



**FIVE YEAR**  
**STRATEGIC PLAN**  
2021  2025



**Puerto Rico Aqueduct and Sewer Authority**  
GOVERNMENT OF PUERTO RICO

# Puerto Rico Aqueduct & Sewer Authority at a glance...

founded in **1945**  
serving a population of  
**3.2 million**

covering an area of  
**3,535**  
square miles

with over  
**20,000** miles of  
pipelines



**113** FILTER PLANTS  
**249** WELLS  
**8** DAMS

producing  
approximately

**540 mgd**



**51** WASTEWATER PLANTS

treating  
approximately

**200 mgd**

with ancillary  
facilities

**1,560** WATER TANKS

**1,977** PUMP STATIONS

## A MESSAGE FROM THE PRESIDENT

As we celebrate the 75 years since its inception, it is an honor to direct the Puerto Rico Aqueduct and Sewer Authority (PRASA) and lead it into the future, overcoming challenges ahead, while providing a quality and safe water service to all Puerto Ricans.

With every step taken throughout the years, we have surpassed obstacles and celebrated achievements, PRASA has delivered life and health to our clients.

It is a privilege to serve the people of Puerto Rico as the president of an essential public corporation of the Island. With great pride, and together with PRASA's team, we will continue working to bring quality water and wastewater services.



We are living in a time of significant challenges. Collectively, we have experienced major hurricanes, severe droughts, earthquakes, financial distress and, most recently, the worldwide historic COVID-19 pandemic. We have suffered, we have struggled, and we have learned new ways of handling reality and our daily lives; and all these experiences only make us stronger and help us become our best selves.

Puerto Ricans can be entirely sure of our genuine commitment. With the enthusiasm and transparency that characterizes us, we will turn every challenge ahead into opportunities and new developments.

The path is set. I am sure that with God's help and the commitment of each of our colleagues, we will continue advancing into the goal of positioning PRASA in the highest position in terms of quality and reliability.

We will continue managing PRASA's operations with *sensitivity, empathy, and fairness*. Likewise, we will provide spaces for conversation and participation at all levels, with a broad vision of overcoming barriers and promoting effective communication of results and empathy throughout the organization.

I worked with PRASA's great family for the past 27 years, and I will continue working together with PRASA team to advance towards our goals, always keeping in mind our employees, the fiscal situation, and most importantly, you, our clients.

Our mission and commitment have not diminished and remain intact. Even at this time, during such a critical point in PRASA's history, the determination and persistence of the entire PRASA team are even more significant.

I look forward to sharing our achievements with you,

Doriel I. Pagán Crespo  
PRASA's Executive President

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# INTRODUCTION

The Puerto Rico Aqueduct and Sewer Authority (PRASA) has been providing quality service for the last 75 years. As the only water utility in the Island, it serves over 1.2 million active clients including residential, commercial, industrial, and governmental customers. With a highly complex infrastructure, PRASA annually produces approximately an average of 540 million gallons per day (mgd) of water and collects and treats nearly 200 mgd of wastewater.

Responsibility for managing PRASA falls on a highly qualified staff of 4,584 (as of June 30, 2020) employees, distributed between five (5) Regions (North, South, East, West, and Metro) and Central Office (Headquarters). The utility is led by an executive team consisting of a President and three (3) Vice Presidents (Operational, Administrative, and Strategy & Corporate Planning). The central office oversees the administrative and support departments, and each region manages their respective day-to-day operations. Each department and region are structured with a Director, Sub-Director, and Managers for each office within their respective area.

Service covering 3,535 square miles supply area is provided through eight (8) Dams, 113 Water Treatment Plants (WTPs), 51 Wastewater Treatment Plants (WWTPs), around 3,800 ancillary facilities (1,560 Tanks, 1,977 Pump Stations, and 249 Water Wells), and over 20,000 miles of distribution and collection pipes.

Since its creation in 1945, PRASA is committed to providing excellence in all aspects of the operations, including drinking water production and distribution, wastewater collection and treatment, as well as system maintenance and customer satisfaction. The goal of providing quality and reliable services has not diminished over time and will continue for years to come. As stated on its *mission statement*, PRASA has the mindset *“to provide high-quality, safe, reliable, and affordable water and wastewater services to the people of Puerto Rico, protecting their health and the environment.”* Setting the standards for the future of the organization is reflected in their *vision statement*: *“PRASA endeavors to become a top-performing utility while continuously exceeding customer expectations and ensuring sustainable water resources management.”*

PRASA’s mission and vision statements are the focal point of the **Strategic Plan**. Supported by the core values, it expands into five (5) **Focus Areas**. Distributed within the focus areas are the ten (10) **objectives** from which twenty-four (24) **Initiatives** are derived, translating the strategic plan into action. The initiatives progress is then monitored by **Key Performance Indicators (KPIs)**, to measure the overall performance of the Strategic Plan and its initiatives.

Focus areas with their respective objectives and initiatives will be explained in detail throughout this document. PRASA’s Strategy Roadmap will be introduced, beginning with the core values responsible for supporting the mission and vision as well as shaping the organization’s culture.

As mentioned, each objective will be measured using a KPI with a goal set for each of the next five (5) years. The overall strategy and goals will be used to set departmental execution plans supported by the Project Management Office (PMO). By doing this, PRASA ensures an environment where everyone is accountable for the successful implementation of strategy through the years, thus, creating an engaged organization.





In addition to the strategic initiatives, this document intends to give the reader a grasp of the current and future challenges that PRASA faces. Also, it will present a brief history of recent events that have molded a new way of doing business. Furthermore, it aligns the strategy with the 2020 Fiscal Plan (as certified by the Fiscal Oversight Management Board on June 29, 2020) and the Capital Improvement Plan (CIP).

# CURRENT STATE





The fiscal situation in Puerto Rico has been challenging over the past several years, affecting the PRASA’s financial state as well. As a result of the economic scenario faced by the Island, in the year 2016, a Fiscal Oversight Management Board (the “Oversight Board”) was set in place for the Government of Puerto Rico to oversee the financial situation and decisions of the Island. As a result, on May 28, 2017, PRASA submitted its first Fiscal Plan to the Oversight Board.

On top of the adverse economic scenario, PRASA also faces several significant challenges. Some are shared with the water industry, and others are specifically related to the organization.

## Water Industry Challenges

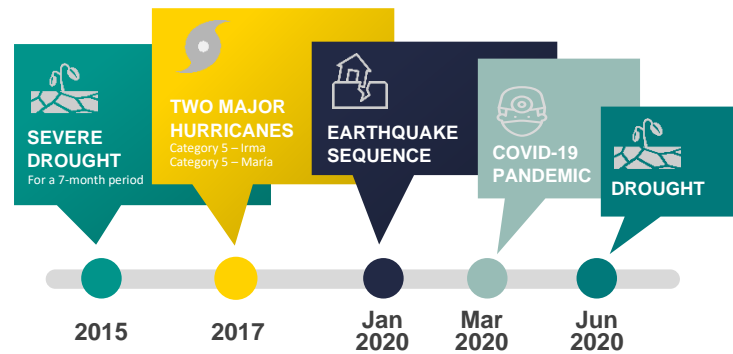
 <p><b>ENVIRONMENTAL REGULATIONS &amp; REQUIREMENTS</b></p> <p>Results in higher capital and operating costs by needing additional compliance resources and trainings.</p>	 <p><b>HIGHER UTILITY COSTS</b></p> <p>Costs are increasing higher than inflation rate resulting in customer tariff increase creating general affordability issues.</p>	 <p><b>RETIRING WORKFORCE</b></p> <p>Creating challenges in replacing them with qualified and committed resources.</p>	 <p><b>AGING INFRASTRUCTURE</b></p> <p>An aging infrastructure results in capital intensive operation mainly due to maintenance costs.</p>
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## PRASA Challenges

 <p><b>LARGE &amp; COMPLEX INFRASTRUCTURE</b></p> <p>Sparsely populated areas with significant variations in elevation and climate conditions.</p>	 <p><b>DECLINE IN POPULATION &amp; BILLED CONSUMPTION</b></p> <p>Consumption declining 15% over the last 5 years and 45% of the population living below poverty level.</p>	 <p><b>HIGH LEVELS OF NON-REVENUE WATER (NRW)</b></p> <p>Mostly due to leakage of water throughout the system mainly due to aging infrastructure.</p>	 <p><b>INABILITY TO ACCESS CAPITAL MARKETS</b></p> <p>Directly affecting the capital improvement investments degrading system conditions over the years.</p>
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These challenges have been exacerbated by the vulnerability of the Island to climate changes and natural disasters. Climate is the main factor that controls the hydrology of the Puerto Rico, directly affecting the availability of water resources. Over the past few years, PRASA has been mitigating new, unexpected hazards. Starting with a severe drought in 2015 up to the recent Coronavirus (COVID-19) pandemic, the timeline below shows the frequency of recent challenges.



## Severe Drought

Based on the [Drought Report 2014-2016](#) published by the Department of Natural and Environment Resources (DRNA, Spanish acronym), Puerto Rico had been experiencing atypical drought conditions since November 2013, especially on the southern part of the Island. Conditions worsen by the summer of 2014 as the central area of Puerto Rico began to feel the effect of water scarcity. By the beginning of the year 2015, specifically by April, the drought intensified, affecting the whole Island triggering a severe water rationing. PRASA even started a cloud seeding initiative to provoke rain, specifically where the Carraízo dam is located. The severe drought with its rationing extended for approximately seven (7) months.



In 2020, PRASA faced a new dry season where the 50% of the Island went under moderate to severe drought conditions. A water rationing plan was implemented affecting around 140,000 clients served by the Carraízo system from July 2 to July 27, 2020.

## Two Major Hurricanes

Category five (5) [Hurricane Irma](#), one of the strongest recorded storms in the Atlantic, affected Puerto Rico on September 6, 2017. As a result of its passing through the northern part of the Island, PRASA suffered damages to water treatment facilities and other structures across the Island. Over one million customers lost electric power, and over one-third of PRASA's customers did not have drinking water.



Just a few days later, on September 20, Puerto Rico felt the ruthless force of Category four (4) [Hurricane María](#), the most massive disaster that the Island has endured. While traveling diagonally from southeast to northwest, it tore 80% of the power lines, left 100% of the population without power, 80% of the crops were destroyed, more than \$94,000 million in damages, 1,360 out of 1,600 cellular towers collapsed and ripped over 60,000 houses' roofs.

In addition to PRASA's infrastructure being affected by the brutal force of Hurricanes Irma and María, the island-wide power outage resulted in shutdowns of water and wastewater treatment plants and pumping stations. Hurricanes impacted PRASA generally in *revenue loss, increase in expenses, and material assets damages throughout the Island.*

## Earthquakes Sequence

Puerto Rico's southwestern region is currently experiencing a sequence of earthquakes. The seismic activity started around December 28, 2019 and continuing into 2020. On January 7, 2020, the whole Island felt the strongest 6.4 magnitude of the earthquake sequence followed by a powerful 6.0 magnitude aftershock. Most of the inhabitants were left without electric power since most of the power generation plants are in the south of the Island.



As the electric power went down, the water service provided by PRASA was affected as well. Furthermore, water pipes experienced breakage due to these earth movements, thus, resulting in increased underground leakages, both known and unknown.

## COVID-19 Pandemic

In December 2019, the coronavirus was first identified in Wuhan, China. Since then, it has rapidly spread throughout the world, affecting millions, and killing thousands. The [World Health Organization](#), on January 30, 2020, announced the outbreak as a *Public Health Emergency of International Concern*, and further on, it was declared the COVID-19 Pandemic by March 11, 2020.



To reduce the spread of the virus, on March 15, the Government of Puerto Rico enacted Executive Order 2020-023, which implemented social distancing measures such as the closure of all businesses in Puerto Rico, a curfew for all residents, and penalties to enforce compliance. The Government issued several extensions to the March order with various modifications to Puerto Rico's social distancing measures. On April 9, the Government approved Act 39-2020, which prevented PRASA from disconnecting residential customer's water services due to non-payment.

The COVID-19 pandemic, associated mitigation policies, and resulting economic impacts have presented specific challenges for PRASA:

- **Reduced collections**
- **Increased costs**
- **Shortage of supplies as well as interruption to contracted services**
- **Workforce concerns**
- **Delayed implementation of CIP**

Notwithstanding, PRASA has taken proactive actions to support its liquidity, such as promoting alternative payment options to improve collections, drawing down on previously collected insurance proceeds, and temporarily pausing funding of its Capital Improvement Fund.

PRASA also took steps to address operational challenges, including:

- Maintaining on-site employees at the minimum required levels to ensure an adequate and uninterrupted service while minimizing exposure (e.g., suspension of meter readings to protect the health of employees and closing customer service offices)
- Providing PPE to all employees required to report on-site
- Promoting remote work for administrative and support personnel, significantly expanding the number of virtual tasks performed, and assigning all the resources at hand (available) such as

laptops and hotspots to support employee remote work, increasing virtual communication among PRASA's personnel

- Developing—in collaboration with labor unions—a Plan for Exposure Control on Return to Work, which establishes prevention and control policies and protocols to manage confirmed cases or symptomatic personnel, and security measures specific to site types (e.g., plants, commercial agencies, lab), amongst other things.

# RECOVERY & RESILIENCY

Facing a new reality and on-going challenges such as droughts, hurricanes, earthquakes, the current COVID-19 pandemic and other threats, decisions regarding infrastructure design and development as well as investment in technology must ensure recovery and enhance resiliency. After the 2017 Hurricanes, PRASA's Capital Improvement Program (CIP) was adjusted, adding an objective for system recovery and resiliency. However, access to FEMA's recovery funds after the Hurricanes have proven to be a challenge. PRASA is currently working with FEMA to speed up the damage evaluation and funding to restore the System.

Projects that are necessary to build back PRASA's System to pre-hurricane conditions amount to approximately \$769 million based on post-hurricane visits. The investment does not consider other projects necessary to improve resiliency to potential future events and damages to buried infrastructure. In the aftermath of the hurricanes, a *Build Back Better Plan for Puerto Rico plan (BBB Plan)* was presented by the Central Government, which included \$2.7B for water and sewer projects, from which \$2.2B falls directly under PRASA's responsibility. Furthermore, PRASA is also projecting an additional \$1.5B in projects not included within the BBB Plan for a total of \$3.7B in resiliency projects. However, resiliency projects will be executed only if federal funding is obtained, and as long there is enough contracting capacity in Puerto Rico to complete such projects.

Indeed, resiliency projects come with the challenge on how to measure its performance, as although it is a topic being talked for quite some time, there is no official consensus on how to measure resiliency. During the 2017 European Water Resources Association Conference this challenge was pointed out:

*“Nowadays, water utility managers require modeling tools to predict how the water distribution network (WDN) performs during disruptive events and to understand how the system can best absorb, successfully adapt, and recover from them.”*

EWRAC further recommends that resiliency performance evaluation must ensure that the system must have one or more of the following four (4) attributes: *robustness, redundancy, resourcefulness, and rapidity*. Also, such evaluation should comprehend these three (3) dimensions:

- *Absorptive*. System capacity to absorb clients served by other service areas.
- *Adaptive*. The system allows operational adjustment to address service interruptions.
- *Restorative*. Resiliency projects planned within the system.

Currently, there is no definitive conclusion on how to evaluate resiliency for Water Utilities. Meanwhile, PRASA is committed to continuing with the recovery efforts and making sure that future infrastructure developments consider resiliency for the significant challenges that the Island faces.

# STRATEGIC ALIGNMENT

The current state, as described above, is PRASA's starting point for the Strategic Plan. Challenges presented may result in *loss of revenue, incremental operating expenses, or higher infrastructure investments*. PRASA is responsible for executing both the Fiscal Plan as certified by the Oversight Board and the Capital Improvement Plan (CIP), including commitments with environmental regulatory agencies.

## Fiscal Plan

The Puerto Rico Oversight, Management, and Economic Stability Act ("PROMESA") created the Oversight Board, which defined PRASA as a covered entity under PROMESA requiring the submission of Fiscal Plans with the final goal to become a self-sustainable utility. The 2020 Fiscal Plan has been developed with the focus and commitment to deliver reliable, affordable, and safe water and wastewater treatment services while ensuring PRASA's continued financial sustainability.



### Affordable, safe supply and treatment of water

Provision of a safe and reliable supply of drinking water and treatment of wastewater, complying with federal environmental regulations to safeguard the health of the population and the environment of the Island while guaranteeing an affordable service for all customers.



### Resilient, reliable, and efficient infrastructure

Ensure the required investment in necessary technology and infrastructure to restore the system, enhance resiliency, and establish an efficient and safe water system that provides reliability for customers.



### Long-term financial and organization sustainability

Reaching long-term financial sustainability while facilitating the recruitment and retention of the right talent to transform PRASA into a water utility company for the future.

## Capital Improvement Plan (CIP)

PRASA has relied through the years, mostly on external financing, to improve the infrastructure through its Capital Improvement Program (CIP). Current economic circumstances and bond rating downgrades forced PRASA to start self-funding most of its CIP.

The purpose of the CIP is to modernize and maintain PRASA's infrastructure with the objectives to:

- Optimize its operational efficiency
- Protect public health
- Safeguard the environment
- Promote continuous economic development
- Comply with regulatory requirements
- Properly maintain and renew the infrastructure
- Reduce non-revenue water
- Address emergencies
- Increase resiliency

## Strategy Roadmap

With the development of the strategic plan, PRASA's focus is to engage everyone within the organization. The responsibility of the plan's implementation will be led by departments, which in turn will translate the strategy into actionable and measurable programs.

PRASA's **core values** are designed to guide everyday operations for all employees into providing quality services. These are the **principles, priorities, and convictions** that represent PRASA's culture. The eight (8) core values are the guiding compass to follow to attain PRASA's mission and vision statements.



Setting the overall *direction to follow* falls within the five (5) Focus Areas. These are:

1. **Public Health & Environment Protection**
2. **Operational Efficiency**
3. **Leadership Development**
4. **Financial Sustainability**
5. **Innovation & Accountability**

Focus Areas translate the corporate vision into specific guides to assist the achievement at a higher level of excellence. Each Focus Area is concentrated on critical elements that affect the corporation, which translate into ten (10) Objectives.

Objectives are measured in the Key Performance Indicators (KPIs) designed to validate the implementation of the strategic plan throughout the organization. Each KPI has an annual goal set that will measure the execution of the strategy for the next five (5) years.

The dynamic characteristics of the vision statement allows it to be reviewed and updated when goals are being achieved. PRASA uses the **Strategy Roadmap** as the management tool that allows the merging of the objectives, goals, initiatives, programs, and projects with the vision.

The roadmap shows how actionable initiatives are derived from the mission and vision statement with the support of the core values. Focus Areas, and, in turn, Objectives, translate the mission and vision statements into action. They are influenced by diverse factors such as the operation's dynamics, infrastructure conditions, stakeholders, environmental regulations, and fiscal health of the organization.

# STRATEGIC ROADMAP

## MISSION



*Provide high-quality, safe, reliable, and affordable water and wastewater services to the people of Puerto Rico, protecting their health and the environment.*

## VISION



*Become a top-performing utility while continuously exceeding customer expectations and ensuring sustainable water resources management*

# 8

## CORE VALUES



INTEGRITY



QUALITY



COMMITMENT



RESPONSIBILITY



TEAMWORK



SUSTAINABILITY

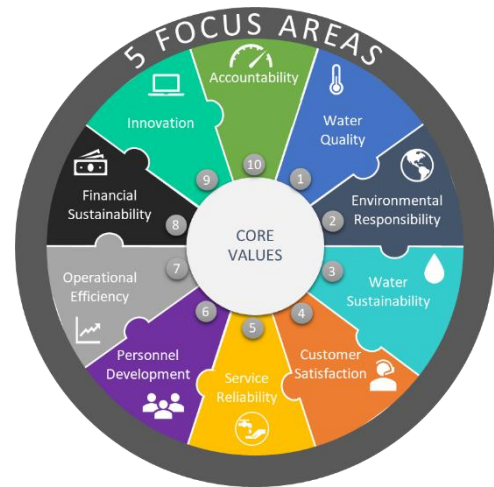


RESILIENCY



INNOVATION

## 5 FOCUS AREAS



# 24 INITIATIVES

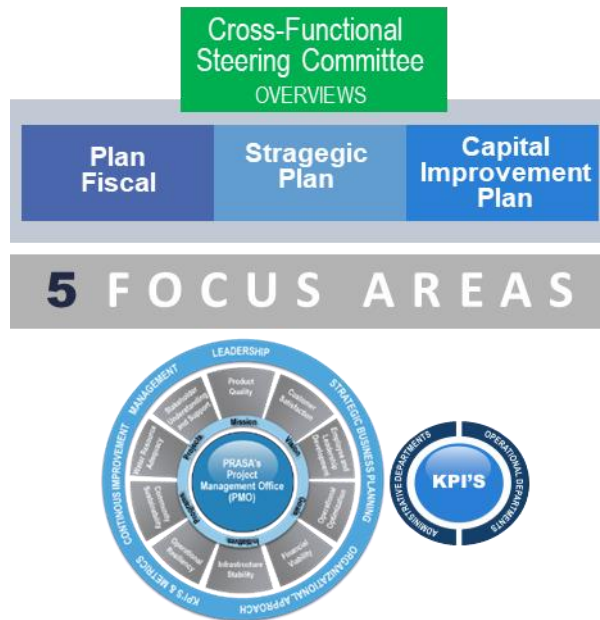
# 26 KPIs



## Alignment

Overseeing the responsibility for the implementation of the three (3) main plans (Fiscal Plan, Capital Improvement Plan and Strategic Plan) falls under a Cross-Functional Steering Committee consisting of PRASA’s upper management. In turn, monitoring the progress and supporting departments into the execution will be led by the PRASA’s Project Management Office (PMO) Framework, directed by the Vice President of Strategic & Corporate Planning. PMO Framework is derived from the [Effective Utility Management](#) (EUM), their five (5) Keys to Management Success and their ten (10) Attributes.

Alignment of the plans occurs at the **Objective level**. Initiatives, designed from the Objectives, will be assigned to the department directors, which in turn will establish a project committee in charge of managing the execution. All departments, led by their Directors, are ultimately responsible for the management of the initiatives and programs derived from the plans.





# PUBLIC HEALTH & ENVIRONMENTAL PROTECTION



Public health and environmental protection this focus area targets to provide a high-quality water service while promoting water conservation and protecting the environment and health for Puerto Rico. It consists of three (3) objectives and nine (9) initiatives. Brief descriptions of each follow.

## Objective: High-Quality and Safe Drinking Water

PRASA has pledged to provide high-quality and safe drinking water for Puerto Rico. Apart from PRASA's commitment, water quality is monitored by the [Environmental Protection Agency \(EPA\)](#) and the [Puerto Rico Department of Health \(PRDOH\)](#) to ensure that drinking water is at an adequate level of compliance. Initiatives taken by PRASA to guarantee water quality include, optimizing the use of chemicals within the facilities and promoting that investments are made to ensure water quality.

### Initiative: Comply with the quality of drinking water parameters established by the regulatory agencies

EPAs [Safe Drinking Water Act \(SDWA\)](#) requires that PRASA monitor the quality of water produced in the filtration plants, including the distribution system. Samples are determined by the population of the specific distribution system. Sampling results and analysis are then reported to PRDOH and EPA. Failing to comply means violations to standards, monitoring, and reports, which could result in monetary fines.

It is expected that water utilities comply 100% with the SDWA and with [National Primary Standards \(NPS\)](#). NPS is set in place to protect public health by establishing an adequate level of contaminants in drinking water. There are approximately 88 primary standards classified into six (6) contaminant groups:



### Key Performance Indicator

**KPI Name:** % Drinking Water Compliance

**Identification #:** PHEP-01

#### Variables:

1. # of Drinking Water Quality Parameters in Compliance
2. # of Total Drinking Water Quality Parameters

#### Mathematical Expression:

$$\frac{\text{\# Drinking Water Quality Parameters in Compliance}}{\text{\# Total Drinking Water Quality Parameters}} \times 100$$

**Initiative: Improve laboratory sampling process and results**

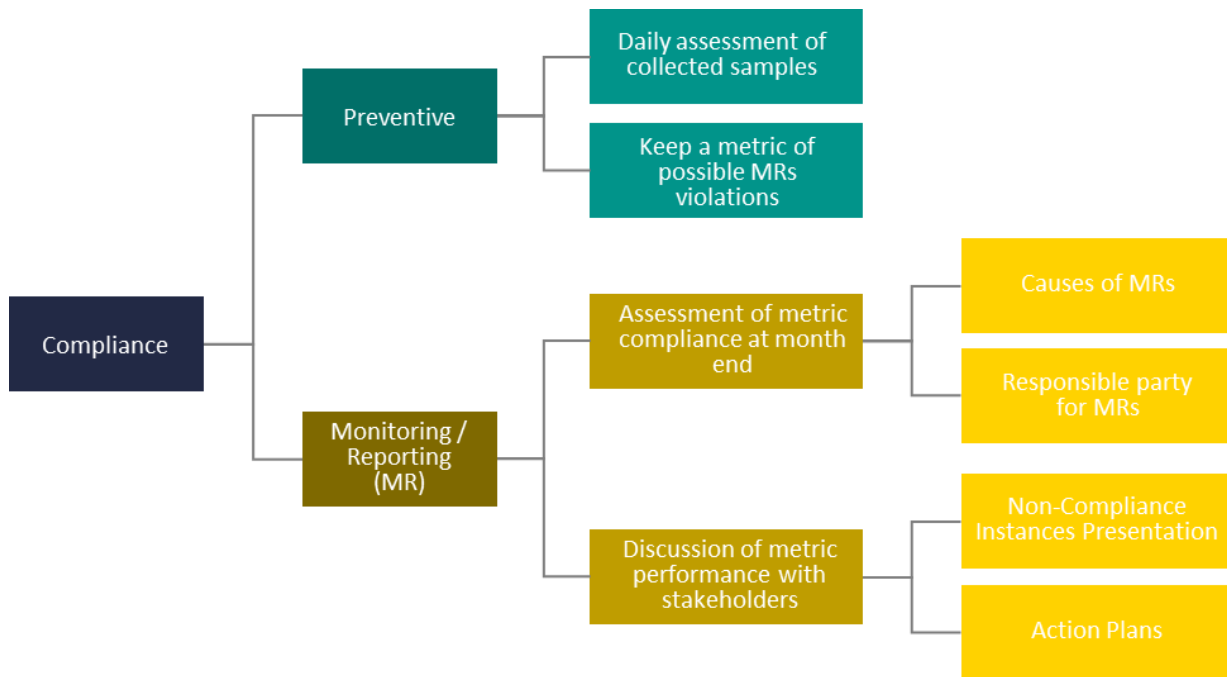
SDWA and the Clean Water Act (CWA) require the monitoring of several parameters to determine regulatory compliance. For a utility like PRASA with 158 potable water systems (comprised by 114 water filtration plants and over 200 wells) and 51 wastewater treatment plants, coordination of the sampling schedule is essential in meeting and complying with regulations.

**PRASA SAMPLING FACTS**



\* PRASA central laboratory was destroyed by Hurricane María and a new laboratory will be built with insurance and/or FEMA funds.

Frequency and location are vital elements of sampling compliance requirements. As a result, to achieve consistency, the sampling process needs to be monitored regularly. Using the Laboratory Information Management System (LIMS) software, PRASA developed the Sampling Collection Monitoring Program, including the following set of guidelines:



**Key Performance Indicator**

**KPI Name:** % Sampling Compliance

**Identification #:** PHEP-02

**Variables:**

1. # of samples collected
2. # of samples required

### Mathematical Expression:

$$\frac{\text{\# of samples collected}}{\text{\# of samples required}} \times 100$$

### Initiative: Capital Improvement Program Focused on Water Quality

Capital Improvement Program's (CIP) primary purpose is to modernize and maintain PRASA's infrastructure. The CIP is classified into five (5) categories:

- **Mandatory Compliance:** Projects to comply with current regulations, including the Consent Decree with EPA and the Agreement with PRDOH.
- **Non-Mandatory Compliance:** Projects with a high risk of non-compliance with environmental regulations that may convert into Mandatory Compliance projects.
- **Quality:** Projects focused on quality in both service reliability as well as water quality areas.
- **Renewal & Replacement:** Equipment and infrastructure renewal and replacement to allow for the provision of a reliable and quality service.
- **Emergency and Recovery:** Projects to address situations requiring immediate actions to allow for a continuous service provision in compliance with water quality regulations.
- **Resiliency:** Project to allow for improved system resiliency to address a new reality of increased impact from climate changes in PRASA's system.

CIP focuses on maintaining water quality and enhancing system recovery and resiliency. Financial capacity to execute the required projects is a challenge that PRASA must overcome to achieve resiliency in the future. However, the projects included in the CIP will help to achieve and maintain financial sustainability, ensuring revenue stability and water quality.

### Key Performance Indicators

**KPI Name:** # Schedule Performance Index (SPI)

**Identification #:** PHEP-03

#### Variables: (Definitions as extracted from Project Management Body of Knowledge<sup>1</sup>)

1. # earned value - Earned value (EV) is the value of work performed expressed in terms of the approved budget assigned to that work for an activity or work breakdown structure component.
1. # planned value - Planned value (PV) is the authorized budget assigned to the work to be accomplished for an activity or work breakdown structure component.

### Mathematical Expression:

$$\frac{\text{\# earned value}}{\text{\# planned value}}$$

<sup>1</sup> Project Management Institute. (2008). A Guide to the Project Management Body of Knowledge (PMBOK Guide) Fourth Edition. Project Management Institute Inc.

## Objective: Environmental Responsibility

PRASA is committed to using water resources adequately. Besides providing high-quality drinking water, the corporation provides the collection and treatment services of wastewater. Therefore, it has an environmental responsibility to return the used water to nature properly treated and clean. EPA's Clean Water Act set the parameters for the water discharges. Guidelines are followed by PRASA to ensure the safeguarding of the Island's environment.









### Initiative: Comply with parameters established by the regulatory agencies for wastewater treatment plant discharges – Clean Water Act (CWA)

CWA establishes the requirements for regulating the discharge of contaminants into the water bodies of the United States and water quality standards for surface and marine waters. It requires the submittal of monthly [Discharge Monitoring Reports \(DMR's\)](#) to assess compliance with standards.

There are approximately 30 parameters monitored through the National Pollutant Discharge Elimination System (NPDES). The NPDES establishes the permits and the guidelines to dispose of common pollutants found on wastewaters. Some of these pollutants are:

- Enterococcus Bacteria
- Fecal Coliforms
- Metals
- Biochemical Oxygen Demand (BOD)
- Total Suspended Solids (TSS)
- Nitrogen

CWA acceptance compliance goal is 100% compliance with the NPDES parameters. Major causes for non-compliance and the corresponding action plan are included below:

Non-Compliance Major Causes	Compliance Improvement Actions
 Problems with dosing or treatment units or equipment	 Accelerate the process to acquire necessary equipment.
 Events of heavy rains	 Chemicals dosing changes during rain events periods and projects to reduce storm water infiltration.
 Treatment trains out of operation and overloaded due to the hurricanes or other	 Repair treatment trains.
 Power outages	 Install emergency generators units in critical facilities.

### Key Performance Indicator

**KPI Name:** % NPDES Parameters Compliance

**Identification #:** PHEP-04

#### Variables:

1. # of NPDES Parameters in Compliance

## 2. # of Total NPDES Parameters

### Mathematical Expression:

$$\frac{\text{\# of NPDES Parameters in Compliance}}{\text{\# of Total NPDES Parameters}} \times 100$$

### Initiative: Manage & reduce combined sewer overflows

To continue managing sewer overflows, PRASA has created the Sewer System Operations and Maintenance Program (SSOMP), which is being implemented within the sewer system tributary to the Puerto Nuevo Wastewater Treatment Plan (PNWWTP).

Some of the guidelines established within SSOMP are sewer system pipelines reconnaissance and inspection, preventive cleaning, system characterization, repairs, and overflows monitoring. PRASA is set to complete reconnaissance and sanitary sewer cleaning for wastewater pipes of less than 30-inch diameters in high priority areas by June 2021 within the PNWWTP.

There will be field crews strictly dedicated to inspecting the elements within the sewer system. This action will facilitate the compliance requirements for the discharge permits, improve collection pipes mapping, and identify areas that need to be prioritized. The crews' primary objective is to perform tasks to prevent and minimize overflows.

### Key Performance Indicator

**KPI Name:** # Average Lineal feet cleaned per month

**Identification #:** PHEP-05

#### Variables:

1. # lineal feet cleaned per month
2. # of months within the period

### Mathematical Expression:

$$\frac{\text{\# lineal feet cleaned per month}}{\text{\# of months within the period}}$$

### Initiative: Implement a grease control program

Approximately 60% of the sewage overflow is caused by grease. Overflow caused by grease, fat, or oils occurs when it accumulates within the walls of the sewer pipelines. As the walls get covered over time, used water will find its way out, harming the environment, health, and quality of life as it can contaminate Puerto Rico's potable water reserves.

PRASA's [Regulation 6685 of June 19, 2003](#), regulates the installation of grease traps and interceptors within commercial establishments to dispose of wastewater, grease, and oils. It states that users must install the traps or interceptors to collect residual water containing fat, grease, oils, or other materials such as dirt or sand or other types of materials that could hurt the sanitary system. Facilities such as gas stations, restaurants, bakeries, hospitals, supermarkets, stores, manufacturing sites and other establishments that dispose of these materials must install the trap or interceptor.

Installation of the trap is compulsory to the users. As such, PRASA has implemented a grease control program known as FOG (Fats, Oils, & Grease). FOG Program's primary purpose is to inspect the facilities to ensure compliance with Regulation 6685. Data collected by inspections will be analyzed, and the establishments that do not comply will be fined. PRASA aims to reduce 5% of grease caused overflows within the first year.

### Key Performance Indicator

**KPI Name:** % Overflow caused by FOG

**Identification #:** PHEP-06

#### Variables:

1. # of overflows caused by FOG
2. # of total overflows

#### Mathematical Expression:

$$\frac{\text{\# of overflows caused by FOG}}{\text{\# of total overflows}} \times 100$$

## Objective: Water Sustainability

Water is a natural resource essential for human life. PRASA is committed to maximize and preserve this precious resource. Puerto Rico has recently suffered from long periods of water scarcity, mainly attributable to climate change around the globe. Furthermore, the aging infrastructure is causing water losses through the system due to pipes leaking. As the impact of climate change continues to increase, new challenges will continue to arise. Thus, water conservation at all levels is essential and should be promoted.

### Initiative: Increase water availability

Climate is the main factor that controls the hydrology of the Island, directly affecting the availability of water resources. Annually, the precipitation or rainfall is approximately 69 inches, ranging from a minimum of 35 inches in the southwest up to 174 inches in the Yunque (Eastern region). Rainfall varies throughout the year, with dry periods generally from December through March.

Although rainfall is abundant generally from April until November, roughly two-thirds are not available as runoff evaporates from land, or it transpires by vegetation. Furthermore, raw water reservoirs accumulate silt and sand at the bottom, affecting the amount of volume stored. Around \$1 billion for silt and sand removal has been allocated as part of the Resiliency projects submitted to FEMA's federal funding.

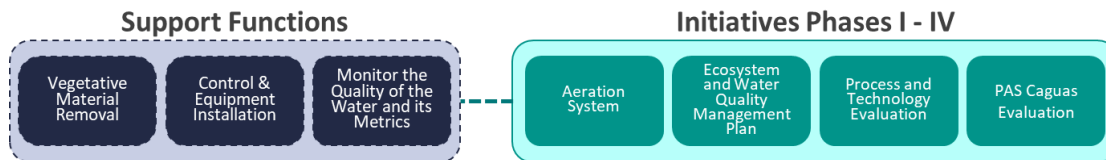
In the past, PRASA has successfully implemented a laminar aeration process in the Toa Vaca reservoir with the support of EPA, reducing chemical consumption by almost 50% on the three (3) plants it supplied. In general, this process injects air (microbubbles) in laminar ascending flow at slow speed (one foot per second) from the bottom to the top of the reservoir through ceramic diffusers. Some of the benefits of laminar aeration are:

- Increase the water storage capacity
- Reduce water rationing potential
- Reduction in water treatment costs, fewer chemicals
- Reduction in sludge disposal costs



- Control of manganese concentration in water
- Improve the lake's ecosystem health
- Increase the reservoir's useful life

PRASA is currently working on installing laminar aeration in the Carraízo Reservoir. Phase 1 is to get rid of the vegetative material found in the dam, which will start after the bid process to select the supplier. Afterward, the process of installing the laminar aeration starts along with other support functions as presented below:



Meanwhile, La Plata, Cidra, and Guajataca are some of the reservoirs that are being evaluated to implement the laminar aeration.

Most reservoirs' water levels are continually being monitored, allowing them to carry out necessary operational adjustments to maintain adequate levels and mitigate the risk of possible water rationing. PRASA is aiming to maintain at 100% the optimum levels of reservoirs.

### Key Performance Indicator

**KPI Name:** # three depth Reservoirs' Water Quality

**Identification #:** PHEP-07

#### Variables:

1. # Surface's Water Quality
2. # Mid Level's Water Quality
3. # Bottom's Water Quality

#### Mathematical Expression:

$$\frac{\# \text{ Surface's WQ} + \# \text{ Mid Level's WQ} + \text{Bottom's WQ}}{3}$$

3

### Initiative: Reduce water loss

In the year 2013, to continue the on-going efforts of reducing its water loss, PRASA created the Water Recovery Office or ORA (Spanish acronym for "Oficina de Recuperación de Agua"). As its name suggests, the primary purpose of ORA is to develop initiatives to capture or recover water loss across the Island. It is also the responsible entity within PRASA to strategically guide every department in the execution of the developed initiatives.

There are two (2) types of water losses: Commercial Losses and Physical Losses. ORA's focus is on the Physical Loss reduction with the final goal of *increasing efficiency and reducing water production and its*

*associated costs*. Thus, ORA designed three (3) initiatives that directly or indirectly contribute to the physical water loss reduction. These are:

1. Pressure Management
2. Leak Detection
3. Master Meters

Pressure management initiative consists of setting up a continuous process of verifying all components on each Potable Water System Identification (PWSIDs) within the PRASA system to adjust, repair, or replace them, and ultimately optimize their respective pressure. When the water pressure is lowered within the system, it will essentially reduce leakage and water production (when adequately measured).

Most of the PWSIDs within the Island operates with a minimum pressure requirement in mind and not a maximum pressure restriction or limitation. This tendency results in numerous high-pressurized areas hindering any real loss abatement efforts.

To avoid unnecessary leaks in the distribution system, unnecessary or excess pressures must be reduced while eliminating impacts to the system caused by faulty pressure controls. Within this initiative, PRASA's goal is to monitor the pressure reduction and control mechanisms in real time.

Pressure management will be measured by the number of pressure zones visited and the reduction of the average Pounds per Square Inch (PSIs) in optimized systems.

Water leakage is one of the main components of the physical water loss across America. Leakage can occur on transmission or distribution lines, tanks, and service connections up to the customer metering. As such, an active leak detection program is an essential part of every utility to lower their Non-Revenue Water (NRW) levels. Leak detection initiative will be measured based on number of leaks detected and repaired with the consequent reduction in lost MGDs.

The master meters initiative will be measured by the number of meters installed and calibrated, and the percent of measured water production. PRASA aims to measure 83% of its potable water production by June 30, 2021.

With the integration of the pressure management, leak detection, and master meters initiatives, PRASA could be accurately set optimum levels of services across the PWSIDs. Measuring production and the water needs within the PWSIDs, PRASA will ensure an adequate supply of water with the correct level of pressure. The KPI used to summarize all projects addressing physical loss is Physical Water losses in MGDs. This indicator is widely used when measuring the effectiveness of the utilities when dealing with their physical loss water levels.

To reduce the commercial water losses PRASA is working on the following initiatives:

- Modernizing PRASA's meters and implementing technological solutions for remote meter readings (drive-by or full automated meter readings)
- Addressing illegal connections
- Re-engineering commercial activities and services
- Improving customer service experience including reduced waiting times and increased efficiency addressing job orders
- Empowering PRASA's customers by leveraging technology and digital advancements



- Completing clients georeferencing
- Adjusting and completing database information (rates, service types and other)
- Increasing the customer's base

### Key Performance Indicators

**KPI Name:** # Physical Water Losses in MGDs

**Identification #:** PHEP-08

**Variables:**

1. # monthly average Physical Water Losses

**Mathematical Expression:**

$$\sum \text{# monthly average of Physical Water Losses}$$

**KPI Name:** # Commercial Water Losses in MGDs

**Identification #:** PHEP-09

**Variables:**

1. # monthly average Commercial Water Losses

**Mathematical Expression:**

$$\sum \text{# monthly average of Commercial Water Losses}$$

### Initiative: Promote water conservation through communication

Water conservation responsibility falls on all the Island's residents. PRASA launched the communication campaign "Gota a Gota se Agota" (Drop by Drop it Runs Out). With the hashtags #gotaagota and #seagota, the Communications Department publishes tips on how to preserve water on its Twitter account @acueductospr and the corporate website "Conservemos el Agua". The communications campaign's goal is to create consciousness around preserving water by all stakeholders, including not only at PRASA systems but also by all its customers, from residential to commercial, government and industrial clients. Throughout the years, the Communications Department has successfully managed water conservation campaigns. Some of the most recent are:

- Haz Conciencia del Agua (Make Water Awareness)
- Nuestra Agua, Consévala (Our Water, Conserve it)
- Cada Gota Cuenta (Every Drops Count)

Simultaneously, PRASA runs multiple campaigns promoting water conservation and current topics of interest. Some of the campaigns are:

- **Hydrant Management:** Promotes consciousness in the correct usage of the fire hydrants.
- **Waste Management:** A campaign in conjunction with "Estuario de San Juan" to raise awareness of materials that should not be disposed of through the toilet.
- **Fat, Oil, and Grease (FOG):** This campaign is directed to promote the correct disposal of fat, oil, and grease.



- **Hurricane Season:** An annual campaign concentrated on the tips during the hurricane season in Puerto Rico.

PRASA plans to keep running conservation campaigns throughout the years.

Furthermore, PRASA is working on changing their current rate structure to incentive conservation, including both reduction in peak and average day demands. In order execute the rate structure change, a Request for Proposal (RFP) is currently being developed to start the search for third parties interested supporting PRASA through this process.

### Key Performance Indicator

**KPI Name:** # People reached per campaign

**Identification #:** PHEP-10

#### Variables:

1. # people reached by campaign
2. # campaigns

#### Mathematical Expression:

$$\frac{\text{\# people reached by campaign}}{\text{\# campaigns}}$$

# OPERATIONAL EFFICIENCY



The Operational Efficiency focus is customer satisfaction. It promotes efficiency, reliability, and resiliency, allowing service of excellence to its customer while exceeding their expectations. It consists of three (3) objectives and four (4) initiatives. Brief descriptions of each is included in this section.

## Objective: Customer Satisfaction

PRASA serves approximately 1.5 million connections, with over 1.2 million active customer accounts. The highest priority of the corporation is to provide high-quality drinking water distribution and wastewater collection to each of the customers: Residential, Government, Commercial, and Industrial. PRASA also seeks to continuously improve customer satisfaction.

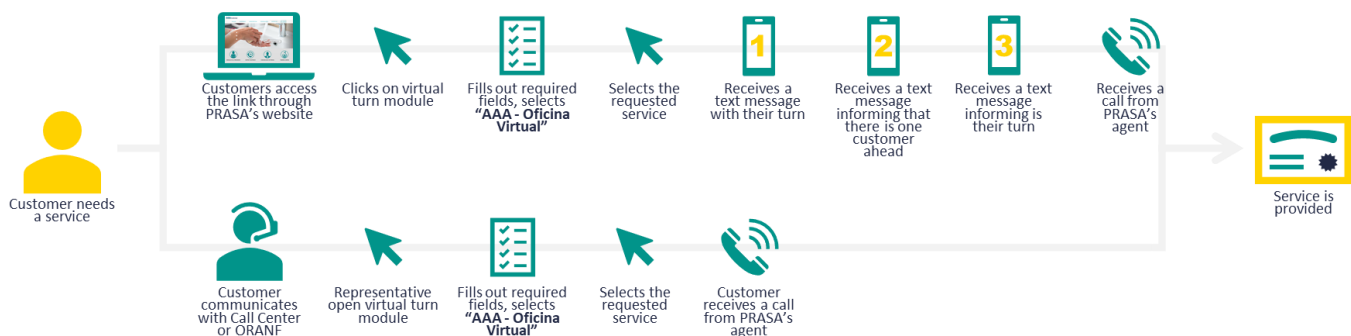
### Initiative: Achieve Optimal Service Level

Having faster and easy access to all the required information by the customer will simplify the interaction with PRASA, and in turn, reduce the time to address overall requests.

PRASA's website has been improved to provide essential services and transaction offered at the commercial offices. Thus, reducing visits to commercial offices and customer attention time. Furthermore, during the year 2020, PRASA's webpage was enhanced following these objectives:

- Ease customer's access to their accounts ([Mi Cuenta](#))
- Web services accessibility ([Servicios](#))
- Tips on water conservation ([Conservemos el Agua](#))
- Lookup reservoir current levels ([Niveles de Embalses](#))
- Communication transparency ([Comunicaciones](#))
- Organizational structure information ([Nuestra AAA](#))

To continue improving service levels, PRASA implemented a module within their queue software to provide the customer with a virtual line or turn option. Instead of customers physically waiting, they can now take a virtual turn without going to a commercial office. The process is as follows:



Also, PRASA is designing an Interactive Voice Response (IVR) to facilitate customers when requesting service and a chat that will be responded to by the call center representatives. Also, the developed [mobile application](#) is being improved to provide more service alternatives.

These initiatives' primary purpose is to reduce the overall time to attend the customer's needs. Especially service requests, time to complete new connections, and call center attention time.

### Key Performance Indicators

**KPI Name:** # Customer Service Complaints per 1,000 connections

**Identification #:** OE-01

**Variables:**

1. # of complaints
2. # active connections

**Mathematical Expression:**

$$\frac{\text{\# of complaints}}{\text{\# active connections}} \times 1,000$$

**KPI Name:** # Average time to resolve claims

**Identification #:** OE-02

**Variables:**

1. # sum of time to resolve claims
2. # total number of claims

**Mathematical Expression:**

$$\frac{\text{\# sum of time to resolve claims}}{\text{\# total number of claims}}$$

## Objective: Infrastructure Reliability

Hurricanes Irma and María resulted in major devastation of Puerto Rico's infrastructure. PRASA's already aging infrastructure suffered damages that will require not only rebuilding what was existing but rethinking to build in a way to be able to withstand potential new hurricanes that will most likely be stronger and more frequent. Resiliency projects within the CIP focus are hazard mitigation, safety, water quality and availability, redundancy, robust infrastructure, energy independence, management of critical assets, and optimization.

### Initiative: Achieve water supply reliability

The approach to achieve water supply reliability is working with a preventive and proactive approach, which helps to predict and plan equipment downtime and intervention. To actively maintain the system's components, translate into having the parts needed, trained personnel and action plans to avoid service interruptions, thus fewer service interruptions.

CIP projects that incorporate service reliability improvements include:

- Improving potable water service zones' transfer capabilities, allowing PRASA to adapt to water shortages.

- Increasing pumping station redundancy.
- Improving water treatment capabilities to handle high turbidity events better, always assuring water quality.
- Developing an asset management program for large diameter pipes reducing service interruptions when repairs are needed.
- Increasing system resiliency

System reliability is measured through service interruptions when compared to active connections. Interruptions can be classified between those planned or unplanned.

### Key Performance Indicator

**KPI Name:** % of Service Interruptions

**Identification #:** OE-03

#### Variables:

1. # of service interruptions (customers without water) per month
2. # of active connections in the month

#### Mathematical Expression:

$$\frac{\text{\# of service interruptions per month}}{\text{\# of active connections in the month}} \times 100$$

## Objective: Operational Optimization

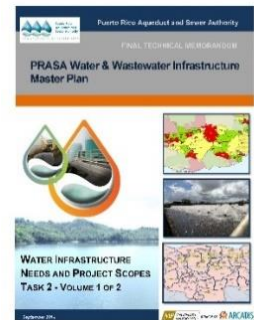
Water utilities have been facing increasing challenges, as previously described. As such, PRASA must become more efficient in managing available resources.

### Initiative: Master Plan projects execution

PRASA has been proactively working to consolidate systems and reduce facilities. However, after hurricanes Irma and María, combined with the need to identified resiliency for future similar events, PRASA will include service areas consolidation and redundancy analyses as part of the Water and Wastewater Infrastructure Master Plan (Master Plan), to be updated after the 2020 census information is available.

The current Master Plan delineates the route for future infrastructure investments up to the year 2030. It is based on demand, capacity, and compliance analyses to determine future needs. Scheduled to be revised in 2021, the Master Plan will incorporate analyses for hurricanes impact, updates in infrastructure's needs, and Island's population levels.

PRASA's CIP simplification and consolidation and other types of projects will be developed with the Master Plan, and the CIP will be continuously updated in alignment with the System needs. Additional modifications to PRASA's CIP may be warranted as negotiations with Regulatory Agencies continue, and additional regulatory requirements and needs arise, or as the Systems' needs change. All planned projects will be subject to funds availability.



### Key Performance Indicator (Definitions as extracted from Project Management Body of Knowledge<sup>2</sup>)

**KPI Name:** # Cost Performance Index (CPI)

**Identification #:** OE-04

**Variables:**

1. # earned value - Earned value (EV) is the value of work performed expressed in terms of the approved budget assigned to that work for an activity or work breakdown structure component.
2. # actual cost - Actual cost (AC) is the total cost actually incurred and recorded in accomplishing work performed for an activity or work breakdown structure component.

**Mathematical Expression:**

$$\frac{\text{\# earned value}}{\text{\# actual cost}}$$

### Initiative: Process standardization & controls

PRASA will strengthen the process of managing instructional documents that define the operational activities (procedures, manuals, administrative orders, etc.) in an effort to achieve standardization, increased alignment between various document layers and better control of changes to be able to successfully mitigate and address current challenges. All procedures will be evaluated against the control system.

The design of an improved Instructional Document Design and Control Process is one of the first tasks that PRASA will undertake. This workstream will improve the flow of revision and approval cycles, identification of gaps in knowledge of current personnel and increase compliance with PRASA's regulations and procedures. PRASA will define the procedures review schedule for all departments and will ensure all procedures content and structure are based on industry best practices.

### Key Performance Indicator

**KPI Name:** % of revised approved procedures

**Identification #:** OE-05

**Variables:**

1. # revised approved procedures
2. # total procedures

**Mathematical Expression:**

$$\frac{\text{\# Revised Approved Procedures}}{\text{\# Total Procedures}}$$

<sup>2</sup> Project Management Institute. (2008). A Guide to the Project Management Body of Knowledge (PMBOK Guide) Fourth Edition. Project Management Institute Inc.

# LEADERSHIP DEVELOPMENT



One of PRASA's principal assets is their employees. As such, it is essential to develop their skills, make sure they are properly compensated, trained, motivated and that they are healthy, safe and efficient. The leadership development focus area consists of one (1) objective and four (4) initiatives. Brief descriptions of each follow.

## Objective: Employee leadership development

Employees are one of PRASA's most significant assets. Developing their skills is essential in creating a healthy and proud workforce. Developed talent should continue to work for the public corporation to ensure the implementation of the plans (including the Strategic Plan). When considering employee's personal growth and succession plans, it is vital to maintain a well-balanced headcount.

## Initiative: Enhance existing talent retention, effective succession plan, and develop qualified personnel

PRASA is developing recreational and cultural programs to promote a sense of ownership and increase knowledge of the corporation's historical significance. The retention plan is focused on creating internal publications and campaigns emphasizing the core values to create a healthy organizational culture. Employees who are interested in growth opportunities within PRASA will have the ability to participate in continued learning courses and workshops.

In general, PRASA has six (6) training programs focused on minimizing or eliminating fines from regulatory agencies. They encompass all the corporation needs regarding compliance. The programs are:

1. Environmental Compliance
2. Process Controls
3. Corrosion Maintenance and Control
4. Development of Organizational Competencies
5. Sewer System Operations and Maintenance Program (SSOMP)
6. Health, Occupational Safety and Emergencies

Moreover, each department is responsible for establishing their own specific training plan. As they have their complexity and specialization levels, they need to assign the employees to train with two (2) primary purposes: to be better prepared for their work responsibility and to ensure a departmental succession plan. There is a training plan for every job within PRASA and, thus, by the department as well. Furthermore, there are complementary trainings and workshops for the employee to support their daily tasks and learn new skills throughout the year.

Currently, PRASA is developing most of its training to be offered online. Most of the training digitalization is planned to be completed by the fiscal year 2021. One of the principal challenges is that not all employees have a computer due to the nature of their job; as such, initially, not all training will be 100% online.

Meanwhile, directors are being trained in practical communication skills to deal with different situations effectively. The nature of the operations makes it essential to maintain an openness attitude on events where the customer service could be affected. Some training will be focused on workshops organized using situation simulations and how to define and articulate potential messages and solutions.

Another initiative being studied as part of the talent retention strategy is the revision of the salary scales for the organization. It is currently on a RFP stage and is further discussed on the [Increase Productivity](#) initiative.

### Key Performance Indicator

**KPI Name:** # Training hours per employee

**Identification #:** LD-01

**Variables:**

1. # of training hours
2. # of active employees

**Mathematical Expression:**

$$\frac{\text{\# of training hours}}{\text{\# of active employees}}$$

### Initiative: Increase workers' safety

Everyone within PRASA is responsible for providing a safe working environment. There is a commitment to avoid accidents and minimize injuries to ensure employees' wellbeing. Due to the complexity of operations within PRASA, the [Occupational, Safety, and Health Administration \(OSHA\)](#) practices are adopted. Safety culture is continued to be enhanced and spread through the organization focusing on the following elements:



1. **Create, promote, and maintain** an awareness culture in compliance, occupational safety, and health issues in employees.
2. **Ensure** that employees know their roles and responsibilities to comply and maintain current environmental policy, occupational health, and safety.
3. **Prevent** accidents and work-related illness cases by *identifying, controlling, or eliminating* health and safety risks.
4. **Provide** adequate instructions, information, and training to ensure employees' adoption of competitive practices to perform their work.
5. **Implement** effective safety procedures to reduce or avoid risks while protecting the environment, health, and occupational safety of employees.
6. **Train and educate** employees, contractors, and suppliers in the procedures and applicable OSHA standards.
7. **Require** clients, contractors, suppliers, and all those that interact with PRASA to comply with applicable regulations to environmental, health, and occupational safety.

PRASA's goal is to avoid work-related injuries (accidents) and illnesses.

As mentioned, PRASA is facing the COVID-19 pandemic. As such, it is now more important than ever to ensure the safety and health of employees. This is a challenge never seen in the modern era, thus, every day the organization is learning and developing new ways to safeguard everyone involved in the corporation's activities.

The most recent central government executive order allows employees to return to their workplace. PRASA developed "Plan de Control de exposición para el Retorno al Trabajo ante COVID-19" which details the steps to follow to resume presential work, cleaning and prevention protocols, and what to do if there



is an employee that test positive for COVID-19. Within the guide it can be found an exposure risk level matrix for an auto evaluation. The information was given to all employees via virtual workshops.

### Key Performance Indicator

**KPI Name:** # of Work-Related Injuries and Illness per month

**Identification #:** LD-02

#### Variables:

1. # of work-related injuries and illness
2. # of months in the study period

#### Mathematical Expression:

$$\frac{\text{\# of work-related injuries and illness}}{\text{\# of months in the study period}}$$

### Initiative: Increase productivity.

Productivity is a direct result of a positive employee engagement. When employees are engaged, they will show up, will work longer hours (without overtime), and, overall, will be more productive. PRASA is engaged continuously in motivating its employees to improve productivity. Enhancing the sense of ownership (as [previously discussed](#)) is an example of the steps taken to improve productivity.

Implementing tools such as Microsoft Office 365 suite helps communicating throughout the organization without being physically in the same place. This implementation allows employees to perform their work without boundaries, sometimes remotely, thus, promoting a stress-free environment. With the current global pandemic COVID-19 situation, PRASA has been analyzing new ways to adapt to the new reality. As such, the Human Resources Department is currently in the process of analyzing work environment alternatives to promote the safety of all employees. Also, due to the current COVID-19 pandemic, PRASA is working on approving a protocol for remote working.

The organization is continuously analyzing employees' sick leaves to study monthly trends to evolve its strategy. As a result, a Wellness Program is being defined to reduce sick leave. Although the program is in a design phase, the corporation is taking advantage of its medical health provider's prevention program communicating wellness alternatives to employees. The medical provider has seven (7) clinics providing specialized services in:

- Acupuncture
- Aromatherapy
- Therapeutic Massages
- Other activities

Promoting wellness demonstrates employees that the organization supports them on a personal level. When employees feel supported in the workplace, it leads to increased employee productivity and decreased absenteeism.

Furthermore, the Human Resources department is currently analyzing proposals for companies to study, recommend, and revise the existing salary scale. Once the salary scale is revised, PRASA's retaining strategy will be strengthened, morality will be boosted and productivity will increase, thus, positioning

the corporation to offer a fair and competitive market compensation directed to well-prepared employees. It is estimated that the study will be completed by February 2021.

### Key Performance Indicator

**KPI Name:** # Sickness absence days per Full-Time Equivalent (FTE) employees

**Identification #:** LD-03

**Variables:**

1. # sickness absence days
2. # FTE employees

**Mathematical Expression:**

$$\frac{\text{\# sickness absence days}}{\text{\# FTE employees}}$$

### Initiative: Maintain a balanced headcount

In 2014, PRASA conducted a performance capacity study to determine the optimal headcount for every department based on workload and capacity. As a result, PRASA have enhanced workforce productivity and reduced labor costs, while taking into account employee level and responsibilities.

The optimal number of employees may be measured as the proportion of employees compared to the number of connections. As such, the goal for the **Employees per Connection** indicator was set using the capacity analysis mentioned previously.

The optimal FTE level defined by the capacity study was 4,935 employees. Currently, PRASA has approximately 4,584 employees (current cap defined by the Oversight Board), including around 300 pre-retired employees not providing service. However, a new capacity study will be developed within the fiscal year 2021 to find an updated and adequate employee balance based on PRASA's current resources needs in light of recent developments.

Using the new capacity study results, PRASA is aiming to maintain an adequate staff level within areas with most variances between the availability and the required capacity to perform the operations and maximize the use and fit of current employees..

### Key Performance Indicator

**KPI Name:** # Employees per 1,000 Connections

**Identification #:** LD-04

**Variables:**

1. # total active FTE employees
2. # total connections (active and inactive)

**Mathematical Expression:**

$$\frac{\text{\# total active FTE employees}}{\text{\# total connections (active and inactive)}} \times 1,000$$

# FINANCIAL SUSTAINABILITY



For several years, Puerto Rico has been struggling with its fiscal challenges. PRASA has also been adversely affected by this situation. As a result, in 2016, the Oversight Board was created to oversee the financial decisions of the Government and certain covered instrumentalities, including PRASA. To continue to improve PRASA's financial situation, initiatives within this focus area are addressed to provide financial sustainability without affecting the cost of services. It consists of one (1) objective and four (4) initiatives. A brief description of each initiative is included herein.

## Objective: Financial Efficiency

PRASA and the water industry's increasing challenges force the corporation to become more efficient in managing the limited economic resources. The initiatives within the financial efficiency section look for ways to either increase revenue, reduce operating costs, or maximize the use of available federal programs and external financing at reasonable costs while providing customers with affordable water services.

### Initiative: Improve billings and collections

PRASA's revenues are derived from providing potable water treatment and distribution and wastewater treatment and collection. There are multiple initiatives that PRASA is currently working on to keep improving its billing and collections:

- Commercial Losses Mitigation
- Interagency data integration
- Meter replacement

Commercial losses represent approximately 7.3% (as extracted from the 2019 Water Balance) of the total water supplied. Apparent losses (commercial losses), refers to unauthorized consumption, metering inaccuracies and data handling errors. Non-Revenue Recovery Office, or known by its Spanish acronym ORANF, gathers information about non-registered accounts, and consumption deviations, among others; and executes actions to impact the accounts with field operations teams. ORANF's primary purpose is to increase collections rate by actively converting non-billable into billable accounts.

Billing and collections are also affected by discrepancies in customers' data. As such, PRASA will be working with another initiative for interagency data integration. This initiative looks to cross-examine information from governmental corporations or agencies such as PREPA, [Puerto Rico Treasury Department \(Hacienda\)](#), and [Municipal Tax Collection Center \(CRIM\)](#), among others, to capture clients information to update PRASA's database. The initiative is in the design phase, but once executed, it will improve billing and collections by correcting postal addresses, service connection type or by identifying possible theft.

The Meter Replacement initiative consists of installing new meters capable of being read remotely to increase the precision of water consumption billed and reducing customer's claims related to incorrect meter reading.

Improving billing and collections will ensure the implementation of initiatives to guarantee the quality and continuity of the service it provides.

### Key Performance Indicator

**KPI Name:** % Billing Adjustments

**Identification #:** FS-01

**Variables:**

1. \$ billing adjustments
2. \$ gross billing

**Mathematical Expression:**

$$\frac{\$ \text{ billing adjustments}}{\$ \text{ gross billing}} \times 100$$

### Initiative: Controlling operating costs

Payroll, electricity, maintenance, and chemical costs represent approximately 75% of operating expenses (OPEX). To achieve financial sustainability, the corporation maintain its commitment to keep identifying cost savings opportunities.

Currently, PRASA has approximately 4,600 employees. However, the employee level concluded by the capacity analysis is 4,900 (as [previously described](#)). The corporation will continue to maintain the current employment level to keep controlling payroll expenses. Also, the organization is working to decrease overtime levels for plant operators and electromechanics through water filtration plants shift automation and recruitment.

The second highest expense is electricity costs representing approximately 20% of OPEX. To reduce electrical consumption, the five (5) regions are already implementing initiatives within their facilities. Also, PRASA has set Power Purchase Agreements (PPA) with private companies for installing solar panels within sites where the size of the lot so allows. Roughly, the PPA states that PRASA will buy the energy produced at rates between \$0.11 and \$0.15 per KWH, lower than [Puerto Rico Energy & Power Authority \(PREPA\)](#) \$0.20 per KWH rate. Approximately 11.5 Million Kilowatts per hour (MKWH) of electric consumption is already occurring as a result of the PPAs, which is expected to increase to over 30 MKWH by the fiscal year 2026.

Maintenance and chemical expenses combined represent approximately 12% of OPEX. The preventive Maintenance department promotes the anticipation of repairs by focusing on a proactive approach to work done within the facilities. This proactive approach reduces costs by expanding the equipment's lifespan and unplanned costs related to corrective maintenance.

As to chemicals, PRASA is currently working on standardizing the use of chemicals for effective management throughout the facilities. Optimizing chemical usage will reduce its costs as dosages can be planned based on historical trends. Some of the actions to be taken to optimize chemical use are:

1. Development of processes and procedures.
2. Identify cost-effective coagulants and flocculants suppliers.
3. Establish the right monitoring criteria for chemical products.
4. Development of metrics to measure the effectiveness trends of chemical consumption.

To measure this initiative, PRASA will closely monitor the current operating expenses and compare them to the budget.

### Key Performance Indicator

**KPI Name:** % Operating Expenses Budget Usage

**Identification #:** FS-02

**Variables:**

1. \$ Actual Operating Expenses
2. \$ Budget Operating Expenses

**Mathematical Expression:**

$$\frac{\$ \text{ Actual Operating Expenses}}{\$ \text{ Budget Operating Expenses}} \times 100$$

### Initiative: Efficient planning for CIP gradual self-funding

PRASA's primary goal is to achieve its vision of becoming financially sustainable. As such, PRASA needs to generate and provide enough revenue through an affordable rate structure while providing quality and reliable service, allowing for access to capital markets, and meeting all its financial obligations, including a portion of its Capital Improvement Program

Historically, most of the CIP was externally funded with a repaying planned based on the rate structure. Since 2015 PRASA has been unable to access the capital markets and therefore started to gradually self-funding its CIP. To do so, and as required by the Oversight Board, annual gradual rate increases started in January 2018 for all customer types distributed as follows:

- Residential: 2.5%
- Commercial: 2.8%
- Industrial: 3.5%
- Government: 4.5%

In December 2016, Raftelis Financial Consultants (RFC) submitted a Professional Opinion Report. Their comments regarding self-funded CIP where:

***"The appropriate level of rate revenue funded capital improvements is unique for each utility. As a result, there is no industry standard percentage that can be recommended in all situations.***

***RFC believes that a target of achieving 50% rate revenue financing within ten years is appropriate for PRASA to balance the conflicting objectives of minimizing the required rate increase while, at the same time, reducing PRASA's overall level of default risk."***



To achieve 50% of CIP self-funding, PRASA needs to regain cost-effective capital markets access. Rating analysts and investors will demand that PRASA demonstrated improvement in the main areas of creditworthiness identified by the major rating agencies: (i) Size and health of the system, service area, and the economy; (ii) Financial strength of the operation; (iii) Strength and independence of rate-setting

structure and regulatory compliance; (iv) Strength and independence of governance; (v) Operational and financial management assessments; and (vi) Capital improvement plan requirements.

As such, PRASA has been undertaking key actions to demonstrate its commitment towards restoring capital market access. These actions include:

- Professional and independent Governing Board members pursuant to Act No. 68-2016, which sets requirements for a diversified and professionalized board.
- Five-year rate increase schedule and independent rate setting process determined by Act 21
- Long-term planning: strategic, financial, and capital improvements
- Annual balanced budgets
- Fund operating reserve requirements of 90-days cash on hand
- Access to CIP funding alternatives: FEMA, SRF program, and Rural Development bonds

PRASA aims to establish self-funding to gradually be able (i) to pay for the annual renewal and replacement investments to maintain the System in optimal condition and operation, and (ii) to fund up to 50% of the total needs of other CIP projects (excluding projects financed with federal funds and grants).

### Key Performance Indicator

**KPI Name:** % Self-Funded CIP

**Identification #:** FS-03

**Variables:**

1. \$ revenue for CIP funding
2. \$ total CIP needs

**Mathematical Expression:**

$$\frac{\$ \text{ revenue funds for CIP funding}}{\$ \text{ total non-federal CIP needs}} \times 100$$

# INNOVATION AND ACCOUNTABILITY



This focus area looks for engagement in an organizational culture gear towards on continuous innovation and accountability to provide credibility and business transparency. It consists of two (2) objectives and four (4) initiatives. Brief descriptions of each are included in this section.

## Objective: Technology Inclusion

PRASA continuously searches for innovation opportunities throughout its operation with the support and active coordination of the Information Technology (IT) department. In 2004, the IT department started INTEGRA Program, allowing PRASA to modernize and integrate its systems and applications to support business needs and industry best practices. The program it's based on technology inclusion, taking into consideration: customers, management of the information systems, IT infrastructure and its resiliency, and processes. The strategic plan focuses on two (2) INTEGRA initiatives: Remote meter reading and Business Intelligence and Digitalization.



## Initiative: Remote meter reading

As mentioned, commercial losses represent approximately 7.3% (as stated on Water Balance 2019) of the total water supplied. It has three (3) classifications: Non-Authorized Consumption (Theft), Customer Meter Inaccuracies (Meter Error), and Systematic Data Handling Errors. Remote meter reading initiatives' general purpose is to reduce the Customer Meter Inaccuracies as it represents 51% of the commercial losses, roughly translated to 20.24 MGDs, as shown on the most recent water balance audit (2019). This large amount of inaccuracies is related in part to the impact of the Hurricanes in PRASA's meters, which accelerated their degradation and reduced their accuracy.

The initiative consists of replacing current customers' meters with new remote technology reading meters. Investment for meter replacement is calculated in over \$300 million. PRASA is currently identifying potential sources of funding for such replacements.

After the meters are installed, the IT department needs to incorporate adequate infrastructure to collect data being transmitted by the meters. Furthermore, information needs to be integrated across all platforms used, such as SAP, GIS, Scada, among others. Handling the data properly will help increase collections, optimize billing, and as a result, revenue growth.

## Key Performance Indicator

**KPI Name:** % of Customers with AMR

**Identification #:** IA-01

### Variables:

1. # customers with AMR
2. # total of PRASA's customers

### Mathematical Expression:

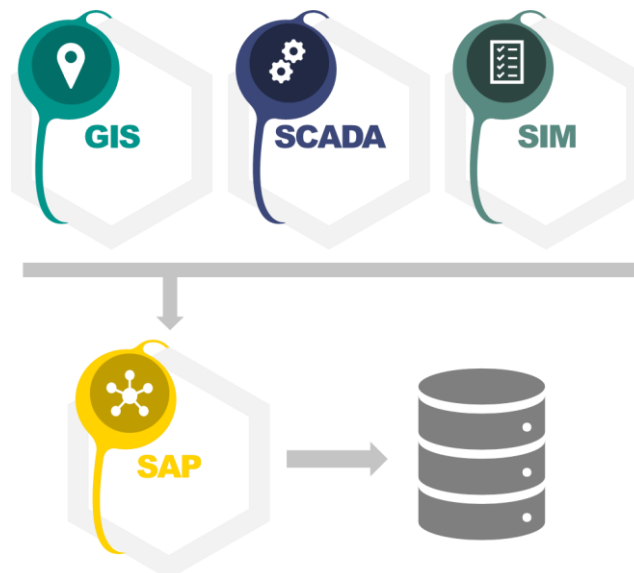
$$\frac{\text{\# customers with AMR}}{\text{\# total PRASA's customers}} \times 100$$

### Initiative: Business Intelligence and Digitalization

PRASA is continuously improving its software, technological and reporting tools. Within this initiative, the IT department is working in two areas: Business Intelligence and Digitalization. The primary purpose is to integrate the different platforms within the organization to improve working efficiency and data mining to improve the analyses performed.

One of the first steps to improve Business Intelligence is through platform integration. Out of the need to communicate any service interruptions, an Excel file was created to report how many customers are without water at any given time. This report was known as “Cédula de Acción Rápida” or CAR. The information came from customers' complaints, calls, system checkups, or telemetry. Later, an application was created to facilitate the data entry process for the users.

Due to recent events, information for service interruption, along with other important data, is needed to be dynamic, current, and almost instantaneous for making the right decision. Thus, PRASA is working into integrating: Geographical Information System (GIS), Sistema Integrado de Métricas (SIM), and SCADA to SAP Hana, which in turn will be integrated into a centralized business intelligence database. By integrating all systems into a centralized database, the organization will be able to better visualize all sectors and service interruptions dynamically and quickly for an accurate decision-making process. Integration planning will be starting after the implementation of the SAP Hana suite and its business warehouse, which will be deployed in August 2020. Remote reading meters will also allow PRASA to identify clients without service avoiding the need of a client requirement.





Complementing business intelligence, PRASA is also working on digitalizing processes to start its path of being a paperless corporation. The department will implement in phases following the steps below:



- **As Is Process Analysis.** All process analysis to be digitalized.
- **Paper Forms.** Identifying paper forms used as part of the process.
- **Supporting Documents.** Identifying paper supporting documents used as part of the process.
- **Define Future Process.** Process improvement to be prepared for a digital environment.
- **Digitalized Forms.** Convert paper forms into digital forms.
- **Workflows.** Implementation of digital workflows within the selected system.

### Key Performance Indicator

**KPI Name:** % Processes Digitalized (analysis phase)

**Identification #:** IA-02

#### Variables:

1. # of processes digitalized
2. # total processes to digitalize within the analysis phase

#### Mathematical Expression:

$$\frac{\text{\# processes digitalized}}{\text{\# total processes to digitalize within the analysis phase}} \times 100$$

## Objective: Performance Responsibility

PRASA believes that everyone in its organization is responsible for the overall performance of the corporation. This objective address transparency in results, communications, and spreading the culture of performance measurements throughout the organization to hold all PRASA employees accountable for their performance and success.

### Initiative: Transparency through effective communication

Through public communications, PRASA intends to publish quarterly performance reports for all stakeholders. The report is built in an electronic format that will be easy to read and have dynamic visual content, providing useful information about the corporation, including specific performance indicators. Communications are designed, taking into consideration the audience. PRASA has several types of target audiences, such as:

- Direct Customers (Residential, Commercial, Government, and Industrial)
- Employees
- Central and Municipal Governments
- Fiscal Oversight Management Board
- Regulatory Agencies (Department of Health and EPA)

- Investors
- Suppliers and other external parties.

In 2011, PRASA continued its commitment to providing effective communication by creating the corporation's account into social media platforms, specifically Twitter and Facebook. Currently, they have over 70,000 followers on Twitter and over 46,000 on Facebook. In 2015, they included Instagram, with approximately 2,000 followers. By emerging into the social platforms Twitter and Facebook, PRASA is engaged in providing effective communication. Last year (2019), all social media accounts were certified as official.

To engage the general population in following the communication, PRASA frequently publishes on its Twitter account general tips about conservation ([Initiative: Promote Water Conservation](#)) and other water-related topics, including routine and emergency repair work.



PRASA is providing information almost 24-hours a day, seven days a week, by maintaining a direct customer relationship attending any issue raised using all social media platforms. This practice has proven to be useful during the global COVID-19 pandemic, where service has been providing using social media as the initial contact. These actions result in reducing customer attention time at the Commercial Offices as visiting clients are reduced to those that need personalized service.

### Key Performance Indicator

**KPI Name:** # average communications per month

**Identification #:** IA-03

#### Variables:

1. # communications per month
2. # number of months

#### Mathematical Expression

# communications per month

# number of months

### Initiative: Governance, KPIs, and Employee Accountability

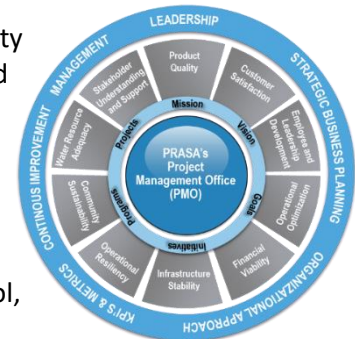
Implementation of the Strategic Plan is the responsibility of everyone within PRASA. Leading the execution of this Plan falls within the Project Management Office (PMO) framework under the Vice President of Strategic & Corporate Planning.

The PMO is, in turn, governed by a Cross-Functional Steering Committee consisting of upper management professionals who will be overseeing the general implementation efforts of the initiatives. This framework promotes high-level sponsorship by assigning initiatives among the executive level, who, in turn, will designate a project committee to provide appropriate oversight.



General PMO framework and methodology are essential for effective implementation of the initiatives. However, all departments led by their director are ultimately responsible for the management of the initiatives derived from the plan. Some of PRASA’s PMO facts are:

- Framework is based on best practices guided by Effective Utility Management (EUM), its Five Keys to Management Success, and their Ten Attributes.
- Implementation process ensures alignment between Fiscal, Strategic, and Capital Improvements Plans.
- Governance structure will sponsor and guide coordination between departments.
- Monitoring and controlling KPIs provide transparency, control, alignment, and accountability throughout the organization.



The implementation process (as shown below) is designed around the [Project Management Institute \(PMI\)](#) methodology adapted to PRASA’s internal general project management guidelines. This process facilitates both external and internal resources to collaborate and develop standard policies and procedures and manage best practices to ensure alignment and consistency in the execution of the initiatives throughout PRASA’s five operational regions.



The Strategic Plan has a total of 26 KPIs measuring each of the initiatives presented herein. A standardized format will be developed for all regions and departments to report results and action plans for any negative deviation.

During the year 2019, a software license was acquired to provide centralized information for all KPI’s and other performance metrics. The electronic platform is used to measure every effort towards the goals established in the Strategic Plan. The data entry process is still manual, but PRASA is currently planning to map all variable data to provide a limited human-error process. Software user integration and engagement will be closely monitored to ensure the platform usage.

Employee’s responsibilities will be directly related to achieving the objectives presented herein and its KPIs. By doing so, PRASA is creating an organizational culture of measuring results and sustainable responsibility spread throughout the corporation. Department and region directors will be responsible for translating the initiatives into Departmental Plans and reflecting the KPIs into employee’s performance evaluation, thus, assuring accountability.

Furthermore, employee engagement is being addressed by PRASA’s Executive President with an initiative known as Organizational Commitment. The initiative is inspired in the phrase: “a positive and proactive attitude is the key to success”. Its execution is based on eight (8) focus areas:



The initiative proposes a new cultural model where employee engagement and inclusion are the main objective.

### Key Performance Indicator

**KPI Name:** % Employees Engagement Coverage

**Identification #:** IA-04

#### Variables:

1. # employees impacted by President’s message
2. # total amount of employees

#### Mathematical Expression:

$$\frac{\text{\# employees impacted by President’s message}}{\text{\# total amount of employees}} \times 100$$

# CLOSING REMARKS

Armed with the Strategic Plan, PRASA is ready to go full throttle into the next five (5) years and overcome challenges ahead. After 75 years of serving Puerto Rico, the corporation is more determined than ever to provide sustainable, high-quality drinking water to its consumers. Employees are committed to providing their usual high-quality services to all customers around the Island. PRASA's system complexity does not prevent it from adequately managing the resources and maintaining the infrastructure.

Over the years, the water industry and more significantly PRASA has faced many challenges, including hurricanes, droughts, earthquakes, a historic global pandemic and a stressed fiscal situation in Puerto Rico. It is forecasted that there will be more powerful hurricanes, more extended drought periods, and the earth is going to keep moving. Still, PRASA will keep improving its infrastructure to be more resilient to these inevitable changes.

The Island's economic challenges led to the enactment of PROMESA, creating the Oversight Board, thus, adding to PRASA's administrative and reporting requirements. However, PRASA has been meeting all requirements set forth by the Oversight Board by developing and presenting the Fiscal Plans as required. The Fiscal Plan states the objectives, goals, and initiatives to improve PRASA's fiscal situation. Some of the initiatives are interconnected with the ones stated within the Strategic Plan. As such, the two plans jointly with the CIP are aligned, and their implementation should be coordinated and simultaneously.

The design of the Strategic Plan took into consideration PRASA's core values, mission, and vision statements, translated into five (5) focus areas. The Strategic Plan five (5) focus areas are translated into actionable plans by defining ten (10) objectives and 24 initiatives. Each initiative monitored by KPIs to measure its progress being observed within the PMO framework.

Finally, the five (5) year projection for each KPI is mapped to each of the focus areas, objectives, and initiatives, which are presented in the Balanced Scorecard, a live document that will measure the annual progress of the Strategic Plan execution.

The plan is set, the path is traced, goals are in place, and the employees are engaged. PRASA is armed with the strategy that will guide the organization into the future. Regardless of the challenges ahead, PRASA, led by its Executive President and its committed employees, has a plan and is prepared to become a top-performing utility and set an example of a properly run public corporation.