

# For Florida Power and Light After the Deming Prize: The "Music" Builds . . . And Builds . . . And Builds

*Florida Power & Light pursued the Deming Prize primarily because it wanted to accelerate the quality improvement process, wanted to emphasize even more to its employees the importance of customer satisfaction, and wanted to involve even more employees in the quality improvement process.*

Al Henderson and Target Staff

This past November, Florida Power & Light Company (FPL) became the first company outside Japan to win the coveted Deming Prize, which recognizes outstanding achievement for quality-control management.

The Deming Prize was created in 1951 to honor American quality pioneer W. Edwards Deming and the businesses that exercise his management concepts. The prize was opened to overseas companies in 1985. However, no foreign company challenged the Japanese domination of the award until Florida Power & Light, one of the largest and the fastest-growing utility in the United States, applied in 1989.

In challenging for the Deming, Florida Power & Light faced a staggering array of criteria to be met. The company's application covered 1000 pages of documentation in ten bound booklets. When the Deming examiners flew in from Japan in the summer of 1989, they were free to question any worker. Employees had to be able to supply the data to support their answers—preferably within a few minutes.

Despite a dedication to quality improvement throughout the 1980s, FPL found that it had to concentrate on overcoming weaknesses that it perceived it had in comparison with the standards of Deming Prize examinations. Those guiding FPL into the examination process

worked long hours for months. Fig. 1 illustrates the intensity of preparation for the exam.

FPL's quest for quality bears a striking resemblance to Maurice Ravel's "Bolero." First performed in Paris in 1928, this hauntingly familiar musical piece consists of one theme, in C major, almost throughout, in an unvarying rhythm and with a gradual crescendo.

FPL's theme is written in Total Quality Control, or QIP (Quality Improvement Process) with an unvarying rhythm: customer satisfaction. Unlike Bolero, however, the crescendo is a continuing process without end.

The process through which Maurice Ravel created Bolero and FPL's quality improvement process are strikingly similar. Ravel is quoted to have said:

"In my own composition I judge a long period of gestation necessary. During this interval I come progressively, and with a growing precision, to see the form of evolution that the final work will take in its totality. Thus I can be occupied for several years without writing a single note of work, after which the composition goes relatively quickly. But one must spend time in eliminating all that could be regarded as superfluous in order to realize as completely as possible the definitive clarity so much desired.<sup>1</sup>

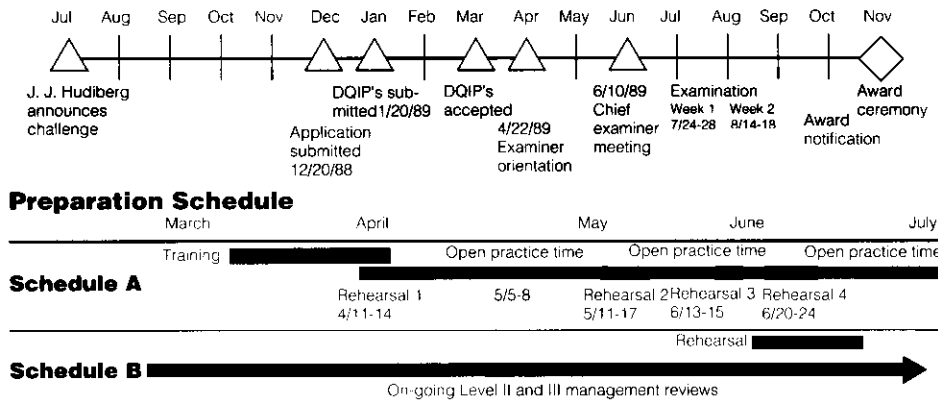
FPL went through a similar gestation in which they progressively, and with growing precision, created their QIP. Even after winning the Deming Prize, the process continues to evolve. Much of FPL's effort now centers on streamlining their quality process.

Why was a utility the first American company to apply? More specifically, why Florida Power & Light? And what lessons, if any, are there to be learned from this one company's pioneering experiences? To answer these questions, we need to first examine the social and economic climate of the 70s.

The late 1970s produced federal legislation to encourage competition in the electric power industry. At the same time, customers were becoming much more discerning. The climate produced cogenerators, independent power producers, numerous small power producers, and others with the capacity to sell to utility customers. In the wake of the Three Mile Island nuclear plant disaster in 1979, utilities around the country found themselves battered by long construction and licensing delays. Utilities were faced with a whole new ball game.

FPL has a unique challenge as a utility, but it long since stopped using its situation as an excuse for poor performance. Florida has more lightning strikes than any other state. FPL has the highest per-

## Florida Power & Light's Preparation Was Thorough Examination Milestones



Measuring up to the Deming Prize required determination and persistence at FPL. The primary challenge was to enhance quality practices wherever it was seen that they fell short of the standards that it was believed the Deming Prize demanded. There was no hope of covering poor practice with excellent presentation, and besides, the whole purpose of the experience was to bring FPL's actual performance to a higher level.

Readiness to answer questions with data during a tightly packed site examination schedule required extensive preparation and rehearsal. FPL executives acted in examiner roles during rehearsals to try to uncover oversights either in substantive performance, or in ability to explain performance. (Excerpted from "The Deming Prize Examination Process," Florida Power and Light internal document, 1989.)

Fig. 1.

## Florida Power & Light's Quality Improvement Process (QIP)

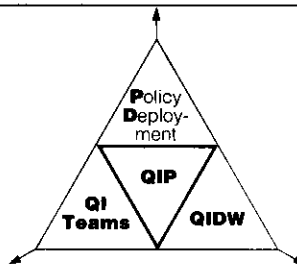
### Policy Deployment (Introduced in 1985)

The cornerstone of FPL's management system, Policy Deployment is a process to translate the corporate vision into specific, coordinated action plans in every part of the company. By this system, top management "tosses objectives out," and operating personnel "toss improvement plans back," finally arriving each year at an overall improvement process that:

- Concentrates on achieving customer satisfaction
- Develops consistent policies, targets, and plans
- Strengthens the review of implementation actions.

### Principles of QIP

1. Customer satisfaction
2. Management by fact
3. Plan-Do-Check-Act (Deming Wheel)
4. Respect for people



### FPL Management System:

1. Focus on customer needs
2. Management reviews of improvement activities
3. Cross-functional management
4. Integration of policy development and budget

### Quality Improvement Teams (1981)

- Consists of functional teams, task (multi-functional) teams, and lead teams of managers
- Supervisors support the teams
- Computer registration and monitoring of team activity
- Use a common QI story format to solve problems
- Use project planning worksheets for planning and scheduling projects
- Have a strong program to recognize team activities and accomplishments.

### Quality in Daily Work (Began in 1986)

- Focuses on supervisors' and managers' key accountabilities
- Focuses on customers' needs
- Develops control systems for top priority jobs
- Provides the means to standardize, replicate, and improve daily operations
- Identifies areas for developing computer systems to relieve line employees of many repetitive tasks—and improve service to customers.

Fig. 2.

## Brief Overview of the Evolution of Florida Power & Light's Quality Improvement Process

YEAR	1983-85 PREPARATION	1986 INTRODUCTION	1987 DEVELOPMENT	1988 INTEGRATION	1989 INTENSIFICATION
<b>OBJECTIVES</b>	<ul style="list-style-type: none"> <li>• INTRODUCE AND PROMOTE QIP</li> <li>• CONSERVE CAPITAL AND REDUCE THE INCREASE IN OPERATING EXPENDITURE</li> </ul>	<ul style="list-style-type: none"> <li>• IDENTIFY MAJOR PROBLEMS</li> <li>• DEVELOP AN INTEGRATED SUPPLY MANAGEMENT STRATEGY</li> <li>• REDUCE NRC VIOLATIONS</li> </ul>	<ul style="list-style-type: none"> <li>• EMPHASIZE IMPROVEMENT ACTIVITIES ON MAJOR PROBLEMS:               <ul style="list-style-type: none"> <li>- IMPROVE RELIABILITY OF ELECTRIC SERVICE</li> <li>- IMPROVE NUCLEAR PLANT AVAILABILITY</li> <li>- IMPROVE FOSSIL PLANT FORCED OUTAGE RATE</li> <li>- IMPROVE EMPLOYEE SAFETY</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• INTEGRATE COMPANY FUNCTIONS</li> <li>• QUANTIFY "BEST MANAGED" VISION</li> <li>• REDUCE NUMBER OF CUSTOMER COMPLAINTS</li> </ul>	<ul style="list-style-type: none"> <li>• FURTHER IMPLEMENT THE Q/D SYSTEM</li> <li>• IMPROVE COST AND SAFETY MANAGEMENT SYSTEMS</li> <li>• INTRODUCE CORPORATE RESPONSIBILITY SYSTEM</li> </ul>
<b>POLICY DEPLOYMENT</b>	<ul style="list-style-type: none"> <li>• DEVELOPED VISION</li> <li>• ESTABLISHED POLICY DEPLOYMENT COMMITTEE</li> </ul>	<ul style="list-style-type: none"> <li>• ESTABLISHED POLICIES AND TARGETS TO ACHIEVE CUSTOMER SATISFACTION</li> <li>• INITIATED PRESIDENTIAL REVIEWS</li> </ul>	<ul style="list-style-type: none"> <li>• ESTABLISHED CORPORATE SYSTEM OF INDICATORS</li> </ul>	<ul style="list-style-type: none"> <li>• FORMALIZED CROSS-FUNCTIONAL MANAGEMENT</li> <li>• STRENGTHENED REVIEWS OF IMPLEMENTATION ACTIVITIES</li> </ul>	<ul style="list-style-type: none"> <li>• INTRODUCED CORPORATE RESPONSIBILITY SYSTEM</li> </ul>
<b>QUALITY IN DAILY/ REPETITIVE WORK</b>		<ul style="list-style-type: none"> <li>• PROMOTED Q/DW ACTIVITIES</li> </ul>	<ul style="list-style-type: none"> <li>• DEVELOPED CONTROL SYSTEMS FOR MANAGERS' TOP PRIORITY JOBS</li> </ul>	<ul style="list-style-type: none"> <li>• DEPLOYED EXTERNAL CUSTOMER NEEDS USING QUALITY SYSTEM MATRIX</li> </ul>	<ul style="list-style-type: none"> <li>• ACCELERATED CONTROL ACTIVITIES</li> </ul>
<b>QUALITY IMPROVEMENT TEAMS</b>	<ul style="list-style-type: none"> <li>• INITIATED TEAM ACTIVITIES</li> </ul>	<ul style="list-style-type: none"> <li>• REQUIRED USE OF QI STORY</li> <li>• DEVELOPED SUPPORT ROLES OF SUPERVISOR</li> </ul>	<ul style="list-style-type: none"> <li>• EMPHASIZED SUPERVISOR AS FACILITATOR</li> </ul>	<ul style="list-style-type: none"> <li>• EMPHASIZED VOLUNTARY PARTICIPATION</li> <li>• INITIATED NEW EMPLOYEE SUGGESTION PROGRAM</li> </ul>	<ul style="list-style-type: none"> <li>• SENT TEAMS TO OUTSIDE CONFERENCES</li> </ul>
<b>EDUCATION AND TRAINING</b>	<ul style="list-style-type: none"> <li>• DEVELOPED BASIC QIP COURSES</li> </ul>	<ul style="list-style-type: none"> <li>• PROMOTED USE OF SEVEN BASIC TOOLS</li> </ul>	<ul style="list-style-type: none"> <li>• DEVELOPED APPLICATION EXPERT COURSE</li> </ul>	<ul style="list-style-type: none"> <li>• IMPLEMENTED SPECIFIC SOC COURSE FOR MANAGERS AND SUPERVISORS</li> </ul>	
<b>QUALITY/ DELIVERY SYSTEM</b>	<ul style="list-style-type: none"> <li>• INITIATED CUSTOMER NEEDS SURVEY</li> </ul>	<ul style="list-style-type: none"> <li>• REVISED PROCEDURES FOR EMERGENCY RESTORATION OF SERVICE</li> </ul>	<ul style="list-style-type: none"> <li>• INITIATED CUSTOMER SATISFACTION SURVEY</li> <li>• IMPROVED SURGE PROTECTION</li> </ul>	<ul style="list-style-type: none"> <li>• IMPLEMENTED SALES PROGRAMS AIMED AT CUSTOMER NEEDS</li> <li>• IMPROVED INSULATION STANDARDS FOR TRANSMISSION LINES</li> </ul>	
<b>COST MANAGEMENT SYSTEM</b>	<ul style="list-style-type: none"> <li>• DEVELOPED STRATEGY FOR REDUCING RESERVE MARGIN</li> </ul>	<ul style="list-style-type: none"> <li>• ESTABLISHED AND IMPLEMENTED RAMP PROGRAM FOR FOSSIL POWER PLANTS</li> </ul>		<ul style="list-style-type: none"> <li>• CONSOLIDATED DISTRICT OFFICE OPERATIONS FOR MORE EFFECTIVE UTILIZATION OF RESOURCES</li> </ul>	
<b>SAFETY MANAGEMENT SYSTEM</b>	<ul style="list-style-type: none"> <li>• EVALUATED EMPLOYEE SAFETY COMPARISON STANDARDS</li> </ul>	<ul style="list-style-type: none"> <li>• IMPROVED THE ACCURACY AND PRECISION OF PERSONNEL RADIATION EXPOSURE</li> </ul>	<ul style="list-style-type: none"> <li>• IMPROVED NUCLEAR PLANT OPERATIONS TO REDUCE AUTOMATIC TRIPS</li> </ul>	<ul style="list-style-type: none"> <li>• IMPLEMENTED "STOP" PROGRAM IN THE DIVISIONS</li> </ul>	
<b>EFFECTS</b>	<ul style="list-style-type: none"> <li>• BEGAN TO FOCUS ON COMPANY PROBLEMS</li> </ul>	<ul style="list-style-type: none"> <li>• CLARIFIED UNDERSTANDING OF MAJOR PROBLEMS</li> </ul>	<ul style="list-style-type: none"> <li>• BEGAN TO SHOW IMPROVEMENT ON MAJOR PROBLEMS</li> </ul>	<ul style="list-style-type: none"> <li>• REDUCED CUSTOMER COMPLAINTS</li> </ul>	<ul style="list-style-type: none"> <li>• IMPROVED CUSTOMER SATISFACTION</li> </ul>
<b>REMAINING PROBLEMS</b>	<ul style="list-style-type: none"> <li>• COMPANY PROBLEMS AND OBJECTIVES WERE NOT CLEAR</li> </ul>	<ul style="list-style-type: none"> <li>• MAJOR PROBLEMS DID NOT SHOW IMPROVEMENT</li> </ul>	<ul style="list-style-type: none"> <li>• CUSTOMER COMPLAINTS WERE HIGHER THAN COMPARABLE COMPANIES</li> </ul>	<ul style="list-style-type: none"> <li>• NEED TO CONCENTRATE ON CUSTOMER SATISFACTION</li> </ul>	<ul style="list-style-type: none"> <li>• CONSOLIDATION OF GAINS</li> <li>• CLARIFICATION OF NEW IMPROVEMENT OPPORTUNITIES</li> </ul>

Fig. 3. From p. 26 of "Summary Description of FPL's Quality Improvement Program," publication of Florida Power & Light Co., 1989.

centage of residential customers in the United States. Over 53 percent of the heads of household are above 55 years of age. FPL experiences the highest level of customer turnover of any utility in the country. Sustained peak loads are in the summer months, but FPL experiences sudden sharp spikes during cold snaps in winter. Its customers have one of the largest per capita consumptions of electricity in the country. The circumstances prescribe that FPL must have an outstanding approach to customer service.

To cope, FPL started Quality Teams in 1981, and from 1983 has steadily added pieces to its management opus, the Quality Improvement Process. (See Fig. 2.) By 1988 the company had gained a reputation as one of America's best in quality, but CEO John Hudiberg and others in top management knew that FPL had to become still better. They figured that applying for the Deming Prize would cure them of any misplaced complacency.

Prior to challenging for the Deming Prize, FPL had a long period of preparation for a quality culture. Like most companies, until

about 1986, there was a basic management process by which business was conducted, with a Quality Improvement Process on the side. Then FPL began to become serious about changing its entire corporate culture.

Through 1987, the quality improvement road at Florida Power and Light was bumpy. As can be seen in the bottom "Remaining Problems" row in Fig. 3 and in Fig. 4, some of FPL's major difficulties failed to budge. The Deming Prize Process was a key factor in actually deploying throughout FPL many

quality practices that had been building for five years. The Deming Prize Process created an artificial crisis that stimulated a corporate change that has now become nearly irreversible.

As FPL moved into the challenge, peer pressure to excel spread through the company. No division, no department wanted to be the culprit which caused FPL as a whole to endure a continuance—and another year of the Deming Prize Process. (See box copy.) This crisis stimulated the extra energy necessary to go through a painful metamorphosis—from employing many quality practices to the Quality Improvement Process (QIP) being the way the company functions.

It's the *practice* of QIP in every part of a company that makes the difference. Over the years, FPL had formed an exchange relationship with Kansai Electric Power Company of Japan, which won the Deming Prize in 1984. From Kansai, FPL learned how Kansai had implemented TQC (Total Quality Control) and of their experience with the Deming examination, but most important, they learned they had to transform themselves—to change the way everyone at FPL reasoned and behaved every day.

FPL is aware that many opportunities for improvement remain, but now most employees have much more confidence that FPL can control its environment, rather than be controlled by it. They learned to focus on long-term solutions and concentrate only on activities that contribute to customer satisfaction.

### **Concentrating on Priorities**

Every year as FPL goes through its Policy Deployment, its practice of quality improvement refines. When Policy Deployment began in 1985, the company discovered a better way to follow up and assure that corporate (and customer satisfaction) objectives were being pursued. However, the company "chased too many rabbits, and could actually catch very few."

As QIP matured, FPL people at all levels learned to concentrate resources on the top Pareto items,

and top Pareto items came from measuring phenomena that make a difference in customer satisfaction. In practice, not only do people need to doggedly pursue the problems that make a difference, they must free their time from activities that have an insignificant impact on customer satisfaction. FPL employees had to learn, for instance, that spending time working on a noisy water cooler might relieve an annoyance, but time is better spent elsewhere because water cooler noise shows up nowhere in analyses of power outages or other matters important to customer service.

At headquarters, FPL's executive committee is guided by an annual customer survey. Priorities for attention also come from executive visits to all operating units and from the annual problem identification process conducted by each unit itself, all of which is done with antennae up for customers, internal as well as external.

After all the goal setting, what does FPL concentrate on? Customer satisfaction as shown by complaints to the public service commission, a high rate of service availability, and adequate capacity for present and future needs. High on-line capability of nuclear plants is coupled with premier nuclear safety. Another overall objective is keeping cost increases below the Consumer Price Index. That can be achieved through excellent quality performance and safety for both employees and communities. Effort concentrates on work that contributes to these goals, and progress is traced by key indicators. Actions that improve the forced outage of power plants are very high in priority, for example, because they contribute to several primary FPL objectives at once.

Concentrating on priorities seems easier than it really is. Enter management by fact. Resist second-guessing the facts or ignoring them. Inevitably someone will suggest that because grass along power lines is infrequently cut, transmission maintenance must be going to pot. On the other hand, by removing factors that once allowed lightning to be the number one

cause of transmission outage, FPL has reduced lightning to the number four cause of outages.

Likewise, if work concentrates too long on one priority and is so successful that improvements are well beyond target, resources are again not used wisely. Other concerns have moved up to the top of the Pareto chart, but it is tempting to keep working, for instance, on boiler feed pumps if one has already had success there.

### **The Martin Plant: An Example of Focusing on Priorities**

The Martin Power Plant is one of 11 fossil plants owned by FPL, which also owns and operates two nuclear plants, thus co-owning a plant with the Jacksonville Electric Authority. An example of decreasing the forced outage rate is the process at Martin Plant's Unit #1, the first of two 783 megawatt generating units at the plant. Until 1986, Unit #1 had a poor history of outages although it was only five years old. Improving reliability of this unit became a high priority, and it served as an example during the Deming site examination.

The first step was summarizing the accepted causes of all the outages of Unit #1 from 1983 to 1986, during which time the outage rate zoomed from five percent to 66 percent. Causes of failure were separated into recurring and first-time causes. A Pareto of the 1987 failures showed that failure of a superheater end cap was by far the top item.

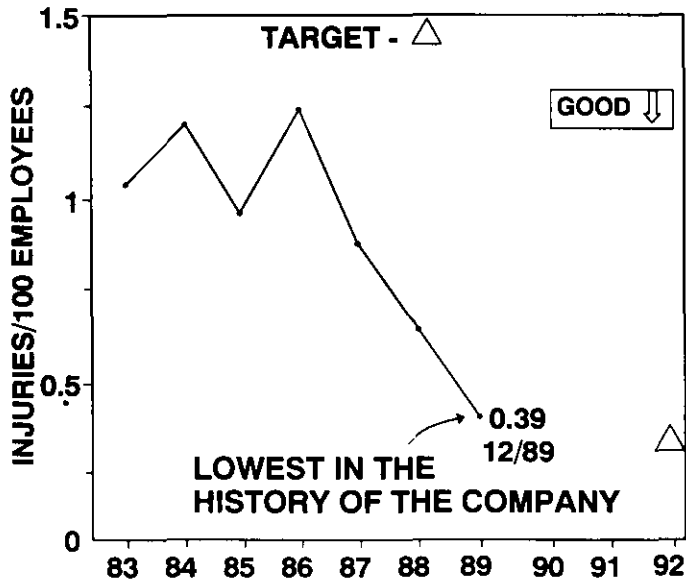
Analysis of the end cap revealed that the root cause was an incorrect A.S.M.E. marking on the end cap. Countermeasures included not only replacement of the end cap, but testing of similar boiler components to be sure they were made of the right material. This finding from Unit #1 was communicated throughout FPL so that the same fix could be applied to all other equipment of the same type.

During 1988, the analysis of other causes of outage continued, but three enhancements to FPL's systems added firepower to the hunt. First, FPL and industry data were analyzed to discover modes of fail-

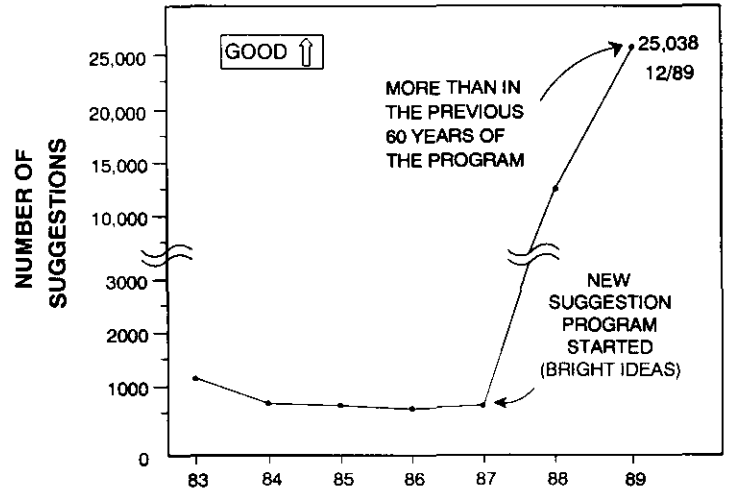


# Some of Florida Power & Light's Accomplishments

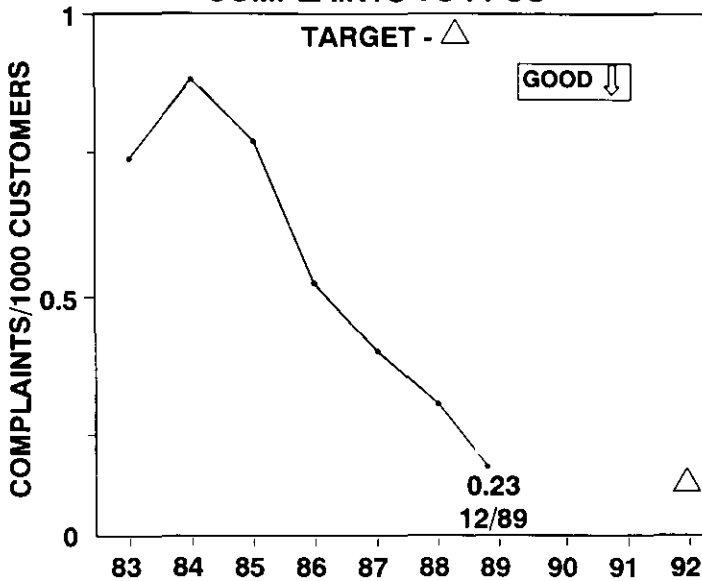
**LOST-TIME INJURIES PER 100 EMPLOYEES**



**NUMBER OF EMPLOYEE SUGGESTIONS SUBMITTED**



**COMPLAINTS TO FPSC**



**DISTRIBUTION SERVICE UNAVAILABILITY**

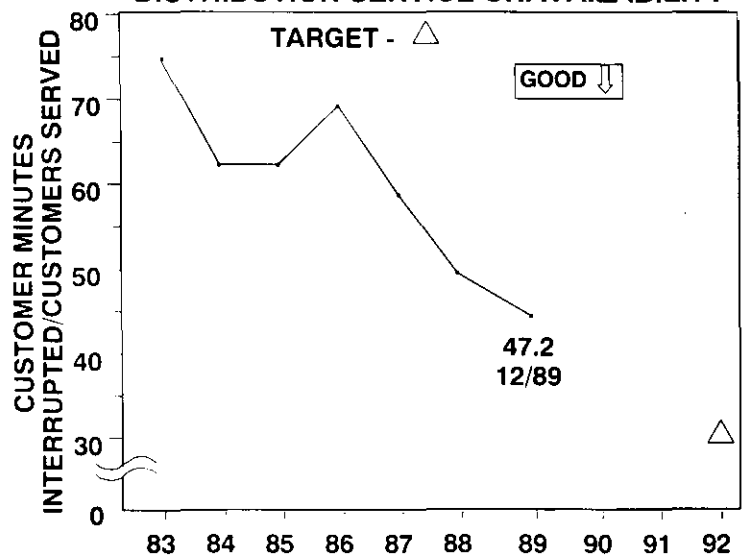
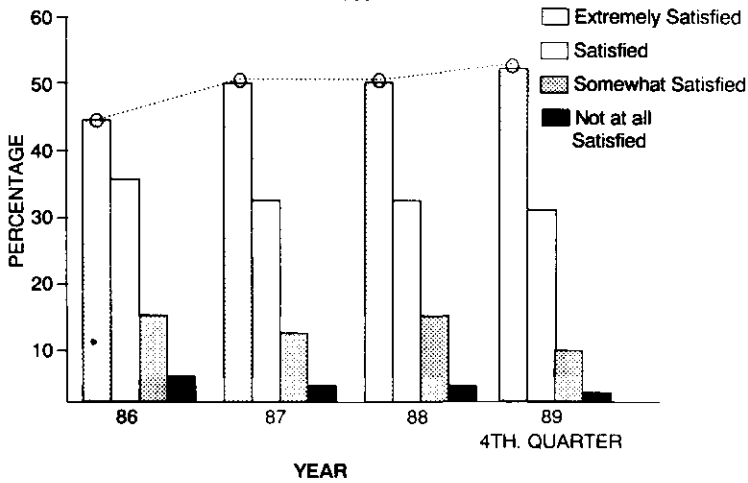
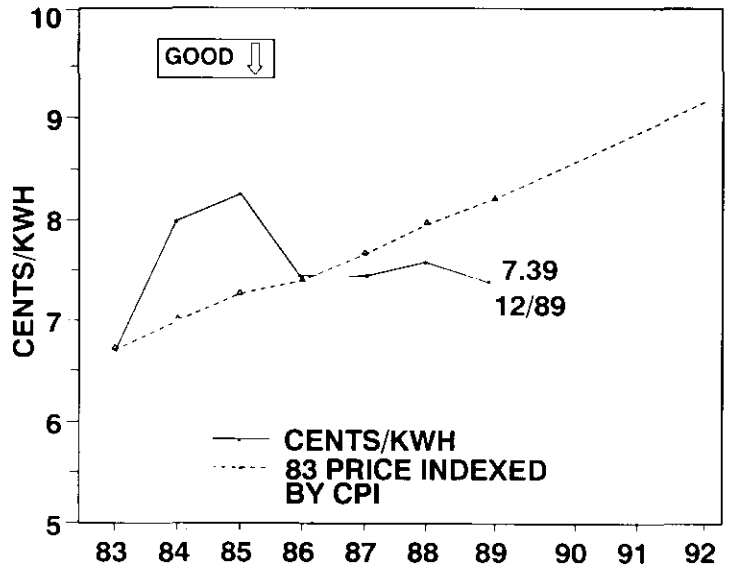


Fig. 4.

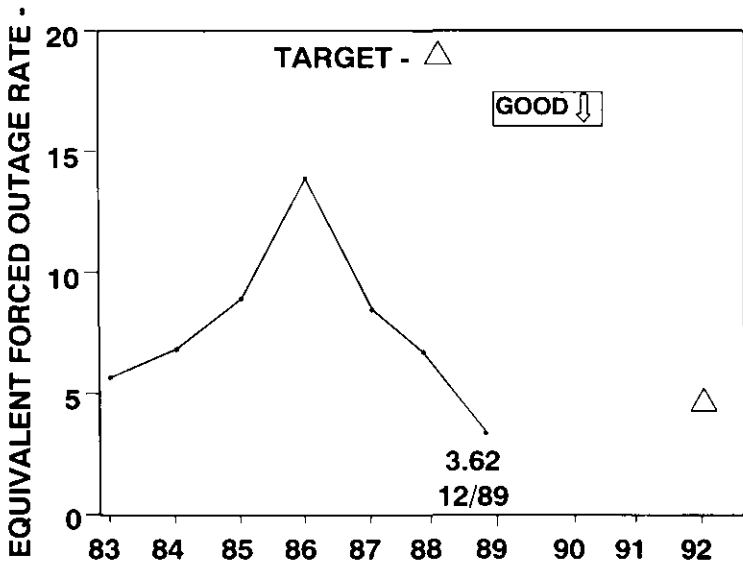
**RESIDENTIAL CUSTOMERS' OVERALL SATISFACTION WITH FPL  
4TH QUARTER COMPARISONS  
1986 - 1989**



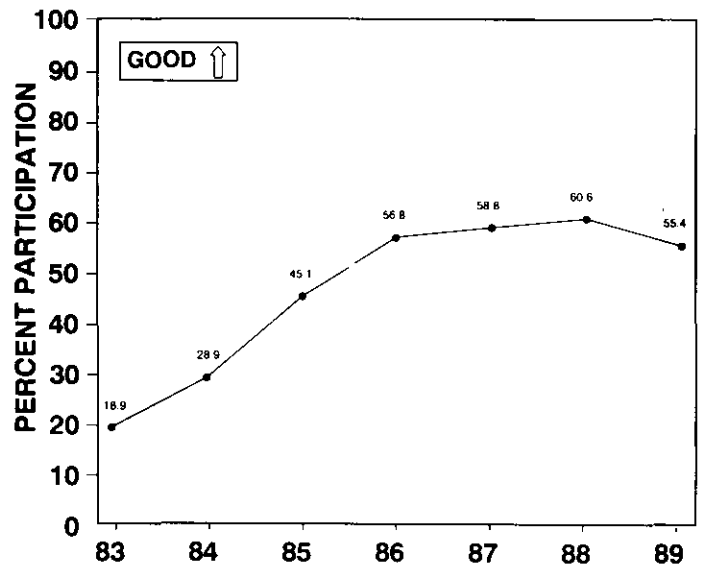
**PRICE OF ELECTRICITY**



**FOSSIL EQUIVALENT FORCED OUTAGE RATE**



**PARTICIPATION ON QI TEAMS**



ure occurring elsewhere that had not yet been experienced with Unit #1, so preventive measures or countermeasures could forestall those types of failures before they happened.

Second, "Condition Assessment" was started on Unit #1. Condition Assessment is systematic physical inspection of the equipment to identify potential precursors to failure, such as aircraft mechanics inspect aircraft. (FPL found and repaired piping cracks that would have previously been unreported, for instance.)

Finally, FPL started a Reliability Rate Profile on Unit #1. An example is shown in Fig. 5. The profile is a projection of Unit #1 reliability problems by category in a format that permits easy discussion of probable problems and countermeasures over a six-year horizon. Note at the bottom of the profile in Fig. 5 that there is a row labeled "First Time Event Rate." Not only is FPL concentrating on the high

probability recurring failures, they are trying to preclude many forms of non-experienced first-time failures from ever appearing on the list.

That's what it takes to convert a sick unit into one with nearly the best forced outage rate (1.22 percent) in the United States. It also impresses Deming examiners.

### Quality in Daily Work (QIDW)

Great execution is the core of FPL's improvements in actual practice. QIDW is the expression used to cover standardizing work routines, removing waste from them, promoting the internal customer concept, and enabling better practice to be replicated from location to location within the power company, which covers a huge territory.

Throughout the company one can see QIDW control systems at work. The systems consist of flow diagrams, process and quality indicators, indicator charts, procedure standards — and very often computer systems designed to over-

come problems in daily work. By examining and analyzing work over and over again, employees in every area contribute to simplifying their work and improving processes. They discover many opportunities for computer systems to free line employees from repetitive tasks.

For example, in the case of the Martin Unit #1, a check routine at the time of an outage reminds responsible parties on the scene to check for precursor events and capture the detail of the current situation, rather than ignore such information while restoring the unit to power. After the cause of failure is determined, another systematic routine is devised to assure that the cause of the outage is permanently corrected. The logic is guided by the Deming Circle, the last step of which is action to preserve improvements. It does no good to know, for example, that boiler tubes will probably begin to crack after three years' use unless corrective action is built into some-

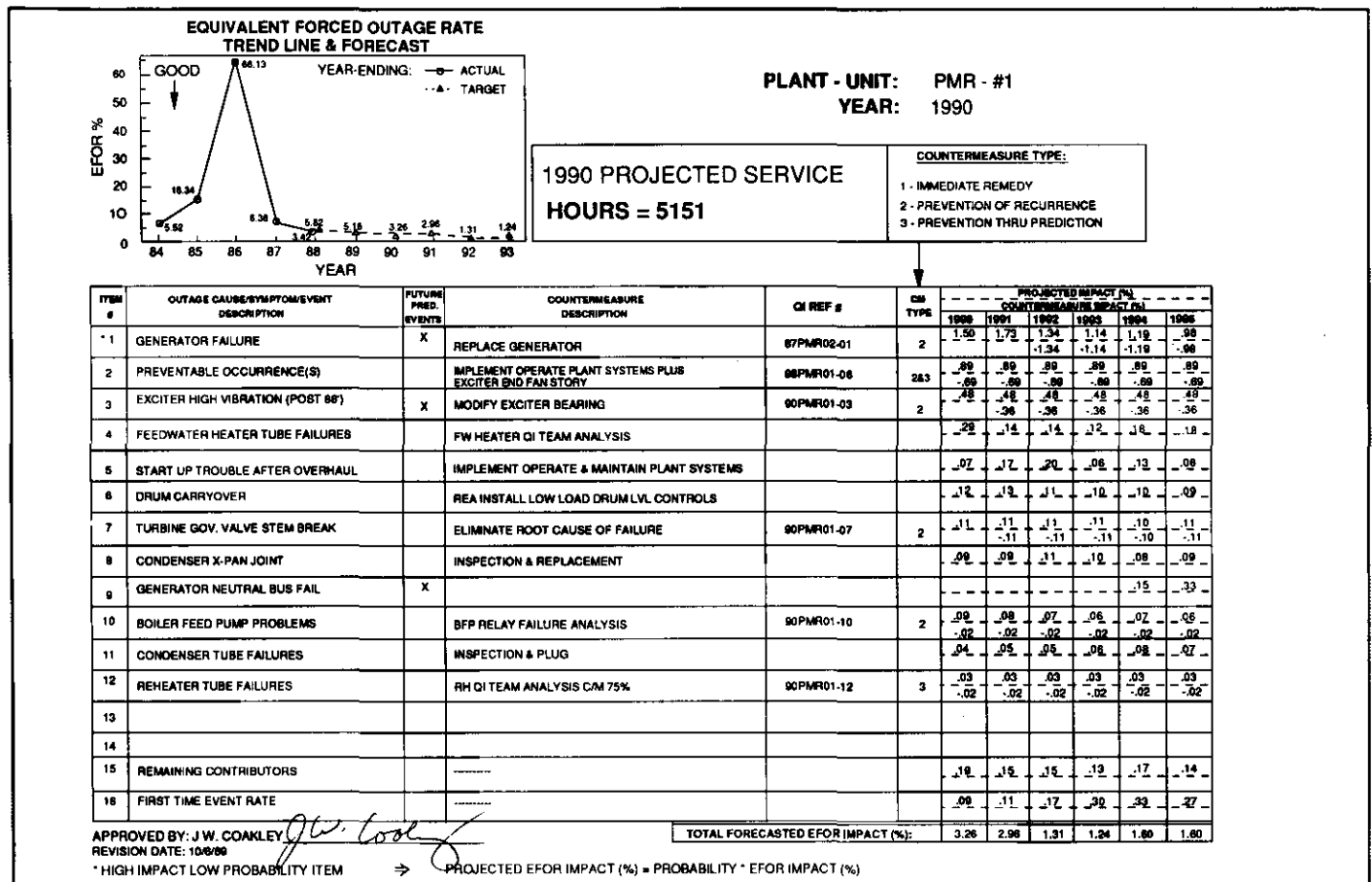


Fig. 5.

one's work plan three years hence.

### **Computerizing Customer Trouble Calls**

Deming examiners seemed impressed with FPL's use of computer systems to assist with daily work and to develop improvements. Florida Power & Light computer systems are often recognized as the leader among American power companies and are well ahead of utility systems seen in Japan.

One of the major reasons FPL has recently cut out-of-service time is a system for processing customer trouble calls. The computer first checks whether the customer has been disconnected for non-payment, then begins to zero in on locations and devices that may be malfunctioning, and routes the call through a dispatcher to an appropriate troubleshooter. A repairman heading to a scene may have a probable diagnosis before arrival. An after-action update stores the history of the event in the database, adding to the information retrievable by another call — and for more routine improvement planning. The system also collects data on such things as transformer locations that are frequent lightning sites (transformers can be moved).

The trouble call system is a huge central system that began in 1985 and has been enhanced since. During the past two years, however, many of FPL's system gains have come through 35 programmers training the "user community" to do their own programming. The training focuses on user-friendly fourth generation languages. The number of desktop systems contributing to Quality In Daily Work has burgeoned under this approach.

Just as reduction of forced outages improves customer service, so does the quality of systems work that interfaces with FPL's three million customer accounts. FPL applies its QI process to make its billing processes, service calls, and customer data as error-free and helpful as possible. FPL's overall use of computer systems has been a major factor pushing favorable trends in their quality indicators.

### **Bright Ideas**

Through 1987, FPL continued with a centralized suggestion system they had used for many years. Each year approximately 600 suggestions were submitted to the personnel department for evaluation. This process typically lasted six months and fewer than half the suggestions were implemented.

A task team formed to improve the suggestion program. The team proposed to decentralize the suggestion system. Simplifying the suggestion procedures would decrease the response time. To the maximum extent possible, employee participation in the implementation of their own suggestions would improve morale. And if the primary focal point were the supervisor, the added communication about quality and productivity at the grass roots level would surely be a benefit.

They tried a four-month pilot. It was so successful that in March 1988, FPL cut the whole company over to this new suggestion system, which they labeled the "Bright Ideas" program. In 1988 there were 9000 suggestions. In 1989 this zoomed to 25,000 suggestions, with 55 percent of them implemented, many of them immediately. That's an average of almost two suggestions per employee per year.

### **QI Teams**

Teams began at Florida Power and Light in 1981 and their influence has been growing ever since. Functional unit "working teams" receive guidance from lead teams of managers who approve and coordinate study themes — and occasionally remove barriers to achievement. Special cross-functional task teams tackle special projects. All functional unit teams are voluntary. Almost half the bargaining unit employees and about two-thirds of all other employees participate.

All the teams use FPL's QI story format as the logical framework for identifying and solving problems. The QI story format is a seven-stage process embodying the scientific method and is similar to the storyboard processes taught by many other companies.

Results from QI teams contin-

ue to increase, and every year FPL increases the support for them. In 1987 FPL introduced a team project planning worksheet that structures the improvement activities of teams in much the same way that any other project at FPL would be organized and managed. In 1988 FPL introduced the Quality Management Information System. Each team registers its projects and plans in this computer system, and from the system each team can retrieve project ideas and plans from many other teams throughout the company. The system has been a strong influence to standardize solutions without teams "reinventing the wheel." A summary of the QI team support system is Fig. 6.

One of the best features of the QI teams now is the role of supervisors. Supervisors are the direct support for the QI team in their area. Facilitators provide indirect support — systems work, training materials, recognition planning, and ideas — the kind of background work a busy supervisor has little time to pursue.

### **Developing People**

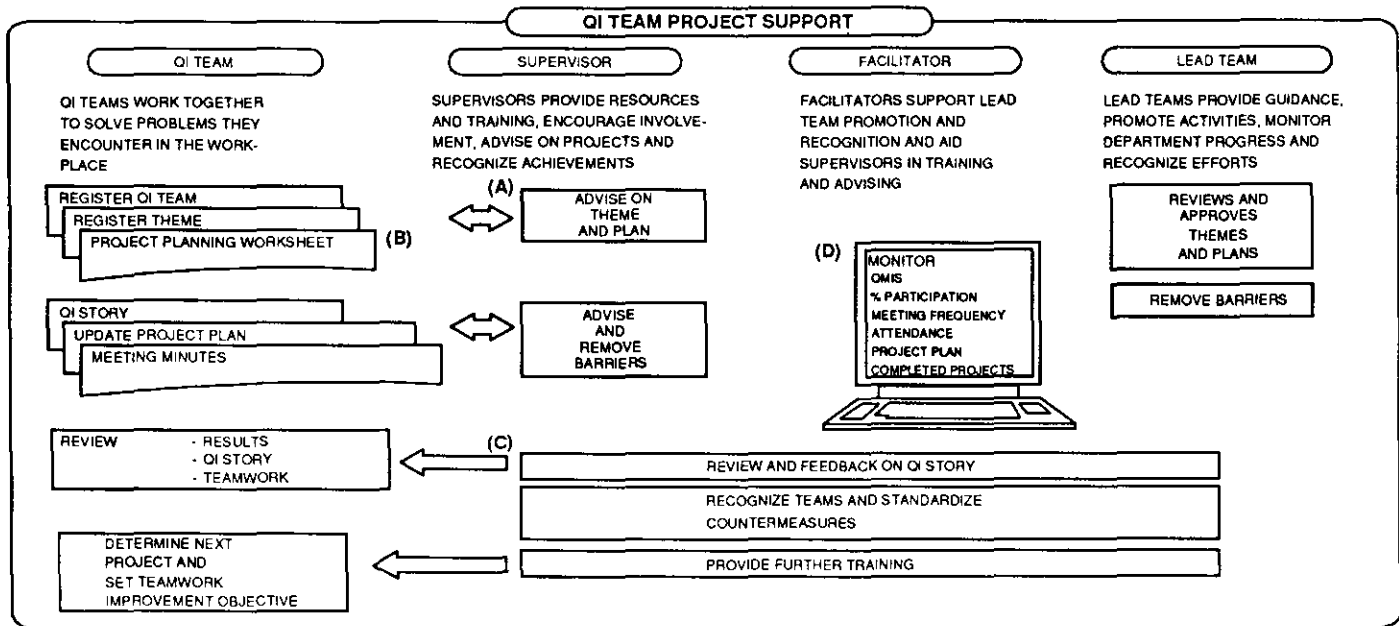
FPL executives think that the potential of QI teams and Bright Ideas suggestions remains great. The benefits of empowering employees are just now beginning to be felt. Like most of us, FPL had to learn how to unlock this potential the hard way — trial with much error.

When FPL began QI teams, facilitators promoted the teams. Supervisory participation was voluntary. That was a mistake. The same mistake had been made years earlier with the old suggestion plan — bypassing the person locally responsible for group performance. Supervisors felt improvement was outside their responsibility. The mistake now has been rectified. Supervisors are in the middle of QI teams and their QI stories, and they are key players in the new suggestion system, too.

The changes were nudged along by a very heavy training schedule. People change takes time and patience. They may quickly see the light, but it takes time to unlearn old habits, and time to



## Team Process Support System



### Evolution (see above)

- A.** The supervisor's supporting role was established in 1986. Additional training was provided in 1988.
- B.** The team project planning worksheet was developed in 1987 to aid teams in completing projects on schedule.
- C.** A structured review and feedback mechanism was developed in 1987 to aid supervisors in their advising roles.
- D.** The Quality Management Information System (QMIS) was developed in 1988 as an online system that managers use to plan and review team activities.

Fig. 6. From p. 21 of "Summary Description of FPL's Quality Improvement Program," publication of Florida Power & Light Co., 1989.

## FPL's Internally Taught Courses Directly Related to the Quality Improvement Process

ELIGIBLE POPULATION	COURSE TITLE (YEAR DEVELOPED)	COURSE LENGTH (DAYS)	CONTENT	PARTICIPANTS TRAINED		
				THROUGH DEC. 1988	THROUGH DEC. 1989 (Projected)	% OF TARGET
EXECUTIVES	STATISTICAL CONCEPTS FOR EXECUTIVES (1988)*	2*	SQC AND RELIABILITY TOOLS	18	19	100
MANAGERS AND ABOVE	ORIENTATION FOR MANAGERS (1983)	1	INTRODUCTION TO QIP	168	168	31
	LEADERSHIP FOR MANAGERS I (1984)	3	MANAGING QI TEAMS	582	582	106
	LEADERSHIP FOR MANAGERS II (1985)	3	POLICY DEPLOYMENT	605	605	110
	LEADERSHIP FOR MANAGERS III (1986)	3	QUALITY IN DAILY WORK	587	587	107
	STATISTICAL CONCEPTS FOR MANAGERS (1988)	5	SQC AND RELIABILITY TOOLS	303	426	77
MANAGERS, SUPERVISORS, SELECTED STAFF	APPLICATION EXPERT (1987)	15	STATISTICAL APPLICATION	230	230	100
SUPERVISORS	SUPERVISOR/FOREMAN AWARENESS (1983)	1	INTRODUCTION TO QIP	1021	1021	55
	SUPERVISING FOR QUALITY (1986)	5	SUPERVISING TEAMS, POLICY DEPLOYMENT AND QIDW	2470	2470	133
	SUPERVISING TEAMS (1988)	2	SUPERVISORY FACILITATION OF TEAMS	914	1484	80
FACILITATORS, TEAM LEADERS		2	QIDW FOR NEW SUPERVISORS	NA	406	100
	TECHNIQUES I (1985)	3	SELECTED SQC TOOLS	224	224	NA
FACILITATORS	TECHNIQUES I (1988)	5	SCATTER DIAGRAMS AND CONTROL CHARTS	724	1658	118
	FACILITATOR TRAINING (1983)	5	QIP ADMINISTRATION AND FACILITATING SKILLS	970	970	100
TEAM LEADERS	TEAM LEADER TRAINING (1982)	5	QC TOOLS, GROUP DYNAMICS	6200	6980	100
<b>TOTALS</b>	<b>13 COURSES DEVELOPED BY FPL</b>	<b>58</b>	<b>QIP</b>	<b>15017</b>	<b>17830</b>	<b>NA</b>

Fig. 7. From p. 21 of "Summary Description of FPL's Quality Improvement Program," publication of Florida Power & Light Co., 1989.

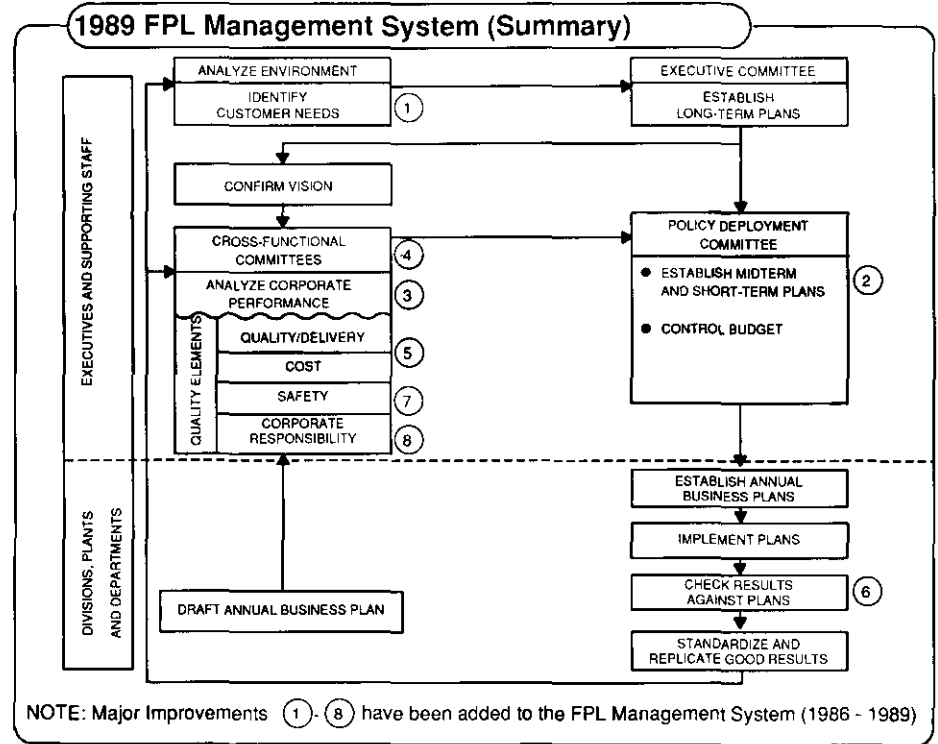
build confidence in the new way of working. FPL did not scrimp on training. They found that training boosted enthusiasm and participation levels. To promote uniform problem-solving methods and the same quality consciousness in all parts of the company, employees from different functional areas in different parts of the company attend courses together.

Training is part of the experience in all QI teams. Supervisors are expected to train their employees, which causes them to be more attentive to the training they receive themselves. To be team leaders, many must evolve new behavior as coaches and cheerleaders — which takes training.

The roles of various employees also have shifted. As line employees have become more skilled in diagnosing and overcoming problems, matters which once required management and staff attention are now handled by line employees. Problems once muddled through by intuition are now approached by using facts. Supervisors and workers whose view of the world was once confined to a small corner of FPL now have a broader view. Perhaps best of all, supervisors and line employees now have much more flexibility in dealing with customers.

To promote this kind of change, top management sets the tone. No one ever doubted that John Hudiburg, the just-retired CEO, was totally committed to quality changes. In 1989 the chief in charge of the Quality Improvement Process was Executive Vice President Wayne Brunetti. He spent the majority of his time working with the quality improvement process. He completed every training course personally. Every member of the top management team has met evenings and weekends for quality training and for refining the new management system.

The new top management role is heavy in personal leadership. At least one member of the FPL top command visits every work location at Florida Power & Light at least once a year and stays all day. The



### Reason

#### 1986

- Weak understanding of customer needs
- Employees unclear on what needed improvement

#### 1987

- Improvement and control activities not clearly tied to customer needs

#### 1988

- Executives unable to effectively address problems which crossed departmental lines
- Corporate and departmental Quality/Delivery activities did not link
- Management unable to confirm that department functions aligned with company objectives

#### 1989

- Employee safety activities did not link to the FPL Management System
- Activities to improve corporate citizenship not clearly tied to FPL Management System

### Major Improvements

- ① Conducted customer needs survey
- ② Initiated mid-term and short-term plans
- ③ Initiated corporate system of indicators
- ④ Formalized cross-functional management
- ⑤ Introduced Quality/Delivery and Cost Management Systems
- ⑥ Initiated Level I, II and III Management Reviews
- ⑦ Enhanced Employee Safety Management System
- ⑧ Introduced Corporate Responsibility System

Fig. 8. Adapted from p. 14-15 of "Summary Description of FPL's Quality Improvement Program," publication of Florida Power & Light Co., 1989.

purposes of most visits are to check the progress of quality improvement, to check progress meeting business objectives, to see if any local problems reflect a more general corporate concern, and generally to promote QIP in every way possible.

As shown in Fig. 6, staff and

middle managers have also had a heavy dose of training. Their roles also changed. At FPL, as elsewhere, the middle level personnel had typically been the experts and order givers. The change process is now well along with FPL's middle managers, but it is hard to ac-

cept that line employees are often your customers, which is why the middle management courses were entitled "leadership."

### The FPL Management System

There are four key characteristics of the FPL management system as it has evolved over several policy deployment cycles:

1. *Customer satisfaction* became the focus of management attention rather than cost control. While a major signal comes from formal surveys of the customers, learning of customer needs and preferences has become everybody's business, and FPL is attempting to discern those needs five, ten, and 20 years out; as well as today. Of course, other kinds of customers are represented by the regulatory agencies.
2. *Management reviews*, cascading through all three management levels, check on improvement progress monthly. There is a strong emphasis on follow-up, asking repeatedly whether FPL is making progress on its top priority goals. Goals are long-term; checking progress is frequent. Managers now review progress in the light of much better statistical insight than previously. They expect to see some random swings in results of performance, but to give constant attention to betterment of performance.

As a result of the Deming Prize Process, the term "alignment" entered FPL's corporate language. Suppose an examiner wanted to field check any of the measurements in FPL's massive written description. Glaring discrepancies would surely bring on a continuance, so managers visited work locations and brought people in from the field

## The Deming Prize Process

Deming Prizes are awarded in three categories:

1. Individual prizes
2. Application prizes given to companies and other operating organizations
3. Awards (not called prizes) given to factories.

Formally, the number of prizes given annually is not limited, but practically a limit is set by the intensity of the examination process and by the time of examiners and advisors necessary to conduct it. One hundred thirty companies have won an Application Prize since the Deming Prize began in 1951.

The Union of Japanese Scientists and Engineers (JUSE) appoints the chairman of the Deming Prize Committee. In turn, the chairman appoints the committee and sub-committees. Company applications are examined by the Applications Prize Sub-committee, which can have no members from companies.

The examiners are recognized experts. Many are professors who have served the Deming Prize Process for many years and have essentially made a career of strengthening quality in various kinds of organizations.

After each company's initial application is accepted as eligible for the process, they submit a description of their quality practice which is thick and detailed. Assembling this corporate description is an extraordinary self-examination in itself. Examiners review these and become very familiar with the company. Sometimes the examiners even restate the Deming Prize checklist in applicant companies' internal terminology.

Based on review of the written descriptions, only companies believed to be successful in Company Wide Quality Control are selected for a site visit. Each site visit consists of three parts:

#### *Schedule A:*

Company presentation to further acquaint examiners with the company and highlight practices the company wishes to bring to the examiners' attention.

#### *Schedule B:*

After a brief overview by the head of each organizational unit examined, the examiners ask questions — often in depth. At the conclusion of each sub-unit examination, there is a wrap-up session during which the company can follow up on unanswered questions or correct misunderstandings.

to assure "alignment" — verify that data reported could be supported by evidence at the scenes of action.

"Alignment" forced confrontation with reality in practice. No more fuzziness in reporting, and checking evidence stimulates a penchant for action in anyone

previously gliding along on mere talk. "Alignment" was so beneficial that it continues in the management reporting systems at Levels I, II, and III. Typical questions: Are policies understood? Are we working on priority problems? Is corrective action QIDW

*Executive Session:*

The examiners as a group interview the top management to confirm their commitment to the company's quality processes and validate findings from examination of sub-units. The Deming Prize Process conducts the interview with top executives last, after working from detailed evidence to conclude the company's actual overall strategic direction. (Westerners usually start with top executives' strategic direction, then audit the details to verify that the direction is being carried out.)

The objective of the Deming Prize examination is not to declare that one or more companies are somehow "best," although publicity surrounding the award ceremony may sometimes imply that. The objectives are to establish that a company has so thoroughly deployed a quality process that it will continue to improve long after the prize is awarded, and that in some phase of its development the company has a practice worthy of sharing with other top-quality companies. Winning the Deming Prize is as much recognition of an organization's capability as of its prior accomplishments.

The examiners use a scoring system on a scale from 1-100, but the scores are never disclosed. Each examiner must score every sub-unit they examine during a site visit. To "pass," the top executives must receive a score of at least 70 and an average of all the sub-unit scores of the company must average 70. No sub-unit score can be below 50.

There are no "losers." If a company fails to pass any phase of its examination, the examination process is continued into another year, and the prize is said to be "pending." The company's name is not publicly disclosed. Strengthening each company itself is the heart of the total Deming Prize Process. A "pending" company continues to process until it passes — or until it withdraws itself. The process is intense enough that applicants cringe at the thought of a continuation.

The examination process is very demanding of the examiners too. The site visits are as broad and deep as the written descriptions of quality. For example, an eight-man visitation team covered FPL in two one-week sessions which began three weeks apart. (There were four examiners for the first session; six for the second.) In addition to top executives and the general offices, examiner teams covered three of five divisional offices and four of 13 generating plants. Each day of review was tightly scheduled.

After the examination, the CEO of every company receives a detailed written feedback report about a month later. Perhaps the best result of the process is learning what to do to become better and being stimulated to do it.

in place and working?

3. *Cross-functional management* permeates the quality improvement process, starting with cross-functional committees who participate in the policy deployment process. Improvement objectives may be assigned to

any individual executive from any functional position, authorizing leadership of a broad project crossing functional lines. Large-scale improvement processes typically are carried out by cross-functional teams.

4. *Integration of the budget with quality improvement* is accom-

plished through "catch ball" consensus and prioritization.

Both are embedded in policy deployment. Quality has a big pay-back, but improvement policies must be deliberately planned.

Fig. 8 presents another view of the FPL management system.

**Capturing the Essence**

Although in a large company few activities are as simple as one, two, three, FPL discovered that sorting through the high Pareto, high-priority problems is an exercise in simplifying. At the end of the Deming site visit, after having answered all the picky, detailed questions, one of the examiners asked what key points FPL would make to other organizations aspiring to quality performance. FPL's answer boiled down to three simple points:

1. Top management must be totally committed — so absolutely convinced that they will commit their personal time and their reputation to leading the effort.
2. The company must support education and training on a very large scale for a very long period of time. Learning to make it all seem simple and natural comes after long periods during which it seems that very little good may ever result.
3. To gain the full benefit, quality improvement processes must be company-wide, transforming every aspect of the business.

At Florida Power and Light, the music is still building toward a full crescendo.

<sup>1</sup>*The New Grove Dictionary of Music and Musicians*; ed. Stanley Sadie. McMillian Publishers Ltd., London, 1980.

*Author:*

Al Henderson is a Hinsdale, IL-based writer.

