



**Sewerage and Water Board of New Orleans
Integrated Master Planning RFI**

REQUEST FOR INFORMATION / FEBRUARY 18, 2020



February 18, 2020

Ms. Patti Wallace
Purchasing Director
Sewerage and Water Board of New Orleans
625 St. Joseph Street, Room 131
New Orleans, LA 70165

Subject: Sewerage and Water Board of New Orleans Written Response and Firm Profile for Integrated Master Planning RFI

Dear Ms. Wallace:

Faced with significant challenges related to infrastructure, climate resiliency, workforce, and public trust, the Sewerage and Water Board of New Orleans (SWBNO) is working to overcome tremendous obstacles by transforming the utility into a more efficient and accountable operation to accomplish further progress. As a key step in this process, SWBNO is embarking on a long-range, integrated planning effort to help propel SWBNO and the city into the future.

Raftelis is responding to SWBNO's call for input on developing an innovative long-term, integrated plan. We are uniquely suited to help SWBNO. We have assisted more than 1,000 major utilities across the country, including working closely with the utilities serving 33 of the 50 largest cities in the US, many of which are facing similar challenges as New Orleans. Our team includes the leading minds in utility management, strategic planning, stakeholder engagement, communications, organizational development, and integrated planning.

While SWBNO's Request for Information focuses on long-term integrated planning, Raftelis believes a broader approach is required, which begins with community engagement, an organizational readiness assessment, and strategic planning. Our approach is based upon our extensive experience assisting the utilities of cities that have reinvented themselves while dealing with similar complex challenges. We're suggesting that integrated planning fit into a comprehensive strategic framework. The framework outlined in this document will provide the organization with a way to align capital, financial, and workforce efforts with community service, sustainability, health, and economic goals.

The City of New Orleans and SWBNO have made considerable strides in organizational improvement, accountability, and transparency. This effort will continue the organization's progress but allow it to do so in a sustainable and community-oriented manner. We have been honored to work with SWBNO on many past projects, which we believe provides us a deeper understanding of SWBNO's overall goals and definition of success, and which will translate into a positive outcome. This background, along with our extensive experience and industry leadership, put us in a unique position to help SWBNO on this important effort.

We are proud of the resources our team can offer and we welcome the opportunity to assist SWBNO in successful completion of this project. Should you have any questions or need additional information, please contact me directly at pbrandt@raftelis.com or by phone at 704.936.4433.

Sincerely,

A handwritten signature in black ink, appearing to read 'P. Brandt'.

Peiffer Brandt
Chief Executive Officer

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Photo on page 10 courtesy of Pedro Szekely (Flickr) and photo on page 11 courtesy of Chris Cast (Flickr)

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Approaching the Future of New Orleans

Cities must reinvent themselves periodically, taking the best of what made them great and introducing new ideas, opportunities and approaches, and New Orleans is on the cusp of just such a reinvention. The Sewerage & Water Board of New Orleans must be an integral part of this reinvention as its services are essential to creating a truly livable and prosperous community. SWBNO faces real challenges, but these challenges also present enormous opportunities.

SWBNO’s RFI seeks answers to three distinct questions regarding challenges for SWBNO’s stormwater/drainage, wastewater/sewerage, and drinking water systems, and approaches to address these challenges. While we have answered these questions later in this section, we believe it is important to begin with a more comprehensive discussion that considers SWBNO’s organizational challenges, opportunities, and strategies around integrated planning and an organization-wide strategic framework.

SWBNO’s Request for Information addresses the need to successfully implement impactful long-term integrated planning by leveraging prior studies and reports, engaging internal and external stakeholders, and optimizing organizational performance, using a broad approach. We concur and believe that achieving the desired outcome of integrated long-term planning starts with community engagement and strategic communications, an organization-level readiness assessment, and a stakeholder-driven strategic plan. This recommended approach is based upon our extensive experience assisting the utilities of cities that have reinvented themselves despite dealing with similar complex challenges. We’re suggesting that integrated planning fit into a comprehensive strategic framework. The framework will provide the organization with a pathway to align capital, financial, and workforce resources to optimize its

ability to protect public health and the environment, fulfill its role to support the City’s economic vitality, and execute on its organizational priorities.

We commend SWBNO for recognizing that the traditional approach, which begins with identifying long-term capital projects and then tries to engage stakeholders and fit projects into community plans, can be less effective than beginning with an overall strategic framework built on stakeholder engagement and incorporating organizational change, as well as city initiatives and priorities. We agree with the vision that a wider and more inclusive strategic focus is necessary to develop a framework for integrated planning. We are eager to partner with SWBNO’s leadership to assist the organization as it seeks a pathway to overcome

THE RAFTELIS APPROACH TO INTEGRATED PLANNING FOR SWBNO



We have learned from working with the utilities in cities like Pittsburgh, Charlotte, Washington, D.C., Baltimore, Tampa, and Philadelphia (just to name a few) that infrastructure cannot be the only focus area. Infrastructure is a vehicle to help achieve a shared solution. The foundation must be a strong strategic plan and framework developed by actively engaging a diverse and representative group of stakeholders.

a historical siloed focus on assets and infrastructure. This past approach may not have always adequately addressed sustainability or human support required for execution, lasting levels of service, or community support.

Our proposed approach captures the spirit of this effort's ultimate goal and is founded in making SWBNO a stronger, more robust organization, that is widely supported by the public. With this foundation, long-range integrated planning becomes proactive, effective, and sustainable for the benefits of the organization and the community.

The inclusion of an organizational readiness assessment, which engages key stakeholders and informs the strategic planning efforts, will lay the groundwork for a more collaborative integrated infrastructure planning program. SWBNO's vision is consistent with a number of other similar programs.

Boston would not be the city it is today without the participation of Massachusetts Water Resources Authority and Boston Water and Sewer Commission in cleaning up Boston Harbor, an effort at one time that was thought to be too complex and too expensive to undertake. Boston faced, and still faces, many of the same challenges as New Orleans including sea level rise, aging

infrastructure, and workforce issues. Pittsburgh is another city that has faced grave challenges but is turning them into opportunities. Once a dominant manufacturing hub, it is now known for health care services and higher education institutions. The Pittsburgh Water and Sewer Authority and the Allegheny County Sanitary Authority (ALCOSAN) have dealt with widespread flooding and affordability issues, as well as many of the same workforce and aging infrastructure challenges as Boston and New Orleans. They have turned failing assets into parks and supported local growth through workforce development and minority business involvement.

Raftelis has helped several major cities on their paths to transformation by working with their utilities on strategic planning and organizational development activities using the type of inclusive framework that we are suggesting for SWBNO. We have learned through this experience that infrastructure cannot be the only focus area. The foundation must be a strong strategic plan and framework developed by actively engaging a diverse and representative group of stakeholders. The plan must be achievable as well as inspirational. It must also align with and support the other transformational activities occurring at the utility and within the city.

A Shared Vision Leads to a Shared Plan

New Orleans' renaissance can only be achieved through the creation of a shared vision and a shared strategic framework. SWBNO must focus on how it engages with stakeholders and other initiatives to create integrated approaches. It must also learn from the utilities in other cities and gain from their experiences facing similar problems. Our experience will provide insights into the critical elements of the successful creation and execution of a transformational strategic effort.

Culture Change Accompanies Strategic Plans

Within SWBNO, cultural change is occurring. Leadership is striving to move the organization toward being proactive and transparent, no matter what the challenges of the day. This direction is most noticeable in the consistency and timeliness of communications during crises, but the legacy of past miscues and misinformation is prevalent as the utility works to change perceptions. Culture change needs to move forward and become a permanent part of SWBNO's strategic framework.

Culture change brings both excitement and trepidation. Accomplishing the steps toward a new vision for a shared future cannot be done by leadership alone—a fully engaged workforce is necessary. SWBNO's knowledgeable employees should be integrated into decision-making. A significant effort to enhance inclusivity and two-way communication will improve this effort. Developing an internal communication strategy will help. Techniques that are used to communicate and engage employees include focus groups, surveys, workshops, use of an intranet and social media, and texting campaigns.

Trust is Built Through Transparency

Deliberate stakeholder and public engagement is the most important task in the development of SWBNO's strategic framework. A public engagement plan describes the purpose of the strategic



Pittsburgh Water and Sewer Authority's (PWSA) strategic plan, Focusing on the Future, which Raftelis developed, and Becoming the Best, PWSA's 2018 organizational performance report, are guiding the utility towards its goals.

framework, the activities and decision points, and the schedule for public involvement activities. As an example of the types of activities that can be included in a public engagement plan, Raftelis uses a Public Engagement Toolkit that contains a broad spectrum of tools that can be used to build on existing communication resources. Some of the techniques that should be considered include visualizations with graphics, media outreach, public workshops and presentations, and written materials and infographics to aid in understanding.

Shared problems create opportunities for shared solutions. Open dialogue motivates elected officials and the public to devote resources to solutions and helps justify necessary rate adjustments, even within financially distressed communities. The Pittsburgh Water and Sewer Authority, for example, recently passed a 48% rate adjustment with wide public support after it communicated its need to replace failing treatment and storage assets. This adjustment was accompanied by a public outreach campaign, an expanded affordability program, and a strategic framework for the future – *Focusing on the Future*.

Support is Gained by Creating a Coalition

SWBNO is embarking upon a difficult journey, which requires widespread community support. Identifying relevant stakeholders that can come together to create a coalition that shares a vision for the future and influences the public to be engaged in the process is key. A coalition can serve as a sounding board for vetting potential

HISTORY OF SIMILAR SUCCESSES

Raftelis has an impressive track record.

Raftelis staff have assisted 1,000+ utilities throughout the U.S. with financial and management consulting services, with wide-ranging needs and objectives similar to those of SWBNO. Our extensive experience will allow us to provide innovative and insightful recommendations to SWBNO, and will provide validation for our proposed methodologies ensuring that industry best practices are incorporated.

impacts; sharing historical knowledge relevant to communities and neighborhoods; and providing community views and advice.

Understanding is Achieved Through Inclusive, Two-Way Communication

Utilities have long been silent servants. This approach does not work for big community-level challenges. SWBNO needs to have an open channel of communication with a wide variety of stakeholders, using multiple communication vehicles. All interested individuals and groups within the community should be identified to allow for inclusive communication during the development of SWBNO’s strategic framework. This is critical in communities such as New Orleans, where there is a legacy of environmental justice concerns. Ensuring inclusive communication means that the community will have an opportunity to understand SWBNO’s

OUR PUBLIC ENGAGEMENT TOOLKIT

Working with client communities at the outset of a project means we can apply the right tools to meet the public where they are today and can build a community perspective and vision into long-term utility solutions. Facilitating inclusive two-way communication maximizes the utility’s ability to build trust through transparency.



CONTROLLED

- Social Media
- Email Newsletters
- Door Hangers
- Feedback Cards
- Online Surveys
- Infographics
- Fact Sheets
- Video



FACILITATED

- Display Maps at Neighborhood Events
- Community Visioning Workshops
- Customer Panels
- Instant Polling
- Youth Workshops
- Stakeholder Interviews
- Information Sessions
- Water Service-Specific Activities
- Open Houses
- Advisory Committees
- Coalition Building



UNSCRIPTED

- Online Forums
- Interactive Mapping
- Texting Campaigns
- Tours
- Pop-Up Events/Displays

Each October, the Value of Water Coalition runs the Imagine A Day Without Water campaign. This effort captures Instagram and Facebook for a single day with cheeky memes such as “no water, no beer.” The idea is to get Americans to imagine going without water services for one day—it’s necessary because most Americans have never experienced this. In cities where the infrastructure is failing though, the campaign cuts a bit close to home. The people of New Orleans know the value of drinking water, sewer service, and stormwater drainage better than most. Harnessing New Orleans’ innate understanding that safe drinking water, clean waterways, and homes that are protected from flooding are essential to the city they love is the key to building a shared vision for the future of SWBNO.

vision for the future, and SWBNO will understand the concerns and interests of the community it serves.

Regular communication and involvement of stakeholders and the community throughout the strategic framework process builds trust and understanding. It is critical that information is made available during the planning process, so the public is given an opportunity to understand and ask questions before decisions are made. Techniques that could be used to communicate include public workshops, pop-up meetings, newsletters, media outreach, social media, community and neighborhood partnerships, a customer advisory committee, and website updates.

Investments Get Supported When Stakeholders Understand and Participate in the Vision

Stakeholders need to clearly see what various levels of service truly cost. The cost of provided services and infrastructure investments is directly tied to the level of service provided and level of risk accepted by the utility. The need to engage stakeholders becomes even more essential to determine the community’s desired levels of service and willingness to pay for these services.

Plans must not just address what the city and the SWBNO will do for stakeholders, it

must also address what stakeholder need to do to support the vision. This might mean helping with water conservation targets, changing behaviors as an employee of SWBNO, or keeping areas around green infrastructure assets free of trash. People must understand how their behaviors connects with the success of the overall plan.

It’s all “One Water”

The One Water movement is a growing chorus of people, ideas, and action shifting the center of gravity in water management to more sustainable, integrated, and equitable approaches. So often at utilities the focus is on the assets and technology. Less attention is paid to the people—their struggles, successes, and insights. Successful utilities are driving a One Water movement—an approach to water stewardship that is innovative, inclusive, and integrated. The movement is organized around six arenas for action: reliable and resilient utilities, thriving cities, competitive business and industry, sustainable agricultural systems, social and economic inclusion, and healthy waterways.

A Strategic Approach to Integrated Planning

The traditional elements of EPA’s integrated planning framework involve six elements that foster efficiencies to best prioritize capital investments and achieve our human

health and water quality objectives. This approach can also lead to more sustainable and comprehensive solutions that improve water quality and provide multiple benefits that enhance community vitality. By incorporating traditional elements of integrated planning into the overall strategic framework proposed will provide economic benefits for the community, avoid organizational frustrations, operational inefficiencies, and lack of community understanding and support. Our approach suggests developing a solid foundation and framework that will prepare the

organization for each element of integrated planning and provide organizational awareness, performance optimization, and successful implementation of future infrastructure projects.



STEPS IN THE INTEGRATED PLANNING PROCESS



- Describing water quality, human health, and regulatory issues
- Existing wastewater and stormwater systems
- Opening channels of communication with relevant community stakeholders
- Evaluating the performance of projects identified in a plan
- Identifying, evaluating, and selecting alternatives and implementation schedules
- Selecting new projects or modifications to ongoing projects based on changing circumstance

Shared Challenges are Shared Opportunities

Revitalization plans for the city and SWBNO must consider the realities of shared challenges facing the community. While many might look at these as insurmountable, they are not. Other cities have taken on similar challenges and are conquering them. They have done it by inspiring innovative and creative solutions based on new ways of thinking. Raftelis has worked with numerous communities that have faced similar challenges and have devised creative solutions to address water, wastewater, and stormwater services.

Opportunity #1: Population
The population of New Orleans peaked at 627,000 in the 1960s. Since then, the population has trended downward, but has experienced periods of noticeable gains and steeper losses, most notably after Hurricane Katrina. Across the country, per capita water use continues

to go down as people adopt more efficient practices and fixtures. Less per capita usage and a gently changing population provide an ideal opportunity to right-size water and wastewater infrastructure. Excess capacity in some areas provides planning flexibility and allows for the use of alternative solutions. Similar trends have occurred in cities like Detroit and Washington, D.C. where oversized infrastructure is being downsized or eliminated, reducing operating costs and shrinking the projected cost of capital projects.

Opportunity #2: Demographics
Today, the average City of New Orleans resident is a 37-year-old, high school educated, black female with a median household income of \$39,576, as compared to \$45,146 in the state of Louisiana and \$63,179 in the United States. This

fictitious person’s household income has dropped by 7% in real dollars since 1979. She, like more than half of renters in New Orleans, find housing costs to be unaffordable (more than 35% of pre-tax income). Utility services need to be more affordable to make New Orleans more livable. Well-designed affordability and conservation programs, along with rate designs that encourage sustainable behaviors, can be coupled with more efficient infrastructure to make utility services more affordable. Cities like Philadelphia are adopting

these types of programs to share the burden of utility services more proportionately across the customer base.

Opportunity #3: Environment
Much of New Orleans lies below sea level and is likely to experience higher temperatures, increased flooding, and more frequent and stronger hurricanes in the future. The city has experienced a 62% increase in extreme rain events since 1950, with Hurricane Katrina dropping upwards of 15 inches. As recently as

RESOURCES AND EXPERTISE

This effort is significant to not only SWBNO, but also the City of New Orleans. It will require comprehensive skillsets to address all issues.

With nearly 120 consultants, Raftelis has the largest water-industry financial and management consulting practice in the nation. Our depth of resources will allow us to provide SWBNO the expertise necessary. We have experts in the key areas of focus, like strategy development, performance management, community visioning and outreach, communication, financial analysis, and long-term planning.

2019, the city saw rain events that exceeded eight inches in several hours, caused extreme flooding, and overtopped canals, as well as lightning storms that disabled pumps. By 2050, Louisiana is projected to see a 1.9 ft increase in sea level rise and New Orleans is expected to experience up to 120 days per year with a heat index above 105 degrees, coupled with the city sinking at a rate of approximately one centimeter per year. While these trends sound dire, opportunities abound for innovative planning. Green infrastructure solutions and creative land use may provide opportunities to address multiple challenges. The Puerto Rico Aqueduct and Sewer Authority (PRASA) faces similar challenges and is

re-evaluating key service delivery assumptions to build more resilient infrastructure.

**Opportunity #4:
Infrastructure**

Infrastructure built to support a larger and less conservation-minded population is aging and has fallen into disrepair in many areas, leading to water quality issues. Almost half of the city's 1,500+ miles of water lines were installed prior to 1940, and about a third of those are more than 100 years old. A report released in March 2019 found that SWBNO loses 55% of the water it treats to leaks, which can cause sinkholes and destabilize roads. Many cities have found that old infrastructure, especially pre-World War

II water and wastewater assets are more robust than newer wastewater assets. Cities like Washington, DC, New York, and Philadelphia are still using pre-civil war assets by strategically looking at ways to rehabilitate and preserve them. In many cases, this has involved strategic condition and risk assessments to identify which should be replaced with new infrastructure, and which should be rehabilitated or left in place undisturbed.

Opportunity #5: Workforce

SWBNO has been subject to scrutiny for workforce practices (e.g., two employees were allegedly found asleep as water pressure dropped in the city's east bank, leading to a precautionary boil

advisory), corruption (e.g., The Times-Picayune reported that previous SWBNO management dictated what the agency's audit department should and should not investigate) and lack of inspection activities (e.g., a car that had disappeared during Hurricane Katrina was recently discovered and removed from a Mid-City drainage canal). The utilities serving cities from Boston to Anchorage have dealt with similar challenges in the past and have fixed them. Working with labor unions on contract modifications and rehabilitation of facilities has provided opportunities for engagement with the workforce.



RFI Questions 1-3

Integrated, Long-Range Planning Challenges

The SWBNO Request for Information requests considerations to the utility's biggest challenges in 50 years and the best approach to integrated, long-range planning for stormwater/drainage, wastewater/sewerage, and drinking water. While each business line is discrete with unique challenges to the individual service it provides, there are overarching long-range challenges that overlap business segments and should be considered holistically across each for providing the most effective and efficient services to the city and community.

Level of Service Engagement and Short & Long-Term Implementation Activities.

The root causes of stormwater management issues are more frequent and intense annual rain events, stormwater infrastructure not designed to handle excessive rainfall, along with building code, floodplain, and development ordinances not structured to properly manage rainfall patterns on private and public property. To address these challenges, a stormwater management level of service (LOS) – defined as a level of protection against surface flooding and basement sewage backups – needs to be developed with stakeholder input. The LOS can be used to determine the SWBNO's long term capital projects and financial planning for stormwater management.

Level of service must also be considered for sanitary sewer and drinking water systems. Sanitary collection system levels of service include

adequate system capacity for all service areas, eliminating system bottlenecks due to pipe blockages, reducing peak flow volumes through inflow/infiltration (I/I) controls, and providing rapid and effective emergency response service acceptable to customers. Customers typically have clearer expectations for drinking water, which rely heavily on operational procedures of the utility, quality of water and service provided, and sufficient response times to emergency repairs or replacements. Minimizing cost while maximizing service and performance are one of the greatest challenges.

The LOS must address short- and long-term performance goals, including water quality and quantity management, infrastructure reliability and resiliency, and environmental standards as well as the customer's expectations. Level of service has direct impact on customer costs. Defining a LOS will assist SWBNO in adopting the most equitable and affordable strategies and standards to address regulatory water quality issues, as well as city-wide surface flooding and sewage basement backup protection.

Comprehensive Asset Management Short- & Long-Term Implementation Plan (CAMP). Like many other cities across the country, New Orleans has a significant portion of its stormwater, sanitary, and drinking water infrastructure in need of renewal and replacement. Much of the infrastructure has suffered from underinvestment over

LOCAL KNOWLEDGE

Our extensive experience with SWBNO and other comparable utilities will allow us to move efficiently.

Raftelis has worked closely with SWBNO on finance and strategy issues since 2007. We've worked on SWBNO projects so we are aware of the intricacies of the organization, internal and external challenges, and key decision makers and stakeholders of the organization. This intimate knowledge and deep understanding provides us with unique perspective on the most pressing needs for SWBNO's long-term success.

an extensive period of time. A CAMP is implemented by understanding the condition, capacity, and level of criticality of existing infrastructure and then developing asset renewal plans founded on solid capital budget needs. A critical part of a CAMP's success is a structured implementation plan with consistent understanding between all levels of the utility organization and stakeholders with both striving to meet common metrics and goals.

Integrated Watershed Management with EPA's Integrated Planning Approach. Raftelis uses the term Integrated Watershed Management (IWM) when explaining how utilities can take full advantage of EPA's Integrated Planning provisions now incorporated into the Clean water Act. IWM seeks to meet SWBNO's regulatory requirements, climate change challenges and asset renewal needs by identifying an affordable combination of new green, grey, and watershed infrastructure, strategic existing asset renewal, and maximizing capacity of existing infrastructure so that singular projects can

achieve multiple objectives. See Figure 1 below. A key to this approach is identifying an affordable schedule over which projects can be implemented and receive fully regulatory credit and customer and stakeholder buy-in.

For example, Raftelis' staff have worked with the Pittsburgh Water & Sewer Authority (PWSA) and City of Pittsburgh to develop IWM plans for addressing both its wastewater and stormwater regulatory requirements, climate change challenges, and asset renewal needs. PWSA's IWM city-wide green and grey infrastructure plan addresses its CSO and stormwater CWA obligations, and reduces surface flooding and sewage backups. Part of this plan includes the design and construction of stormwater source control projects in key areas across the City to not only reduce CSO and reduce stormwater pollution, but also increase the level of protection against surface flooding and sewage backups. PWSA found its IWM Plan is significantly less expensive than utilizing only grey infrastructure to address CSO requirements paired with building additional

infrastructure to address stormwater management and flooding. They have also found that stakeholders embrace the idea of combined green and grey infrastructure more than traditional grey-only solutions.

In addition to the above considerations that should be addressed utility-wide and across business lines, there are also individual challenges that will need to be addressed on a segment-by-segment basis. These challenges and considerations are discussed individually for stormwater/drainage, wastewater/sewerage, and drinking water.

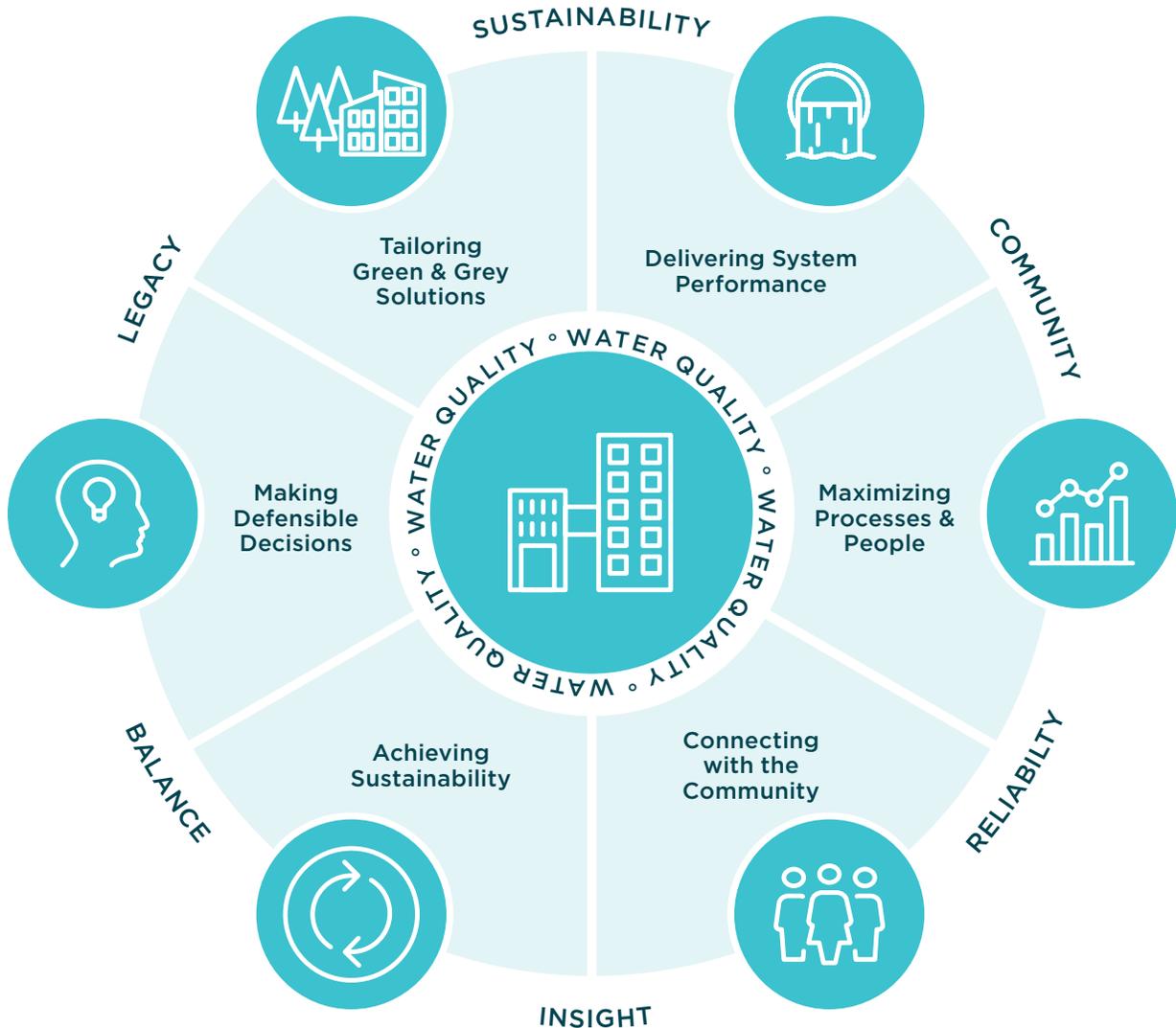
Financial Evaluation of Implementation Activities

Financial elements that Raftelis will evaluate include:

- Affordability Analysis & Program Development
- Capital Improvement Planning / Prioritization
- Debt Issuance Support

- Economic & Financial Evaluations
- Financial Planning
- Rate, Charge, & Fee Studies

We will develop a roadmap for future financial decision making based upon a comprehensive understanding of current conditions, specific project implications, and long-term objectives; our past financial work with SWBNO provides us with a substantial knowledge of where SWBNO has been which is key to informing the decision-making processes associated with where SWBNO wants to go. Having co-authored many of the industry’s leading guidebooks regarding utility financial issues (including manuals for WEF and AWWA), our team is prepared to provide the resources and expertise necessary to identify the financial policies, business processes, and rates and charges that will provide financial integrity and equitable recovery of costs to achieve SWBNO’s objectives while keeping the best interest of the community forefront.



Integrated Watershed Management

Integrated watershed management delivers greater water quality & community benefits at a lower cost to your community

Question 1

What will be New Orleans' biggest stormwater/drainage challenges in 50 years and what is the best approach to integrated, long-range planning to address those challenges?

New Orleans shares both common and unique stormwater/drainage challenges with other mature coastal cities. These challenges fall into four broad categories:

Stakeholder Participation

Stakeholders cannot be viewed as bystanders to solutions or simply as a funding source. New Orleans will need to engage them heavily to implement innovative solutions and get their support for investment. Creative solutions will be needed including green infrastructure that will require community support. Stormwater also offers a unique opportunity for stakeholder participation as it is the most visible service line as compared to wastewater and drinking water. The community can see almost immediately impacts of a storm event and runoff it generates. Executing strategic projects that can demonstrate equally immediate benefits within the community and seeking stakeholder participation in prioritizing these projects can produce significant community support.

Climate Change

New Orleans should expect more frequent and more intense storm events with increased localized surface flooding and sewage backups, which will be exacerbated by sea level rise and ground level subsidence. Climate change should be a consideration at the forefront of Integrated Watershed Management



Pictured: Raftelis staff assisting NOLA Tree Project in replanting trees destroyed by Hurricane Katrina during our 2020 company retreat.

planning and project implementation.

Asset Management

The stormwater/drainage infrastructure is aging and not sized for the anticipated weather events of the next century. A comprehensive assessment, renewal, and an investment plan is needed that integrates with overall community priorities. Asset management is related to level of service, and determining community-accepted levels of service for stormwater and drainage is typically more challenging than that of wastewater and drinking water. Stakeholders

will need to be directly engaged in establishing a city and utility-wide stormwater level of service to buy into this plan.

Changing Regulations

Stormwater will be regulated more heavily in the future requiring increasing levels of treatment to meet in-stream water quality standards, including nutrients. Standards will likely become more prescriptive. As the utility and city are required to develop regulations to meet these standards, costs for implementation may trickle down to stakeholders including developers and builders. Cost impacts

of regulations will need to be understood and properly conveyed to the community. At some point in the future all stormwater run-off may need to be treated. Additionally, BMP retrofits may become mandated to address areas that produce negative water quality and quantity impacts but were built prior to post-construction regulations. Significant analysis and policy decisions will need to be made by the utility; such as who will pay for these retrofits, who will provide long-term maintenance, and how will this be communicated to customers and property owners.

Question 2

What will be New Orleans' biggest wastewater/sewerage challenges in 50 years and what is the best approach to integrated, long-range planning to address those challenges?

New Orleans shares both common and unique wastewater/sewerage challenges with other mature coastal cities. These challenges fall into four broad categories:

Asset Management

The wastewater/sewerage infrastructure is aging and is not sized to treat combined flows during extreme weather events. Additionally, beyond infrastructure the public typically has strong opinions on acceptable levels of service relative to wastewater. Customer levels of service will need to be verified as well as ensuring that internal operations support this level of service. In developing and maintaining a sound asset management program, the opportunity for significant stakeholder engagement to deepen community relationships exists.

New Regulations

More information about contaminants will compel regulatory agencies to treat wastewater to higher standards. This will require increasing levels of treatment to meet water quality standards and may result in significant capital investments such as the need for increased treatment capacity at various facilities including treatment plants.

Implementing Alternative Flow / Contaminant Reduction Strategies

Per capita water use will continue to trend down and cost pressures will make it more attractive for customers to reduce their wastewater contributions to the SWBNO system. SWBNO will need to work closely with customers to manage the role of on-site

treatment/reuse/flow reduction plans with system-wide infrastructure projects.

Implementing Integrated Watershed Management (IWM)

By implementing IWM, investments and limited capital funding can be prioritized and allocated to the stormwater, wastewater, or drinking water projects that provide the greatest water quality and community benefits. Investments can also be made to support alternative/innovative solutions such as onsite wastewater recycling and flow reduction strategies principally grounded in water conservation and reduction of certain inflow.

In the case of stormwater and wastewater, IWM allows SWNBO to answer key regulatory and customer service questions such as:

- “If I invest \$1 million on this project, how many days of increased compliance will I achieve?”
- “If I invest \$1 million on this project, how many fewer surface flooding incidents or sewage backups will occur and how many residents will be impacted?”
- “If I invest \$1 million on this project how many more years of remaining useful life will I add to the renewed asset and is that reasonable and justified?”

The goal is to use IWM to develop efforts that can meet these multiple goals with singular investments.



Question 3

What will be New Orleans’ biggest drinking water challenges in 50 years and what is the best approach to integrated, long-range planning to address those challenges?

New Orleans shares both common and unique drinking water challenges with other mature coastal cities. These challenges fall into four broad categories:

Asset Management

All SWBNO’s infrastructure is aging, but the water infrastructure is among the oldest and the most susceptible to catastrophic failure resulting in threats to public health. Protecting public health is of the utmost importance and one of the most basic levels of service provided by a utility.

New Regulations/Old Contaminants

More information about old contaminants like lead will compel regulatory agencies to develop new rules. These will be accompanied by new rules for old contaminants like PFOS/PFAS, endocrine disruptors, pharmaceuticals, whose impact we are only now starting to understand. These contaminants will require increasing levels of treatment to meet water quality standards.

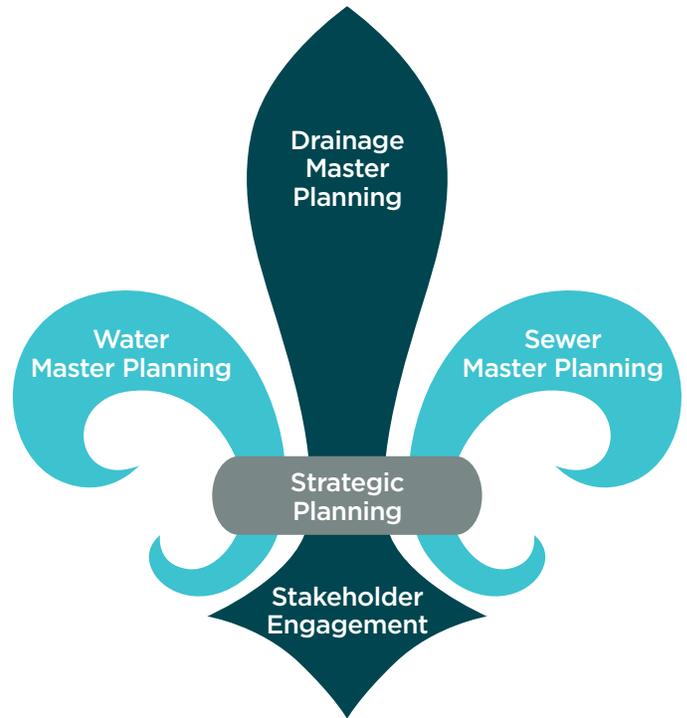
Reduced Per Capita Demands

Per capita water use will continue to trend down and cost pressures will make it more attractive for customers to curtail water use. More costs will need to be part of the fixed portion of a customer’s bill or the demand-based portion will need to increase drastically. This will put pressure on affordability.

Stakeholder Participation

Stakeholders will scrutinize water treatment and distribution systems, but also voice concern about costs. Reconciling the conflicting viewpoints will require intense stakeholder education and involvement in solutions. As SWBNO embarks on a more robust and mature asset management program to address water infrastructure, emphasis should be placed on opportunities to engage stakeholders throughout this process, as well as finding ways to tell SWBNO’s story in a manner that flips the script from traditional project engineering to community building and involvement.

Each phase of the strategic framework for SWBNO will have financial implications that impact SWBNO and the New Orleans community. Perhaps the most visible element of any plan, and often the one that gains most public scrutiny, is its cost. Financial impact should be considered throughout every stage of SWBNO’s strategic framework from strategic planning to organizational readiness assessments to specific infrastructure projects. Funding options, timeline, and overall community impact must be evaluated and used as part of any decision-making process. At the core of SWBNO’s journey through this process will be maintaining revenues that support sustainable operations and long-term planning.

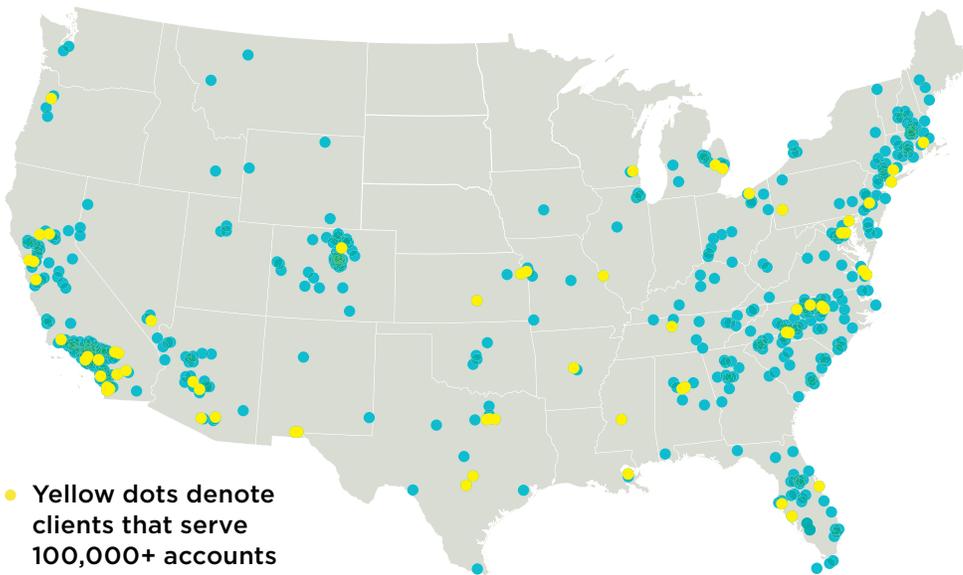


Raftelis Utility Partners

RAFTELIS HAS THE MOST EXPERIENCED UTILITY FINANCIAL AND MANAGEMENT CONSULTING PRACTICE IN THE NATION.

Our staff have assisted more than 1,000 utilities across the U.S., including some of the largest and most complex agencies in the nation. In the past year alone, Raftelis worked on more than 600 financial/organizational/technology consulting projects for over 400 water, wastewater, and/or stormwater utilities in 40 states, the District of Columbia, and Canada.

This map shows some of the utility clients that we have assisted.



● Yellow dots denote clients that serve 100,000+ accounts

Raftelis has provided financial/organizational/technology assistance to utilities serving more than

25% of the U.S. population.

This list shows a sample of the large water, wastewater, and stormwater utilities that we have assisted with financial and management consulting. A more comprehensive list can be provided upon request.

AL	Birmingham Water Works Board
AR	Central Arkansas Water
AZ	Phoenix, City of
AZ	Pima County
AZ	Tucson Water
CA	Alameda County Water District
CA	Central Contra Costa Sanitation District
CA	East Bay Municipal Utility District
CA	Long Beach, City of
CA	Los Angeles, City of
CA	MWD of Southern California
CA	San Diego, City of
CO	Boulder, City of
CO	Denver Water
DC	DC Water
FL	Tampa, City of
KS	Wichita, City of
KY	Louisville Water
LA	New Orleans, Sewerage & Water Board of
MA	Boston Water & Sewer Commission
MD	Baltimore, City of
ME	Portland Water District
MI	Detroit Water and Sewerage Department
MO	St. Louis MSD
MS	Jackson, City of
NC	Charlotte Water
NC	Raleigh, City of
NY	New York City Water Board
OH	Northeast Ohio Regional Sewer District
OR	Portland Bureau of Water, City of
PA	Philadelphia Water Department
PA	Pittsburgh Water and Sewer Authority
TN	MWS of Nashville and Davidson County
TX	Austin, City of
TX	Dallas, City of
TX	El Paso Water Utilities
TX	North Texas MWD
TX	San Antonio Water System
UT	Salt Lake City
VA	Richmond DPU
WA	Seattle Public Utilities
WA	Tacoma, City of
WI	Milwaukee Water Works
WI	Milwaukee Metropolitan Sewerage District

Industry Thought Leaders



Melissa Elliott APR

Director of Strategic
Communication Services

Melissa's 25+ year public engagement career has been focused on helping utilities and municipalities tell their stories. Melissa has extensive experience working with elected officials, stakeholders and the public on issues as diverse as drought, water quality, affordability, rate structure change, impactful construction projects, rate increases, customer assistance programs, and demand management. Melissa is President-Elect of the American Water Works Association, and a former chair of AWWA's Public Affairs Council.



Doug Bean

Director of Government Services

Doug's career has been built around serving utilities and the public sector. He was the former City Manager of Asheville, NC and the Director of Charlotte-Mecklenburg Utilities (now Charlotte Water) and oversaw the organization's regional growth to serve more than one million people. A frequent lecturer at professional associations and academic institutions, Doug has, since joining Raftelis, provided a variety of services for financial and management consulting engagements including facilitating stakeholder and public involvement, strategic plan development, workshop facilitation, and organizational assessment.



Samantha Brown PE

Senior Consultant

Samantha focuses on assisting agencies and local governments in regional policy development and collaborative program implementation. As a manager at a regional wastewater and stormwater utility and founding member of the Great Lakes Stormwater Collaborative, she has implemented integrated planning framework and educated agencies on the cost and community benefits of such an effort. Samantha's blend of technical expertise with stakeholder engagement leads to strong consensus building among stakeholders and successful implementation of new utility policies, regulations, and programs.



Mac Underwood CPA

Principal Consultant

Mac has 32 years of experience serving in leadership positions within utility and municipal agencies, including serving as the leader of Birmingham Water Works Board for 15 years. His tenure was marked by implementation of a major capital improvements program, financial modeling that led to AA credit ratings from two rating agencies, technology advancements that improved efficiency, implementation of sustainable strategies in buildings and operations, and establishing employee development plans and succession planning process designed to provide long-term sustainability across a diverse organization.



Henrietta Locklear

Vice President

Henrietta specializes in working with local government staff, stakeholders, and elected officials to identify solutions and implement programs to meet environmental and public health challenges. Henrietta is experienced in all aspects of utility development work, with particular focus on stormwater policy analysis and development, and data system performance. She has developed utility customer assistance and affordability programs with extensive public input processes for cities like Philadelphia and Boston.



Seth Garrison

Senior Manager

Seth combines more than 15 years of hands-on experience as the former General Manager of a regional utility and as an elected board member of two water and wastewater utilities, with an additional 15 years of consulting experience advising several of the largest and best-known public entities in the U.S. on management, organizational development, operations and maintenance practices, and strategy. Seth is the Chair of the AWWA's Strategic Management Practices Committee, which recently rewrote AWWA's M5 Utility Management Manual, and participates on the committee that produces AWWA's Benchmarking Performance Indicators for Water and Wastewater.

Project Profiles

Below, we have provided descriptions of transformative efforts that we have worked on that are similar to those needed at SWBNO. We have included references for each of these clients and urge you to contact them to better understand our capabilities and the quality of service that we provide.

Pittsburgh Water & Sewer Authority

PENNSYLVANIA

Reference: Robert Weimar, PE, BCEE, Executive Director
P: 412.255.8960 / E: rweimar@pgh2o.com

The Pittsburgh Water and Sewer Authority (PWSA) has struggled for decades with inefficiency, underinvestment in infrastructure, and a lack of public support. Thanks to PWSA's strong leadership and the help of the team from Raftelis, things have turned around measurably. Raftelis has provided PWSA an array of financial, organizational, and program management assistance. By working side-by-side with PWSA leadership and coordinating with various municipal, PWSA, and community stakeholders, PWSA is addressing governance, organizational, and operational efficiency issues.

The Raftelis team provided an aggressive plan that convinced business leaders and community officials that PWSA had a framework for success. Raftelis is now assisting PWSA to implement elements of the Compliance and Organizational Plan including aligning PWSA practice with Pennsylvania Public Utility Commission (PUC) requirements and increasing customer levels of service. Highlights of program management optimization and associated services provided for PWSA included:

Comprehensive Performance Assessment and Development Of PWSA's Strategic Plan, "Focusing On The Future"

The plan identified five goal areas encompassing all the enhancements needed to ensure that PWSA is operating as efficiently and effectively as possible. These goal areas are supported by 55 key metrics developed based upon industry benchmarks and expected customer levels of service for the drinking water, wastewater, and stormwater utilities. Each goal area addresses trends of customer expectations and the changing requirements of PWSA's service delivery. Customer level of service metrics have been identified as well as the required internal technical level of services necessary to maintain these customer expectations

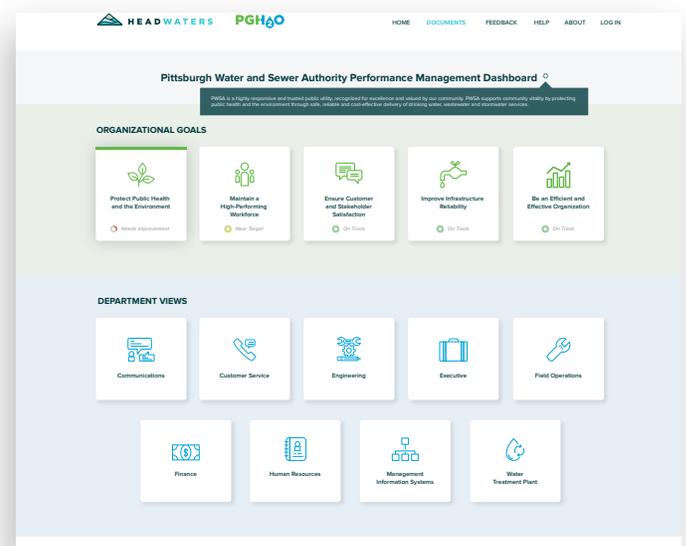
Development of the PA PUC

Operational Compliance Plan and Program

Key focuses of continuous improvement, performance monitoring, and stakeholder communication have all been critical components of this plan. One of PWSA's focus areas in ensuring compliance with the PUC's requirements are met is through application of the principles of LEAN and Six Sigma and performance management

How PWSA Relates

- Similar population & demographic challenges
- Similar internal governance challenges
- Updated strategic plan required
- Significant stakeholder engagement
- Metric development, reporting, continuous improvement
- Need for transparency
- Aging infrastructure and underinvestment
- Significant flooding and stormwater challenges



Raftelis developed Headwaters, a web-based dashboard to track organizational performance metrics throughout departments at PWSA.

through defined metrics. To achieve this, Raftelis developed a web-based performance management dashboard, Headwaters, to track organizational performance metrics and key performance indicators (KPIs) throughout departments at PWSA. Observed metrics and progress will be used to report progress to the PUC and an array of external stakeholders.

Puerto Rico Aqueduct & Sewer Authority

PUERTO RICO

Reference: Miriam Rivera Rodriguez, Director
P: 787.620.2482 / **E:** mariam.rivera@acueductospr.com

The Commonwealth of Puerto Rico has the highest debt per capita of any U.S. state or territory at \$15,637 per person; more than 10 times higher than the average debt per capita of the 50 states. Add to the debt burden the obstacles of high power and labor costs and a declining, economically disadvantaged population, these conditions make operating the island-wide water and wastewater provider, the Puerto Rico Aqueduct and Sewer Authority (PRASA), extremely challenging. While PRASA strives to be a world-class utility, it must contend with more substantial financial, geographical, and regulatory hurdles than those faced by most other major U.S. metropolitan utilities.

PRASA has made considerable progress becoming more efficient in the last 10 years: reducing its workforce from over 7,000 to now roughly 5,000 employees, eliminating more than a dozen treatment facilities, and increasing productivity by more than 10 percent. Despite these positive changes, PRASA still deals with many challenges that are outside of its control and, therefore, it has been difficult for PRASA to access money in the financial markets.

PRASA obtained the expertise of Raftelis to conduct an independent assessment of the utility's operations, management, and financial position, to help show customers and other stakeholders, including prospective buyers of PRASA bonds and commercial debt, that the utility's management and operational practices support their desired levels of service and are worthy of investment. Raftelis' charge was to develop an unbiased professional opinion with clear and defensible assessments of initiatives, inefficiencies, challenges, and opportunities, while simultaneously considering PRASA's difficult operating environment.

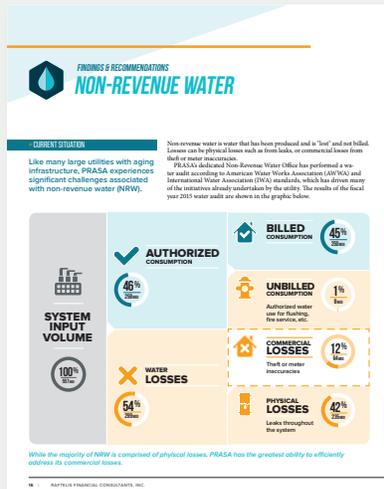
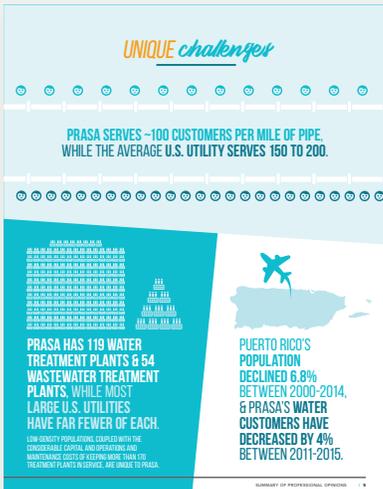
How PRASA Relates

- Challenging economic conditions
- Disadvantaged population demographics
- Unique geographical hurdles
- Extensive current state understanding required
- Stakeholder engagement
- Metric development, reporting, continuous improvement
- Long-term capital planning
- Challenges with extreme weather events

Raftelis expended considerable effort to understand the current state of the organization, and then focused on assessing PRASA's current initiatives, performance, and the resulting projects for the future. Assessments and recommendations were informed by discussions with PRASA senior leadership, its Board of Directors, interviews with PRASA staff, more than 20 facility site visits, review of over 50 documents and reports, and input from external stakeholders including the GDB (PRASA's Fiscal Agent), and Bank of America Merrill Lynch. The comprehensive assessment validated recent actions and provided additional recommended cost reductions and revenue enhancements related to operations; organizational operations; organizational planning, support, and development; capital planning; non-revenue water initiatives; and customer service activities.

While the Raftelis study resulted in a strong independent operational and financial road map, the overarching Commonwealth challenges dominated the financial landscape and prevented PRASA from accessing the capital markets. The expectation is that, as the Commonwealth rebounds, the Raftelis study will provide a springboard for debt restructuring, raising new capital, and jump-starting the PRASA capital plan.

Shown here is an example of excerpts from Raftelis' Professional Opinion report on the operations, infrastructure, and finances of the Puerto Rico Aqueduct and Sewer Authority



City of Baltimore

MARYLAND

Reference: Rudy Chow, Department of Public Works Director
P: 410.396.5182 / **E:** rudy.chow@baltimorecity.gov

Department of Public Works – Strategic Plan

Raftelis was engaged to develop a strategic plan for the Department of Public Works. This activity engaged more than 100 of the Department's leadership staff through focus groups and facilitated sessions. Specific focus was given to the relationship between the Mayor's City-wide goals and the DPW priorities, which resulted in a separate deliverable to demonstrate how DPW can support the City's efforts. Strategic planning sessions were built upon the DPW's organizational strengths, aspirations, opportunities, and desired results, in keeping with appreciative inquiry best practices. Ultimately, DPW developed six goals to direct the organization in moving forward.

A strategic plan was developed for the Department and now the plan is being used as a guide to move from a reactive to a proactive organization. To further organizational performance management, Raftelis assisted in the creation of a new Office of Strategy and Performance, the mission of which is to direct the Department's strategic activities and implementation efforts.

Bureau of Water and Wastewater - Integrated Planning Support

Since 2006, Raftelis has been assisting the City of Baltimore's Bureau of Water and Wastewater on multi-year contracts to provide cost of service, rate, and financial consulting services for their water and wastewater operations. At the same time, Raftelis has provided support for the planning and prioritization of the Bureau's capital program. Raftelis worked in conjunction with the City's engineering team to provide financial capability and assessment services during renegotiation of the City's long-term consent decree as part of their integrated planning program. Raftelis determined the optimal level of sustainable capital financing that could be supported with revenues without adversely impacting customer's ability to pay for services. This task involved blending publicly available census data with utility billing statistics, historical financial performance, and projected financial needs to develop the comprehensive long-term plan. The outcome of this effort was an extension of the City's consent decree.

Bureau of Water and Wastewater – Optimization

The Bureau was interested in optimizing the organization by enhancing alignment and operational efficiency, identifying organizational structure improvement opportunities, and establishing a framework. They wanted to enhance organizational alignment and operational efficiency, identify organizational structure improvement opportunities, and establish a framework to support the Bureau leadership team's vision for continual improvement. To accomplish these objectives, Raftelis conducted an organizational assessment program for the Bureau, called the Organizational Optimization Initiative (or O₂I).

How Baltimore DPW Relates

- Similar population & demographic challenges
- Similar internal governance challenges
- Funding challenges
- Updated strategic plan required
- Significant stakeholder engagement
- Metric development, reporting, continuous improvement
- Aging infrastructure challenges

Raftelis examined the organizational structure and business operations of the Bureau's approximately 2,000 budgeted positions in a "deep-dive" evaluation process, and worked extensively with the Bureau's senior management team to define structural and workforce modifications that would enhance the Bureau's effectiveness and efficiency. Raftelis recommended structural enhancements that included:

- Reducing the Bureau's nine Divisions to five Areas
- Defining staffing and skill requirements for near- and long-term staffing goals
- Identifying support services that the Bureau would need to achieve its goals (e.g., HR Support, Training and Development, Fleet Management, IT, and Purchasing/Procurement)

Raftelis was later engaged with conducting a similar assessment of the Bureau of Solid Waste and the DPW's 12 administrative and support services groups. Raftelis provided the Bureau of Water and Wastewater, the Bureau of Solid Waste, and the Department of Public Work's administrative groups each with a detailed O₂I Plan and recommended structural enhancements which are being used to guide them as they move from a reactive organization to a proactive organization.

