain the
14 plants. This could be accomplished by hiring another employee or by assigning these
15 responsibilities to one or more existing personnel.

16 As an option, Midwest Energy can investigate and negotiate operating agreements for
17 the plants with a company specializing in providing such services similar to the
18 current agreement at Great Bend.

19 **Q: As a result of your study did you develop conclusions?**

20 A: Yes.

21 **Q: What are these conclusions?**

22 A: Based on the results of the evaluation of the Colby, Great Bend, and Bird City Plants
23 conducted for Midwest Energy, Burns & McDonnell concludes the following:

- 1 1. The plants have been maintained in an adequate operating condition. Routine
2 maintenance and upgrades have been conducted at the plants since the time
3 they were initially built, allowing them to be a reliable source of peaking
4 energy for over 35 years.
- 5 2. Maintenance parts for the plants and auxiliary equipment are reasonably
6 available, but will tend to be more difficult to secure in the future. From a
7 technical perspective, there is no current indication that the Colby or Great
8 Bend plants should be retired due to: (a) imminent potential failure, (b)
9 scarcity of needed replacement parts, (c) environmental or operating
10 restrictions, or (d) significant reliability or operating problems.
- 11 3. The Bird City Plant currently requires a \$70,000 investment to bring one of the
12 two 2 MW Electro-Motive internal combustion engines back into service.
13 This cost is to replace 10 pistons and 1 connecting rod. This replacement
14 should be put on hold until further evaluation is completed.
- 15 4. From an economic perspective, each of Midwest Energy's generation assets
16 have relatively high heat rates combined with high fuel costs. The net plant
17 heat rates are further increased by the nearly continuous station power loads
18 from the plant's auxiliary equipment. These operational inefficiencies cause
19 the fuel costs and other production costs at the plants to be significantly in
20 excess of the cost to purchase market power during much of the on peak hours
21 each year.
- 22 5. From a technical perspective, Midwest Energy's generation resources have
23 been used as a reliable source of peaking energy and continue to provide

1 operational stability to the system. The unit at Colby and the operating unit at
2 Bird City both have black start capability, which enable them to be placed
3 online when called upon. These generation resources are typically dispatched
4 when energy cannot be obtained from other resources or the cost to purchase
5 market power exceeds the cost to generate internally. Midwest Energy has
6 also recently dispatched the plants when they have experienced transmission
7 access constraints.

8 **Q: What recommendations did you make to Midwest Energy regarding the**
9 **plants?**

10 **A:** Based on the results of the evaluation of the Colby, Great Bend, and Bird City
11 Plants conducted for Midwest Energy, Burns & McDonnell recommends that the
12 following actions be considered for implementation:

- 13 1. In the near term, Midwest Energy should only provide basic maintenance
14 activities at each of the plants. After solidifying other power supply options,
15 Midwest Energy can make a decision regarding retirement of some of the units
16 in the 2008 to 2010 time frame.
- 17 2. Midwest Energy should not consider refurbishment of the damaged Bird City
18 unit at this time. However, it is recommended that basic maintenance should be
19 continued on the operating unit.
- 20 3. Midwest Energy should consider training an additional internal staff member to
21 operate and maintain the generation assets, contracting out plant operation and
22 maintenance services to a third party vendor, or hiring an additional maintenance
23 technician. This will provide Midwest Energy with the flexibility and capability

1 to operate these units for peaking energy requirements until the decision is made
2 to retire them.

3 4. Midwest Energy should evaluate the asset retirement costs associated with
4 discontinuing operations at each of the facilities.

5 **Q: Does this conclude your testimony?**

6 A: Yes.