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Issue: Supply Plan and Business Plan
Maintenance Expense Normalization
Witness: F. Dana Crawford
Type of Exhibit: Direct Testimony
Sponsoring Party: Kansas City Power & Light Company
Case No.: ER-2006-____
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MISSOURI PUBLIC SERVICE COMMISSION

CASE NO. ER-2006-____

DIRECT TESTIMONY

OF

F. DANA CRAWFORD

ON BEHALF OF

KANSAS CITY POWER & LIGHT COMPANY

**Kansas City, Missouri
January 2006**

***** [REDACTED] *** Designates that "Proprietary" Information has been Removed.
"Proprietary" or "Highly Confidential" Information has been Removed from Certain
Schedules Attached to This Testimony Designated ("P") or ("HC")
Pursuant to the Standard Protective Order.**

DIRECT TESTIMONY

OF

F. DANA CRAWFORD

Case No. ER-2006-_____

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

2 A: My name is F. Dana Crawford. My business address is 1201 Walnut, Kansas City,
3 Missouri 64106-2124.

4 **Q: By whom and in what capacity are you employed?**

5 A: I am employed by Kansas City Power & Light Company ("KCPL") as Vice President,
6 Plant Operations.

7 **Q: What are your responsibilities?**

8 A: My responsibilities include the direction of the operation and maintenance of KCPL's
9 fossil-fuel generating stations, including their support and construction services.

10 **Q: Please describe your education, experience and employment history.**

11 A: I graduated from the University of Missouri-Columbia with a degree in Civil
12 Engineering. I also have a Master of Business Administration degree from DePaul
13 University. I joined KCPL in 1977 as a Construction Engineer on the Wolf Creek
14 Nuclear Plant project. In 1980, I was promoted to Manager, Nuclear and promoted to
15 Director, Nuclear Power in 1983. Following completion of Wolf Creek, I became
16 Manager, Distribution Construction & Maintenance, in 1988 and Manager, Customer
17 Services, in 1989. In 1994, I became Plant Manager of the LaCygne Generating Station.

1 **Q: Have you previously testified in a proceeding at the Missouri Public Service**
2 **Commission (“MPSC”) or before any other utility regulatory agency?**

3 A: Yes, I testified before the MPSC in KCPL’s rate case concerning the Wolf Creek Nuclear
4 Generating Station.

5 **Q: What is the purpose of your testimony?**

6 A: The purpose of my testimony is threefold. First, I will describe the supply-related
7 projects that KCPL seeks to include in its rate base and confirm that each project satisfies
8 the in-service criteria set forth in the Stipulation and Agreement concerning KCPL’s
9 Regulatory Plan, which the MPSC approved in Case No. EO-2005-0329 (“Regulatory
10 Plan Stipulation and Agreement”). Second, I will provide historical information
11 concerning KCPL’s plant operations and outline the steps KCPL needs to take to
12 continue the successful operation of its generation facilities. Finally, I will describe the
13 normalization of maintenance expenditures included in this proceeding and the costs
14 related to the addition of wind generation.

15 **I. RATE BASE ADDITIONS**

16 **Q: Please describe how KCPL’s significant supply-related projects have met the in-**
17 **service qualifications for inclusion in rate base.**

18 A: Hawthorn Unit 6/9: Hawthorn Unit 6 is a Siemens V84.3A1 gas turbine and Siemens air-
19 cooled generator. It is the first of the V84.3A1’s to be built and installed in the United
20 States. It is located on the Hawthorn Plant site on the Missouri River, northeast of
21 downtown Kansas City. Construction was completed in May of 1997. However, due to
22 issues with the new design of the advanced gas turbines, KCPL did not fully accept Unit
23 6 until July of 1999. Unit 6 is capable of running in synchronous condenser operation

1 producing 60 MVAR overexcited output at 17 kV. Up until the addition of the heat
2 recovery steam generator (“HRSG”), which is described below, KCPL operated Unit 6
3 solely as a simple-cycle unit.

4 Hawthorn Unit 9 is the HRSG and re-powered steam turbine with supplemental natural
5 gas duct firing. The HRSG was installed with a Selective Catalytic Reduction Device
6 (“SCR”) system utilizing ammonia to reduce NOx emissions. Unit 6 exhaust provides
7 the supplied heat input for the HRSG. The units are therefore combined as Unit 6/9.
8 Construction was completed and KCPL accepted Unit 9 in July of 2000.

9 In un-fired conditions, *i.e.*, combined-cycle operation without supplemental duct firing,
10 Unit 6 is rated at 132 MW and Unit 9 is rated at 55 MW. In fired conditions, *i.e.*,
11 combined-cycle with supplemental duct firing, Unit 6 continues to be rated at 132 MW,
12 but Unit 9’s rating increases to 137 MW.

13 Hawthorn Units 7 and 8: Hawthorn Units 7 and 8 are General Electric 7 EA gas turbines
14 and General Electric 7A7 Air-cooled Generators. The units are built on the north end of
15 the Hawthorn Plant site. They are designed for simple-cycle, natural gas-fired operation
16 to serve peak load. Construction began in fall of 1999 and was completed in May 2000.
17 KCPL accepted Unit 7 in May of 2000 and accepted Unit 8 in July of 2000. Each unit is
18 rated at 72 MW base and 77 MW peak. The units have a Dry Low NOx combustion
19 system. Due to the supply of gas from two different suppliers, one with low pressure,
20 KCPL installed two gas compressors to serve the units.

21 Hawthorn Unit 5: Hawthorn Unit 5 is a natural circulation, single drum, single reheat,
22 top-supported radiant boiler and a General Electric steam turbine and hydrogen-cooled
23 generator. It is located at the Hawthorn Plant site. Unit 5 was rebuilt following an

1 explosion that occurred in 1999. Commercial acceptance of the rebuilt unit occurred in
2 June of 2001. KCPL also installed an SCR system, Spray Dry Absorbers (“SDA”), and a
3 Fabric Filter Dust Collector (*i.e.*, a bag house) to satisfy current environmental standards.
4 The current capacity of Unit 5 is 565 MW.

5 West Gardner Units 1, 2, 3 and 4: The West Gardner Plant site is located west of
6 Gardner, Kansas. The four West Gardner units are General Electric 7 EA gas turbines
7 and Brush Air-Cooled Generators. The plant is designed as a peaking facility and all the
8 units are designed for simple-cycle, natural gas-fired operation. Construction began in
9 the summer of 2002 and KCPL accepted the units in May of 2003. Each unit is rated at
10 72 MW base and 77 MW peak.

11 The units have a Dry Low NOx combustion system. In addition, because there was not
12 any gas supply close to the plant, KCPL constructed a 3.2-mile gas transmission line to
13 bring gas into the plant. KCPL owns and operates the 3.2-mile gas transmission line.

14 Osawatomie Unit 1: The Osawatomie Plant site is located just south of Paola, Kansas.
15 The site is arranged for eight simple-cycle, gas-fired turbines. One unit has been installed
16 on this site. It is a General Electric 7 EA gas turbine and Brush Air-Cooled Generator.
17 The plant is designed as a peaking facility and is designed for simple-cycle, natural gas-
18 fired operation. Construction began in the winter of 2002. KCPL accepted Unit 1 in
19 June of 2003. The unit is rated at 72 MW base and 77 MW peak. The unit has a Dry
20 Low NOx combustion system.

1 **Q: Did the Regulatory Plan Stipulation and Agreement provide specific in-service**
2 **criteria for the types of supply-related projects KCPL seeks to include in rate base?**

3 A: Yes, Appendix H of the Regulatory Plan Stipulation and Agreement sets forth specific in-
4 service criteria for each type of supply-related project at issue here.

5 **Q: Does each project satisfy the in-service criteria provided in the Regulatory Plan**
6 **Stipulation and Agreement?**

7 A: Yes, the projects satisfy the in-service criteria set forth in the Regulatory Plan Stipulation
8 and Agreement.

9 **Q: Please explain.**

10 A: With respect to Hawthorn Unit 6/9, all major construction and pre-operational testing has
11 been successfully completed. The combustion turbine, steam turbine, and the HRSG
12 were successfully tested and met all operational guarantees and currently operate
13 successfully. The combustion turbine unit will successfully start and synchronize from a
14 local start signal. The combustion turbine unit will also successfully shutdown from a
15 local shutdown signal. The combustion turbine unit has demonstrated that it will operate
16 at minimum load for at least one hour. The combustion turbine unit was successfully
17 tested to operate at or above 98% of nominal capacity for commercial acceptance and
18 currently operates successfully. The unit is an intermediate loaded unit and runs below
19 the 0.60 capacity factor. Sufficient transmission facilities exist to carry the total design
20 net electrical capacity of Hawthorn Unit 6/9 to KCPL's distribution/transmission system.
21 With respect to Hawthorn Units 7 and 8, West Gardner Units 1, 2, 3 and 4, and
22 Osawatomie Unit 1, to which the same in-service criteria apply, all major construction of
23 the units has been completed. All pre-operational testing was successfully completed

2

1 prior to KCPL's commercial acceptance and operation of the units. Specifically, prior to
2 KCPL's acceptance of the units, each unit successfully demonstrated its ability (i) to start
3 and synchronize from a local or remote start signal; (ii) to meet fast start criteria; (iii) to
4 shutdown from a local or remote shutdown signal; (iv) to operate at minimum load for at
5 least one hour; (v) to operate at or above 98% of peak load; (vi) to operate at or above
6 98% of base load. Each of the units was successfully tested and met all operational
7 guarantees and currently operates successfully. Sufficient transmission interconnection
8 facilities exist for the total plant design net electrical capacity of each of the units. In
9 addition, sufficient transmission facilities exist for the net electrical capacity of the units
10 from the generating station into the KCPL service territory.

11 With respect to Hawthorn Unit 5, the unit has demonstrated that it can operate at its
12 design minimum load or above. The unit has also demonstrated that it is able to operate
13 at or above a 0.60 capacity factor for a reasonable period of time. The unit has
14 demonstrated that it can run at or above 98% of its design maximum continuous rating
15 for at least 4 hours. The unit successfully completed all major equipment startup test
16 procedures. Sufficient transmission interconnection facilities exist for the total plant
17 design net electrical capacity of the unit. In addition, sufficient transmission facilities
18 exist to transmit the total plant design net electrical capacity from the unit into the KCPL
19 service territory.

20 To demonstrate that Unit 5 can be operated using coal as its primary fuel, the unit
21 satisfied the following criteria: (i) boiler control tuning completed such that the unit can
22 operate safely with all control systems in auto; (ii) ash build up in the furnace and
23 backpass areas were monitored and found to be within expected levels; (iii) all

1 boiler/turbine interlocks have been proven to work as designed; (iv) soot blowing timing
2 and sequences have been set to maintain the cleanliness of the tube area; and (v) all
3 critical alarm systems are operational and functioning properly.

4 Finally, the emission equipment installed at the unit is operational and has been
5 demonstrated to remove 93% or more of the NO_x, SO₂, particulate, and mercury
6 emissions it was installed to remove over a continuous four-hour period while operating
7 at or above 95% of the unit's design load. The equipment has also demonstrated its
8 ability to remove 88% or more of the same emissions it was installed to remove over a
9 continuous 120-hour period while operating at or above 80% of the unit's design load.

10 II. BUSINESS PLAN

11 **Q: Please describe KCPL's historical operation of its generating units?**

12 **A:** KCPL has had significant success in the operation of its generating units. The net
13 generation produced by KCPL's existing coal fleet has increased significantly in recent
14 years. During the past four years (both annually and in total), net megawatt-hour
15 production from the coal units has reached the highest levels in KCPL's history.
16 In other critical performance areas, the coal fleet's equivalent availability has also
17 increased and the total production costs of the coal fleet have remained at the very lowest
18 levels both regionally and nationally. This information can be found in the Supply
19 Business Plan, which is attached hereto as Schedule FDC-9 (P/HC).

1 **Q. What will be necessary for KCPL to continue this success?**

2 A. There are two primary areas that will be critical. First, the upcoming unprecedented work
3 force turnover must be effectively managed. The necessary workplace culture,
4 management talent and technical skills must be provided to maintain and operate the
5 existing and future generating assets at high levels of performance.

6 Secondly, ongoing performance improvements will be needed to continue to deliver high
7 levels of output from the existing aging generating assets while integrating the new
8 environmental equipment into plant operations.

9 **Q. Please describe the challenges that KCPL faces regarding the generating station**
10 **workforce?**

11 A. KCPL has a very experienced workforce for its generating stations, many of whom were
12 hired at the time of construction of the units and are now nearing retirement age. In fact,
13 within the next five years, over 65% of the fossil station management employees and
14 over 40% of the fossil station bargaining unit employees will be eligible for retirement.
15 Approximately 20% more of the employees in both groups will be eligible for retirement
16 within ten years. Because of the potential retirements of so many experienced
17 employees, KCPL will have significant ongoing recruitment, hiring and training efforts
18 for the needed replacement employees. In addition, KCPL will incur not only the
19 increased costs of “on-boarding” large numbers of new employees, but also the costs to
20 ensure that sufficient “overlap” and “knowledge transfer” training time will be available
21 with the experienced employees before they leave.

1 **Q. What is KCPL’s plan to address these workforce challenges?**

2 A. There are a number of ongoing efforts in various areas. First, KCPL has introduced a
3 corporate-wide “winning culture” initiative to improve employee engagement and
4 accountability in the business. This has involved efforts such as leadership development
5 and training programs, increased emphasis on communication throughout the
6 organization and encouragement of learning and growth opportunities at all levels. As
7 the effects of the “winning culture” are felt, it will have a direct benefit for the
8 recruitment and hiring of new employees as well as the retention of existing employees.
9 In addition, KCPL is developing a Strategic Workforce Plan. This will provide a
10 comprehensive succession plan that integrates all areas of the generation workforce
11 planning including projected retirements, management development and training needs,
12 craft skill requirements, apprentice training durations, operator training needs,
13 recruitment and hiring lead times, etc. KCPL is also enhancing its management training
14 and development programs. In particular, KCPL is emphasizing training for new first-
15 level supervisors.
16 Both craft apprentice and operator training programs are also receiving a great deal of
17 attention. New and ongoing craft apprentice classes are in progress. KCPL is evaluating
18 the operator training processes to determine if additional trainers will be needed to
19 support the increased volume of operators requiring both initial and refresher training.
20 KCPL is considering increasing the “off-shift” use of the existing unit-specific training
21 simulators at each plant site. KCPL is also evaluating the need for additional support for
22 efforts to recruit both skilled and entry-level new employees.

1 **Q. What is KCPL doing to address performance improvements needed to maintain**
2 **high levels of output from its existing generating assets?**

3 **A.** There are a variety of performance improvement projects focused in four key areas.
4 The first area involves process improvement projects such as the Electric Power Research
5 Institute (“EPRI”) Plant Maintenance Optimization (“PMO”) process that has been
6 piloted at LaCygne and is planned to be implemented at all the generating stations. The
7 purpose of the PMO process is to facilitate moving plant maintenance work from a
8 reactive mode to a proactive (or planned) maintenance strategy. The PMO process also
9 provides a means to communicate and share best practices on a consistent basis between
10 plants. For example, by using the PMO maintenance basis and root-cause analysis,
11 equipment breakdown information at one location can easily be discussed with the other
12 plant sites.
13 The second major area of performance improvements relates to outage planning. As the
14 cost of a lost day of production has increased, the focus of outage management has
15 moved from one of cost control to that of schedule control. The goal is to minimize the
16 outage durations while still accomplishing all the work necessary to run until the next
17 scheduled outage. KCPL continues to focus on developing more comprehensive
18 integrated outage schedules that it can analyze to determine the shortest schedule well in
19 advance of the outage. Another major component of maintenance planning is the
20 development of standardized work packages. KCPL is working to develop standardized
21 work packages for maintenance at all generating stations. Having pre-planned work
22 packages greatly improves crew productivity by having all the information and material
23 necessary to do the maintenance task ready when the work is assigned.

1 The use of technology is the third significant area of performance improvement initiatives
2 for KCPL. For a number of years, KCPL has utilized dedicated predictive maintenance
3 teams at each plant site to gather data (vibration, oil sampling, thermography, sonic
4 testing, etc.) to proactively look for early “warning” signs of possible equipment failures.
5 These efforts have been successful and are a key component of the PMO process.
6 Recently, KCPL installed a new technology application called “Smart Signal” at each
7 KCPL generating unit. “Smart Signal” is a proprietary process that takes real-time plant
8 operating data and feeds it into a model that compares it to “normal” conditions. Any
9 deviation can be an indication of an equipment problem needing attention. “Smart
10 Signal” is also a “backup” tool that can assist new or inexperienced employees during
11 trouble-shooting activities.

12 The “Pi” data historian that is part of each unit’s Distributed Controls System is another
13 technology that is being utilized to detect “abnormal” trends that could indicate
14 equipment or operational problems. Data from the Pi historian can be automatically
15 trended and plotted against other related trend data to highlight concerns.

16 Each KCPL unit has a plant-specific operations simulator for operator training.
17 Evaluations are underway to expand the use of these simulators to accomplish increased
18 operator training during off-shifts. The simulators are also proving valuable in allowing
19 “trial” runs of proposed changes in operating procedures or practices.

20 The fourth major area of plant improvements involves upgrades or retrofit projects to the
21 existing stations. These projects may be necessary for a number of reasons such as aging
22 plant components reaching the end of their useful life and upgrade projects to increase the
23 output of the plant. With the age of the KCPL generating stations, there are numerous

1 components that have reached the end of their useful lives and are required to be changed
2 out. These change-outs could be for safety reasons or to maintain the existing output and
3 reliability of the plants. An example of this situation is the reheater and economizer
4 sections of the LaCygne Unit 2 and Iatan Unit 1 boilers that are being replaced during
5 upcoming outages. Examples of unit upgrades that have or will be occurring are the
6 LaCygne Unit 1 and Iatan Unit 1 turbine/generator upgrades. In both cases, the
7 replacement of aging components with new more-efficient replacements will result in
8 greater unit outputs with no increase in steam flow requirements. This is a very
9 beneficial opportunity from both an economic and an environmental viewpoint.

10 III. MAINTENANCE NORMALIZATION

11 **Q: Please describe the 2005 test year and compare it to a normal year as it pertains to**
12 **generating unit maintenance costs.**

13 A: 2005 was an abnormally low year for generation unit maintenance expense. The low
14 level of expense was primarily due to the fact that only two routine scheduled outages
15 occurred in 2005. Routine scheduled outages are generally considered to include boiler
16 outages of 20 or more days and turbine overhauls usually lasting 40 days or longer.
17 Between the years 2000-2010, including the budgeted 2006-2010 scheduled outages,
18 2002 and 2005 are the only years that include only two routine scheduled outages. All
19 other years have three to five such outages.

20 **Q: How does a routine scheduled outage typically affect KCPL's maintenance**
21 **expenses?**

22 A: Routine scheduled outages generally require the addition of contract crews to complete
23 the necessary work in a reasonable timeframe. The maintenance cost for contractors,

1 their equipment and the materials utilized during a routine scheduled overhaul will
2 normally result in an increase in non-KCPL labor maintenance expenditures of roughly
3 \$1 to \$2 million or more.

4 **Q: Did any of the maintenance outages KCPL experienced in 2005 have a different**
5 **impact on maintenance expenses than expected?**

6 A: Yes, it should be noted that one of the two scheduled outages in 2005 was a “turbine”
7 overhaul on LaCygne Unit 1. A “turbine” overhaul typically requires a longer outage
8 period than a “boiler” overhaul. This normally equates to a higher level of added
9 maintenance expense when compared to a “boiler” overhaul because more work can be
10 accomplished during the extended downtime. However, the 2005 turbine overhaul on
11 LaCygne Unit 1 was unusual due to the fact that it included significant capital
12 replacements and a turbine uprate. Because a significantly larger portion of the turbine
13 work was eligible for capitalization than normal, the maintenance costs charged to this
14 overhaul were lower than those normally expected during an extended turbine overhaul.
15 The recommendation for normalizing maintenance expense includes considerations to
16 balance the impact of historic and routine scheduled overhauls.

17 **Q: Has KCPL quantified a comparison of its 2005 maintenance expense to the expenses**
18 **KCPL has historically experienced?**

19 A: Yes, KCPL quantified the comparison by restating KCPL’s historical maintenance
20 expenses in 2005 dollars and comparing those expenses to KCPL’s 2005 maintenance
21 expenses. The low level of maintenance expense in 2005 is evident when compared to
22 these historic figures. To accurately compare historic costs to current costs, the costs
23 must take into account escalation and view expenditures in “same-year-dollars.” Handy-

1 Whitman is a highly recognized independent source of historical escalation factors, which
2 are widely used as a standard measure of historic escalation. The historic figures shown
3 in the attached Schedule FDC-1 have been adjusted to 2005 dollars utilizing the Handy-
4 Whitman index. Schedule FDC-1 demonstrates that 2005 non-labor maintenance
5 expense is below various averages for reported spending between 2000-2004. Note that
6 Grand Avenue and Wolf Creek are NOT included in the costs shown in Schedule FDC-1.
7 This is because Wolf Creek utilizes an accrual/reversal accounting process, which
8 maintains fairly constant maintenance expense and Grand Avenue is no longer a
9 maintenance liability for KCPL.

10 **Q: Please describe a more appropriate measure of normalized maintenance expense.**

11 A: Due to the issues mentioned above, KCPL recommends utilizing a six-year average
12 incorporating 2000-2005 to establish an equitable and normal expectation for annual
13 maintenance expense. Several adjustments are required in order to establish this historic
14 average as a measure of normal maintenance. The recommended adjustments can be
15 summarized in three distinct categories. The first category of adjustments, "Asset-Based
16 Adjustments," corrects for changes in the asset base during the 2000-2005 timeframe.
17 For example, this category includes the fact that five new combustion turbines are now
18 included in KCPL's asset base for maintenance expense. Maintenance expense for these
19 five new combustion turbines is not reflected in the six-year historic average.
20 The second category of adjustments, "Normalized Adjustments for Known Changes,"
21 addresses known maintenance expense items not included in the 2000-2005 historic
22 average. This category includes future turbine overhauls that are not shown in the
23 historic figures.

1 The third category of adjustments, "Normalized Adjustments for Comprehensive Plan
2 Additions," discusses planned cost issues that are expected to occur beyond 2006.

3 **Q: Please describe the adjustments pertaining to "Asset-Based Adjustments"?**

4 A: The first adjustment considers the fact that Hawthorn Unit 5 was under construction early
5 in the 2000-2005 period. The unit went in-service in June of 2001. 2001 and 2002 are
6 considered to be unusual years for maintenance expense on Hawthorn Unit 5 for the
7 following reasons: (i) a significant level of warranty maintenance was performed at no
8 cost to KCPL; and (ii) the unit was essentially new and therefore would not be expected
9 to require the same level of maintenance as a unit with five or more years of wear and
10 tear, *e.g.*, boiler tube failures would not be expected as a result of numerous heat cycles
11 or other longer-term operating impacts.

12 For Hawthorn Unit 5, the recommendation is to utilize the three-year average of 2003-
13 2005. Although these years still reflect an essentially new unit and therefore lower
14 maintenance expense than we would anticipate in later years, 2003-2005 are much more
15 indicative of the expected maintenance expense than 2000-2002. The annual levels of
16 maintenance expense for Hawthorn Unit 5 are shown in the attached Schedule FDC-2,
17 which clearly shows the unusually low maintenance expense in the years 2000-2002.

18 The second adjustment is to remove Grand Avenue expense from historic and future
19 expectations because this unit is no longer owned by KCPL and is no longer a
20 maintenance liability.

21 The third adjustment is for the five new combustion turbines added to KCPL's asset base
22 in 2005. These units were under lease until mid-2005. No maintenance expense was
23 incurred on these units until KCPL took ownership on May16, 2005. An upward

1 adjustment should be made for 2005 and future years to reflect the addition of this new
2 maintenance liability. The recommendation is to replace the historic combustion turbine
3 expense with the average budgeted expense for 2006-2010. The average annual budgeted
4 expense for the Northeast Oil turbines, Hawthorn Units 7 and 8, West Gardner Units 1, 2,
5 3 and 4 and the Osawatomie combustion turbine is \$546,705 per year, which should be
6 used as the normalized maintenance cost for this group of combustion turbines.

7 There is a fourth adjustment that will be required for the addition of 100.5 MW of wind
8 generation scheduled to be added in late 2006. Contract negotiations with GE and
9 enXco, Inc. indicate that the first full year of wind operation will add ** [REDACTED] ** to
10 operation and maintenance expense. We currently do not have enough information to
11 separate the categories of operations and maintenance for the wind expense. Therefore,
12 the ** [REDACTED] ** is not included in the recommended adjustment of non-labor
13 maintenance expense. Instead it is shown as a separate entry in the summary table
14 attached as Schedule FDC-8 and is included separately as Adj-52 in the Summary of
15 Adjustments in KCPL witness Don A. Frerking's Schedule DAF-2. It should also be
16 noted that the recommended adjustment to operations and maintenance expense does not
17 include an estimated ** [REDACTED] ** per year for Payment In Lieu Of Taxes ("PILOT").
18 The PILOT adjustment is included in the property tax adjustment-Adj-33b in the
19 Summary of Adjustments, which is attached to the direct testimony of KCPL witness
20 Don Frerking as Schedule DAF-2. A summary of the Wind costs is shown in the
21 attached Schedule FDC-3 (P).

22 **Q: Please describe the adjustments recommended under "Normalized Adjustments for**
23 **Known Changes"**

1 A: The table attached as Schedule FDC-4 **(P)** compares the six-year historic turbine
2 overhauls to planned and expected turbine overhauls in the six-year period from 2006-
3 2011. As demonstrated in this table, the number of historic and future turbine overhauls
4 and the impacted units are identical with the exceptions of future overhauls on the
5 Hawthorn Unit 5 and LaCygne Unit 2 turbines. The turbine overhauls on Hawthorn Unit
6 5 and LaCygne Unit 2 are not reflected in the historic costs. Adjustments need to be
7 made to reflect these planned turbine overhauls.

8 Future plans call for implementing “sectionalized turbine overhauls” for Hawthorn
9 Unit 5. Under this plan, individual sections of the turbine will receive maintenance on a
10 rotating basis. Plans call for one of the three turbine sections to be maintained every two
11 years. The result on turbine performance is expected to be similar to a standard six-year
12 turbine overhaul cycle. However, the proposed approach will avoid the need for
13 scheduling the much longer turbine outages required under a six-year turbine overhaul
14 cycle.

15 The 2006-2010 budget includes the first two sectionalized turbine overhauls. The
16 budgeted cost of the Hawthorn Unit 5 sectionalized overhauls and the recommended
17 adjustment to the 2000-2005 historic average are shown in the attached Schedule FDC-5
18 **(P)**. The difference in cost between the two sectionalized overhauls is a reflection of the
19 different scope of work and material costs associated with the different sections of the
20 turbine. The recommendation is to include a four-year average that includes the two
21 years when turbine maintenance is scheduled and two years when no turbine maintenance
22 is scheduled. The resulting adjustment is \$1,125,000 per year.

1 LaCygne Unit 2 turbine overhauls are not included in the 2000-2005 historic data.

2 LaCygne Unit 2 has a budgeted turbine overhaul scheduled in **[REDACTED]**. LaCygne Unit
3 2 last experienced a turbine overhaul in 1997, which indicates the potential for a **[REDACTED]
4 [REDACTED]** cycle for turbine overhauls on this unit. The associated 2006 budget expense and
5 the recommended **[REDACTED]** average cost for this turbine overhaul are shown in the
6 attached Schedule FDC-6 (P).

7 The final adjustments under "Known Changes" involve the Generator Start-Up ("GSU")
8 Transformer failures that occurred on Hawthorn Unit 5 and Montrose Unit 3 in 2005.

9 The maintenance costs associated with these failures are not a normally expected
10 occurrence. The maintenance expense associated with the Hawthorn Unit 5 transformer
11 was largely capitalized. This is because the replacement transformer for Hawthorn Unit 5
12 is owned by KCPL. The resulting increase in maintenance expense was \$79,916, which
13 is included in 2005 maintenance expense. The Montrose Unit 3 replacement transformer
14 was leased from another utility. Because this involved an asset not owned by KCPL, the
15 work to install the spare transformer was charged to maintenance. The maintenance
16 expense charged to the transformer failure in 2005 was \$521,180. The total adjustment in
17 2005 maintenance expense for the two transformer failures is a downward adjustment of
18 \$601,096.

19 **Q: Please describe the potential adjustment pertaining to normalized adjustments for**
20 **Comprehensive Plan additions.**

21 **A:** KCPL's future annual maintenance expense is expected to be impacted by the addition of
22 new generating resources and new environmental control equipment.

1 The May 2007 addition of an operating SCR on LaCygne Unit 1 is one example. The
2 maintenance impacts of the LaCygne Unit 1 SCR are shown in the attached Schedule
3 FDC-7 (P), which indicates an increase in maintenance expense of over **[REDACTED]**
4 in 2007 and over **[REDACTED]** during the first full year of operation in 2008.

5 Further additions to future maintenance expense will result from the additions of an SCR,
6 wet scrubber and baghouse on Iatan Unit 1 in late 2008, the refurbishment of the
7 LaCygne Unit 1 scrubber and the addition of a baghouse in 2009, and the completion of
8 Iatan Unit 2 scheduled for 2010. The maintenance costs associated with these future
9 additions are NOT included in the recommended maintenance adjustment at this time.

10 **Q: Can you summarize the adjustments to the 2005 test year, which are recommended**
11 **to reflect a normalized maintenance year?**

12 **A:** A summary of the recommended adjustments is shown in the attached Schedule FDC-8,
13 Summary of Normalized Adjustments. The first entry shows the 2005 non-labor
14 maintenance expense including nine months of actual results and three months of
15 budgeted expense totaling \$24,604,204. The next entry is the recommended base
16 maintenance expense utilizing the recommended six-year average of 2000-2005
17 inclusive. The next line shows the recommended upward adjustment to 2005 results of
18 \$729,165. Following this is the adjustment to remove Grand Avenue, a downward
19 adjustment of \$52,070 leaving a base O&M level of \$25,281,299 before adjusting for
20 Asset-Based Changes, Known Changes or Comprehensive Plan Additions. Subsequent
21 entries document the recommended adjustments included in my testimony. The resulting
22 recommended base figure for normalized annual maintenance is \$27,895,570 an upward

1 adjustment of \$3,291,366 to the projected 2005 results. This adjustment is reflected as
2 Adj-26 on KCPL witness Don A. Frerking's Schedule DAF-2.


3 **Q: Does that conclude your testimony?**

4 **A:** Yes, it does.

In the Matter of the Application of Kansas City)
Power & Light Company to Modify Its Tariffs to) Case No. ER-2006-____
Begin the Implementation of Its Regulatory Plan)

STATE OF MISSOURI)
) ss
COUNTY OF JACKSON)

1. My name is F. Dana Crawford. I work in Kansas City, Missouri, and I am employed by Kansas City Power & Light Company as Vice President, Plant Operations.
2. Attached hereto and made a part hereof for all purposes is my Direct Testimony on behalf of Kansas City Power & Light Company consisting of twenty (20) pages and Schedules FDC-1 through FDC-9, all of which having been prepared in written form for introduction into evidence in the above-captioned docket.


F. Dana Crawford

Nicol A. Wenz
Notary Public

NICOLE A. WEHRY
Notary Public - Notary Seal
STATE OF MISSOURI
Jackson County
My Commission Expires: Feb. 4, 2007