
SALT LAKE CITY COUNCIL

STAFF REPORT

DATE: February 17, 2006

SUBJECT: **An Organizational, Staffing, and Operational Review of the Metropolitan Water District of Salt Lake and Sandy, performed by EMA, Inc.**

STAFF REPORT BY: Lehua Weaver

CC: Rocky Fluhart, Sam Guevara, Mike Wilson, Reed Jensen, LeRoy Hooton, Susi Kontgis, DJ Baxter

In the fall of 2005, the Metropolitan Water Board commissioned an organizational, staffing, and operational review of the Metropolitan Water District of Salt Lake and Sandy. The audit was performed by EMA, Inc. and presented to the Board in January of 2006. EMA representatives will be at the Council briefing to present their report. The District General Manager, Mike Wilson, will be in attendance and has a short presentation as well.

Following is a brief staff report regarding the audit report and a background of items discussed during last year's budget briefing for the District.

According to the audit report, EMA states, "the study methodology was to view the various core and support functions 'through the lens' of a privatizer," and therefore the review evaluated how a privatizer might improve efficiency and practices to operate the utility.

Overall, the review findings were very positive, including several mentions of the ability of Metro staff to provide high levels of customer service. Based on calculating the potential savings that would be realized by implementing the suggested efficiencies, EMA estimates that a privatizer would save approximately 4.9% or \$540,996 annually. According to the final audit document, this "represents the 4th best score out of the 420+ reviews that EMA has conducted of utilities around the world in the past 12+ years." EMA also noted that Metro is quite technologically progressive compared to the other utilities they have evaluated over the years.

KEY ELEMENTS

On June 9, 2005, then Board Chairman, Lon Richardson, presented to the City Council the proposed 2005-06 budget for the Metropolitan Water District. Below is a list of items raised in the June 3, 2005 Council staff report, and the corresponding information provided by the EMA review:

1. Proposed staffing levels

Issue: Salaries and benefits (\$855,805 increase) – Operating staffing is proposed to increase by 10 FTEs. At the prompting of the Board, a management audit will be conducted prior to the authorization to hire these proposed FTEs. The audit will address the District's staffing levels to evaluate the need for additional staff.

The budget also proposes a 6.3% raise for employees, to cover cost of living and merit increases. The Metropolitan Water District Board has been reviewing the benefits package for Metro employees.

Review Findings: Regarding staffing levels, EMA made several suggestions of practices to improve efficiencies. Through implementation of the suggestions made by EMA, there is the potential to reduce O&M staffing by 7 FTEs and non-O&M staffing by 8 FTEs. It is further suggested that the 7 O&M staff people be reassigned to the new facility instead of hiring additional people as originally proposed.

These efficiencies might be realized through a) cross-training operators to perform preventative maintenance tasks, b) increasing “Planned Maintenance” rather than waiting for repairs to be performed on an as-needed basis, c) cross-training staff beyond their primary responsibility, and d) other best practices dealing with technology and organizational structure.

EMA also reported in their final report that, “the supervisor/manager to worker ratio is 1:7.6.” This is higher than the industry standard, which is 1:10 to 1:15.

Regarding Metro staff salaries, EMA compared Metro fully-loaded salaries with the full-loaded salaries of “regional and industry-wide” utilities and Salt Lake and Sandy comparable positions. EMA found that entry level salaries are currently below the local market, while some higher-level positions are higher than the local market.

The suggestion for resolving the high manager to worker ratio and the inflated pay of some higher-level positions is through attrition.

2. Outsourcing services

Issue: Professional and contract services (\$28,314 increase) – The District’s proposed budget includes \$200,000 for legal fees, which is a decrease of \$30,000 from fiscal year 2004-05.

Review Findings: EMA found that a sound outsourcing strategy is in place.

3. Fleet Policy

Issue: Vehicle purchases - This is the second year of the district’s policy of replacing general purpose vehicles each year. The theory is that a government agency can purchase vehicles at a favorable price under the state contract and sell them in one year to the general public and recover a large portion of the purchase price. Maintenance costs are eliminated under this approach. The District keeps large trucks and other specialized equipment for their useful life. The District tested this policy during the current year with a few vehicles. The capital budget proposes \$367,500 to replace 13 vehicles that will be one-year old and to add two new vehicles to the District’s fleet. Revenue from the sale of the one-year old vehicles is projected to be \$250,000.

Review Findings: “Fleet maintenance and repair is \$26,200/yr (or \$1,191/vehicle) which is below average.” This might indicate that Metro’s goal of minimizing fleet maintenance costs is successful.

4. Revenue sources and increases – Likely the most significant issue discussed during last year’s budget briefing, was Metro’s plans to increase property taxes to increase revenue. Currently, Metro receives assessments from both Salt Lake and Sandy, revenue from water sales, and tax revenue. Metro also utilizes bond proceeds and interest revenue. For the 2005-06 Budget, they proposed a property tax increase to Salt Lake and Sandy residents. As you may remember, the Salt Lake City Council sent a letter to the Metro Water Board requesting that the property tax increase be deferred until a more equitable solution could be identified. (A copy of this letter is attached for your reference.) The Council's concerns were: a) that the amount of property tax revenue received would be disproportionate between Salt Lake and Sandy compared to the ownership ration, and b) that the County residents who utilize the water through Salt Lake City Public Utilities would not be included in the tax.

Council Members may wish to ask Metro representatives what progress has been made on this issue.

ADDITIONAL INFORMATION

Salt Lake City appoints five of the seven board members of the Metropolitan Water District. Sandy City appoints the remaining two board members. Utah Code Annotated, §17A-1-502, provides that constituent entities of a special district can request a meeting with representatives of a district to discuss the budget. The law does not prevent the board of a special district from approving and implementing a budget over protests or objections of constituent entities. The Council has on occasion provided written comments to the Salt Lake City appointed board members.

Background

In 1935, the voters of Salt Lake City created the Metropolitan Water District in order to enter into long-term agreements to build the Provo River Project including Deer Creek Reservoir. The Bureau of Reclamation built the project, and it was necessary to enter into repayment contracts to reimburse the federal government for the construction costs plus interest. The Metropolitan Water District is a 61.7% owner of the Provo River Project. The water rights for the Provo River Project consist of water diverted from the Duchesne and Weber Rivers conveyed through a tunnel and canal system from the two basins to the Provo River for use by the Metropolitan Water District and others. In order to reimburse the Federal Government for the cost of the Provo River Project and Deer Creek Reservoir, the residents of Salt Lake City have paid property taxes since 1935. The Metropolitan Water District continues to build dams and facilities such as Little Dell Reservoir.

In 1990, Sandy City became the second member of the District. Sandy City sought membership in the District to treat its approximately 34 percent water right in Little Cottonwood Creek. Sandy City’s annexation in the District increased efficiencies by consolidating water supplies and delivery systems to most of eastern Salt Lake County. As part of the agreement, the District receives water purchase revenue and ad valorem tax revenue from Sandy City. Furthermore, as a part of the annexation Salt Lake City acquired additional water rights in Little Dell Reservoir and \$4 million in water transmission mains installed on the City’s west side. Also, the 1990 agreement admitting Sandy City established conjunctive water management practices among

Salt Lake City, Sandy City, Jordan Valley Water Conservancy District and the Metropolitan Water District.

In 1998, the Metropolitan Water District updated its capital improvement master plan and identified \$236 million in improvements and expansion of water capacity. In 2001, the District entered into an Interlocal Agreement with Sandy and Salt Lake City for implementation of the master plan. The major project is a new water treatment plant near the Point of the Mountain in the Draper area. The Metropolitan Water District owns additional water from the Provo River Project (in non-drought years) but hasn't been able to treat and convey the water to users. Additional water will also be available from the Central Utah Bonneville Unit (Jordanelle Reservoir) beginning in 2005.

The master plan improves redundancy in the event of a water treatment plant or aqueduct failure. Improvements include pipeline connections between the Little Cottonwood Water Treatment Plant, the Jordan Valley Water Treatment Plant, and the Point of the Mountain Water Treatment Plant. This will allow flexibilities in shifting water between major north-south pipelines.

SALT LAKE CITY CORPORATION
OFFICE OF THE CITY COUNCIL

June 13, 2005

Mr. Lon Richardson, Chair
Board of Trustees
Metropolitan Water District of Salt Lake & Sandy
3430 East Danish Road
Sandy City, Utah 84093

Dear Lon,

On behalf of the Salt Lake City Council, I would like to thank you for taking the time to attend the City Council's June 9th Work Session and present to us your fiscal year 2005-06 tentative budget. The discussion was very informative and helped us understand some of the major budget issues facing the district.

Furthermore, we appreciate and commend the District's efforts to provide treatment and conveyance systems necessary to meet its customer cities water supply needs into the future.

As you know, Salt Lake City's commitment to MWDSLS's successful completion of the Point of the Mountain Water Treatment Plant (POMWTP) and Point of the Mountain Aqueduct (POMA) is contained in the Interlocal Agreement "Relating To Metropolitan Water District of Salt Lake & Sandy Capacity Capital Improvements and New Water Supplies" approved on April 19, 2001. This Interlocal Agreement commits Salt Lake City to pay a capital assessment to MWDSLS to finance its share of POMWTP and POMA amounting to over \$200 million (excluding debt service) to be financed by water rates. This is the largest capital improvement project ever constructed and financed solely by two municipalities in the state of Utah through water rates and without state or federal subsidies. The cost of the water treatment plant was capped at \$125 million, but indexed to adjust for escalating construction costs. Additionally, a schedule of water sales rates was presented to pay for operation and maintenance expenditures and other capital improvement projects. Besides the water rates committed to the project, MWDSLS also assesses property taxes on the residents and businesses within both cities.

In reviewing the MWDSLS budget, the Salt Lake City Council makes the following suggestions to the MWDSLS Board of Trustees:

1. In other City functions, we have resisted raising taxes. We ask that you postpone your decision regarding a property tax increase until further study can be conducted on the equity of its implementation, because:
 - a. the amount of property taxes that would be received from Salt Lake City and Sandy City may be disproportionate compared to the ownership ratio, and

Council Members Carlton Christensen -District One; Van Turner -District Two; K. Eric Jergensen -District Three
Nancy Saxton -District Four, Council Vice-Chair 2005; Jill Remington Love -District Five
David L. Buhler -District Six; Dale Lambert -District Seven, Council Chair 2005

451 SOUTH STATE STREET, ROOM 304, SALT LAKE CITY, UTAH 84111

TELEPHONE: 801-535-7600, FAX: 801-535-7651



- b. given that there are consumers who do not reside in either of the member cities who will benefit from the MWDSLS improvements, but will not be assessed the property tax, other methods for increasing revenues should be explored to ensure that all water users who benefit from the improvements will participate financially.
2. Consider the timing, scope and scheduling of future capital improvement projects. It may be feasible to spread out the construction expenditures over a longer period of time to improve MWDSLS's cash flow and bond coverage ratio.
3. Investigate the possibility of deferring, on an annual basis, portions of Central Utah Project water supply. By 2010 block notices for the full 20,000 acre-feet of Bonneville Unit water will be delivered to MWDSLS. Given water conservation efforts of MWDSLS and its two customer cities, annual deferral may be possible under Section 207 of the 1992 Central Utah Completion Act.
4. Carefully monitor the operation & maintenance and capital improvements assessments from the Provo River Water Users Association, which are passed onto the two customer cities.
5. Utilize local benchmarks in conducting the performance audit of MWDSLS. Also, overlapping services currently provided by either one or both cities should not be duplicated. The study should include the charge to identify areas where changing the proposed staffing plan will result in effective cost savings. Both cities should participate in development of the scope of work and in the consultant selection process. Because the consequence of maintaining the current plan is a property tax increase, this study should be independent, and provide a basis for justification of any tax or rate change.
6. We understand that you have been reviewing MWDSLS's employee compensation and benefits program. Inasmuch as the two member cities have comparable positions, there should be parity between MWDSLS and its two cities.
7. We question the \$632,500 injection well, infiltration pond, and injection trench project. Even though MWDSLS has acquired a \$300,000 grant from the Bureau of Reclamation Water 2025, the capital cost per acre-foot of water is over \$2,100. This cost does not include O&M. Given that MWDSLS is acquiring 20,000 acre-feet of CUP water, it appears that investing in a ground water recovery project at this time is not necessary.
8. We question the need to enclose the Provo River Canal channel at this time due to funding limitations. Of course, we would be less reluctant about this expense if it is necessary for safety and/or there are other compelling operational justifications.
9. We ask you to review MWDSLS's fleet and take home vehicle policy. Recently questions have been raised regarding another government agency's fleet policies that are similar to yours.

We appreciate your willingness to consider these items. We realize the extensive efforts you make to provide our residents and consumers with water. Over the last four years, we have raised water rates by 15% to cover the annual capital assessment amount of \$7 million and we will be considering the need to raise water rates by another 8% to cover MWDSLS's current anticipated water rate increases. There are also projects within the City's own infrastructure that must be balanced with expenses associated with MWDSLS. Currently the cost of the MWDSLS represents nearly 40 percent of the Department of Public Utilities

budget. It is imperative that MWDSLS and the cities work together in providing its citizens quality water service that is efficient and affordable.

In light of these pending issues, we strongly urge you to delay the property tax increase. We understand your needs for the additional revenue that would be generated by the property tax, and would be willing to work with you and Sandy City representatives to come up with the best solution to the equity issue.

Thank you for your hard work.

Sincerely,

A handwritten signature in black ink, appearing to read "Dale Lambert", written in a cursive style.

Dale J. Lambert, Chair
Salt Lake City Council

cc: MWDSLS Board of Trustees
MWDSLS Administration
Mayor Tom Dolan, Sandy City
Sandy City Council
Mayor Rocky Anderson, Salt Lake City
Salt Lake City Department of Public Utilities



Metropolitan Water District of Salt Lake and Sandy

Organizational, Staffing, and Operational Review

Final Report

TABLE OF CONTENTS

1. REVIEW SUMMARY

Background.....	1-1
Metro has an Excellent Track Record.....	1-1
Review Results Show that Opportunities to Improve Productivity in the Core (O&M) Functions Do Exist.....	1-1
Non-O&M Strategies	1-4
High Leverage Recommendations Focus on Organization, Practice, and Technology Opportunities	1-8
Conclusions	1-10

2. BACKGROUND

3. REVIEW STRATEGIES

O&M Strategies.....	3-3
Non-O&M Strategies	3-6

4. RESULTS SYNOPSIS

Observations Show Potential for Increased Productivity	4-2
A New Vision is Suggested to Increase the Utility's Productivity	4-3
Lost Productivity Calculations Show that Productivity Could be Increased.....	4-4
Non-O&M Support Lost Productivity Calculations Show that Productivity could also be Increased in these Areas	4-11
High Leverage Recommendations Focus on Organization, Practice, and Technology Opportunities	4-11
Conclusions	4-13

5. COST SAVINGS/COST AVOIDANCE SUMMARY

6. IMPLEMENTATION RECOMMENDATIONS

Organization Recommendations	6-1
Practice Recommendations	6-1
Technology Recommendations.....	6-2
Conclusions	6-2

APPENDIX A. REVIEW PRESENTATION

APPENDIX B. SALARY SURVEY RESULTS

BACKGROUND

The Metropolitan Water District of Salt Lake and Sandy (Metro) requested that EMA, Inc. (EMA) conduct an Organizational, Staffing, and Operational Review of Metro. The treatment and transmission of water are core services provided by Metro to its customers. These customers have come to expect the high reliability and low cost of service provided them by Metro for many years. As part of its continual planning effort aimed at maintaining and improving their high level of reliability and low cost, Metro staff developed and submitted a Staffing Plan in April 2005 projecting staffing needs through 2009 in support of new and expanded facilities. This review was requested subsequent to the completion of that Staffing Plan report.

METRO HAS AN EXCELLENT TRACK RECORD

Metro has a strong tradition of customer satisfaction, public health and safety commitment, and regulatory compliance. Metro staff quickly execute well-prepared action plans in anticipation of changing customer needs, evolving public health and safety concerns, and new regulatory actions.

Metro is meeting the challenges of our industry in several ways, including commissioning the review summarized by this report. The review was conducted from the perspective of a private sector utility operator to determine where and to what extent performance improvement opportunities exist in the current operation and for the future facilities now under construction. The review addresses the entire Metro operation, including the core business functions of Operation and Maintenance (O&M) of the water facilities and infrastructure and all of the supporting functions: Administration, Information Systems, Environmental Services, Office Services, and Engineering.

REVIEW RESULTS SHOW THAT OPPORTUNITIES TO IMPROVE PRODUCTIVITY IN THE CORE (O&M) FUNCTIONS DO EXIST

The findings of this review show that small opportunities do exist to improve productivity at Metro. The study methodology was to view the various core and support functions “through the lens” of a privatizer. A privatizer would improve productivity beyond the present level, primarily by applying strategies that are different than those used today by Metro. These new O&M strategies are the following:

.....

1. From Operations *and* Maintenance to Total Productive Operations (TPO)

A privatizer 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. Metro already significantly employs this strategy so a privatizer would realize little gain from this.

2. From Reactive to Planned Maintenance

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 privatizer would ensure that approximately 75% of maintenance work was planned. Metro is presently at approximately 50% planned maintenance. This represents a small opportunity for productivity improvement.

3. From Attended to Unattended Operation

A privatizer would fully utilize automation to reduce staffing in the field during the swing and graveyard shifts. Off-shift staff would be busy doing preventive maintenance tasks and would only “operate” if the automation systems failed. Metro already nearly fully employs this strategy leaving little or no opportunity for the privatizer to improve here.

4. From Work Separated By Skill and Craft To Work Force Flexibility (WFF)

Work force flexibility means cross training of existing staff. A privatizer would cross-train all staff. Cross training significantly reduces time spent waiting for specific skills and trades and allows staff to work as teams. As a result, productivity gains of 20% or more are possible.

In return for achievement of specific skills, licenses, etc., a privatizer 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. Metro has committed to workforce flexibility and is improving in this area, leaving little opportunity in this area.

.....

5. From Technology as Risky to Technology as Strategy

Metro has utilized technology primarily to automate the work of core and support functions. Computerized maintenance management has been implemented and is currently being replaced with a new system. The LCWTP is nearly fully automated and the new POMWTP will be fully automated. A privatizer would use this technology to support all of the previously mentioned strategies to optimize productivity and to minimize energy, chemical, and other costs. With the completion of automation and other technologies (such as a fully-integrated Laboratory Information Management System (LIMS)) and the integration of technologies to make information readily available to all decision-makers, Metro will see small productivity improvements. However, there is a technology implementation cost to accomplishing this strategy.

6. From Organization as Structure to Organization as Strategy

A privatizer 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 privatizer's goal is to trust staff to do their jobs and to provide them with the tools they need to maximize their productivity. Metro has already moved in this direction leaving little room for improvement.

7. From Customer as a Nuisance to Customer as an Advocate

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

To that end, privatizers develop strong customer advocacy programs. Metro is proactive in their relationships with their City customers leaving little opportunity for improvement in this area.

8. From Assets as a Cost to Assets as an Investment

A privatizer 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 their chemical and energy costs over the long haul.

.....

Metro does a good job of managing their assets. As a result, a privatizer would realize little opportunity in this area.

Summary

In total, the application of these strategies to Metro's O&M functions indicated the potential for improving productivity by seven FTEs. However, seven additional FTEs are recommended to support the new plant and additions to the existing plant and pumping facilities as well as aging equipment at the LCWTP. This recommendation negates the improvement opportunity potential noted above in O&M. As a result, EMA concurs with the Metro Staffing Plan for 38 FTEs in O&M by 2009.

EMA's high level review of Metro's O&M was based on four days of interviews, plus review of relevant documentation supplied by Metro. The resulting calculations of potential improvement contained in this report certainly could be refined with further analysis; however, it is clear that only small improvements are possible and that those gains could be used to support the future new facilities and the existing aging facilities.

The results of this review show that a privatizer could operate Metro's O&M functions only 4.9% more efficiently and, therefore, potentially save approximately \$540,996 annually, by applying the eight strategies described above. This meager 4.9% "gap" represents the 4th best score out of the 420+ reviews that EMA has conducted of utilities around the world in the past 12+ years. That is an accomplishment for which Metro and its customers should be proud. And again, this gap will be completely offset by increased staffing needs as the new facilities come online.

NON-O&M STRATEGIES

To evaluate the support functions, the review team applied the 14 points listed below. These strategies reflect the organization's ability to exploit technology and teamwork within the functional support groups. These 14 points are evaluated on a scale from "routinely/uniformly applied" (low value - one) to "seldom/rarely implemented" (high value - five) and assigned a ranking for a quantitative score tabulation. The higher the score, the greater the lost productivity. The total score gets plotted on a chart, providing comparative results.

1. **Serial Work Processes (vs. Concurrent):** The way tasks are routed through an enterprise - concurrent or serial. This includes analyses, reviews, and approvals. More effective organizations optimize staff productivity with

concurrent routing, with reduced total time to achieve results (calendar time and actual time).

Metro's score is **3**, which was between the two extremes of "routinely" and "rarely". Typically, a score of 3 or lower is not considered high enough to warrant significant concern or substantial effort to gain minor improvement.

- 2. Use of Cross Functional Teams and Process Focused Organization:** How employees do their work and communicate with other disciplines and across the organizations. Staff productivity is optimized with dependence on cross functionality. You rarely hear "It's not my job," and people with different functional backgrounds often work together to solve problems and make decisions. Less effective organizations have functional silos, and don't work in cross-functional teams, from either a business process or an organizational structure point of view. They don't have business process focus, but rather have an "I only do this approach."

Metro's score was **3**.

- 3. Duplication of Effort:** Are tasks or processes redundant and striving for perfectionism? Is a factor for quality related to absolute avoidance of risk, rather than customer requirements? More effective organizations optimize staff productivity by avoiding redundant handling. They don't have people checking people checking people. Their quality is driven by the customer's needs and regulatory requirements. They don't use a two belts and two suspenders approach.

Metro's score was **3**.

- 4. Access to Information and Use of Technology:** Is technology used productively to improve work quality and capabilities? More effective organizations optimize staff productivity with high dependence on productive implementation of technology. Information is easily available as needed, with people properly trained. When technology is put into place, manual tasks are eliminated or changed to take advantage of the technology. Data is entered one time, at the source. There are not islands of information. Technology decisions are based upon the ability to meet business needs. 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 source of data.

Metro's score was **4** indicating room for improvement exists here. This was due largely to opportunities to integrate existing technologies.

-
5. **Autocratic Top-Down Culture (vs. Aligned Organization):** 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 productivity with a shared perception of vision and its day-to-day manifestation. Managers allow their people to think and make decisions.

Metro’s score was **4** indicating room for improvement that is likely to occur as Metro continues its current team-oriented leadership philosophy.

6. **Specialty Skills or Silos Underused:** Are there under-used specialties and capabilities within the organization, i.e., low-use specialty skills which are expensive to acquire and maintain? More productive organizations optimize staff productivity by not staffing for skills that are rarely required or used. Communications and team functioning are emphasized, and outsourcing is used where appropriate. By contrast, less productive organizations maintain staffs where expensive skills are only rarely required.

Metro scored a **4** indicating improvement potential.

7. **Formal Cross Training Program (WFF):** Is there a cross training program mandated? More productive organizations provide avenues and opportunities for cross training, with the training focused towards frequently required skills. Formalized programs exist, with established norms for performance, and recognition (certification) of achievement.

Metro’s score was **4** indicating an opportunity to improve.

Note: The scores on Strategies 6 and 7 are due primarily to the siloing of several small groups.

8. **Inflexible or Nonexistent Technical or Work Standards Imposed:** Do the standards (or lack thereof) inflate project price or cycle time? Do standards exist where needed? Is there a timely process for revising them, to meet business requirements? More effective organizations maintain standards of technical, equipment and procedural excellence, but acknowledge the changing environment for performance. They are not wedded to out-of-date criteria. Flexibility and change to stay on the established leading (not bleeding) edge are essential.

Metro’s score was **3**.

9. **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 more

productive 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.

Metro's score was **3**.

- 10. Cultural Impediments (vs. Supportive Cultural Environment):** Is there an environment of fear and mistrust, and competition between employees? Or are the employees and management open to new ideas · do they embrace change? More productive organizations recognize the process of change and growth, assessing and embracing change as it is appropriate. Employees can make decisions to do their job right the first time, and they communicate with each other as they make the decisions. More effective organizations offer staff the freedom to identify and perform key tasks to enhance organizational effectiveness and customer satisfaction.

Metro scored a **2** on this strategy indicating a nearly excellent execution.

- 11. Quality of Work Products:** Do customers perceive high value in the product 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.

Metro's score was **4** on this strategy. This is due largely to Metro's focus on water quality and other aspects of their service that may increase production costs as quality standards are exceeded.

- 12. Management of Load ("Staff for the base"):** Are there clear priorities regarding which customer requests get quick responses and what the required response time is? Are there procedures or mechanisms for obtaining additional resources when required?

Metro's score was **3**.

- 13. Outsource Strategy:** Is outsourcing of non-core processes considered? More effective organizations do what they do uniquely well, and identify and off-load non-core processes.

Metro's score was **2** on this strategy because there is a significant level of support services contracted out at present. EMA suggests that Metro continue to review all support functions regularly to ensure that services are being provided at the best possible price and quality.

-
14. **Routine Customer Feedback:** Do you ask for customer feedback and does the enterprise act positively on that feedback? More effective organizations actively solicit customer feedback and use it to tune delivery of goods and services.

Metro's score was **4** because there appears to be an opportunity to formalize the customer feedback process so that staff at lower levels of Metro are getting the same feedback as management.

Productivity Delta

The evaluation method for these support strategies is to assess points and arrive at a composite average for an overall rank expressed as an average. Current reviews indicate the minimum achieved lost productivity ranking is about 25%, typically achieved by the best run private utilities. Worst case reviews identify a lost productivity of 80% to 90%, for the least efficient publicly run water and wastewater utilities. Metro had a raw score of 46 (which is equal to lost productivity of 50% on our attached calculating curve) on this review indicating a productivity gap of 25% (50% lost productivity score – 25% lost productivity goal). These findings, confirmed through an independent analysis approach, indicate that Metro could reduce the planned staffing increases for the non-O&M supporting functions in 2009 by eight FTEs.

HIGH LEVERAGE RECOMMENDATIONS FOCUS ON ORGANIZATION, PRACTICE, AND TECHNOLOGY OPPORTUNITIES

The following high-leverage actions are recommended to enable Metro to perform at "World Class" service provider levels:

Organization Recommendations

- Make organization structure changes to combine O&M (including moving I&C technicians into O&M).
- Make organization structure changes to combine HR and Office Services into a single Administrative Services group.
- Redefine the Controller position before refilling it after the upcoming retirement and adjust the salary to match regional salaries (utilize member city information as a guide).


-
- Reassign staff freed up when “best practices” strategies are employed to cover new maintenance needs as future facilities are brought online and existing facilities age.
 - Conduct formal outsourcing reviews of support services on a regular (annual) basis – no specific outsourcing is recommended at this time.
 - Redefine the AGM position to an Assistant to the GM position.

Practice Recommendations

- Implement “best practices” from this review to free up resources for maintenance of new and aging facilities.
- Move the GIS position to IS so that integration of GIS and CMMS is ensured.
- Design and implement a Workforce Flexibility/Skill-Based Compensation Program for all O&M staff.
- Physically move managers closer to staff where possible.
- If possible, relocate staff so that O&M and Environmental Services staff work together more closely.
- Reduce lab analyses to the required testing levels and consider creating a “regional lab” service offering.
- Redefine the Planner/Estimator role to Planner/Scheduler with more emphasis on planning and scheduling Preventive Maintenance (PM), Predictive Maintenance (PdM), and advanced asset management activities.

Technology Recommendations

- Implement MAXIMO as quickly as possible to support better maintenance planning and asset management.
- Integrate MAXIMO and plant SCADA control systems for better information access.
- Connect all lab instruments to the Laboratory Information Management System (LIMS) to reduce data entry time.
- Implement a software system to collect data and make it available to management and staff for reporting and decision-making.

- 
- Implement a software system to optimize electric consumption without reducing water quality.
 - Implement a software system to optimize operations of the complex water system Metro will be managing once the new facilities come online.
 - Completely implement and then integrate the many systems currently in place.
 - Hire an additional Systems Administrator and 2 additional IT Analysts to support the many information systems integration opportunities that exist.

CONCLUSIONS

Through the implementation of “best practices” per this review, there is an opportunity to improve performance by the equivalent of seven FTEs in Operations and Maintenance. However, the staff made available from implementation of best practices should be reassigned to maintenance of new and aging facilities. Thus, EMA concurs with the planned O&M staffing level of 38 FTEs in 2009. The temporary nature of much of the current Engineering work should enable a four FTE reduction in staff from the 2009 goal within the next two to three years. Environmental Services and Office Services organizational changes and technology solutions should enable a one FTE reduction in staff from the 2009 goals in both of those groups. And improved technology implementations and organizational changes should enable a two FTE reduction in Information Systems staff from the 2009 goal (although we are recommending that certain staff in this group be transferred to O&M opening 3 new positions in IS). This totals an eight FTE reduction from the 2009 goals of the Staffing Plan for support services.

Water and wastewater utilities are facing rapidly increasing fiscal pressures driven by aging infrastructure, increased regulatory constraints, and consumer demands. To respond to these driving forces, proactive utilities and agencies are adopting revised management philosophies and practices to improve productivity, hold the line on controllable costs, and respond to competitive forces and opportunities.

In November and December 2005, EMA, Inc. conducted a review of Metro's O&M and support functions. The purposes of the review were to 1) determine the efficiency of the Utility's current operations as compared to how an O&M privatizer or private support function provider might operate the Utility; 2) consider future staffing plans as the Utility expands in coming years when new facilities are brought online; and 3) to present and discuss the review results with the Board of Trustees and Utility staff and identify areas where operational efficiencies could be obtained. The review methodology included:

- Interviews with Metro O&M and support staff to determine current work practices and to quantify costs associated with those practices.
- Independent analysis and comparison of the Utility's current situation with the approach used by U.S. privatizers, as well as by private European utilities and private support services providers.
- Presentation to Utility staff of the eight most significant paradigms governing private and European water utility operations and maintenance and the 14 most significant strategies driving support function performance improvement.
- Presentation to, and discussion with the Board of Trustees and Utility staff regarding application of the O&M paradigms and support strategies specifically to Metro, including quantified results.
- Preparation of this summary report outlining the results of the review, including implementation recommendations.

The review addressed the following areas of Metro:

- O&M Department
- Administration
- Information Systems
- Environmental Services
- Office Services
- Engineering

.....

The following representatives of the member Cities, Board of Trustees, and staff were interviewed to obtain information regarding Metro operations, costs and future plans:

Interviewees

Title

Cities of Salt Lake and Sandy

Phil Glenn	City Council Executive Director, Sandy City
Cindy Gust-Jensen	City Council Executive Director, Salt Lake City
Shane Pace	Director, Sandy City Public Utilities
LeRoy W. Hooton, Jr.	Director, Salt Lake City Public Utilities

Metro Board of Trustees

F. David Stanley	Board of Trustees
J. Steven Newton	Vice Chair, Board of Trustees
John S. Kirkham	Board of Trustees
Leland J. Myers	Board of Trustees
Patricia Comarell	Board of Trustees
Genevieve Atwood	Secretary, Board of Trustees
Lon R. Richardson, Jr.	Chair, Board of Trustees

Metro Management

Mike Wilson	General Manager
Robyn Clayton	Office Services Manager
Steve Stocking	O&M Department Manager
Ashley Rasmussen	HR/AP/PR Administrator
Scott Forsling	Engineering Manager
Claudia Wheeler	Environmental Services Manager
Mike DeVries	Information Systems Manager

Metro O&M Department

M. Hone	Liaison
G. Cook	Liaison
M. Tietje	Liaison
Dallin Ewell	Operations Supervisor
Day shift Operator #1	Operator
Day Shift operator #2	Operator
Hal Miller	Maintenance
Lynn Coon	Maintenance
Duane Mitchell	Maintenance Supervisor
Fred Larsen	Planner/Estimator
Bryan Montague	Control System Tech



Interviewees

Title

Metro Support Staff

Susi Paiz	Procurement Analyst
Jeff Matheson	Biologist
Marie Owens	Process Engineer
Wayne Winsor	Senior Project Manager
Gardner Olson	Project Engineer
Reed Jensen	Controller
Ryan Nicholes	Systems Administrator

Mike Collins	Bowen, Collins, & Assoc.
--------------	--------------------------

EMA, Inc.

Tim Payne	Larry Lederer
Brad Jurkovic	

Through experience working with many utilities, including large, private European-based utilities, EMA has identified eight major Operation and Maintenance (O&M) areas in which private/European and public/U.S. utilities differ. These eight areas, or strategies, are what provide private/European companies significant cost advantages. This review of Metro operations utilized these eight strategies as the comparison yardstick for O&M. The eight strategies are as follows: total productive operations, planned maintenance (vs. reactive maintenance), unattended operations, work force flexibility, technology as strategy, organization as strategy, customer as an advocate, and assets as investments. These strategies are defined in more detail below:


For the Non-O&M, or support functions, we used a model that includes 14 “Best Practices” for general business functions. These best practices come from a compilation of information and concepts that are implemented in the most successful private and public enterprises. The best practices 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
- ISO 9000
- ISO 14001

First, it is important to define “business practice.” A business practice is a habitual way of carrying out work. It gets at *how* work is carried out, not *what* work is carried out. Best practices are those practices that have been determined to be the best approach for all or large parts of an organization. This is based on a variety of factors and evaluative criteria. There is no single, agreed upon, comprehensive list of best practices. The 14 points used in the review are a synthesis of 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 (cross-functional teams)

- 
- Use of resources (technology, skills, staffing, tools)
 - Customer focus
 - Reduced cycle time
 - Quality of work
 - Duplication of work
 - Training

Benchmarking is a term that is often used in discussions about best practices. There are a number of definitions of benchmarking. In the water and wastewater utilities, benchmarking is most typically used to refer to metrics, or ratios of some measure. Examples include \$/MGD, \$/mile of pipe, and so on. Comparing benchmarks of this nature across utilities is generally non-productive due to the differences between utilities, including water sources, water quality, treatment processes, and geography. At this point, a more productive approach is for a utility to determine what benchmarks it will track over time and to compare its performance to itself over the course of years.

For those wishing additional information, the following references will provide a starting point.

- American Productivity and Quality Center (Process Classification Framework on Best Practices, What Is Benchmarking?, What is Best Practice?).
<http://www.apqc.org>
- Department of Energy Best Practices Clearinghouse.
<http://www.pr.doe.gov/ocmacler.html> and <http://www.pr.doe.gov/dg61-3.html>
- Malcolm Baldrige National Quality Award. <http://nist.gov>
- Presidential Award for Quality
<http://www.pica.army.mil/ardec/tqm/award.html>. A good site with references to other quality, best practices and benchmarking sites is:
<http://www.pica.army.mil/ardec/tqm/top2.html>
- ISO 9000
- ISO 14000

The private/European and the 14-point Non-O&M models were selected because they are the models of the most effective and efficient utility companies and manufacturers, as well as U.S. privatization firms. Two French/U.S. privatization firms, USFilter, and United Water are used as examples. Both of these firms apply these new strategies when operating utilities in the U.S.



O&M STRATEGIES

Total Productive Operations (TPO)

U.S. utilities have traditionally organized around two distinct work groups: Operations and Maintenance (O&M). The Total Productive Operations (TPO) strategy eliminates this distinction by changing the dual “O&M” work force emphasis to one of continuously improved, focused maintenance. Operators no longer “watch and wait” for problems to occur. Instead, everyone in a single work force has maintenance assignments to complete while process monitoring and control technology alert certain maintenance personnel to process deviations and alarms.

Planned Maintenance (vs. Reactive Maintenance)

Many U.S. utilities 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 U.S. utility.

Unattended Operations

Today, major European facilities often run “unattended,” i.e., in the absence of operations personnel specifically assigned to wait and watch for process deviation and alarms, especially during “off” shifts. By contrast, in North America, most major water treatment facilities run fully attended by staffs of operators waiting and watching for process deviation and alarms. The driving elements creating the difference between these two philosophies are the perceived risks associated with process deviations and the perceived level of reliability of the process automation technologies deployed.

Profit motive has provided powerful incentive for the private/European companies to move beyond conjecture and experimentation to full implementation of unattended operations despite initial perceptions of risk and unreliability. Of course, this depends on the type of process and level of automation employed at the facility. However, in all cases, these companies have been successful in reducing the number of operators attending a facility during “off” shifts. The

.....

unattended operations philosophy has driven the Europeans to develop plant designs that integrate reliable automation technologies with processes. What the Europeans (and a few U.S. utilities) have proven is that unattended operations, when properly designed and implemented, is in fact often more consistent and predictable than attended operations. Unattended operations is often significantly less risky than the attended approach because heavy dependence on staffs of operators with mixed and variable skill sets, knowledge, intuitions, and motivations is substantially reduced. The Europeans have proven that the unattended operations strategy saves money and is a reliable approach to facility operations.

Work Force Flexibility (WFF)

Historically in the U.S., the largest single dead time factor affecting the execution of utility maintenance work is people waiting for other skills. Single-skill work systems artificially separate skills and crafts, institutionalizing “skill-waiting” dead time. Europeans and progressive U.S. utilities 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.

Technology As Strategy

Many U.S. utilities are very cautious, viewing process control and information technology as “risks” to be minimized. The European strategy recognizes the exponentially increasing value of applying technology as a strategy to every business process within the utility organization. When information technology is viewed as strategic, it can be factored into every challenge, initiative, or project required for utility 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 European strategy leverages the cost-effectiveness of applied, integrated technology in many ways, for example:

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



Organization As Strategy

U.S. utilities 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 utility 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.

From Customer as a Nuisance to Customer as an Advocate

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

To that end, privatizers develop strong customer advocacy programs. In a number of recent instances, private operators 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.

From Assets as a Cost to Assets as an Investment

Privatizer 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 their chemical and energy costs over the long haul.

The assets as investments strategy drives the private operator to conduct more preventive, predictive, and reliability-centered maintenance. This typically leads to significantly lower repair and collateral damage costs over the life of their contracts.

NON-O&M STRATEGIES

1. **Serial Work Processes (vs. Concurrent):** The way tasks are routed through an enterprise - concurrent or serial. This includes analyses, reviews, and approvals. More effective organizations optimize staff productivity with concurrent routing, with reduced total time to achieve results (calendar time and actual time).
2. **Use of Cross Functional Teams and Process Focused Organization:** How employees do their work and communicate with other disciplines and across the organizations? Staff productivity is optimized with dependence on cross functionality. You rarely hear "It's not my job," and people with different functional backgrounds often work together to solve problems and make decisions. Less effective organizations have functional silos, and don't work in cross-functional teams, from either a business process or an organizational structure point of view. They don't have business process focus, but rather have an "I only do this approach."
3. **Duplication of Effort:** Are tasks or processes redundant and striving for perfectionism? Is a factor for quality related to absolute avoidance of risk, rather than customer requirements? More effective organizations optimize staff productivity by avoiding redundant handling. They don't have people checking people checking people. Their quality is driven by the customer's needs and regulatory requirements. They don't use a two belts and two suspenders approach.
4. **Access to Information and Use of Technology:** Is technology used productively, to improve work quality and capabilities? More effective organizations optimize staff productivity with high dependence on productive implementation of technology. Information is easily available as needed, with people properly trained. When technology is put into place, manual tasks are eliminated or changed to take advantage of the technology. Data is entered one time, at the source. There are no islands of information. Technology decisions are based upon the ability to meet business needs. 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 source of data.
5. **Autocratic Top-Down Culture (vs. Aligned Organization):** 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 productivity with a shared perception of vision and its day-to-day manifestation. Managers allow their people to think and make decisions.

-
6. **Specialty Skills or Silos Underused:** Are there under-used specialties and capabilities within the organization, e.g., low-use specialty skills which are expensive to acquire and maintain? More productive organizations optimize staff productivity by not staffing for skills that are rarely required or used. Communications and team functioning are emphasized, and outsourcing is used where appropriate. By contrast, less productive organizations maintain staffs where expensive skills are only rarely required.
 7. **Formal Cross Training Program (WFF):** Is there a cross training program mandated? More productive organizations provide avenues and opportunities for cross training, with the training focused towards frequently required skills. Formalized programs exist, with established norms for performance, and recognition (certification) of achievement.
 8. **Inflexible or Nonexistent Technical or Work Standards Imposed:** Do the standards (or lack thereof) inflate project price or cycle time? Do standards exist where needed? Is there a timely process for revising them, to meet business requirements? More effective organizations maintain standards of technical, equipment and procedural excellence, but acknowledge the changing environment for performance. They are not wedded to out-of-date criteria. Flexibility and change to stay on the established leading (not bleeding) edge are essential.
 9. **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 more productive organizations, the enterprise is flexible and changes for 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.
 10. **Cultural Impediments (vs. Supportive Cultural Environment):** Is there an environment of fear and mistrust, and competition between employees? Or are the employees and management open to new ideas - do they embrace change? More productive organizations recognize the process of change and growth, assessing and embracing change as it is appropriate. Employees can make decisions to do their job right the first time, and they communicate with each other as they make the decisions. More effective organizations offer staff the freedom to identify and perform key tasks to enhance organizational effectiveness and customer satisfaction.
 11. **Quality of Work Products:** Do customers perceive high value in the product 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.

12. **Management of Load - ("Staff for the base"):** Are there clear priorities regarding which customer requests get quick responses, and what the required response time is? Are there procedures or mechanisms for obtaining additional resources when required?
13. **Outsource Strategy:** Is outsourcing of non-core processes considered? More effective organizations do what they do uniquely well, and identify and off-load non-core processes.
14. **Routine Customer Feedback:** Do you ask for customer feedback and does the enterprise act positively on that feedback? More effective organizations actively solicit customer feedback and use it to tune delivery of goods and services.

Information about Metro costs, staffing levels, work rules, and current use of automation and information systems was gathered from interviews and review of documentation provided by Metro staff. The documentation included O&M and support 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 14 Non-O&M support 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 and to review the future staffing plan, not to criticize. A comparison of Metros' operations versus the privatizer's approach provides a target.

The water system operation and maintenance practices result in a high level of uninterrupted service to Metro customers. Metro staff are hardworking and dedicated. There are some changes that could be made, however, to improve productivity and enable O&M staff levels to stabilize during the addition of new facilities and allow staffing projection reductions in Non-O&M support functions through 2009 projections.

It should be stressed that the findings in this report are based on a four day cursory overview by EMA, based on interviews and review of documentation provided by Metro, as well as comparison to similar utilities. Further analysis is required to refine these findings and to develop a plan of action to increase Metro's performance, as compared to how a privatization firm might operate the utility.

These results were presented to Metro's Board of Trustees and management in a workshop held on January 23, 2006, using the slides included in Appendix A. Calculations in this section and in Appendix A have been modified slightly from those contained in earlier versions of the slide presentation, based on further analysis of the data and input from Metro staff.

The following averaged burdened salary was used for the review:

Metro Staff = \$68,428/year



OBSERVATIONS SHOW POTENTIAL FOR INCREASED PRODUCTIVITY

The following observations were made by EMA, based on interviews and analysis of data provided by Metro.

General Observations

- The utility provides a very high level of service to their customers. A privatizer would meet all legal and regulatory requirements, but might not provide as high a quality of product and service as is currently provided by Metro.
- From both regional and industry-wide perspectives the utility provides competitive wages and benefits for Metro employees. A proactive approach will help to ensure these competitive wages and benefits continue. There is a tendency to pay entry-level positions lower than local competitors – this could lead to recruitment challenges as the aging workforce retires and new employees are sought. The pay for a few of the higher-level positions tends to be higher than local competitors – this could be corrected over time as positions are vacated and re-evaluated.
- The utility is a unique organization in the water industry due to the current addition of significant new facilities. The addition of these new facilities presents increasing demands for the utility to do more and provides the utility with a better-than-average business environment.
- The intergovernmental relation between the utility and other regional water and wastewater agencies provides unique opportunities to leverage utility business functions through interagency agreements.
- The Utility is highly advanced in the area of technology development. However, some islands of information exist and certain technologies have not yet been fully applied to produce the greatest benefit to Operations & Maintenance and Non-O&M support staff.
- A new CMMS system is being implemented. The remaining CMMS effort is substantial and could provide an implementation challenge for Metro but could also provide a common base for integration of several Metro technologies.
- There is little cross training between the various skills and crafts within both the O&M and support areas. These “silos” of specialization hinder efficiency and effective use of time and other resources.

-
- The utility is one of the most technologically progressive utilities EMA has encountered in the course of performing over 420 competitiveness assessments throughout the U.S. and Canada.
 - Utility staff are presently implementing technology as a strategic partner. The Plant Control and SCADA systems will provide enhanced technology support to O&M and management and support staff. Other systems provide significant technology support potential to all utility staff and will continue to improve productivity as systems are enhanced and integrated.
 - Metro is currently budgeted for 60.5 Full Time Equivalents (FTEs). 45% of those are in O&M and 55% are providing support to the O&M group. This is a reasonable distribution of staff for a small stand-alone utility.
 - The supervisor/manager to worker ratio is 1:7.6 while the industry standard is 1:10 to 1:15. This represents an opportunity to reduce overhead and flatten the organization by pushing decision-making down. This should be accomplished over time as vacancies occur.
 - The total annual operating budget (not including debt reduction and capital costs) is \$10,959,154. Of that, \$3,024,510 (or 36%) is spent on labor. That number is below average. \$59,500 is spent on overtime which is well below average. As noted above, this calculates to an average burdened salary (salary plus benefits) of \$68,428/yr.
 - Fleet maintenance and repair is \$26,200/yr (or \$1,191/vehicle) which is below average.
 - The organization is structured five levels deep and five divisions wide indicating that the organization is not overly top-heavy.
 - The current budget includes \$750,000 in contracted services, indicating that there is a sound outsourcing strategy in place.
 - The current budget includes \$816,000 for chemicals; \$571,000 for utilities; \$576,000 for maintenance and repair; \$10,117,300 for debt reduction; and \$420,000 for related expenses. Some of these observations will be used in subsequent calculations.

A NEW VISION IS SUGGESTED TO INCREASE THE UTILITY'S PRODUCTIVITY

Based on the observations described above, EMA suggests the utility develop a new vision for the future of O&M and support functions, based on application of

.....

the new strategies described in Section 3 of this report. The new vision would include:

- Implementation of Total Productive Operations (TPO) and Work Force Flexibility (WFF) Programs (Metro has already outlined a WFF skills matrix).
- Maintenance and operations would be redesigned to eliminate some of the separateness that still exists after recent redesigns, as part of TPO and WFF. Everyone would work in cross trained teams.
- A skill based compensation program could be put in place to improve entry-level and lower position compensation packages.
- Planned, preventive, and predictive maintenance would rule the day with nearly 75% of all maintenance being performed in advance of equipment failures or other non-planned events triggering maintenance.
- All information and control systems would be fully integrated.
- Staff would use technology as a strategy, or partner.
- Non-O&M support staff would function as a cross-trained team of professionals using technology and best practices to provide optimum customer service (to both internal and external customers).

LOST PRODUCTIVITY CALCULATIONS SHOW THAT PRODUCTIVITY COULD BE INCREASED

EMA developed the calculations in this section by viewing Metro's O&M Department as a privatizer would. The calculations are derived by applying each strategy to the utility's present business practices.

1. Total Productive Operations Productivity Opportunities

The total productive operations strategy is applied to the Production day shift at the plant, since that is the period of time when most maintenance activities are performed. At present, there are a total of two operators (sometimes three, if a relief operator is present) on the day shift at the plant doing monitoring, making rounds, and helping maintenance staff with some minor maintenance functions if necessary around the plant. Operators spend time making log entries and conducting lab analyses. Operators are not normally involved in maintenance or in CLAIR (Cleaning, Lubrication, Adjustments, Inspections, and minor Repairs) activities. However, EMA learned that most maintenance staff are certified plant operators but avoid operating so that they do not have to work shifts.

There is an opportunity to improve efficiency by implementing a TPO philosophy. Operators would receive the training necessary to allow them to do preventive maintenance (PM) tasks. The plant would be fully automated to eliminate most of the “waiting and watching time.” Much of the day shift operation staff time would be spent doing PM tasks.

The net result of TPO would be an estimated 50% increase in productivity. This translates into increased efficiency equal to 1 FTE

$1 \text{ FTE} \times \$68,428^*/\text{year} = \$68,428/\text{year}$
--

* \$68,428 = burdened salary for operations staff in this strategy.

2. Planned Maintenance Productivity Opportunities

The curve in Figure 4-1 shows the relationship of the total cost of maintenance to the percentage of work that is planned in advance of 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 European water and wastewater utilities, as well as by U.S. privatizers.

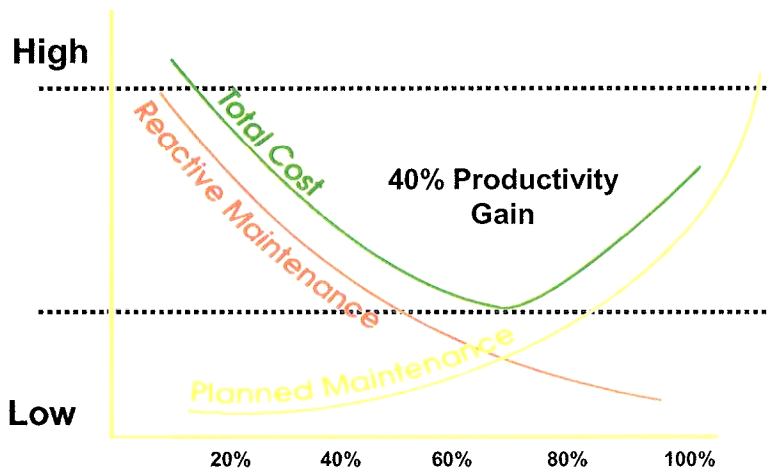


Figure 4-1: Level of Work Planned in Advance of Equipment Failure

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. Utilities and industries using this approach have seen an increase in wrench on bolt time from a typical 2.5 hrs/day to 4.5 hrs/day or an 80% increase in productivity.

.....

Metro maintenance is estimated to be at the 50% planned level. This estimation is based on feedback from interviews and observation of maintenance reports. Maintenance staff do conduct regular planning meetings but equipment at the existing facilities 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 10% increase in productivity. This translates into increased efficiency equal to 1 FTE in maintenance.

$1 \text{ FTEs} \times \$68,428^*/\text{year} = \$68,428/\text{year}$

* \$68,428 = *burdened salary for maintenance staff in this strategy.*

3. Unattended Operations Productivity Opportunities

The unattended operations strategy is the concept of minimizing the staffing of a facility on the off shifts, as compared to moving from O&M to total productive operations, which seeks to make more efficient use of operating staff on all shifts. Total plant automation is required to reduce the amount of attendance required

Currently, five operators (including relief operators) cover the off shifts at the LCWTP. With additional full automation, EMA feels that this group will be sufficient to operate this plant. However, EMA concurs with the Metro Staffing Plan report request for additional operators to support the new POMWTP during operation of that facility. As a result, there will not be an efficiency increase associated with this strategy.

$0 \text{ FTEs} \times \$68,428^*/\text{year} = \$0/\text{year}$
--

* \$68,428 = *burdened salary for operations staff in this strategy.*

4. Work Force Flexibility (WFF) Productivity Opportunities

The work force flexibility strategy is illustrated in Figure 4-2. Staff are no longer confined to one skill set or one functional area e.g., operations, mechanical maintenance, electrical maintenance and instrumentation maintenance. 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.

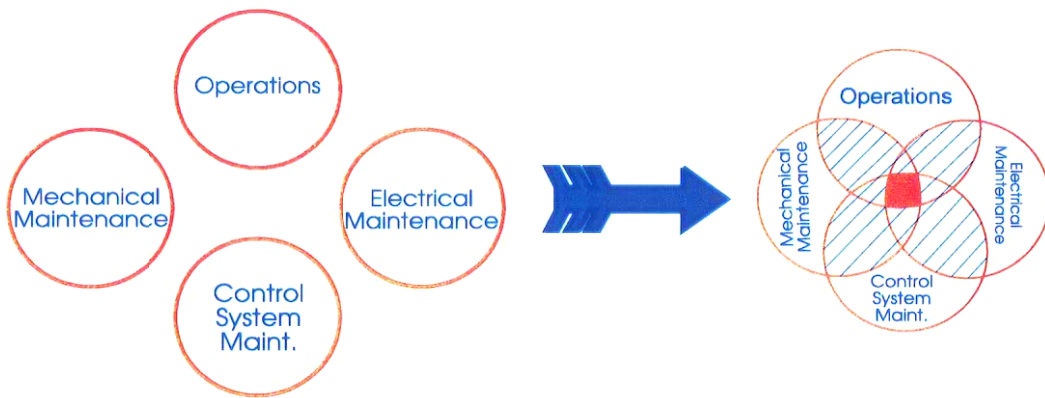


Figure 4-2: Work Force Flexibility Provides Skill Crossover

EMA’s review indicates that operations and maintenance staff are not cross-utilized. Operations and Maintenance are not totally separate but little cross-training exists today. Segregation also exists among trades, e.g., mechanics, electricians and instrumentation technicians, with little or no crossover. Work force flexibility stresses the importance of moving away from this type of task segregation to sharing responsibility and skills.

Figure 4-3 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.

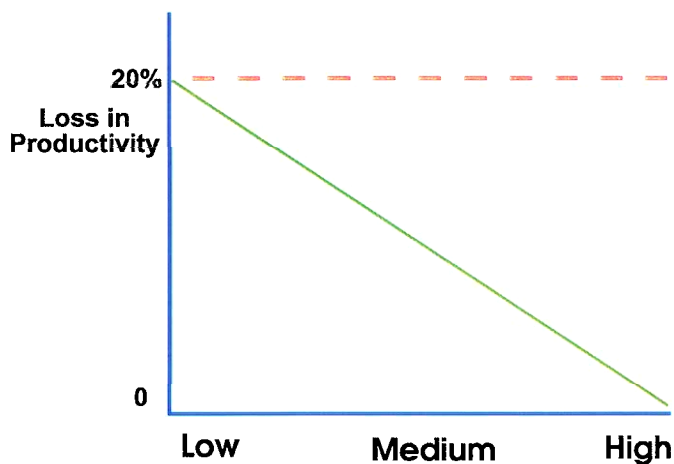


Figure 4-3: Degree of Work Force Flexibility Implemented

Figure 4-4 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.

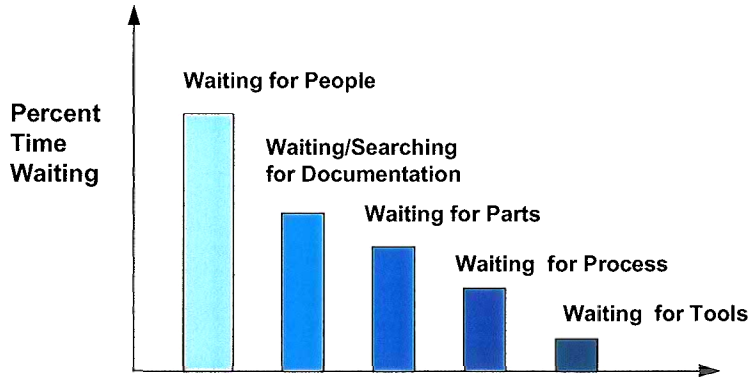


Figure 4-4: Work Force Flexibility Reduces Wait Times

EMA recommends the implementation of integrated work teams and workers to replace the current segregated O&M groups.

Each work team or worker would be assigned to perform work and would be cross-trained in operations, mechanical maintenance, light electrical (120 VAC and low voltage DC), instrumentation and controls and preventive maintenance. Each worker would remain a specialist in electrical, mechanical, instrumentation, operations and other unique areas. Team members would receive pay based on the levels they have attained in each skill area.

This idea is likely to meet resistance from staff wanting to avoid shift work. This idea would also require the movement of instrumentation staff from the IS group to O&M.

EMA estimates that a 16% productivity increase could result from implementation of a WFF program. The total number of operations and maintenance staff positions remaining after the performance improvements noted above under the TPO and Unattended Strategy strategies is 19. The potential efficiency increase is therefore 19 staff positions x 16% = 3 FTEs.

$3 \text{ FTEs} \times \$68,428^*/\text{year} = \$205,284/\text{year}$
--

* \$68,428 = burdened salary for staff in this strategy.

.....

5. Technology As Strategy Productivity Opportunities

The utility's plant currently has substantial automation. However, opportunities exist for some reductions in power consumption and significant reductions in chemical consumption through the employment of emerging technologies. Further, full automation of the lab would net an improvement equal to one FTE. However, this FTE is in a support group, not the core O&M group we are discussing now, so this FTE will not be included in the gap calculations.

A 5% power savings and 10% chemical savings could be realized and is considered a conservative assumption, although a more detailed analysis is required to make a more accurate estimate.

Current expenditures for power are \$100K per year and for chemicals are \$571K, therefore a 5% power savings and a 10% chemical savings would be:

$5\% \times \$100,000 = \$5,000/\text{year}$
$10\% \times \$571,000 = \$57,000/\text{yr}$
<u>1 Lab FTE = \$68,428/yr</u>
TOTAL = \$130,428/yr

6. Organization As Strategy Productivity Opportunities

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

EMA recommends that the utility develop a Plan of Action to, among other things, ensure that technology is being applied to best business practices. Also, EMA recommends that the utility consider implementing a Work Force Flexibility and Skill-based Compensation program. Finally, EMA recommends that the utility consider several options for combining groups within the utility to improve the supervisor/manager to worker ratio.

The Plan should also include the integrated O&M work teams described earlier in this Section. This program should involve employees in a meaningful way. The Plan should be structured to provide full implementation of a redesigned organization within a five year window.

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 utility would realize a two FTE improvement.

$2 \text{ FTEs} \times \$68,428^*/\text{year} = \$136,856/\text{year}$
--

* \$68,428 = burdened salary for staff in this strategy.

7. Customers as Advocates Productivity Opportunities

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

EMA did not calculate any productivity improvement associated with customer advocacy but does recommend that the utility develop a Customer Advocacy Program and Plan going into the future.

$0 \text{ FTEs} \times \$68,428/\text{year} = \$0/\text{year}$
--

8. Assets as Investments Productivity Opportunities

EMA observed that the utility will be taking on the O&M responsibility of new facilities soon. To cover these new responsibilities, EMA recommends that the seven FTEs freed up from previous strategies be reassigned to the O&M Department in support of these upcoming changes. Maintenance needs will increase with the acceptance and startup of the new facilities and existing aging facilities will continue to need more attention. The new highly automated facilities will require additional instrumentation and electrical maintenance support and all facilities will need additional mechanical maintenance support.

Asset management often includes extensive discussions around life-cycle costing, reliability, asset performance, maintenance decision-making and the like. However, EMA has observed that asset management is not a critical issue at this time for the utility so this discussion will be avoided. Suffice it to say that Metro has an assortment of assets of varying age and condition and that the implementation of the new CMMS will be critical to your ability in the future to provide proper O&M support for your assets.

.....

Reassigning the freed up resources from earlier strategies to O&M of the new facilities has the net effect of negating previous improvement opportunities.

Summary

Looking back on the calculations for these eight strategies, the total opportunity for O&M performance improvement amounts to \$540,996 or 4.9% which is the 4th lowest among over 420 reviews EMA has conducted over the past 10+ years.

NON-O&M SUPPORT LOST PRODUCTIVITY CALCULATIONS SHOW THAT PRODUCTIVITY COULD ALSO BE INCREASED IN THESE AREAS

EMA used a complex 14-point model for evaluating the non-O&M groups (previously described in Sections 1 and 3 of this report). The model was used to rate the Non-O&M groups on a scale of 1 to 5 (1 being excellent and 5 being poor) in the 14 Non-O&M strategies. Metro received an overall raw score of 46 in that exercise (out of a possible scoring range of 14 to 70). That raw score of 46 translated into a lost productivity of 50%. The goal in supporting functions is to have a lost productivity level of no more than 25%. Thus, Metro's gap in the Non-O&M areas was 25% ($50\% - 25\% = 25\%$). Applying that 25% opportunity to the 33 FTEs planned for Metro in 2009 resulted in an 8 FTE improvement opportunity. Specifically, those improvements would come from:

- 4 FTEs in Engineering
- 1 FTE in Office Services
- 1 FTE in Environmental Services
- 2 FTEs in Information Service

HIGH LEVERAGE RECOMMENDATIONS FOCUS ON ORGANIZATION, PRACTICE, AND TECHNOLOGY OPPORTUNITIES

The following high-leverage actions are recommended to enable Metro to perform at "World Class" service provider levels:

Organization Recommendations

- Make organization structure changes to combine O&M (including moving I&C technicians into O&M).


-
- Make organization structure changes to combine HR, and Office Services into a single Administrative Services group.
 - Redefine the Controller position before refilling it after the upcoming retirement and adjust the salary to match cities salaries.
 - Reassign staff freed up when “best practices” strategies are employed to cover new maintenance needs as future facilities are brought online and existing facilities age.
 - Conduct formal outsourcing reviews of support services on a regular (annual) basis – no specific outsourcing is recommended at this time.
 - Redefine the AGM position to an Assistant to the GM position.

Practice Recommendations

- Implement “best practices” from this review to free up resources for maintenance of new and aging facilities.
- Move the GIS position to IS so that integration of GIS and CMMS is ensured.
- Design and implement a Workforce Flexibility/Skill-Based Compensation Program for all O&M staff.
- Physically move managers closer to staff where possible.
- If possible, relocate staff so that O&M and Environmental Services staff work together more closely.
- Reduce lab analyses to the required testing levels and consider creating a “regional lab” service offering.
- Redefine the Planner/Estimator role to Planner/Scheduler with more emphasis on planning and scheduling Preventive Maintenance (PM), Predictive Maintenance (PdM), and advanced asset management activities.

Technology Recommendations

- Implement MAXIMO as quickly as possible to support better maintenance planning and asset management.
- Integrate MAXIMO and plant SCADA control systems for better information access.

- 
- Connect all lab instruments to the Laboratory Information Management System (LIMS) to reduce data entry time.
 - Implement a software system to collect data and make it available to management and staff for reporting and decision-making.
 - Implement a software system to optimize electric consumption without reducing water quality.
 - Implement a software system to optimize operations of the complex water system Metro will be managing once the new facilities come online.
 - Completely implement and then integrate the many systems currently in place.
 - Hire an additional Systems Administrator and 2 additional IT Analysts to support the many information systems integration opportunities that exist.

CONCLUSIONS

Through the implementation of “best practices” per this review, there is an opportunity to improve performance by the equivalent of seven FTEs in Operations and Maintenance. However, the staff made available from implementation of best practices should be reassigned to maintenance of new and aging facilities. Thus, EMA concurs with the planned O&M staffing level of 38 FTEs in 2009. The temporary nature of much of the current Engineering work should enable a four FTE reduction in staff from the 2009 goal within the next two to three years. Environmental Services and Office Services organizational changes and technology solutions should enable a one FTE reduction in staff from the 2009 goals in both of those groups. And improved technology implementations and organizational changes should enable a two FTE reduction in Information Systems staff from the 2009 goal (although we are recommending that certain positions be transferred to O&M and that 3 new staff be hired in IS). This totals an eight FTE reduction from the 2009 goals of the Staffing Plan for support services.

5

COST SAVINGS/COST AVOIDANCE SUMMARY

In summary, a privatizer would operate Metro’s O&M Department 4.9% more efficiently and, therefore, potentially save approximately \$540,996 annually by applying the new O&M strategies described in the previous sections of this report.

Table 5-1 summarizes the increased efficiency and savings a privatizer could realize by applying the new O&M strategies.

Paradigm	Potential Savings/Year
Total Productive Operations	\$ 68,428 (1 FTE)
Planned Maintenance	\$ 68,428 (1FTE)
Unattended Operations	\$ 0
Work Force Flexibility	\$ 205,284 (3 FTE)
Technology as Strategy	\$ 62,000
Organization as Strategy	\$ 136,856 (2 FTE)
Customer as Advocate	\$ 0
Assets as Investments	\$ 0
Total Savings	\$ 540,996

Table 5-1: Annual Savings

These potential savings represent about 4.9% of the current Metro O&M budget. The \$541K may also be viewed as a “competitive gap”, calculated:

$$\text{Gap} = \frac{\$541\text{K}}{\$10,959\text{K}} = 4.9\%$$

The competitive gap is the difference between the approach a privatizer would use to run Metro’s O&M as compared to the approach currently used by Metro, (i.e. the privatizer would apply the new strategies to achieve the \$541K savings). **However, Metro has an opportunity to reassign the resources freed up from applying these strategies to address future maintenance needs of the new facilities and aging existing facilities. EMA recommends that these staff be**

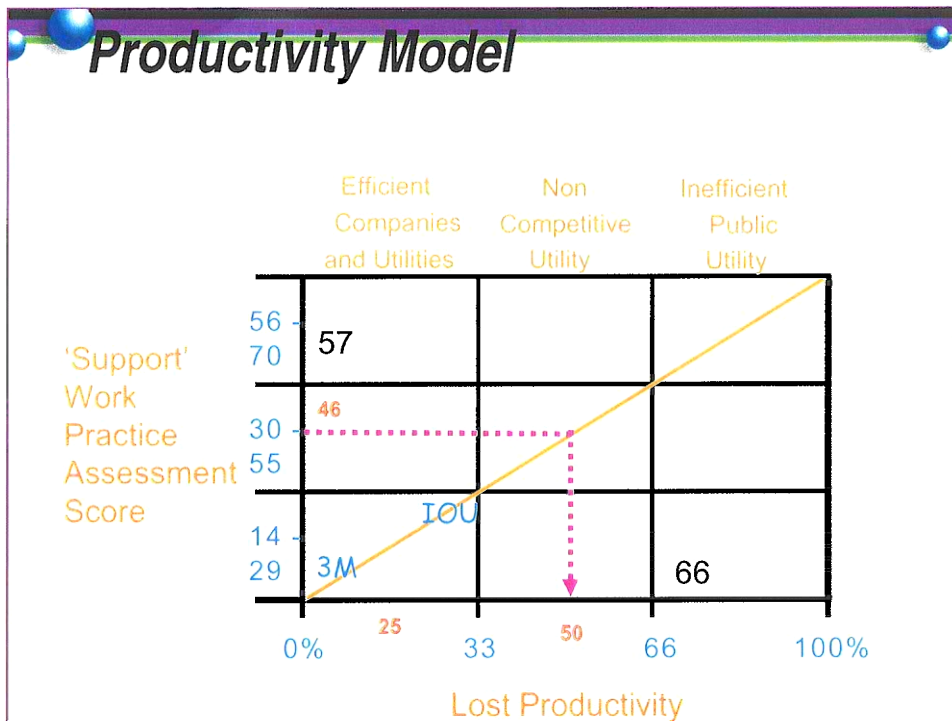
reassigned for those purposes and EMA concurs with the Staffing Plan which calls for 38 FTEs by 2009.

This is an extremely low gap – something of which Metro and its customers should be proud. With such a low gap, private operators would not see an opportunity to make gains that would offset the risks of assuming the O&M functions of the utility.

Regarding the Non-O&M support functions (Administration, Engineering, Office Services, Environmental Services, and Information Services), an opportunity does exist to improve performance and reduce lost productivity equivalent to reducing the planned hiring by eight FTEs by 2009 per the charts below:

<u>Non-O&M</u>	<u>Score (1 = excellent, 5 = poor)</u>
1. Serial WP	3
2. Cross-Functional Teams	3
3. Duplication	3
4. Technology	4
5. Top - Down	4
6. Silos	4
7. Cross-Training	4
8. Inflexible Standards	3
9. Outdated P&P	3
10. Cultured Impediments	2
11. Quality	4
12. Management of Load	3
13. Outsourcing	2
14. Customer Feedback	4
TOTAL	46

The chart above shows the raw scores assigned to the 14 Non-O&M strategies for Metro's support services.



The chart above shows the conversion of that raw score into a lost productivity calculation. Applying a 25% lost productivity to the 33 FTEs planned for 2009 nets an 8 FTE opportunity. An independent analysis by the EMA team confirmed this opportunity. As a result, the overall staffing plan for 2009 could be reduced from 77 to 69 FTEs with all reductions in the plan coming from these Non-O&M support areas of Metro.

6

IMPLEMENTATION RECOMMENDATIONS

The following high-leverage actions are recommended to enable Metro to perform at “World Class” service provider levels as described in Section 4:

ORGANIZATION RECOMMENDATIONS

- Make organization structure changes to combine O&M (including moving I&C technicians into O&M).
- Make organization structure changes to combine HR, and Office Services into a single Administrative Services group.
- Redefine the Controller position before refilling it after the upcoming retirement and adjust the salary to match cities salaries.
- Reassign staff freed up when “best practices” strategies are employed to cover new maintenance needs as future facilities are brought online and existing facilities age.
- Conduct formal outsourcing reviews of support services on a regular (annual) basis – no specific outsourcing is recommended at this time.
- Redefine the AGM position to an Assistant to the GM position.

PRACTICE RECOMMENDATIONS

- Implement “best practices” from this review to free up resources for maintenance of new and aging facilities.
- Move the GIS position to IS so that integration of GIS and CMMS is ensured.
- Design and implement a Workforce Flexibility/Skill-Based Compensation Program for all O&M staff.
- Physically move managers closer to staff where possible.
- If possible, relocate staff so that O&M and Environmental Services staff work together more closely.
- Reduce lab analyses to the required testing levels and consider creating a “regional lab” service offering.
- Redefine the Planner/Estimator role to Planner/Scheduler with more emphasis on planning and scheduling Preventive Maintenance (PM), Predictive Maintenance (PdM), and advanced asset management activities.



TECHNOLOGY RECOMMENDATIONS

- Implement MAXIMO as quickly as possible to support better maintenance planning and asset management.
- Integrate MAXIMO and plant SCADA control systems for better information access.
- Connect all lab instruments to the Laboratory Information Management System (LIMS) to reduce data entry time.
- Implement a software system to collect data and make it available to management and staff for reporting and decision-making.
- Implement a software system to optimize electric consumption without reducing water quality.
- Implement a software system to optimize operations of the complex water system Metro will be managing once the new facilities come online.
- Completely implement and then integrate the many systems currently in place.
- Hire an additional Systems Administrator and two additional IT Analysts to support the many information systems integration opportunities that exist.


CONCLUSIONS

Through the implementation of “best practices” per this review, there is an opportunity to improve performance by the equivalent of seven FTEs in Operations and Maintenance. However, the staff made available from implementation of best practices should be reassigned to maintenance of new and aging facilities. Thus, EMA concurs with the planned O&M staffing level of 38 FTEs in 2009. The temporary nature of much of the current Engineering work should enable a four FTE reduction in staff from the 2009 goal within the next two to three years. Environmental Services and Office Services organizational changes and technology solutions should enable a one FTE reduction in staff from the 2009 goals in both of those groups. And improved technology implementations and organizational changes should enable a two FTE reduction in Information Systems staff from the 2009 goal (although we are recommending that certain positions be transferred to O&M and that 3 new people be hired into IS). This totals an eight FTE reduction from the 2009 goals of the Staffing Plan for support services.




REVIEW PRESENTATION



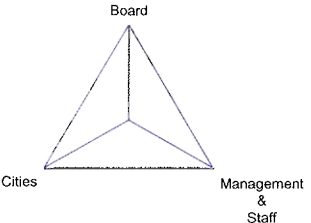


**Metro Organizational,
Staffing, and
Operational Review**

FINAL



We Triangulate to Get to the Heart of the Matter...



O&M PERFORMANCE GAP:

\$540,996 \$541K / \$10,959K
= 0.049 or 4.9%

4.9%
4th Best
out of 420!!

The Process We Followed

- Step One: Introduction Workshop
- Step Two: Desk Audit
- Step Three: Conduct Interviews
- Step Four: Determine Opportunities and Gap
- Step Five: Develop Recommendations

Agenda

- Efficient Strategies
- Facts and Observations
- Opportunity Calculations
- Efficiency "Gap"
- Look Into the Future
- Recommendations
- Questions and Discussion

**Management & Staff
Perspective...**

Strengths, Weaknesses, Opportunities and Threats (SWOT) Analysis

Strengths

1. Long history of excellence
2. Water quantity, capacity
3. Interface with customers
4. Internal staff

Weaknesses

1. Relationship with customers
2. Going through cultural change
3. Planned maintenance, record keeping
4. Complexity of new water system

Opportunities

1. Better communication with customers, more empathy
2. Integrating new facilities
3. Working through cultural change
4. Building a team-based environment

Threats

1. Being efficient in the eyes of customers
2. Drawing attention to ourselves needlessly
3. Insufficient revenue
4. The changing workforce
5. Being an attractive place to work while keeping costs down

Efficient O&M Strategies

- Efficiency is a fundamental issue
- O&M strategies to make you efficient
 - Total Productive Operations (TPO)
 - Planned Maintenance (PM)
 - Off Shift Staffing
 - Work Force Flexibility (WFF) & Interdependence
 - Customer Service
 - Asset Management
- How to make these strategies permanent
 - Technology as a Strategy
 - Organization as a Strategy

Efficient Non-O&M Strategies

- Serial Work Practices
- Use of Cross-Functional Teams
- Duplication of Effort
- Use of Technology
- Strong Top-Down Culture
- Specialty Silos Prevalent
- Formal Cross-Training
- Inflexible Technical Standards Imposed

Efficient Non-O&M Strategies (cont'd)

- Old, Outdated Policy & Procedures
- Cultural Impediments
- Quality of Work Products
- Management of Load, Service Level Agreements
- Outsource Strategy
- Routine Customer Feedback Acquired

General Facts & Observations

Facts and Observations

- 60.5 Budgeted FTEs
 - 27.5 O&M (45% of staff in core functions)
 - 5 Information Systems (includes SCADA staff)
 - 10 Environmental Services
 - 5 Office Services
 - 9 Engineering
 - 4 Administration (55% of staff in support functions – this is not a high % for a stand-alone authority)

Facts and Observations

- Supervisor : Worker Ratio
1:7.6 (Industry Standard: 1:10, 1:15)
- Total Operating Budget: \$10,959,154
- Labor Cost: \$3,924,510
- Labor % of Budget: 36% (below avg.)
- Overtime: \$59.5K (2.0%, well below avg)
- Average Burdened Salary: \$68,428

Facts and Observations

- Fleet Maintenance & Repair: \$26,200 (\$1,191/Vehicle – below avg)
- Organization is 5 deep, 5 wide (indicates that the organization is not top-heavy)
- Significant technology in place but not completed and not integrated (24 systems)
- \$750K in contracted services (indicates there is a sound outsourcing strategy in place)

Facts and Observations

- Chemical Costs: \$816K
- Utility Costs: \$571K
- Repair & Maintenance: \$576K
- Debt Reduction: \$10,117,300
- Related Expenses: \$420K

Observations by O&M Strategy

Typical Operations Day Shift/Off Shift Duties Show 70% Lost Productivity (Metro's is better...)

70%

- Monitor, observe, inspect. Data entry. Record data from process measurements and charts (logs).
- Manual process and equipment adjustments, chemical adjustment and handling, collection and distribution adjustments.
- Special projects, R&D or new construction projects.

30%

- Perform basic laboratory testing, lab process control.
- Process control analysis.
- Emergency response.
- Safety & training.
- Housekeeping/custodial tasks, maintenance, electronic calibration.

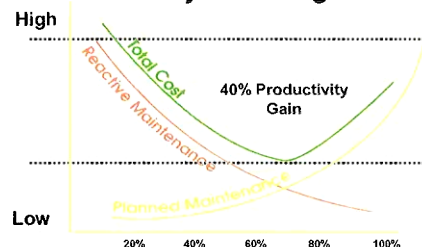
Operations vs Maintenance → Total Productive Operations Observations

1. Operators make rounds, complete log entries, conduct lab analysis, and help maintenance if necessary
2. Operators are not normally involved in maintenance or CLAIR (Cleaning, Lubrication, Adjustments, Inspections, and minor Repairs)
3. Most maintenance staff are certified operators but do not want to work shifts

Operations vs Maintenance → Total Productive Operations Calculation

- Approximately 50% of operations time on day shift is spent outside of identified productive activities
- As a result, productivity could be improved by 1 FTE
- This would require additional automation to eliminate/reduce rounds and training
- TOTAL Opportunity: 1.0 FTEs

Maintenance Productivity is Enhanced 40% by Planning



If you plan 10% now, your lost productivity is 40%!
 If you plan 75% now, your lost productivity is 0!

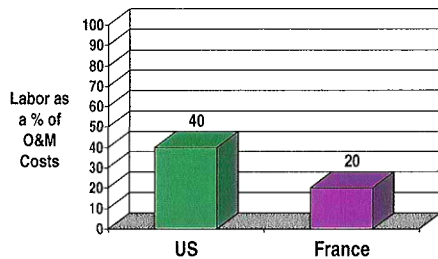
Reactive Maintenance → Planned Maintenance Observations

1. There are weekly, monthly, quarterly, and annual backlogs
2. The PM:RM ratio is approximately 50/50
3. Operations and Maintenance staff meet weekly to prioritize work
4. Older equipment fails often forcing Operations to submit high-priority work orders frequently to Maintenance
5. Some PMs are not getting done (for example: instrumentation PMs are falling behind adding to unplanned maintenance and contributing to water quality issues, also reservoir landscaping is falling behind)

Reactive Maintenance → Planned Maintenance Calculation

- A 50/50 relationship between Planned and Reactive Maintenance indicates a 10% productivity improvement by moving to 75/25 PM/RM ratio
- 14 FTEs in Maintenance x 10% improvement opportunity = 1.4 FTEs
- This would require full deployment of the MAXIMO Computerized Maintenance Management System (CMMS)
- TOTAL Opportunity: 1.0 FTEs (rounded)

France Makes Great Use Of Unattended Facilities To Reduce Operating Labor



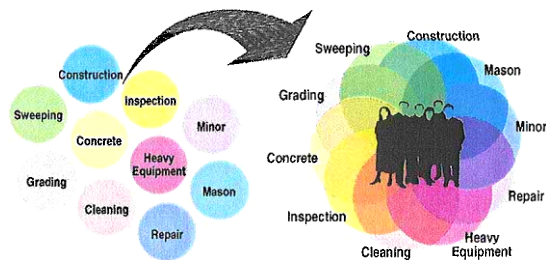
Attend → Unattend Observations

1. The Little Cottonwood Water Treatment Plant is staffed 24/7
2. One operator is on duty at night, 2 operators are on duty during the day
3. Off-shift failures are infrequent since incoming power has been upgraded
4. With such a small amount of finished water storage, there is little time to react to failures now
5. The plant is significantly automated but not fully automated (thus, rounds are required)

Attend → Unattend Calculations

Off-shift staffing:
 Operations: 1 operator/shift
 Plant requires: full automation
 Even with full automation, operating this plant unattended is NOT recommended
 TOTAL Opportunity: 0.0 FTEs

Work Force Flexibility Increases Productivity Up To 20%



Workforce Flexibility Observations

1. Maintenance staff would resist this concept to avoid shift work
2. There is very little cross-training today – a program has been conceived but not implemented
3. The organization is not currently set up optimally for WFF – some Maintenance staff are in other groups outside of O&M

Workforce Flexibility Calculations

Following employment of the previous strategies, 13 Maintenance and 6 Operations staff would remain for a total of 19 FTEs in O&M

- A 16% improvement opportunity exists by implementing WFF with this group
- This would require additional training and some restructuring
- TOTAL Opportunity: 3.0 FTEs (19 x .16)

Technology As Strategy

Reinforce New Practices



Technology Observations

1. Systems include SCADA, Security, Work Management (PMC), and Internet/Intranet
2. There are many "Islands of Information"
3. The plant is "mostly" automated
4. Current work management system is PMC but MAXIMO has been purchased to replace PMC in the near future
5. Not all lab instruments are connected to the LIMS

Technology Calculations

A fully implemented LIMS could improve productivity by 1 FTE

Utility costs: \$571K (no Op's Optimized)
Chemical costs: \$816.5K (\$100K not auto)

$\$100,000 \times 0.05 = \$05.0K$
 $\$571,000 \times 0.10 = \$57.0K$
 $\$68.4K$ 1 FTE (Lab*)
\$130.0K

Would require Operations Optimization of power consumption and full automation of the plant

*Lab FTE included in Non-O&M calculations

Organization As Strategy

Move From Top Down To Teams



Facilitate teams with team leaders



Organization Observations

1. Leadership style has improved under John and now Mike
2. Little fear of reprisal
3. Many silos and divisions within O&M
4. Good communication
5. Teams are formed to solve problems then disbanded

Organization Calculations

Current Manager to Worker ratio is 1:7.6 (based on 7:53.5)

Future target should be 1:10 to 1:15

By moving from 7:53.5 to 5:55.5 the ratio would improve from 1:7.6 now and become 1:11.1

Recommendations:

- Combine HR and Office Services into one group
- Eliminate the vacant Assistant O&M Manger position
- Redefine the AGM role to an Assistant to the GM role
- Redefine the Controller position and adjust the salary accordingly
- 7 FTE → 5 FTE = 2 FTE opportunity

From Customer as a Nuisance to an Advocate



Best Practice

- Managing How Well We Do It
- Resource Management
- Empowering Staff
- Everybody Knows
- Customer satisfaction
- Anticipation

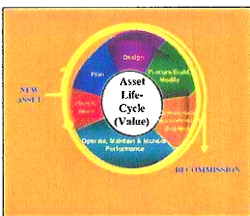
Every customer contact is an opportunity to collect data on customer confidence. By collecting the data, we turn customers into advocates and customer satisfaction improves.

Customer Approach Observations and Calculation

1. O&M staff are not aware of a system that provides them with a customer satisfaction rating
2. Customer advocacy program is not formalized
3. Most customer contact for O&M staff is complaint-based but that is not the case for management staff who have frequent "proactive" contact with Cities

Opportunity = 0.0 FTEs

From Assets as a Cost to Assets as Investments



Best Practice

- Manage the Investment in Assets/ Infrastructure
- Collect work and cost history against assets
- Maximize asset performance, reliability and availability
- Minimize cost of asset preservation
- Replace asset based on sound economic evaluations
- Involve all parties in creating new assets

Asset Management Observations

1. Staff are not aware of any AM program at this time
2. Asset O&M costs are not tracked
3. Projects often interfere with PM performance
4. "Run-to-fail" is the standard operating mode for many assets
5. PMC (the current CMMS) doesn't support AM well
6. Pipelines may be getting neglected

Asset Management Calculations

- Take the 7 FTEs freed up from previous strategies and use to cover the increased maintenance needs resulting from the construction of the new plant and aging assets at existing facilities
- Add 2 I&C technicians, 1 electricians, and 4 mechanics for the new plant and to support aging assets at existing facilities and new Ozone system at LCWTP
- TOTAL Opportunity: use the 7.0 FTEs freed up from other strategies

GAP

$$\begin{aligned}
 & 7 \text{ FTEs} && \$541\text{K} / \$10,959\text{K} \\
 & \times \$ 68,428/\text{FTE} && = 0.049 \text{ or } 4.9\% \\
 & \$478,996 \text{ Labor} && \\
 & + \$ 62,000 \text{ Chem/Pwr} && \\
 & = \$540,996 \text{ TOTAL} &&
 \end{aligned}$$

4.9%
4th Best
out of 420!!

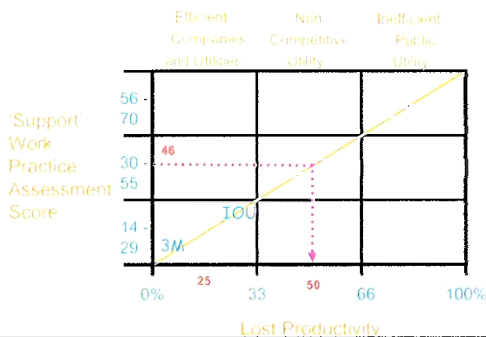
Non-O&M Strategies

Non-O&M Score (1 = excellent, 5 = poor)

- | | |
|---------------------------|---|
| 1. Serial WP | 3 |
| 2. Cross-Functional Teams | 3 |
| 3. Duplication | 3 |
| 4. Technology | 4 |
| 5. Top - Down | 4 |
| 6. Silos | 4 |
| 7. Cross-Training | 4 |
| 8. Inflexible Standards | 3 |
| 9. Outdated P&P | 3 |
| 10. Cultured Impediments | 2 |
| 11. Quality | 4 |
| 12. Management of Load | 3 |
| 13. Outsourcing | 2 |
| 14. Customer Feedback | 4 |

TOTAL 33

Non-O&M Productivity Model



Non-O&M Results

- 50% lost productivity – 25 goal = 25% gap X 33 staff = 8.25 FTEs
- Our further analysis of the detailed groups indicates a 8 FTE opportunity
- This would involve reducing 2009 goals by: 4 in Engineering, 1 in Office Services, 1 in Environmental Services, and 2 in Information Services – more on this later in the presentation...

Opportunity: 8 FTEs

Board Perspective...

Staffing Issues

1. Competent staff doing a great job
2. Controller position role
3. Need for Workforce Flexibility
4. Staffing Plan raised questions
5. Slow the growth rate of staffing
6. Slow growth rate in support functions

Financial Issues

1. Want to be seen as an accountable organization
2. Can revenue be generated by selling water to other entities?

Political Issues

1. Previous management didn't accept input from cities
2. Board is somewhat divided over the staffing plan issue
3. Metro wants to be sensitive to cities \$ issues and concerns

Cities Perspective...

Staffing Issues

1. Competent staff doing a great job
2. Controller position salary issues
3. Need for Workforce Flexibility
4. Staffing Plan caused concerns
5. Slow the growth rate of staffing
6. Reduce size of Engineering and Lab
7. Investigate outsourcing some functions
8. Slow growth rate in support functions

Financial Issues

1. Don't want tax or rate increases
2. Agreed to one thing now hearing another
3. Accountability of Metro (\$ and staffing)
4. Increases for Metro mean decreases for cities
5. Can revenue be generated by selling water to other entities?
6. Metro salaries shouldn't be higher than cities

Political Issues

1. Cities see themselves as being more efficient than Metro
2. Previous management didn't accept input from cities
3. Board is divided over staffing plan issue
4. Metro needs to be more sensitive to cities \$ issues and concerns

Recommendations

Optimization begins with O-P-T



EMA Recommendations: Organization

- Make organization structure changes to better combine O&M (including moving I&C technicians into O&M)
- Make organization structure changes to combine HR and Office Services into a single Administrative Support group
- Redefine Controller position before filling after upcoming retirement and adjust salary to match cities EMA recommends starting this action now
- Assign O&M staff freed up when Best Practices strategies are employed to new maintenance needs
- Conduct formal outsourcing reviews of support services on a regular (annual) basis – no specific outsourcing is recommended at this time
- Redefine the AGM position to an Assistant to the GM position

EMA Recommendations: Practices

- Implement "Best Practices" from this assessment to free up resources for maintenance of new facilities
- Move GIS position to IS so that integration of GIS and CMMS are ensured
- Design and Implement a Workforce Flexibility/Skill-based Compensation Program for all O&M staff (already started internally)
- Physically move Managers closer to staff where possible
- If possible, relocate staff so that O&M and Environmental Services staff work together more closely
- Reduce lab analyses to required testing only and consider creating a "regional lab" service offering
- Redefine Planner/Estimator role to Planner/Scheduler with more emphasis on planning and scheduling PM, PdM, and Asset Management activities

EMA Recommendations: Technology

- Implement MAXIMO as quickly as possible to support better maintenance and Asset Management
- Integrate MAXIMO and SCADA for better information access
- Connect all lab instruments to LIMS to reduce data entry time
- Implement a software system to collect data and make available to management and staff for reporting and decision-making
- Implement a software system to optimize electric consumption without reducing water quality
- Completely implement and then integrate the many systems currently in place
- Hire an additional Systems Administrator and 2 additional IT Analysts to support the many information systems integration opportunities that exist

Conclusions

Conclusions:

- Through the implementation of best practices per this assessment, there is an opportunity to improve O&M performance by the equivalent of 7 FTEs
- The staff made available from the implementation of O&M best practices should be reassigned to maintenance on new facilities (plus transfer 1 liaison and 3 O&M staff (2 control system technicians and 1 electrician) from IS) *EMA concurs with the plan for 38 O&M FTEs and recommends Metro begin hiring those staff now*
- The temporary nature of much of the current Engineering work should enable a 4 FTE reduction in staff from the 2009 goal within the next 2-3 years (one of those would be a transfer of the GIS position to IS, requiring a reduction of 3)
- Environmental Services and Office Services organizational changes and technology solutions should enable a 1 FTE reduction in staff from the 2009 goals in both groups
- Improved technology implementations and organizational changes should enable a 2 FTE reduction in IS staff from the 2009 goal (allowing for 1 liaison and the GIS transfer in plus 3 new hires (Systems Administrator and 2 Analysts) after 3 transfer out to O&M)
- This totals an 8 FTE reduction from the 2009 goals of the Staffing Plan

Questions?

www.ema-inc.com
© 2005 EMA, Inc.

For more information,
contact bjurkovac@ema-inc.com
or www.ema-inc.com






SALARY SURVEY RESULTS

Metro Grade	Metro Title	Metro Mid-Range (Black: in range or NA) (Red: under SL&S) (Green: over SL&S)	All Utilities Surveyed Mid-Range	Salt Lake and/or Sandy Mid-Range
10	O&M 1	\$26K	\$28K	\$29K
	Receptionist	\$26K	\$25K	\$28K
	Security Guard	\$26K	NA	NA
11	Records Clerk O&M 2	\$32K	NA	NA
	Journeyman Mechanic (Other Utilities or SL&S) Avg of O&M 2 & O&M 3 (Metro)	\$34K	\$37K	\$40K
12	O&M 3 Procurement Analyst Aqueduct Inspector	\$37K	NA	NA
13	O&M 4	\$42K	NA	NA
	Control Sys Tech 1	\$42K	\$41K	NA
	Lab Technician	\$42K	\$29K	NA
14	Planner/Estimator	\$46K	\$52K	\$51K
	GIS Technician	\$46K	\$39K	\$36K
	Engineering Technician	\$46K	\$40K	\$36K
	Control Sys Tech 2	NA	NA	NA
15	IT Analyst 1	\$51K	NA	NA
	Process Control Analyst	\$51K	NA	NA
16	Journeyman Electrician	\$56K	\$67K	NA
	Systems Administrator	\$56K	NA	NA
	Chemist	\$56K	\$47K	\$44K
	Biologist	\$56K	\$47K	\$44K
	Project Manager 3	\$56K	NA	NA
	Maintenance Supervisor	\$56K	NA	NA
	Operations Supervisor	\$56K	NA	NA

Metro Grade	Metro Title	Metro Mid-Range (Black: in range or NA) (Red: under SL&S) (Green: over SL&S)	All Utilities Surveyed Mid- Range	Salt Lake and/or Sandy Mid-Range
	Office Manager Program Manager 3	\$56K \$56K	\$41K NA	\$46K NA
17	Project Manager 2 Human Res's/PR/AP Program Manager 2	\$61K \$61K \$61K	NA \$80K NA	NA \$74K NA
18	Project Manager 1 Program Manager 1	\$67K \$67K	NA NA	NA NA
19	Sr Engineer/Contracts Mgr Sr Project Manager Sr Program Manager Asst O&M Manager	\$72K \$72K \$72K \$72K	NA NA NA NA	NA NA NA NA
20	Env Services Manager Engineering Manager IS Manager O&M Manager	\$78K \$78K \$78K \$78K	\$64K \$76K \$58K \$64K	NA NA \$64K \$75K
22	Controller	\$89K	\$77K	NA
23	Asst General Manager	\$96K	\$92K	NA
25	General Manager	\$110K	\$96K	\$109K

The salary survey results above warrant a few specific comments:

1. Position descriptions typically did not match between organizations. EMA attempted to align positions and salaries based on this unmatched information.
2. Entry-level position salaries tend to be below the competition. This will make recruiting and retaining difficult as the workforce shrinks in coming years resulting from "Baby Boomer" retirements.

- 
3. Mid-level position salaries tend to be comparable or slightly above the competition.
 4. Higher-level position salaries tend to be comparable or slightly above the competition in most cases. There are a number of positions at these levels that do not have comparable positions in other organizations surveyed (particularly project and program management positions and some supervisory and management positions).
 5. EMA recommends that Metro consider increasing entry-level salaries to better compete in the coming shrinking labor market. Other changes (upward or downward) should be accomplished whenever Metro staff currently filling those positions depart or change positions so that job requirements can be redefined to match appropriate salaries.
 6. An independent comparison of local entity salaries indicates that the Metro salary range for Controller is higher than the two member cities.

**Metropolitan Water
District of Salt Lake &
Sandy**

City Council Presentations

February 21, 2006

Organizational Study Results

- Top 1% (4th out of 420)
 - Culture of efficiency
 - System is working
 - Cities: City Councils, City Departments
 - Board of Trustees
 - Staff
- 69 FTE projection
 - Less O&M staff than staffing plan
 - More IS staff than staffing plan

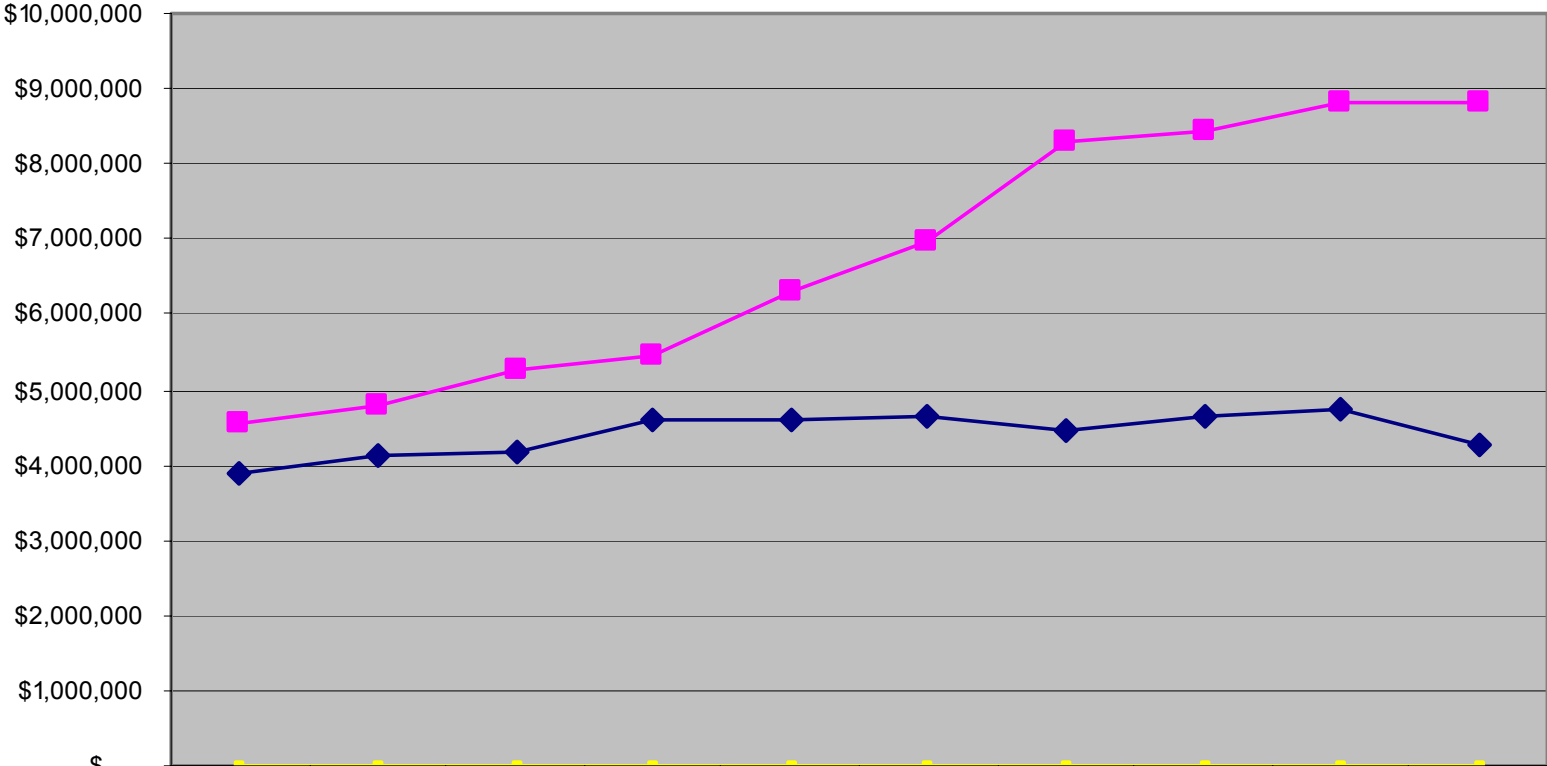
Expenditure Information

- Metro Water Project:
 - Approximately 60% complete
 - Within one percent of original estimates
- Fiscal Year 2009 Projections (after Metro Water Project completion)
 - Debt Service/Ongoing Capital: \$18,006,228
 - Water Supply Costs (3rd parties): \$4,639,547
 - O&M Expense: \$10,832,716

Options for Consideration

- Asset Depletion (project deferrals for Terminal Reservoir, Salt Lake Aqueduct, etc.)
- Additional water sales (volume)
 - To member cities
 - To other entities
- Taxes
- Rates
- A combination of some or all of the above

District Tax Revenues vs. O & M Budget



	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
◆ Total Tax Revenue	\$ 3,905,352	\$ 4,144,131	\$ 4,157,893	\$ 4,610,596	\$ 4,582,361	\$ 4,643,292	\$ 4,463,319	\$ 4,652,127	\$ 4,734,818	\$ 4,254,111
■ District O&M Budget	\$ 4,552,061	\$ 4,787,940	\$ 5,246,900	\$ 5,431,675	\$ 6,318,355	\$ 6,962,710	\$ 8,284,905	\$ 8,454,635	\$ 8,798,411	\$ 8,806,851
■ Revenue % of Budget	86%	87%	79%	85%	73%	67%	54%	55%	54%	48%

Year

MWDSLS Water Rate Information

