MidAmerican Energy Company
Workforce Study Analysis

Prepared For

Illinois Commerce Commission

July 7, 2008

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Frank DiPalma

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1.0 Executive Summary

Background

The Illinois Commerce Commission (ICC, Commission, or Agency) retained Jacobs Consultancy Inc. (Jacobs Consultancy) to conduct a workforce study analysis of MidAmerican Energy Company (MEC, Company, or Utility), as specified by the Illinois Public Utilities Act, Section 4-602.

MEC, the largest utility in Iowa, has electric service territory in Illinois as part of the Quad Cities area. The two Illinois Quad Cities are Moline and Rock Island, where MEC serves 84,526 Illinois electric customers, of which 86% are residential and 12% are commercial.

MEC's field forces for Illinois primarily operate out of one service center located in Rock Island, Illinois, and to a far lesser extent a second location in Bettendorf, Iowa. MEC has one call-center located in Davenport, Iowa, that serves its entire service territory.

Objective and Scope

The objective of the study is to determine the adequacy of the total in-house staffing in each job classification or job title critical to maintaining quality, reliability, and restoring service in the Utility's Illinois service territory. The analysis also examines the total number of contractor employees in the same manner as the in-house analysis.

The study is broken down into two tasks:

- **Task 1**—The first step in determining the adequacy of the Utility's workforce was to compute and compare the yearly workforce ratios during the 1995–2006 time frame for the pertinent job classifications by service area, district, division, or region.
- **Task 2**—The second step in the study consisted of performing a detailed examination of MidAmerican Energy Company's workforce adequacy critical to maintaining quality, reliability, and restoring service in the Utility's Illinois service territory.

As specified in Illinois Public Utilities Act, Section 4-602, critical workforce is defined as:

1. In-house workers, commonly referred to as "linemen"
2. Meter service or repair employees
3. Customer service call-center employees

Approach

Our approach to Task 1—developing the workforce ratio report—consisted of collecting, rationalizing and performing an initial analysis of workforce ratios. In particular, we requested data on the levels of both in-house and contracted staff in each job classification or job title critical to maintaining quality, reliability, and restoring service by examining workforce levels covering the 1995-2006 time periods. Specifically, data were collected and ratios were calculated for:

1. In-house workers, which consist of line workers and substation workers.
2. Meter service or repair employees, which include meter technicians, meter readers and meter on-off employees.
3. Customer service call-center staff, which includes residential, business and lead customer service agents, as well as mission control and other support service specialists.
4. Contracted or outsourced employees used to support employees in categories 1, 2, or 3.

Our approach to Task 2—assessing workforce adequacy—started with establishing a key study understanding, the definition of the word "adequacy." Adequacy is defined as the quality of being able to meet a need satisfactorily or being sufficient for the end in view.[1] Applying this definition to the Illinois Public Utilities Act, Section 4-602, suggests that a spectrum of staffing possibilities exists. Extremes range from providing sufficient in-house staffing to permit timely completion of all work requirements with no overtime and no use of external resources; to depending heavily upon outside contractors to satisfy workload requirements that a static or shrinking in-house workforce is unable to complete in a timely fashion. Jacobs Consultancy does not believe either extreme can be proven to be economic or effective considering all stakeholder needs. In-house workforce adequacy should lie in the middle ground and comprise a blend of resources that cost-effectively maintain reasonable system reliability and service quality, while utilizing outside resources to meet peak workload requirements.

In our workforce adequacy analysis, we examined the existing mix of in-house and contractor workforce in the context of the job functions, level of involvement, and meeting the criteria expressed above. Consequently, we judged the adequacy of the overall workforce on the basis of: system performance, levels of in-house overtime, use of contractors, existing in-house age and skills demographics and workforce plans, customer satisfaction statistics, and workload backlog.

To develop the Workforce Study Analysis report, we collected various related documents, conducted interviews of key individuals, visited several MEC facilities, and inspected numerous recently completed in-house and outsourced distribution system capital and maintenance work

[1] http://www.thefreedictionary.com/adequacy

projects. Specifically, in undertaking this analysis, we conducted 20 interviews with 30 individuals representing both Company management and the bargaining unit, and reviewed nearly 100 documents.

Our detailed analysis includes comparisons of workforce levels against historical reliability indices as well as preventive and corrective maintenance orders indicative in determining workforce adequacy. We also reviewed construction results of work performed by in-house and outsourced labor. Additionally, during the interview phase of our analysis, we interviewed several union officials and bargain unit members. The union representatives articulated various concerns that added additional focus to our workforce adequacy study.

Jacobs Consultancy's study of MEC's workforce adequacy focused on a number of discrete assessments:

- **Maintenance and Operations**—included the dispatch function, the call center during normal operations, minor and major outages, emergency escalation procedures, troubleshooting, coordination with other emergency agencies, mutual aid arrangements, crew mobilization, utilization of contractor forces, maintenance planning, maintenance cycles, maintenance work accomplishment, backlogs, workplace barriers, staffing adequacy, crew sizes, system inspections, vegetation management, quality control, and use of contractors. We also examined the level of technology enablers employed to support this function.
- **Training and Safety**—included the new apprentice and continuing training programs for line workers, meter staff, and call center customer service representatives. We also reviewed the importance of safety in MEC's organization, related training and the safety results achieved.
- **Quality Review**—included observations of MEC's electric distribution facilities to determine the quality of work performed both by in-house and outsourced personnel. We also examined the quality of outsourced work accomplished by various contracting methods, including lump sum and time and equipment.
- **Call Center**—included call center metrics to gauge the level of customer support. We reviewed call center changes, emergency escalation procedures, public agency communication provisions, and customer satisfaction surveys, and also examined the level of technology enablers employed to support this function.

Conclusions

To assess workforce adequacy of in-house workers, meter services workers, and customer service call center staff, we examined as appropriate: staffing levels, use of contractors,

overtime, work order backlog, system reliability performance, existing in-house age and skills demographics, and customer satisfaction. We then balanced our analysis with MEC's philosophy of maintaining its overall level of employees and viewing outsourcing as primarily a means of increased flexibility in addressing fluctuating workload volumes.

Line and Substation Workers

MEC has consistently leveraged automation and the use of contractors to meet work requirements. MEC also recognizes that its workforce is aging and has made efforts to attract and retain apprentices to replace retirees and other workforce decreases. The staffing level for linemen has been fairly level over the 1995 to 2006 period, but overtime increased steadily from about 10% in 1999 to almost 22% by 2002, and has remained at this level through 2006. The staffing level for journeymen substation electricians and technicians dipped in the early 2000s, but MEC proactively added apprentices that have contributed to an overall increase of 6 from 2002 to 2006. MEC faces the same difficulty as many utilities in attracting experienced linemen and substation workers, and therefore depends heavily on apprentice programs. One source for new apprentices is meter readers, some of whom are being displaced with the implementation of Automated Meter Reading (AMR). With a growing backlog of work requests for line workers and an aging workforce, MEC will need to consider carefully its near- and long-term resource requirements.

Meter Services Employees

The meter services staff remained fairly constant at an average of 42 employees over the 1996 to 2006 period. The ratio of customers per meter services employee remained fairly consistent each year throughout the 1995-2006 timeframe, with approximately 2,000 customers per employee. The meter services group does not make use of contractors. We conclude that MEC's meter services workforce is adequate to provide required services.

Call Center Staff

The call center is staffed with approximately 192 employees, with another 26 employees in training. The 26 employees are actually employees of Manpower Inc, which MEC uses as the way to source new employees. Each Manpower staff undergoes 12 weeks of training, which serves as the screening process, enabling the call center to make an offer of permanent employment. The call center experiences roughly 25% turnover rate annually, which is in line with industry standards. The Company staffs the call center in accordance with the flow of call volume and uses technology to enhance the call center's ability to service customers in an effective and efficient manner. The technologies employed vary from a high-volume outage call answering system to an integrated voice response unit system. MEC's call center goals and the

Key Performance Indicators (KPI) results compare favorably with the utility industry, indicating it is well managed and effective. MEC's call center in the last six years has been in the highest quartile in customer satisfaction surveys conducted by several rating agencies.

Recommendations

Based on our analysis, we conclude that the overall adequacy of MEC's workforce has been in harmony with its philosophy of maintaining a consistent level of employees and filling workload peaks and valleys with contractors. However, specifically with respect to line and substation workers, given a growing backlog of work requests for line workers and an aging workforce and the need to plan ahead based on a four-year apprentice program, we offer three recommendations:

1. MEC should conduct a strategic workforce planning study to define the workforce required to implement business strategies and identify actions needed to meet those requirements. This analysis should identify gaps between the workforce required and the workforce supply forecasted to be available for certain critical positions and key employees.
2. MEC's ability to forecast future bargaining unit retirements could be greatly enhanced by conducting an annual nonbinding potential retirement survey.
3. Utilizing the results achieved from the strategic workforce plan and nonbinding potential retirement survey, MEC should strive to increase its number of apprentices, particularly in the line worker category.

In addition to the above recommendations, we make a number of other recommendations throughout the report. These have been summarized in Appendix A.

2.0 Introduction

2.1 Background

2.1.1 Philosophy on Outsourcing

Every electric utility is expected to extend its service to meet the needs of a growing population. Power needs to be provided in a reliable, safe, and timely fashion. To maintain high standards of service quality and safety, utility managers traditionally have opted for the control of an in-house workforce. As a result, many utilities historically did not have to rely on others to provide support to its staff or rely on others to meet its customers' needs. However, today many regulated distribution utilities have developed strategies to shift risk, reduce costs, and refocus attention on core functions.

At MEC, outsourcing has primarily sought increased flexibility in addressing fluctuating workload volumes. Driven by a strong desire to maintain in-house knowledge of the distribution and transmission system and the wish to have first responders be staff to ensure quality service and help preserve brand recognition, distribution system contractors are primarily used to fill workload peaks. MEC states that approximately 30% of its distribution system line work is outsourced. Management has indicated in the long term they would prefer the outsourced levels to be closer to 20 percent.

This philosophy and level of outsourcing represent a fairly conservative approach from our experience, but still places certain obligations on the Utility's management as well as impacts on the Utility's workforce. Management must ensure that the quality of the work completed is consistent with customer service standards, that the cost of the work is reasonably similar to what the work would cost if it were performed by the in-house staff, and that high-quality customer service is provided, while the workforce may see a reduction in the total number of employees and a reduction in the breadth of job skills.

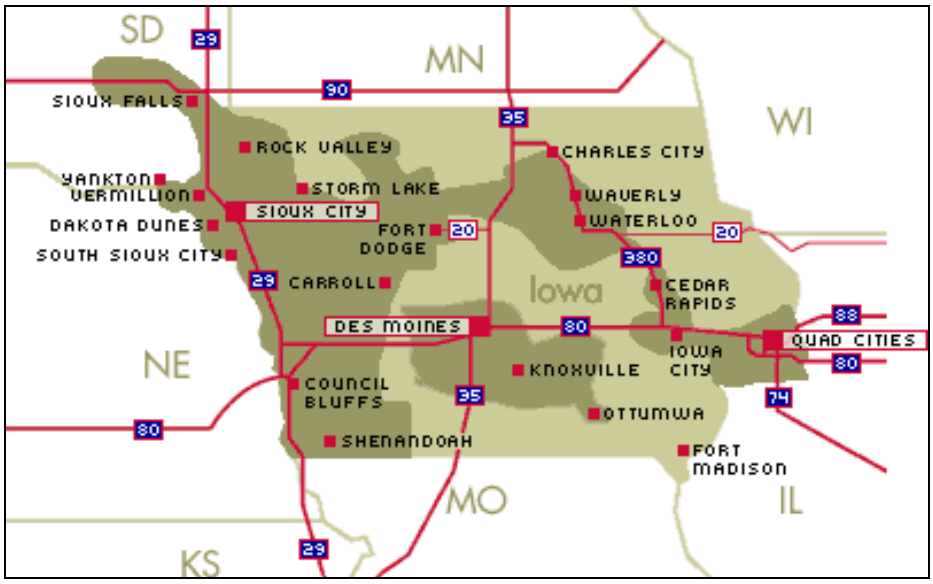
In Appendix B we provide a more complete discussion on the utility industry outsourcing philosophy. In Appendix C we have also included a brief review of the bargaining unit's contractual agreement history and a current arbitration concerning contracting.

2.1.2 Service Territory

MEC's electric service territory in Illinois is part of the Quad Cities area. Quad Cities refers to the two Illinois cities of Moline and Rock Island and the two Iowa cities of Davenport and Bettendorf. MEC today serves 84,526 Illinois electric customers, of which 86% are residential and 12% are commercial. MEC's field forces for Illinois primarily operate out of one service center located in Rock Island, Illinois, and to a far lesser extent a second location in Bettendorf,

Iowa. MEC has one call center located in Davenport, Iowa, that serves its entire service territory. MEC's service territory is illustrated in Figure 1.

Figure 1—MEC Service Territory



2.2 Objective and Scope

The Illinois Commerce Commission (ICC, Commission, or Agency) retained Jacobs Consultancy Inc. (Jacobs Consultancy) to conduct a workforce study analysis of MidAmerican Energy (MEC or Utility), as specified by the Illinois Public Utilities Act, Section 4-602 (shown on the following page).

Sec 4-602. Electric utility workforce study

(a) The Commission shall conduct a comprehensive workforce analysis study of each electric utility to determine the adequacy of the total in-house staffing in each job classification or job title critical to maintaining quality reliability and restoring service in each electric utility's service territory. Each report shall contain a yearly detailed comparison beginning with 1995 and ending in 2006 of each electric utility's ratios of:

(1) In-house workers, commonly referred to as "linemen", to customers;

(2) Customer service call-center employees to customers; and

(3) Meter service or repair employees to customers

The ratios shall be reported from each utility's named service area, district, division, outlying area, village, municipality, reporting point, or region. The analysis shall determine the total number of contractor employees for the same timeframe and shall be conducted in the same manner as the in-house analysis.

(b) The Commission may hold public hearings while conducting the analysis to assist in the adequacy of the study. The Commission must hold public hearings on the study and present the results to the General Assembly no later than January 1, 2009.

(c) An electric utility shall bear the costs of issuing any reports required by this Section and it shall not be entitled to recovery of any costs incurred in complying with this Section.

The objective of the study is to determine the adequacy of the total in-house staffing in each job classification or job title critical to maintaining quality reliability and restoring service in the Utility's Illinois service territory. The analysis also examines the total number of contractor employees in the same manner as the in-house analysis. The study is broken down into two tasks:

- **Task 1**—The first step in determining the adequacy of the Utility's workforce was to compute and compare the yearly workforce ratios during the 1995–2006 timeframe for the pertinent job classifications by service area, district, division, or region.
- **Task 2**—The second step in the study consisted of performing a detailed examination of MidAmerican Energy's workforce adequacy critical to maintaining quality reliability and restoring service in the Utility's Illinois service territory.

As specified in Section 4-602, critical workforce is defined as:

1. In-house workers, commonly referred to as linemen
2. Meter service or repair employees
3. Customer service call-center employees

2.3 Approach

2.3.1 Workforce Ratio Report

To develop the workforce ratio report, we collected, rationalized, and performed an initial analysis on workforce ratios as specified in the Illinois Public Utilities Act, Section 4-602. In particular, we requested data on the levels of both in-house and contracted staff in each job classification or job title critical to maintaining quality reliability and restoring service by examining workforce levels covering the 1995-2006 time periods for:

1. In-house workers, commonly referred to as “linemen”
2. Customer service call center employees
3. Meter service or repair employees
4. Contracted or outsourced full-time equivalent (FTE) employees for each of the above

Since computing the ratio of employees to customers resulted in a very small number that is not practical or informative to use to assess the workforce adequacy, we augmented the ratio analysis by calculating the number of customers per employee instead.

In this task, we also noted the job classifications included in each ratio analysis and identified the factors that may have affected the changes in the ratios each year.

Our approach to this task was divided into the following five subtasks:

- **Data Collection**—We collected data emanating from the initial data requests as provided by the Utility and through our research. This information was made consistent, as practicable, and was input into our web-based document control facility (eRoom).
- **Initial Analysis/Cleaning**—In this subtask, we performed our initial analysis on the data provided by the MEC to support the workforce ratio analysis. We identified any gaps or inconsistencies in the data and identified missing or questionable data. We made appropriate corrections, based on clarifications from MEC, to the data to provide a consistent data set.

- **Additional Data Requests**—Based on our Initial Analysis/Cleaning, we formulated additional specific data requests, data explanations and other information deemed necessary for consistent data. MEC was requested to provide responses to these additional data requests within a 10-day timeframe.
- **Data Analysis and Cleaning**—In this subtask, we incorporated the additional data received into our workforce ratio analysis model and continued data cleaning efforts to assure consistent and meaningful baseline workforce ratios to support further analysis.
- **Develop Ratio Report**—Prior to developing the reports, we coordinated with the Agency to define the workforce ratio report format and content. Following this and completion of the Data Analysis and Cleaning subtask, we proceeded to assemble the ratios and develop the final Workforce Ratio Report.

2.3.2 Workforce Adequacy Analysis

Illinois Public Utilities Act, Section 4-602 states that the study is to "Determine the adequacy of the in-house staffing in each job classification critical to maintaining quality, reliability and restoring service in each electric utility service territory."

The key word to conducting the study then lies in the word "adequacy." Adequacy can be defined as the quality of being able to meet a need satisfactorily or the quality of being sufficient for the end in view.[2] Applying this definition to the Illinois Public Utilities Act, Section 4-602 suggests that a spectrum of staffing possibilities exists. Extremes range from providing sufficient in-house staffing to permit timely completion of all work requirements responding to normal work load as well as emergencies, with no overtime and no use of external resources, to depending heavily upon outside contractors to satisfy normal and emergency workload requirements that a static or shrinking in-house workforce is unable to complete in a timely fashion.

Jacobs Consultancy does not believe that either extreme can be proven to be economic or effective considering all stakeholders. We believe that in-house workforce adequacy in the context of the Illinois Public Utilities Act, Section 4-602 should lie in the middle ground and comprise a blend of resources that accomplishes the following:

- Maintain reasonable system reliability and service quality.
- Provide a cost-effective solution.
- Use outside resources to supplement in-house resources to meet peak workload requirements.

[2] http://www.thefreedictionary.com/adequacy

- Use outside resources to perform work efforts that require specialized equipment or specialized skill sets that are not economic to maintain in house.
- Permit in-house resources to maintain expertise and knowledge in their core business.
- Use outside contractors to relieve in-house staff of non-core or non-critical workload.
- Provide a reasonable level of regular and overtime opportunities to the in-house workforce.
- Use additional temporary outside resources to supplement in-house workforce and existing contract workers during emergencies.

In our workforce adequacy analysis, we examined the existing mix of in-house and contractor workforce in the context of the job functions, level of involvement, and meeting the criteria expressed above. Consequently, we judged the adequacy of the overall workforce on the basis of:

- System performance
- Levels of in-house overtime
- Existing in-house age and skills demographics and workforce plans
- Customer satisfaction statistics
- Workload backlog

We have provided in Appendix B an overview of general outsourcing philosophies and MEC's specific outsourcing philosophy.

To develop the Workforce Adequacy Analysis report, we collected various related documents, conducted interviews of key individuals, visited several MEC facilities, and inspected numerous recently completed in-house and outsourced distribution system capital and maintenance work projects. Specifically, in undertaking this analysis, we conducted 20 interviews with 30 individuals representing both management and the bargaining unit and reviewed nearly 100 documents.

Our detailed analysis includes comparisons of workforce levels against historical reliability indices as well as preventive and corrective maintenance orders indicative in determining workforce adequacy. We also reviewed construction results of work performed by in-house and outsourced labor, and during the interview phase of our analysis we interviewed several union officials and bargain unit members. The union representatives articulated various concerns that added additional focus to our workforce adequacy study.

Our study of MEC's workforce adequacy focused on a number of discrete assessments including:

- **Maintenance and Operations**—In reviewing the operations area, we studied the dispatch function and examined linkages to the call center during normal operations, minor outages and major outages. We traced handling of outage and work notification and reviewed emergency escalation procedures and provisioning of emergency operations, troubleshooting, coordination with other emergency agencies, mutual aid arrangements, crew mobilization, and utilization of contractor forces. In reviewing the maintenance function, we focused on maintenance planning, maintenance cycles, maintenance work accomplishments, backlogs, workplace barriers, staffing adequacy, crew sizes, system inspections, vegetation management, use of contractors, and quality control. We also examined the level of technology enablers employed to support this function.

- **Training and Safety**—Here we included an examination of new apprentice and continuing training programs for line workers, meter staff and call center customer service representatives. We sought to observe any training provided to contractors and how their capabilities were assessed, and we explored the steps the Utility is taking to attract new line workers. We reviewed the importance of safety in MEC's organization, related training and the safety results achieved, and also examined MEC's safety performance over the 1995-2006 timeframe.

- **Quality Review**—Our work involved visual observations of MEC's electric distribution facilities through conducting a random spot inspection to determine the quality of work performed both by in-house and outsourced personnel. We also examined the quality of outsourced work accomplished by the various contracting methods, including lump sum and time and equipment.

- **Call Center**—We assessed call center metrics, such as call volume, abandonment rates, and call answers statistics to gauge the level of customer support that is present. We also reviewed call center changes, such as staffing, training and automation enhancements. We reviewed the process for normal and emergency situations, emergency escalation procedures, public agency communication provisions, and customer satisfaction surveys. We also examined the level of technology enablers employed to support this.

We specifically addressed staffing adequacy in two subsections: Staffing in Section 5.1 Operations and Maintenance and Section 5.4 Call Center.

2.4 Report Organization

Section 1.0 Executive Summary provides an overview of Jacobs Consultancy's key conclusions and recommendations. Only those recommendations identified as directly linked to workforce adequacy are presented in the Executive Summary. Several other recommendations are presented in the body of the report.

The main body of the report is divided into two sections: Section 4.0 Ratio Investigation and Section 5.0 Workforce Adequacy Analysis. In the Ratio Investigation section we include ratio reports for linemen, meter service, and call center employees. In the Workforce Adequacy Analysis section, assessments were conducted and an analysis was made into a variety of areas including operations and maintenance, training and safety, quality review, and the call center.

The Workforce Adequacy Analysis sections contain a background description for each area and an analysis of specific topics. The findings presented represent strengths, weaknesses, opportunities and threats, which tie directly into the facts obtained from our interviews and review of documents. The Conclusions summarize and represent our assessment of the related findings and our opinion regarding proposed opportunities associated with a specific topic. In some instances our conclusions lead to Recommendations.

3.0 Glossary

A glossary of terms to familiarize the reader with the acronyms and industry terms used throughout this report is provided below.

3.1 Abbreviations

ADC	Automatic Call Distributor
AMR	Automated Meter Reading
ASA	Average Speed of Answer
BBS	Behavior Based Safety
CIS	Customer Information System
CSA	Customer Service Agent
CTI	Computer Telephony Integration
DSCADA	Distribution Supervisory Control and Data Acquisition System
ETR	Estimated Time to Restore
eRoom	Web-based document control facility
eWFM	Electronic Workforce Management & Real Time Adherence
FTE	Full-time equivalent
GIS	Graphic Information System
GPS	Geo Positioning System
HVCA	High Volume outage Call Answering
IBEW	International Brotherhood of Electrical Workers
ICC	Illinois Commerce Commission
IT	Information Technology
IVRU	Integrated Voice Response Unit
KPI	Key Performance Indicators
LIHEAP	Low Income Home Energy Assistance Program
MDT	Mobile Data Terminals
MEC	MidAmerican Energy Company

NESC	National Electrical Safety Code
NJATC	National Joint Apprentice and Training Committee
OJT	On the Job Training
OMS	Outage Management System
QA	Quality Assurance
SAIDI	System Average Interruption Duration Index
SAIFI	System Average Interruption Frequency Index
T&E	Time and Equipment
WMIS	Work Management Information System
WO	Work Order

3.2 Common Industry Terms

Automated meter reading (AMR)	The technology of automatically collecting data from metering devices (water, gas, electric) and transferring that data to a central database for billing and/or analyzing.
Automatic Call Distributor	A telephone facility that manages incoming calls and handles them based on the number called and an associated database of handling instructions.
Average Speed of Answer	The timing for answering the call begins when the call is queued for the ACD queue and ends when an agent (either in the primary or overflow ACD queue) answers the call.
Behavior Based Safety	A wide range of programs that focus almost entirely on changing the behavior of workers to prevent occupational injuries and illnesses.
Capacitor	An electrical/electronic device that can store energy in the electric field between a pair of conductors.
Completely self protected transformer (CSP)	Efficiently and effectively disconnect the load from the transformer under overload conditions.
Customer Average Interruption Duration Index (CAIDI)	A distribution circuit reliability measure that represents the average time required to restore service to the average customer per sustained interruption.
Customer Average Interruption Frequency Index (CAIFI)	A distribution circuit reliability measure that can be used to describe trends and customer interruptions by showing the number of customers affected out of the total customer base.

Computer Telephony Integration	The use of computers to manage telephone calls.
Customer Information System	A broad set of customer, location, service, asset and financial information.
Customer Service System	A broad set of customer, location, service, asset and financial information.
Electronic Workforce Management & Real Time Adherence	A suite of call center workforce management software tools.
Energy Management System (EMS)	Electric transmission and generation controls and data acquisition system for managing electric flows on the transmission network and automatically adjusting generation output.
Estimated Time to Restore	Represents the best information available at this time.
Full-time equivalent	Number of total hours worked divided by the maximum number of compensable hours in a work year as defined by law.
High Volume Outage Call Answering	Automatically take customer electric outage telephone calls and create outage service orders that are then electronically delivered directly to the Outage Management System.
Integrated Voice Response Unit	An automated telephone system that interacts with callers, gathers information and routes calls to the appropriate recipient.
Key Performance Indicators	Quantitative measurements that help an organization measure progress towards goals and identify areas for improvement.
Mobile data terminals	A computerized device used in vehicles to communicate with a central dispatch office.
National Electrical Safety Code	Standard for the safe installation of electrical wiring and equipment.
National Joint Apprentice and Training Committee	Oversees uniform standards that are adopted and used nationwide to select and train qualified men and women for the electric industry.
On the job training	Employee training at the place of work while he or she is doing the actual job.
Outage management system	A computer system used by operators of electric distribution systems to assist in restoration of power.
Quality assurance	Systematic process of checking to see whether a product or service being developed is meeting specified requirements.

Recloser	A circuit breaker equipped with a mechanism that can automatically close the breaker after it has been opened due to a fault.
Regulator	A device that has the function of maintaining a designated characteristic.
Substations	A subsidiary station of an electricity system where voltage is transformed from high to low or the reverse using transformers.
Supervisory Control and Data Acquisition (SCADA)	Electric transmission and generation controls and data acquisition system for managing electric flows on the transmission network and automatically adjusting generation output
System Average Interruption Frequency Index (SAIFI)	A distribution circuit reliability measure that can be used to describe trends and the average number of interruptions that a customer would experience.
Transformer	A device that transfers electrical energy from one circuit to another through inductively coupled electrical conductors.

4.0 Ratio Investigation

Jacobs Consultancy developed the following three ratio reports as specified in the scope of work. The Discussion section explains in more detail how the data provided by MEC were adjusted and made consistent to develop the appropriate ratios of customers to employees.

4.1 Ratio Reports

4.1.1 Linemen Employee Ratio Report

Table 1 shows the data used to compute the ratios of customers per linemen employee. Figure 2 illustrates the linemen employee ratio trend during the 1995–2006 time period for both in-house and contractor employees.

Table 1—MEC Linemen Employee Data

Year	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Rock Island Service Center [1]												
Number of Customers	83,129	83,584	83,970	84,409	83,962	83,216	83,301	83,537	83,719	83,873	84,183	84,379
Number of Employees												
Linemen [2]	49	49	45	44	41	48	51	51	48	51	52	53
Substation Employees [3]	19	14	14	14	15	15	17	18	17	17	17	17
First Responder Employees [4]	6	6	6	6	6	6	6	6	6	6	6	6
Total Linemen In-house Employees [5]	74	69	65	64	62	69	74	75	71	74	75	76
Total Linemen Contractor Employees [6, 7]	0	0	0	0	0	0	0	4	11	15	13	20
Total Linemen Employees	74	69	65	64	62	69	74	79	82	89	88	96
Percentage of Linemen In-house Employees	1	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.87	0.83	0.85	0.79
Percentage of Linemen Contractor Employees	0	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.13	0.17	0.15	0.21
Ratios [8]												
Customers to Linemen In-house Employees	1123	1211	1292	1319	1354	1206	1126	1004	884	784	815	696
Customers to Linemen Contractor Employees	0	0	0	0	0	0	0	54	137	159	141	183
Customers to Total Linemen Employees	1123	1211	1292	1319	1354	1206	1126	1057	1021	942	957	879

Source: DR-009, DR-021, DR-059, DR-076, DR-077, DR-082

Notes:

[1] A few Iowa based MEC crews also work in Illinois, but this is offset by work done by Rock Island crews that work in Iowa so the Iowa based crews are not included.

[2] The linemen numbers represent year-end actual level and the allocation of resources assigned for work in the Illinois Quad Cities.

[3] Substation personnel all report to the Illinois Quad Cities but serve both the Iowa Quad Cities and Illinois Quad Cities so substation employees serving Illinois are calculated based on the percentage of linemen serving Illinois.

[4] In Illinois there are 4 first responders during the day and 2 in the evening.

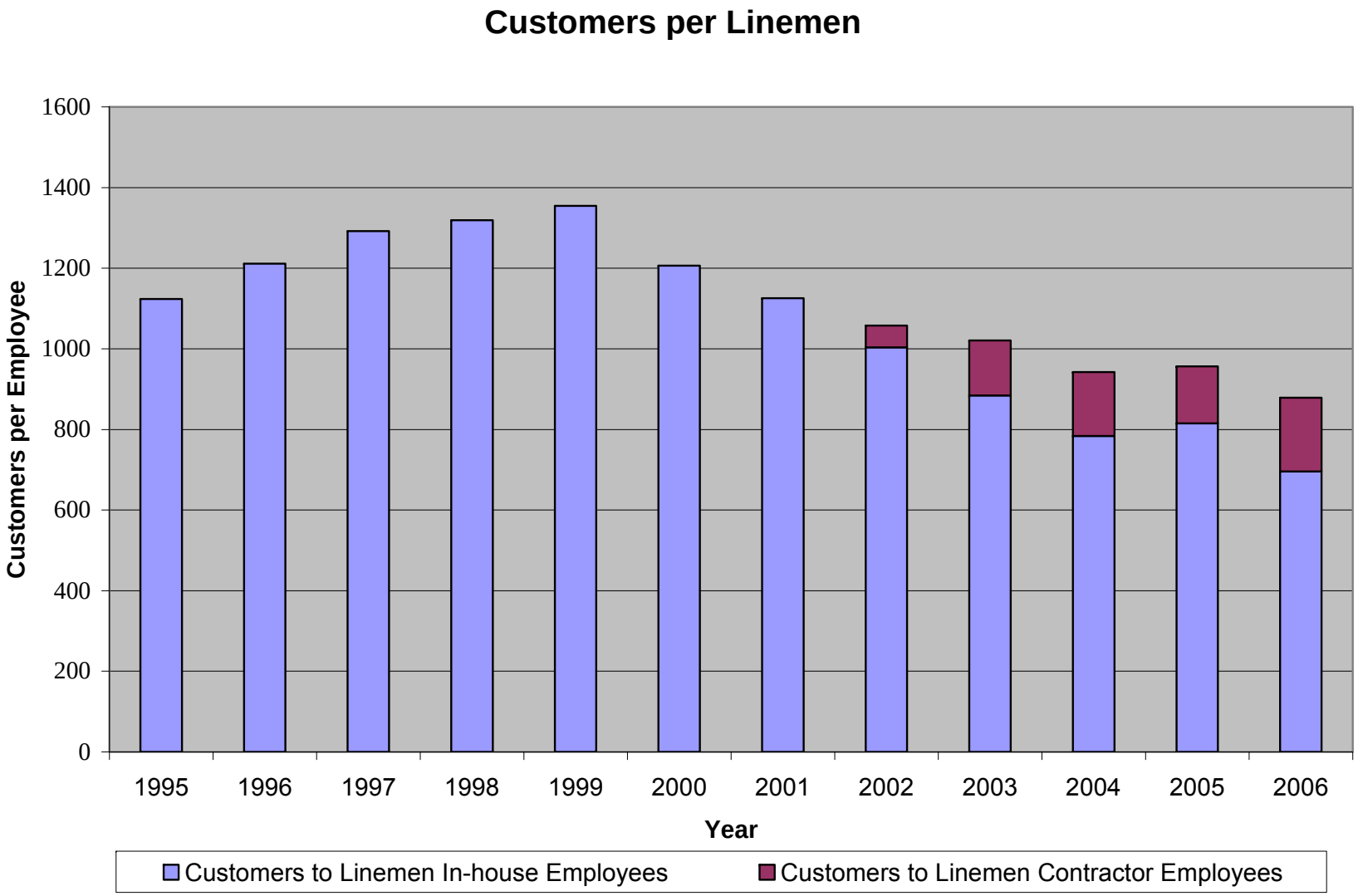
[5] Total linemen in-house employees include linemen, substation, and first responder employees serving Illinois.

[6] MEC provided numbers for "electric contractors" which include contract linemen and substation employees, utilized for the peaks in work and large one-time bid projects for the Iowa Quad Cities and Illinois Quad Cities. These represent peak FTE's (as filed with the ICC).

[7] Total linemen contractor employees serving Illinois are calculated based on the total electric contractors serving both Iowa Quad Cities and Illinois Quad Cities and the percentage of linemen and substation employees serving Illinois.

[8] The ratio of customers to employees is calculated instead of employees to customers as specified by Illinois Public Utilities Act, Section 4-602.

Figure 2—MEC Customer per Linemen Ratios



4.1.2 Call Center Employee Ratio Report

Table 2 shows the data used to compute the ratios of customers per call center employee. Figure 3 illustrates the call center employee ratio trend during the 1995–2006 time period for both in-house and temporary employees.

Table 2—MEC Call Center Employee Data

Year	1995 [1]	1996	1997 [2]	1998 [3]	1999 [3, 5]	2000 [3]	2001 [3]	2002 [4]	2003 [4]	2004 [4]	2005 [4]	2006 [4]
Davenport Call Center [2]												
MEC Electric Customers [6]	83,129	637,963	644,213	650,528	658,219	665,788	670,041	676,735	684,124	691,984	701,112	709,912
MEC Gas Customers [7]	na	602,928	611,766	619,440	629,481	640,112	646,162	654,129	660,629	669,335	678,850	687,148
Total MEC Customers [8]	83,129	1,240,891	1,255,979	1,269,968	1,287,700	1,305,900	1,316,203	1,330,864	1,344,753	1,361,319	1,379,962	1,397,060
Number of Employees												
Residential CSA Phone Staff	13	75	98	196	163	164	163	165	150	144	143	133
Business Advantage CSA	0	0	0	0	0	14	18	17	17	17	17	17
Mission Control Specialists	0	0	0	3	9	12	11	10	10	10	10	12
Support Services Specialists	0	0	0	0	0	8	10	8	10	11	11	11
Lead CSAs	0	0	0	0	2	13	13	14	13	13	13	13
Total Call Center In-house Employees [9]	13	75	98	199	174	211	215	214	200	195	194	186
Total Call Center Temporary Employees [10]	24	7	14	0	0	0	0	5	12	21	19	27
Total Call Center Employees	37	82	112	199	174	211	215	219	212	216	213	213
Percentage of Call Center In-house Employees	0.35	0.91	0.88	1.00	1.00	1.00	1.00	0.98	0.94	0.90	0.91	0.87
Percentage of Call Center Temporary Employees	0.65	0.09	0.13	0.00	0.00	0.00	0.00	0.02	0.06	0.10	0.09	0.13
Ratios [11]												
Customers to Call Center In-house Employees	789	13841	9812	6382	7401	6189	6122	5938	5984	5690	5901	5728
Customers to Call Center Temporary Employees	1457	1292	1402	0	0	0	0	139	359	613	578	831
Customers to Total Call Center Employees	2247	15133	11214	6382	7401	6189	6122	6077	6343	6302	6479	6559

Source: DR-009, DR-020, DR-021, DR-083

Notes:

[1] Staffing numbers for companies prior to acquisition in fall of 1995 between Iowa Illinois Gas & Electric and MidWest Power not available.

[2] At the end of 1997, all eligible contract employees were hired by MidAmerican Energy Co. as full time permanent employees of the Call Center located in Davenport, Iowa and serving customers across the entire service territory.

[3] In 1998, 1999, 2000 and 2001, no contract employees were used to handle customer calls.

[4] Data from MEC Annual Reliability Report filed pursuant to 83 ILL. Adm. Code Part 411.120.

[5] The Technology Resource Center did a cleanup of t7 [e.g. contractors] numbers in MEC's database prior to 2000 and the system MEC used to do their ticket tracking prior to 2002 was decommissioned this past January 2007.

[6] MEC electric customers from Iowa, Illinois, and South Dakota are included. Only Illinois electric customers are included in 1995.

[7] MEC gas customers from Iowa, Illinois, South Dakota, and Nebraska are included. Number of MEC gas customers in 1995 not available.

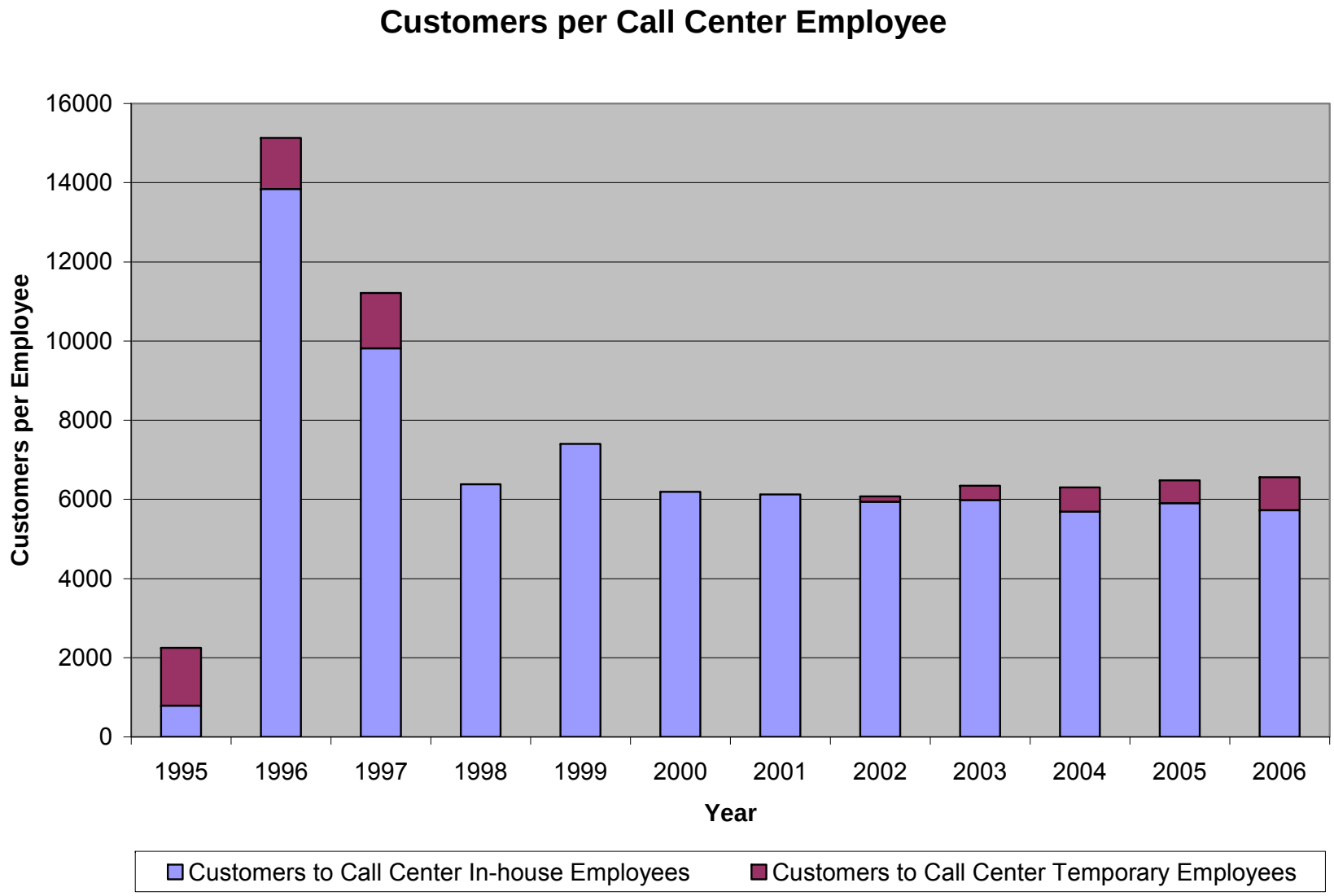
[8] Call center employees handle all customer service calls, including both electric and gas customers for all of MEC's service territories. Therefore, the ratio analysis uses the total MEC customer count instead of only the MEC Illinois electric customers.

[9] Total call center in-house employees are customer facing employees that include Residential CSA Phone Staff, Business Advantage CSA, Mission Control Specialists, Support Services Specialists, and Lead CSAs. Administrative Assistance, Administrative Specialist, Administrative Clerks, Workforce Specialists, Supervisors, and Managers are not included.

[10] Total call center temporary employees are probationary residential CSA phone staff that undergo 12 weeks of training before MEC makes them an offer to become permanent employees. Contract Return Mail & Permanent Address Change employees are not included.

[11] The ratio of customers to employees is calculated instead of employees to customers as specified by Illinois Public Utilities Act, Section 4-602.

Figure 3—MEC Customer per Call Center Employee Ratios



4.1.3 Meter Service Employee Ratio Report

Table 3 shows the data used to compute the ratios of customers per meter service employee. Figure 4 illustrates the meter service employee ratio trend during the 1995–2006 time period for only the in-house employees since there were no meter service contractor employees.

Table 3—MEC Meter Service Employee Data

Year	1995 [6]	1996	1997	1998	1999	2000	2001 [5]	2002 [5]	2003 [5]	2004 [5]	2005 [5]	2006 [5]
Rock Island Service Center [1]												
Number of Customers	83,129	83,584	83,970	84,409	83,962	83,216	83,301	83,537	83,719	83,873	84,183	84,379
Number of Employees												
Meter Employees [2, 3, 4]	24	24	25	30	30	31	27	28	28	27	28	26
Meter On-Off Employees [5, 6]	18	13	13	13	14	14	16	15	15	13	14	14
Total Meter Service In-house Employees	42	37	38	43	44	45	43	43	43	40	42	40
Ratios [7, 8]												
Customers to Meter Service In-house Employees	1979	2259	2210	1963	1908	1849	1937	1943	1947	2097	2004	2109

Source: DR-009, DR-021

Notes:

[1] A few Iowa based MEC crews also work in Illinois, but this is offset by work done by Rock Island crews that work in Iowa so the Iowa based crews are not included.

[2] Meter employees include meter readers and meter techs.

[3] Meter readers are allocated as assigned in the Iowa Quad Cities or Illinois Quad Cities.

[4] Meter techs report to Illinois Quad Cities but serve both Iowa Quad Cities and Illinois Quad Cities.

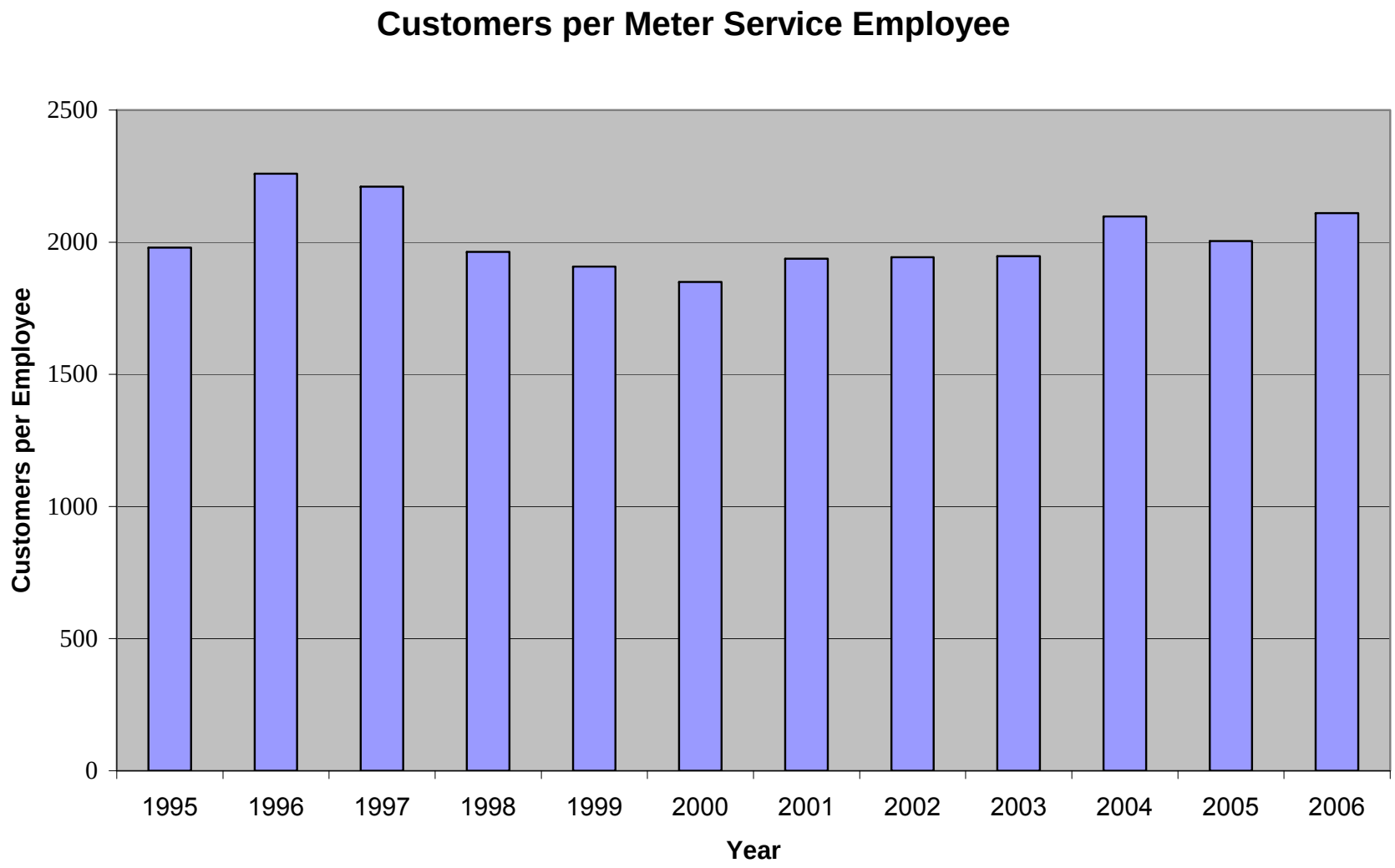
[5] Meter on-off employees split between Iowa Quad Cities and Illinois Quad Cities 1996 through 2000. All report to Iowa Quad Cities starting in 2001, but serve both Iowa Quad Cities and Illinois Quad Cities. Therefore, meter on-off employees serving Illinois after 2000 are calculated using the total MEC meter on-off employees and the percentage of meter employees serving Illinois.

[6] In 1995, all 26 of the meter on-off employees reported to Rock Island but served both Iowa Quad Cities and Illinois Quad Cities. The approximate number of meter on-off employees serving Illinois is calculated using the total MEC meter on-off employees and the percentage of meter employees serving Illinois that year.

[7] There are no meter service contractor employees for 1995-2006 so the ratio of customers to meter service contractor employees is not calculated.

[8] The ratio of customers to employees is calculated instead of employees to customers as specified by Illinois Public Utilities Act, Section 4-602.

Figure 4—MEC Customers per Meter Service Employee Ratios



4.2 Discussion

In developing the ratios of customers to employees, we reviewed the staffing level data MEC provided by job classification, in-house employees, and contractor employees at year end for each year during the 1995-2006 time period, and made several adjustments to make the ratios consistent and easier to interpret.

4.2.1 Linemen Employee Ratios

MEC's field forces for Illinois primarily operate out of one service center located in Rock Island. Although a few Bettendorf, Iowa-based MEC crews also work in Illinois, this is offset by work done by Rock Island crews that work in Iowa. As a result, the Iowa-based crews were not included in the linemen and meter service ratio analysis.

For the linemen and meter service ratio analysis, some of the data provided included resources assigned for work in the Illinois and/or the Iowa Quad Cities areas due to changes in the reporting structure. In those cases, we had to estimate the number of employees for Illinois, because only employees serving the MEC Illinois territory are included in the ratio analysis. For instance, the substation employees all report to Rock Island, Illinois, but serve both the Illinois and Iowa Quad Cities areas. We estimated the Illinois substation employees by multiplying the total Rock Island substation employees by the percentage of linemen employees serving Illinois.

The total linemen in-house employees is the sum of the employees in the following job classifications: Linemen, Substation, and First Responder. The Total Linemen Contractor Employees is based on the "electric contractors" data provided by MEC. They represent peak FTEs as filed with the ICC. Since these include contract linemen and substation employees utilized for the peaks in work and large one-time bid projects for the Illinois and Iowa Quad Cities areas, we estimated the contractors serving Illinois by multiplying the total electric contractors by the percentage of linemen and substation employees serving Illinois.

The Total Linemen Employees is the sum of the Linemen In-house Employees and the Linemen Contractor Employees. Using the percentage of in-house employees versus contractor employees, the ratios of customers to employees in these two categories were calculated and summed together to get the overall customers per employee ratios.

As depicted in the customer-to-linemen employee ratio trend in Figure 2, there were no contractor linemen employees at year end until 2002. Before this time, the MEC Operations group reported no distribution contractors onsite. Various asset replacement programs and/or line extension projects may be responsible for the initial use of contractors starting in 2002. The data in subsequent years reflect continuous and increasing use of contractors, resulting in the overall ratio of total customers to linemen employees decreasing during 2002 to 2006, thus providing more linemen resources per customer.

4.2.2 Call Center Employee Ratios

Since MEC only has one customer service call center located in Davenport, Iowa, that serves both electric and gas customers across their entire service territory, we used the total MEC customer count (instead of only MEC Illinois electric customers) in computing the ratios of call center employees to customers. In 1995, however, only Illinois electric customers were included in the ratio analysis due to the lack of staffing numbers prior to the merger that formed MEC in 1995.

The Total Call Center In-house Employees is the sum of the customer-facing employees in the following job classifications: Residential Customer Service Agent (CSA) Phone Staff, Business Advantage CSA, Mission Control Specialists, Support Services Specialists, and Lead CSAs. The call center employees in the following job classifications are not included in the ratio analysis: Administrative Assistance, Administrative Specialist, Administrative Clerks, Workforce Specialists, Supervisors, and Managers.

The call center temporary employees consist of probationary residential CSA phone staff that undergo 12 weeks of training before MEC generally makes them an offer to become permanent employees. These temporary employees are contracted out by Manpower Inc. to help MEC filter new employees and address the high turnover typical of call centers. Contract Return Mail & Permanent Address Change employees are not included in the ratio analysis. No contract employees were used to handle customer calls from 1998 to 2001.

The Total Call Center Employees is the sum of the Call Center In-house Employees and the Call Center Temporary Employees. Using the percentage of in-house employees versus temporary employees, the ratios of customers to employees in these two categories were calculated and summed together to get the overall customers per employee ratios.

As depicted in the call center employee ratio trend in Figure 3, MEC began using contractor CSA phone staff again in 2002 to maintain a fairly consistent ratio of 6,000 call center customers per employee from 2000 to 2006. The fluctuations in the ratios during 1995-1999 are due to: the lack of staffing numbers prior to the 1995 merger that formed MEC; the large number of contract employees transitioning to permanent employees at the end of 1997; an attempt to clean up contractor numbers in MEC's database prior to 2000; and the decommission of the system necessary to extract contract employee numbers for those time periods.

4.2.3 Meter Service Employee Ratios

Most of the meter service employees serving Illinois also report to the Rock Island Service Center. Meter service employees consist of meter readers, meter technicians, and meter on-off employees. Except for 1995, meter on-off employees were divided between reporting to Illinois and Iowa Quad Cities areas through 2000. Starting in 2001, all the meter on-off employees

reported to Iowa Quad Cities but served both Iowa and Illinois. As a result, meter on-off employees serving Illinois after 2000 were calculated using the total Quad Cities meter on-off employees and the percentage of meter employees serving Illinois. For 1995, all the meter on-off employees reported to Rock Island, so a similar calculation was used to determine an estimate of the meter on-off employees serving Illinois.

The Total Meter Service In-house Employees is the sum of the meter employees and the meter on-off employees. MEC had no meter service contractor employees during 1995-2006, so only the ratios of customers to meter service in-house employees were calculated.

As depicted in the meter service employee ratio trend in Figure 4, these ratios remained fairly consistent each year throughout the 1995-2006 timeframe, with approximately 2000 customers per employee.

4.3 Conclusions

MEC's overall outsourcing philosophy for employees in the linemen job classification is to use contractors for workload peaks and large one-time bid projects. Since the initial use of contractors in 2002, there has been a gradually increased use of contractors resulting in a decreasing overall ratio of total customers to linemen employees (*i.e.*, more linemen resources provided per customer). Customer service call center temporary employees consist of probationary employees in training who are usually offered positions as permanent employees. MEC tries to maintain a constant flow of these call center employees in training to serve as a screening process and address the high employee turnover common for call centers. Contractors are not used for meter service work, and the ratios of customers per meter service employee have remained consistent. In general, MEC appears to be maintaining the necessary workforce to efficiently address the peaks and valleys in their work load during the 1995-2006 timeframe.

5.0 Assessment Areas

Jacobs Consultancy conducted assessments of the areas specified in the scope of work. For each assessment area, we present our analysis in the form of findings, conclusions, and recommendations, as appropriate.

5.1 Operations and Maintenance

5.1.1 Background

Operations

MEC's electric control center is located in Des Moines, Iowa. The functions are divided and handled by different personnel. Distribution control handles 15 kV to the customer meter and has two key goals:

1. Operate system reliably and safely—high voltage (HV) switching, load monitoring, *etc*.
2. Storm restoration—system recovery from widespread outages

The Energy Management System (EMS)/Supervisory Control and Data Acquisition (SCADA) system reaches down to 15 kV for monitoring and control, and nearly 98% of distribution substations have SCADA. MEC has mapped over 85% of its customers to the distribution transformer level, which allows the outage management system (OMS) to rapidly group related outage calls to the device that has operated speeding the restoration process, as well as provide relevant information back to the call center system(s).

The control center's communication is mainly via radio, with cell phones for backup and for areas where radio communication is not reliable. There are no mobile data terminals (MDT) in first responders' vehicles for electric, but MEC is currently putting a team together to study extending the MDT function, using the mobile support module in the OMS system.

Maintenance orders related to outages are initiated at the control center but are not dispatched directly. These orders are communicated through the work management information system (WMIS) to work centers where crew scheduling is done. After 3:00 pm, certain customer service work orders are dispatched and closed from the control center.

The control center does call-outs for first responders for outage restoration, and after-hours acts as proxy for supervisors as they administer the workforce without supervision during those times.

The control center has interface with the call center through:

- Direct and automated linkages with Customer Information System (CIS)
- Live Customer Service Agent calls
- High Volume Outage Call Answering System (HVCA), which is linked to the OMS for status and estimated time to restore (ETR)

The communications group provides coordination linkages to the call center Mission Control. Estimated time to restoration is computed based on device types. MEC looks at 10 years' data to obtain a 90% to 95% confidence level to compute the estimated time to restoration data by typical outage type.

MEC belongs to the Midwest Mutual Assistance Consortium, a non-formal group of 33 utilities, covering three North to South zones. The initiating utility will request a conference call to discuss crew availability, materials and specific needs during emergencies, or in anticipation of emergencies. The responding utility will usually also send supervisors, safety personnel, trucks and mechanics for equipment.

Maintenance

To properly assess workforce adequacy, we examined the maintenance function with a focus on maintenance planning/cycles maintenance accomplishments, backlogs, work effort barriers, field worker adequacy, crew sizes, system inspections, vegetation management, and the use of contractors, quality control and technology enablers.

5.1.2 Findings

Maintenance Planning

- MEC's maintenance initiative descriptions and schedules are described below:
    - **10-Year Illinois Circuit Inspection Plan**—MidAmerican has initiated a number of different programs to maintain distribution facilities. Since 1996, distribution circuits in Illinois have been part of a 10-year inspection schedule. Representatives from the Distribution Engineering department are trained annually and complete circuit inspections during the same calendar year in which they receive their training. Work instructions to correct National Electrical Safety Code (NESC) violations, address immediate reliability concerns, and repair or replace damaged facilities are generated and completed by operations the following calendar year. This program has been temporarily replaced due to the National Electrical Safety Code Corrective Action Plan, filed with the Illinois Commerce Commission on 1/31/2008.

- **National Electrical Safety Code Corrective Action Plan**—A complete circuit inspection identifying all NESC and reliability deficiencies will be conducted on all Illinois distribution circuits from 2008-2011, with all corrective actions to be completed by 2012. In addition, a ground line inspection will be conducted annually on all poles on circuits identified that year for inspection. Corrective actions will be completed based on MEC's National Electrical Safety Code Corrective Action Plan filed with the ICC on 1/31/2008.

- **Recloser Maintenance**—Each recloser is inspected on a monthly basis by Distribution Operations, and a log of trip/close operations recorded and submitted to Distribution Engineering for review. Based on the type of recloser, it is maintained on a 3-, 5-, or 10-year cycle in which each three-phase and single-phase recloser is removed from service and thoroughly inspected by Substation Operations. Reclosers may be brought in for more frequent servicing if an unusually high number of operations is identified during the monthly inspections, or the unit is found damaged and in need of repair.

- **Regulator Maintenance**—Each voltage regulator is inspected on a monthly basis by Distribution Operations, and a log of buck/boost operations recorded and submitted to distribution engineering for review. Each regulator is removed and serviced on a 3-year cycle. Regulators may be brought in for more frequent servicing if a problem or damage is identified during the monthly inspections.

- **Switch Maintenance**—Illinois overhead and underground switches are inspected and maintained on a 10-year cycle in conjunction with the 10-year Illinois circuit inspection plan. Deficiencies are noted and corrective actions (repair/replace) taken within the same calendar year.

- **Capacitor Maintenance**—Prior to 2008, capacitor time, temperature, VAR, and voltage controllers were in the process of being changed out to Cannon controls, which control capacitor operations depending on VAR flow and power factor, with voltage override capabilities. Capacitor banks were inspected visually every spring, and brought in for maintenance if deficiencies were noted at the time of visual inspection. As a result of this control changeover, the capacitor inspection program has evolved to an automated process where the system controlling the capacitors reports on problems that are corrected on a routine basis. Currently MEC is in the process of verifying communications with a number of capacitor banks in Illinois and testing open/close operations. Banks with “fixed-on” controllers will continue to be visually inspected, and noted deficiencies are corrected on an annual basis.

- **Substations**—Substation inspections include: monthly perimeter/security, equipment condition, operation flags and recorders, battery systems and operating status of monitoring circuits and equipment. Oil is sampled annually for

dissolved gas analysis and hot spot analysis. Results feed the Maintenance Management System for predictive analysis. MEC has a risk-based program that looks at individual substation items such as oil leaks, access to waterways, capacity, lightning protection, fire detection, *etc*., to pull out and identify high-probability failures. This is part of the reliability center maintenance program along with condition-based analysis, such as oil analysis, operation counts and manufacturers' service advisories.

- **Vegetation Management**[3]—MidAmerican Energy performs routine maintenance line clearance tree trimming on a three-year growth season cycle. In addition to routine maintenance work, tree crews trim for storm damage and new line construction. Tree trimming in Illinois is on track. Tree trimming is outsourced and competitively bid approximately every three years for routine work. Wright Tree Service is MEC's current vendor.

  To assure the quality of the work being performed and the accuracy of the reports being created, MidAmerican audits daily time sheets/production reports of the individual crews. MEC also inspects work once it has been completed.

  The forestry manager, once located in the Rock Island service building, is now located in Des Moines. Two foresters/technicians who serve the area are located in the Rock Island service building.

Triggering Mechanisms

- MEC uses System Average Interruption Frequency Index (SAIFI) and Customer Average Interruption Duration Index (CAIDI), as well as a number of specific device operations incurred over a specified timeframe, as a metric to identify devices/circuits for annual reliability improvement programs. These include:
  - Worst Circuits
  - Rolling Average Devices
  - Worst Devices
  - Underground Cable Replacement—Underground primary cable is replaced as it reaches the end of its life and failure rates reach unacceptable levels. MEC currently uses three metrics to rule if an underground cable is defective and needs replacement:
    - Two failures within a 12-month period on the same section of cable
    - Four failures of cable at any protective device within a 12-month period

[3] DR-005

- Cable is not capable of being spliced back together

Unplanned Maintenance

- MEC employs several mechanisms to identify maintenance issues that do not fall under planned or triggered programs:
    - **Voltage surveillance and system studies**—Distribution system voltages are maintained and continuously monitored by utilizing information from MidAmerican Energy's SCADA. In addition, MEC completes both customer and initiated voltage surveys to ensure voltages are maintained within the specified limits. As part of an ongoing program, voltage surveillance results are being compared to system studies conducted in MEC's System Planning group on an as-needed basis. If voltage surveillance reveals a problem with a feeder that was monitored, system studies are initiated to simulate load conditions when the problem took place. Simulated voltage characteristics are compared with results from field measurements and corresponding corrective actions to address phase balancing and low/high voltage trends on feeders in peak load situations.
    - **Power quality**—MidAmerican utilizes a portion of its engineering resources dedicated to power quality-driven maintenance requests. Customers experiencing frequent outages, voltage problems and/or radio frequency interference are addressed from within the distribution group. Investigations are generated to resolve reliability issues or potential reliability issues. The scope of the power quality group's investigations range from single customer problems to entire feeder outages and voltage issues (high/low, flicker problems).

Crew Scheduling[4]

- The majority of linemen assigned to work in the Illinois Quad-Cities report to and work out of the Rock Island Service Center. The crews report to the supervisors in Rock Island. Three supervisors are responsible for the work assignment of crews, and one supervisor assigns work for the contractor crews. The crews are typically made up of a foreman and journeyman. Forty linemen—making up 16 line crews—are assigned to the Rock Island Service Center.
- One to two crews from the Bettendorf, Iowa Service Center also support certain areas served in Illinois. The primary areas are the communities north of I-80 along the Mississippi River, that include Rapids City, Port Byron, Hillsdale and Cordova. Bettendorf Service Center provides 3–6 linemen making up 1–2 line crews to service the

[4] DR-006

Illinois service territory described above. The number varies with the workload in the area. The crews are supervised by one operations supervisor.

- MidAmerican Energy supplements company crews with contractor crews. This number of support contractors will vary as required to meet the peaks and valleys of workload.
- During normal working hours (7:00 am to 3:30 pm), which is known as the B shift, work is normally scheduled by the work scheduler and then given to the crew supervisors to assign to company or contractor crews. MEC crews are capable of doing construction and maintenance work and are assigned based on the work available. Emergencies and work that can be completed by one person are dispatched to the field services personnel via radio dispatch from the Des Moines control center. There are eight electric servicemen (linemen), with three in Iowa and five in Illinois supporting the B shift. These servicemen provide support for both Illinois and Iowa Quad Cities.
- After normal working hours (3:30 pm to 11:00 pm), which is known as the C shift, four electric servicemen (linemen)—2 in Iowa and 2 in Illinois—are dispatched to provide the initial response to emergencies that arise via radio dispatch. If additional assistance is required, seven linemen are available as on-call personnel who respond to after-hours emergencies. The on-call personnel are dispatched to work locations by the Des Moines control center. If the emergency requires more than the seven linemen on-call, the on-call supervisor is called. The on-call supervisor will utilize the crew overtime list to call out additional personnel as needed. If additional resources are needed after all company personnel have been contacted, local contractor resources will be called.
- MidAmerican Energy does not schedule contractors outside normal hours to supplement off-hour shifts. Contractors are only used outside normal hours during storm events where the field force is unable to handle the excess work load.

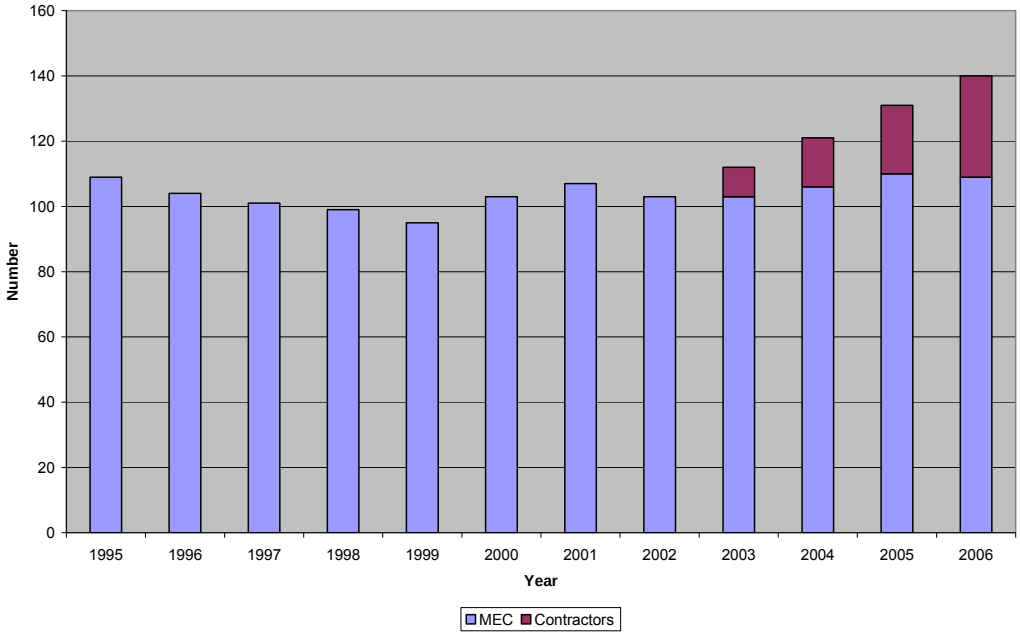
Use of In-house Crews vs. Contractors

- As discussed earlier, MEC's philosophy is to use in-house crews for base load maintenance and construction work efforts. Contractors are used to handle workload peaks and to perform larger scale projects where it is more cost and time-efficient. Contractors are also used in cases where specialized tools or equipment is required that is not economic for MEC to maintain in house.
- Contractor work is controlled by three contract arrangements:
    - **Lump-sum competitively bid project packages**. There could be a single large-scale project, such as a road widening project, or an assembly of smaller, related projects, into a large project. The lower boundary for these type projects ranges from $75,000 to $100,000.

- **Time and Equipment (T&E) projects**. These are situations in which contractors are routinely assigned smaller projects.
- **Unit price projects**. This represents repetitive work assigned to contractors (for example, vegetation management).

- The makeup of MEC line and substation staff compared to contractor full-time equivalents (FTE) is shown in the following figure.[5]

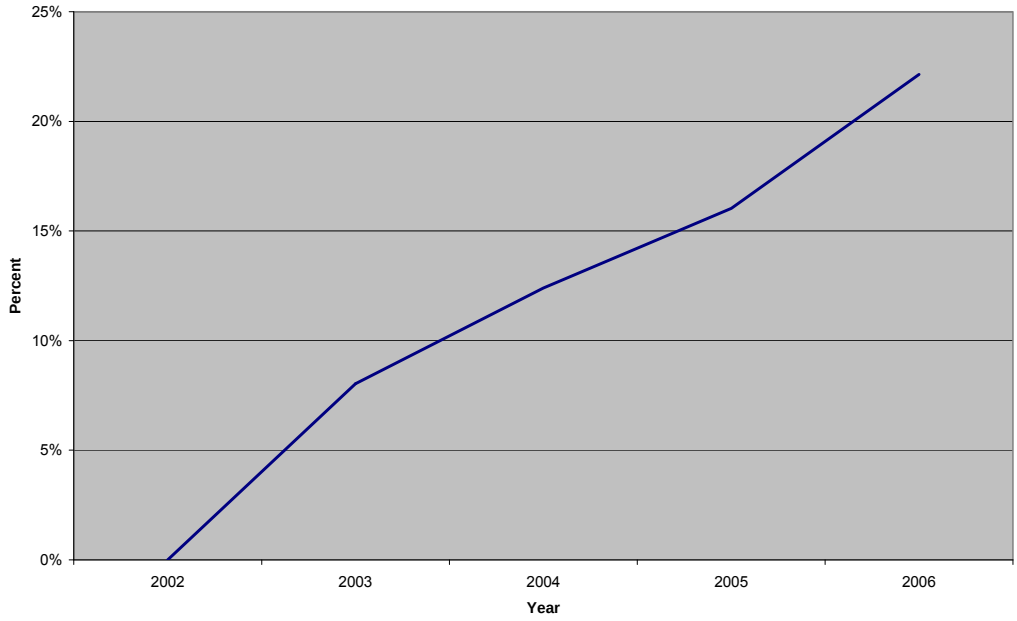
Figure 5—MEC and Contractor Line and Substation Workforce



- While MEC has basically maintained its in-house field worker complement, it has increasingly turned to contractors to supplement its workforce. The penetration of contractor FTEs has increased dramatically from 2002 to 2006, as shown in Figure 6.

[5] DR-009 revised

Figure 6—Contractor vs. Total Workforce



Outsourcing Agreements[6]

- MidAmerican Energy has contractual agreements with Wright Tree Service for trimming, clearing, and spraying of vegetation to maintain line clearances for overhead facilities. Vegetation management contracts are competitively bid and normally are in effect from one to three years.

- MidAmerican Energy maintains agreements with several contractors for construction and maintenance of electric facilities. MEC's primary contractor has historically been L.E. Meyers. These agreements are normally in effect for one to three years and are competitively bid. The contracts are predominantly time and equipment. Large projects are bid on an individual basis. There are no guarantees for work contained in the contracts. MEC also has agreements in place with several additional line contractors that are used on an "as needed" basis for emergency storm restoration. MidAmerican Energy is an active member of the Midwest Mutual Assistance group of utilities. Procedures are in place for requesting mutual aid from other Midwest utilities and the contractors who are working for them in times of larger system disturbances and emergencies.

- MidAmerican has contractual terms in place to have underground utility locates performed by outside resources. Again, the vendor is determined through competitive bidding, and contracts for this work normally are one to three years in duration.

[6] DR-026

Workload and Backlogs

- MEC conducts a series of meetings each month to address workload requirements, balance the workload cross crews, and define the level of contractor involvement that is required:
    - **Weekly** workload meetings to plan workload.
    - **Bi-monthly** meetings via conference call including VPs, operation managers, and head of Engineering. Topics include: accomplishing job within time constraints, defining larger projects, new business, availability to move crews, resources (contractors) on property, types of work and future issues.
    - **Monthly** meeting to balance work including contractors—includes engineering, operations managers, contractor head and technicians. Labor hour estimates come from WMIS. Meetings consider sensitivity of customer, work timing, task size and need for visibility to the customer.
- Over the 2002 to 2006 period[7] (data only available from 2002 due to accounting system change out), there was very little backlog as MEC strove to complete all work orders within 12 months through optimized crew scheduling and use of contractors to fill in as workload requires. However, the volume of work requests increased markedly in 2006. The backlog grew in 2007 to about 15%, which is considered typical in many utilities. The following figures illustrate work request growth and backlog from 2002 to 2006.

[7] Data only available from 2002 due to accounting system change. Figures do not include pole change-outs. Data pending clarification from MEC.

Figure 7—Work Request Growth

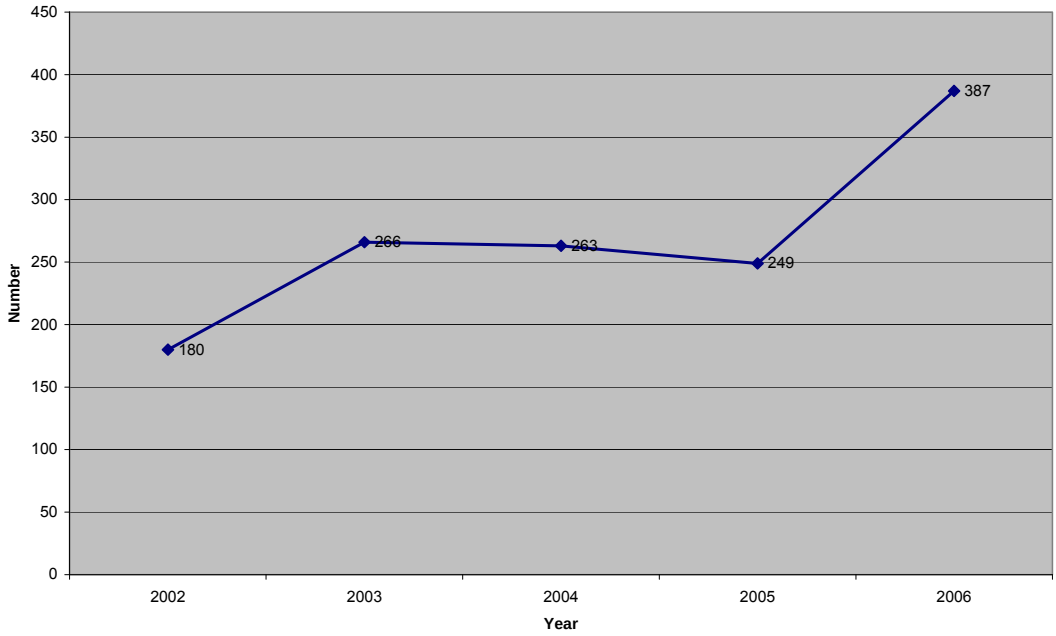
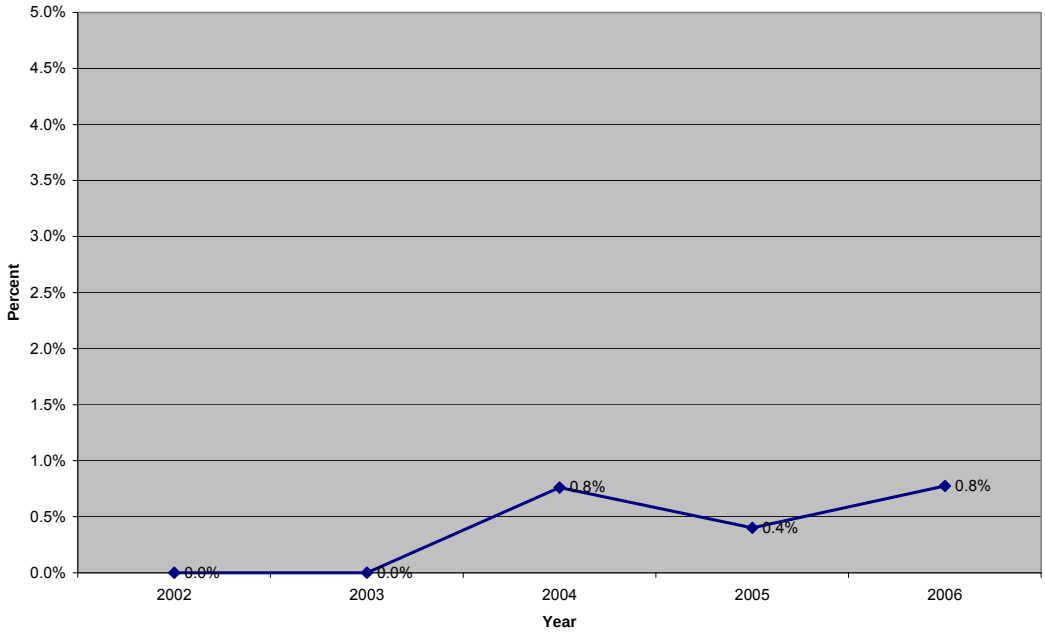


Figure 8—Work Request Backlog



Line Supervision

- In several interviews, both with represented employees and MEC management, we discovered that electric line supervisors generally have not risen from the journeyman ranks but have come from other areas of the company. Many of the line supervisors, therefore, do not have direct field experience in distribution construction standards or

work practices. We further understand that line supervisors are encouraged, but not required, to undertake journeyman training. Some line supervisors have chosen to perform self-study during their spare time. The represented employees expressed the concern that the line supervisors therefore were not necessarily qualified to assess construction or maintenance work quality and adequacy.

- Both represented employees and MEC management asserted that due to pay scale, overtime, and benefit package differences, it has been difficult to attract journeymen to the line supervisor position. MEC has made adjustments in pay scale and continues to examine ways to alleviate compensation differences to smooth the way for journeymen to ascend to line supervisor positions.
- Line supervisors spend approximately 40% of their day in the service center handling scheduling and other paperwork. They spend the balance of an average day in the field, either reviewing new project requirements or visiting and reviewing line crew work.

Construction Contractors[8]

- When a contractor is utilized to install, operate, or maintain MEC electric facilities, it is MidAmerican's responsibility to manage those contractors. To accomplish this, MEC must: have the appropriate contractual agreement with the contractor; ensure proper insurance is in place; establish the commercial terms through competitive pricing; ensure the contractor is utilizing qualified personnel to complete the work; inspect the work; and document that the work has been completed on time, meets standards and conforms to regulatory requirements.
- Prior to beginning the actual field work, the operations manager requesting the use of contractors identifies a person responsible for quality assurance (QA). The person responsible for quality assurance is expected to:
    - Inspect or assign qualified inspectors, MEC field personnel, operations supervision, qualified retired or contractor inspectors that will be responsible for specific or random inspections.
    - Assure all administrative functions associated with QA are completed and documented in a timely manner and transfer field inspection data to web page forms.
    - Contact contract management if the contractor work quality is unacceptable.
- Each inspector receives annual training on MEC's Basic Inspection Electric Facilities, which addresses: standards, inspection procedures and administration, standards, and safety requirements.

[8] DR-015

- Inspectors inspect work sites, complete and enter required documentation, report quality problems, and notify the project manager if tasks are being completed that the inspector is not qualified to inspect. While field inspection does not require an inspector to be onsite for every task, it is important that the inspector knows the work is being completed according to standards by properly qualified personnel. Further, the inspector has the authority to shut down construction if quality or safety problems are encountered. Generally, shutting down a construction project will be done after communications with the project manager or responsible QA person.
- For construction contractors, the inspector performs site reviews of contractors on a daily basis, and completes and documents audits using a daily inspection form for each contractor crew visited.
- The contract administrator conducts periodic meetings with the construction contractors to review results noted on the inspection forms. The contract administrator will act on any trends or issues noted with the appropriate contractor.

Staffing[9]

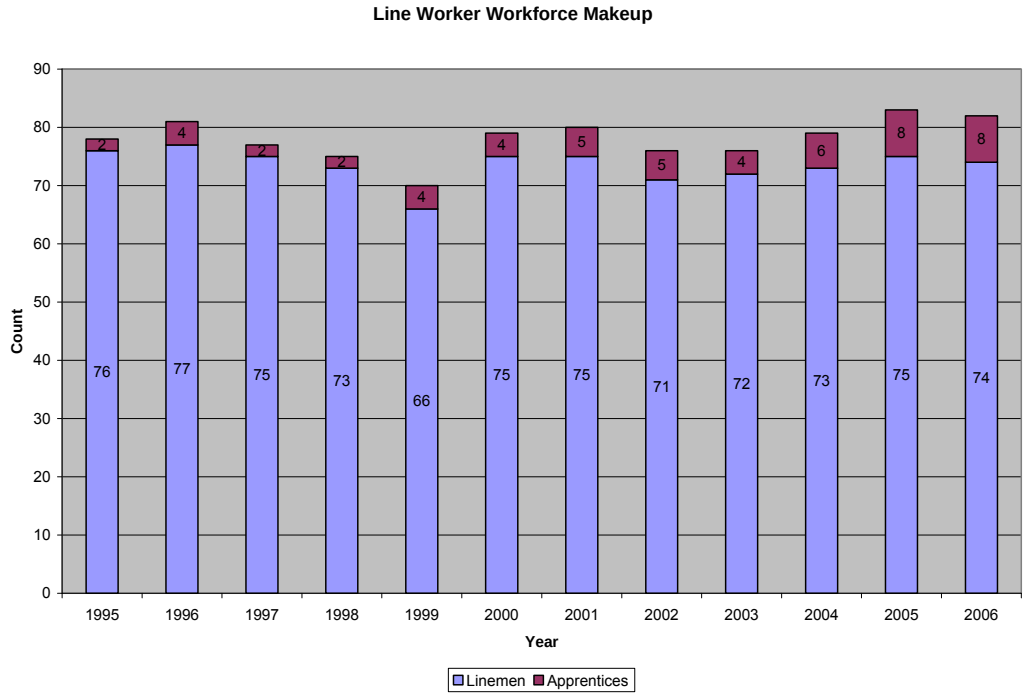
- The staffing level for linemen was fairly level over the 1995 to 2006 period.
- MEC has recognized that its workforce is aging and has made efforts to attract and retain apprentices to replace retirees and other workforce decreases.
- Meter readers who have been or will be displaced by the implementation of automated meter reading (AMR) have been candidates for lineman and substation apprentices.
- The staffing level for journeymen substation electricians and technicians dipped in the early 2000s, but MEC proactively added apprentices, which has contributed to an overall increase of 6 from 2002 to 2006.
- Lineman overtime has increased steadily from about 10% in 1999 to almost 22% since 2002.
- Tolerance for overtime varies among the line workers: about one-third want less overtime, one-third want more overtime, and the balance is ambivalent.
- The level of overtime among substation workers averaged less than 1% over the 1999 to 2006 period.

[9] DR-009 revised

Line workers

- The line worker staff complement, including apprentices, is depicted in the following figure.

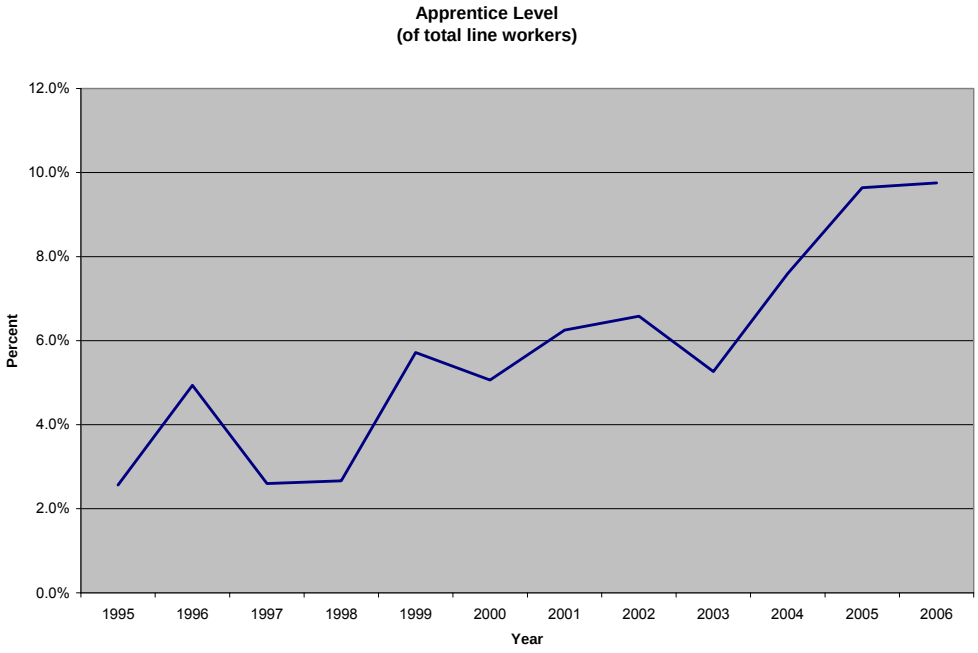
Figure 9—Line Worker Workforce Makeup



- The staffing level for linemen was fairly level over the 1995 to 2006 period. MEC has recognized that its workforce is aging and has made efforts to attract and retain apprentices to replace retirees and other workforce decreases.

- The composition of apprentices dramatically increased from an average around 6% (of total line workers) in the late 1990s and early 2000s to nearly 10% in 2005 and 2006, as shown in the following figure.

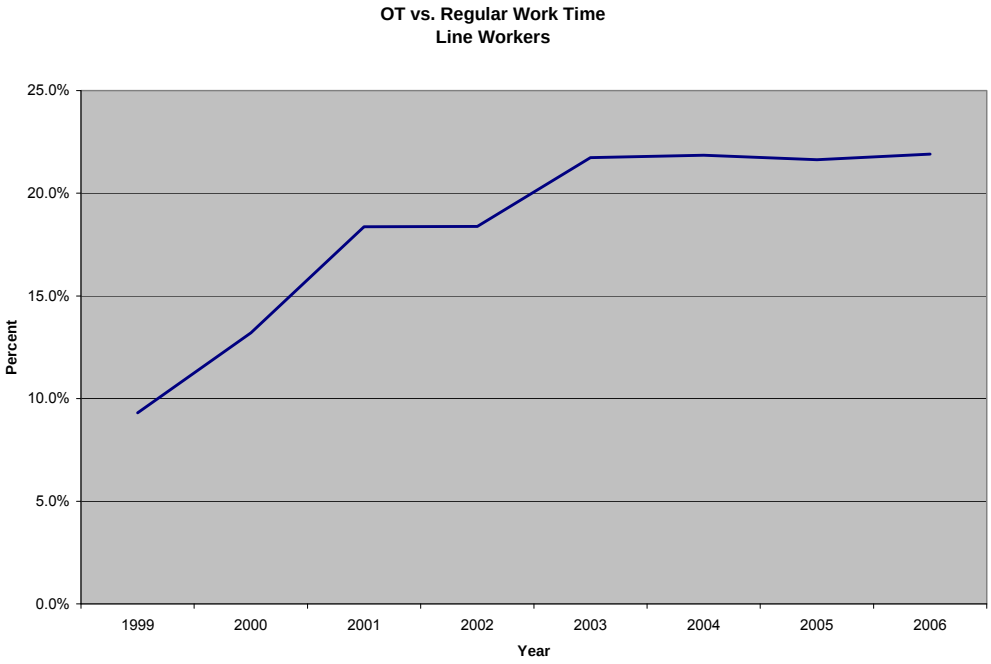
Figure 10—Line Worker Apprentice Level



- MEC is currently implementing automated meter reading. The Quad Cities Iowa installation was completed February 1, 2008, and the Quad Cities Illinois implementation is underway and expected to be completed by November 1, 2008. In Quad Cities Illinois, the headcount for meter readers is planned to be reduced from 39 to 9 subject to efficiencies in the new system[10]. Some of these meter readers have moved to become apprentice line workers.
- Overtime has increased steadily from about 10% in 1999 to almost 18% in 2002 as shown in Figure 11. This is consistent with figures reported during our interviews and consistent with our industry experience.
- Overtime for MEC crews leveled off at about 22% over the 2003 to 2006 period, while the use of contractors dramatically increased over the same period.

[10] DR-068

Figure 11—Line Worker Overtime vs. Regular Work Time



- MEC has stated that it utilizes its system performance in terms of reliability and other indices to determine areas of focus. In the following two figures, we have shown the relationships between staff level changes and changes in reliability for System Average Interruption Frequency Index (SAIFI) and Customer Average Interruption Duration Index (CAIDI).

Figure 12—SAIFI vs. Linemen

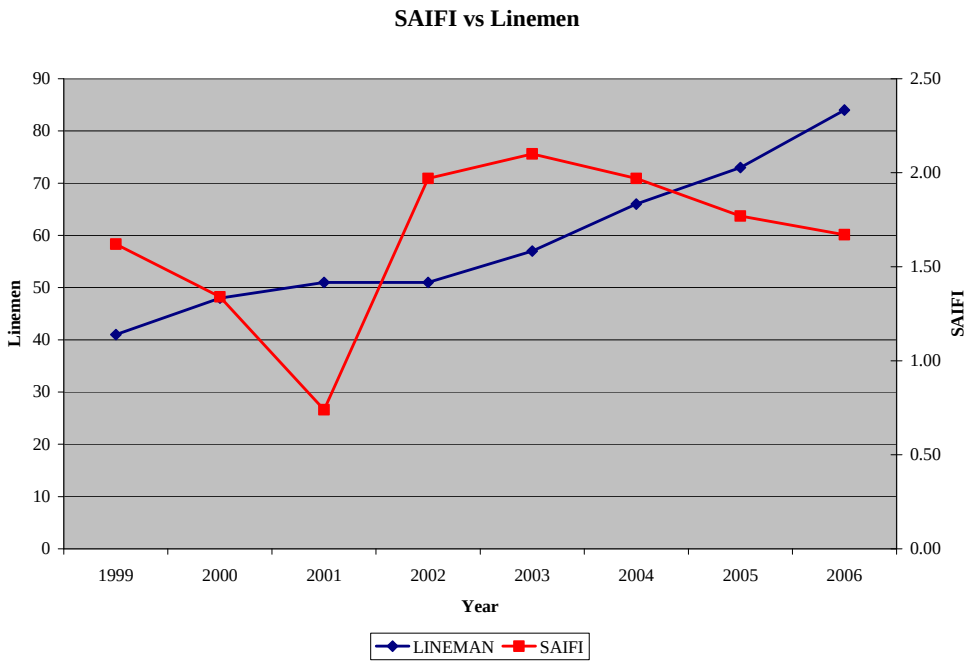
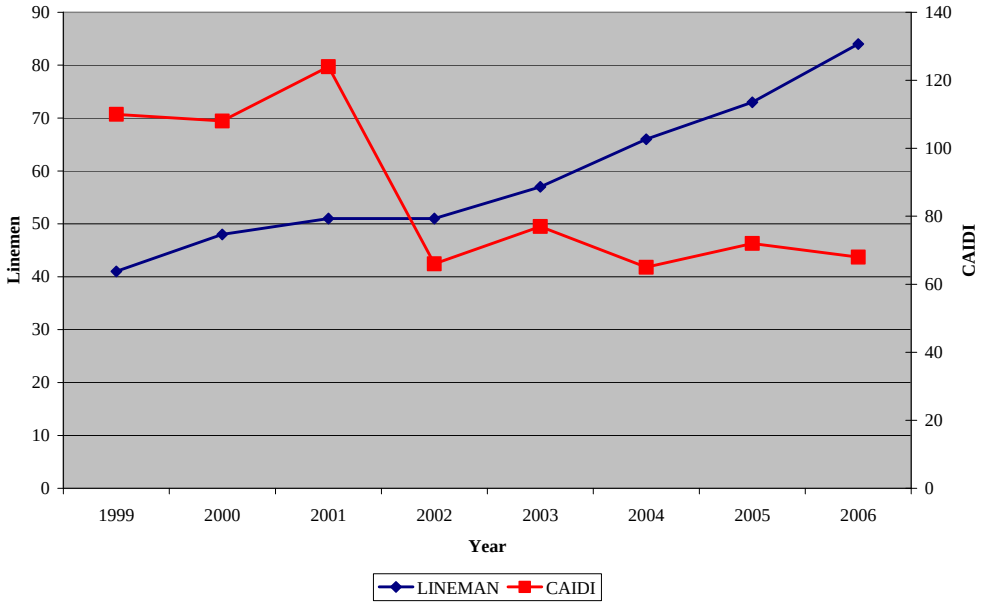


Figure 13—CAIDI vs. Linemen



- As depicted in the preceding figures, the number of linemen (journeymen, apprentices and contract workers) has increased, and both SAIFI and CAIDI have decreased

(improved). This indicates that, at least over the 1999 to 2006 period, one of the drivers of improved reliability performance was increased total field staff level.[11]

- Another set of measures used by MEC to validate its overall service level includes customer satisfaction surveys. Overall customer satisfaction survey results are reported in the Call Center section of this report. In regard to reliability, the ICC mandates that MEC provide a survey[12] that captures customer sentiment toward their satisfaction with MEC's level of "providing electric service." We have reproduced the results from this survey in the following table for 2000 through 2007.

Table 4—ICC Mandated Customer Reliability and Satisfaction Study
Overall Satisfaction with "Providing Electric Service" (Illinois Customers Only)
0-10 scale, mean scores

Year	Residential	Commercial
2000	8.36	8.62
2001	8.18	8.56
2002	8.39	8.52
2003	8.49	8.76
2004	8.49	8.75
2005	8.52	8.92
2006	8.68	8.93
2007	8.43	8.79

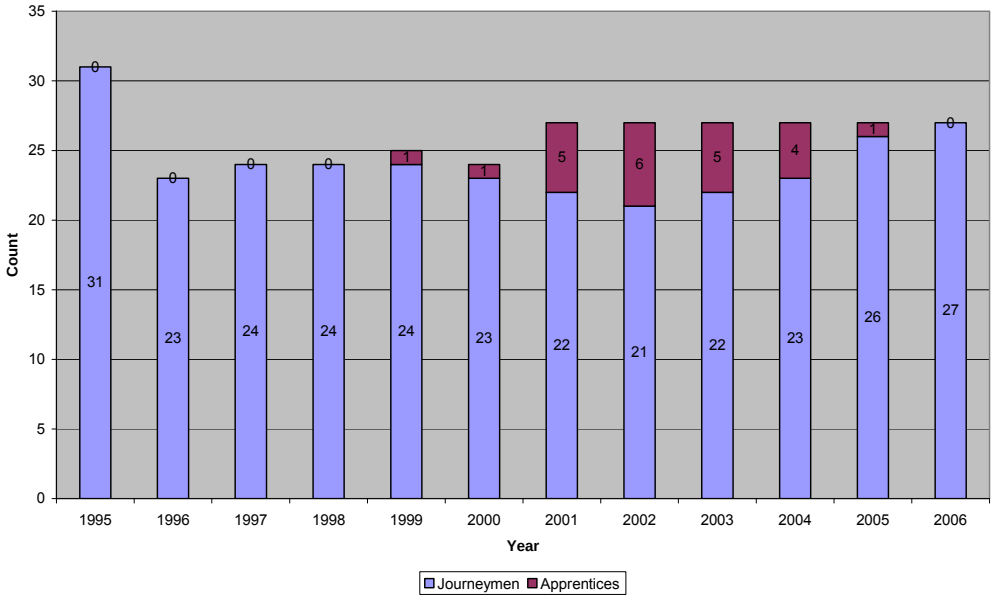
Substation Workers

- The staffing level for journeymen substation electricians and technicians dipped in the early 2000s, but MEC proactively added apprentices, which contributed to an overall increase of 6 from 2002 to 2006. The 2006 level of 27 staff is the highest since 1996. Ex-meter readers have transferred to substations and to the Line department as apprentices.

[11] Other system improvement efforts undoubtedly also contributed to improving reliability.

[12] DR-032

Figure 14—Substation Worker Workforce Makeup

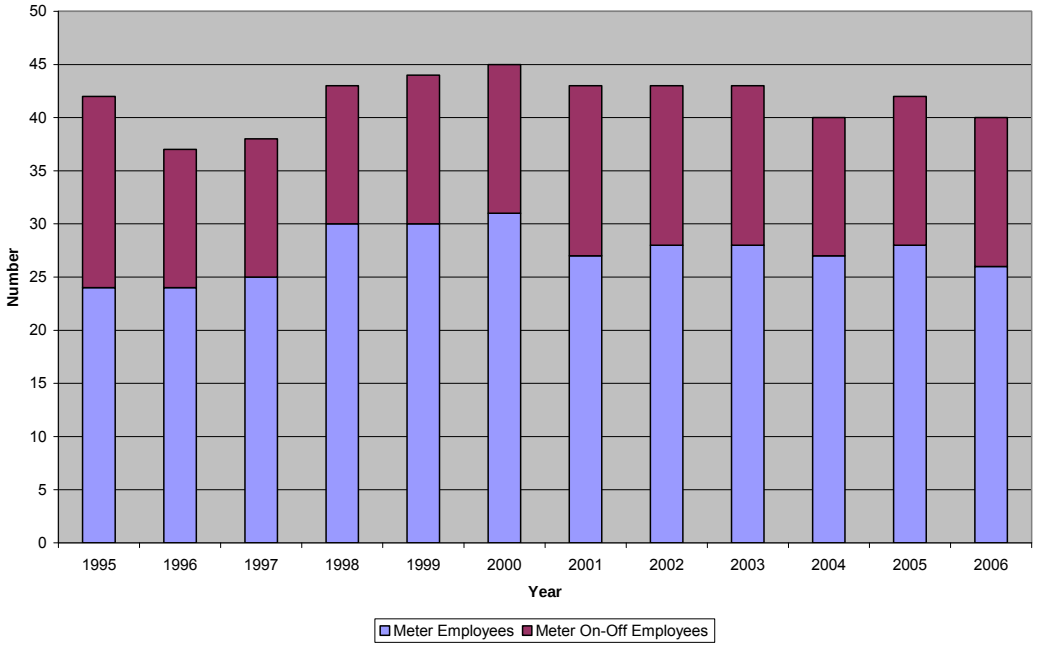


- The level of overtime among substation workers averaged less than 1% over the 1999 to 2006 period.

Meter Service Workers

- The meter services staff complement remained fairly constant at an average of 42 over the 1996 to 2006 period, as depicted in Figure 15.
- The ratio of customers per meter services employee remained fairly consistent each year throughout the 1995-2006 timeframe, with approximately 2000 customers per employee.
- With the implementation of AMR, the number of Meter Employees—which includes meter readers and meter technicians—is expected to decline; however, most Meter Employees will be offered the opportunity to transition into line and substation apprentice programs.
- The meter services group does not use contractors.

Figure 15—Meter Services Staff Level



Technology Enablers

- The Work Management System (Logica, installed in 2000) has a construction standards module. Work management is integrated into the Geofacilities Information System (Intergraph). MEC has deployed MDTs in individual first responder line trucks. In addition, line crews have laptops with circuit maps loaded into them. About 50% of the crews use maps in electronic form; the rest prefer paper maps, which are provided in the trucks. This is a typical acceptance rate compared to our industry experience.

- A Global Positioning System (GPS) is installed in the individual first responder line trucks and is used for travel directions.

- Dispatch is done from the Des Moines dispatch and control center via radio. Work order completions are radioed back to Dispatch, which closes out the work order.

- During the day, work orders are dispatched to the MDTs in the individual first responder line trucks; upon completion, work orders are cleared via MDT. After 3:00 pm, certain customer service work orders are dispatched and closed from the Des Moines control center.

- The EMS/SCADA system's reach is down to 15 kV for monitoring and control. Nearly 98% of distribution substations have SCADA. Over 85% of MEC's customers are mapped to the distribution transformer level, which allows the Outage Management System to rapidly group related outage calls to the device that has operated and speeds

the restoration process, as well as provide relevant information back to the call center system(s).

- MEC is currently deploying automated meter reading capabilities through Itron. This system will result in more efficient and accurate meter reads and will free up nearly 100 meter readers to fill other positions within the company.

- MidAmerican Energy Company's delivery services application portfolio consists of more than 120 separate applications. Many of these applications represent "add on" capabilities for purchased software and smaller work group type applications. The table below lists the key applications supported on behalf of the delivery services business unit.[13]

[13] DR-024

Table 5—Key IT Applications

Application	Description
Energy Efficiency Information	Application support for various state-sponsored energy efficiency programs
Meter reading – residential and commercial	Applications for commercial and residential meter reading supporting customer service and energy trading
Automated Meter Reading	Support for mobile collection of meter reads
Meter Control and Inventory	Gas and Electric meter inventory and management
Electric Outage Management	Electric outage tracking and management
Work Management	Construction work management
Mobile Service Dispatch	Field service order and customer appointment scheduling and dispatch
Geofacilities Information	Mapping and tracking of geo-located facilities with connectivity
Compliance	Regulatory inspection tracking, work order generation
Gas and Electric Capacity Modeling	Engineering model for determining capacity impacts of proposed construction
EMS / SCADA	Electric transmission and generation controls and data acquisition system for managing electric flows on the transmission network and automatically adjusting generation output
Document Management	Engineering drawing management and version control
Online Forms	Electronic workflow tracking of complex customer requests
Facilities Locates	Interface to OneCall agencies to accommodate locate orders for buried facilities
FERC Compliance Monitoring	Monitor employee and contractor access to secure facilities/information in accordance with NERC CIPS compliance requirements
Capital Budgets	Maintain monthly capital budget data

5.1.3 Conclusions

Operations

MEC employs a state-of-the-art control center in Des Moines, Iowa, to monitor and control the transmission and distribution system in Illinois. MEC's SCADA reaches down to the 15 kV system and covers most of its distribution substations. As part of the outage management system, customers are mapped to the transformer that serves them, providing a highly connected model that enhances outage response.

Maintenance

MEC has a robust maintenance planning function that meets or exceeds industry norms. The maintenance planning function specifies depth and frequency of line and substation inspections, NESC code compliance, switching and control equipment maintenance intervals. MEC's

maintenance planning function makes use of triggering mechanisms to identify required remedial maintenance work. These triggering mechanisms include reliability performance and component operating trends. For example, the 10 worst performing circuits are identified for remediation on an annual basis, device performance degradation, and underground cable replacement needs. MEC captures additional unplanned maintenance requirements through voltage surveillance, system studies and power quality monitoring.

Staffing

MEC has recognized that its workforce is aging and has made efforts to attract and retain apprentices to replace retirees and other workforce decreases. The staffing level for linemen was fairly level over the 1995 to 2006 period, but overtime increased steadily from about 10% in 1999 to almost 22% by 2002, remaining at this level through 2006. The staffing level for journeymen substation electricians and technicians dipped in the early 2000s, but MEC proactively added apprentices, which contributed to an overall increase of 6 from 2002 to 2006. The level of overtime among substation workers averaged less than 1% over the 1999 to 2006 period. MEC faces the same difficulty as many utilities in attracting experienced linemen and substation workers and therefore depends heavily on apprentice programs. One source for new apprentices is meter readers, some of whom are being displaced with the implementation of AMR. While MEC has basically maintained its in-house field worker complement, it has increasingly turned to contractors to supplement its workforce. MEC states that its policy is to use contractors to supplement its work force to satisfy the peaks in maintenance activities; however, the penetration of contractor FTEs increased dramatically from 2002 to 2006, and in 2006 accounted for approximately 22% of the total workforce.

The meter service group, which consists of meter technicians, meter on-off employees and meter readers, was maintained at a fairly consistent level over the 1995 to 2006 period. However, with the implementation of AMR, the number of meter readers and meter technicians is expected to decline. Thus, overall meter service group levels will be declining in the future.

Line supervisors spend approximately 40% of their day in the service center handling scheduling and other paperwork. They spend the balance of an average day in the field, either reviewing new project requirements or visiting and reviewing line crew work. Further, electric line supervisors generally have not risen from the journeyman ranks but have come from other areas of the company. Many of the line supervisors, therefore, do not have direct field experience in distribution construction standards or work practices, and this arose as a concern by the unions.

Work Scheduling

MEC conducts a series of meetings each month to address workload requirements and to balance the workload across crews and define the level of contractor involvement that is required. These meetings include: bi-weekly workload planning, monthly meetings to review

project requirements, and timing and monthly meetings to balance the workload among in-house crews and contractors. MEC maintained a relatively small backlog of less than 1% from 2000 to 2006. In 2007, the backlog grew to nearly 15 percent.

Technology Enablers

MEC has a robust set of integrated applications that serve to support the maintenance, dispatch and operations functions. MEC continues to expand and integrate functionality to leverage information technology to enhance productivity and effectiveness. For example, MEC is studying expanding the implementation of MDTs for the electric first responders to enhance their communications and productivity potential.

5.1.4 Recommendations

- MEC should conduct a strategic workforce planning study to define the workforce required to implement company business strategies and identify actions needed to meet those requirements. The analysis should reveal gaps between the workforce needed and the workforce supply forecasted to be available, certain critical positions as well as certain key employees.
- MEC should strive to increase its complement of apprentices, particularly in the line worker category. The ability to forecast future bargaining unit retirements could be greatly enhanced by conducting a nonbinding potential retirement survey.
- MEC should continue to explore means to improve compensation parity to attract more journeyman line workers into line supervisor positions.

5.2 Training and Safety

5.2.1 Background

The training and safety function is an essential human resource support component of any business. Working safely means leaving the workplace in the same condition as when the workday began, while training refers to the acquiring of knowledge, skills and competencies resulting from teaching. In the electric distribution industry, training forms the core of apprenticeships and provides the backbone for technical education. Apprentice programs supply the training for the initial qualifications, while refresher training provides the opportunity for continued technical development. At MEC, electric technical training consists of a combination of both training in the classroom and on the job.

The quality and effectiveness of the training and safety function is one of the most enduring sources of a sustainable, competitive advantage for companies today. An organization gains a

competitive advantage by encouraging and creating a safe environment and by training its people and allowing them to use their expertise and ingenuity to meet clearly defined objectives.

5.2.2 Findings

Training

- MEC technical training is a responsibility of the Director—Compliance and Support organization. This organization also has responsibility for process and procedures, franchise agreements, and technology coordination.

- Geographically, training is split into three areas: Rock Island, Des Moines and Sioux City. Each training center has both electric and gas technical training responsibilities. Since 2001, the electric apprentice training has been conducted by a bargaining unit position titled Electric Training Lineman. In addition, safety and other technical training is coordinated by a supervisory position titled Technical Trainer.

- Unique to the Electric Training Lineman position is the fact that trainers are selected based on qualifications as opposed to seniority. This helps assure that they are skilled in current technical requirements, as well as being able to effectively deliver the training. Since the position also is available for overtime and participation in outage restoration, the issue of inadequate supervisory pay differential becomes moot.

- MEC has created an Electric General Apprentice Committee to oversee the apprentice program. The committee consists of five management members and five union members (two from Local 109 and three from Local 499).

- Given the four-year apprentice training program, MEC tries to hire in advance of known journeyman retirements. This practice helps to develop staff so they are ready when needed and supports knowledge transfer. In assessing the impact on the apprentice program based on the union's labor agreement, experienced apprentices received a maximum of six months' credit in grade. Consequently, hiring experienced linemen is not supported by the current labor agreement.

- The MEC organization works under an overall full-time equivalent employee cap. However, individual organizations or departments can increase their in-house employee levels so long as the overall FTE level is maintained. Since total staffing for any large organization is always to some extent in a state of flux, with employees leaving or being added, it is possible to hire employees in advance of a specific employee leaving and still maintain the FTE cap. If this pre-hiring were done consistently, the organization could to some extent support knowledge transfer for critical positions. However, pre-hiring in advance of known retirements is not consistent. We found that the Substation group annually informally polls its staff near retirement age to gain an understanding of constituent retirement plans. Although these retirement indications are not binding, they

do help forecast prospective departures. In the Line department this practice is not followed as formally. Consequently, staffing level and skill gaps can and do frequently exist.

Table 6—Apprentice Staffing Levels[14]

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Total Apprentices*	2	4	2	2	4	4	5	5	4	6	8	8
Apprentice Departures							1				2	

*Totals for IAQC and IIQC work group

- The above table describes the number of apprentices for the last 10-year period under study. It also includes for each year the number of apprentices leaving the company for any reason.
- Turnover in the apprentice program during the study period has not been an issue. However, we learned through interviews that the apprentice program is currently experiencing a high washout rate. This is because the prime feeder group consists of meter readers, whose jobs are being phased out. Many of them eventually come to the conclusion that being a journeyman lineman is not for them.
- Each apprentice receives a mandatory 144 hours of classroom training each year for four years. MEC belongs to and uses the National Joint Apprentice and Training Committee (NJATC) based training templates. NJATC is a joint program between the National Electrical Contractors Association (NECA) and the International Brotherhood of Electrical Workers (IBEW) has clearly demonstrated the most cost-effective way to train qualified craft workers. The MEC training program is accredited by the Illinois Department of Labor.
- The apprentice program trainer located at Rock Island is a certified NJATC instructor and actively participates in NJATC committee work.
- Electric refresher training is mandatory for all front-line fieldworkers, but optional for first-line supervisors and engineers. A list of actual refresher training conducted in 2007 follows: Customer Contact Training, 2007 Electric Refresher Tool & Equipment-Altec Sentry, Waste Management: In Sure Hands, Oil Spill Response/SPCC: Practice Prevention, Oil Spill Response/SPCC: Prepare to Respond, Emergency Plan - Employee Evacuation, Right to Know: Hazard Communications, Fire Extinguisher Operation - Hands On, CPR - Re-certification, Bloodborne Pathogens, Hazardous Material Security Procedures – Awareness, First Aid, Hearing Conservation Program, Equipotential Grounding 1 - Day Training, Fire Safety and Extinguishers, Lock Out/Tag Out Annual Review for Affected Employees, Confined Space Entry – Delivery, Services

[14] DR-055, DR-092

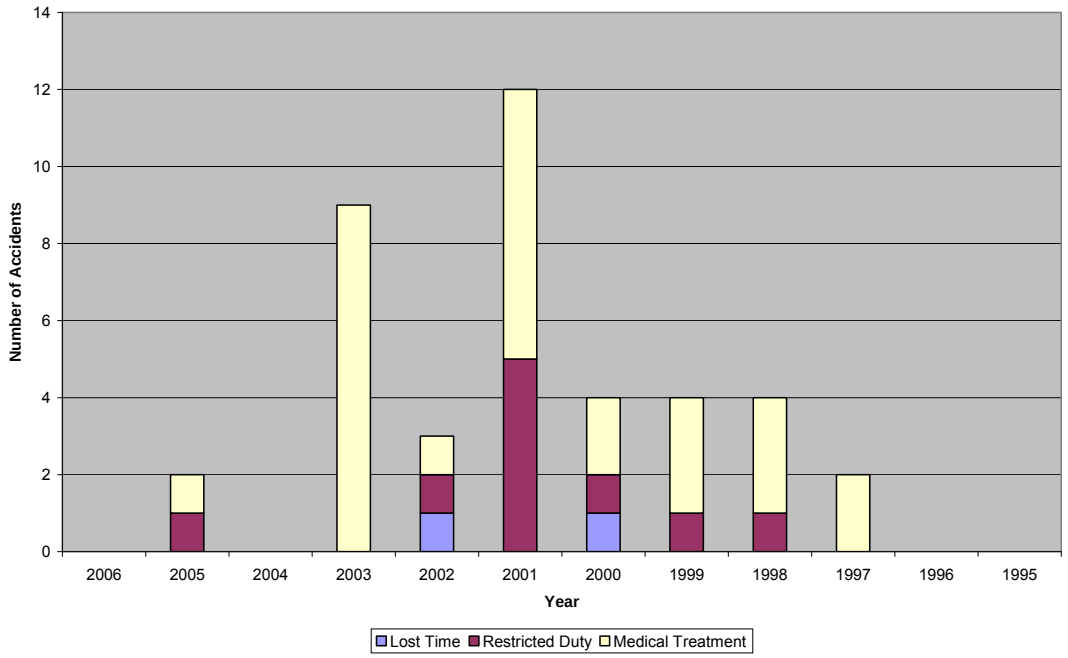
Enclosed Space Entry – Delivery, Services Pole Top Rescue Bucket Truck Rescue, Ladder Safety, MidAmerican Energy/MidAmerican Energy Holdings Company Driving Policy, Work Zone Setup Refresher Training/Annual Flagger Certification, Training Revisions to the MEC Driving, and Policy Customer Contact Training.

- Outsourced service providers, such as electrical contractors, are not trained by MEC. Management requires that the service provider retain and provide a qualified workforce.
- New line and substation department supervisors do not necessarily have technical electric distribution experience when assigned. Their technical background is primarily learned through on-the-job training (OJT) and attending annual journeymen lineman training.
- The company is instituting efforts with community colleges, chambers of commerce and community groups to develop and enhance a feeder program for new hires.

Safety

- In almost every interview, safety was stressed as a prime company objective: “we will deliver services safely and efficiently.”
- It was reported that MEC has optimized its safety program and went beyond what other utilities were requiring.
- Employees are keenly aware of the company’s emphasis on safety, but believe it is being driven by the numbers.
- The company conducts an aggressive audit program consisting of both safety supervisor initiated audits that generate internal reports and Behavior Based Safety (BBS) field audits that remain anonymous.
- Formal safety training includes: hazard communications, asbestos refresher, emergency gas response, blowing gas, fire extinguisher, fork truck and Smith Driving, plus other programs provided on an annual basis. Over 1600 MEC employees have completed the Smith Driving training program in the last two years.
- The figure below shows the total number of accidents that occurred in MEC’s Illinois electric distribution workforce for the 1995–2006 period. The total number of accidents includes those that resulted in either lost time, restricted duty, or medical treatment.

Figure 16—Electric Distribution Operations Accidents



- From the preceding figure, it can be seen that accident experience peaked in 2001 and to a somewhat lesser extent again in 2003. Since then, only two accidents occurred during between 2004 and 2006—a dramatic improvement.

- The company's safety department indicated that MEC does not specifically have safety benchmarking data used to compare the Illinois electric operations. They were only able to provide benchmark information between 2004 and 2006 from the Edison Electric Institute Safety Survey to provide general safety comparisons. This survey includes all of MEC's gas, electric, generation and corporate data company data and not just electric distribution operations.

5.2.3 Conclusions

Training

Typically in the electric distribution industry, the apprentice linemen training course covers a three-year period consisting of both classroom and in-house training. At MEC, the linemen and substation training program is four years in length. While the additional program length is desirable, the length of time between when apprenticeship is initiated and when an apprentice is fully qualified presents an organizational challenge. The timing of known attrition and having qualified apprentice program graduates to take their place is difficult to forecast. During the study period, minimal turnover in the apprentice program occurred; however, the present program is experiencing high turnover. Given the reluctance to place into position and train

apprentices beyond anticipated needs, it appears the company would be well served if it could enhance its ability to forecast future staffing requirements.

The company lives within a prescribed level of FTEs but varies the number of employees in any particular line of business or classification to fit immediate needs. There is some attempt to use this flexibility as a way to prepare for future retirements; however, this is not a universal practice.

MEC's approach to utilizing qualified bargaining unit members as linemen training instructors helps assure that they are skilled in current technical requirements, as well as being able to effectively deliver the training.

Safety

Safety, as stated by all levels of management and bargaining unit personnel, is a prime MEC objective. Based on our experience, the emphasis placed on safety has gone beyond what other utilities are requiring. The company conducts aggressive audit programs and extensive safety training.

In contrast to the emphasis on safety, the company participates in minimal benchmarking to compare itself to other electric distribution utilities. Benchmarking can result in the identification of best practices, which may ultimately present safety efficiency and effectiveness opportunities.

5.2.4 Recommendations

- Improve ability to forecast future bargaining unit employee retirements by annually asking journeymen linemen who are within four years of potential retirement what their retirement plans are.
- Having supervisors with only partial familiarity with the technical aspects of the journeymen linemen position is an issue that should be addressed by developing a process or program to strengthen supervisory technical knowledge.
- Participate in an ongoing safety benchmarking survey with comparable utilities, so that best practices may be identified and analyzed, and uncover opportunities for MEC to proactively pursue.

5.3 Quality Review

5.3.1 Background

MEC has a formal, but not completely documented, quality assessment and control process that is made up of three main components: line supervisor reviews of MEC crew work, contractor follow-up (conducted by a contracted retired journeyman lineman), and the MEC Annual Standards Audits. Each of these is discussed below.

Line Supervisor Inspections

The line supervisors visit crew work locations, review the progress of the work efforts and inspect the quality of the work and conformance to standards. The line supervisors do not keep any records on these inspections.

Contractor Follow-up

MEC developed inspection forms several years ago for recording the results of these inspections but stopped using the forms. They recently again began using these forms to record the results of the contractor quality assessments.

MEC Annual Standards Audits[15]

Projects in various Electric Service Center Areas are audited annually for compliance of the Distribution Construction Standards and compliance with usage of Standard (ESTD) materials. MEC's process for these audits begins with a request to the various Distribution Engineering and Operation Departments to select new WMIS projects, consisting of new overhead and underground single and/or three phase construction projects for the audit. The WMIS projects were provided and representatives from Electric Standards and the Electric Distribution Construction Standards Committee conducted the audits. Some of the projects were overhead primary relocate projects and overhead rebuilds, where various materials were transferred from existing poles to the new poles. Construction projects that were assigned by a Service Center to contract crews were also audited and are listed as such. We reviewed these reports for 2000 through 2005 and note that the audits provide a very detailed set of inspection results that are fed back to operations and engineering and are a good learning tool to educate operations and engineering staff on standards implementation and construction practice consistency.

Quality (Condition) Assessment

As per our proposal, we specified: "We will examine The Utilities' physical facilities, the electrical distribution system." During our discovery and interview process, we found that quality assurance monitoring for distribution construction and maintenance jobs was not being recorded but was being accomplished. We have modified our proposed scope to focus on a construction

[15] DR-063

and maintenance audit of selected in-house and outsourced jobs over the past year. For selected jobs, our inspectors conducted a detailed field audit that included a visual inspection of the facilities for construction quality and adherence to MEC's published construction standards.

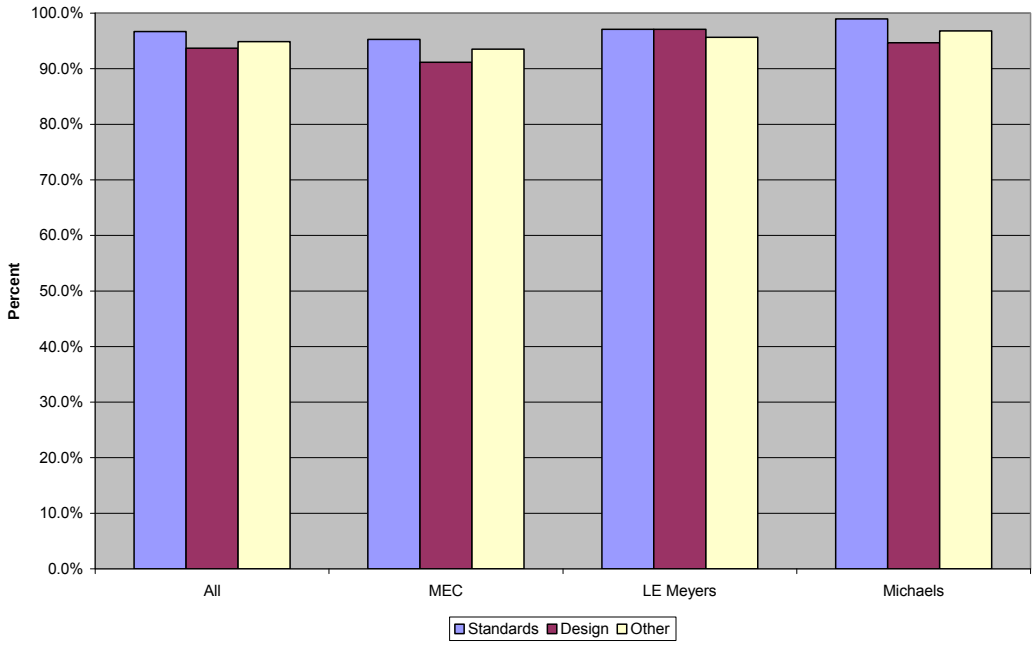
We sampled a total of 333 recent work orders within MEC's Illinois service territory. Based on interview comments, we chose to create a balanced sample approximately equally divided between MEC and contractors, with a sample of 170 jobs and 163 jobs, respectively. The contractors included Michaels (94 lump sum jobs) and L.E. Meyers (69 T&E jobs).

A MEC line inspector or line supervisor accompanied our inspection team and facilitated locating the work order work location and subject facility.

5.3.2 Findings

- Projects in various Electric Service Center Areas are audited annually for compliance of the Distribution Construction Standards and compliance with usage of Standard (ESTD) materials.
- MEC inspectors check some 10% of contractor-executed projects for quality and safety.
- Written records of the contractor inspections have only recently been reactivated.
- MEC line supervisors check MEC crew work in the field for quality, safety and adherence to standards.
- MEC line supervisors do not record the results of their quality inspections of MEC crew work.
- During our quality inspections, we found a fairly high level of adherence (96.7%) to standards. The most common variances we found are consistent with MEC's annual audits.
- We found that 93.7% of the jobs we sampled were built to exact design as specified on the work order. In some cases the crews missed minor items or exceeded the work order requirements.
- The results were recorded on an inspection form that captured relevant construction standards compliance and compliance with the work order design and are summarized in the figure below:

Figure 17—Compliance with Standards and Design



Standards Compliance

- As shown above, there is a high level of compliance with standards at 96.7% overall. The discrepancies relate to the following:
    - Standard FMC 603 not shown on the Work Order (WO)
    - No cutout installed
    - No cutout installed. Arrestor on completely self-protected (CSP) transformer is okay. Company has policy of adding cutouts due to CSP problems.
    - No cutout installed
    - No cutout installed; only apparent work is guy guard
    - Present installation has old style arrestors no longer in use
    - Standard FMC 100 required pole top pin change out, which was not done
    - Clf was not installed as called for in WO, but installation is okay
    - Single pole top pin used on a tangent pole—WO called for 2; guy insulation link—old style wood?
    - No animal guards on transformer. Not in conformance with WO but operationally okay
    - WO required animal protection on transformer that was not installed

Design Adherence

- Adherence to specified design averages 93.7 percent. In many cases where the job did not adhere to standards, it also was not built to design. We have eliminated the standards violations from the compilation of adherence to design to identify variations in build-to- design alone. The discrepancies relate to the following:
    - Pole extender installed instead of replacement pole. Existing pole okay
    - No guy guard or down guy
    - Guys shown on WO but not required for a take off—underground take off
    - Pole grounds added beyond work order
    - Standard FMC 603 added beyond WO requirements
    - Used a double insulator instead of splice on neutral
    - 911,912,950 not shown on inspection Form added by field crew
    - Work was accomplished per FMC 490 but installed 4' crossarm instead of 8'
    - Crew utilized a 4' arm instead of specified 8' arm conforms to standard FMC 490-acceptable
    - No guy/not needed
    - Replaced with short pole top not 32"
    - Molding appears acceptable; no split tub installed on cutout
    - Molding appears acceptable; no split tube installed on cutout
    - Underground take off with c/d's and arrestors has been added
    - Crossarm installed not as specified but is okay; crew changed to 8' crossarm for consistency—okay; rpc 300 ug take-off has been added—okay
    - Crew changed to 8' cross arm for consistency—okay; transformer added for construction power to trailer—okay
    - Framing indicated on WO not used, 8' arm used instead of 4'—okay
    - Configuration specified in FMC 412 has been moved 2 spans west—okay
    - No switch installed—WO requested but note on drawing indicates it was eliminated—not needed, no reason evident why a switch was specified
    - 300 amp door was installed instead of a 200 amp per WO

- Did not install arrestor
- Switch not transferred to new pole

Other

- This category is used to record other discrepancies that were not necessarily related to standards or specifications. Overall, this category represented only 5.1% of the jobs inspected. The discrepancies relate to the following:
  - Primary & Neutral east of pole are on the ground, Secondary resting on tree—WO is not complete
  - New Pole in place—top is broken out of new pole
  - Molding poorly done
  - Straighten pole-questionable need danger markers, and need to repair ground molding—no work accomplished
  - Work order called for guy repair; work crew noted bad pole and replaced it
  - Pole has been eliminated
  - Capacitor bank actually located at pt 3—this point is old location
  - No split bolts
  - Temporary OH transformer needs to be removed; not in use
  - Pole has not been worked on, no 8 ft arms
  - Conforms to standards but no new work evident even though called in work order
  - WO map inaccurate; old pole still in place
  - Old style 7/16 guys in place and in good shape—identified work not accomplished
  - No work accomplished at this location—new pole laying beside Quonset hut

5.3.3 Conclusions

MEC depends on a largely informal quality assurance process and, as reported in interviews, measures work quality by the performance of the distribution system. While the reliability performance of the system is improving, using a measure such as SAIFI or CAIDI to reflect

quality may be too high a level and potentially misleading, because it may mask quality issues that may not emerge until years later.

5.3.4 Recommendations

- Continue reimplementation of the contractor quality inspection results recording form.
- Implement a similar data form for line supervisors to complete following their field reviews of MEC crew quality.
- Establish an independent third party quality review function in an operational group separate from lines and substation.
- Generate periodic report summarizing quality inspection results for senior management to review.

5.4 Call Center

5.4.1 Background

MidAmerican Energy has one call center located in Davenport, Iowa, which services all the MEC four-state service territory. The company has both electric and gas customers, and MEC Customer Service Agents (CSA) are universal and can answer calls from all customer types and service areas. There are three groups within the call center: General Residential East, General Residential West, and Call Center Special Services. The classifications that handle direct customers interface are: general CSAs, Business Specialist, and Mission Control Specialists. Below we provide a brief description of the Business Specialist and Mission Control functions. The call center uses three shifts—A, B, and C—to cover call volume on a 24/7 basis. There are five toll-free numbers for customers to call, and these are routed to the call centers automated call distributor. The call center has participated in numerous tabletop exercises and training with other community groups. The company has numerous major technology enablers that help the call center perform its mission.

Mission Control[16] handles emergencies and other highly sensitive and critical situations. This group is a liaison with service dispatch and electric control to communicate and resolve issues that may result during the processing of emergency orders; acts as liaison with fire/police departments throughout the service territory to resolve emergency situations and to build relationships for customer satisfaction; utilizes various systems, data reports, technology and related equipment for research to assist other departments receiving customer complaints or training issues and alerts personnel when problems with critical systems occur.

[16] DR-064

Business Advantage Specialists[17] receive all business/commercial incoming calls, respond to customer requests received through e-mail or written correspondence, and may take general residential calls. This group develops strategies to enhance the business customer's interaction by analyzing data, products and services, trending past call history and developing new venues for communication with the business customer. This group also interprets rates, billing, metering and credit policies to ensure minimal financial loss or impact to the company.

5.4.2 Findings

Staffing

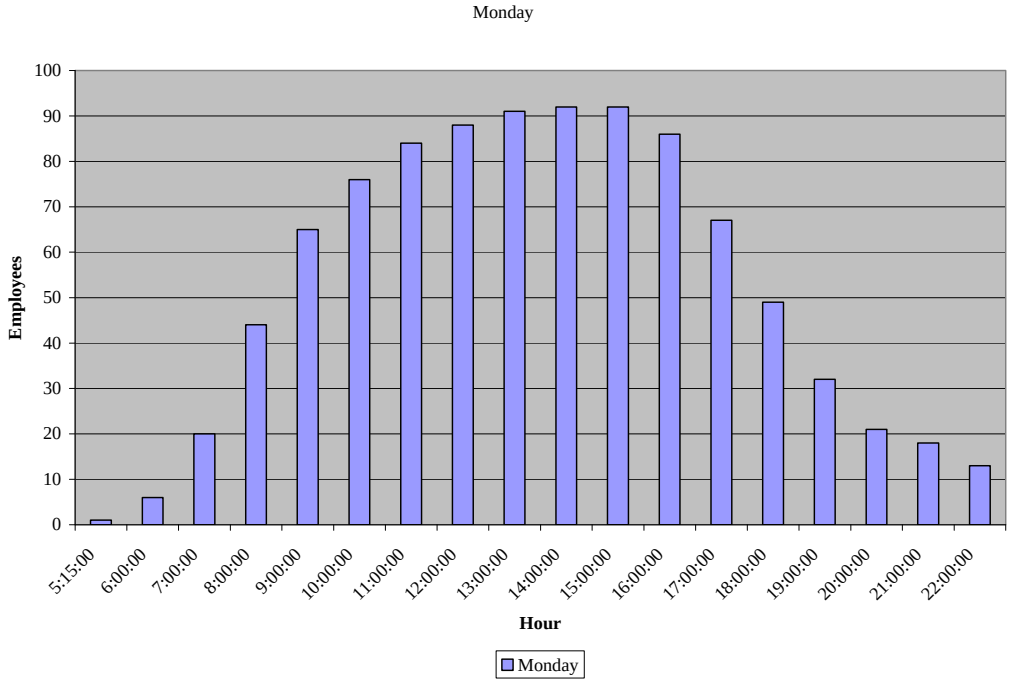
- The call center is staffed with approximately 192 employees, with another 26 employees in training. The 26 trainees are actually employees of Manpower Inc, which is used by MEC as the way to source new employees. Each Manpower staff undergoes 12 weeks of training, which serves as the screening process that enables the call center to make an offer of permanent employment. Historically, the call center experiences roughly a 25% turnover rate annually, which is in line with industry standards. Of this, approximately 4% to 5% of the call center employees transfer to other opportunities within MEC. However, the turnover rate increased in 2006 to 29% and in 2007 to 34% due to several factors, including additional internal MEC opportunities for transfers or promotions and more local competition for call center jobs.

Scheduling

- The first shift begins at 5:15 am, and MEC brings on extra CSAs every 30 minutes thereafter. Staffing needs are determined by an electronic workforce management system, a call center optimization software that looks at half-hour increments and historical call patterns to determine the total number of FTEs needed and to determine shift assignments. They also have 10 individuals who are assigned as on-call and carry a pager for a seven-day period.
- We analyzed how the CSAs' shifts were scheduled to determine the adequacy of staff during the peak call times.

[17] DR-064

Figure 18—Call Center Hourly Call Volume



- As can be seen in the above figure, the addition of CSAs is consistent with the typical daily hourly increase in call volume.

Technology[18]

The company uses numerous main systems to enable the call center personnel to serve the customer better. These systems are integrated with other company systems such as meter reading, outage management and service order. Below is a brief description of each system.

Customer Service System

- MEC customer service function is supported by the Customer Service System (CSS) from Accenture and has 50 system interfaces related to meter reading, bill print, mail address verification, payment processing and service order processing. CSS is a mainframe-based client/server application acquired and implemented in November 1998.
- Customers can use self-service functionality through web self-service and an advance speech recognition system that has real time interface and updates to the customer service system. The functionality offered by these systems include making payments, entering customer meter reads, requesting account balance, requesting a duplicate bill, viewing your bill on-line, viewing historical payment and usage information, signing up

[18] DR-024

for budget billing, signing up for automatic payment plan, requesting a payment extension and reporting an electric outage. In addition, MEC has a State of Illinois-compliant web Low Income Home Energy Assistance Program (LIHEAP) application that provides customer-pertinent data.

High Volume Outage Call Answering System

- The High Volume outage Call Answering (HVCA) system is a third party electric outage call processing system from Twenty-First Century Communications Incorporated. Outage calls are routed directly to an Integrated Voice Response Unit (IVRU) service to automatically take customer electric outage telephone calls and create outage service orders that are then electronically delivered directly to the Outage Management System.
- The system will transfer calls back to agents when it cannot identify the customer account or when the customer is reporting lines down or damage to equipment. The system provides information about ongoing outages in the form of Area Specific Messages, and calls customers back to confirm their power was restored.

Integrated Voice Response Unit System

- The Integrated Voice Response Unit (IVRU) system is a third-party software platform from Syntellect Incorporated. IVRU applications utilize both touch-tone and advanced speech recognition technologies to directly interface with the customer.
- The customers can leave meter readings; get balance, due date, last payment received information, make payments by phone, obtain pay-station locations; and make payment arrangements or speak with an agent.
- This system places outbound calls to customers to confirm appointments, survey customer satisfaction, and give advanced notification of scheduled outages.

Electronic Workforce Management & Real Time Adherence System

- The Electronic Workforce Management & Real Time Adherence (eWFM) system is a suite of call center workforce management software tools from Aspect Communication Incorporated. The software has call center agent scheduling and call forecasting software applications to create work schedules based on historical call arrival patterns and current operating conditions.
- The system monitors intra-day performance for changes in forecasted conditions. The agent compliance to individual schedules is tracked using real-time reporting.

Automatic Call Distributor

- The call center maintains and operates its own telephone system and has Automatic Call Distributor (ACD) hardware and software systems from Aspect Communications Incorporated. These systems are employed to prioritize and route all in-bound and out-bound call center telephone traffic.
- The ACD produces call tracking reports by application and by agent and interfaces with the HVCA, IVRU, eWFM, Quality Monitoring, and CTI systems.

Call Quality Monitoring & Survey System

- The call monitoring system is a third-party software system from Autonomy/etalk. It randomly captures and records voice and video screens of agent interactions on in-bound customer calls. The captured recordings are then reviewed by a team of quality coordinators to analyze and report agent performance.
- Another application of this system is used to survey customer satisfaction immediately following the agent interaction or to survey customer satisfaction with MidAmerican services within one week of service order completions.

Computer Telephony Integration System

- The Computer Telephony Integration (CTI) system is a third-party software interface between the ACD and CSS, which provides an automatic CSS "screen pop" of the calling customer's account information to the responding agent's desktop. The system is provided by Genesys Telecommunication Laboratories.

Performance[19]

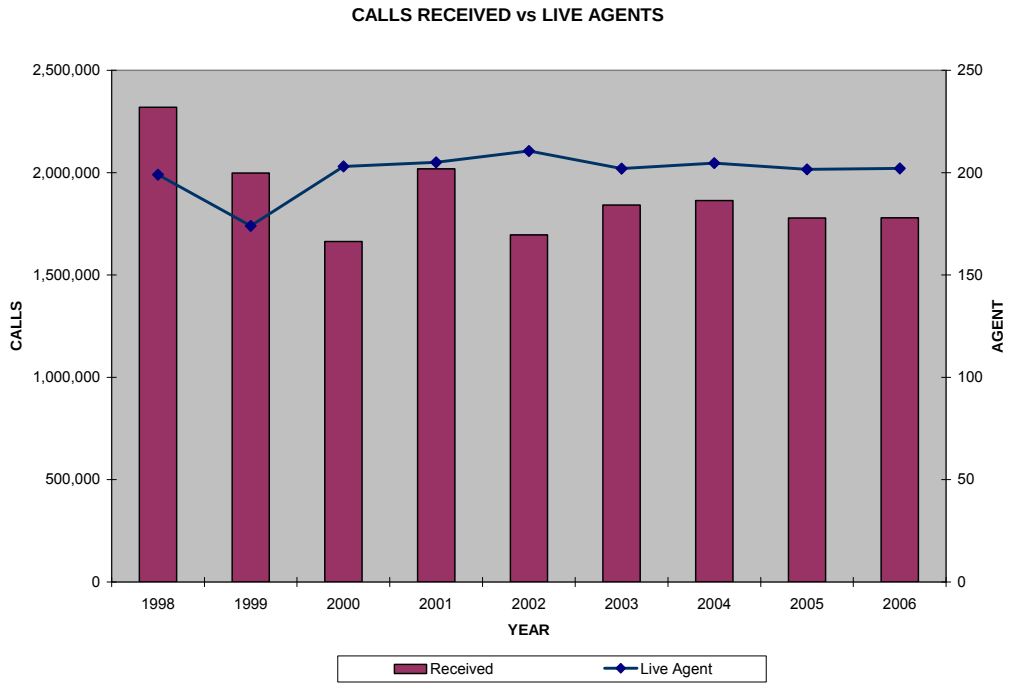
- Customer contact call center performance is typically evaluated on the basis of key measures such as:
    - Average Speed of Answer (ASA)
    - Service Level (%)
    - Rate of Abandoned Calls (%)
- Each of these measures is highly susceptible to the influence of factors, such as the number of customer service representatives available to handle calls and the average or longest duration of typical calls. Both of these factors are dependent on the

[19] DR-074

circumstances and events being encountered. During normal operations, the number of customer service representatives may or may not be adequate, depending on the time of the event, the day(s) on which it occurs, or the duration involved. Similarly, it is not unusual for the duration of calls to be longer during emergency situations because explanations tend to take longer than under routine conditions. We have excluded the automated agent so we can ascertain the performance of the live agents.

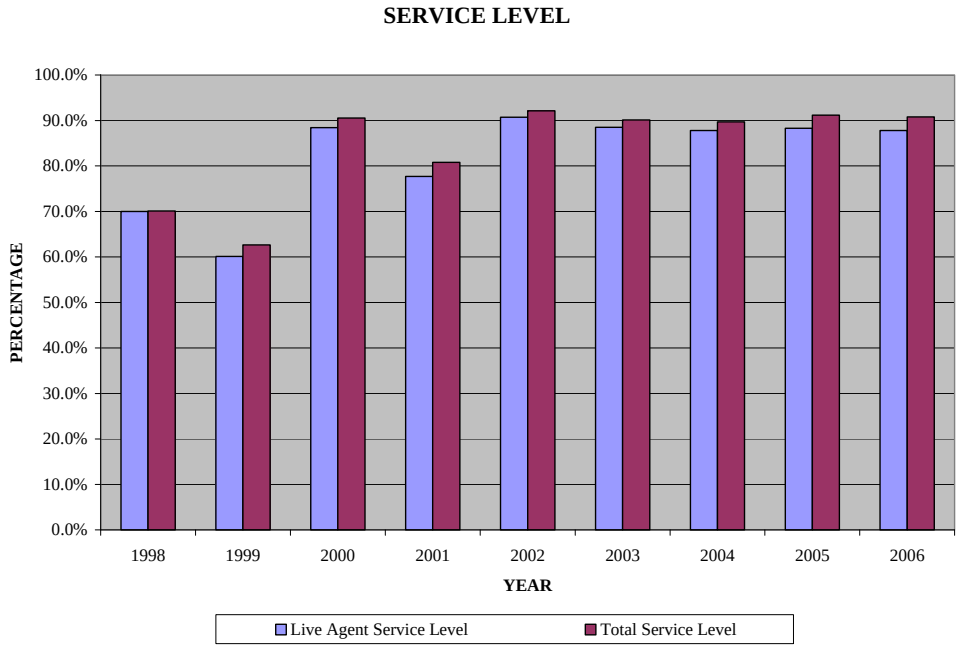
- The company has set goals of:
    - ASA—calls answered in 30 seconds or less
    - Service Level—90% percentage of calls answered in 30 seconds or less
    - Abandonment Rate—The number of calls that were not answered.

Figure 19—Calls Received With Live Agents



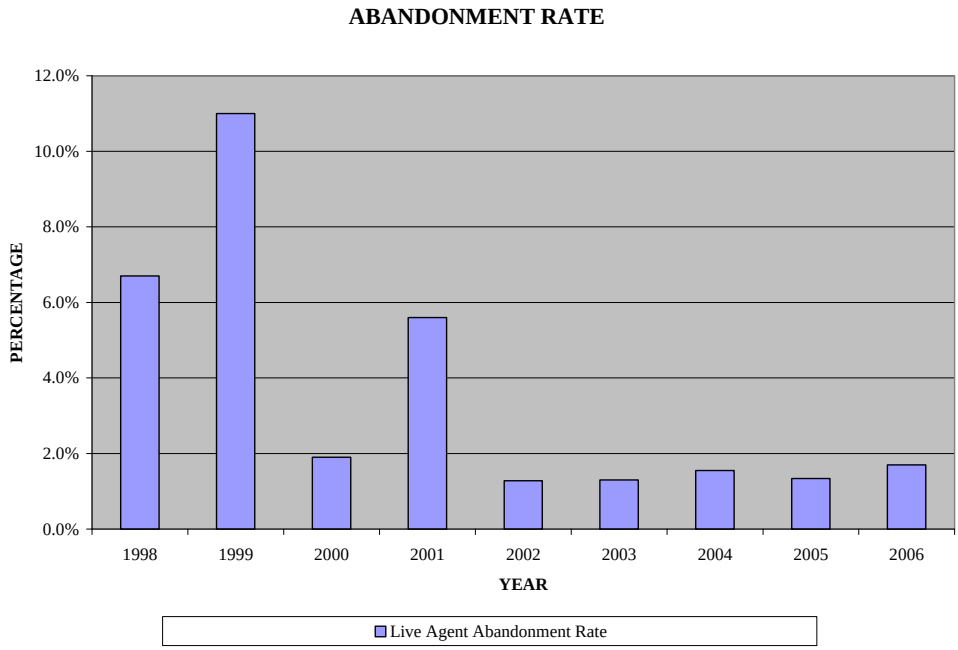
- The number of calls received by the live agents is on a downward trend, while the number of live agents is on a slight upward trend. This trend and technology enablers has allowed MEC to meet or exceed its Key Performance Indicators (KPI) since 2002, as illustrated in the figures below.

Figure 20—Call Center Service Level Trends



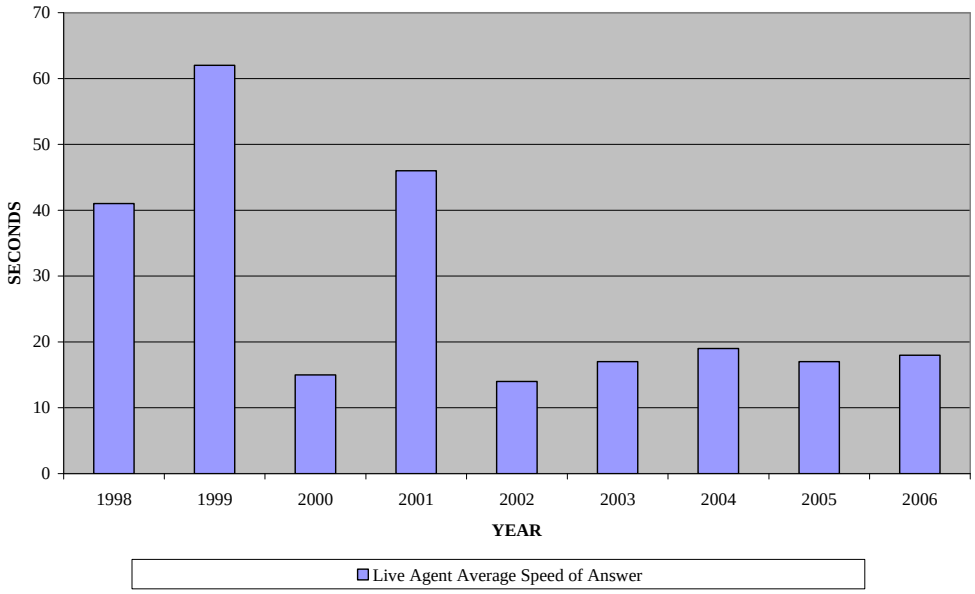
- Service level for the company has shown an upward trend for live agents and is near the company's goal of 90 percent. When technology enablers' statistics are included, the company has matched or exceeded its goal in 6 of 9 years.

Figure 21—Live Agent Abandonment Rate



- The abandonment rate is decreasing and is below 2%, which is below the industry average for utility inbound call centers of 3.5 percent [20].

Figure 22—Live Agent Average Speed of Answer



- The average speed of answer has been below the company's goal of 30 seconds in 6 of the 9 years and is on a downward trend.
- MEC participates in three national benchmark studies:[21]
    - Market Strategies International, Inc.
    - J.D. Power & Associates
    - TQS Research Inc.
- The company has received ratings in the upper quartile in each of the studies and has shown continued improvement in customer satisfaction. Below are the results of the studies.

[20] Purdue University Call Center Benchmark Study @ 2006

[21] DR-032

Table 7—Market Strategies International Overall Customer Satisfaction with MidAmerican Energy Company 0-10 scale, total satisfied scores = 6-10

Year	Residential	Commercial
1995	*	*
1996	8.00	8.00
1997	8.20	8.20
1998	8.30	8.60
1999	8.00	8.90
2000	8.50	8.60
2001	8.40	8.70
2002	8.00	8.60
Q2 2003	7.90	8.50
Q4 2003	8.20	8.60
Q2 2004	8.30	8.70
Q4 2004	8.60	8.90
Q2 2005	8.50	9.10
Q4 2005	7.90	9.30
Q2 2006	8.20	9.00
Q4 2006	8.50	9.20
Q2 2007	8.40	9.10
Q4 2007	8.50	9.30

Average of "very satisfied" scores for Midwest Resources and Iowa-Illinois Gas & Electric, two of the predecessor companies that were already included in the research.

Table 8—J.D. Power & Associates Overall Customer Satisfaction Index Score

Year	Residential Electric	Business Electric
1999	100	n/a
2000	106	n/a
2001	101	n/a
2002	106 (old); 739 (new)	n/a
2003	104 (old); 728 (new)	n/a
2004	109 (old); 754 (new)	110 (old); 700 (new)
2005	106 (old); 741 (new)	113 (old); 714 (new)
2006 *	713	694
2007	716	727
2008	data not yet available	728

* In 2006, J.D. Power & Associates moved from giving index scores based on a centered-to-100 scale, to giving scores based on a maximum 1000 point scale, in order to provide improved reporting and trending capabilities. Whereas the "high" scores on the centered-to-100 scale were normally in the 110-120 range, the "high" scores on the maximum 1000 point scale typically range from 690-770. Due to the change, some index scores from prior years were recalculated using the maximum 1000 point scale, in order to make an "apples-to-apples" comparison.

Table 9—TQS Key Accounts National Benchmark
Overall Customer Satisfaction with Electric Utility
1-10 scale, total very satisfied = 8-10 scores

Year	Overall Satisfaction
1995 *	6.20
1996	6.50
1997	5.80
1998	6.20
1999	6.30
2000	7.30
2001	7.30
2002	8.50
2003	8.00
2004	8.40
2005	8.40
2006	8.90
2007	9.30

Average of "very satisfied" scores for Midwest Resources and Iowa-Illinois Gas & Electric, two of the predecessor companies that were already included in the research.

5.4.3 Conclusions

The company staffs the call center in accordance with the flow of call volume and uses technology to enhance the call center's ability to service customers in an effective and efficient manner. The technologies employed include: Customer Service System, High Volume outage Call Answering System, Integrated Voice Response Unit System, Electronic Workforce Management & Real Time Adherence System, Automatic Call Distributor, Call Quality Monitoring & Survey System, and Computer Telephony Integration System. MEC's call center goals and the KPI results compare favorably with the utility industry, indicating it is well managed and effective. MEC's call center in the last six years has been in the highest quartile in customer satisfaction surveys conducted by Market Strategies International, Inc, J.D. Power & Associates, and TQS Key Accounts National Benchmark.

5.4.4 Recommendations

None

Appendix A

List of Recommendations

Section	No	Recommendation
Operations & Maintenance	5.1.1	MEC should conduct a strategic workforce planning study to define the workforce required to implement company business strategies and identify actions needed to meet those requirements. The analysis should reveal gaps between the workforce needed and the workforce supply forecasted to be available, certain critical positions as well as certain key employees.
	5.1.2	MEC should strive to increase its complement of apprentices particularly in the line worker category. The ability to forecast future bargaining unit retirements could be greatly enhanced by conducting a nonbinding potential retirement survey.
	5.1.3	MEC should continue to explore means to improve compensation parity to attract more journeyman line workers into line supervisor positions.
Training & Safety	5.2.1	Improve ability to forecast future bargaining unit employee retirements by annually asking journeymen linemen who are within four years of potential retirement, what their retirement plans are.
	5.2.2	Having supervisors with only partial familiarity with the technical aspects of the journeymen linemen position is an issue that should be addressed by developing a process or program to strengthen supervisory technical knowledge.
	5.2.3	Participate in an ongoing safety benchmarking survey with comparable utilities; so that best practices may be identified and analyzed uncovering opportunities for MEC to proactively pursue.
Quality Review	5.3.1	Continue reimplementation of the contractor quality inspection results recording form.
	5.3.2	Implement a similar data form for line supervisors to complete following their field reviews of MEC crew quality.
	5.3.3	Establish an independent third party quality review function in an operational group separate from lines and substation.
	5.3.4	Generate periodic report summarizing quality inspection results for senior management to review.
Call Center		None

Appendix B

Background

Every electric utility is expected to extend its service to meet the needs of a growing population. Power is needed to be provided in a reliable, safe, and timely fashion. To maintain high standards of service quality and safety, utility managers traditionally have opted for the control of an in-house work force. As a result, many utilities did not have to rely on others to provide support to its staff or rely on others to meet its customers' needs.

In view of regulatory reform and restructuring, many regulated distribution utilities developed strategies to shift risk, reduce costs, and refocus attention on core functions. Core functions are the tasks the utility and its in-house workforce perform best. Utility management decisions to outsource raise questions about the relationships between the distribution utility and its employees, the external service providers, the regulators and the ultimate customer. This report focuses on the relationship between the distribution utility, its workforce and customers.

Outsourcing can be defined as creating a long-term, results-oriented relationship with an external service provider for activities traditionally performed within the company. Usually the term outsourcing applies to a complete business process, where some degree of managerial control and risk are shared by the service provider. This compares to the relatively straightforward procurement of goods or services where support is rendered, but the company continues to assume the risks and takes management responsibility for the requested service.

Outsourcing Philosophy

Essential distribution functions include distribution system planning: the construction, operation, and maintenance of the distribution circuits and substations; connection of new residential, commercial, and industrial customers; and the monitoring and emergency restoration of the distribution system. Most utilities contract out a portion of construction and maintenance of the distribution system, including functions like tree trimming and other right of way maintenance as well as distribution line and substation construction. All essential distribution functions are potential candidates for outsourcing. The business benefits that can be achieved through outsourcing are well documented and have been proven by past experience, both within and outside the utility industry. These benefits include:

- Cost savings are typically achieved by lower labor costs, increased productivity, and economies of scale delivered by an outsource service provider.
- Performance improvement is generally delivered through the use of technologies and business processes that may be better than those employed by the utility, and where the

service provider can invest and focus on functions that are core to its business but not core to the utility that chooses to outsource them.

- Increased flexibility/scalability is provided through contract terms that support different levels of business activity, allowing costs to fluctuate with changing volumes of work. This is a key benefit for utilities with fluctuating activity volumes.
- Access to innovation and best practices is made available by the service provider whose primary business is to support specific business functions. This focus allows them to build expertise and access a broader market of clients, enabling them to identify and leverage good ideas from a wide base of exposure.
- Access to a labor force is supplied by a service provider who focuses on specific functions, hires resources specifically for these functions, and provides greater career development opportunities associated with the performance of a specific type of work, may lead to enhanced efficiencies.

MEC outsourcing has primarily sought increased flexibility in addressing fluctuating workload volumes. Driven by a strong desire to maintain in-house knowledge of the distribution and transmission system and the wish to have first responders be company staff to ensure quality service and help preserve brand recognition; distribution system contractors are primarily used to fill workload peaks. MEC states that approximately 30% of its distribution system line work is outsourced. Management has indicated in the long term that they would prefer the outsourced levels to be closer to 20%.

Outsourcing used in this manner represents a conservative approach, but still places certain obligations on the Utility's management as well as impacts on the Utility's workforce. Management must ensure that the quality of the work completed is consistent with customer service standards, that the cost of the work is reasonably similar to what the work would cost if were performed by the in-house staff, and that high quality customer service is provided, while the workforce may see a reduction in the total number of employees and a reduction in the breadth of job skills. Unions may attempt to erect barriers to outsourcing through their negotiated labor agreements by seeking language which may prohibit or greatly limit the company's ability to outsource. In addition unions may seek to gain support for their position by using their political influence concerning job loss.

Appendix C

Union Agreement History

Over the study period there initially were separate agreements for IBEW Union Local 109, which consists of employees whose regular reporting place is within the State of Illinois and an Eastern portion of Iowa, and IBEW Union Local 499, which consists of employees whose regular reporting place is within the remaining portions of Iowa. Between 1998 and 2000, a successful effort was made to consolidate the six labor agreements between the two locals (two with Local 109 and four with Local 499) into one. The surviving labor agreement, first dated March 1, 2000-March 1, 2004, represented both Local 109 and Local 499. The consolidated agreement resulted in agreed-upon subcontracting language and job security language. The current collective bargaining unit agreement continues to represent both Locals 109 and 499 and is dated May 1, 2006 - April 30, 2009.

Current Contracting Arbitration

The only arbitration that has occurred concerning contracting in the last 10 years was heard on April 22, 2008, as a result of a grievance filed by the Iowa IBEW Local 499. This arbitration is relevant to the Illinois IBEW Local 109 as both locals are subject to the same contract and consequently identical subcontracting language.

In the arbitration, the union contended there was a pattern of usage of contractors over a number of years by the company, where work customarily performed by bargaining unit members was being contracted out. The union based its contention that this usage practice violates provisions of the Collective Bargaining Agreement. Specifically, Article XII states that the company is permitted to contract out work where necessary if it does not result in a violation of Article XI of the Contract, which is the job security provision and Article XII, which focuses on subcontracting potentially undermining the union's membership representation.

The union contended the use of contractors has resulted in:

- Permanent contracting out of some bargaining unit work
- Not filling new jobs as they have been created due to the contracting out of bargaining unit work

The union's contentions were that the company's position is:

- Contracting occurs consistently, but the company claims that there are inadequate bargaining unit staffing available

- The company has consistently used subcontractors to augment the workforce or in some instances to replace bargaining unit positions but use has been rapidly increasing
- There are no contractual limitations with regard to subcontracting, except that bargaining unit staffing could not be reduced relative to the job security provision

Thus, the company maintains it has no subcontracting limitations; the only real limitation it sees is that it could not lay off an existing bargaining unit employee and then replace him/her with a subcontractor.

Briefs in connection with the arbitration are due June 6, 2008, with the arbitrator's decision sometime thereafter.