



*Cape Fear Public Utility Authority Efficiency &
Competitiveness Study*

July 2011

Provided by Woolpert, Inc.



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Section 1: Executive Summary

Cape Fear Public Utility Authority requested an Efficiency & Competitiveness Study of the Authority (CFPUA, or Authority) be conducted. The departments within CFPUA include: Environment & Safety Management, Engineering, Human Resources, Operations & Maintenance, and Finance & Administration. These departments provide critical core services to the customers of the Authority. This study was undertaken to ensure that operations of the Authority was being conducted in an optimum manner and consistent with the best interests of the customers of CFPUA.

What We Did

Woolpert conducted this evaluation using standardized procedures and methods that have been applied to over 80 public agencies around the United States and beyond over the past 15+ years. The process consisted of: 1) a desk audit of requested operational and financial information, 2) a series of interviews (with CFPUA staff and management) and observations focused on work processes, organization structure, and technology utilization, 3) calculation of any improvement opportunities based on application of observations to industry best practices, 4) validation of observations and calculations with Authority management and staff, and 5) development and delivery of report and presentation deliverables to complete the process.

1. Desk Audit

The desk audit typically involves a detailed review and analysis of operational and financial information. Woolpert requested the following data from CFPUA for this review:

- Organization Charts – Detailed to the divisional level
- Budgets (Operating and Capital) – 2 years actual, next year projected
- 5-year Capital Plan
- Annual Report – Last 2 fiscal years (if available)
- Union Agreement(s) (if any)
- Accident/Injury Reports – Last 3 fiscal years (if available)
- Performance/Productivity Measures in Use
- Job Classifications/Descriptions
- Staffing Allocations (number of staff and location by classification/position)
- Salary Schedule (by classification/position)
- List of Training/Certification Requirements and Programs
- List of Management Information Systems in Use (e.g., CMMS, inventory, GIS, etc.)
- List of Contracted Services (e.g., repairs construction, building/lawn care, paving, etc.)
- Service Area Maps
- Field Functions Performance Metrics (division or sub-group level)
- Business Functions Performance Metrics (division or sub-group level)
- Facilities and Buildings Location Map(s)

- List of Activity Schedules and/or Routines
- Field and Business Functions Programs Definitions (detailed)
- Rolling Stock Equipment (vehicle) Inventory
- Equipment/Facility Rental Rates (if applicable)
- Department/Division/Section Reports (samples)
- List of Departmental/Divisional SOPs
- Departmental/Divisional Programs Overviews (general)
- List of Typical Routine and Unscheduled Activities and Events (division or sub-group level)
- Departmental/Divisional Reports (samples).
- Water resource Master Plan
- Most recent rate study and current rate structure

CFPUA staff provided all of the information requested in electronic format in a timely manner.

2. Interviews, Findings and Observations

Our process included conducting over 40 interviews of Authority management and staff. We also observed CFPUA in action while conducting interviews and while touring facilities and visiting field crews on job sites. From these encounters, we were able to develop an understanding of the Authority and the challenges they face, accomplishments they strive for, and culture they are creating. We group our input from some meetings into the four categories of strengths, weaknesses, opportunities, and threats. Strengths and weaknesses are discussed in terms of the present while opportunities and threats are seen as future conditions. Here are some of the key findings and observations from these encounters with CFPUA management:

Present Strengths:

- People
 - Experienced, competent staff
 - Good communicators
- Practice
 - Chose best practices from City and County
 - Financial controls in place
- Technology
 - Implementing MAXIMO EAM

Present Weaknesses:

- People
 - Lack of succession planning

- Practice
 - Policy & Procedure documentation not complete
 - Need performance indicators more fully developed
- Technology
 - Data cleanup from billing issue not completed yet

Opportunities:

- People
 - Improved leadership & workforce development
- Practice
 - Greater consistency of services and products
 - Continued benchmarking level of service
- Technology
 - Integration of technologies
 - Technologies supporting best practices

Threats:

- People
 - Not having people properly trained to transition into supervisory and management positions as they become vacant
- Practice
 - Continued reorganizing / reacting to outside influences should be minimized and the effects carefully analyzed / considered
 - Continued stakeholder education, outreach and coalition building should be encouraged and facilitated
- Technology
 - Need to roll MAXIMO EAM out to all O&M areas

As we started this evaluation process, we developed an awareness that there were several concerns that were, perhaps, driving this effort. Included among those concerns were questions of staffing levels, span of supervisory control, equipment quantities, and budget/rates. The facts supporting our findings and recommendations are noted throughout this report but we are compelled to state at this point that we did

not find these concerns to be founded in reality or based on fact. Rather, our evaluation finds that the Authority is operating within industry standards in these regards.

3. Calculations and Analysis

The industry best practices used for this evaluation fall under two distinct categories. One set of “O&M Best Practices” was used for the evaluation of the Operations & Maintenance (O&M) Department of CFPUA. Another set of “Business Services Best Practices” was used for the evaluation of the other departments of the Authority including: Finance & Administration, Human Resources, Engineering, and Environment & Safety Management.

O&M best practices include:

- Operations and Maintenance United (OMU)
- Program-Driven Maintenance (PDM)
- Base-Load and Off-Shift Staffing
- Workforce Flexibility (WFF)
- Technology
- Strategic Organization Engagement
- Customer Advocacy
- Asset Management.

Business Services best practices include:

- Eliminate Old, Outdated Policies & Procedures
- Routinely Acquire customer Feedback
- Manage Information Strategically
- Manage Finances Strategically
- Utilize Resources Optimally
- Manage Service Delivery
- Manage Organization Effectiveness
- Utilize Technology Strategically

We compared the way CFPUA conducts business to these best practices as a set of “benchmarks” for this evaluation. We refer to this type of evaluation as “Practice Benchmarking” vs. “Metric Benchmarking”. Our experience has shown that practice benchmarking brings greater value to the agencies we evaluate by providing them with an understanding of the industry practices that enable high performance organizations to excel on a sustainable basis. Conversely, metric benchmarking is extremely difficult to “normalize” for geographic and other variables (that is, pipe repairing conditions in North Carolina vary greatly from pipe repairing conditions in Colorado making these types of comparisons both challenging and of limited value given the high cost of data normalization). Furthermore, as our database has grown (we have now applied this process to over 80 public agencies), the results attain a higher level of validity

– being in the top five of a list of 80 agencies is, perhaps, statistically more significant than achieving the same results when compared to a limited number of organizations during a metric benchmarking exercise. Concerning the background of these best practices, we offer the following discussion: The practices are compiled from best practice information, theory, and concepts that have been implemented in some of the most successful public and private utilities. They are integral measuring tools for the following programs, awards and certifications.

- American Productivity and Quality Center
- Malcolm Baldrige National Quality Award
- Deming Application Prize for Quality
- Presidential Award for Quality
- Six Sigma, Lean Six Sigma
- ISO 9001
- ISO 14001

It is important to first define “business practice”. A business practice is a habitual way of conducting work. It is “how” work is carried out, not “what” work is carried out. Best practices are those business practices that have been identified as the best approach for an organization. These are based on a variety of specific factors and evaluative criteria. There is, in fact, no single, agreed upon, comprehensive list of best practices. The best practices used in this assessment are a synthesis of the key recurring themes in the best practices body of knowledge.

These recurring themes revolve around the key areas of:

- Increased productivity
- Work-flow and processes
- Work environment (culture) and communications
- Use of resources (technology, skills, staffing, tools, finances)
- Customer focus
- Quality of work

“Benchmarking” is a term that is often used in discussions about best practices. There are a number of definitions of benchmarking. In the public sector, benchmarking may refer to metrics, or ratios of some measure. Examples include breaks/mile of pipe, #staff/1,000 customers, \$/million gallons treated, and so on. Comparing benchmarks of this nature across agencies is generally non-productive due to differences in circumstances including geography, regional issues, and specific processes. A more productive approach is for a public agency to determine what practice performance benchmarks it will track, establish a current baseline performance level, and to compare its performance to itself over the course of time. This is “Practice Benchmarking” and is the basis for our evaluation of the Authority.

4. Validation

Following our analysis and resulting calculations, we conducted an extensive review of the results with CFPUA staff and management. During this review, we requested confirmation of our observations and findings – not of the calculations themselves. This review resulted in clarification of question areas we had identified during the evaluation and corrections to observations we had misinterpreted or misunderstood. As is typically the case, the validation process resulted in no adjustments to our calculations.

Our findings are that Cape Fear Public Utility Authority operates at a high level of performance with little opportunity for significant improvement. In fact, we are pleased to note that CFPUA is among the top 5 of all agencies we have evaluated. Our process involves the development of a performance improvement “gap” that is calculated by dividing the total improvement opportunity we have identified by the operating budget of the agency we are evaluating. We have calculated that CFPUA has a 4.8% gap of which we are recommending to target one half, or a 2.4% gap to close over the next 1 – 3 years and total gap closure over the next 3 – 5 years. This gap is very low. In other words, by adapting or adopting the various recommendations contained in our report and based on the industry best practices we adhered to during our evaluation, CFPUA can improve their productivity by a factor of only about 2.4% in the short-term (1 – 3 years) and 4.8% in the long-term (3 – 5 years). That equates to a cost of service improvement equal to \$430,688 short-term and \$861,376 long-term in an operating budget of \$27,800,000. This is one of the lowest gaps we have ever calculated – it is a very good score compared to the many similar evaluations we have conducted and puts CFPUA in the top 5 of utilities we have assessed.

Some of the reasons for this “Top 5” performance rating include: 1) the agency has a strong commitment to performance measurement and management, 2) the Authority utilizes its resources effectively, and 3) CFPUA’s ongoing leadership in the acquisition and use of technology to support best practices. We will discuss these further later in this report.

5. Recommendations:

Our recommendations fall into three major categories: People, Practices, and Technology. Further, we have defined our recommendations as short term, intermediate, and long range in the full report so that, combined in these categories and time frames, they constitute a high-level action plan for CFPUA. Execution of this high-level action plan will support the Authority’s continuing efforts to optimize performance and build a sustainable model for the future.

Of the three categories of People, Practices, and Technology, the “People” category often attracts significant attention (for good reason). In that regard, our conclusion is that CFPUA could improve productivity by a factor that is equivalent to 8 FTEs (Full Time Equivalents) over a short-term period of several (1 to 3) years and by a factor that is equivalent to 16 FTEs over a long-term period of 3 to 5 years by implementing various recommendations contained within this report. At the same time, using a modest growth rate of 0.5% annually, CFPUA would need to add 7 staff over the next 5 years to their current staffing level. Thus, the implementation of recommendations based on best practices could help the Authority avoid the cost of hiring these 7 positions over that period of time and additionally provide for an improvement equal to 9 FTEs in that 5 year period (these assumptions do not take into account any major shift or event that cannot be predicted at this time such as further growth of service area or unforeseen positive or negative financial trends effecting the region).

While we are *not* suggesting a hiring freeze, we believe that CFPUA could avoid filling *some* vacancies while implementing the recommendations contained in this report for the long-term (3 - 5 years) to reduce costs until growth catches up to staffing needs. Then the Authority could hire staff to support continuing growth beyond that point. An exception to this overall approach is that CFPUA needs to add staff to conduct Planning and Scheduling and Asset Management activities in the O&M Department and design staff to support Asset Management related projects in the Engineering Department for improved preventive maintenance and optimum asset management of the Authority’s facilities and infrastructure. Improvement in these areas will not begin until these resources are on board and contributing to the focus of maintenance and asset management optimum performance. These positions could be created from existing and vacant positions as opportunities occur and are already included in the calculations above.

This discussion leads us to a primary concern regarding CFPUA – that a significant percentage of the agency’s staff could retire in the next several years placing the sustainable performance of CFPUA at risk. CFPUA needs to develop and execute a Succession Plan to ensure that this agency is prepared for this eventuality. We find that the Authority, like many public utility agencies, is a very good organization that has been striving to keep up with a fast-growing economy for the past decade or longer (as City and County departments) and now, fortunately, has the time to catch up to that growth and prepare for the future more strategically. We recommend that CFPUA invest

the time and resources to prepare for this coming change in the workforce today. Otherwise, the “brain drain” this exodus represents could be extremely difficult to overcome.

Key Recommendations

The following high-leverage actions are recommended to enable the Authority to perform at “World Class” service provider levels:

Key “Practices” Recommendations

- Using the EMS program as a basis, continue the program for systematically reviewing/creating policies and procedures (including SOPs) on a regular basis
- Evaluate the potential for skills training and cross-training along with SOPs to ensure consistent work production and results, include standards for productivity and work quality
- Continue to implement the balanced scorecard for agency and staff by incorporating into agency reporting and individual evaluation processes via the EMS program
- Consider skill-based compensation to go along with skills training so that flexible, valued workers don’t have to wait for vacancies to be compensated for their increased value to the organization
- Establish and execute full proactive approach to address any future consent order issues

Key “Technology” Recommendations

- Identify functional requirements to fully automate plants for optimized chemical and power consumption
- Continue Implementing a plan to ensure optimum fleet management for long-term maintenance/replacement cost control (MAXIMO)
- Determine permanent new CFPUA facility property and define functional requirements for new building(s) (consider drive-time for crews when selecting location(s) and leverage existing properties (plants and field service locations) if possible)
- Implement GPS and mobile technologies – consider GPS in all vehicles or in primary crew units
- Implement integration of technologies (MAXIMO, GIS, Financial, Billing) to support best practices

Key “People” Recommendations

- Develop Succession Planning to prevent “brain drain” resulting from retirements/attrition
- Reorganize CFPUA around the concept of a CEO-COO leadership team. CEO should be the promoter of the vision for CFPUA and should be outwardly focused on stakeholders.

COO should be inwardly focused and capable of engaging staff and working across department, division and unit lines.

- Create and execute Leadership Development program to support succession planning and knowledge retention
- Develop and implement cross-training program with skills-based compensation to encourage development of a highly productive workforce
- Implement reorganization as follows:
 - Improved Strategic Planning: Update Strategic Plan and Operating Plan and assign CFPUA leadership according to roles and responsibilities (Strategic = CEO, Operating = COO) (add 1 FTE to separate COO and O&M Manager roles)
 - Employee Development: Use Succession Plan as basis for developing approach (add 1 FTE to HR to focus on overall organization and employee development)
 - Develop IT Master Plan to identify and plan for implementation of technology integration throughout CFPUA (add 1 FTE to IT to support advanced technology utilization and integration)
 - Customer Service: Evaluate CS processes and options and develop an action plan based on development and implementation of proactive customer feedback and response (add 1 FTE to provide QA/QC for CS – reports directly to CEO)

The above recommended reorganization changes are included in the previous staffing calculations. Woolpert is pleased to respond to any questions the Authority may have following review of this and other referenced documents.

Section 2: Introduction

Cape Fear Public Utility Authority Has an Established Track Record of Performance

CFPUA has a tradition of customer service, public safety commitment, regulatory compliance, and leadership (as demonstrated by CFPUA's leading role in conducting this type of evaluation). This tradition is an extension of the City of Wilmington and New Hanover County – the two agencies from which CFPUA was recently formed. The Authority is meeting the challenges of the current economic downturn in the United States as well as increasing demands on the public sector in several ways, including commissioning the study summarized by this report. This review was conducted from the perspective of a private sector service provider to determine where and to what extent performance improvement opportunities exist in the current operation as well as looking to the future. The review addresses the Cape Fear Public Utility Authority operation, including the Operation & Maintenance (O&M) and Business functions of the Authority.

In March through July of 2011, a review was conducted of the Cape Fear Public Utility Authority. The purposes of the review were to 1) determine the efficiency of the Authority's current operations as

compared to how a private utility contractor might operate the Authority; and 2) to present and discuss the review results with the Authority Board, management, and staff and identify areas where operational efficiencies could be obtained. The review methodology included:

- Interviews with CFPUA management and staff to determine current work practices and to quantify costs associated with those practices.
- Independent analysis and comparison of the Authority's current situation with the approach used by contractors, as well as by private business services providers.
- Presentation to Authority staff of the 16 most significant best practices governing public utility operations and maintenance activities as well as business services activities.
- Presentation to (and discussion with) staff regarding application of the best practices specifically to CFPUA, including quantified results.
- Preparation of this summary report outlining the results of the review, including implementation recommendations.

The review addressed the following areas of the Cape Fear Public Utility Authority:

- Environmental & Safety Management
- Engineering
- Human Resources
- Operations
- Finance & Administrative Services

Interviews were conducted by two members of the Woolpert assessment team: Mike Sweeney, Brad Jurkovic, and Raymond Cordon. Dr. Sweeney, Mr. Jurkovic, and Mr. Cordon took a "generalist" approach to their interviews asking questions in the areas of people (or organization), practices, and technology then focused, or "drilled down", into specific issues as necessary. The following representatives of CFPUA were interviewed to obtain information regarding current operations, costs, services, and goals, as well as future plans. They are listed by name, position, department, division, and unit:

Mike Sweeney conducted interviews with the following people:

Cord Ellison, IT Manager, IT
Ron Long, Construction Supervisor, Operations, Utility Services, W/S Pipeline Const.
Tito Tart, Meter Reader Foreman, Customer Service, Billing & Collections
Renee Maiorano, Comp. & Class Manager, HR
Beth Eckert, Envir & Safety Director, Envir & Safety
Carey Ricks, Chief Communications Off., Administration
Matt Jordan, Chief Executive Officer, Administration

Brad Jurkovic conducted interviews with the following people:

Aundria Miracle, Fiscal Support Supervisor, Customer Service, Billing & Collections
Dave Reidmiller, Water Control Operator, Operations, Water Treatment
Mike Williams, Sr. Construction Worker, Operations, Utility Services, Collection Systems
Robert Daughtry, Utility Collection Sys. Mgr, Operations, Utility Services
Larry Burroughs, Water Control Operator, Operations, Water Treatment

Robert Mazzeo, Pump Station Foreman, Operations, Utility Services, Collection Systems
Matt Jordan, Chief Executive Officer, Administration
Ken Smith, Elec. & Instrument Tech, Operations, Wastewater Treatment, Plant Maintenance
Kirk Fields, Wastewater Treat. Oper., Operations, Wastewater Treatment
Cheryl Spivey, Chief Financial Officer, Finance
Stephanie Floyd, Customer Service Supervisor, Customer Service, Customer Service Center
Jill Deaney, Chemist, Envir & Safety, Environmental Services, Drinking Water
Leslie Lewis, Envir. Compl. Assist Officer, Envir & Safety, Envir Services, Community Compl
Nancy Gallinaro, Chief Operations Officer & Deputy CEO, Administration
John Skipper, Utility Maintenance Tech, Operations, Utility Services, Pump Stations
Rich Hopman, Utility Maintenance Foreman, Operations, Water Treatment, Plant Maintenance
Allen Coward, Water Quality Supervisor, Operations, Utility Services, W/S Pipeline Const.
Andrew Jones, Warehouse Manager, Operations, Utility Services, Warehouse
John Littleton, Equipment Operator, Operations, Utility Services, W/S Pipeline Const.
Fred White, Wastewater Treat. Oper., Operations, Wastewater Treatment, Southside WWTP

Raymond Cordon conducted interviews with the following people:

Danny Sullivan, Construction Crew Foreman, Operations, Utility Services, Collection Systems
Don Reaves, Trades Specialist, Operations, Utility Services, Pump Stations
Craig Lundin, Project Manager, Engineering, Project Management
Melinda Hoggard, Accounting Manager, Finance
Frank Styers, Director of Engineering, Engineering
Jim Bonser, Project Manager, Engineering, Development Services
Nancy Gallinaro, Chief Operations Officer & Deputy CEO, Administration

Section 3: Background

CFPUA O&M Strategies

Through experience working with many public agencies, including large and small, public and private entities, eight major Operation and Maintenance (O&M) areas have been identified in which private and public agencies often differ. These eight areas, or strategies, are what provide private companies significant cost advantages. This review of CFPUA Operations utilized these eight strategies as the comparison yardstick for O&M. The eight strategies are as follows: operation and maintenance united, program-driven maintenance (vs. reactive maintenance), off-shift staffing, work force flexibility, technology utilization, strategic organization engagement, customer advocacy, and asset management. These strategies are defined in more detail below:

1. Operations Staff and Maintenance Staff United (OMU) Enables Effective Achievement of Common Goals

Public agencies have traditionally organized around two distinct work groups: Operations and Maintenance (O&M) workers. This new strategy eliminates this distinction by changing the dual “O&M” work force emphasis to one of continuously improved, focused maintenance. Operators no longer “operate the plant or construction equipment only” when needed. Instead, everyone in a single work force has operation and maintenance assignments to complete while all team members are busy throughout the process.

2. Program-Driven Maintenance (PDM) Maximizes Productivity and Reduces Costs

Many public agencies operate in a “reactive” maintenance mode with the “if it ain’t broke, don’t fix it” philosophy predominating. The Planned Maintenance strategy focuses labor resources on planned, preventive, and predictive activities while confining reactive maintenance to a small fraction of all maintenance performed. Materials and inventory management is synchronized with planned equipment overhauls, reducing or eliminating travel time, and other similar dead time components typical of the reactive maintenance philosophy. When properly implemented and supported with integrated information systems, the Planned Maintenance management philosophy can save up to 40% of labor costs normally associated with the reactive approach for the typical public agency.

3. Base-Load and Off-Shift Staffing

Today, major operations in the private sector often run “unattended,” i.e., in the absence of personnel specifically assigned to wait and watch for alarms or calls to come in, especially during “off” shifts. By contrast, many major public utility facilities are partially or fully attended by staffs waiting and watching for alarms or calls to come in. The driving elements creating the difference between these two philosophies are the perceived risks associated with the perceived ability to respond reliably to citizen calls for service 24/7 (24 hours per day, 7 days per week).

Profit motive has provided powerful incentive for the private companies to move beyond conjecture and experimentation to full implementation of unattended staffing despite initial perceptions of risk and unreliability. Of course, this depends on the type of service and level of response automation employed by the agency. However, in all cases, these companies have been successful in reducing the number of staff attending facilities during “off” shifts. The unattended philosophy has driven them to develop business process designs that integrate reliable technologies with processes. What these companies (and a growing number of public agencies) have proven is that unattended staffing, when properly designed and implemented, is in fact, often as consistent and predictable as attended staffing strategies. These companies and public agencies have proven that the unattended staffing strategy saves money and is a reliable approach to operations.

4. Workforce Flexibility (WFF) Maximizes Productivity

Historically in the U.S., the largest single dead time factor affecting the execution of maintenance work is people waiting for people with other skills. Single-skill work systems artificially separate skills and crafts, institutionalizing “skill-waiting” dead time. Companies and progressive public agencies have shown that increasing the range of skills possessed by maintenance personnel through cross-training can reduce skill-waiting time by up to 40%. Cross-training is standardized, expedited, and individually configured through structured programs supported by multimedia-based instruction systems. On-the-job practice, procedure, and standards review and guidance are provided by knowledge-based decision support systems.

5. Technology is Essential in Minimizing Costs and Maximizing Response

Many public agencies are very cautious, viewing the use of information technologies as “risks” to be minimized. The private corporation strategy recognizes the exponentially increasing value of applying technology as a strategy to every business process within the organization. When information technology

is viewed as strategic, it can be factored into every challenge, initiative, or project required for operations, maintenance, management, and administration. On an enterprise-wide basis, integrated systems allow information to be appropriately shared, facilitating continuous improvements in business processes. The corporate strategy leverages the cost-effectiveness of applied, integrated technology in many ways, for example:

- Automated process operations.
- Knowledge-based systems for facility and infrastructure maintenance management.
- Advanced customer service information systems.
- Technology-based training, problem analysis, and decision support.

6. Strategic Organization Engagement - Flexible Organization Empowers and Motivates Employees

Public agencies traditionally have a hierarchical organizational structure that tends to be mechanistic, fixed, and resistant to change. Change, however, is inevitable to meet the growing demand to do more with less.

Using an orchestra as a metaphor, the sixth strategy is like the conductor providing the vision and direction for the whole orchestra and the individuals are empowered to make music on their own. The powerful music produced is the product of all the individuals working in unison. This strategy extends participation with the change process to all stakeholders. The organizations become flexible, team oriented, streamlined, energized, empowered, and living. One agency saved 15% by the end of a three-year design phase by employing this strategy. Redeployment of personnel through this philosophy increases productivity, saves money, and empowers employees to be actively involved in the change process.

7. Customer Advocacy – Managing Performance for Customer Satisfaction

The contractor recognizes their customers not only as their source of revenue but also as a powerful ally within and outside of the community. To that end, contractors develop strong customer advocacy programs. In a number of recent instances, private contractors have used the lack of customer advocacy as an entry to public service providers. They have offered to take customer complaints “off the screen” of elected officials by implementing their new advocacy strategies.

8. Asset Management – Managing your Facility & Infrastructure Investment

Public agencies understand they are the stewards of the assets they operate and maintain. A well written contract requires contractors to return those assets to the agency at the end of their contract in equal or better condition than at the outset of the contract. As a result, they take great care to maintain the critical assets in their best operating condition.

Asset Management drives more preventive, predictive, and reliability-centered maintenance. This typically leads to significantly lower repair and collateral damage costs over the life of the assets.

Business Services Strategies for Environmental & Safety Management, Engineering, Human Resources, and Finance & Administrative Services:

1. Policies and Procedures

High-performing organizations adhere to established policies and procedures. But, they are also flexible so they can respond quickly to changes. Policy and procedure impediments impede performance. Performance improvement implementation is key as is the establishment of continuous review processes.

2. Routine Customer Feedback

A high-performing organization is focused on the customer and is focused on achieving high-quality service delivery at all times. Customer service performance is achieved through the development of sound customer relations and by learning from and responding to feedback from customers (both internal and external).

3. Information Management

High-performing organizations develop information management best practices to meet regulatory requirements, for documentation, and to support organizational needs. Information system structure, accessibility and management are keys to optimum information management.

4. Financial Management

How an organization manages its financial resources is a major enabler of high performance. An organization's financial management supports both growth and stability. World class financial management includes strategic as well as tactical planning, automated budget tracking, and procurement and spending authorities that support the other best practices included in this section of the report.

5. Resource Utilization

In world class organizations, programs are designed and implemented to measure and maintain the quality of service delivery. This is important because the quality of service delivery can be an excellent measure of overall performance. Optimum service delivery is achieved through effective resource utilization with a focus on quality control, asset utilization, and workforce workload management.

6. Service Delivery

The way you plan, monitor, and measure your service delivery is a good indicator of performance. High-performing organizations have standards to ensure levels of service delivery but can also respond to internal and external customer issues. Optimized service delivery avoids serial work processes and duplication of effort while continuously evaluating opportunities to outsource if tasks can be performed better using other resources.

7. Organization Effectiveness

The right structure and practices need to be in place to support optimum performance. But, the organization has to be able to adapt to changes as well. Organization effectiveness is determined through the application of sound mission, vision and values as well as succession planning and employee development.

8. Use of Technology

Technology is critical to high level performance. Technology also has to be implemented correctly. Optimum use of technology is achieved through extensive utilization, large-scale information access, and appropriate levels of technology support.

Section 4: Analysis

OPERATIONS DEPARTMENT

Summary Results Show Minor Opportunities to Improve Productivity in the O&M Functions Do Exist

The findings of this review show that small opportunities do exist to improve productivity at CFPUA Operations Department. The study methodology was to view the various O&M and Business Services functions “through the lens” of a contract service provider of the various functions. A contractor could improve productivity beyond the present level, primarily by applying O&M strategies that are different than those used today by CFPUA Operations Department. These new O&M strategies are the following:

1. Operations Staff and Maintenance Staff United (OMU) Enables Effective Achievement of Common Goals

A contractor would eliminate any separation between operators and maintenance staff. Everyone would be capable of performing all phases of work. No one would be “waiting and watching” for things to happen or for their turn to perform a specific task. As a result, productivity would increase. *CFPUA Operations Department already partially employs this strategy, but about 5.1 FTE’s (Full Time Equivalents) or \$274,564 would be achieved in fully deploying this strategy.*

2. Program-Driven Maintenance (PDM) Maximizes Productivity and Reduces Costs

Planning maintenance in advance of infrastructure failure is problem prevention. Reactive maintenance (“wait ‘till it breaks”) is expensive. Planning ensures that the right tools, the right skills and the right parts are in hand prior to maintenance work being accomplished. A contractor would ensure that approximately 70% of maintenance work was planned. *CFPUA Operations Division is estimated at 40% planned average = 15% lost productivity using our standard productivity curve. Closing this gap would improve productivity by the equivalent of 12.8 FTE’s which has a value of \$689,101.*

3. Base-Load and Off-Shift Staffing

A contractor would fully utilize technology and on-call arrangements to reduce staffing in the field during the swing and graveyard shifts and on weekends and holidays. Off-shift staff, when called on, would be busy doing emergency work tasks and would only be on duty if extenuating circumstances required their presence. *CFPUA Operations employs this strategy to nearly its fullest extent. There is an opportunity, however, to reduce overtime by practicing “staggered shifts” to provide enhanced customer service at a*

reduced cost during certain hours. As a result, a contractor would realize an overtime savings of approximately \$275,000.

4. Workforce Flexibility (WFF) Maximizes Productivity

Work force flexibility means cross training of existing staff – not just within trades and crews but across trades and crews. A contractor would cross-train all staff. Cross training significantly reduces time spent waiting for specific skills and trades and allows staff to work as more flexible teams. As a result, productivity gains of 20% or more are possible.

In return for achievement of specific skills, licenses, etc., a contractor rewards employees through a skill-based compensation program. The more skills an employee attains, the more pay and/or bonuses he or she receives. As a result, everyone wins - productivity increases and employees benefit financially. *CFPUA has been addressing workforce flexibility and is gradually improving in this area but the approach has not been fully developed and formalized. Currently, we estimate that cross-training is at a 75% level in the Department (mostly within crafts and crews) which translates to only a 5% productivity improvement potential = 5.7 FTEs or \$306,865.*

5. Technology is Essential in Minimizing Costs and Maximizing Response Time

Technology as a tool for Operations primarily exists in the form of facility and system automation and work management. Facility automation via SCADA and control system technology can reduce chemical and power consumption as well as labor costs. Work management via integrated maintenance management and geographic information systems can improve productivity of staff and improve life cycle costs of assets. *CFPUA Operations Department has utilized technology primarily to automate the facilities and the work of O&M functions and for asset management purposes. A computerized maintenance management system (CMMS) is being implemented (MAXIMO) but it is not fully integrated with the geographic information system (GIS) for optimum work planning potential. Automation of the treatment facilities has been achieved to varying degrees. CFPUA Operations Department relies on multiple computerized maintenance management systems to manage their work (until MAXIMO is fully deployed). A contractor would use this technology similarly to support all of the previously mentioned strategies to optimize productivity and to minimize costs. CFPUA utilizes these technologies. However, fully automating facilities could result in chemical and power savings of as much as 5% = \$185,000.*

6. Strategic Organization Engagement - Flexible Organization Empowers and Motivates Employees

A contractor would eliminate bureaucracy and hierarchy and utilize a team approach, empowering employees and maximizing productivity. Support organizations would also be reinvented to streamline support services. A contractor's goal is to trust staff to do their jobs and to provide them with the tools they need to maximize their productivity. This equates to organization structures that are flatter with decision-making pushed down to the lowest level possible. *A reorganization of CFPUA Operations Department over time could result in improved supervisor to worker ratios. As a result, a contractor would realize an opportunity equal to 6 FTEs in this area = \$323,016.*

7. Customer Advocacy – Managing Performance for Customer Satisfaction

The contractor recognizes their customers not only as their source of revenue but also as a powerful ally within and outside of the community.

To that end, contractors develop strong customer advocacy programs. *CFPUA Operations Department is somewhat proactive in their relationships with their customers and improvements have been evident under this management team since the inception of CFPUA but opportunities for improvement do exist. Results of those improvements cannot be quantified, however, in terms of productivity but, rather, are a matter of improving the “good will” that is integral to the relationship between public servants and the customers they serve. No gap was determined in this area.*

8. Asset Management – Managing your Facility & Infrastructure Investment

A contractor understands that they are the keepers of the assets they operate and maintain. They are often required by contract to return those assets to the owner at the end of their contract in equal or better condition than at the outset of the contract. As a result, they take great care to maintain the assets in their best operating condition. This approach also reduces other costs over the long haul.

CFPUA Operations Division overall does a good job of proactively managing their assets. However, many of the assets are aging and will require more maintenance to extend the life optimally. As a result, a contractor would expect to actually spend more in this area than the current level for long-term asset management. When the opportunities for improved asset management are combined with other strategy improvements noted above, a possible reorganization of CFPUA Operations Department could improve work prioritization, planning and preventive maintenance – all key aspects of asset management. Specific improvement is achievable via some potential reorganization to support the implementation of the other benefits quantified in the strategies noted above but we estimate that a minimum of 18 positions that currently do not exist in the Operations Department would be required to achieve these benefits. Those positions include maintenance staff, Planner/Schedulers, and engineering design staff – all focused on asset management (including maintenance, rehabilitation, and replacement). The net effect of this recommendation is an increase of 18 FTEs at a cost of \$969,048.

Summary of O&M Performance

In total, the application of these strategies to CFPUA Operations Department O&M functions to close the gap indicated the potential for improving productivity by 11.6 FTEs.

This review of CFPUA Operations Department O&M was based on several days of interviews, site visits to the Operations Department field locations, plus review of relevant documentation supplied by CFPUA. The resulting calculations of potential improvement contained in this report certainly could be refined with further analysis; however, it is clear that improvements are possible and that those gains could be used to support improved services and management of assets and facilities.

The results of this review show that a contractor could operate CFPUA Operations Department slightly more efficiently and, therefore, potentially save approximately \$1,084,498 annually, by applying the eight strategies described above. These savings include chemical, power, and overtime as well as the 11.6

FTEs noted above. This meager “gap” is in the top 5 of the reviews that have been conducted of public agencies throughout the United States and beyond over the past 15+ years. That is an accomplishment for which Operations Department, the Cape Fear Public Utility Authority, and its customers should be proud. But, improvement opportunities are real and should be pursued on a near, mid and long term basis as recommended in this report.

ENVIRONMENTAL & SAFETY, ENGINEERING, HUMAN RESOURCES, AND FINANCE & ADMINISTRATIVE SERVICES DEPARTMENTS

Summary Results also Show Minor Opportunities to Improve Productivity in the Business Services Functions Do Exist

To evaluate the Business Services functions (applied to the remainder of the departments within CFPUA), the review team applied the 8 points listed below. These strategies reflect the organization’s ability to exploit technology and teamwork within these functional business services groups. These 8 points are evaluated on a scale from an excellent score of “routinely/uniformly applied best practice” (low range score of one) to a poor score of “seldom/rarely implemented best practice” (high range score of five) and assigned a ranking for a quantitative score tabulation. In the case of this model, a higher the score equates to a greater lost productivity. The total score gets plotted on a chart, providing comparative results. These are the eight best practices for Business Services:

1. Eliminate Old, Outdated Policies & Procedures
2. Routinely Acquire customer Feedback
3. Manage Information Strategically
4. Manage Finances Strategically
5. Utilize Resources Optimally
6. Manage Service Delivery
7. Manage Organization Effectiveness
8. Utilize Technology Strategically

1. Old Outdated Policy and Procedure Impediments (vs. Flexible Operating Environment)

Are policies and procedures a constraint? Are existing policies and procedures a barrier to getting work accomplished? In high performance organizations, the enterprise is flexible and changes its procedures for success. The policies are indicative of a competitive industry and are focused upon getting the required work efficiently and effectively accomplished. They embrace flexibility for standards and procedures. *CFPUA policies and procedures are in various states of development but are not generally complete at this time (this applies to the Operations Department as well). The lack of up-to-date policies*

and procedures can be detrimental because periodic reviews and updates supporting best practice, technology and people changes are not supported and because the lack of policies and procedures can result in inconsistent performance of work tasks. However, the EMS program is driving all departments toward more complete SOPs, policies, and procedures. As a result, CFPUA Business Services departments were given a score of 2 on a scale of 1 to 5. CFPUA overcomes this potential shortfall by having a high number of skilled and long term employees in critical positions. However, as noted in this report, this is one of their greatest areas of risk due to impending retirements. For all of these eight best practice comparisons, scores above 3 indicate greater improvement opportunities while scores below 3 indicate less improvement potential. Thus, this best practice area offers less than an average improvement potential.

2. Routinely Acquire Customer Feedback

Do you ask for customer feedback and does the enterprise act positively on that feedback? More effective organizations actively solicit citizen/customer feedback and use it to tune delivery of goods and services. *Customer feedback for the CFPUA Business Services departments, as well as the Operations Department, is not formalized although some departments do meet regularly with internal and some external customers. Feedback is often customer-initiated. At times, these can be complaint-based. The departments are conducting more proactive customer feedback acquisition in recent years through surveys. The resulting score is 2.5 indicating that this best practice area offers less than an average improvement potential.*

3. Manage Information Strategically

Is information used productively to improve work quality and capabilities? Information is easily available as needed, with people properly trained to access and use the data. Data is entered one time, at the source. There are not islands of information. By contrast, when information is not easily accessible, people must interrupt their work to go get needed information, and they begin to develop their own, duplicate sources of data. *CFPUA Business Services departments utilize significant technology. The various systems are not all integrated. As a result, information is maintained and managed in numerous systems. The resulting score range is 3 indicating that this best practice area offers an average improvement potential.*

4. Manage Finances Strategically

Are financial resources managed as a major enabler for high performance? Financial management should support both growth and stability of the organization. Financial planning and budget tracking are expert knowledge areas. Procurement processes and spending authorities are optimized to support streamlined operations. *CFPUA faces challenges relating to procurement but the Budgeting process has improved as have the technologies that support these functions. A score of 3 for this best practice area indicates that an average improvement potential exists.*

5. Utilize Resources Optimally

Are there clear priorities regarding which citizen/customer requests get quick responses and what the required response time is? Are there procedures or mechanisms for obtaining additional resources when

required? Do departments within the organization use Service Level Agreements (SLAs) to ensure sound business relationships and processes aimed at optimum customer service (both internal and external)? *CFPUA Business Services departments do a good job of managing resources for high utilization. Work is assigned according to abilities and customer needs for optimum responsiveness. Service Level Agreements (SLAs), however, are not commonly used. The resulting score is 2 indicating that this best practice area offers less than average improvement potential.*

6. Manage Service Delivery

Do customers perceive high value in the services and products that you provide? More effective organizations tailor the delivery of goods and services to match customer expectations. They solicit regular feedback from customers, both internal and external. They are less focused on developing paper trails and more focused on customer service. *Some remaining standardization of procedures will not improve services. Technology integration and utilization will also support improved customer perception. While numerous departments are still oriented toward paper-based processes, the document management system is improving work flows and helping to optimize service. A score of 3 for this best practice area indicates that an average improvement potential exists.*

7. Manage Organization Effectiveness

Does the leadership have a command and control, hierarchical, “do what you’re told” culture? Is there a perception of retribution for independent actions? More effective organizations share a common vision, and optimize staff performance with a shared perception of vision and its day-to-day manifestation. Managers allow their people to think and make decisions. *CFPUA Business Services department’s management have created good work environments. Staff understand the vision and plan for reaching the vision. Succession planning, however, is a recognized concern and a need throughout the Authority. The resulting score is 2.5 indicating that this best practice area offers less than average improvement potential.*

8. Utilize Technology Strategically

Is technology used productively to improve work quality and capabilities? More effective organizations optimize staff performance with high dependence on productive implementation of technology. When technology is put into place, manual tasks are eliminated or changed to take advantage of the technology. Technology decisions are based upon the ability to meet business needs. *CFPUA Business Services departments do utilize technology extensively. However, the technology is often not integrated and some technology is not yet in place (such as a Laboratory Information Management Systems or LIMS) nor has technology become widely mobile. As a result, staff recognize opportunities to streamline processes and improve performance still exist. The resulting score range is 2.5 indicating that this best practice area offers less than average improvement potential.*

Summary of Business Services Evaluation

The application of these strategies to CFPUA Business Services functions for the Environmental & Safety Management, Engineering, Human Resources, and Finance & Administrative Services departments also indicated the potential for improving performance by implementing a more strategic approach to Business

Services department-wide. Implementation details are addressed via recommendations contained in this report.

Our review of CFPUA Business Services functions was also based on several days of interviews, plus review of relevant documentation supplied by the Authority. As with the O&M evaluation of the Operations Department above, the resulting Business Services evaluation contained in this report could be refined with further analysis; however, it is clear that some improvements are possible (the details of which are included in sections below) and that those gains could be used to reduce the gap and support improved services and to increase productivity by an equivalent 4.4 FTEs.

The results of this review show that adaptation of best practices could render CFPUA Business Services departments slightly more efficient and, therefore, potentially save approximately \$236,878 annually, by applying the eight business services strategies described above to reduce the gap. This small “gap” contributes to CFPUA being in the top 7 percent of the reviews that we have conducted throughout the United States over the past 15+ years. Again, that is an accomplishment for which CFPUA and its customers should be proud. But, as with the O&M best practices, these business services best practices revealed improvement opportunities that are real and should be pursued on a near, mid and long term basis as recommended in this report.

Section 5: Result Details

Information about the Cape Fear Public Utility Authority costs, staffing levels, work rules, finances, and current use of technology and information systems was gathered from interviews and review of documentation provided by Authority staff. The documentation included budgets and expenditures for labor and materials, as well as organization charts, job descriptions, and staffing history. Cost saving and productivity improvement opportunities were reviewed in comparison with each of the eight O&M strategies and the eight business services strategies. This Section contains a summary of the results.

It is important to note that the purpose of this review was to look for opportunities for improvement, not to criticize. A comparison of CFPUA’s operations versus a best practices approach potentially pursued by contractors provides a target.

The current practices within CFPUA result in a high level of service to their customers. CFPUA staff are hardworking and dedicated. There are some changes that could be made, however, to improve productivity and enable staff to be more efficient and effective.

The findings in this report are based on a multi-week review including interviews and an audit of documentation provided by CFPUA, as well as comparison to similar agencies. Further analysis is required to refine these findings and to develop a detailed plan of action to increase CFPUA performance, as compared to how contracting firms might provide similar services. These results were presented to CFPUA management and staff in late June of 2011 using the slides appended to this report. Calculations in this section have been modified slightly from those contained in earlier versions of the slide presentation, based on further analysis of the data and input from CFPUA staff.

The following average burdened salary was used for the review:

| |
|-----------------------------|
| CFPUA Staff = \$53,836/year |
|-----------------------------|

Observations Show Opportunities for Improved Productivity

The following observations were recorded based on interviews and analysis of data provided by the Authority.

General Observations

- The Authority provides a comparable high level of service to their customers - the citizens of Wilmington and New Hanover County, NC. A contractor would meet all legal and regulatory requirements, but might reduce costs by not providing as high a quality of product and service as is currently provided by CFPUA.
- From a regional perspective the Authority provides competitive wages and benefits for CFPUA employees. However, most staff have not received pay increases for several years while costs have continued to rise. A proactive approach will help to ensure future pay increases and these competitive wages and benefits continue. Specifically, the current system in place requires staff to leave before others can be promoted to higher-paying positions – this could lead to recruitment challenges as the aging workforce retires and new employees are sought. A better approach might be to provide a skilled-based compensation program wherein employees are compensated for additional skills acquired based on the needs of the agency. This approach could result over time in a highly skilled, flexible workforce participating in a program that enables them to progress at their own pace through a competitive wage system.
- A significant % of the workforce could retire in the next few years. This presents a significant risk to the sustainability of services to the customers of CFPUA. A Succession Plan should be developed and executed to address this critical issue.
- Policy and procedure updates are occurring at present. Again, these efforts should continue as policies and procedures are important tools for capturing knowledge in advance of the retirements that will occur in the near future.
- CFPUA is currently budgeted for 291.5 Full Time Equivalents (FTEs). This is 18 FTE positions less than the original authorized total. These position eliminations have been achieved through consolidation efforts and efficiency gains.
- The supervisor/manager to worker ratio is 1:7 which is close to the ideal ratio of 1:10. This indicates some opportunity to reduce overhead and flatten the organization.
- The total annual operating budget (not including debt reduction and capital costs) is \$27,800,000. Of that, \$13,400,000 (or 48%) is spent on labor. That number is close to the average for the businesses of CFPUA. As noted above, this calculates to an average burdened salary (salary plus benefits) of \$53,836/yr.

Based on the observations described above as well as the details in this and other sections of this report, the Authority should consider adapting or adopting the new strategies described in Section 2 of this report. Doing so will provide improved performance and potentially lower costs and will help the

Authority sustain performance through the upcoming period that is likely to be defined by economic recovery as well as institutional knowledge loss due to retirements.

O&M Calculations Applied to the Operations Department Show Potential Improvement

The calculations developed in this section result from viewing CFPUA as a contractor would. The calculations are derived by applying each strategy to the agency's present business practices.

1. Operation Staff and Maintenance Staff United (OMU) Opportunities

This strategy is applied to the Operations day shift staff working as operators at plants and as equipment operators on field crews. At present, there are a varying number of operators and crews working daily from a number of locations, depending on the type of work being executed and the number of staff reporting for work each day. The field crews are made up of maintenance workers as well as equipment operators. Plants are staffed with operators as well as maintenance technicians from several craft/skill areas. Plant operators perform a varying amount of maintenance activities at the water and wastewater treatment facilities. For the most part, the equipment operators perform any type of work necessary to help complete the job. All crew members are encouraged to learn how to run equipment but training varies depending on numerous field conditions.

There is an opportunity to improve efficiency by implementing a more formal training and cross-training program and philosophy. Staff would receive the training necessary to allow them to perform both operation and maintenance activities proficiently based on the needs of the Department as determined on a daily basis. The net result would be an estimated 30% increase in productivity for plant operators and 10% increase in productivity for equipment operators. This translates into increased efficiency equal to 5.1 FTE's.

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| $5.1 \text{ FTE's} \times \$53,836^*/\text{year} = \$274,564$ |
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* \$53,836 = burdened salary for CFPUA staff.

2. Program-Driven Maintenance (PDM) Opportunities

The curve in Figure 1 shows the relationship of the total cost of maintenance to the percentage of work that is planned in advance of infrastructure or equipment failure (vs. reactive maintenance, which waits for things to break). This curve has been developed from maintenance experience in both the private and public sectors and is the model used by the private contractors and public utility agencies.

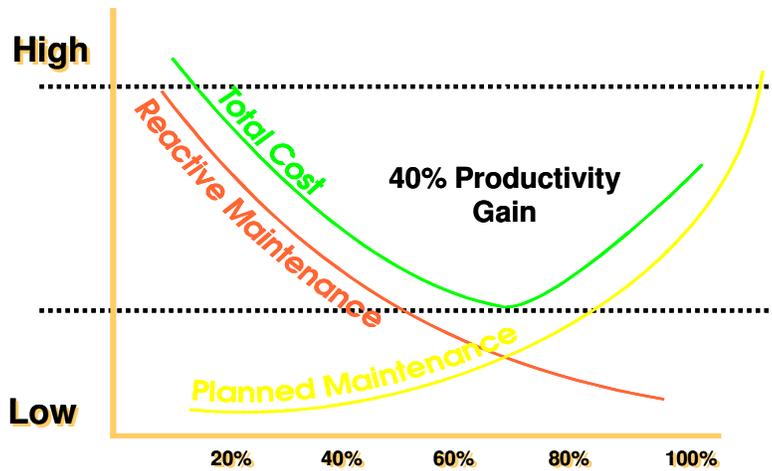


Figure 1: Level of Work Planned in Advance of Equipment Failure

The curve shows that maintenance costs can be cut by 40% at the optimum level of 75% of maintenance work planned in advance. The reason for these savings is that planning maintenance in advance reduces waiting time for parts, crafts, and other resources which in turn increases “wrench on bolt” time or time “on task”. Agencies and industries using this approach have seen an increase in “productive time” from a typical 2.5 hrs/day to 4.5 hrs/day, or an 80% increase in productivity. “Productive time” is defined as time **not** including travel time, setup and breakdown time, and time spent in meetings and other activities as well as vacation, holiday, and other time off.

CFPUA Operations Department maintenance is estimated to be at the 40% preventive/planned level. This estimation is based on feedback from interviews and observation of maintenance reports. Maintenance staff do conduct regular planning meetings but infrastructure is aging and fails often causing some planned maintenance to be postponed. Further productivity increases are possible in this area.

The net result of achieving 75% planned maintenance would be an estimated 15% increase in productivity for Operations. This translates into increased efficiency equal to 12.8 FTE’s in maintenance.

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| 12.8 FTEs x \$53,836*/year = \$689,101/year |
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* \$53,836 = burdened salary for CFPUA staff.

3. Base-Load and Off-Shift Staffing Opportunities

The “unattended” or off-shift staffing strategy is the concept of minimizing the staffing on the off shifts, as compared to moving from O vs. M to O&M united in the first strategy, which seeks to make more efficient use of staff on day-shift crews. A high degree of reliance on automation, call-in systems, and remote monitoring systems is required to reduce the amount of attendance in some instances.

Currently, Operations schedules one to two operators for each treatment plant per every off shift but does not schedule staff for off-shift work outside of weather and other emergencies. As a result, there are some potential overtime savings by staggering shifts for field crews so that staff are present during hours when most calls resulting in overtime occur (typically 4 PM to 11 PM). CFPUA Operations is performing at a high level in this regard but could reduce overtime by as much as \$275,000 by deploying this strategy for field crews.

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| \$275,000/year overtime savings potential |
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4. Workforce Flexibility (WFF) Opportunities

The work force flexibility strategy is illustrated in Figure 2. Staff are no longer confined to one skill set or one functional area e.g., mechanical maintenance, vacuum truck operation, meter repair, etc. As staff are cross-trained in multiple areas, the circles overlap and a larger number of staff are available to work in all functional areas as needed. A “sweet spot,” the crossover of all functional areas illustrated below in red, is the goal of work force flexibility. This sweet spot represents staff who are trained in multiple skills, provide added value to the organization, and are often compensated according to their skill sets.

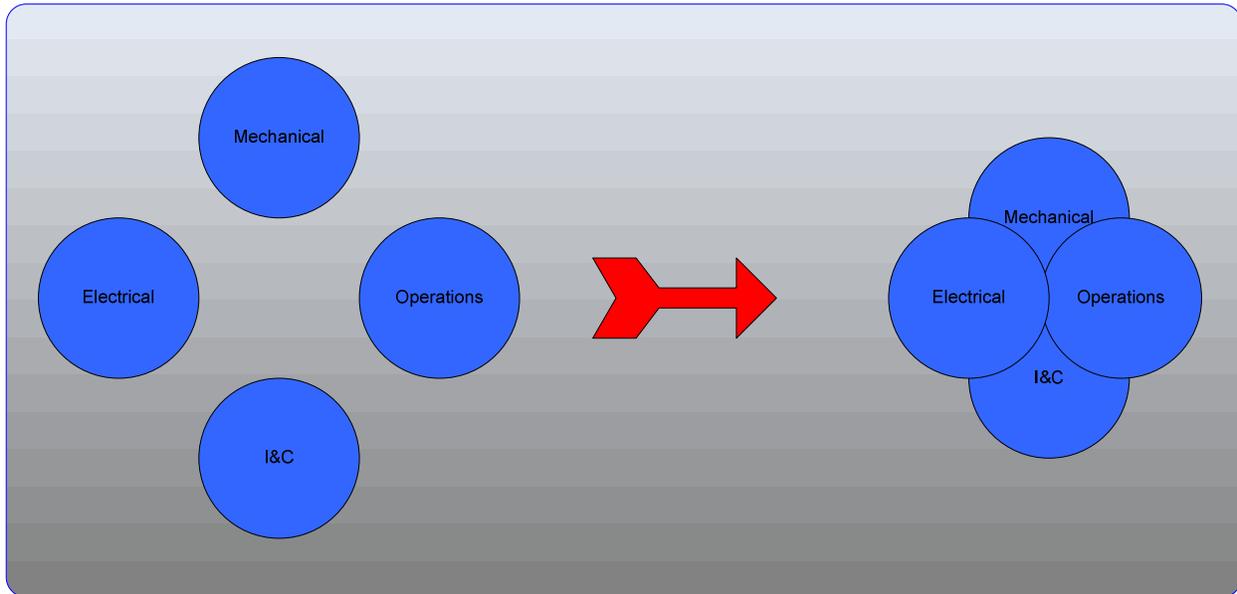


Figure 2: Work Force Flexibility Provides Skill Crossover

The assessment indicates that Operations staff are somewhat cross-utilized. However, staff are not *totally* cross-trained as yet but are moving in that direction. Cross-training occurs almost daily as field crews are filled to cover for absences. Cross-training is less prevalent in the plants. Still, the degree to which they have achieved a cross-trained workforce offers a 5% productivity improvement that could be achieved by formalizing this process and program and linking it to a skill-based compensation program to support the effort.

Figure 3 illustrates the goal of work force flexibility-increased productivity. As part of this strategy, the idea of skills-based compensation allows employees to be paid based on their level and diversity of skills. The highest paid employees directly impact productivity measures by providing the most benefit by being skilled in multiple areas.

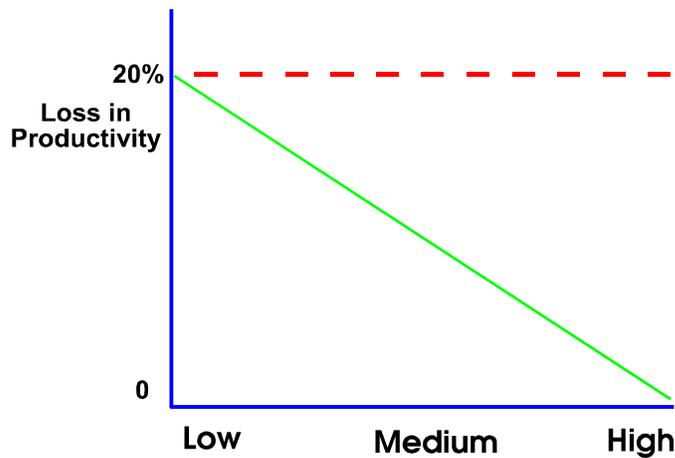


Figure 3: Degree of Work Force Flexibility Implemented

Figure 4 further illustrates the benefits of work force flexibility. Since people have multiple skills, waiting time is reduced, productivity increases, labor and dollars are saved, and morale is improved since employees are learning and doing new things.

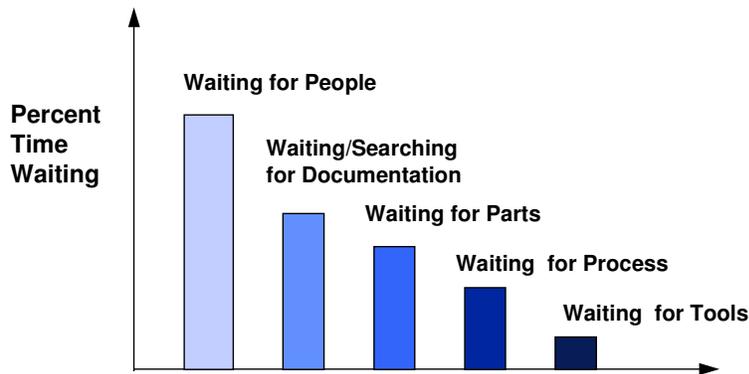


Figure 4: Work Force Flexibility Reduces Wait Times

Over a longer period of time, implementing integrated work teams are recommended to replace the current segregated Operations Department.

Each work team or worker would be assigned to perform work and would be cross-trained in the various areas of Operations responsibility. Each worker would remain a specialist in their current area. Team members would receive pay based on the levels they have attained in each skill area.

As noted above, assessment results estimate that a 5% productivity increase could result from implementation of a WFF program. The potential efficiency increase is therefore 5.7 FTE.

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| $5.7 \text{ FTE} \times \$53,836^*/\text{year} = \$306,865/\text{year}$ |
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* \$53,836 = burdened salary for CFPUA staff.

5. Technology Opportunities

Leverage the CMMS, GIS and other systems to deploy Asset Management strategies for optimum asset life cycle costing/ROI. The opportunity to merge geographic information and maintenance management systems is significant. The performance improvement potential associate with these changes has been

calculated into the previous strategy opportunities so a calculated savings is not included in this gap calculation.

Leverage plant automation by deploying remaining feed-forward/feed-back closed loop controls to reduce chemical and power costs. Leverage plant automation to potentially operate the Nano Plant unattended during off shifts. Chemical and power savings are estimated to be approximately 5% of total costs = \$185,000.

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| \$185,000/year chemical and power savings potential |
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6. Strategic Organization Engagement Opportunities

Moving from Organization as Structure to Organization as Strategy includes reducing hierarchy, team building, empowering employees, and moving toward self-directed work teams.

CFPUA should develop a plan of action to, among other things, ensure that Operations is sustainable through upcoming retirements. The Authority should consider implementing a Work Force Flexibility and Skill-based Compensation program as mentioned earlier in this report and the agency should consider several changes within the Operations Department to improve the supervisor/manager to worker ratio.

This program should involve employees in a meaningful way. The Plan should include the following goals:

- Form cross functional work teams and workers.
- Implement a skill-based compensation program.
- Complete the move to a proactive, energized management approach with reduced hierarchy, in which employees are empowered and motivated.

In doing so, the organization would realize improvement equivalent to 6 FTEs and would improve the manager-to-worker ratio and the work flow model for the Operations Department as a whole.

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| 6 FTE x \$53,836*/year = \$323,016/year |
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* \$53,836 = burdened salary for CFPUA staff.

7. Customer Advocacy Opportunities

An opportunity to improve customer advocacy exists in nearly every public agency. While this strategy does not typically result in performance improvements, it is an important strategy to ensure organization stability during changing times.

Today, CFPUA provides a relatively high level of customer service and that has been improving under the current management team and new Authority since the merger of City and County agencies several years ago. However, the challenges with consolidated billings following the merger combined with recent rate increases have stressed relations. Managing your customer relations and resources, empowering staff and educating them for optimum customer service, and learning to anticipate customer needs is essential in today's world of higher customer expectations.

Because of your current level of customer service, no projections of productivity improvement associated with customer advocacy were performed but the continuation of your current Customer Advocacy Program and Plan as a recommended best practice should be considered.

8. Asset Management Opportunities

The Operations Department is managing the assets of CFPUA for which they are responsible. They use technologies available in support of that work and they manage their resources well in the face of increasing pressures to do more with less. However, there is an opportunity to take asset management to a new level within the Department by reorganizing and assigning staff dedicated to advanced asset management, the planning and scheduling of preventive maintenance, and design of replacement assets as infrastructure ages over the coming years. This approach will ensure a balance between the immediate needs (repairs and emergencies) and the long-term needs of the infrastructure and plant equipment Operations supports. This balance will help control costs and optimize productivity of crews in support of the other strategies discussed earlier in this section of the report.

The net effect of this recommendation is the addition of 18 FTEs to the Operations Department to support optimum asset management.

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| 18 FTE x \$53,836*/year = \$969,048/year in additional costs |
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* \$53,836 = burdened salary for CFPUA staff.

O&M Summary for Operations

Looking back on the calculations for these eight strategies, the total opportunity for O&M performance improvement amounts to 11.6 FTEs or \$1,084,498 (including chemical, power, and overtime savings). This is the total (7%) performance gap for O&M.

Business Services Opportunities for Environmental & Safety, Engineering, Human Resources, and Finance & Administrative Services

CFPUA Business Services were reviewed using eight best practices considered to be “universal” to public agency business services.

1. Policies and Procedures

CFPUA has some established policies and procedures but the process for updating the existing ones and creating new ones is not complete. Departmental policies and procedures addressing specific aspects of the business may be more current than overall, or general, organization-wide policies and procedures. The management team and the EMS program are driving the development of more policies and procedures. Many processes are currently under review. A formalized update/development program with a focus on internal and external customer service is in order.

2. Routine Customer Feedback

Customer feedback at CFPUA has been typically customer-initiated in the past. However, several initiatives (including surveys) are underway that are aimed at obtaining proactive customer feedback. In addition, a number of departments conduct regular meetings with internal and external customers to get feedback from key constituents.

3. Information Management

Similar to many public agencies, CFPUA still relies on various systems and on paper for certain processes. Additionally, systems are not fully integrated. These realities lead to manual data handling and management and inefficient practices. Some systems are outdated making integration an even greater challenge. That said, there are some excellent examples of information improvements CFPUA has implemented recently and has planned for the near future. These opportunities should garner substantial information management improvements.

4. Financial Management

CFPUA employs advanced financial practices and systems. Still, procurement processes can be cumbersome and cause significant delays. CFPUA staff should work together to develop a program to ensure that the systems, processes, and procedures CFPUA uses are up to date and that financial data is being shared throughout the Authority to increase the level of financial awareness.

5. Resource Utilization

Resource utilization looks at two opportunities: 1) how the use of internal resources is planned and, 2) how service level agreements (SLAs) are leveraged for performance optimization. Regarding internal resource utilization, CFPUA practices proactive resource management in most instances (although Automation and improved technology integrations could be used for more proactive resource utilization). However, SLAs are not commonly used but seen as something that would improve performance in several areas.

6. Service Delivery

Service delivery is at the heart of CFPUA's business. In some areas, CFPUA is comparing itself to the private sector to ensure that service delivery is optimal. In other areas, old and outdated processes that rely on paper trails and multiple serial steps in processes add to the cost and time to deliver critical services. The lack of procedures leads to inconsistent work performance in some instances and there is a general desire to develop better practices in this regard. The Authority is attaining ISO certification. Integration of operational systems (MAXIMO and SCADA systems) with financial systems is a remaining opportunity.

7. Organization Effectiveness

CFPUA provides a good working environment for its employees. The work place is familial, collegial, and collaborative. Succession planning is a major concern in virtually every department of CFPUA. This issue is discussed in greater detail elsewhere in this report. Some reorganization could improve the manager-to-worker ratio.

8. Use of Technology

Regulations drive public utility agencies to use technology optimally. CFPUA is no exception to this observation. But, there are instances where technology has not yet been fully deployed or integrated in support of best practices. Additionally, not everyone has access to technologies. Progress appears to be incremental due largely, perhaps, to the current economic challenges we all face resulting from the "Great Recession". CFPUA should make technology optimization a strategic initiative to support all other best practices advancements targeted as a result of this evaluation.

Business Services Summary

Looking back on the calculations for these eight strategies, the total opportunity for Business Services performance improvement amounts to 4.4 FTEs or \$236,878. This is the total (3.8%) performance gap for Business Services.

Overall Combined O&M and Business Services Summary

When the opportunities from O&M in Operations and Business Services in the other departments are combined, the total improvement potential is \$1,321,376. This represents a “gap” range of 4.8% or 16 FTEs. A 4.8% “gap” is considerably lower than the average “gap” calculated over the past 15+ years of 26% and places CFPUA in the top 5 of agencies evaluated over that time. World class agencies have “gaps” of 1.5% or less so the remainder of this report will be focused on recommendations for reducing CFPUA’s “gap”.

Section 6: Recommendations Focus on People, Practice, and Technology Opportunities

The following high-leverage actions are recommended to enable Cape Fear Public Utility Authority to perform at “World Class” service provider levels:

Practice Recommendations

- Short Term (0-9 Mo)
 - Using the EMS program as a basis, continue the program for systematically reviewing/creating policies and procedures (including SOPs) on a regular basis – ensure that the program includes:
 - Periodic scheduled reviews
 - SOPs that are results-oriented, not steps-oriented, so that continuous improvement is encouraged
 - Continue the program to make customer feedback a routine, implementing multiple avenues for acquiring feedback data
 - Continue creating a “balanced scorecard” for CFPUA through the EMS for each division/section, and individual staff for managing performance and accountability
 - Evaluate the potential for skills training and cross-training along with SOPs to ensure consistent work production and results, include standards for productivity and work quality
 - Continue implementation of Level of Service and to develop KPIs based on Balanced Scorecard, 10 principles of EUM, and your strategic plan

- Increase awareness of the budget, use regular meetings for budget discussions, train supervisors and higher on the budget process
- Review procurement procedures to ensure the “pendulum swing” is not too far in either direction
- Define functional needs (SSES, flow monitoring, I&I) to be proactive concerning upcoming consent order
- Intermediate (9-24 Mo)
 - Conduct resource loading and utilization monitoring to ensure optimum use of resources (people) – we’ll provide a tool...
 - Develop a detailed plan to proactively address potential consent order issues and begin actions
 - Continue to implement the balanced scorecard for agency and staff by incorporating into agency reporting and individual evaluation processes via the EMS program
 - Optimize planned maintenance using MAXIMO
 - Reduce OT by using staggered 10 hour shifts in field
 - Design skills training and cross-training – include cross-training between sections to achieve optimum flexibility and productivity
 - Consider skill-based compensation to go along with skills training so that flexible, valued workers don’t have to wait for vacancies to be compensated for their increased value to the organization
 - Complete development of remaining SOPs (and all policies and procedures) via the EMS program
 - Use engineers/consultants vs. hiring staff to augment Engineering during upcoming CIPs
- Long Term (2yr – 5yr)
 - Expand training and cross-training programs in support of improved performance as well as knowledge transfer
 - Continue the ongoing regularly-scheduled policy & procedure review program (including SOPs)
 - Establish and execute full proactive approach to address all consent order issues

Technology Recommendations

- Short Term (0-9 Mo)
 - Develop a Technology Master Plan to prioritize improvements
 - Using the Laserfiche system, continue to evaluate paper consumption and identify ways to improve in this area
 - Continue to evaluate and determine specific requirements for GPS and mobile data terminals (laptops) in vehicles (already have 31 units in field)
 - Identify functional requirements to fully automate plants for optimized chemical and power consumption
 - Develop a plan to ensure optimum fleet management for long-term maintenance/replacement cost control
 - Develop detailed specifications for automation upgrades at plants (for chemical and power consumption optimization)
 - Determine permanent new CFPUA facility property and define functional requirements for new building(s) (consider drive-time for crews when selecting location(s) and leverage existing properties (plants and field service locations) if possible)
- Intermediate (9-24 Mo)
 - Implement GPS and mobile technologies – consider GPS in all vehicles or in primary crew units
 - Detailed design of technology integrations
 - Design new facility building(s) – consider LEED certification to ensure long-term cost optimization
- Long Term (2yr – 5yr)
 - Implement integration of technologies (MAXIMO, GIS, Financial, Billing) to support best practices
 - Construct new facilities to support long-term business model of CFPUA

People Recommendations

- Short Term (0-9 Mo)
 - Design cross-training as a strategic tool, develop and train to a skill matrix – link to a skill-based compensation program

- Perform staff skills assessment and gap analysis
- Implement performance management processes that reward training and knowledge sharing
- Develop a knowledge transfer program including: content experts write SOPs, mentoring, succession planning
- Flatten the organization and push decision-making down to the lowest level possible through employee/leadership development
- Divide the current COO/Deputy CEO position into two roles: COO and O&M Department Director to alleviate responsibilities of both roles from one person (being COO/Deputy, and O&M Director is more than one person should be responsible for...)
- Develop a Succession Planning Program including:
 - Conduct cultural assessment and demographic analysis to determine “risk” areas
 - Develop “work catalog” capturing the work, skills, and knowledge requirements of CFPUA and conduct internal HR analysis
 - Identify leadership requirements, skills and knowledge assessment tools
 - Select knowledge management tools
 - Conduct individual assessments and create individual development plans
 - Develop knowledge retention strategy and validate strategies and tools
- Develop a CFPUA-specific Leadership Development Program
- Improve accessibility of senior management (created by physical separation from O&M staff)
 - CEO channels some of the typical 1/3 inwardly focused time for “one-on-one” time with staff
 - Continue recently-established staff meetings – they are appreciated/valued
 - Practice more asking questions and active listening
 - Spend more time in the field one-on-one and small groups
 - Find opportunities to informally and formally recognize your internal heroes
- Intermediate (9-24 Mo)
 - Execute succession planning to prevent “brain drain” resulting from retirements

- Execute Leadership Development program to support succession planning and knowledge retention
- Implement cross-training program with skills-based compensation to encourage development of a highly productive workforce
- Long Term (2yr – 5yr)
 - Continue implementation of Leadership Development, Cross-training, Succession Planning, and Knowledge Retention initiatives

Section 7: Follow-Up Discussions

The Business Services issues discussed in prior sections of this report require additional recommendations to support the implementation of other key actions contained herein. Those recommendations include a change in the management team makeup to add an Operations Department Director position and the addition of four critical positions in support of future initiatives recommended in this report. In consideration of these items, we offer the following recommendations:

1. Reorganize CFPUA by separating the roles of COO and O&M Director. COO should be inwardly focused and capable of engaging staff. O&M Director position should, as with other director positions, report to the COO. This would result in the separation of COO and Operations Department Director responsibilities enabling the O&M Director to focus on managing that department. Attributes of the COO vs. the Operations Department Director typically are:

| <u>COO</u> | <u>Operations Department Director</u> |
|-------------------------------------|---------------------------------------|
| Management professional | Water/wastewater professional |
| Oriented to working in teams | Oriented to motivating individuals |
| Operations strategist | O&M expert, detail-oriented |
| Adaptable to changes | Provides stability during chaos |
| Sets high standards | Coaches to achieve standards |
| Influences others to achieve | Shows others how to achieve |
| Effective communication | Effective communication |
| Simplify issues for decision-making | Pushes decision-making down |
| Coaching-facilitating style | Mentoring style |

This change would create a new position of Operations Department Director that would be at the same level as other director positions

2. Future Agency Assumptions and Goals that Require Resources (included in the calculations):
 - Goal: optimize performance via improved strategic planning, employee development, and “World-class Customer Service”
 - Improved Strategic Planning: Update Strategic Plan and Operating Plan and assign CFPUA leadership according to roles and responsibilities (Strategic = CEO, Operating = COO) (add 1 FTE to separate COO and Operations Director roles)
 - Employee Development: Use Succession Plan as basis for developing approach (add 1 FTE to HR to focus on overall organization and employee development)

- Develop IT Master Plan to identify and plan for implementation of technology integration throughout CFPUA (add 1 FTE to IT to support advanced technology utilization and integration)
- Customer Service: Evaluate CS processes and options and develop an action plan based on development and implementation of proactive customer feedback and response (add 1 FTE to provide QA/QC for CS – reports directly to CEO)

These constitute the 4 FTEs added to the Business Function departments discussed earlier in this report.

Section 8: Conclusions

- CFPUA is a good operation with a 4.8% gap that is significantly lower than the 26% average that we have calculated in over 80+ prior assessments. In fact, CFPUA ranks among the top 5 of all agencies we have evaluated.
- The quality of the services you provide exceeds that of contractors.
- You are a partner with your community – looking out for its long-term interests.
- Implementing the recommendations will take time – 3 to 5 years in most cases.
- One of the highest priorities for CFPUA should be the development of a Succession Plan to ensure sustainability in the coming years as a high % of the workforce exits via retirements.