Implementing People-Led Asset Management Using ISO 55001 Framework

John Acton, Ken Gedman, Melody Tungol

ABSTRACT

People-led asset management is at the heart of implementing the ISO 55001 framework at Palm Beach County Water Utilities Department (PBCWUD). The organization became the first water and wastewater utility in North America to achieve ISO 55001 certification for its asset management system.

When empowered with the right tools, processes, support, and guidance from senior leadership, the people working for the organization can establish performance standards and thresholds, make decisions to reduce risks, identify opportunities in areas of weaknesses, use data to spot trends, monitor asset health, and realize that as an individual they have a significant impact on the achievement of the organization's mission and drive further value to the business.

The goal of this technical paper is to present the experience and lessons learned from an organization that transformed its culture, ended communication silos, increased operational excellence through asset management while energizing the human capital, focus on continuous improvement, and move towards a performance-driven culture.
Who is PBCWUD?

PBCWUD is a County-owned utility, governed by the Palm Beach County Board of County Commissioners (BCC) that provides potable water, wastewater, and reclaimed water services to 600,000 residents, and is the third-largest provider in the State of Florida. With a workforce of approximately 600, PBCWUD is an enterprise fund that is self-supported through utility revenues and bound by capital bond covenants. PBCWUD currently manages assets with a replacement cost of approximately $5 billion. Utility rates are established by the BCC, which also approves the Department's annual Operating Budget and five-year Capital Budget. An Advisory Board of utility stakeholders representing each commission district provides advice and feedback on the organization's issues. PBCWUD is the third-largest utility in the state.

Where do we operate?

PBCWUD serves residents and businesses in unincorporated Palm Beach County, as well as the Village of Royal Palm Beach, the City of Greenacres, Town of Haverhill, and assumed responsibility for operating and maintaining the assets and providing water and wastewater service to the customers of the former Glades Utility Authority (GUA), which includes the cities of Belle Glade, Pahokee, and South Bay in western Palm Beach County. Through the establishment of inter-local agreements, PBCWUD additionally provides bulk supply services to the Village of Palm Springs, the Town of Lake Clarke Shores, Seacoast Utilities, and the Cities of Lake Worth, Boynton Beach, and Atlantis.

What’s next for PBCWUD?

The organization is currently in transition from a sustainable utility to a “best in class” utility. Over the next five years, PBCWUD anticipates the loss of 20% of its current long-term staff, the implementation of $480 million in capital projects, and the maintenance of a safety and team-oriented work environment. Other challenges that PBCWUD faces include: aging infrastructure, population growth, and strict regulatory requirements for safety, water quality, and environmental sustainability.

ISO 55001: The Asset Management Journey

PBCWUD has recognized that to become a best-in-class utility, the whole organization has to transform how it operates and manages risk. In 2016, senior leadership chose to implement an ISO 55001 compliant asset management system across the organization. ISO 55001 is the global benchmark for utilities to effectively manage the balancing of costs, opportunities, and risks over the whole life cycle of an organization's assets. This framework coupled with using data to drive decision-making has benefited the organization's internal and external stakeholders. PBCWUD undertook this journey to assure regulators, customers, and other stakeholders that assets and services are efficiently managed to ensure an abundant supply of fresh, high-quality drinking water for the future and keep average household service fees low. PBCWUD did not stop at complying with the standard but also pushed towards achieving certification. Gaining ISO 55001 certification proved the utility's commitment towards best practice and continuous improvement in core business functions.
PBCWUD’s senior leadership understood that for the utility to move forward in adopting the ISO 55001 framework, changes had to be made not only to the organization’s structure but more so to its culture. A gap assessment was undertaken and it was clear that for the framework to be fully effective, the organization needed to own and fully embrace the whole approach to best practice asset management. Executive sponsors from senior leadership were identified to lead this change and plan out what needed to be done. Strong branding and a communications strategy were put in place to reach all stakeholders on what the utility was trying to accomplish. Below are some of the activities that were facilitated in the last four years:

- Stakeholders’ communication planning and execution
- The development of marketing materials and collateral, e.g. ISO 55001 videos, posters, quarterly articles in journals/newsletters
- The delivery of an ISO 55001 roadshow to promote the progress being made and gain the buy-in for the developing asset management system
- Monthly employee onboarding that included roles, and responsibilities of newly appointed staff in terms of the developing asset management system
- The recruitment of ISO core and champion members to act as change agents across the organization for the asset management system

### Setting the Road Map for the Asset Management Improvement Program

Part of senior leadership’s role in steering and preparing the organization for the changes to be made was to develop an Asset Management Improvement Program. The utility understood that for this program to be successful the organization would need to:

- Recruit the necessary talent and provide the appropriate resources
- Get buy-in from the organization
- Look for subject matter experts
- Own the program - i.e. drive the change and implement the plan from within
- Learn from other organizations

The Asset Management Improvement Program was broken down into actions, categorized into documentation, people, processes, systems, data, risk, and supply chain. Employees from across the business – i.e. Operations, Maintenance, Engineering, Customer Service, Procurement, Finance, IT, Environmental, Health, and Safety, and HR were trained and developed their knowledge on a wide range of asset management topics. A framework was established that supported the definition of organizational arrangements, setting out roles and responsibilities across the Institute of Asset Management’s 39 subject areas.
The implementation of the Asset Management Improvement Program covered a multi-horizon approach and included revisions when necessary as COVID-19 affected the way the business functioned. It was important that every aspect of the Asset Management program, from ensuring alignment of asset management objectives with the overall strategic objectives all the way to maintaining an approach of continuous improvement, was understood and the rationale behind it was clearly articulated.

**Putting the Team Together: A Balance of Insourcing and Outsourcing**

In a business where outsourcing is a norm, PBCWUD has taken a different approach in the implementation of ISO 55001. With the executive sponsors and external resources in place, senior leadership recruited people internally to be part of the process. A core group of individuals together with the executive sponsors and a consultant started strategizing on how to best prepare the organization. The team recognized that changes, even if it's for the improvement of the utility, are difficult and often met with hostility. People by nature do not like change.

The ISO Core team, taken from middle management and rank personnel, understood that to get buy-in from the organization, they would have to show how everyone could benefit from asset management. It was equally important that the framework slowly permeates and supports a positive organizational culture towards asset management. By influencing the culture, finding like-minded individuals, and using the ISO 55001 framework to drive improvement and mitigate risks, a new perspective has taken root in the utility.

**Who does Asset Management?**

“PEOPLE do asset management and therefore people, and their knowledge, competence, motivation, and teamwork have a huge influence on the asset management outcomes. Tools and technologies are important: (but) engagement of the workforce, clarity of leadership, and collaboration between departments and functions are the real differentiator of a leading asset management organization.”

**People Do Asset Management, IAM's Big Picture**

The above paragraph succinctly summarizes the strategy used by PBCWUD to get people out of silos and parochial thinking. By incorporating asset management in the culture of the organization and treating culture and people as part of the organization's valuable assets, these factors have led to the successful adoption of ISO 55001 and the asset management system over time.

Aside from the executive sponsors and ISO Core Team, a team of ISO Champions was created. These are individuals that volunteered to promote the framework and provide feedback to senior leadership to ensure that new processes are captured, documented, and complied with. This also provides a forum where ideas for continuous improvement are discussed.
To be an ISO Champion the individual has the following qualities:

- Believes in the organization’s mission and has a drive for asset management excellence
- Is a role model, enthusiastically modeling the right behaviors that become infectious to those around them
- Is subject matter expert and a natural go-to person in the teams they operate in
- Is credible, courageous, and curious to do better

**The Bottom-line: Breakdown of Costs and Benefits**

**How Much Does it Cost?**

<table>
<thead>
<tr>
<th>Period Covered</th>
<th>November 2016 – October 2021</th>
</tr>
</thead>
<tbody>
<tr>
<td>Audit and Certification Cost (including mock audit)</td>
<td>$100,000</td>
</tr>
<tr>
<td>Consultancy Fees</td>
<td>$274,000</td>
</tr>
<tr>
<td>Documented Labor Hours Spent (ISO55001 Related Activities)</td>
<td>2,040 hrs</td>
</tr>
<tr>
<td>Average labor cost per hour (including salaries and benefits)</td>
<td>$76/hr</td>
</tr>
<tr>
<td><strong>Total Internal Labor Cost</strong></td>
<td>$155,040</td>
</tr>
<tr>
<td><strong>Total Consultancy and Certification Cost</strong></td>
<td>$374,000</td>
</tr>
<tr>
<td><strong>Total Cost</strong></td>
<td>$529,040</td>
</tr>
</tbody>
</table>

The table shows that the biggest one-time cost was for the certification process which included a mock audit from the IAM Certified Assessors. Consultancy fees from an outsourced provider included bi-monthly catch-up calls with the ISO core team and scheduled visits to facilitate workshops, training, and maturity assessments. These activities cost approximately $54,800 per year.

Compared to other organizations that are currently implementing ISO 55001, the cost for PBCWUD was comparatively low as most of the tasks, documentation, and in-house facilitation were delivered in-house by the ISO Core Team. By owning the important activities and tasks, the in-house team learned from the process and subject matter experts. The team was agile and able to adjust accordingly to changes brought by the pandemic that started in 2020. The ISO Core Team was also responsible for developing key artifacts such as the Strategic Asset Management Plan (SAMP), PBCWUD’s RACI Chart (Responsible Accountable Consult Inform), critical business process maps, risk appetite statements, performance indicators, and metrics.

**Activities related to implementing the ISO 55001 framework:**

- 44 presentations for the ISO 55001 Campaign (internal and external)
- 6 posters, 3 videos, 9 journal articles, other marketing collaterals
- 32 ISO related workshops, 120 participants
- 55 Artifacts
- 4 Maturity Assessments
- 1 Performance Dashboard Portal
- 15 Business Process Maps
- 22 sessions of Employee Onboarding
- 10 - ISO Executive Sponsors
- 4 - ISO Core Team Members
- 21 - ISO Champions
- 50 Interviewees
- 120 interview sessions
- 549 employees reached
Benefits of the Asset Management Journey

From changing the culture to capturing information and using data to manage assets, to applying best practices in asset management, PBCWUD has benefited in the following areas:

Taking Down the Silos: Improving the Communication Channel

Ultimately the biggest benefit the utility gained from implementing ISO 55001 is strengthening the communication between the different teams. This was reflected in a score of 4.0 in the 7.4 clause, Communication (2). In 2016, the original score was 1.8. In the past, divisions worked under a vacuum with no coordination of work nor regard for the consequence of their actions. Costly mistakes that affected timelines, deliverables, and stakeholders' needs were prevalent. Implementing the asset management system has brought the organization together. When senior leadership helmed the organization's Responsible, Accountable, Consult, Inform (RACI) Chart, this led towards looking at the various areas in asset management and the role each one in the utility plays from field personnel to the utility director.

A clear example of communication between senior leadership and the rest of the organization was the publication of the Asset Management Policy. This document is reviewed on an annual basis (or when needed) and is shared with the whole organization. New employees are also made aware of this as part of their employee onboarding.

Knowledge Capture, Transfer, and Retention

To manage the risk brought by the aging workforce, lack of formal documentation and low retention of talent in the water and wastewater industry, PBCWUD made it a priority to capture business-critical processes that cover capital improvement programs, regulatory, health, and safety processes, operations, and maintenance work management processes, supply chain, and others. Business Process Mapping sessions became the norm in the last five years. In these sessions, subject matter experts were interviewed by the ISO Core Team to cover end-to-end processes and identify all affected and involved stakeholders (internal and external). A diagram with swim lanes was developed to show the relationships and decision points for the process being captured. These documents are used in employee and contractor onboarding and are readily available on the organization's SharePoint site. Key artifacts are updated and reviewed regularly by the ISO Core Team.

Data and Information in Driving Decisions, Managing Risks

Since the utility uses a myriad of applications (CMMS via Maximo, SCADA, ArcGIS, HachWIMs, LabWorks, etc.) to manage its business, PBCWUD is data-rich. Senior leadership has recognized that to make informed decisions, technicians and directors alike rely on the correct information at any given time. Key Performance Indicators (KPIs) are used to measure improvement, quality, efficiency, cost, and risks. Dashboards are used to track pipe breaks, aging work orders, backlogs, and other metrics.
People and Culture as Assets

PBCWUD has recognized that the workforce should always be equipped with the necessary training, support, and resources. People perform the work and drive performance. When empowered with the right tools, processes, and guidance from senior leadership, the people working for the organization can establish performance standards and thresholds, make decisions to reduce risks, identify opportunities in areas of weaknesses, use data to spot trends, monitor asset health, and realize that as an individual they have a significant impact on the achievement of the organization’s mission and drive further value to the business. When people are identified as the greatest asset of the organization, the culture change is more successful. People respond positively to changes when they see consistent behaviors, especially from leadership, continuous communications, and reinforcement.

Continuing the Asset Management Journey Beyond Certification

For PBCWUD the journey does not end with certification. The assessment from the audit becomes the new baseline for the other improvements the organization is planning for the next 25 years as the utility goes into the master planning phase. This provides the Plan-Do-Check-Act cycle of continuous improvement. The utility is looking at leveraging the power of data to move from a daily maintenance type of culture by gaining control of work and setting standards to a performance type of culture where engineered reliability, organization excellence, and proactive maintenance are the norm.

PBCWUD also has joined the Institute of Asset Management USA Chapter and is currently spearheading the South Florida Chapter and plans on helping and learning from other organizations on their asset management journey.

References

(2) ISO 55001:2014, Clause 7 Support, Clause 7.4 Communications
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Author Profiles

John Acton
Assistant Department Director

John Acton is the Assistant Department Director at Palm Beach County Water Utilities Department (PBCWUD), where he has worked for 6 years. Mr. Acton oversees Operations, Maintenance, and Information Technology for PBCWUD, encompassing 5 water treatment plants, 3 wastewater plants, over 1,000 lift stations, and 3,000 miles of pipeline that serve over 600,000 customers. He has over 20 years of strategic planning, project management, and maintenance experience including best management practices in implementing Enterprise Asset Management programs in water utilities, airports, and the pharmaceutical industry. John led the ISO 55001 core team to implement the Asset Management Improvement Program and recently achieved ISO 55001 certification for PBCWUD being the first water/wastewater utility in North America to achieve certification. In his spare time, he mentors employees in Asset Management promotes the Asset Management practice via the South Florida Institute of Asset Management Chapter, and is an active advocate for safety in the workplace, and promoting environmental stewardship.

Ken Gedman
Director of Stantec UK’s Business Consulting

Ken Gedman is Director of Stantec UK’s Business Consulting practice. His professional career spans 30 years, primarily in the water and wastewater utilities sector, with specific experience in asset management, business transformation, and technical assurance. During his career he has held positions with UK water companies, regulators, as well as a number of consulting advisory, technical and operational roles. A Chartered Civil Engineer by profession, he is a member of the Institution of Civil Engineers, Institute of Asset Management, and Change Management Institute.

Melody Tungol
Technical Compliance Manager

Melody Tungol is the Technical Compliance Manager at Palm Beach County Water Utilities Department (PBCWUD) and previously led the Asset Management Team as Asset Manager. Melody co-led the ISO Core Team to implement the Asset Management Improvement Program and prepare the organization for compliance and certification. She has been with the utility for four years and worked in the private sector for over 10 years in Information Technology integration, strategy and planning, content development, and performance evaluation via KPI development and analysis. Melody is a member of the Institute of Asset Management.