Exhibit No.:
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-___
Date Testimony Prepared: January 27, 2006

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-____

Q: Please state your name and business address.

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

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

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

Q: What are your responsibilities?

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

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

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

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

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

Q: What is the purpose of your testimony?

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

I. RATE BASE ADDITIONS

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Q: Please explain.

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

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

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

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

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

Finally, the emission equipment installed at the unit is operational and has been demonstrated to remove 93% or more of the NOx, SO_2, particulate, and mercury emissions it was installed to remove over a continuous four-hour period while operating at or above 95% of the unit's design load. The equipment has also demonstrated its ability to remove 88% or more of the same emissions it was installed to remove over a continuous 120-hour period while operating at or above 80% of the unit's design load.

II. BUSINESS PLAN

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

A: KCPL has had significant success in the operation of its generating units. The net generation produced by KCPL's existing coal fleet has increased significantly in recent years. During the past four years (both annually and in total), net megawatt-hour production from the coal units has reached the highest levels in KCPL's history.

In other critical performance areas, the coal fleet's equivalent availability has also increased and the total production costs of the coal fleet have remained at the very lowest levels both regionally and nationally. This information can be found in the Supply Business Plan, which is attached hereto as Schedule FDC-9 **(P/HC)**.

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

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

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

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

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

Q. What is KCPL's plan to address these workforce challenges?

A. There are a number of ongoing efforts in various areas. First, KCPL has introduced a corporate-wide "winning culture" initiative to improve employee engagement and accountability in the business. This has involved efforts such as leadership development and training programs, increased emphasis on communication throughout the organization and encouragement of learning and growth opportunities at all levels. As the effects of the "winning culture" are felt, it will have a direct benefit for the recruitment and hiring of new employees as well as the retention of existing employees. In addition, KCPL is developing a Strategic Workforce Plan. This will provide a comprehensive succession plan that integrates all areas of the generation workforce planning including projected retirements, management development and training needs, craft skill requirements, apprentice training durations, operator training needs, recruitment and hiring lead times, etc. KCPL is also enhancing its management training and development programs. In particular, KCPL is emphasizing training for new first-level supervisors.

Both craft apprentice and operator training programs are also receiving a great deal of attention. New and ongoing craft apprentice classes are in progress. KCPL is evaluating the operator training processes to determine if additional trainers will be needed to support the increased volume of operators requiring both initial and refresher training. KCPL is considering increasing the "off-shift" use of the existing unit-specific training simulators at each plant site. KCPL is also evaluating the need for additional support for efforts to recruit both skilled and entry-level new employees.

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

A. There are a variety of performance improvement projects focused in four key areas. The first area involves process improvement projects such as the Electric Power Research Institute ("EPRI") Plant Maintenance Optimization ("PMO") process that has been piloted at LaCygne and is planned to be implemented at all the generating stations. The purpose of the PMO process is to facilitate moving plant maintenance work from a reactive mode to a proactive (or planned) maintenance strategy. The PMO process also provides a means to communicate and share best practices on a consistent basis between plants. For example, by using the PMO maintenance basis and root-cause analysis, equipment breakdown information at one location can easily be discussed with the other plant sites.

The second major area of performance improvements relates to outage planning. As the cost of a lost day of production has increased, the focus of outage management has moved from one of cost control to that of schedule control. The goal is to minimize the outage durations while still accomplishing all the work necessary to run until the next scheduled outage. KCPL continues to focus on developing more comprehensive integrated outage schedules that it can analyze to determine the shortest schedule well in advance of the outage. Another major component of maintenance planning is the development of standardized work packages. KCPL is working to develop standardized work packages for maintenance at all generating stations. Having pre-planned work packages greatly improves crew productivity by having all the information and material necessary to do the maintenance task ready when the work is assigned.

The use of technology is the third significant area of performance improvement initiatives for KCPL. For a number of years, KCPL has utilized dedicated predictive maintenance teams at each plant site to gather data (vibration, oil sampling, thermography, sonic testing, etc.) to proactively look for early "warning" signs of possible equipment failures. These efforts have been successful and are a key component of the PMO process.

Recently, KCPL installed a new technology application called "Smart Signal" at each KCPL generating unit. "Smart Signal" is a proprietary process that takes real-time plant operating data and feeds it into a model that compares it to "normal" conditions. Any deviation can be an indication of an equipment problem needing attention. "Smart Signal" is also a "backup" tool that can assist new or inexperienced employees during trouble-shooting activities.

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

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

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

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

III. MAINTENANCE NORMALIZATION

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

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

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

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

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

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

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

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

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

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

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

A: Due to the issues mentioned above, KCPL recommends utilizing a six-year average incorporating 2000-2005 to establish an equitable and normal expectation for annual maintenance expense. Several adjustments are required in order to establish this historic average as a measure of normal maintenance. The recommended adjustments can be summarized in three distinct categories. The first category of adjustments, "Asset-Based Adjustments," corrects for changes in the asset base during the 2000-2005 timeframe. For example, this category includes the fact that five new combustion turbines are now included in KCPL's asset base for maintenance expense. Maintenance expense for these five new combustion turbines is not reflected in the six-year historic average.

The second category of adjustments, "Normalized Adjustments for Known Changes," addresses known maintenance expense items not included in the 2000-2005 historic average. This category includes future turbine overhauls that are not shown in the historic figures.

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

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

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

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

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

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

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

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

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

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

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

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

LaCygne Unit 2 turbine overhauls are not included in the 2000-2005 historic data. LaCygne Unit 2 has a budgeted turbine overhaul scheduled in **[redacted]**. LaCygne Unit 2 last experienced a turbine overhaul in 1997, which indicates the potential for a **[redacted]** cycle for turbine overhauls on this unit. The associated 2006 budget expense and the recommended **[redacted]** average cost for this turbine overhaul are shown in the attached Schedule FDC-6 **(P)**.

The final adjustments under "Known Changes" involve the Generator Start-Up ("GSU") Transformer failures that occurred on Hawthorn Unit 5 and Montrose Unit 3 in 2005. The maintenance costs associated with these failures are not a normally expected occurrence. The maintenance expense associated with the Hawthorn Unit 5 transformer was largely capitalized. This is because the replacement transformer for Hawthorn Unit 5 is owned by KCPL. The resulting increase in maintenance expense was $79,916, which is included in 2005 maintenance expense. The Montrose Unit 3 replacement transformer was leased from another utility. Because this involved an asset not owned by KCPL, the work to install the spare transformer was charged to maintenance. The maintenance expense charged to the transformer failure in 2005 was $521,180. The total adjustment in 2005 maintenance expense for the two transformer failures is a downward adjustment of $601,096.

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

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

The May 2007 addition of an operating SCR on LaCygne Unit 1 is one example. The maintenance impacts of the LaCygne Unit 1 SCR are shown in the attached Schedule FDC-7 **(P)**, which indicates an increase in maintenance expense of over ** [redacted] ** in 2007 and over ** [redacted] ** during the first full year of operation in 2008. Further additions to future maintenance expense will result from the additions of an SCR, wet scrubber and baghouse on Iatan Unit 1 in late 2008, the refurbishment of the LaCygne Unit 1 scrubber and the addition of a baghouse in 2009, and the completion of Iatan Unit 2 scheduled for 2010. The maintenance costs associated with these future additions are NOT included in the recommended maintenance adjustment at this time.

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

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

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

Q: Does that conclude your testimony?

A: Yes, it does.

BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MISSOURI

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

AFFIDAVIT OF F. DANA CRAWFORD

STATE OF MISSOURI)
) **ss**
COUNTY OF JACKSON)

F. Dana Crawford, being first duly sworn on his oath, states:

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.

3. I have knowledge of the matters set forth therein. I hereby swear and affirm that my answers contained in the attached testimony to the questions therein propounded, including any attachments thereto, are true and accurate to the best of my knowledge, information and belief.

F. Dana Crawford

Subscribed and sworn before me this 27th day of January 2006.

Nicole A. Wehry
Notary Public

My commission expires: Feb. 4, 2007

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

Historic non-labor maintenance expense compared to 2005

HISTORIC NON-LABOR MAINTENANCE EXPENSE COMPARED TO 2005 (HISTORIC COST SHOWN IN 2005-$'s PER HANDY-WHITMAN)						
	2005 (9-mo actual/3-mo budget)	2001-2005 Avg	2003-2004 Avg	2003-2005 Avg	2000-2004 Avg	2000-2005 Avg
Years Averaged		5-Yr	2-Yr	3-Yr	5-Yr	6-Yr
L-1	6,577,338	6,426,056	6,380,223	6,445,928	6,414,049	6,441,264
L-2	2,206,731	3,337,047	3,766,389	3,246,503	3,445,726	3,239,227
latan	5,933,219	5,275,486	4,485,316	4,967,950	5,752,987	5,783,026
H-5	4,962,323	4,094,499	5,424,772	5,270,623	3,418,037	3,675,418
M	4,082,313	5,334,654	7,029,477	6,047,089	5,365,106	5,151,307
Other	1,718	69,868	131,572	88,287	69,525	58,223
WC	-	-	-	-	-	-
Grand Ave	-	-	-	-	-	-
NE	97,626	138,491	96,579	96,928	167,009	155,445
H-6	271,908	378,869	760,414	597,579	354,073	340,379
H-7&8	46,360	32,464	47,425	47,070	23,406	27,231
H-9	374,889	422,300	390,241	385,124	375,093	375,059
Other CT's	49,779	10,553	1,075	17,310	31,709	34,720
Total	24,604,204	25,520,287	28,513,485	27,210,391	25,416,718	25,281,299

Hawthorn-5 historic maintenance expense

Recommended Hawthorn-5 Annual Non-Labor Maintenance Expense (2005-$'s Shown)							
	2000	2001	2002	2003	2004	2005	2003-2005 Avg
H-5	$1,580,011	$1,684,425	$2,976,204	$5,769,980	$5,079,565	$4,962,323	$5,270,623

Schedule FDC-2

SCHEDULE FDC-3

THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION NOT AVAILABLE TO THE PUBLIC

SCHEDULE FDC-4

THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION NOT AVAILABLE TO THE PUBLIC

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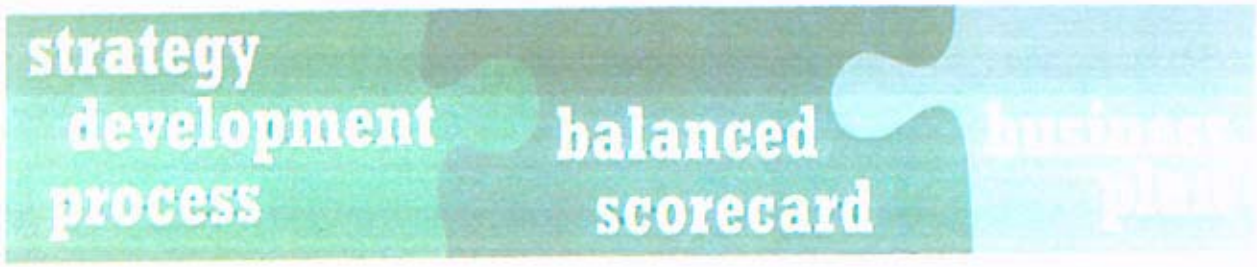
Summary of Normalized Adjustments

NORMALIZED MAINTENANCE PROJECTION (1-13-06)		
Data	**Annual Total**	**Adjustments**
2005 (9-month Actual, 3-month Budget)	$ 24,604,204	
Average Expense Reported for 2000-2005 (Including Grand Avenue)	$ 25,333,369	
Adjustment from 2005 (9/3) To Correct to the 2000-2005 Average		$ 729,165
Average Grand Avenue Expense (2000-2005)		$ (52,070)
2000-2005 Average After Grand Ave. Removed	$ 25,281,299	
H-5 Adjustment		
Average H-5 as Reported 2000-2005		$ 3,675,418
H-5 Average for 2003-2005		$ 5,270,623
Net Adjustment for H-5		$ 1,595,205
Total After H-5 Adjustment	$ 26,876,504	
CT Adjustments		
H-7&8, NE and New CT's Currently included in 2000-2005 Average		$ 217,397
2006-2010 Average Annual Budget for All CT's		$ 546,705
Net Adjustment for CT's		$ 329,307
Total After CT Adjustment	$ 27,205,812	
Adjust for H-5 Turbine OH		
Amount included in 2000-2005 Avg		$ -
Avg Spend for Sectionalized Turbine Mtce (Every Other Year Beginning in 2007)		$ 1,125,000
Total After H-5 Turbine Adjustment	$ 28,330,812	
Adjust for L-2 Turbine OH		
Amount included in 2000-2005 Avg		$ -
Avg Spend for Sectionalized Mtce (9-year cycle)		$ 165,855
Total After L-2 Turbine Overhaul	$ 28,496,667	
Adjust for H-5 and M-3 GSU Transformer Failures		
Total Adjustment		$ (601,096)
Total Normalized Value	$ 27,895,570	
Total Adjustment to 2005 (9/3) For Normalized Non-Labor Maintenance Expense		$ 3,291,366
Expected O&M impact of Adding 100.5 MW of Wind Generation in 2006	**Includes operations expense**	$ 2,017,406

Schedule FDC-8

Supply Division Business Plan



December 6, 2005

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Business Plan Overview

- 2005 Results
- Business Drivers
- Organizational Implications of the Strategy
- Plant Performance
- Off-System Sales and Purchases
- Portfolio Risks
- Expansion and Environmental Upgrades

SCHEDULE FDC-9
Page 3

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Our 2006-2010 business plan is shaped by our current view of several key business drivers

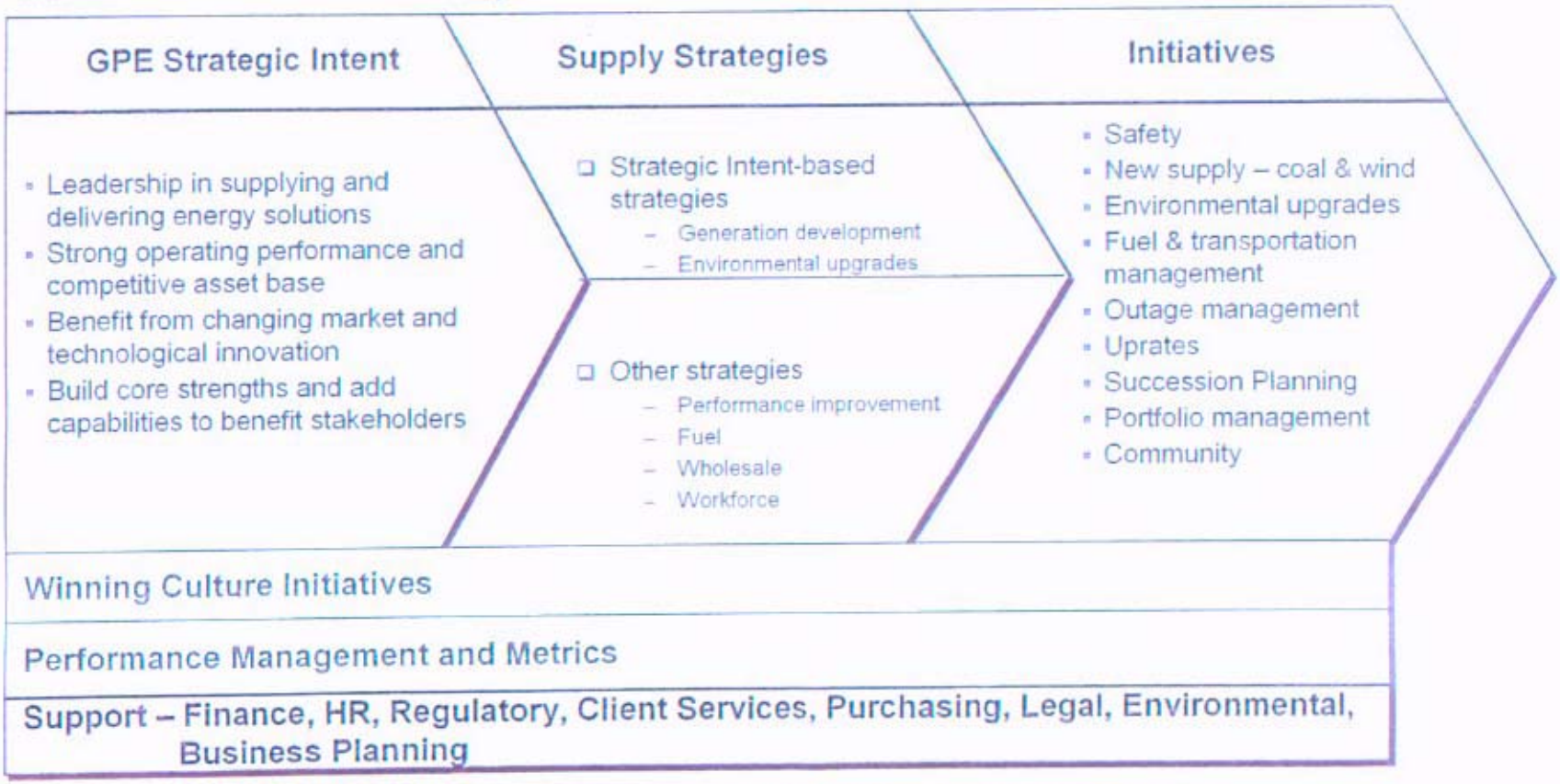
- Power prices will continue to increase and will exhibit higher volatility, driven by natural gas prices and environmental regulation
- Renewal of nuclear licenses at nearly all current reactors will continue, capacity upgrades on both primary and secondary sides being completed, and new reactor development under active consideration by the largest nuclear utilities
- Environmental regulation will increase, including regulation of "Green House" gases towards the end of the next 10 years
- Wholesale market will continue to evolve towards a standard design on a regional/national basis
- Modest transmission construction is expected, driven by reliability concerns
- Continued development of renewables (e.g., wind, biomass)
- Continued high-priced natural gas will fuel the move toward more coal and renewed interest in nuclear
- Managing workforce turnover and knowledge transfer

Our strategies and action plans are consistent with our view of the key business drivers and are grounded in our Strategic Intent

GPE Strategic Intent provides an overview of GPE objectives with which ...

... the Supply strategies are consistent and provide additional detail...

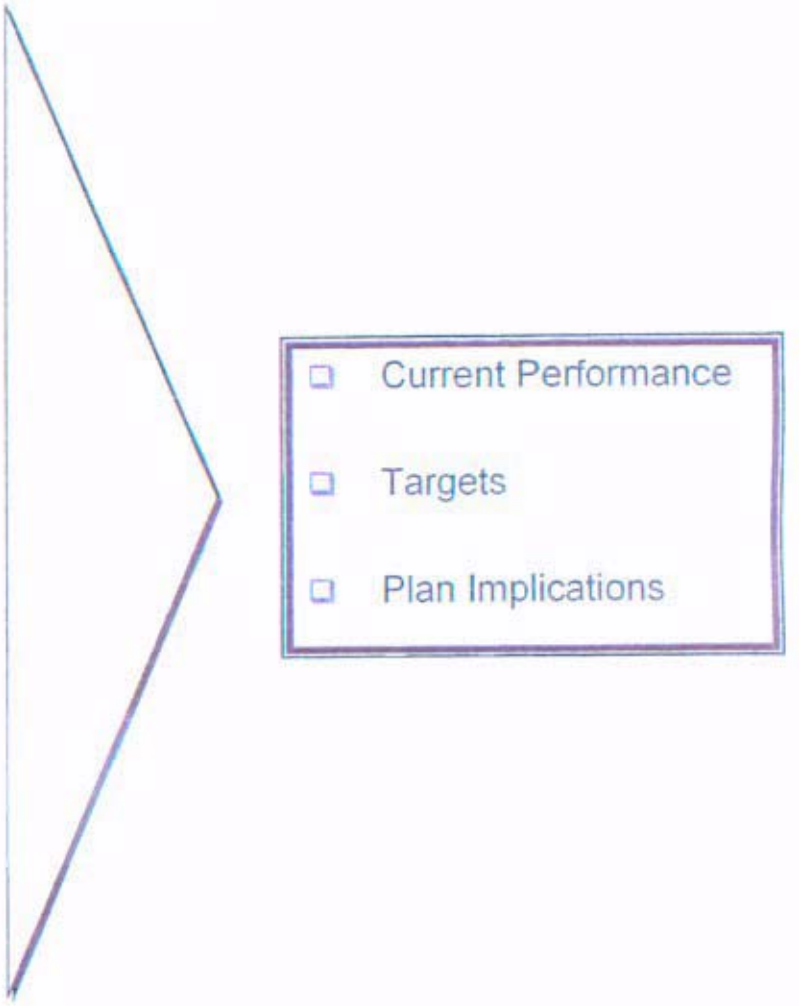
... and includes specific initiatives and action plans ...



... which are enabled by a Winning Culture, Performance Management program and Support Services.

KCP&L's Supply division will focus on four key components

- Organization Implications & Culture
  - On-boarding
  - Diversity
  - Workforce Transition
- Plant Performance
  - Improving equivalent availability
  - Reducing outage durations
  - Continuing to improve our safety record
- Off-System Sales and Purchases
  - Continued expansion of wholesale market opportunities
  - RTO development
  - Continued reduction of MWh not sold
- Expansion and environmental upgrades
  - Development and construction of a new clean coal fired power plant by 2010 at the existing latan site
  - Developing and constructing approximately 100 MW of renewable wind generation with the option of an additional 100MW in the future
  - Investment in pollution control equipment at our existing coal fired units



Organizational Implications of the Strategy

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Our ability to execute our strategies and initiatives and support our Strategic Intent is dependent on Human Performance

- Nothing Gets Done Without People
- Doing the Right Things as Well as Doing Things Right is the Key to Success

SCHEDULE FDC-9
Page 9-10

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The GPE Ideal is the basis for enhancing the performance of the workforce and establishing a Winning Culture

Inspired leadership, disciplined performance management and engagement will lead to accountability & loyalty

- Improve our training at all levels to provide techniques to help move the culture
- Use on-boarding process at all levels to facilitate knowledge transfer and the culture transferred is where we are going to, not where we have been
- Make all errors learning, rather than punishment, opportunities so we both foster innovation as well a continuous learning environment
- Use Business Issues to create opportunities for employees at all levels to make meaningful contributions
- Reward the behaviors that advance the GPE IDEAL and coach to eliminate all other behavior

Plant Performance

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In addition to human performance, production capabilities and performance are driven by two major factors

- **Equipment Reliability**
  - Equivalent Availability Factor
  - Capacity Factor
  - MWH Production
  - Maintenance Schedule Compliance
- **Market Position**
  - Coal price advantage
  - Transportation costs
  - Cost of environmental compliance

SCHEDULE FDC-9
Page 14

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SCHEDULE FDC-9
Page 15

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We will focus our equipment reliability plans on those factors that we believe will have the greatest impact

- **Coal**
  - Aging plant and end of life on major components
  - Maintenance versus Capital
  - Boiler Tube Failure Program

- **Nuclear**
  - Single point vulnerabilities
  - Equipment reliability - Aging plant equipment / end-of-life
  - Maintenance practices
  - Relicensing

SCHEDULE FDC-9
Page 17

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SCHEDULE FDC-9
Page 18

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Maintenance management programs will be focused on becoming more efficient by working smarter, not harder

- Planning
  - Greater focus on outage planning, integrated schedules assessed and reworks prior to outage to yield shortest duration. As the value of the lost/gained day of production increases, the focus shifts from cost control to schedule control.
- Work package development (repeat work)
  - Productivity gains are made by increasing wrench time.
    - Planning
    - Parts
    - Procedures
- Uniform process all plants
  - Plant maintenance optimization piloted at La Cygne will be rolled out to all stations.
  - Focus on Managers/Superintendents sharing data/experiences to assure consistency and facilitate the movement of people between plants.
- Technology
  - Smart Signal
  - New Work Management System
  - Monitoring
  - Central Controls Group

SCHEDULE FDC-9
Page 20

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SCHEDULE FDC-9
Page 21-23

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Off System Sales & Purchases

December 6, 2005

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SCHEDULE FDC-9
Page 25

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The Regional Transmission Organization (RTO) will bring additional changes to the market into which we sell

- Bidding strategies for load and generation
- Financial settlements hourly for deviations from schedules (both load & generation), prices will reflect congestion
- Systems for managing resource plans, ancillary service plans, resource offers and shadow settlement
- Southwest Power Pool dispatching our units

Our success as a participant in the new market structure will be influenced by a few critical factors

- Gas Prices
- RTO Market "Shake Out"
- Plant Performance

SCHEDULE FDC-9
Page 28-29

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Capacity Expansion & Environmental Upgrades

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Expansion & environmental upgrades: We have begun implementation of our long-term, comprehensive energy plan

- Development and construction of approximately 100 MW of renewable wind generation to address the increasing demands for renewable resources, to reduce CO_2 emissions intensity and to demonstrate the viability of this evolving technology. Additional 100MW for consideration in 2008 time frame

- Development and construction of a new clean coal fired power plant by 2010 at the existing Iatan site as the least cost option to provide for the incremental baseload needs of the region and to provide for long term rate stability against volatile future natural gas prices

- Environmental compliance through investment in pollution control equipment at our existing coal fired units (recognizing the options for retirements and reconstruction), ensuring the long term viability and stable economics of our generating portfolio

Execution success will be influenced by several key factors

- Clear understanding of drivers for each project
- Contracting strategy
- Dedicated team (KCP&L / AE / contractors) with the proper experience
- Effective project controls and reporting systems
- Decision-making processes & documentation to support the rate-making process

SCHEDULE FDC-9
Page 33

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Wind Project

- Driver – In Service date to support 2006 rate-case
- Contracting Strategy – Turnkey Project
- Team
  - eneXco Developer; Mortensen Contractor; GE Wind Turbines
  - John Grimwade – Project Lead
  - Phil Duncan – Project Lead
- Site Location – Spearville, Kansas
  - Strong wind resources
  - Minimal environmental impacts
  - Strong community, land owner and political support
- Key Issues / Decisions
  - Turbine Delivery Schedule
  - Transmission Interconnection and Service
  - Regulatory Timing Adjustment due to Construction Schedule

SCHEDULE FDC-9
Page 35

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LaCygne 1 Selective Catalytic Reduction (SCR) for NOx Control

- Driver – Must be in Service for the 2007 ozone season, to fulfill company's commitment to MARC's "Maintenance of Attainment" Plan
- Contracting Strategy – Performance Based EPC
- Team
  - Contractor – Babcock & Wilcox (same as Hawthorn 5)
  - Owners Engineer – Burns & McDonnell
  - Project Director – John Grimwade
  - Project Manager – John Forristal
- Key Issues / Decisions
  - Necessity of SCR by-pass system
  - Large Particle Ash impact on catalyst
  - Pressure drop and potential impact on fan capacity
  - Duration of tie-in Outage

SCHEDULE FDC-9
Page 37

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Iatan 2 & Environmental Retrofit of Iatan 1

- Drivers –
  - Long term Operability/Maintainability
  - Environmental Performance
  - Minimize Impact on Iatan 1 Operations
  - Clear and timely information to assure accurate project status
  - Schedule
  - Demonstration of cost prudency
- Contracting Strategy –
  - Contracting approach under evaluation with KCP&L's Project Team (including Owner's Engineer) managing the project
  - Key Contracts will include D/E Boiler, Turbine, AQC
- Project Team
  - John Grimwade – Project Director
  - To be named - Project Manager (external hire)
  - Owners Engineer – Burns & McDonnell
  - Will use experienced outside consultant to insure appropriate methodology, documentation and communication occurs to support decision-making.

Iatan 2 & Environmental retrofit of Iatan 1 – Regulatory plan completion delay, and competing projects place significant pressure on schedule

- The additional time required for the completion of the regulatory plan reduced the amount of time available in the project schedule for contingency
- Regulators recognized this compression in the schedule by allowing "In-Service Criteria" to be defined around functional as opposed to commercial operation of the unit
- Strong market demand for new coal units as well as environmental retrofits for existing units to comply with CAIR and CAMR has put several other projects out for bid at the same time as Iatan 2 resulting in additional demand on suppliers' engineering and manufacturing resources
- Already volatile commodity markets were even further impacted by 2005 hurricanes which has impacted timing and availability of major steel contracts
- Proposals from major boiler manufacturers in response to KCPL's Boiler RPF will indicate whether contractors have the ability to meet the 2010 schedule

SCHEDULE FDC-9
Page 40

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Supply Summary

- Unit Availability is key to KCP&L's earnings in 2006 – 2010
- Off-System Sales and Fuel Costs are critical to our success
- Delivering the Wind Project on-time to support the rate-case is critical
- Impacts of the RTO must be neutral to positive
- WCNOC must make significant progress on its equipment reliability program to keep or improve its INPO rating

Appendices

Outage Schedules 2006 -2010
Gas Price Forecasts

December 6, 2005

Kansas City Power & Light
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SCHEDULE FDC-9
Page 43-48

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