ARCADIS

PUERTO RICO
AQUEDUCT AND
SEWER AUTHORITY

Fiscal Year 2024 Consulting Engineer's Report for the Puerto Rico Aqueduct and Sewer Authority

Final Report

December 2024

To satisfy the requirements of Section 7.07 of the 2012 Master Agreement of Trust by and between PRASA and Banco Popular de Puerto Rico as Trustee; and the requirements between PRASA, the Government of Puerto Rico and the Puerto Rico Fiscal Agency and Financial Advisory Authority.

Fiscal Year 2024 Consulting Engineer's Report for the Puerto Rico Aqueduct and Sewer Authority

Final Report

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Appendix A. Ongoing and Future Initiatives and Projects by Operational Region
Appendix B. North Region CIP Projects

Acronyms and Abbreviations

AAFAF	Puerto Rico Fiscal Agency and Financial Advisory Authority (Spanish Acronym)
ABT	Additional Bonds Test
ACA	Asset Condition Assessment
ADSEF	Office of Administration for the Families Socioeconomic Development (Spanish Acronym)
ALC	sewer system (Spanish Acronym)
AMI	Automatic Meter Reading and/or Advanced Metering Infrastructure
AOP	All Other Perils
Arcadis	Arcadis Caribe, PSC
ARPA	American Rescue Plan Act
ASSMCA	Health Services Administration and Addiction Control (Spanish Acronym)
AWIA	America's Water Infrastructure Act
AWWA	American Water Works Association
B	Billions
BESS	battery energy storage systems
BIL	Bipartisan Infrastructure Law
BLS	U.S. Bureau of Labor Statistics
BNR	Biological Nutrient Reactor
BOD	Biological Oxygen Demand
BOR	Broker of Record
BPR	Biannual Progress Report
CAA	Consolidated Appropriations Act
CAGR	Compound Annual Growth Rate
CARES Act	Coronavirus Aid, Relief, and Economic Security Act
CBA	Collective Bargaining Agreement
CCL	Contaminant Candidate List
CCP	Corrosion Control Plan
CCR	Consumer Confidence Report
CCT	Corrosion Control Treatment
CDBG-DR	Community Development Block Grant-Disaster Recovery
CER	Consulting Engineer’s Report

CGI	Commonwealth Guaranteed Indebtedness
Chubb	Chubb Insurance Company
CIAPR	College of Engineers and Land Surveyors of Puerto Rico (Spanish Acronym)
CIMS	Compliance Information Management System
CIP	Capital Improvement Program
CL	Case Link
COE	Emergency Operations Center (Spanish Acronym)
COR3	Central Office for Recovery, Reconstruction, and Resilience
COVID-19	Coronavirus Disease 2019
CSEMD	Corporate Security and Emergency Management Directorate
CSO	Commonwealth Supported Obligations
CSWO	Combined Sewer Overflow
CT	Contact Time
CWA	Clean Water Act
CWS	community water systems
CWSRF	Clean Water State Revolving Fund
D&O	Directors and Officers
DAC	Direct Administrative Costs
DBP	Disinfection Byproducts
DBPR	Disinfection Byproducts Rule
DIC	difference in condition
DMR	Discharge Monitoring Report
DNER	Department of Natural and Environmental Resources
DOL	Department of Labor
DSC	Debt Service Coverage
DSSA	Distribution System and Site Assessment
DWO	Dry Weather Overflow
DWSRF	Drinking Water State Revolving Fund
E&O	Errors and Omissions
EGU	Emergency Generator Unit
EMT	Executive Management Team
Eng	Engineer

EPL	Employment Practices Liability
ERAP	Emergency Rental Assistance Program
ERI	Economic Research Institute
ERP	Emergency Response Plans
ERS	Employees Retirement System
FAASt	FEMA Accelerated Award Strategy
FEMA	Federal Emergency Management Agency
FOG	Fats, Oils, and Grease
FOMB	Fiscal, Oversight, and Management Board
FTE	Full-Time Employee
FY	Fiscal Year
GDC	General Duty Clause
GIS	Geographic Information System
GO	general obligation bond
gpm	gallons per minute
GPS	Global Positional System
GRR	Galvanized Requiring Replacement
GWR	Ground Water Rule
GWUDI	Groundwater Under the Direct Influence of Surface Water
HAA	Haloacetic Acids
HAF	Homeowner Assistance Fund
HAZWOPER	Hazardous Waste Operations and Emergency Response
HES	Head End System
HIEPAAA	*Hermandad Independiente de Empleados Profesionales de la Autoridad de Acueductos y Alcantarillados*
HMGP	Hazard Mitigation Grant Program
HR	Human Resources
HRPA	Human Resources and Labor Relations Applications
HUD	United States Department of Housing and Urban Development
IMP	Integrated Maintenance Program
IT	Systems and Information Technology
ISS	Integrated System for Security

KPI	Key Performance Indicators
km	kilometer
kWh	kilowatt-hour
LC	Legal Case
LCR	Lead and Copper Rule
LCRI	Lead and Copper Rule Improvements
LCRR	Lead and Copper Rule Revision
LIHWAP	Low-Income Household Drinking Water and Wastewater Assistance Program
LSL	Lead Service Lines
LSLR	Lead Service Line Replacement
LT2ESWTR	Long-Term 2 Enhance Surface Water Treatment Rule
LTP1	Short Long-Term 2 Projects
LTP2	Mid Long-Term 2 Projects
LTP3	Long-Term 2 Projects
LUMA	Luma Energy, operator of PREPA's electricity distribution in Puerto Rico
M	Millions
MAPFRE	MAPRE PRAICO Insurance Company
MARSH	Marsh Saldaña
MAT	Master Agreement of Trust
MCL	maximum contaminant levels
MDBP	Microbial and Disinfection Byproduct
MG	million gallons
MGD	Million Gallons per Day
mg/L	milligrams per liter
MNC	Minor Non-Compliance
MPS	Maintenance Planning and Scheduling
N	Nitrogen
ng/L	nanograms per Liter
NPDES	National Pollutant Discharge Elimination System
NPV	Net Present Value
NPW	Non-Potable Water
NTNC	non-transient non-community water systems

MRP	Material Requirement Planning
NRW	Non-Revenue Water
O&M	Operation & Maintenance
OATRH	Oficina de Administración y Transformación de los Recursos Humanos (Spanish Acronym)
OCIP	Owner Controlled Insurance Program
ORANF	Non-Revenue Water Recovery Office (Spanish Acronym)
OSHA	Occupational Safety and Health Administration
P	Phosphorous
PCS	Process Control System
PE	Professional Engineer
PFAS	Per-and Polyfluoroalkyl Substances
PFC	Puerto Rico Public Finance Corporation
PFOA	perfluorooctanoic acid
PFOS	perfluorooctanesulfonic acid
PMC	Program Management Consultants
PML	Probable Maximum Loss
PMO	Project Management Office
PO	Purchase Order
PPA	Power Purchase Agreement
ppt	parts per trillion
PRASA	Puerto Rico Aqueduct and Sewer Authority
PRDOH/DOH	Puerto Rico Department of Health
PREB	Puerto Rico Energy Bureau
PREPA	Puerto Rico Electric Power Authority
PRIFA	Puerto Rico Infrastructure Financing Agency
PRITS	Puerto Rico Innovation and Technology Service
PROMESA	Puerto Rico Oversight, Management, and Economic Stability Act
PRWEA	Puerto Rico Water and Environmental Association
PWS	Potable Water Systems
QSAR	Quarterly Settlement Agreement Report
R&R	Renewal and Replacement
RFP	Request for Proposal

ROC	Remote Operating Centers
RWI	Raw Water Intakes
RWPS	Raw Water Pump Station
RWWTP	Regional Wastewater Treatment Plant
SAAS	Software as a Service
SAHFI	SRF Supplemental Appropriation for Hurricanes Fiona and Ian
SAP	Systems, Applications, and Products in Data Processing
SBR	Sequencing Batch Reactor
SCADA	Supervisory Control and Data Acquisition
SDWA	Safe Drinking Water Act
SEC	U.S. Securities and Exchange Commission
SIR	self-insured retention
SISC	Corporate Security Inspections System (Spanish Acronym)
SNC	Significant Non-Compliance
SOLPE	Purchase Order Request (Spanish Acronym)
SOP	Standard Operating Procedures
SRF	State Revolving Fund
SSMC	Sewer System Maintenance Crew
SSO	Sanitary Sewer Overflow
SSOMP	Sewer System Operation & Maintenance Plan
SSS	Sanitary Sewer System
STS	Sludge Treatment System
TIV	Total Insurable Value
TOC	Total Organic Carbon
TSO	operational service workers (Spanish Acronym)
TSS	Total Suspended Solids
TTHM	Trihalomethane
µg/L	micrograms per liter
U.S.	United States
UCMR5	Fifth Unregulated Contaminant Monitoring Rule
UIA	Unión Independiente Auténtica
UIA-AAA	*Unión Independiente Auténtica de la Autoridad de Acueductos y Alcantarillados*

USDA RD	U.S. Department of Agriculture Rural Development
USDOJ	U.S. Department of Justice
USEPA	U.S. Environmental Protection Agency
UV	Ultraviolet
VARTOL	Values at Risk at the Time of Loss
VHCC	Visualization and Hydraulic Control Center
WM	Warehouse Management
WPS	Water Pump Station
WRO	Water Recovery Office
WST	Water Storage Tank
WTP	Water Treatment Plant
WWPS	Wastewater Pump Station
WWTP	Wastewater Treatment Plant

Disclaimer

This Consulting Engineer's Report (CER) considers the financial projections and Capital Improvement Program (CIP) included in the Puerto Rico Aqueduct and Sewer Authority's (PRASA) 2024 Certified Fiscal Plan as certified by the Oversight Board on June 11, 2024 (2024 PRASA Fiscal Plan), PRASA's FY2025 Annual Budget approved by the Oversight Board on June 14, 2024.

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Arcadis is required to make disclosures stating the limitations of the work contained within the FY2024 CER and its use. In accordance with the Securities Exchange Act of 1934, the following disclosure statements are incorporated into the FY2024 CER prepared by Arcadis. This FY2024 CER was prepared by Arcadis for PRASA; hereinafter referred to individually as the "Authorized Recipient."

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Arcadis devoted effort in the construction and preparation of this document is consistent with (i) the degree of care and skill ordinarily exercised by members of the same profession currently practicing under the same or similar circumstances and (ii) the time and budget available for its efforts to ensure that the data contained in the FY2024 CER is accurate as of the date of its preparation. This document was based on estimates, assumptions and other information developed by Arcadis from its independent research effort, general knowledge of the industry, and information provided by and consultations with the Authorized Recipient and the Authorized Recipient's representative and consultants. No responsibility was assumed for inaccuracies in reporting by the Authorized Recipient, the Authorized Recipient's agents and representatives, or any third-party data source used in preparing or presenting this study. Arcadis assumes no duty to update the information contained in the FY2024 CER unless it is separately retained to do so according to a written agreement signed by Arcadis and PRASA.

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Arcadis relied on assumptions, forecasts, data, and statistics provided by PRASA, its other consultants, and published industry references. Arcadis reviewed the PRASA-prepared forecast over a future six-year period of time and "forward-looking statements." These statements relate to Arcadis's expectations, beliefs, intentions, or strategies regarding the future. These statements may be identified by the use of words like "anticipate", "believe", "estimate", "expect", "intend", "may", "plan", "project", "will", "should", "seek", and similar expressions. The forward-looking statements reflect Arcadis's views and assumptions concerning future events as of the date of this document and are subject to future economic conditions and other risks and uncertainties. Actual and future results and trends could differ materially from those outlined in such statements due to various factors, including, without limitation, those that will be discussed in this FY2024 CER. These factors are beyond Arcadis's ability to control or predict. Accordingly, Arcadis makes no warranty or representation that any of the projected values or results contained in this document will be achieved.

Unless otherwise stated, this FY2024 CER summarizes the work completed through September 1st, 2024, to align with the annual Budget Review Report. Changed conditions occurring or becoming known after such date could affect the material presented and the conclusions reached herein to the extent of such changes. Arcadis has no responsibility for updating this report for changes that occur after the date of the report.

This document is qualified in its entirety by, and should be considered in light of, these limitations, conditions, and considerations.

Executive Summary

E.1. Introduction

The Puerto Rico Aqueduct and Sewer Authority (PRASA) is a public utility that owns and operates water and wastewater infrastructure in Puerto Rico. PRASA serves approximately 3.2M residents[1] and millions of visitors annually throughout an area of 3,535 square miles. PRASA owns many assets, including land, buildings, dams, wells, water and wastewater treatment facilities and pump stations, ocean outfalls, buried infrastructure, vehicles, equipment, and water meters.

Arcadis Caribe, PSC (Arcadis), has been retained by PRASA as their Consulting Engineer for the preparation of the Consulting Engineer's Report (CER) to satisfy the reporting requirements specified in Section 7.07 of the Master Agreement of Trust (MAT), as amended, by and between PRASA and Banco Popular de Puerto Rico as Trustee, and the requirements between PRASA and the Government of Puerto Rico.

As required by Section 7.07 of the MAT, unless the Senior Bonds have been rated investment grade by at least two Rating Agencies for 24 consecutive months, the Consulting Engineer shall prepare a CER to document the current condition and changes, if any, in PRASA's operation and the performance of the system. Arcadis prepared this CER for FY2024 (2024 CER or the "Report") in compliance with the MAT. PRASA's fiscal year begins on July 1st and ends on June 30th. For example, FY2024 is the fiscal year from July 1, 2023, through June 30, 2024.

E.2. PRASA's Fiscal Situation

Over the past several years, the Government of Puerto Rico has faced significant economic and demographic challenges that have adversely impacted PRASA. In addition to the economic downturn that has been experienced in Puerto Rico, like many other municipal water and wastewater utilities around the world, PRASA continues to face several major challenges, including service affordability, aging infrastructure, high volume of non-revenue water (NRW), regulatory mandates, system vulnerabilities to climate change and natural disasters, declining population and water consumption, workforce challenges, and increasing capital and renewal and replacement (R&R) needs. In addition, Puerto Rico suffered economic, infrastructural, and operational impacts because of Hurricanes Irma and María in 2017, a series of earthquakes in 2019 and 2020, the Coronavirus Disease 2019 (COVID-19) pandemic, and Hurricane Fiona in 2022.

In May 2016, the United States (U.S.) Congress enacted the Puerto Rico Oversight, Management, and Economic Stability Act (PROMESA). PROMESA created the Fiscal, Oversight, and Management Board (FOMB) for Puerto Rico to provide financial and other oversight of the Government and its agencies, including PRASA. The FOMB oversees the development of budgets and fiscal plans for Puerto Rico's Central Government and its covered entities, including PRASA.

Under PROMESA's requirement for the submission of a Fiscal Plan, on June 11, 2024, the FOMB certified PRASA's most recent Fiscal Plan, according to Section 201(d)(2) of PROMESA (2024 PRASA Fiscal Plan). The 2024 PRASA Fiscal Plan promotes PRASA's mission of providing high-quality drinking water and sanitary service at the lowest possible cost. Provided that the Certified Fiscal Plan is successfully executed and the financial and operational sustainability objectives are achieved, PRASA will be able to maintain access to credit markets at reasonable rates

[1] Source: U.S. Census Bureau as of July 1, 2022.

and, as needed, to meet borrowing requirements, enabling it to continue to provide an essential service to its customers.

The 2024 PRASA Fiscal Plan provides for its Capital Improvement Program (CIP) to cover 15 years from FY2024 to FY2038 (the CIP) and PRASA's 15-year forecast covering preliminary results for FY2024 and projections for FY2025 through FY2038 (the Forecast). In addition, PRASA's CIP has been restructured to optimize the use of federal funding, achieve a more resilient and reliable water and wastewater system, improve water quality, ensure consistency with PRASA's long-term goals, and ultimately achieve financial sustainability.

PRASA has implemented various initiatives and has secured funding from various sources to improve its fiscal situation, which includes:

1. Federal Debt Modification: On July 26, 2019, PRASA modified its debt obligations under the State Revolving Fund (SRF) programs and the U.S. Department of Agriculture Rural Development (USDA RD) loans. The benefits of this federal debt modification were:
    a. Reduction of interest rates and extension of the amortization period resulting in a debt service relief of approximately $370 million (M) between FY2020 and FY2030.
    b. Termination of existing Commonwealth guarantees over the Federal Debt, reducing overall Government contingent liabilities by approximately $1 billion (B).
    c. Access to new loans (classified as senior indebtedness) from the SRF and USDA RD programs, including $26M granted under the SRF program on the debt modification date.
2. 2020 and 2021/2022 Refunding: The issuance of the 2020 Senior Bonds resulted in a reduction in average annual senior debt service of $13M and total debt service savings to final maturity of approximately $348.2M. On August 25, 2021, PRASA issued its 2021 Senior Bonds in a total principal amount of $1,089.8M, and on June 15, 2022, completed the issuance of its 2022 Senior Bonds in a total principal amount of $565.2M to refinance the aggregate of all the 2012 Series A and B senior revenue bonds. The issuance of the 2021/2022 Senior Bonds resulted in a reduction of the average annual senior debt service of $22M and total debt service savings to final maturity of approximately $569.7M.
3. Rate Adjustments: During FY2024 and beyond, after following the process required by Act 21-1985, PRASA implemented a new rate structure and charges, simplifying its rate to only two charges – a base charge and a consumption charge. The rate increases in FY2024 included an increase of 4.95% to the base charge revenues and 2% to the consumption charge revenues. As recommended by the Officer Examiner appointed to run the public hearing process required by Act 21-1985, the revised rate also incorporates an annual increase for subsequent years of at least 2% but not more than 5% annually, up to a cumulative cap of 30%. Additionally, as part of this process, PRASA revised the charges for other service activities, such as water connection charges, wholesale charges, etc.
4. Energy Management: PRASA implemented energy supply projects through Power Purchase Agreements (PPAs) to reduce its electricity costs. In the meantime, PRASA started designing a microgrid energy system at the Superaqueduct raw water pumping station.
5. Federal Funds for Disaster Recovery and Resilience: In addition to the historical type of funding available (e.g., SRF and USDA RD), PRASA secured federal funding for efforts related to the 2017 Hurricanes (Hurricanes Irma and María), the 2020 Earthquakes, the COVID-19 pandemic, and Hurricane Fiona in 2022 and other available sources for water and wastewater infrastructure, including the Federal Emergency Management Agency (FEMA) Public Assistance Program, the U.S. Department of Housing and Urban Development (HUD) Community Development Block Grant-Disaster Recovery (CDBG-DR) Program, Consolidated Appropriations Act (2021), the American Rescue Plan Act (ARPA), and the Infrastructure Investment and Jobs Act. Table ES-1 includes a summary of the identified, obligated, and received funds as of April 2023.

Table ES - 1 Federal Funding Summary (As of March 31, 2024, $ in M)

Fund Name	Program	Funding Source	Identified Amount	Obligated/Approved	Received
Reconstruction & Recovery	Emergency Work (Category A&B)	FEMA (PA)	$229.5	$229.5	$224.7
	Permanent Work (FAASt, Section 428)	FEMA (PA)	$3,663.0	$3,663.0	$47.3
	Disaster Related Hazard Mitigation	FEMA (406)	$1,422.0	$1,048.1	-
	Non-Disaster Related Hazard Mitigation (HMGP)	FEMA (404)	$421.6	$22.6	4.6
	CDBG – MIT	HUD	$386.5	$159.6	-
	CDBG-DR (Non-Federal Match Program)	HUD	$406.9	$200.0	$4.4
	Direct Administrative Costs (DAC)	FEMA (PA)	$203.5	-	-
	Working Capital Advance (Perm Work)	FEMA (PA)	-	-	$309.4
	SRF – SAHFI	EPA	$555.0	-	-
	RD – Harvey, Irma, and María Grant	RD	$24.7	$24.7	$24.7
	Emergency Communities Water Assist	RD	$3.6	$3.6	$3.6
	Disaster Water Grants	RD	$5.6	-	-
	Reconstruction & Recovery Funds		**$7,321.9**	**$5,351.2**	**$618.7**
COVID-19 Relief Funds	Coronavirus Aid, Relief, and Economic Security Act (CARES Act)	ARPA/OMB	$2.1	$2.1	$2.1
	Infrastructure Projects (Naranjito, Santa Rita, El Yunque (Las Picuas) WWTP Elimination, etc.)	ARPA	$65.0	$65.0	$65.0
	Caño Martín Peña	ARPA	$129.1	$129.1	$129.1
	Calle Loíza	ARPA	$7.7	$7.7	$7.7
	Las Picuas – Río Grande	ARPA	$11.3	$11.3	$11.3
	Other Infrastructure Projects	ARPA	$9.6	$9.6	$9.6
	Premium Pay	ARPA	$12.1	$12.1	$12.1
	LIHWAP	ARPA/CAA	$5.0	$5.0	$5.0
	ERAP – Emergency Rental Assistance	HUD	$23.1	$23.1	$23.1
	Mortgage Assistance Program	HFA	$3.2	$3.2	$3.2
	Total Coronavirus Relief Funds		**$268.2**	**$268.2**	**$268.2**
Infrastructure Funds	CWSRF – Regular + BIL	USEPA	$282.1	$237.8	$89.8
	DWSRF– Regular + BIL	USEPA	$157.8	$127.9	$42.7

Fund Name	Program	Funding Source	Identified Amount	Obligated/Approved	Received
	Total Funds for Infrastructure Projects		$439.9	$365.7	$132.5
		Total	$8,030.0	$5,985.1	$1,019.5

E.3. Organization and Management

PRASA is organized into five operational Regions (North, South, East, West, and Metro) and is managed by an Executive Management Team (EMT) that provides the day-to-day management oversight and coordination for all institutional activities and is governed by a multi-disciplinary Board. The organization includes various departments including, but not limited to, finance, human resources (HR), customer services, legal, and information systems. Figure ES-1 shows PRASA's current organization.

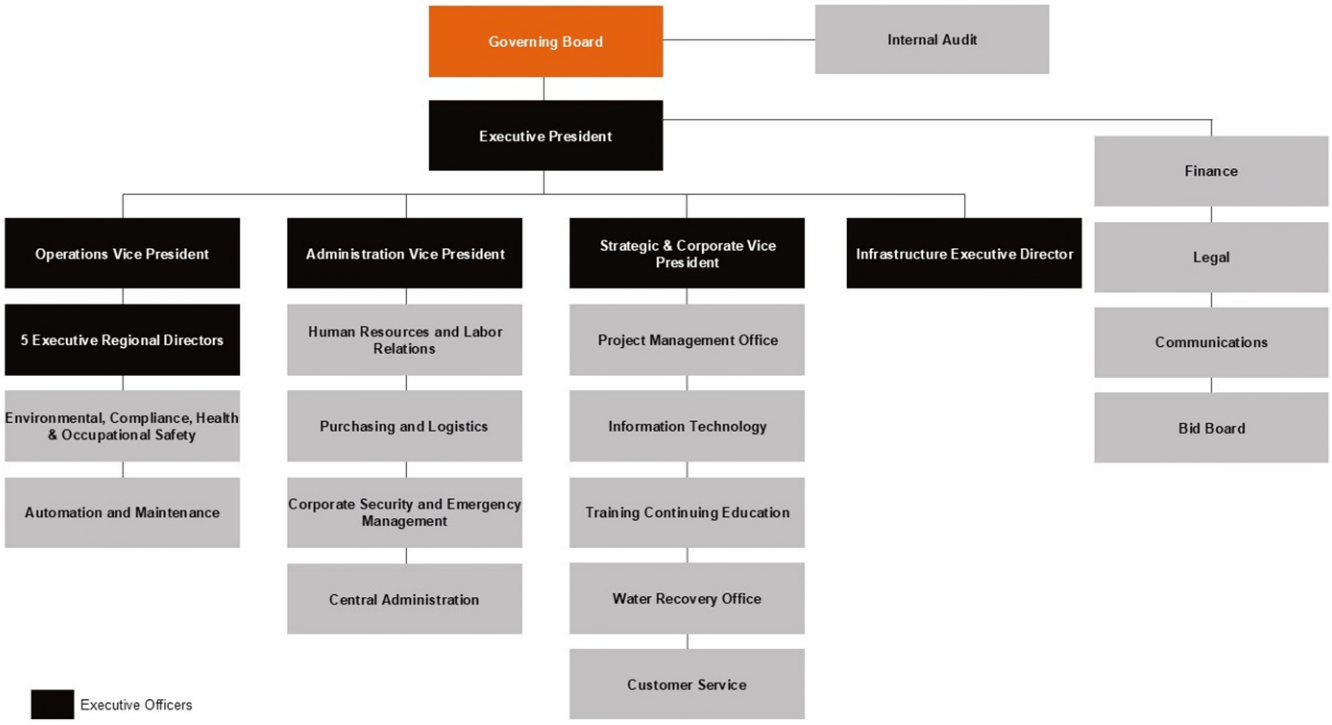


Figure ES - 1 PRASA's current Legislated and Executive Management Structure

Key PRASA leadership includes its Executive President, Operations Vice President, Administration Vice President, Strategic and Corporate Planning Vice President, Interim Executive Director of Infrastructure, and the five Regional Executive Directors and Department Directors. PRASA's key EMT staff and current roles during FY2024 are Eng. Doriel Pagán (Executive President), Eng. Damaris Santini (Operations Vice President), Arnaldo Jiménez (Strategic and Corporate Planning Vice President), Mariana S. Pérez, Esq. (Administration Vice President), Omar Rivera (Executive Director of Finance), Eng. Joel Lugo (Interim Executive Director for Infrastructure), Eng. Roberto Martínez (Interim Executive Director Metro Region), Eng. José Rivera (Interim Executive Director North Region),

Eng. Bruce León (Interim Executive Director South Region), Eng. Enrique Rosario (Interim Executive Director East Region) and Eng. Erick Rosa (Interim Executive Director West Region).

At the end of FY2024, PRASA had a total headcount of 4,493 employees, including 166 employees under the Voluntary Pre-Retirement Program. Full-time employee (FTE) staff decreased by 1.3% from FY2023 to FY2024, which represents 58 FTE employees. In January 2022, PRASA completed a labor capacity and productivity assessment to determine optimal staffing levels. The study identified a need (including amendments to incorporate updates on Customer Service and Infrastructure Departments) for 5,030 employees. PRASA continues to face challenges in filling crucial positions within its Operations Department, such as field workers, supervisors, electromechanics, electromechanical assistants for the Maintenance Department, plant operators, plant managers, technical managers, preventive maintenance managers, distribution system managers, compliance specialist, and licensed engineers.

E.4. Condition of System Assets

Arcadis performed asset condition assessments of a selection of Water Treatment Plant (WTP) and Wastewater Treatment Plant (WWTP) facilities corresponding to FY2024 and a sample of ancillary facilities. The facilities were inspected to assess the structural integrity and physical condition of the structures, equipment's adequacy of operation and maintenance practices, and renewal and repair needs. Arcadis also evaluated the compliance performance results for the WTPs and WWTPs from January 1, 2023, through December 31, 2023. The inspections for the dams were performed in March 2024. The WTPs, WWTPs, and ancillary facilities were inspected between April and July 2024. Additional information can be found in the FY2024 Asset Condition Assessment (ACA) Report. The facilities were rated as Good, Adequate, Poor, or Unacceptable.

In total, 188 facility inspections were performed out of the 3,957 facilities comprising the system, excluding 136 active Raw Water Intakes (RWIs) and 75 Raw Wastewater Pump Stations (RWPSs). Inspected facilities include eight dams, 57 WTPs, 23 WWTPs, 20 Wells, 30 Water Pump Stations (WPSs), 30 Water Storage Tanks (WSTs), and 20 Wastewater Pump Stations (WWPSs). Table ES-2 includes the summary of the facilities inspected by category.

Table ES - 2 Assets Inspected by Category

Asset Category	Total PRASA Facilities[1]	Inspections Performed	
		Quantity	Percent
Regulated Dams	8	8	100
Water Treatment Plants	112	54	48
Wastewater Treatment Plants	50	26	52
Wells	244	20	8
Water Pump Stations	1,139	30	3
Water Storage Tanks	1,569	30	2
Wastewater Pump Stations	835	20	2
Total	**3,957**	**188**	**5**

[1] Data obtained from PRASA Geographical Information System (GIS) updated in June 2024. The total excludes 136 active RWIs and 75 RWPSs.

As was the case in 2022, four dams (La Plata, Cidra, Isabela, and Las Curías) received an overall rating of Poor, and the other four dams received an overall rating of Adequate. No dam received a combined rating of Good inspections. A major rehabilitation project for the outlet works at Cidra Dam was underway at the time of the inspection. All dams except Cidra Dam appear to have deteriorated since the last inspection, although some improvements were observed but not well-documented. Notwithstanding Isabela has an ongoing CIP construction project that should address some or all of the observations.

Eleven of the inspected WTPs, Fajardo Nueva WTP, Lares Nueva (Espino) WTP, Toa Vaca WTP, Adjuntas (Garzas) WTP, Coamo Urbano WTP, San Sebastián WTP, Añasco WTP, Ponce de León (Mayagüez) WTP, Monte del Estado WTP, Sabana Grande WTP and Maginas WTP, were rated as Good, with an overall average of 2.5. The remaining 43 facilities were rated as Adequate. However, even though 80% of the WTPs were classified as Adequate, three of the 43 WTPs, Ponce Vieja WTP, El Yunque WTP, and Jayuya Urbano WTP, received a low-end rating that could deteriorate to a Poor rating if not attended.

A total of 26 WWTPs (45% of total WWTPs) currently in operation were inspected as part of this asset evaluation. Overall, the facilities inspected were rated as borderline Adequate, with a score of 1.9; 4 (15%) WWTPs were rated as Poor, and 21 (81%) WWTPs were rated Adequate in the overall rating. However, three of the 21 WWTPs rated as Adequate in the overall rating are on the lower end, close to being rated as Poor. The WWTPs with the lowest overall score (below 2) include Culebra (East Region), Naranjito (North Region), Peñuelas (South Region), Adjuntas (South Region), Morovis (North Region), Patillas (South Region), Guánica (South Region), Santa Isabel (South Region), Aguadilla (Aguada) (West Region), Arecibo (North Region), Vega Baja (North Region), Guayanilla (South Region), and Las Marías (West Region).

A total of 20 wells (equivalent to 8% of total wells) from the Operational Areas of Cayey, Humacao, Carolina, Bayamón, Manatí, Toa Alta, Guayama, Coamo, San Germán, and Mayagüez were inspected in FY2024. Out of the 20 wells inspected, two received a rating of Poor, five were rated Good, and the remainder were rated Adequate under the overall rating criteria.

A total of 30 above-ground WPSs (3% of total WPSs) were inspected. Four (14% of inspected WPSs) facilities were rated as Poor under this category, which includes Villa Santa Catalina and Niagara, both from the Coamo Operational Area; Barrazas 1, from the Carolina Operational Area; Buena Vista, from Bayamón Operational Area, and April Gardens, from Humacao Operational Area.

A total of 30 WSTs were inspected in FY2024. Emphasizing the facility-specific criterion, the WSTs rating distribution for this evaluation is as follows: one (3% of inspected WSTs) WSTs were rated as Poor, 14 (47% of inspected WSTs) were rated as Adequate, and 15 (50% of inspected WSTs) were rated as Good.

A total of 20 WWPSs were inspected in FY2024. Out of the 20 WWPSs inspected, 12 (60%) received an Adequate overall rating, four (20%) received an overall rating of Good and Poor, and none was rated as Unacceptable. The areas of opportunity in each facility that obtained a low score to improve their condition include replacing old equipment with new equipment or modifying the process control strategies.

In FY2024, of the total 513M gallons per Day (MGD) produced, approximately 338 MGD was NRW, an increase in NRW over FY2023 results (334 MGD). Of this amount of NRW, 322 MGD was due to water losses (both apparent and real), and 15.50 MGD was due to unbilled authorized consumption. Of the total water losses in FY2024, approximately 55.49 MGD was due to apparent (commercial) losses, while approximately 267.30 MGD was due to real (physical) losses. According to the FY2024 PRASA Fiscal Plan, PRASA’s goal is to reduce water losses by 55 MGD by FY2031 by successfully implementing the Water Recovery Office (WRO) three main programs:

- Master Meters: This initiative includes the installation of water meters at critical facilities to measure water production accurately.
- Pressure Management: This initiative includes installing best practices across the transmission and distribution network.
- Leaks Detection and Reduction: This initiative will aid PRASA with identifying, prioritizing, and resolving major leaks detected in the system.

PRASA recognizes that reducing its NRW and water loss volume and, in turn, its water production will positively impact its operations and financial results (lower operation & maintenance (O&M) expenses and higher revenues, for example) and its sustainability practices. Therefore, reducing NRW is one of the top priorities and is one of the main objectives of the 2024 PRASA Fiscal Plan.

Because of the system's size, complexity, and current condition, it is reasonable to state that it will continue to require significant capital investments and continuous maintenance and repairs. Also, it is likely that as the system ages and new compliance regulations are implemented, an additional O&M budget may be necessary to address maintenance, repairs, and compliance requirements.

E.5. O&M Practices and Strategic Plan

Arcadis evaluated the adequacy of PRASA's O&M practices by assessing compliance with regulatory requirements, conducting interviews with PRASA personnel, and having field inspectors observe various WTP and WWTP during the FY2024 asset condition assessment.

During the evaluation period, several WTP and WWTP facilities experienced non-compliance with treatment parameters due to inadequate tools for executing O&M practices, outdated versions of O&M manuals and equipment manuals, lack of potable water flow meter, no calibration plan for the chemical feed pumps, insufficient security measures, inconsistent jar tests by operators, inadequate pipe labeling or color coding, poor lighting, and deficient emergency power systems.

Furthermore, issues with the automatic transfer switches and deficient housekeeping were identified. Repairs to fences, gates, and access roads were also found necessary. Despite operational and process control challenges, WTPs effectively deliver potable water, while several WWTPs encounter difficulties related to process control and equipment issues.

PRASA should consider operational procedure improvements like standardization of processes and providing more tools and training to operators on process controls and actions to facilitate and improve plant operations and performance and optimize O&M expenses. Also, including new process control equipment and system automation would benefit PRASA, given that operators continue to depend on manual operation for several processes. There is also room for improvement concerning prioritization, scheduling, and execution of corrective and preventive maintenance activities for optimizing and strengthening the system.

PRASA's FY2024 O&M expenses preliminary projection for the water and wastewater system (combined) is approximately $790.8M (as of June 2024), of which $717.8M are directly related to the O&M of the System. The remainder of $72.9M is related to commercial activities and provision of customer services, including but not limited to staffing and operation of customer service offices island-wide; meter reading; connection and disconnection services; invoice preparation, printing, and distribution; and customer service call centers, among others. PRASA estimates that during FY2024, approximately 73% of its System's O&M budget ($524M) was allocated to the water system and the remaining 27% ($193M) to the wastewater system.

In FY2024, chemical-related expenses were one of the largest operating expenditures at nearly $60M. PRASA's efforts to reduce overall chemical costs include non-capital initiatives such as procurement strategies and better handling of chemical usage. However, rising costs associated with chemical production and the compliance requirements for water quality have offset efforts to generate savings.

Below is a brief description and status of additional programs and initiatives that PRASA continued to work on in FY2024 and will continue to be implemented in future fiscal years.

1. Integrated Maintenance Program (IMP) and Asset Management: The 2015 Consent Decree with U.S. Environmental Protection Agency (USEPA) and the 2006 Puerto Rico Department of Health (PRDOH) Drinking Water Agreement required that PRASA continues to develop a comprehensive IMP to include both corrective and planned (i.e., preventive, predictive, and proactive) maintenance activities to ensure the proper O&M of its treatment plants and other critical facilities. In August 2023, PRASA began a comprehensive assessment of the utility's existing Asset Management Program and Organization Structure. During the latter part of 2023 and March 2024, PRASA performed an Asset Management Program Gap Analysis. By April 2024, PRASA had defined and prioritized its Asset Management improvement initiatives and completed a draft of its Strategic Asset Management Program.
2. NRW Reduction Program: Refer to the section above.
3. Electricity Management Program: PRASA's energy cost is the second largest expense and depends on the fluctuations in electricity rates established by the Puerto Rico Energy Bureau (PREB) based on oil prices. Therefore, PRASA continues to implement initiatives to reduce energy consumption.
4. Master Plan Update: PRASA develops its Water and Wastewater Master Plan (Master Plan) every ten years to align with the U.S. Census population information. The latest Master Plan was completed in 2024 for population projection adjustments and to create the roadmap for the next years for a safer, resilient, efficient, and financially viable System.

E.6. Capital Improvement Program and Regulatory Compliance

PRASA has developed a multi-year CIP to improve and maintain its System and restore damaged infrastructure to its condition before the 2017 Hurricanes, Hurricane Fiona, and the 2020 earthquakes. The CIP's main objectives are to maintain (renew and replace), modernize (new technology), and simplify the System to achieve operational efficiency and sustainability, protect public health, safeguard environmental quality, enable continued economic development, and meet all regulatory requirements. Additionally, the CIP includes projects aimed at meeting mandatory compliance with the 2015 USEPA Consent Decree, as recently amended, and the 2006 PRDOH Drinking Water Settlement Agreement.

As of March 2024, PRASA had 292 active projects in the CIP at different stages for a total investment of $6,928M, as shown in Table ES-3.

Table ES - 3 Active CIP Projects by Stage

Stage	Number of Projects	Estimated Investment ($, M)	Percentage (%)
Pre-Planning	2	$1,251	18
Planning	40	$1,206	17

Stage	Number of Projects	Estimated Investment ($, M)	Percentage (%)
Design	64	$2,121	31
Bidding	70	$1,018	15
Construction	72	$1,179	17
Completed	44	$1533	2
Total	**292**	**$6,928**	**100**

As of March 2024, the major projects under construction include the dredging of Lake Carraízo, the Guayama RWWTP (Regional Wastewater Treatment Plant) rehabilitation, Enrique Ortega WTP rehabilitation, the Morovis Sur WTP rehabilitation, the Caguas Laboratory, the Dorado, Patillas/ Guayama, Ponce, Caguas, Camuy, Isabela/Aguada, Hormigueros/Mayagüez and Salinas/Guayama trunk sewers rehabilitation. In addition, the main projects under design or bidding phases include water meter replacement, Culebrinas WTP rehabilitation, the Buena Vista Community drainage, sewer and water system improvements, the Superaqueduct WTP rehabilitation, the Carolina, Santa Isabel and Mayagüez WWTPs improvements, the elimination of the Maunabo WWTP the Caguas Norte WTP rehabilitation, the Guaynabo WTP rehabilitation and the Superaqueduct microgrid.

PRASA's CIP for FY2024 through FY2038, as included in the 2024 PRASA Fiscal Plan, amounts to $11.3B. Table ES-4 shows annual capital expenditures by project category. Almost 80% of PRASA's CIP comprises Reconstruction & Recovery, Compliance (mandatory and non-mandatory), and Mitigation and Resilience projects of the total forecasted expenditures.

Reconstruction & Recovery, totaling 42% of the total CIP, is $4,766M and is the largest category in terms of dollars throughout this CIP period. Mitigation and Resiliency projects are the second largest expense, with an annual average expenditure of $207.45M and a total of $3,111.8M. Non-Mandatory Compliance is now the third largest expense, with an annual average expenditure of $67.6M and $1,013.8M over 15 years.

The total of $11.3B includes $430M to gradually fund a reserve for meter replacement and other infrastructure needs.

Table ES - 4 CIP FY2024-FY2038 by Category ($, M)

Project Category	Fiscal Year Ending June 30							
	2024	2025	2026	2027	2028	2029	2030	2031
Reconstruction & Recovery	$239.6	$880.7	$1,319.4	$1,132.9	$610.4	$220.9	$115.6	$96.2
Mandatory Compliance	$32.3	$99.9	$169.7	$107.8	$24.7	$8.9	$18.7	$10.5
Mitigation & Resiliency	$18.2	$96.3	$480.2	$846.3	$369.2	$167.8	$102.6	$183.9
Generators & Meters	$10.7	$14.8	$2.5	$0.7	$3.5	$35.5	$40.5	$34.0
Renewal & Replacement	$74.9	$70.8	$43.2	$35.0	$40.0	$40.0	$40.0	$60.0
Non-Mandatory Compliance	$75.8	$146.7	$266.6	$234.2	$61.1	$24.4	$33.3	$24.2
Quality	$22.1	$45.7	$67.9	$22.0	$3.3	$2.5	$7.8	$0.6
Fleet & IT	$18.1	$11.5	$5.0	$5.0	$8.0	$8.0	$8.0	$8.0
Others	$36.0	$15.3	$26.2	$29.8	$31.2	$30.9	$24.3	$15.9
Total	**$527.7**	**$1,381.8**	**$2,380.6**	**$2,413.7**	**$1,151.4**	**$538.8**	**$390.8**	**$433.3**

[1]Numbers may not add up due to rounding.

Project Category	Fiscal Year Ending June 30							
	2032	2033	2034	2035	2036	2037	2038	2024-2038
Reconstruction & Recovery	$48.8	$23.2	$21.7	$23.7	$11.9	$10.6	$10.6	**$4,766.0**
Mandatory Compliance	$1.8	$1.8	$12.7	$16.3	$9.8	$8.3	$3.5	**$526.8**
Mitigation & Resiliency	$390.8	$340.9	$113.4	$2.0	$0.2	$-	$-	**$3,111.8**
Generators & Meters	$34.0	$34.0	$39.0	$64.0	$64.0	$69.0	$59.0	**$505.2**
Renewal & Replacement	$60.0	$60.0	$60.0	$60.0	$60.0	$60.0	$60.0	**$823.9**
Non-Mandatory Compliance	$64.9	$40.8	$17.3	$8.3	$5.4	$6.6	$4.3	**$1,013.8**
Quality	$-	$-	$-	$-	$-	$-	$-	**$171.9**
Fleet & IT	$8.0	$8.0	$8.0	$8.0	$8.0	$8.0	$8.0	**$127.6**
Others	$9.1	$3.0	$3.0	$2.7	$2.7	$2.7	$2.7	**$235.5**
Total	**$617.4**	**$511.6**	**$275.0**	**$185.1**	**$162.0**	**$165.3**	**$148.1**	**$11,282.6**

[1]Numbers may not add up due to rounding.

One of the main objectives of the six-year CIP is to ensure regulatory compliance with the existing USEPA Consent Decree and the 2006 PRDOH Drinking Water Settlement Agreement. Both the Consent Decree with USEPA and the Drinking Water Settlement Agreement with PRDOH require PRASA to mandate that PRASA implements remedial plans, develops and executes CIP projects to align systems with regulatory requirements, and conducts evaluations on specific infrastructure and operational issues. Negotiations and modifications to the Consent Decree with USEPA, along with the Drinking Water Settlement Agreement with PRDOH, have been completed by the end of FY2023; PRASA, in collaboration with USEPA and the U.S. Department of Justice (USDOJ). A notice of lodging was presented in court at the beginning of FY2024 to address force majeure events. PRASA began enforcement of the modified Consent Decree in 2024, and Biannual Progress Report (BPR) Number 18 summarizes the initiatives and programs implementation efforts carried out. PRASA and the U.S. negotiated additional modifications to the Consent Decree, and the Court approved the final Consent Decree in October 2024.

Furthermore, in accordance with the 2006 Drinking Water Settlement Agreement, PRASA submits a Quarterly Settlement Agreement Report (QSAR) every quarter, including Remedial and Preventive Measures and action plans to prevent future violations.

PRASA continues to work on the requirements of the Consent Decree with USEPA and the Settlement Agreement with PRDOH. In addition, it continues to consider the proposed modifications to said Consent Decree and Settlement Agreement between PRASA and regulatory agencies in its CIP.

While PRASA has begun to identify the potential impact of new regulations, the full impact of future regulations and other regulatory requirements on PRASA's System is unknown. In some cases, future regulations and additional regulatory requirements are expected to require minor process changes and, in other cases, major capital improvements, such as the construction of new treatment processes and intensive repair programs.

PRASA is vigilant of potential future regulations, such as the Lead and Copper Compliance Rule and the Per-and Polyfluoroalkyl Substances (PFAS) groups, that may impact the System and compliance requirements. Also, PRASA has experienced additional compliance challenges regarding the National Pollutant Discharge Elimination System (NPDES) permit limit requirements for WWTPs and Sludge Treatment System (STS) discharges at the WTPs. Over the past years, the NPDES permit limits became more stringent for certain parameters such as total nitrogen, total phosphorous, and residual chlorine, among others. PRASA is currently performing investigations and analysis to explore feasible alternatives while continuing communication with regulatory agencies to achieve compliance in the future.

However, as the impact of future regulations becomes clearer and NPDES permit limits become more stringent, modifications to the CIP may be necessary to address the resulting needs adequately. Consequently, the reprioritization of CIP requirements and implementation schedules will depend on PRASA's financial capacity.

E.7. Insurance Program

Arcadis has reviewed PRASA's current insurance coverage as per the provided policies and determined the adequacy of the received policies considering the type and value of PRASA's fixed assets. Also addressed in the Section 7 subsections are some outstanding recommendations for PRASA's insurance coverage from previous evaluations. The data, opinions, and comments included in this section have been based solely on PRASA's copies of policies for the 2023-2024 period provided by PRASA for this purpose unless stated otherwise. Several key recommendations for PRASA's insurance program are provided below.

1. The insurable values stated in the policy program are the same as in 2013 based on the cost appraisal performed by Malcolm Pirnie in 2006. Therefore, factors like PRASA's CIP, inflation, acquisitions, etc., have not been considered for at least 16 years. It is strongly recommended that PRASA undertake a new valorization of its assets. Arcadis Caribe was retained during 2023-202424 to perform an asset valorization update which is expected to be completed at the latest by the end of 2024 or early 2025.
2. The current Probable Maximum Loss (PML) estimates for PRASA for quantifying catastrophic risk exposures were performed in 2010 by AIR Worldwide Corporation based on a valorization study from 2006. Since then, modules, maps, and projections have changed, and new modules might prove economically beneficial to PRASA. This study will provide PRASA and its stakeholders with a scientific report representing the maximum foreseeable loss from catastrophic events, considering various scenarios in terms of intensity and return periods, corroborating if the current limits of insurance carried are adequate or if adjustments shall be made. This analysis may assist PRASA in complying with FEMA's insurance requirements. It is strongly recommended that PRASA undertake a new PML study, which should be performed after a new valorization of PRASA's assets is conducted since any changes in the values of all insurable assets will affect the outcome of this study.
3. Once the new valorization of PRASA assets and PML study are completed, PRASA will be better positioned to determine if its current insurance limits and deductibles are adequate.
4. It is recommended that a loss control assessment plan be set in place to reduce the possibility that a loss will occur and reduce the severity of those that do occur. Periodic inspection of WTPs and WWTPs, focusing on safe working conditions and proper maintenance, will be an integral part of the Loss Control Assessment Plan.
5. *PRASA indicates that after the 2017 Hurricanes and the pandemic, it has updated the Authority safety plans and action plans to reduce loss plus they perform yearly inspections of the treatment plans. Therefore PRASA does not find this additional loss control assessment plan necessary.*

E.8. System Assets and Financial Analysis

Arcadis evaluated PRASA's financial forecast as included in the 2024 PRASA Fiscal Plan and as certified by the Oversight Board on June 11, 2024, and evaluated the appropriateness of rates and charges. Arcadis also reviewed the FY2025 Annual Budget, certified and approved on June 14, 2024, by the FOMB. This section summarizes Arcadis's review and provides an assessment of PRASA's financial condition as it relates to PRASA's financial preliminary results for FY2024 and the reasonableness of PRASA's assumptions in the preparation of the five-year

financial projections from FY2025-FY2029 (the forecast period). The sufficiency of the revenues necessary to support the projected operations and capital costs.

In FY2023, PRASA implemented a new rate structure and charges, simplifying its rate to only two charges – a base charge and a consumption charge. For FY2024, a rate adjustment of 2.0% was implemented, and for FY2025, starting on July 1, 2024, the minimum required annual rate adjustment of 2.0% was also implemented. The projected accumulated benefit of the rate increases is $333.5M through FY2029.

Operating Revenues and Expenses

PRASA's annual Operating Revenue projections for FY2024 through FY2029, including the 2024 PRASA Fiscal Plan revenue-enhancing initiatives, presented on a cash basis per the MAT, are summarized in Table ES-5.

Table ES - 5 PRASA Operating Revenues ($, M)

Fiscal Year	Operating Revenues
FY2024 Projection, based on Preliminary Results	$1,100.9
FY2025 Annual Budget[1]	$1,180.6
FY2026 Projected	$1,218.7
FY2027 Projected	$1,230.7
FY2028 Projected	$1,273.9
FY2029 Projected	$1,316.8

[1] As certified by the FOMB on June 14, 2024.

PRASA is not projecting any additional sources of revenue. Therefore, PRASA's Authority Revenues shall equal Operating Revenues for the forecast period from FY2024 through FY2029.

PRASA's Operating (Current) Expenses are presented on an accrual basis as required by the MAT. PRASA's preliminary Operational Expenses for FY2024 and operating expense projections for FY2025 to FY2029 net of (i) capitalized expenses, (ii) the 2024 PRASA Fiscal Plan expense reduction initiatives, and (iii) the 2017/2022 Hurricanes impact recoveries are presented in Table ES-6.

In its FY2024 projections, PRASA includes a net deposit of $21.4M from FEMA funds to the credit of the Current Expense Fund for the reimbursement of PRASA's operating expenses concerning the impacts of Hurricanes Irma and María. In FY2025, PRASA has budgeted a net deposit of $1M for the impact of 2020 earthquakes and Hurricane Fiona in 2022. No additional deposits are included in the periods from FY2026 through FY2029.

Table ES - 6 PRASA Operating Expenses ($, M)

Fiscal Year	Operating Expenses Without FEMA Reimbursements	Operating Expenses net of FEMA Reimbursements
FY2024 Preliminary	$831.7	$810.3
FY2025 Annual Budget	$904.1	$903.1
FY2026 Projected	$935.1	

Fiscal Year	Operating Expenses Without FEMA Reimbursements	Operating Expenses net of FEMA Reimbursements
FY2027 Projected	$941.8	
FY2028 Projected	$947.6	
FY2029 Projected	$953.6	

Debt Service

Estimated debt service amounts include projected payments on the 2020, 2021, and 2022 Bonds, other existing debt, and payments for maintaining required debt service reserves, as applicable. Other System Indebtedness in parity with Senior bonds includes the SRF and USDA RD Loans, which started in July 2019 after the federal debt modification. Renegotiated terms of PRASA's SRF and RD debt obligations, reclassified as Senior Level Debt per the Seventh Supplemental Agreement of Trust dated July 26, 2019, are summarized in Table ES-7.

Table ES - 7 Renegotiated Terms for SRF and RD Debt

Debt Category	SRF	RD
Outstanding Debt Balances, including future loans of $26M for SRF and accrued interests for RD	$595,777,017.21	$402,931,464.55
Term	30 years	40 years
Rate	0% until year 10 and 1.0% after that	2.0%
Payment Terms	Biannual principal-only payment of $5M in Years 1-10; biannual principal and interest payments of $13.7M in Years 11-30	Biannual principal and interest payments of $5M in Years 1-10, increasing to $8.5M in Years 11-40
Maturity Date	7/1/2049	7/1/2059
Debt Level	Senior	Senior

A summary of PRASA's debt service obligations and projections for FY2024 and the forecast period are presented in Tables ES-8 and ES-9, respectively. FY2024 debt service obligations totaled $249.1M of Senior lien obligations.

Table ES - 8 FY2023 Debt Service Obligations and Preliminary Results ($, Thousands)

Debt Category	FY2024 Preliminary Results
Senior Debt	$249,111
Senior Subordinated Debt	-
Subordinated Debt	-

Debt Category	FY2024 Preliminary Results
Total	**$249,111**

Table ES - 9 FY2025-FY2029 Debt Service Obligations ($, Thousands)

Debt Category[1]	FY2025 Projection	FY2026 Projection	FY2027 Projection	FY2028 Projection	FY2029 Projection
Senior Debt	$249,374	$258,446	$264,431	$269,007	$269,998
Senior Subordinated Debt	-	-	-	-	-
Subordinated Debt	-	-	-	-	-
Total Debt	**$249,374**	**$258,446**	**$264,431**	**$269,007**	**$269,998**

The Debt Service Coverage (DSC) results presented in Table ES-10 for the forecast period have been calculated using the Rate Covenant requirements per the MAT, as amended, and debt service obligations.

Table ES - 10 FY2024 - FY2029 Debt Service Coverage

Debt Service Level	DSC Requirement	FY2024 Preliminary DSC	FY2025 DSC	FY2026 DSC	FY2027 DSC	FY2028 DSC	FY2029 DSC
Senior Debt[1]	**2.50**	4.42	4.73	4.72	4.65	4.74	4.88
Senior Subordinated Debt[1]	**2.00**	4.42	4.73	4.72	4.65	4.74	4.88
Subordinated Debt[1]	**1.50**	4.42	4.73	4.72	4.65	4.74	4.88
All Obligations[2]	**1.00**	1.00	1.00	1.00	1.00	1.00	1.00

[1] DSC calculated for Operating Revenues.
[2] DSC calculated for Authority Revenues.

Reserves and Other Deposits Requirements

Per the Sixth Supplemental Agreement to the MAT, PRASA is cash funding the reserve and deposited $5.8M in the Operating Reserve Fund during FY2024. For FY2025, PRASA is projecting to deposit $8.5M in the Operating Reserve Fund to comply with the MAT requirement of 90 days of current expenses of such year. In future years, PRASA is projecting to deposit the required funds in the Operating Reserve Fund to align the balance with the increases in Operating Expenses, always seeking to maintain three months of current expenses in deposit.

PRASA deposited $32.6M from Operating Revenues in the Capital Improvement Fund during FY2024 to finance a portion of its projected CIP. This deposit is net from the FEMA/ARPA proceeds and other restricted funds, and the

PRASA FY2024 Fiscal Plan New Federal Funds initiative is estimated at $90.1M (excluding the costs related to such funds as they are already included as a part of the debt service) for FY2024.

In its FY2025 Annual Budget, PRASA projects to make a deposit to the Capital Improvement Fund of $19.4M from Operating Revenues, net from FEMA/ARPA proceeds and net from the PRASA FY2024 Fiscal Plan New Federal Funds initiative estimated at $210.9M (excluding the costs related to such funds as they are already included as a part of the debt service).

From FY2026 through FY2029, PRASA projects to make deposits in the Capital Improvement Fund in the amounts of $18.5M, $23.0M, $54.7M, and $89.6M from Operating Revenues, net from the New Federal Funds initiative estimated at $361.5M, $288.1M, $80.6M, and $41.0M, respectively (excluding the costs related to such funds as they are already included as a part of the debt service).

The FY2024 projections include a $36M transfer to the Rate Stabilization Account, while the FY2025 Annual Budget includes transfers from the Rate Stabilization Account of $35M. The 2024 PRASA Fiscal Plan also includes transfers from the Rate Stabilization Account for $32M in FY2026. Transfers are not planned beyond FY2026.

Conclusions

Over the past several years, the Government of Puerto Rico has faced significant economic and demographic challenges that have adversely impacted PRASA. In addition to the economic downturn that has been experienced in Puerto Rico, PRASA is also facing several major challenges, including service affordability, aging infrastructure, high volume of NRW, regulatory mandates, system vulnerabilities to climate change and natural disasters, declining population and water consumption, workforce challenges, and increasing capital and R&R needs. However, PRASA's financial circumstances have improved and indicate a positive outlook due to the implementation of various initiatives, including recent debt refunding resulting in debt service savings without increasing the maturities of the refunded debt, expected influx of federal funds, gradual increases to rates, and improved collection of past due amounts and government accounts.

In January 2022, PRASA completed a labor capacity and productivity assessment to determine optimal staffing levels. The study identified a need for 4,800 employees for PRASA's optimal performance. Based on the FY2024 total headcount of 4,493 employees, PRASA will ideally need to hire 307 additional employees. PRASA continues to face challenges in filling critical operational staff positions needed island-wide, including, but not limited to, field workers, supervisors, electromechanics, electromechanical assistants for the Maintenance Department, plant operators, plant managers, technical managers, preventive maintenance managers, distribution system managers, compliance specialist, and licensed engineers. As a result, there has been an increase in overtime hours, delayed repairs, and deficiencies in services due to understaffing.

Arcadis performed asset condition assessments of a selection of WTP and WWTP facilities corresponding to FY2024 and a sample of ancillary facilities. Arcadis visited 188 facilities throughout PRASA's five Operational Regions between March and July of 2024 to conduct a condition assessment of PRASA's facilities. Of the inspected facilities, 80 (43%) were treatment (WTP and WWTP) facilities. The assessment included a visual inspection of the physical condition of the equipment and the facilities, process controls, and an evaluation of the regulatory compliance performance, O&M practices, staffing, and training.

PRASA's eight regulated dams are rated as Adequate to Poor conditions. Many of the recommendations from the 2022 and prior inspections saw little or no progress, resulting in the overall depreciation of ratings across the board and on all of the inspected dams.

Overall, the WTPs inspected are mostly in Adequate condition. To the extent that the physical structures and operational and process controls are maintained or improved, they are expected to continue to serve their intended purpose of providing potable water supply in compliance with applicable regulations. The WWTPs generally range from Poor to Good conditions in the overall rating. Out of the 26 facilities inspected, four facilities (15%) received a Poor overall rating, 21 facilities (81%) received an Adequate rating, and one facility (4%) received a Good rating. Regarding ancillary facilities, the facility criteria rating of Wells, WPS, and WST decreased but remained at the upper end of the Adequate range. PRASA has included in its CIP program several projects to address Wells, WPSs, WSTs, and WWPSs, and it is expected to see improvements in the following years.

Several WTP and WWTP facilities experienced non-compliance with treatment parameters due to inadequate tools for executing O&M practices, outdated versions of O&M manuals and equipment manuals, lack of potable water flow meters, no calibration plan for the chemical feed pumps, insufficient security measures, inconsistent jar tests by operators, inadequate pipe labeling or color coding, poor lighting, and deficient emergency power systems.

Furthermore, issues with the automatic transfer switches and deficient housekeeping were identified. Repairs to fences, gates, and access roads were also found necessary. Despite operational and process control challenges, WTPs effectively deliver potable water, while several WWTPs encounter difficulties related to process control and equipment issues.

PRASA has a long road ahead to address challenges that have hindered and continue to affect O&M performance but hopes that important operational initiatives, including reducing NRW, improving meter and billing accuracy by implementing the pilot and full deployment of the AMI project, where new resilient water meters will be installed to collect accurate readings remotely. The influx of federal funds for the CIP implementation will allow for the much-needed improvements to the system.

PRASA has engaged the services of four Program Management Consultants (PMCs) to support its Infrastructure Department in the planning, design, permitting, procurement, construction, and management of the CIP projects in each of the five Regions. As of March 2024, PRASA had 292 active projects in the CIP at different stages for a total investment of $6,928M.

PRASA’s insurance program, including risk management, policies, and the OCIP, was reviewed to determine if it is appropriate for the system. Several key recommendations for PRASA’s insurance program were made and are recommended to be implemented promptly.

PRASA’s forecast reflects the financial projections included in the 2024 PRASA Fiscal Plan certified by the Oversight Board on June 11, 2024. With PRASA’s projected additional revenues, cost savings, new federal funds, and proposed rate increases, the forecast reflects a total surplus of $11.9M from FY2024 through FY2029.

Operating Revenues are projected to be sufficient to meet Senior Lien debt service payments and meet Rate Covenant DSC requirements for Senior Lien Debt. Authority Revenues are projected to be sufficient every year of the forecast period to meet All Obligations per the MAT. Therefore, PRASA is projecting to meet its Rate Covenant requirement of 1.0x coverage of its current obligations throughout the forecast period. In meeting these requirements, PRASA must consider its rates’ overall sustainability and affordability, given the overall economic situation affecting Puerto Rico and recent trends affecting customer consumption profiles.

1 Introduction

1.1 Introduction

The Puerto Rico Aqueduct and Sewer Authority (PRASA) is a public utility that owns and operates water and wastewater infrastructure in Puerto Rico. PRASA serves approximately 3.2M residents and millions of visitors annually. PRASA is the only utility in Puerto Rico providing water to approximately 96% and wastewater services to approximately 59% of Puerto Rico's population. The remaining four percent of residents acquire water from private wells, and 41% treat the wastewater using septic tanks or other private disposal systems. The effective operation of this vital public service is essential to the health and economic prosperity of Puerto Rico and its residents.

PRASA provides water and wastewater services throughout the island for approximately 3,535 square miles. Because Puerto Rico is an island with varied topography, isolated demographic distributions, and a diverse mix of users, thus, PRASA has a somewhat fragmented and localized system of water sources, treatment systems, and distribution/collection systems. As a result, PRASA has more treatment facilities than most utilities that serve a similar number of customers and greater diversity in assets in terms of size, treatment technologies, and age when compared to systems in the United States (U.S.) and Canada, which tend to have more centralized systems with larger regional facilities. The size and diversity of assets add complexity to the management of the water and wastewater systems (collectively, the "System") and contribute to higher operation and maintenance (O&M) costs compared to other utilities serving similar populations.

Based on the water and wastewater infrastructure geodatabase data provided by PRASA as of June 2024, PRASA owns and operates:

- Eight dams
- 112 Water Treatment Plants (WTPs)
- 136 active Raw Water Intakes (RWIs)
- 50 Wastewater Treatment Plants (WWTPs)
- 244 Wells
- 1,139 Water Pump Stations (WPSs), of which 75 are Raw Water Pump Stations (RWPSs)
- 1,569 Water Storage Tanks (WSTs)
- 835 Wastewater Pump Stations (WWPSs)
- More than 21,159 miles of water and wastewater pipelines island-wide.

1.2 Consulting Engineer's Report Purpose and Requirement

PRASA has retained Arcadis Caribe, PSC (Arcadis) as its Consulting Engineer to assist in the preparation of a Consulting Engineer's Report (CER) to satisfy the reporting requirements specified in Section 7.07 of the Master Agreement of Trust (MAT), as amended, by and between PRASA and Banco Popular de Puerto Rico as Trustee, and certain requirements between PRASA and the Government of Puerto Rico.

As required by Section 7.07 of the MAT, unless the Senior Bonds have been rated investment grade by at least two Rating Agencies for 24 consecutive months, the Consulting Engineer shall prepare a CER to document the following:

- The recommendations of the Consulting Engineer as to the proper maintenance, repairs, and operation of the System during the ensuing Fiscal Year (FY), and an estimate of the amounts of money necessary for such purposes.
- The recommendations of the Consulting Engineer as to the amount that should be deposited each month during the ensuing FY to the credit of the Capital Improvement Fund.
- The recommendations of the Consulting Engineer as to the improvements that should be made during the ensuing FY and an estimate of the amounts of money necessary for such purposes, showing separately (i) the amount to be expended during such FY from moneys to the credit of the Capital Improvement Fund and the Surplus Fund and (ii) the amount to be expended during such FY from the proceeds of Bonds and other Indebtedness.
- The recommendations of other Consultants retained by or relied upon by the Consulting Engineer as to the insurance to be carried under the provisions of Section 7.08 of the MAT.
- A statement by the Consulting Engineer of the cost of all additions made to the System and of the cost (if the cost cannot be accurately determined, the estimated cost) of all retirements of property made in such FY.
- A report of the Consulting Engineer (which may retain other Consultants as necessary) as to the adequacy of existing rates and charges for purposes of the Rate Covenant contained in Section 7.01 hereof for the current FY to date and recommendations as to any necessary or advisable revisions of rates and charges and such other advice and recommendations as they may deem desirable.
- The findings of the Consulting Engineer, whether the properties of the System have been maintained in good repair and sound operating condition, and their estimate of the amount, if any, required to be expended to place such properties in such condition and the details of such expenditures and the approximate time required therefor.

Arcadis prepared this CER (2024 CER or the “Report”), containing the Section as included below.

1.3 Approach and Methodology

This section presents the approach and methodology used in the evaluation to achieve the CER's goals and the report's organization.

- Section 2 PRASA’s Fiscal Situation: This section overviews PRASA’s fiscal situation during FY2024.
- Section 3 PRASA’s Organization and Management: This section summarizes PRASA’s organization and management, including:
  - The Executive Management Team (EMT)
  - The Board of Directors
  - Staffing Profile
  - Labor Relations
  - Training
- Section 4 Condition of the System Assets: This section includes a summary of the condition and operational state of the water and wastewater facilities inspection during FY2024.

- Section 5 O&M Practices and Strategic Plan: A summary of the O&M program, O&M costs (benchmarked against other industry utilities), and a detailed summary of PRASA’s Strategic Plan and Operational Initiatives are included in this section.
- Section 6 Capital Improvement Program (CIP) and Regulatory Compliance. This section provides an overview of the CIP spanning 15 years from FY2024 to FY2038, including PRASA's 15-year forecast with preliminary results for FY2024 and projections for FY2025 through FY2038, as presented in the 2024 PRASA Fiscal Plan. It also includes an update on the regulatory compliance of the System.
- Section 7 Insurance Program: This section summarizes PRASA’s current insurance coverage per the provided policies, and recommendations for adequacy were evaluated. Note: This chapter will be separately provided to PRASA’s finance department for review.
- Section 8 System Assets and Financial Analysis: This section includes the estimated costs for additions to the System and assets that were retired in FY2024, the financial forecast, and rates and charges appropriateness evaluation. Note: This chapter will be separately provided to PRASA’s finance department for review.
- Section 9 Conclusions and Recommendations: This section includes an overview of the assumptions, significant conclusions, and recommendations.

1.4 Acronyms

A listing of acronyms or abbreviations of terms used in this report is included in the Table of Contents.

2 PRASA's Fiscal Situation

2.1 Overview

Over the past several years, the Government of Puerto Rico has faced significant economic and demographic challenges that have adversely impacted PRASA. In addition to the economic downturn that has been experienced in Puerto Rico, like many other municipal water and wastewater utilities around the world, PRASA continues to face several major challenges, including service affordability, aging infrastructure, high volume of non-revenue water (NRW), regulatory mandates, system vulnerabilities to climate change and natural disasters, declining population and water consumption, workforce challenges, and increasing capital and renewal and replacement (R&R) needs. In addition, Puerto Rico has suffered economic, infrastructural, and operational impacts because of Hurricanes Irma and María in 2017, a series of earthquakes in 2019 and 2020, the Coronavirus Disease 2019 (COVID-19) pandemic, and Hurricane Fiona in 2022. However, PRASA's financial circumstances continue to improve due to the ongoing implementation of financial and operational initiatives, including debt restructuring, revenue-enhancing measures, federal funding from disaster recovery, and access to Drinking Water and Clean State Revolving Fund (SRF) programs to the U.S. Department of Agriculture Rural Development (USDA RD) programs funds (both SRF and USDA RD are referred herein as the "Federal Lenders").

PRASA is committed to building on its past accomplishments, particularly in improving its System's condition, increasing operational efficiencies, and timely and on-budget implementation of its CIP. These areas are expected to be addressed using the projected inflow of federal funds (with appropriate contributions from PRASA's internal funds), which should support PRASA's goal to build and maintain a more robust infrastructure and more efficient and resilient water and wastewater systems. The initiatives and challenges faced by PRASA during FY2024 are summarized in this section.

2.2 Puerto Rico Oversight, Management, and Economic Stability Act, and PRASA's Fiscal Plan

In May 2016, the U.S. Congress enacted the Puerto Rico Oversight, Management, and Economic Stability Act, PROMESA. PROMESA created the Fiscal, Oversight, and Management Board (FOMB) for Puerto Rico to provide financial and other oversight of the Government and its agencies, including PRASA. The FOMB oversees the development of budgets and fiscal plans for Puerto Rico's Central Government and certain covered entities, including PRASA. Also, it may issue subpoenas, certify voluntary agreements between creditors and debtors, seek judicial enforcement of its authority, impose penalties, and enforce territorial laws prohibiting public sector employees from participating in strikes or lockouts. The Oversight Board's responsibilities include:

- Certifying fiscal plans for entities designated as "covered entities" by the Board as well as the Government's Fiscal Plan
- Approving annual budgets
- Enforcing budgets and ordering any necessary spending reductions
- Reviewing laws, contracts, rules, and regulations for compliance with the fiscal plan

Under the PROMESA's requirement for the submission of a Fiscal Plan, on June 11, 2024, the FOMB certified PRASA's Fiscal Plan (2024 PRASA Fiscal Plan). The 2024 PRASA Fiscal Plan promotes PRASA's mission of providing high-quality drinking water and sanitary sewer service at the lowest possible cost. This certified Fiscal Plan reflects the financial and operational goals of PRASA in compliance with the requirements mandated by PROMESA to ensure fiscal responsibility while prioritizing the delivery of reliable, safe, and affordable water and wastewater services. Provided that the Certified Fiscal Plan is successfully executed and the financial and operational sustainability objectives are achieved, PRASA will be well-positioned to maintain access to credit markets at reasonable rates and as needed to meet borrowing needs, enabling it to continue providing essential customer services.

Based on the 2024 Certified Fiscal Plan, PRASA has identified certain measures to ensure continued progress in PRASA's long-term fiscal condition and to ensure the Authority can continue to provide safe, reliable, and affordable water and wastewater services. Four broad categories of measures are incorporated in the Post-Measures Financial Results:

- Revenue Enhancement Measures, which target adequate cost recovery levels executed through future rate adjustments and improvements in billing accuracy.
- Expense Reduction Measures by reduction of PRASA's overall expenditures through operational optimization, mostly by reducing physical water losses and electricity costs.
- New Financing for CIP by securing additional federal funding to finance the CIP.
- Enabling Measures, which will enact measures to facilitate the successful implementation of the Fiscal Plan key measures and to provide for operational sustainability throughout the organization.

For this Report, Arcadis used the certified 2024 PRASA Fiscal Plan as the official fiscal plan, which provides for its CIP to cover 15 years from FY2024 to FY2038 (the CIP) as well as PRASA's 15-year forecast covering preliminary results for FY2024 and projections for FY2025 through FY2038 (the Forecast). In addition, PRASA's CIP has been restructured to optimize the use of federal funding, achieve a more resilient and reliable water and wastewater system, improve water quality, ensure consistency with PRASA's long-term goals, and ultimately achieve financial sustainability.

The 2024 PRASA Fiscal Plan is discussed in more detail in Section 8.

2.3 Federal Debt Modification

Typically, PRASA receives federal funds through loans from the Drinking Water and Clean Water SRF programs and bonds or loans under the USDA RD program (both "Federal Lenders"). On July 26, 2019, PRASA modified its debt obligations under the SRF programs and USDA RD loans. The benefits of this federal debt modification are:

- Reduction of interest rates and extension of the amortization period resulting in a debt service relief of approximately $370 million (M) between FY2020 and FY2030 and $292M between FY2018 and FY2024.
- Termination of existing Commonwealth guarantees over the Federal Debt reducing overall Government contingent liabilities by approximately $1B.
- Access to new loans (classified as senior indebtedness) from the SRF and USDA RD programs.

2.4 Senior Debt Refunding (2020 and 2021/2022 Refunding)

PRASA issued its 2020 Senior Bonds in the principal amount of $1,370M on December 17, 2020, to refund a significant portion of its outstanding 2008 Senior Bonds and all the 2008 Guaranteed Bonds. The issuance of the 2020 Senior Bonds resulted in a reduction in average annual senior debt service of $13M, total debt service savings to final maturity of approximately $348.2M or approximately $213.3M Net Present Value (NPV) savings, representing 15% of refunded par amount, and the termination of the Commonwealth guarantee over the 2008 Guaranteed Bonds. On August 25, 2021, PRASA issued its 2021 Senior Bonds in a total principal amount of $1,089.8M, and on June 15, 2022, completed the issuance of its 2022 Senior Bonds in a total principal amount of $565.2M to refinance the aggregate of all the 2012 Series A and B senior revenue bonds. The issuance of the 2021/2022 Senior Bonds resulted in a reduction of the average annual senior debt service of $22M, total debt service savings to final maturity of approximately $569.7M or approximately $361.5M NPV savings, representing 20% of refunded par amount.

After the Federal Debt modification in July 2019 and the issuance of the 2020 Senior Bonds, no Commonwealth Guaranteed Indebtedness (CGI) remains outstanding. In addition, each purchaser of 2020/2021/2022 Bonds consented to certain amendments to the MAT that, among other changes, may convert the security for the revenue bonds under the MAT from a gross revenue pledge to a net revenue pledge, subject to the consent of the Federal Lenders.

2.5 Rate Adjustments

Through June 30, 2023, the rate structure implemented by PRASA provided a maximum annual rate adjustment of 4.5%, up to a cumulative 25%, through applying an annual adjustment coefficient.

During FY2024 and beyond, after following the process required by Act 21-1985, PRASA implemented a new rate structure and charges, simplifying its rate to only two charges – a base charge and a consumption charge. The rate increase in FY2024 included an adjustment of 4.95% to the base charge revenues and 2% to the consumption charge revenues. As recommended by the Officer Examiner appointed to run the public hearing process required by Act 21-1985, the revised rate also incorporates an annual increase for subsequent years of at least 2% but not more than 5% annually, up to a cumulative cap of 30%. Additionally, as part of this process, PRASA revised the charges for other service activities, such as water connection charges, wholesale charges, etc.

From FY2018 through FY2024, these yearly rate adjustments generated a total revenue of $732M for PRASA.

2.6 Energy Management

After Hurricane María made landfall in September 2017, PRASA faced challenges recovering its infrastructure to pre-disaster condition while maintaining water and wastewater service. The states of emergency that were declared in 2017 and 2020 allowed for the expedited process under Act 76 for the construction and reconstruction of critical infrastructure, including resilience improvements to Puerto Rico’s electric, aqueduct, and sewer systems.

In 2022, the Regulation on Electric Energy Wheeling was adopted pursuant to Act 57-2014 to grant the Energy Bureau of the Puerto Rico Public Service Regulatory Board the authority to regulate the wheeling mechanism in Puerto Rico in accordance with applicable laws. It aims to allow independent power producers, including PRASA, the ability to file a certification application that the Energy Bureau must approve to participate in wheeling. PRASA

staff reported that recently, the Energy Bureau established a final resolution to facilitate mechanisms for wheeling incorporation. Prior to this, there were no regulations on wheeling that provided a clear route for PRASA to move forward with the Power Purchase Agreements (PPAs), among other reasons.

Reducing electricity costs is a priority for PRASA, given unpredictable and rising energy prices. In order to reduce electricity costs, PRASA has ten facilities under PPAs generating onsite photovoltaic solar energy at an average rate of $0.154/ kilowatt-hour (kWh). The PPAs allow the use of photovoltaic energy at a blended rate that is less than the rates charged by the Puerto Rico Electrical Power Authority and its distributor system operator (PREPA/LUMA). According to 2024 PRASA's Certified Fiscal Plan, the electricity expense reduction from PPAs from FY2018 through FY2024 was $4.4M. In total, the ten sites produce approximately 11.3M kWh per year, which supplies roughly 2% of PRASA's total annual consumption.

In addition, PRASA has implemented regional energy conservation and optimization measures throughout the System. Since FY2013, the electricity consumption has been reduced by over 10% from 740M (kWh) to 660M kWh. By implementing these measures, PRASA aims to reduce reduced energy consumption by approximately 15M kWh by FY2028. As stated in the 2024 Certified Fiscal Plan, PRASA intends to implement four microgrid projects, which will be financed with hazard mitigation funds (FEMA-HMGP 406, RD), starting with the microgrid energy system at the Superaqueduct Raw Water Pump Station, currently under design phase. This pumping station, with a capacity of 100M gallons per day (MGD), will operate off-grid and will be powered by liquid natural gas and photovoltaic energy as the main energy source combined with battery energy storage systems (BESS).

2.7 Federal Funds for Disaster Recovery and Resilience

In addition to the historical type of funding available (e.g., SRF and USDA RD), PRASA secured federal funding for efforts related to the 2017 Hurricanes (Hurricanes Irma and María), the 2020 Earthquakes, and Hurricane Fiona in 2022. PRASA also secured funds from other available sources for water and wastewater infrastructure for new financing from the Federal Emergency Management Agency (FEMA), American Rescue Plan Act (ARPA), and Community Development Block Grant-Disaster Recovery (CDBG-DR) programs. Additional funding from SRF (including Bipartisan Infrastructure Law (BIL) and SRF Supplemental Appropriation for Hurricanes Fiona and Ian (SAFHI) funds) and USDA-RD were also assigned to PRASA.

2.7.1 Disaster Recovery Programs

The main sources of disaster recovery federal funding are:

1. FEMA Public Assistance Program: This program addresses emergency work (e.g., debris removal and emergency protective measures) and permanent work (e.g., reconstruction of the System to current industry standards). PRASA, FEMA, and the Central Office for Recovery, Reconstruction, and Resilience (COR3) have been coordinating for years to define the projects that resulted in the FEMA Accelerated Award Strategy (FAASt) Initiative.
   This program also provides funding for measures that would reduce or eliminate threats of similar future damage to the System that was damaged by previous disasters, also known as Section 406. Table 2-1 includes the projects expected to be completed using these funds.
   In addition, FEMA's Hazard Mitigation Grant Program (HMGP), also known as Section 404, provides funding to improve resiliency for facilities not damaged by a declared disaster. Grants provided under HMGP may be used with Section 406 funds to bring a facility to a higher level of disaster resiliency only when a disaster event

damages portions of the facility. PRASA submitted four applications under this program. Table 2-2 includes the HMGP applications submitted by PRASA.

2. Department of Housing and Urban Development (HUD) Community Development Block Grant-Disaster Recovery (CDBG-DR) Program: PRASA is a sub-recipient of these funds, which provides annual grants to develop communities by providing decent housing and a suitable living environment in low and moderate-income areas.

   HUD also includes CDBG Mitigation funds (CDBG-MIT) under this program. CDBG-MIT funds are used for financial assistance to support areas impacted by recent disasters to carry out strategic activities to mitigate risks and reduce future losses. The CDBG-MIT program applies for costs not covered or in excess of funding available from the FEMA Public Assistance Program/HMGP Section 404. The CDBG-MIT applications submitted by PRASA are summarized in Table 2-3.

Table 2-1 Section 406 Funded Projects ($ in M)[1]

Project Name	Requested Amount		Approved Amount
	FEMA (406)	FAASt	
Dorado-Barceloneta WWTP	$792.0	$-	$-
Advanced Metering Infrastructure (AMI) Project	$580.0	$210.0	$790.0
San Sebastián WWTP Elimination	$17.1	$-	$-
Barceloneta 42-inch Trunk Sewer Rehabilitation	$17.1	$25.8	$42.9
Morovis Sur WTP Water Intake	$3.9	$40.5	$44.3
Morovis Sur WTP Water Intake	$0.9	$1.9	$2.7
Enrique Ortega WTP Rehabilitation	$2.3	$124.5	$126.8
Isabela Lake Membranes	$6.9	$9.7	$16.6
Lares Espino WTP Rehabilitation	$1.8	$22.9	$24.7
Totals	**$1,422.0**	**$435.2**	**$1,048.1**

[1] Source: 2024 PRASA Fiscal Plan.

Table 2-2 HMGP Section 404 Projects Applications ($ in M)[1]

Project Name	Requested Amount	Approved Amount
East Region Water System Improvements (Valenciano)	$417.5	$18.5
Emergency Generators Units (EGUs) Enrique Ortega La Plata Phase I	$1.4	$1.4
Salinas WTP Phase I	$2.7	$2.7
Totals	**$421.6**	**$22.6**

[1] Source: 2024 PRASA Fiscal Plan.

Table 2-3 CDBG-MIT Projects Applications ($ in M)[1]

Project Name	Requested Amount	Approved Amount
EGUs Enrique Ortega La Plata Phase II	$19.8	$21.2
Bauta	$257.4	$26.4

Project Name	Requested Amount	Approved Amount
Salinas WTP Phase II	$24.3	$27.0
San Lorenzo Distribution System	$85.0	$85.0
Totals	**$386.5**	**$159.6**

[1] Source: 2024 PRASA Fiscal Plan.

2.7.2 Consolidated Appropriations Act

On December 27, 2020, Section 533 of the Consolidated Appropriations Act (CAA) was enacted to assist low-income households with paying water and sewer bills. The funds of the payments are provided directly to PRASA by CAA. In addition, Section 501 of the CAA provides funds to assist households unable to pay rent or utilities under the Emergency Rental Assistance Program (ERAP). As of April 30, 2024, PRASA received $23.1M and applied it to outstanding balances for services provided to qualifying beneficiaries.

In December 2020, Section 533 of the CAA provided $638M to eligible recipients for the prevention, preparation, and response to the coronavirus pandemic; this includes necessary expenses to carry out the low-income household drinking water and wastewater emergency assistance program (LIHWAP) to assist low-income households that pay a high proportion of household income for drinking water and wastewater services. LIHWAP also provided funds to owners or operators of public water systems or treatment works to reduce arrearages of and rates charged to such households for such services.

The funds were allocated to recipients based on the following: (1) the percentage of households in the State with income equal to or less than 150 percent of the Federal poverty line, and (2) the percentage of such households in the state that spend more than 30 percent of monthly income on housing.

2.7.3 ARPA

The ARPA was enacted on March 11, 2021, to provide relief due to COVID-19 impacts. The ARPA provisions applicable to PRASA are:

- Subtitle M Section 9901: On September 14, 2021, and December 19, 2022, PRASA received $7.5M and $4.7M, respectively, to provide premium pay to its essential employees. On December 1, 2021, $65M was assigned to PRASA for infrastructure projects, and on February 15, 2022, an additional $130M was assigned to implement the Caño Martín Pena Program.
- The Government of Puerto Rico could assign additional funds for PRASA under this Act to assist low-income households with water and wastewater services.
- As of April 30, 2024, PRASA received $23.1M and applied it to outstanding balances for water and wastewater services of qualifying beneficiaries through the PRHUD under the Emergency Rental Assistance Program (ERAP). PRASA received some of the allocated ARPA funds, expected to be used for the projects included in Table 2-4. PRASA must pursue additional funding to complete the projects on Table 2-4 and any other project.

Table 2-4 ARPA Funds for PRASA Projects ($ in M)[1]

Project Name	Municipality	Allocation Date	Allocation Amount
Naranjito WTP	Naranjito	01-Dec-21	$54.9

Project Name	Municipality	Allocation Date	Allocation Amount
Improvements to Santa Rita Sanitary Sewer System (SSS)	Fajardo	01-Dec-21	$6.4
Ceiba Norte &Gurabo Abajo Juncos SSS	Juncos	01-Dec-21	$1.3
Improvements to La Piedra & Pasto Viejo Distribution systems	Cayey	01-Dec-21	$2.5
Improvements to Pajita Falcón Water Supply System	Aguas Buenas	01-Dec-21	$0.4
WWPS Hacienda Las Lomas, Ceiba	Ceiba	18-Dec-23	$2.0
D&B of Cruzadas Well & Improvements to Piazza Tank	Yauco	11-Oct-23	$3.0
Replacement of El Yunque WWTP with el Yunque WWPs (Las Picuas)	Río Grande	20-Apr-23	$11.3
Caño Martín Peña Program	San Juan	15-Feb-22	$130.0
		Totals	**$211.7**

[1] Source: 2024 PRASA Fiscal Plan.

2.7.4 Infrastructure Investment and Jobs Act

The Infrastructure Investment and Jobs Act, also known as the BIL, established in November 2021, allocated funds over five years to improve the transportation network and core infrastructure, including aging water infrastructure, upgrading water treatment facilities, addressing emerging contaminants in small and disadvantaged communities, and making water systems resilient. For FY2024, PRASA estimated $91.5M of funding under the Act and forecasted approximately $91.5M per year for FY2025 and FY2026.

2.8 Funding Status

The federal funds identified, obligated, and received as of March 31, 2024, are summarized below in Table 2-4.

Table 2-5 Federal Funding Summary (As of March 31, 2024, $ in M)[1]

	Program	Funding Source	Identified Amount	Obligated/ Approved	Received
Reconstruction and Recovery	Emergency Work (Cat. A&B)	FEMA (PA)	$229.5	$229.5	$224.7
	Permanent Work (FAASt, Section 428)	FEMA (PA)	$3,663.0	$3,663.0	$47.3

	Program	Funding Source	Identified Amount	Obligated/ Approved	Received
	Disaster Related Hazard Mitigation	FEMA (406)	$1,422.0	$1,048.1	-
	Non-Disaster Related Hazard Mitigation (HMGP)	FEMA (404)	$421.6	$22.6	4.6
	CDBG – MIT	HUD	$386.5	$159.6	-
	CDBG – DR (Non-Federal Match)	HUD	$406.9	$200.0	$4.4
	Direct Administrative Costs (DAC)	FEMA (PA)	$203.5	-	-
	Working Capital Advance (Perm Work)	FEMA (PA)	-	-	$309.4
	SRF – SAHFI	EPA	$555.0	-	-
	RD – Harvey, Irma, and María Grant	RD	$24.7	$24.7	$24.7
	Emergency Communities Water Assist.	RD	$3.6	$3.6	$3.6
	Disaster Water Grants	RD	$5.6	-	-
	Reconstruction & Recovery Funds		**$7,321.9**	**$5,351.2**	**$618.7**
Coronavirus Relief Funds	Cares Act	ARPA/OMB	$2.1	$2.1	$2.1
Coronavirus Relief Funds	Infrastructure Projects (Naranjito, Santa Rita, El Yunque (Las Picuas) WWTP Elimination, etc.)	ARPA	$65.0	$65.0	$65.0
	Caño Martín Peña	ARPA	$129.1	$129.1	$129.1

	Program	Funding Source	Identified Amount	Obligated/ Approved	Received
Coronavirus Relief Funds	Calle Loíza	ARPA	$7.7	$7.7	$7.7
	Las Picuas – Río Grande	ARPA	$11.3	$11.3	$11.3
	Other Infrastructure Projects	ARPA	$9.6	$9.6	$9.6
	Premium Pay	ARPA	$12.1	$12.1	$12.1
	LIHWAP	ARPA/CAA	$5.0	$5.0	$5.0
	ERAP – Emergency Rental Assistance	HUD	$23.1	$23.1	$23.1
	Mortgage Assistance Program	HFA	$3.2	$3.2	$3.2
	Total Coronavirus Relief Funds		**$268.2**	**$268.2**	**$268.2**
Infrastructure Funds	CWSRF – Regular + BIL	USEPA	$282.1	$237.8	$89.8
	DWSRF – Regular + BIL	USEPA	$157.8	$127.9	$42.7
	Total Funds for Infrastructure Projects		**$439.9**	**$365.7**	**$132.5**
		Total	**$8,030.0**	**$5,985.1**	**$1,019.5**

[1] Source: 2024 PRASA Fiscal Plan.

A total of $8.0B of funds have been identified, $6.0B has been obligated, and $1.0M has been received through March 31, 2024.

3 PRASA's Organization and Management

3.1 Introduction

According to Act Number 92, effective on March 31, 2004 (Act 92-2004), PRASA is organized into five Operational Regions (North, South, East, West, and Metro), as shown in Figure 3-1.

Figure 3-1 PRASA Regions

PRASA's EMT provides daily management oversight and coordination for institutional activities. Several departments support the EMT, including finance, compliance, HR, customer services, legal, and information systems. Figure 3-2 shows PRASA's current organization.

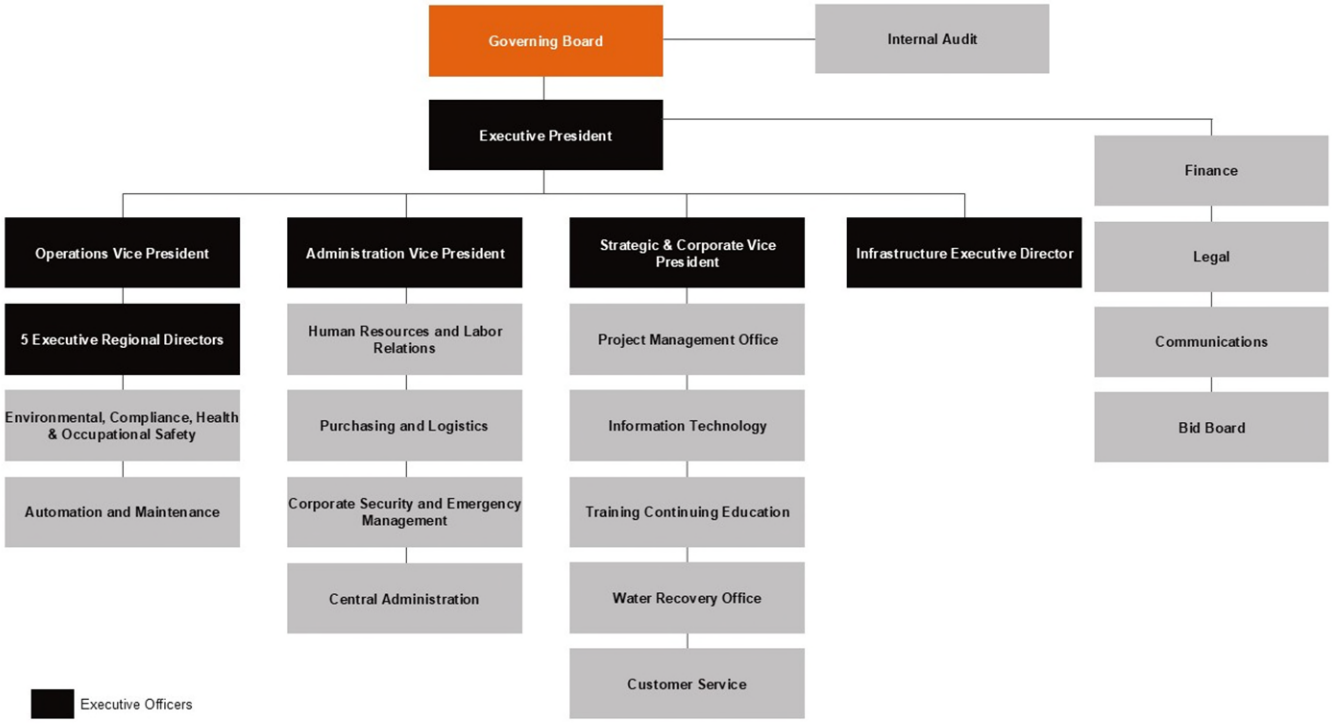


Figure 3-2 PRASA's current Legislated and Executive Management Structure

3.2 Updates and Changes in PRASA's Organization and Management

3.2.1 Board of Directors

According to restructuring as per Act Number 68 of 2016 (Act 68-2016)), as amended by Act Number 2 of 2017, PRASA's Governing Board is composed of eight members (refer to Table 3-1), which include:

- Four independent directors appointed by the Governor of Puerto Rico, comprised of:
  a. One engineer licensed to practice in Puerto Rico with at least 10 years of experience.
  b. One attorney with at least ten years of experience in Puerto Rico.
  c. One member with broad knowledge and experience in the field of corporate finance.
  d. One professional with expertise in any field-related functions delegated to PRASA.
- One Consumer Representative, a private citizen representing PRASA's customers.
- Two ex-officio members: the Executive Directors of the Association of Mayors and the Federation of Mayors.
- One representative from AAFAF, as per Act 2-2017, while PRASA remains a covered entity under PROMESA.

Table 3-1 PRASA's Governing Board Members (as of December 5, 2024)

Name	Board Position	Position Description	Commencement Date	Term Ends
Héctor J. del Río Jiménez, Esq.	President	Independent Director/Finance	November 22, 2022	November 21, 2026
Rafael E. López Soler	Vice-President	Independent Director/Legal	August 8, 2024	Pending[1]
Iván E. López Báez, PE	Director	Independent Director/Engineering	November 16, 2022	Pending[2]
Javier B. Bayón Torres	Director	Independent Director	August 8, 2024	Pending[3]
Vacant	Director	Executive Director of the Puerto Rico Mayors Federation	-	-
Verónica Rodríguez Irizarry	Director	Executive Director of the Puerto Rico Mayors Association	August 19, 2022	Indefinite
Héctor Sánchez Cardona, PE	Director	Consumer Representative	July 1, 2014	June 19, 2020[4]
Gerardo Lorán Butrón	Director	AAFAF Representative	February 17, 2017	Indefinite

[1] Mr. López Soler has been appointed since August 8, 2024, through a "legislative recess". He is currently awaiting confirmation from the Senate of Puerto Rico.
[2] Eng. López Báez has held the appointment since January 4, 2022. He continues to serve uninterruptedly and is currently awaiting confirmation from the Senate of Puerto Rico.
[3] Mr. Bayón Torres has been appointed since August 8, 2024, through a "legislative recess". He is currently awaiting confirmation from the Senate of Puerto Rico.
[4] Mr. Sánchez Cardona will hold the position until a successor is duly elected and appointed.

Directors appointed by the Governor will be selected from ten candidates, vetted by a recognized executive search firm, and according to objective criteria, including the candidate's professional and educational backgrounds. The Consumer Representative will serve for a three-year term, with no term limits, and be chosen through a selection process under the jurisdiction of the Puerto Rico Ombudsman. The Governor-designated or elected Board members serve staggered terms: two members will hold office for five years and two members for six years. As these Board members' office terms expire, the Governor will appoint successors for five-year terms, following the exact candidate identification mechanism. None of the Governor's appointed members may hold such office for over three terms.

The Governing Board is responsible for making or approving major decisions taken by PRASA, including overall institutional policies, strategies and programs, executive and key management recruitments and terminations, approval of union contracts, professional services contracts beyond the limits accorded to the Executive President, and contract changes that are beyond the limits accorded to the Executive President.

3.2.2 Executive Management Team

Since enacting Act 92-2004, PRASA has implemented various organizational management changes, including the EMT. A summary of PRASA's key EMTs as of June 30, 2024, including previous positions and years of experience, is presented in Table 3-2.

Table 3-2 PRASA's Executive Management Team (as of June 30, 2024)

Name	Current Role	Term Ends	Prior Role	Experience Total/Experience at PRASA
Eng. Doriel Pagán	Executive President	February 2025	Operations Vice-President	34 years/32 years
Eng. Damaris Santini Martínez	Operations Vice President	Indefinite[2]	Interim Executive Director South Region	27 years/17 years
Eng. Arnaldo Jiménez	Strategic and Corporate Planning Vice President	Indefinite[2]	Executive Advisor, Presidency	25 years/23 years
Mariana Pérez Cordero, Esq.	Administration Vice President	Indefinite[2]	Executive Advisor, Presidency	19 years/4 years
Omar Rivera Rolón	Executive Director of Finance	Indefinite[2]	PRASA Treasurer	25 years/17 years
Eng. Joel Lugo Rosa	Interim Executive Director for Infrastructure[1]	Indefinite[2]	Interim Executive Director West Region	25 years/25 years
Eng. Roberto Martínez	Interim Executive Director Metro Region[1]	Indefinite[2]	Deputy Executive Director Metro Region	37 years/27 years
Eng. José Rivera Ortiz	Interim Executive Director North Region[1]	Indefinite[2]	Toa Alta Area Director	26 years/25 years
Eng. Bruce León Ng	Interim Executive Director South Region[1]	Indefinite[2]	Deputy Executive Director South Region	29 years/18 years
Eng. Enrique Rosario	Interim Executive Director East Region[1]	Indefinite[2]	Deputy Executive Director East Region	26 years/16 years
Eng. Eric Rosa Lugo	Interim Executive Director West Region[1]	Indefinite[2]	Deputy Executive Director West Region	25 years/12 years

[1] These roles are legislated positions.
[2] Indefinite per amended Act 40-1945 (Ley 68-2016), which allows EMT staff to be on an interim basis without a defined term of service.

3.2.3 Staffing Profile

PRASA's existing staff is categorized into the five primary categories described below:

- Appointed Employees: This category includes the executive staff, deputy and department directors, area directors, and administrative assistants that support key management personnel of the utility.
- Management Employees: These employees manage the day-to-day operations of the utility. They hold management positions both in the central and regional offices.

- HIEPAAA Employees (*Hermandad Independiente de Empleados Profesionales de la Autoridad de Acueductos y Alcantarillados*): These employees are the unionized professional staff that includes accountants, engineers, insurance specialists, project inspectors, and surveyors.
- UIA-AAA Employees (*Unión Independiente Auténtica de la Autoridad de Acueductos y Alcantarillados*): The unionized plant and System operators, maintenance, support staff, meter readers, customer service specialists, and administrative assistants.
- Temporary Employees: These employees are hired and classified as temporary until formally assigned to a regular position. New hires are placed in a 90-day probationary period. They do not have full benefits during the probationary period. If still employed after probation, they either become full-time employees (FTE) or renew their temporary employment contract.

At the end of FY2024, PRASA had a total headcount of 4,493 employees, including 166 employees under the Pre-Retirement Program. FTE staff decreased by 1.3% from FY2023 to FY2024, which represents 58 FTE employees. Based on the total number of active FTE employees for FY2024 (4,327), the ratio of service accounts (accounting for both water service and sanitary sewer service for the same client as two separate accounts) to employees was 474. The industry standard for combined (water and wastewater) utility operations average ranges from 331 to 576, with a median of approximately 461 customer accounts per employee[2]. Therefore, based on the customer account per employee benchmarking ratio, PRASA falls over the median of the range for the industry. Table 3-3 shows the staff levels by staff category over the last five fiscal years.

Table 3-3 Staff Levels

End of FY	Appointed Employees	Management Employees	HIEPAAA Employees	UIA-AAA	Temporary Employees (UIA)	Pre-Retired Employees	Total Employees
2020	164	1,089	118	2,883	7	321	4,582
2021	164	1,138	120	2,956	0	292	4,670
2022	171	1,094	116	2,963	6	254	4,604
2023	177	1,077	112	2,964	5	216	4,551
2024	176	1,047	112	2,987	5	166	4,493
5-year CAGR[(1)]	**1.78%**	**-0.98%**	**-1.30%**	**0.89%**	**-8.07%**	**-15.20%**	**-0.49%**

Source: HR Department.
[1] CAGR is the acronym for Compound Annual Growth Rate.

3.2.3.1 Organization Optimization

During FY2021, PRASA engaged an external consultant to perform a labor capacity and productivity assessment study to determine PRASA's optimal staffing levels. In January 2022, the selected firm presented its final recommendations. The study found (including amendments to incorporate updates on Customer Service and Infrastructure Departments) a need for 5,030 employees, compared with PRASA's actual headcount of 4,551 as of

[2] Source: 2023 AWWA Utility Benchmarking: Performance Management for Water and Wastewater.

June 30, 2023, of which 216 employees were under the Pre-Retirement Program. Based on the initiatives PRASA is currently implementing, the optimal headcount is expected to be lower than established in 2021 by approximately 200 employees.

In January 2022, PRASA completed a labor capacity and productivity assessment to determine optimal staffing levels. The study identified the need (including amendments to incorporate updates on Customer Service and Infrastructure Departments) of 5,030 employees. Based on the initiatives PRASA is currently implementing, the optimal headcount is expected to be lower than established in 2022 by approximately 200 employees. Based on the FY2024 total headcount of 4,493 employees, PRASA will ideally need to hire 307 additional employees to reach a headcount of 4,800 FTEs by FY2026. Below is a summary of PRASA's strategy to address the employee gap:

- Recruiting key technical and operating personnel, such as plant operators, electromechanics, and other workers for operations.
- Progressively recruiting personnel for positions left open as the pre-retired employees reach full retirement age.
- Filling headcount needs in the Infrastructure, Customer Service, and Compliance Departments, among others.

PRASA's recruitment will be prioritized based on position criticality and System needs.

The staff needs will continue to be reevaluated by PRASA based on the results and benefits of the initiatives, the projected headcount additions, and the balancing of the FTE with overtime and external resources, as well as fleet and other resources availability.

The recruitment technology called "Smart Tool" was stopped because when it was delivered to the directors, it was determined that it was not viable. The main reason was the need to update all tasks with all titles, which was extremely tedious and created an additional workload instead of streamlining and simplifying the process, going against expectations. Additionally, after testing the "Smart Tool," it was confirmed that it did not work and, therefore, will not be implemented. In FY2024, PRASA continued to utilize newspaper ads and digital platforms to post positions for operators and electromechanics, which resulted in filling a significant number of vacancies.

PRASA's current hiring strategy focuses on recruiting for positions that are challenging to fill, particularly in departments that are understaffed and impacted by the Voluntary Pre-Retirement Program. Staff positions needed island-wide include, but are not limited to, field workers, supervisors, electromechanics, electromechanical assistants for the Maintenance Department, plant operators, plant managers, technical managers, preventive maintenance managers, distribution system managers, compliance specialists, and licensed engineers. The shortage of operations personnel has necessitated the Operations Department to rely on overtime hours and engage private contractors to manage facilities, leading to an impact on payroll metrics.

PRASA intends to keep identifying candidates and following hiring procedures, while complying with FOMB requirements further to optimize its staff and address needs in critical areas. In addition, PRASA is currently redefining certain key performance indicators (KPIs) and specific goals for overtime and absenteeism labor indicators. The main three actions in that direction items are the following:

- Provide status to the Oversight Board on the system expected to be used in the workforce efficiency plan.
- Develop a plan to measure workforce efficiency.
- Continue tracking absenteeism and overtime levels to identify areas of opportunities.

To maintain a motivated and efficient workforce during FY2023, PRASA reviewed its pay scales and implemented incentives for some critical operating positions, such as plant operators and electro-mechanics. An additional in-depth review and update to the pay scales is currently underway to align the same, when and if possible and necessary, with the OATRH pay scales (following the Government Civil Service Reform) or other representative

comparable data such as the salaries published by the American Water Works Association (AWWA), Economic Research Institute (ERI) or U.S. Bureau of Labor Statistics (BLS). This analysis will result in a revised Job Classification Plan and an updated Compensation Plan. The final analysis is expected to result in proper and competitive compensation levels for Authority employees.

In FY2024, PRASA implemented Resolution 3302 and Act 47 of September 21, 2021. Refer to sections 3.2.4.3 and 3.2.4.4 for more details related to the resolution and act.

3.2.4 Labor Relations

Several laws that affect PRASA's labor relations came into effect during the last years such as Act Number 26 of April 27, 2017 (Act 26-2017) and Act 176-2019. These laws have supremacy over any other law or agreement regarding the same matters. The aspects of these laws that affect PRASA are discussed below.

3.2.4.1 Voluntary Pre-Retirement Program (Act 211-2015)

As a result of the past fiscal situation, the Government enacted Act Number 211 on December 8, 2015 (Act 211-2015), which created a "Voluntary Pre-Retirement Program". Act 211-2015 intended to create a program "whereby eligible employees of the Government of the Commonwealth of Puerto Rico may voluntarily separate from service by receiving incentives until they meet the requirements for retirement; provide for the requirement of credited years of service needed to qualify for this Program; established the timeframe for employees to exercise their option to avail themselves of the Voluntary Pre-Retirement Program; provided the special incentives that will be granted to employees who avail themselves of the Program; provided the requirements needed to implement the Program; and for other related purposes".

The program attempted to reduce the workforce progressively and voluntarily. The Voluntary Pre-Retirement Program was active until 2018, and no additional employees can be added. However, some employees still benefit from Act 211-2015 until they meet the requirements for the Pre-Voluntary Program. As of June 30, 2024, still 166 PRASA employees remain active as pre-retired under the program.

3.2.4.2 Acts 26 of 2017 and 176-2019

To ensure the Government's compliance with the approved Fiscal Plan, Act 26-2017 was enacted. Act 26-2017 prevails over any previous law. Among other measures, Act 26-2017 requires marginal benefits to be the same for the Government of Puerto Rico employees, including public agencies, instrumentalities, and corporations, such as PRASA. The act froze and reduced some payroll benefits or compensation, including vacation and sickness licenses, payout terms of licenses, and bonuses. Subsequently, under Act 176-2019, certain amendments were reverted. Currently, PRASA employees' benefits include the following:

- Vacation licenses accumulate at a rate of 1.25 days per month of service and may be accumulated to up to a maximum of 15 days by the end of each natural year and may accrue up to 60 days.
- Sickness licenses accumulate at a rate of 1.5 days per month of service and may be accumulated to up to 18 days by the end of each natural year.
- Licenses in excess will not be paid out, except for vacation days accrued up to 60 days.
- Elimination of all bonuses, except for Christmas bonuses, which shall have a maximum of $600.
- Extra hours will be compensated at a maximum rate of 1.5 times the regular hourly rate.

3.2.4.3 Resolution 3302

Amendment to Resolution Number 2342 of October 30, 2007, to review and establish new minimum compensation scales for career employees (UIA, HIEPAAA, and Managers) based on new minimum salaries and a preliminary adjustment to the labor market. A full in-depth review and update to the pay scales is currently underway.

3.2.4.4 Act 47

Act 47 of 2021, also known as the "Law of Minimum Salary, Vacations, and Sick Leave in Puerto Rico", establishes provisions related to the minimum wage, vacations, and sick leave in Puerto Rico. Act 47 provides for a phased increase of the minimum wage to $10.50 per hour, with the main objective of protecting the labor rights of workers on the island.

3.2.4.5 Collective Bargaining Agreement

To maintain labor relations in good order despite the present environment of limited resources and increasing operating costs, PRASA and its largest union, the UIA, reached a Negotiation Agreement (“Negotiation Agreement”). As a result of the Negotiation Agreement, the Collective Bargaining Agreement (CBA) with the UIA (which expired in 2015 and was extended until June 30, 2021, pursuant to Act 3-2017) was further extended to June 2024 or until the negotiations of a new labor agreement are reached as provided by Act 9-2021. The Negotiation Agreement provides for the continuing negotiation of revised pay scales, as well as of several incentives for the benefit of both parties, subject to compliance with PROMESA and PRASA’s Fiscal Plan.

3.2.5 Training

PRASA offers a variety of training programs to its employees to enhance work management and productivity among its employees. In FY2024, PRASA provided over 30,799 training hours, averaging approximately seven hours per employee. The Training Department’s key performance indicator mandates two hours of training per employee monthly, globally evaluated, even if certain employees have not completed their allotted hours. The Moodle Online Training platform offers 34 active training sessions, with continual development aligned to departmental priorities and Standard Operating Procedures (SOP) reviews. Directors provide insights into necessary technical and practical online training emphasis areas. The department awarded a contract to Puerto Rico (PR) Virtual School to manage the Moodle platform, a virtual education and training system accessible via mobile devices and emails. Users are notified about both assigned and pending training sessions. This partnership with PR Virtual School was initiated this year. Expansion and updates to training centers are in progress, with construction at Mayagüez WWTP for the West Region center and plans for the North Region remodel. New initiatives include scheduling personalized training in Moodle and the integration of Systems, Applications, and Products in Data Processing (SAP) with Moodle for streamlined registration. Challenges encompass the need for additional training room computers, staffing for the recording studio, and resources for an effective merging of SAP and Moodle. The department completed and inaugurated the recording studio at the Central Building during FY2023. This studio aims to enhance training material production quality and facilitate the creation of engaging and informative content for employee development programs. Providing a dedicated space for recording and editing training resources, the studio contributes to the department's goal of delivering high-quality and engaging training experiences to PRASA staff.

Approximately 76% of the employees participated in training activities offered by PRASA in FY2024. PRASA continues to invest in personnel training to enhance work ownership and productivity. Additionally, PRASA is

committed to training and certifying its treatment plant operators to meet regulatory agency requirements. Table 3-4 summarizes the number of operators by the type of license held.

Table 3-4 FY2024 Operator Licensing[1]

Facility	In Training	Type I	Type II	Type III	Type IV	Total
Water	118	31	37	72	224	482
Wastewater	37	6	7	14	85	149
Total	**155**	**37**	**44**	**86**	**309**	**631**

[1]Does not include operators under the Voluntary Pre-Retirement Program.

4 Condition of System Assets

4.1 Introduction

Arcadis evaluated the condition and operation of PRASA's assets through an inspection program of selected facilities in the System to meet the following objectives:

1. Assess the current physical state of the facilities inspected.
2. Determine if the facilities are being operated and maintained to achieve their operational goals.
3. Evaluate if PRASA's Capital Improvement Program (CIP) is aligned with the System's identified needs.

Arcadis performed asset condition assessments of a selection of WTP and WWTP facilities corresponding to FY2024 and a sample of ancillary facilities. The facilities were inspected to assess the structural integrity and physical condition of the structures, equipment's adequacy of operation and maintenance practices, and renewal and repair needs. Arcadis also evaluated the compliance performance results for the WTPs and WWTPs from January 1, 2023, through December 31, 2023. The inspections for the dams were performed in March 2024. The WTPs, WWTPs, and ancillary facilities were inspected between April and July 2024. This section summarizes the inspection results, findings, and recommendations based on the condition of the assets inspected during FY2024 and is detailed in the FY2024 Asset Condition Assessment (ACA) Report.

4.2 Facility Inspections

A summary of the facilities inspected between March and July of 2024 is presented in Table 4-1. Out of 3,957 facilities that comprise the System, 188 facility inspections were performed. Inspected facilities include 8 Dams, 54 WTPs, 26 WWTPs, 20 Wells, 30 WPSs, 30 WSTs, and 20 WWPSs.

Inspections were not performed on the following assets: small dams and weirs, buried infrastructure, meters, ocean outfalls, buildings, and land. PRASA provided limited buried infrastructure condition data, which is included in Section 4.3.

Table 4-1 Percent of Assets Inspected by Category

Asset Category	Total PRASA Facilities[1]	Inspections Performed	
		Quantity	Percent
Regulated Dams	8	8	100
Water Treatment Plants	112	54	48
Wastewater Treatment Plants	50	26	52
Wells	244	20	8
Water Pump Stations	1,139	30	3
Water Storage Tanks	1,569	30	2
Wastewater Pump Stations	835	20	2
Total	**3,957**	**188**	**5**

[1] Data obtained from PRASA GIS was updated in June 2024. The total excludes 136 active RWIs and 75 RWPSs.

4.2.1 Inspections Methodology

Inspections were performed throughout PRASA's five Operational Regions: North, South, East, West, and Metro. Table 4-2 shows the number of facilities inspected within each Region. Note that the total number of inspections performed in the Metro Region is lower than those performed in the other Regions since it has fewer but larger WTPs and WWTPs. Nevertheless, the Metro Region assets were inspected consistently with the other Regions.

Table 4-2 Summary of Inspections by Region

Asset Category	East	Metro	North	South	West	Total
Regulated Dams	3	2	1	1	1	8
Water Treatment Plants	16	2	13	15	8	54
Wastewater Treatment Plants	7	1	7	6	5	26
Wells	4	3	4	5	4	20
Water Pump Stations	6	6	6	6	6	30
Water Storage Tanks	6	6	6	6	6	30
Wastewater Pump Stations	4	4	4	4	4	20
Total	**43**	**22**	**40**	**42**	**33**	**188**

Following the approach adopted by Arcadis in previous condition assessments, an attempt was made to obtain a random sampling of the ancillary facilities like wells, water pump stations, water storage tanks, and wastewater pump stations by inspecting several facilities within each Operational Area across the island rather than inspecting a uniform number of minor facilities within each Operational Area. The Operational Areas for ancillary facilities that were visited were Manatí and Toa Alta (North Region), Coamo and Guayama (South Region), Cayey and Humacao (East Region), Mayagüez and San Germán (West Region), and Carolina and Bayamón (Metro Region). The Carolina Operational Area only had one well to be inspected; therefore, Arcadis visited another well in the Coamo Operational Area.

The Assessment Inspection Forms for the asset categories (WTP, WWTP, Well, WPS, WST, and WWPS) premises were modified for FY2024, which may reflect significant changes in the scoring.

Each facility was inspected using an asset management application called Fulcrum. Fulcrum includes scoring and weighting criteria developed by Arcadis. The assets are grouped by type of facility: WTP, WWTP, Well, WPS, WST, and WWPS. Fulcrum was customized for each specific asset category to determine the asset's current state of repair and operation as influenced by age, historical maintenance, and operating environment. This platform facilitates access to the data gathered and allows for evaluation, monitoring, and generating asset-specific condition reports with digital photos and Global Positional System (GPS) coordinates.

Each facility's compliance parameters were summarized and verified using a Microsoft Power BI Dashboard. Arcadis designed the Compliance Dashboard, and the source data is the information provided by PRASA for the calendar year 2023. The dashboard summarized the following parameters including, but not limited to: Total Organic Carbon (TOC), Trihalomethane (THM), Haloacetic Acids (HAA5), *Bacteriología*", *"Alcantarillado"* (ALC), Sludge Treatment System (STS), Turbidity, and Flow. The evaluation criteria used include the following:

- Regulatory Compliance – The degree to which the performance of the asset complies with its permit limits and regulatory requirements.
- Operations/Process Control – The degree to which the asset condition and features allow it to be operated and controlled to meet its performance objectives.
- Equipment/Maintenance – An assessment of the adequacy of the maintenance practices and the condition of the facility.
- Staffing/Training – An assessment of facility staffing coverage and training adequacy.

The asset inspected was assigned a numerical score between zero and three within each evaluation criterion. An overall facility rating was then determined based on a weighted average of the ratings for each criterion. For example, for a WTP and WWTP, a weighted average was used per equipment listed in Fulcrum to account for the importance of critical equipment. The average of each equipment rating was considered for the overall facility rating. The general interpretation of the numerical ratings is described below.

Rating	**Range**
• Good (Most of the criteria are adequately addressed)	2.5 – 3.0
• Adequate (Many of the criteria are adequately addressed)	1.5 – 2.4
• Poor (Many of the criteria are not adequately addressed)	0.5 – 1.4
• Unacceptable (Most of the criteria are not adequately addressed)	0.0 – 0.4

An overview of the approach and results of the inspections for each asset category is discussed in the following sections. Refer to the FY2024 ACA for the detailed evaluation and results.

4.2.2 Inspection Results

According to the facilities' inspections performed in FY2024, an overall condition rating for each asset category was determined. The condition of the facilities varied mostly from adequate to those requiring capital or operation upgrades in addition to staffing and training needs. The inspection rankings and results per asset type are summarized in the following subsections.

4.2.2.1 Dams

PRASA's eight regulated dams were inspected between March 4 and 8, 2024. PRASA operates approximately 168 water distribution systems, of which 109 are supplied by surface water and 59 by subsurface water systems. All eight dams inspected for this assessment are classified as high-hazard dams, which could cause more than very little loss of life and serious damage to communities, industry, and agriculture if a failure occurs. Arcadis utilized the previous inspection reports from 2016, 2018, 2020 and 2022, along with PRASA's follow-up reports from 2019, as a baseline to perform independent visual inspections and operational assessments of the dam structures. According to Puerto Rico's Dam Safety Program regulations, regulated dam facilities are to be inspected every three years.

Timely and ample inspection of these dams is essential for permitting or approval required for the construction, modification, repair, or removal of the dam or the appurtenant works. Aside from the daily observation and operations of the fully staffed dam facilities, all of these structures are given a cursory safety inspection annually by PREPA prior to hurricane season. Each recommendation, based on an inspection, is rated, indicating the priority for action. With this in consideration, Arcadis developed and used criteria and weighting factors to evaluate regulated dams. The criteria include Equipment and Maintenance, Regulatory Compliance, Operations and Process Control, and Staffing and Training with Good, Adequate, or Poor ratings. Refer to the FY2024 ACA for details on the criteria and factors evaluated for the eight regulated dams inspected.

Table 4-3 summarizes the facility ratings by each evaluation criteria and the overall facility rating. As was the case in 2022, four dams (La Plata, Cidra, Isabela, and Las Curías) received a Poor rating in the Equipment and Maintenance category. The same four dams received a rating of Poor in the Regulatory Compliance category. Cidra Dam, Fajardo Dam, and Isabela Dam received a Poor rating in the Operation and Process Control category. Cidra Dam, Las Curías Dam, and Isabela Regulator Dam received a rating of Poor in the Staffing and Training category.

Consequently, the same four dams (La Plata, Cidra, Isabela, and Las Curías) received an overall rating of Poor, and the other four dams received an overall rating of Adequate. No dam received a combined rating of Good. Overall, there was no improvement of ratings in any indicators due to the lack of improvements to address deficiencies noted in the previous inspection. Notwithstanding, Isabela has an ongoing CIP construction project for major rehabilitation of the dam and liner that should address most or all of the observations and PRASA indicated that the Cidra dam ongoing construction project was addressing these deficiencies; however, Arcadis could not confirm improvements at the time of the visit because no safe access was available.

Table 4-3 Regulated Dams – Number and Percentage of Ratings by Category

Rating Range	Regulatory Compliance		Operations/Process Control		Equipment/Maintenance		Staffing/Training		Overall Rating	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Unacceptable (0-0.4)	0	0	0	0	0	0	0	0	0	0
Poor (0.5-1.4)	4	50	2	25	4	50	2	25	4	50
Adequate (1.5-2.4)	4	50	6	75	4	50	6	75	4	50
Good (2.5-3.0)	0	0	0	0	0	0	0	0	0	0
Average Rating	**1.4**		**1.5**		**1.3**		**1.7**		**1.4**	

4.2.2.2 Water Treatment Plants

PRASA operates 112 WTPs where it treats raw water to produce potable water for its customers. The island-wide WTP's design production capacity is approximately 570 MGD. The WTPs range from several thousand gallons per day to 100 MGD. For FY2024, PRASA reported a total water production of 513 MGD, of which approximately 88%

or 453 MGD are from WTPs. A total of 54 WTPs (48% of total WTPs) were inspected as part of this assessment. Each assessment consisted of a thorough site visit inspection and an interview with the operator, plant manager, plant supervisor, or designated personnel. Therefore, the information obtained was at least partly based on the understanding of the person being interviewed. Arcadis developed and used criteria and weighting factors to evaluate the WTPs. The criteria include Equipment and Maintenance, Regulatory Compliance, Operations and Process Control, and Staffing and Training with Good, Adequate, Poor, or Unacceptable ratings. Refer to the FY2024 ACA for details on the criteria and factors evaluated for the WTPs inspected.

Table 4-4 summarizes the inspection results for the 54 WTPs sorted by the four evaluation criteria and the overall facility rating. Eleven of the inspected WTPs, Fajardo Nueva WTP, Lares Nueva (Espino) WTP, Toa Vaca WTP, Adjuntas (Garzas) WTP, Coamo Urbano WTP, San Sebastián WTP, Añasco WTP, Ponce de León (Mayagüez) WTP, Monte del Estado WTP, Sabana Grande WTP and Maginas WTP, were rated as Good, with an overall average of 2.5. For all evaluated facilities, the overall average was 2.2. The remaining 43 facilities were rated as Adequate.

Table 4-4 WTPs – Number and Percentage of Ratings by Category

Rating Range	Regulatory Compliance		Operations and Process Control		Equipment and Maintenance		Staffing and Training		Overall Rating	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Unacceptable (0-0.4)	0	0	0	0	0	0	0	0	0	0
Poor (0.5-1.4)	0	0	4	7	2	4	28	52	0	0
Adequate (1.5-2.4)	3	6	37	69	51	94	24	44	43	80
Good (2.5-3.0)	51	94	13	24	1	2	2	4	11	20
Average Rating	**2.8**		**2.2**		**1.9**		**1.4**		**2.2**	

4.2.2.2.1 Regulatory Compliance Findings

Most of the facilities were rated as Good in this category. The overall rating of WTPs in this evaluation category remained the same since the previous inspection. However, several compliance parameters had interim limits or only monitoring. Minillas WTP (East Region), Comerío (Río Hondo) WTP (East Region) and Ponce Vieja WTP (South Region) were rated as Adequate. These facilities have reported exceedances in TOC, turbidity, HAA5, and total coliforms for Safe Drinking Water Act (SDWA) parameters and Biological Oxygen Demand (BOD), lead, copper, turbidity, zinc, and dissolved oxygen for National Pollutant Discharge Elimination System (NPDES) parameters. The rest were rated as Good.

In general, most facilities comply with regulations. However, PRASA continues implementing several operational strategies in the System to minimize incidences. Efforts are mainly targeted to address WTP issues contributing to disinfection byproducts (DBP) formation at the treatment process level.

Future regulations may require additional capital improvement to achieve higher levels of treatment at certain facilities depending on the characteristics of the source water and the distribution system, such as U.S. Environmental Protection Agency (USEPA) residual chlorine, metals, phosphorous (P), and nitrogen (N) recent criteria. At the issuance process for an updated NPDES permit, PRASA continues to request interim limits, as determined by the Compliance Department, until the capital project for the said facility is executed and completed. The project completion term would be subject to the Prioritization System. In addition, PRASA is vigilant of potential future regulations such as the Lead and Copper Compliance Rule and the Per-and Polyfluoroalkyl Substances (PFAS) groups that may impact the water system and compliance with the regulatory agencies' requirements.

4.2.2.2.2 Operations and Process Control Findings

The Operations and Process Control in most WTPs inspected were rated as Adequate (69% of inspected WTPs. However, four facilities (7% of inspected WTPs) were rated as Poor, and 13 facilities (24% of inspected WTPs) were rated as Good. The operations and process control scores increased from the previous year. The four facilities rated as **Poor** were:

- Ceiba Sur WTP (East Region)
- Humacao (Las Piedras) WTP (East Region)
- El Yunque WTP (East Region)
- Jayuya Urbano WTP (North Region)

4.2.2.2.3 Equipment and Maintenance Findings

This criterion rated the facilities inspected as Poor, Adequate, or Good. No facility was rated as Unacceptable. Of the 54 facilities inspected, 36 (67% of inspected WTPs) had a rating under 2.0. Only one (2% of inspected WTPs) of the facilities inspected was rated as Good regarding equipment and maintenance practices. The facility is Toa Vaca WTP (South Region).

Although rated as Adequate at the time of inspection, the following facilities are on the lower end of the scoring range (score below 2.0) and should be closely monitored. Equipment or maintenance deficiencies should be addressed:

- Aguas Buenas Urbano WTP (East Region)
- Minillas WTP (East Region)
- Caguas Norte WTP (East Region)
- Caguas Sur WTP (East Region)
- Barranquitas Urbano WTP (East Region)
- Luquillo (Sabana) WTP (East Region)
- Juncos Urbano (KTP90) WTP (East Region)
- Ceiba Sur WTP (East Region)
- Humacao (Las Piedras) WTP (East Region)
- El Yunque WTP (East Region)
- Cubuy WTP (Metro Region)
- Canóvanas Nueva WTP (Metro Region)

- Quebradillas WTP (North Region)
- Arecibo Urbano WTP (North Region)
- Utuado Urbano WTP (North Region)
- Lares Nueva (Espino) (North Region)
- Lares Urbano WTP (North Region)
- Jayuya Urbano WTP (North Region)
- Mameyes Limón WTP (North Region)
- Morovis Urbano WTP (North Region)
- Cedro Arriba WTP (North Region)
- Corozal Urbano WTP (North Region)
- Las Delicias WTP (North Region)
- Jagüeyes-Villalba WTP (South Region)
- Guayama Urbano WTP (South Region)
- Adjuntas Vieja (Olimpia) WTP (South Region)
- Ponce Vieja WTP (South Region)
- Guaraguao WTP (South Region)
- Yahuecas WTP (South Region)
- Peñuelas WTP (South Region)
- Guayanés WTP (South Region)
- Yauco WTP (South Region)
- Isabela Urbana WTP (West Region)
- San Sebastián WTP (West Region)
- Ponce de León (Mayagüez) WTP (West Region)
- Maricao WTP (West Region)

4.2.2.2.4 Staff and Training Findings

The Staffing and Training category's overall rating is 1.4, which falls on the upper end of Poor, and it has increased by 0.1 compared to the 2023 inspections (Table 3-2). Two (4% of inspected WTPs) facilities received a Good rating, 24 (44% of inspected WTPs) facilities received an Adequate rating, and 28 (52% of inspected WTPs) facilities received a Poor rating in this category, mostly due to the need for staffing, including certified operators and/or lack of training. In FY2023, 34 facilities were rated as Poor compared to 28 in FY2024, which is an 18 percent decrease. The personnel turnover is still an ongoing challenge for PRASA, along with the lack of training and the need for more certified WTP operators, as many qualified operators have migrated to the U.S. In addition to licensed operators, there is also a need for STS operators, licensed operators at large, maintenance staff, supervisors, and operational service workers (TSOs for its Spanish Acronym).

4.2.2.2.5 Lowest Rated Facilities

Only three facilities had an overall score below 2.0 out of the 54 WTPs inspected. The observations of these facilities are described in Table 4-5.

Table 4-5 WTPs – Lowest Rated Facilities and Observations

WTP	2024 Score	Observations
Ponce Vieja WTP (South Region)	1.7	During the evaluation period, the Compliance of the WTP was rated as adequate. The exceedances were reported for SDWA: five minor non-compliances (MNCs) for HAA5 parameters and one MNC for total coliforms. At the time of the visit some algae formations were observed at the sedimentation basins. The facility's Operations and Process Control of the WTP were rated as adequate. The available version of the O&M manual is from October 2013. The Operators conduct routine sampling at different locations during the day, following Standard Operating Procedures (SOPs), and perform the necessary process control adjustments. The NDPES was not available at the time of the visit. They use raw water parameters sampling results, jar tests, and stream current monitoring to determine the appropriate chemical dose. The jar test is performed daily. The facility is equipped with an EGU with a capacity of 500 kW that is capable of energizing the facility. The automatic transfer switch works properly and the EGU is tested weekly (Wednesday). The process laboratory is on-site, and the Operator takes the samples for process control. The lab equipment is adequate, and the calibration is up to date. The facility has electronic surveillance cameras/ CCTV. The fence and gate are in good condition. The access road has potholes, and there is a big hole near the entrance of the facility. There are bees in the flocculation basin, sedimentation basins, and filters. According to PRASA personnel, the illumination is good. The facility needs to be painted, remove debris, and groundskeeping. Lastly, the facility has telephone and internet access. The facility's Equipment and Maintenance at the WTP were rated as adequate. The gravity raw water intake is in good condition. At the influent monitoring, the stream current monitor is working properly, but there is a turbidimeter that is out of service. The chemicals need secondary containment, as all drums are currently located on the floor without spill protection. The concrete in the flocculation tank, sedimentation basin, and filters is deteriorated. The filter media also presents some mudballs, and the filter media needs to be replaced. The chlorine application system is working properly and has enough supply to satisfy the facility's demand. The distribution tank needs attention, but the pumps are working properly. The areas surrounding the STS have severe vegetation. The thickener tank also presents vegetation. The walls at the sludge drying beds show some concrete deterioration. PRASA personnel performs routine maintenance. Finally, the facility faces challenges in corrective maintenance and procurement processes due to extended delays. In general, the facility needs cleaning and groundskeeping. Lastly, the facility is under a CIP project and will be placed in the planning phase to create a hydraulic sampling plan. The facility's Staffing and Training criteria were rated as poor. The facility needs one at-large operator to operate the plant efficiently. One operator is pending certification to Puerto Rico Department of Health (PRDOH) requirements.
El Yunque WTP (East Region)	1.9	During the evaluation period, the facility's Compliance was rated as good. However, the SDWA compliance parameters had MNC exceedances for the CFE turbidimeter. The facility's Operations and Process Control were rated as poor. The available version of the

WTP	2024 Score	Observations
		O&M manual is from February 2013. The operators perform routine sampling, follow SOPs, and perform the necessary process control adjustments. The process lab data is reported to the supervisor on a daily basis. Jar test and raw water parameters sampling results are used to determine the appropriate chemical dose. A jar test is performed at each shift every day. The facility has three EGUs; they are in function but have to be turned on manually. In addition, the automatic transfer switch is not working. The EGU is tested biweekly. The facility lacks a potable water meter and a security system. The primary and secondary polymers are not labeled. The pipes do not meet the color code. The facility gate is not working. Perimeter fence condition is poor, with scattered debris through the facility grounds and some safety issues associated with corroded ladders and broken handrails since Hurricane María. The roads have potholes. The illumination at the filter pipe gallery is damaged. The facility signs and emergency numbers are not posted at the entrance. The facility has adequate communication tools. Lastly, the overall facility appearance is not adequate. The facility's Equipment and Maintenance were rated as adequate. At the raw water intake, the air pumps and seals need to be replaced, and there are two pumps out of service. Half of the aeration system is on standby, and there are safety issues with the handrails that Hurricane María destroyed. The aeration tank also needs a gate. Both mixers in the flocculation rapid mix tank are out of service. In the slow mixing tank, there is one pump out of service due to an electrical issue. The automatic sludge removal system has vegetation. The filters have an ongoing replacement project and there were no mudballs present. The STS has one submersible pump out of service in the thickener and holding tank. The vacuum pump #4 in the dewatering system is out of service, and both geotubes units are awaiting sludge removal. Plant staff performs routine maintenance at the WTP. The facility is under a CIP project in the design phase and has as-built drawings available at the facility. The facility's Staffing and Training criteria were rated as adequate. Two operators are pending PRDOH certification requirements. The operators need training refreshers.
Jayuya Urbano WTP (North Region)	1.9	During the evaluation period, the facility's Compliance was rated as good, although certain parameters were noted to have interim limits or were under monitoring only. Specific violations were identified in the SDWA at two distribution points: La Cócora WST and Las Arenas WST, both classified as significant non-compliance (SNC). Furthermore, violations in the NPDES were observed in the Biochemical Oxygen Demand (BOD) parameter, also falling under the category of MNC. The facility's Operations and Process Control were rated as poor. The available version of the O&M manual is from June 2015, and Procedure 119 and General Duty Clause (GDC) are available. However, the Emergency Plan was not found during the visit. Operators perform the necessary sampling to make adjustments to the process, and experience is used to determine and apply the appropriate chemical dose. Jar tests are not performed. The facility's EGU does not have enough capacity for operations, and the EGU is tested weekly using the AAA-500C form. Operator samples are taken for process control, and electronic surveillance cameras/CCTV are available. Additionally, there is no potable water meter, the access roads need improvement, and the facility's entrance gate is damaged. Some debris was observed around the facility during the visit, but in general, the housekeeping and overall appearance of the facility were deemed adequate. The facility's Equipment and Maintenance were rated as

WTP	2024 Score	Observations
		adequate. However, one water intake pump is out of service with no redundancy. The Coanda system requires repairs due to its malfunctioning maintenance system, necessitating a system evaluation for operational enhancement. Communication issues exist in the reservoir remote monitoring and control system. There is only one dosing pump for GPAC 2899 without redundancy, and one blower is currently out of service. A distribution pump assigned to Jayuya Urbano was found to be leaking. There is no available space for the STS system and dewatering system. The diesel tank, labeled as opaque, needs attention. Plant staff (TSO) performs routine maintenance, but there are challenges with corrective maintenance under a CIP project in the design phase, and no as-built drawings are available. Despite these issues, the overall appearance of the facility is considered adequate. The facility's Staffing and Training criteria were rated as adequate, with no staff vacancies currently present. However, one operator is pending PRDOH certification. Additionally, maintenance data, confined spaces, and Hazardous Waste Operations and Emergency Response (HAZWOPER) training have not been offered or may require refresher courses.

The major concern is the facilities' physical condition, which deteriorates yearly. However, PRASA expects to properly address the deficiencies with the projected inflow of federal funds to cover (with appropriate contributions from PRASA's internal funds) its needs.

4.2.2.3 Wastewater Treatment Plants

PRASA currently operates 50 WWTPs. The facilities range from several thousand gallons per day up to 80 MGD. The island-wide design treatment capacity is approximately 377 MGD, and the treated wastewater for FY2024 was estimated at 231 MGD. PRASA has 13 plants designed to provide tertiary or advanced treatment, 31 plants designed to provide secondary treatment, and the remaining six facilities (which account for approximately 222 MGD of treatment capacity) provide primary treatment.

A total of 26 WWTPs (52% of total WWTPs) currently in operation were inspected as part of this asset evaluation. Each assessment consisted of a thorough site visit inspection and an interview with the operator, plant manager, plant supervisor, or designated personnel. Arcadis developed and used criteria and weighting factors to evaluate the WWTPs. The criteria include Equipment and Maintenance, Regulatory Compliance, Operations and Process Control, and Staffing and Training with Good, Adequate, Poor, or Unacceptable ratings. For the Equipment and Maintenance criterion, the inspection forms show scores distributed by type of processes for ease of identification of deficiencies, including Pretreatment, Primary Treatment, Secondary Treatment, Tertiary Treatment, Sludge Treatment and Handling, Disinfection and Discharge, and Miscellaneous (Non-potable water (NPW), Back-up Power, Septage). Refer to the FY2024 ACA for details on the criteria and factors evaluated for the WWTPs inspected.

Table 4-6 summarizes the WWTP ratings for each of the four evaluation criteria and the overall facility rating. Overall, the facilities inspected were rated as Adequate. Four (15% of inspected WWTPs) WWTPs were rated as Poor, one (4% of inspected WWTPs) WWTP was rated as Good, and 21 (81%) WWTPs were rated as Adequate in the overall rating. However, three (Patillas WWTP, Guayanilla WWTP, and Morovis WWTP) of the 21 WWTPs rated as Adequate in the overall rating were on the lower end, close to being rated as Poor.

Table 4-6 WWTPs – Number and Percentage of Ratings by Category

Rating Range	Regulatory Compliance		Operations and Process Control		Equipment and Maintenance		Staffing and Training		Overall Rating	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Unacceptable (0-0.4)	4	16[1]	0	0	0	0	2	8	0	0
Poor (0.5-1.4)	5	19	1	4	1	4	4	15	4	15
Adequate (1.5-2.4)	5	19	19	73	24	92	13	50	21	81
Good (2.5-3.0)	12	46	6	23	1	4	7	27	1	4
Average Rating	**1.9**		**2.2**		**1.9**		**1.9**		**1.9**	

[1] Numbers rounded, considers adding to 100 percent.

4.2.2.3.1 Regulatory Compliance Findings

The WWTPs received a combined score of 1.9 in Regulatory Compliance, an Adequate rating. The equipment's condition and treatment units out of service have negatively impacted the compliance criterion. Scores could be even lower at some of the facilities inspected since some NPDES parameters have interim limits or are for monitoring only. Despite this, the results show that there were still exceedances. PRASA intends to address requirements stipulated under the 2015 USEPA Consent Decree to achieve compliance objectives, including new, more restrictive permit limits and major improvements that need to be implemented to achieve positive results. PRASA must make the necessary improvements to meet current limits, understanding that when interim limits are lifted, they will have the necessary processes, tools, and conditions to meet the permanent permit limits.

Out of the 26 facilities inspected, four (16%) were rated as Unacceptable, and five (19%) received a Poor rating under the regulatory compliance criterion. The remaining treatment plants were rated as Adequate, except for Parcelas Borinquen WWTP, Cayey WWTP, Barranquitas WWTP, Comerío WWTP, Vieques WWTP, Unibón WWTP, Dorado WWTP, Jayuya WWTP, Puerto Nuevo Regional Wastewater Treatment Plant (RWWTP), Guayanilla WWTP, Lajas WWTP and Mayagüez RWWTP which were rated as Good. The facilities rated as **Unacceptable** and **Poor** in this criterion were:

- Morovis WWTP (North Region) – Unacceptable
- Adjuntas WWTP (South Region) – Unacceptable
- Patillas WWTP (South Region) – Unacceptable
- Peñuelas WWTP (South Region) – Unacceptable
- Culebra WWTP (East Region) – Poor
- Naranjito WWTP (North Region) – Poor
- Vega Baja WWTP (North Region – Poor

- Guánica WWTP (South Region) – Poor
- Santa Isabel WWTP (South Region) – Poor

The nutrient removal and aeration process must be evaluated for some of these facilities and determine its optimal operation. In addition, repairs to key equipment and improvements to outdated or damaged ones must be performed for WWTPs to operate properly and achieve the required compliance.

4.2.2.3.2 Operations and Process Control Findings

The WWTPs Operations and Process Control criteria were rated as Adequate, with a 2.2 overall rating. Of the 26 facilities inspected, zero facility (0%) received a rating of Unacceptable, and one (4%) received a Poor rating under this criterion. The rest were rated as Adequate, except for Morovis WWTP, Vega Baja WWTP, Santa Isabel WWTP, Patillas WWTP, Las Marías WWTP, and Maricao WWTP, which were rated Good. The facility rated as **Poor** in this criterion was:

- Guayanilla WWWTP (South Region)

In addition, it was observed that various treatment plants are still experiencing problems with process control of P, N, metals, and residual chlorine, among other parameters with interim limits.

4.2.2.3.3 Equipment and Maintenance Findings

The Equipment and Maintenance category had an average overall rating of 1.9, Adequate. Equipment condition is the primary driver under this criterion. Out of the 26 facilities inspected, one facility (4%) received a Poor rating under this criterion, and the remaining facilities were rated as Adequate except for Parcelas Borinquen WWTP, which was rated as Good. The facility rated as **Poor** was:

- Culebra WWTP (East Region)

Despite 24 (92% of inspected WWTPs) of the facilities being rated as Adequate at the time of inspection, 19 facilities (73% of inspected WWTPs) of those WWTPs are on the lower end of the scoring range (score below 2.0), and if unattended, could fall to a Poor or Unacceptable rating in the future. These 19 facilities were:

- Cayey WWTP (East Region)
- Comerío WWTP (East Region)
- Culebra WWTP (East Region)
- Vieques WWTP (East Region)
- Humacao RWWTP (East Region)
- Arecibo RWWTP (North Region)
- Morovis WWTP (North Region)
- Vega Baja WWTP (North Region)
- Dorado WWTP (North Region)
- Naranjito WWTP (North Region)
- Jayuya WWTP (North Region)
- Santa Isabel WWTP (South Region)
- Patillas WWTP (South Region)

- Peñuelas WWTP (South Region)
- Guayanilla WWTP (South Region)
- Guánica WWTP (South Region)
- Las Marías WWTP (West Region)
- Aguadilla (Aguada) WWTP (West Region)
- Mayagüez RWWTP (West Region)

The deficiencies identified in several of these facilities will be addressed through PRASA's capital or O&M projects in the future.

4.2.2.3.4 Staff and Training Findings

The Staffing and Training category was rated as Adequate, with an overall score of 1.9. Seven facilities (27% of inspected WWTPs) were rated as Good, and the remaining 50% of visited WWTPs received an Adequate rating in this category. The facilities rated as **Unacceptable** or **Poor** in this criterion were:

- Culebra WWTP (East Region) – Unacceptable
- Jayuya WWTP (North Region) – Unacceptable
- Barranquitas WWTP (East Region) – Poor
- Cayey WWTP (East Region) – Poor
- Guánica (South Region) – Poor
- Aguadilla (Aguada) WWTP (West Region) – Poor

It has certainly been evident that qualified operators have migrated to the U.S.A., as shown by the WWTP's lack of licensed operators to effectively cover the facility operating hours, including vacations and other absences. Besides licensed operators, the findings showed multiple vacancies for laboratory technicians, sanitary sewer technicians, licensed operators at large, managers, supervisors, secretaries, electricians, electrician assistants, security guards, compost trucker drivers, maintenance and housekeeping staff, and wastewater workers (TA, by its Spanish acronym). PRASA mitigates the needs by having existing staff work overtime or reducing shifts, increasing PRASA's overtime costs.

Although PRASA has installed remote monitoring systems (telemetry) through its IMP in many facilities throughout the island, most WWTP facilities do not have it, or the equipment was out of service during the inspection. The ability to remotely monitor these facilities becomes particularly critical as most WWTPs are not staffed 24 hours per day, with many WWTPs having only one shift. In addition, most WWTP staff had the minimum required training level; however, they needed refreshers in key training courses and continuing education.

4.2.2.3.5 Lowest Rated Facilities

The facilities with the lowest overall score (below 2.0) are summarized in Table 4-7. PRASA should address the deficiencies identified during the inspections to improve the physical condition of these facilities and achieve continuous and consistent compliance. These improvements may be related to new process equipment, process automation, or process control optimization.

Similar to the WTPs, future regulations may require additional capital improvement to comply with stringent levels of NPDES discharge parameters as per updates WWTP's NPDES permits based on the Water Quality Certificate

and agreements in the 2015 USEPA Consent Decree. During the issuance process for an updated NPDES permit, PRASA requests interim limits for P, N, metals, and residual chlorine in some facilities until the capital project for the said facility is executed and completed. The project completion term is subject to PRASA's Prioritization System.

Regulatory Compliance and Equipment and Maintenance are the categories of major concern. Similar to the WTPs, the major concern is the facilities' physical condition, which deteriorates yearly. PRASA expects to properly address the deficiencies with the projected inflow of federal funds to cover (with appropriate contributions from PRASA's internal funds) its needs.

Table 4-7 WWTPs – Lowest Rated Facilities and Observations

WWTP	2024 Score	Observations
Culebra (East Region)	1.2	During the evaluation period, the facility's Compliance was rated as poor; there were exceedances in BOD, Total Nitrogen, and P. According to the manager, there was a problem with the clarifiers, RAS/WAS pumps, and the mixers. All of them were out of service. In addition, the plant was understaffed. The facility's Operations and Process Control were rated as adequate. The operators perform the necessary sampling to make adjustments to the process. The O&M manual is recent, dated April 27, 2023. The chemical dosing modifications are determined and conducted by the operator's sampling results. No calibration plan for pumps, no jar tests are being performed, exterior lights need improvements, the pipelines need repainting, and the access roads have potholes. The EGU has battery problems but can energize the entire WWTP. The facility does not have additional security available. Also, the entrance gate operates manually and has vegetation. The facility needs groundskeeping. Empty polymer drum containers are located in a green area of the facility. Lastly, the facility operates manually (no Supervisory Control and Data Acquisition (SCADA) system). The facility's Equipment and Maintenance were rated as poor. Significant equipment is not operating at the moment of the visit: one hydraulic/electrical grinder, one auger, one degritter system; one nitrate returns pumps; two mixing systems; one scum pump; one RAS pump; one granular media filter; one chlorine application system. Also, the Biological Nutrient Reactor (BNR), RAS/WAS pumps, scum pumps, recycle pumps, and the NPW tank present corrosion. The WWTP needs significant repairs and maintenance. Plant staff performs routine maintenance. Lastly, the facility is not under CIP and has as-built drawings. The facility's Staffing and Training were rated as unacceptable. The facility is understaffed; it needs at least two licensed operators and one licensed operator at large to operate the facility efficiently.

WWTP	2024 Score	Observations
Naranjito (North Region)	1.2	During the evaluation period, the facility's Compliance was rated as poor; there were several non-compliances of Total Suspended Solids (TSS) and N. According to the supervisor and operator, they unknown the reason for the non-compliance. The facility's Operations and Process Control were rated as adequate. The O&M manual of the facility is not updated. The facility operators conduct all laboratory sampling at the site following the SOPs and keep records of sampling. The NPW system is available, and it is used for the cleanup of the facility units. In terms of security, there are no available security cameras or guards, and the fence is damaged. For last, the EGU of the facility is adequate for the operation of the entire plant. The facility's Equipment and Maintenance were rated as adequate. However, one degritter unit is out of service due to a breaker problem. According to the operator, the breaker location is unknown; there is a clarifier tank out of service due to the damaged mechanism; and lastly, there is an NPW pump out of service. The chlorine application system will be changed from gas to liquid in July 2024. The facility's Staffing and Training were rated as good. However, the staff needs training refresher.
Peñuelas (South Region)	1.2	During the evaluation period, the facility's Compliance was rated as unacceptable. There were SNCs of TSS and BOD throughout the year due to the clarifier being out of service. The facility's Operations and Process Control were rated as adequate. However, the O&M manual is not updated; at the moment of the inspection, there were floating solids on the effluent; the potable water meter was not visible; there was no adequate bathroom for women; there was no adequate access road to enter the WWTP, part of the fence is damaged since Hurricane María, and there are areas in need of landscaping/housekeeping. The facility's Equipment and Maintenance were rated as adequate. However, there were visible corrosions in tanks and equipment; the package plant motor and transmission were damaged, and the centrifuge had hydraulic pressure problems and a broken screw conveyor. Lastly, the facility is under a CIP project in the construction phase. The facility's Staffing and Training were rated as adequate. The facility staff is adequate for the operational area, but refresher training is necessary.
Adjuntas (South Region)	1.3	During the evaluation period, the facility's Compliance was rated as unacceptable. There were several non-compliances of P, BOD, and TSS. According to the supervisor, the only equipment operating with problems was the clarifier transmission mechanism. The facility's Operations and Process Control were rated as adequate. The operators perform the necessary sampling to make adjustments to the process. However, O&M manuals are not updated, and there is no equipment manual available on site. There is no NPW System, and some pipelines need to be painted. The facility's Equipment and Maintenance were rated as adequate for the operation of the WWTP. All the equipment is in operation and in good condition. However, some visible corrosion in equipment and pipelines was observed at the moment of the inspection. Lastly, the facility is under CIP Phase 2 for emergency generators, which is currently in the construction phase. The facility's Staffing and Training were rated as good. However, the facility staff needs the training refresher.

WWTP	2024 Score	Observations
Morovis (North Region)	1.5	During the evaluation period, the facility's Compliance was rated as unacceptable. There were significant exceedances in BOD and TSS. According to the manager, the influent actuator was operating with problems, and a decanter from Sequency Batch Reactor (SBR) #1 was out of service. The facility's Operation and Process Control were rated as good. The operator performs the necessary sampling following the SOPs for adjustment. However, the facility needs a women's bathroom, and the fence needs replacement in some areas. The facility's Equipment and Maintenance were rated as adequate. Several pieces of equipment were repaired or replaced since the last inspection and a new space for a laboratory is under construction. However, at the moment of the visit, the aeration system was operating with a deficiency; the filter system can't be operated since the membranes and backwash actuators are out of service; one SBR decanter was operating with problems, and sludge drying beds filter media needs replacement. The facility is under a CIP project pending approval from FEMA 406. The staff is good for the operation of the plant. However, the staff needs confined space training and other training refresher.
Patillas (South Region)	1.5	During the evaluation period, the facility's Compliance was rated as unacceptable. There were several non-compliances with BOD, TSS, and Residual Chlorine. The facility's Operations and Process Control were rated as good. The operators perform the necessary sampling to make adjustments to the process. However, the O&M manual was not updated, the equipment manuals were incomplete, and there was no NPW System. The facility's Equipment and Maintenance were rated as adequate. However, the comminutor in the influent area is not in place, two influent pumps are out of service, the grit removal system is out of service due to the amount of corrosion in the structure, RAS pump electric control panel does not have the capacity to operate more than one pump, and there is a visible deterioration in the concrete tanks structures. Lastly, the facility is under a CIP project in the construction phase. The facility's Staffing and Training were rated as good. However, staff need training refresher.
Guánica (South Region)	1.5	During the evaluation period, the facility's Compliance was rated as poor. There were SNCs of TSS and BOD due to the problems with the clarifier of the package plant and a biological nutrient reactor out of service. The facility's Operations and Process Control were rated adequate. However, the O&M manual is not updated, there are only cameras for the emergency generator area, some parts of the fence are damaged, and there are some areas with damaged handrails. The facility's Equipment and Maintenance were rated as adequate. However, there is some visible corrosion in tanks, pipelines, and pump cranes. The package plant is heavily corroded and out of service with accumulated solids and vegetation. Also, the engine of one of the secondary clarifiers is damaged, RAS/WAS pumps are operating manually, and the sludge drying beds have visible vegetation. Lastly, the facility has completed the CIP for the reconstruction of structures affected by earthquakes. The facility's Staffing and Training were rated as poor; one operator should be added, and refresher training is necessary.

WWTP	2024 Score	Observations
Santa Isabel (South Region)	1.7	During the evaluation period, the facility's Compliance was rated as poor. During the evaluation period, the facility had several non-compliances with BOD, TSS, and Dissolved Oxygen. According to the operator, there were rain events, problems with the rotary screens, and electric power failures during the staff operating hours, causing blowers to turn off and affecting the SBR process. The facility's Operations and Process Control were rated as good. The operators perform the necessary sampling, following SOPs, for adjustments to process. However, the O&M manual and the Emergency Response Plan (ERP) were not updated; the fence was damaged, but there is a plan to replace it, and the bathrooms need improvement. The facility's Equipment and Maintenance were rated as adequate. Most of the equipment and components were in good condition and operating adequately. However, comminutors in the influent pit were out of service, and there was visible corrosion in some equipment. There is one pending project to make improvements for the better operation of the WWTP. Lastly, the facility is under a CIP project in the design phase. The facility's Staffing and Training were rated as adequate. However, an additional licensed operator is needed for better operation, and staff need refresher training.
Aguadilla (Aguada) (West Region)	1.7	During the evaluation period, the facility's Compliance was rated as adequate. There were exceedances in Residual Chlorine, Fecal Coliforms 20%-30DA, and Total Coliforms. At the moment of the visit, the supervisor does not know the reason for the exceedances. The facility's Operations and Process Control were rated as adequate. The operators perform the necessary sampling for adjustments to process. However, the O&M manual was not available at the moment of the visit; the WWTP was operating with a rented generator unit, and there were areas without illumination. The facility's Equipment and Maintenance were rated as adequate. Some of the equipment presents severe corrosion and needs urgent replacement, such as primary clarifier components and some valves. Also, the belt filter press is out of service. The Aguadilla Operational Area performs routine maintenance. Lastly, the facility is included in a CIP project as part of the planning process for FEMA 406. The facility's Staffing and Training were rated as poor. Training refreshers and at least a permanent lab technician for water analysis are needed.

WWTP	2024 Score	Observations
Arecibo (North Region)	1.8	During the evaluation period, the facility's Compliance was rated as adequate. However, during the evaluation period, there were exceedances of Fecal Coliforms and Residual Chlorine. According to the manager, the reason for the exceedances is unknown and there is a private company taking samples as part of an investigation. The facility's Operations and Process Control were rated as adequate. The operators perform the necessary sampling following SOPs for adjustment to the process. However, the O&M manual is not updated, and there are no equipment manuals available on site. There is no calibration plan for chemical feed pumps. Operation with several major equipment in bad condition. There were some floating solids at the discharge point. Lastly, RWWTP has good emergency power for the entire plant. The facility's Equipment and Maintenance were rated as adequate. However, there were important components of the RWWTP process out of service or operating with deficiency. The degritter system has been out of service for several years; one primary clarifier is out of service due to filtrations in the structure and deterioration; one thickener tank is out of service due to the scum collector damage, and the other thickener tank is operating as a holding tank due to problems with the mechanism; one belt filter press has significant corrosion and is out of service due to problems with the guideline. Sludge grinders have problems with the electric control panel. A septic tank is not used (damaged); when septage is received, it is connected to thickeners. The facility has corrective maintenance and procurement process challenges due to extended delays/funding. Lastly, the facility is included in a CIP project as part of the elimination process, with the approval of the project under FEMA 406, which is currently in the planning phase. The facility's Staffing and Training were rated as adequate. However, three electricians and one electrician's assistant are needed to comply with equipment maintenance. Staff need training refresher.
Vega Baja (North Region)	1.8	During the evaluation period, the facility's Compliance was rated as poor due to several non-compliances with BOD and Residual Chlorine. According to the supervisor, there was a problem with the chemical distributor causing PRASA a deficit of bisulfite. Currently, PRASA is not working with that distributor. There was a problem with the clarifier skimmer arm. Influent pumps were not working properly with the flow entering the plant, and the package plant was emptied for equipment verification. The facility's Operations and Process Control were rated as good. The operators perform the necessary sampling following the SOPs to adjust the process. There is an emergency power system and a general safety adequate. However, the O&M manual was not updated at the moment of the inspection. The facility's Equipment and Maintenance were rated as adequate. However, the mechanical bar screen equipment has problems with the chains and is not operating. Degritter system grit pumps are out of service and need a replacement; six RBC mechanical equipment are out of service; two floating aerators of the biological nutrient reactor are out of service; package plant clarifier skimmer is damaged; and filters are not working due to a problem with the drain valve located beneath the Ultraviolet (UV) system. To put the filters in operation, the UV system needs to be removed. Currently, the UV system is damaged and not in use. Lastly, the facility is included in a CIP project as part of the elimination with the approval of the project that is under FEMA 406. The facility's Staffing and Training were rated as good. The plant has the necessary staff for the operation hours. However, staff need training refresher.

WWTP	2024 Score	Observations
Guayanilla (South Region)	1.8	During the evaluation period, the facility's Compliance was rated as good. However, there was a non-compliance of TSS due to events of rain. The facility's Operation and Process Control were rated as poor. At the moment of the inspection, the O&M and ERP were not updated, there were no security cameras or alarms, a jar test was not used to establish coagulant dosages, the bathroom needs improvements, illumination was not adequate in the blower and effluent sampler areas, and emergency generator auto transfer switch was operating with problems. The facility's Equipment and Maintenance were rated as adequate. However, the degritter system of the facility is out of service and requires repairing. Also, the clari-digester and secondary clarifier are not in operation. There is a plan to repair corroded areas and transmission of the clarifier digester. The facility equipment requires improvements and repair due to the presence of corrosion, and sludge drying beds need to be cleaned. According to the supervisor, they are waiting for permits to empty and clean the sludge drying beds. The sludge-drying bed units do not have roofs. Lastly, if the facility obtains approval from FEMA 406 for the elimination of the North Plants, this facility will qualify under 406 for removal and redirect the flows to Yauco WWTP. The facility's Staffing and Training were rated as adequate. The facility staff is adequate for the operational areas. Training refreshers are necessary.
Las Marías (West Region)	1.9	During the evaluation period, the facility's Compliance was rated as adequate. There were exceedances in BOD. According to the supervisor, it was due to problems with the transmission chain of the clarifier and clogged recirculation pipe. The facility's Operations and Process Control were rated as good. The operators perform the necessary sampling to make adjustments to the process. The AF-501 polymer is added for copper and phosphorous control; thus, no jar test is performed. However, the O&M manuals are the original from 1990 and were not updated, equipment manuals are not available on-site, and sections of the fence need to be changed. The facility's Equipment and Maintenance were rated as adequate. However, the package plant has significant deterioration and corrosion. Structural evaluation of the package plant is recommended. The aeration system needs soft starters, and sludge drying beds need a roof replacement. Lastly, the facility is under a CIP project in the planning phase. The facility's Staffing and Training were rated as adequate. However, refresher training is necessary.

4.2.2.4 Wells

PRASA owns and operates 244 water wells, most of which deliver water directly into a distribution system with little or no treatment except for disinfection by chlorination. PRASA's wells vary in size from 100 to 1,200 gallons per minute (gpm). A total of 20 wells (equivalent to 8% of total wells) from the Operational Areas of Cayey, Humacao, Carolina, Bayamón, Manatí, Toa Alta, Guayama, Coamo, San Germán, and Mayagüez were inspected in FY2024. Only one well was inspected in the Carolina Operational Area; therefore, Arcadis visited an additional well (three) in the Coamo Operational Area. The facilities were assessed using the following criteria: facility-specific and regional-specific criteria. The facility-specific evaluation criterion considers a specific facility's operations, process control, and equipment aspects. The regional-specific criterion considers maintenance aspects carried out on a regional or operational area basis and staffing and training aspects. Staffing and training were included to evaluate the adequacy of PRASA's assigned monitoring and operations personnel. The facility-specific (Operations/Process Control and Equipment) criterion was assigned a weighting factor of 75%, while the regional-specific (Maintenance/Training/Staffing) criterion was 25%. While compliance information is relevant to evaluating wells,

this category was not included. The wells were rated as Good, Adequate, or Poor. Refer to the FY2024 ACA for details on the criteria and factors evaluated for the wells inspected.

Out of the 20 wells inspected, two received a rating of Poor, five were rated Good, and the remainder were rated Adequate under the overall rating criteria. Note that even though only two wells were rated as Poor, eight (equivalent to 10% of the wells inspected) of the 13 wells rated in the Adequate range received an overall rating below 2.0. If left unattended, their condition could deteriorate, downgrading their rating to Poor or Unacceptable in the future.

Table 4-8 summarizes the facility ratings by each of the evaluation criteria, as well as the overall facility rating. As previously stated, the facility-specific criterion accounts for 75% of the weighted factor, as it is the key criterion for assessing the condition of the wells. Three (15%) wells were rated as Poor, 11 (55%) were rated as Adequate, and six (30%) were rated as Good. In addition, this inspection cycle had significantly fewer Operational Areas in the Regional Evaluation category rated in the Poor range compared to previous inspections.

Table 4-8 Wells – Number and Percentage of Ratings by Category

Rating Range	Facility Evaluation		Regional Evaluation		Overall Rating	
	Number	Percent	Number	Percent	Number	Percent
Unacceptable (0-0.4)	0	0	0	0	0	0
Poor (0.5-1.4)	3	15	6	30	2	10
Adequate (1.5-2.4)	11	55	8	40	13	65
Good (2.5-3.0)	6	30	6	30	5	25
Average Rating	**2.0**		**2.0**		**2.0**	

Table 4-8 shows the wells that received a Poor rating in the facility-specific category with a summary of the deficiencies identified during the inspection. The regional-specific evaluations for Cayey, Toa Alta, and Manatí Operational Areas for potable water systems were rated as Poor for the regional-specific category. The Bayamón, Carolina, Coamo, Fajardo, Toa Alta, Arecibo, and Mayagüez Operational Areas were rated as Adequate with fewer deficiencies. In the Humacao, Guayama, and San Germán Operational Areas were rated as Good. The only deficiency identified for the Humacao Operational Area is the unavailability of O&M/vendor manuals.

Table 4-9 Wells Rated as Poor in Facility – Specific Category

Facility	2024 Observations
Matadero (East Region, Cayey)	The facility personnel need to color code distribution and waste lines, install missing bolts and a safety shower, replace interior and exterior lighting, and implement corrosion control measures to safeguard equipment integrity.

Facility	2024 Observations
Levittown 4 (Metro Region, Bayamón)	The facility personnel need to color code distribution and waste lines. Implement corrosion control measures to safeguard equipment integrity and label the control panel. Install facility signs with emergency phone numbers and a storage room to protect the solution's integrity. Repair or replace the fence and flow meter.
Boquerón (East Region, Humacao)	The facility personnel need to color code distribution and waste lines, install waste line pipelines and bolts, and implement corrosion control measures to safeguard equipment integrity.

PRASA should look into mitigation initiatives to address some deficiencies identified during the inspections. However, for now, these wells are expected to continue serving their intended supplemental water supply function. Four main concerns were identified: lack of remote monitoring, improper color-coding of waste lines, inadequate extension of well heads above ground, and repeated corrosion in several wells.

Most deficiencies can be addressed through PRASA's R&R program and may not require major capital improvements. Note that PRASA has an aggressive capital improvement plan as a result of the projected inflow of federal funds to cover (with appropriate contributions from PRASA's internal funds) its needs; hence, the deficiencies identified as adequate, poor, or unacceptable are expected to be properly addressed in future years. In addition, future regulatory requirements may require significant capital improvements to include and achieve additional treatment capabilities at the well facilities or the closure of certain wells.

4.2.2.5 Water Pump Stations

PRASA owns and operates 1,136 WPSs and an additional 75 RWPSs. The WPSs consist of two major categories: 1) above-ground pumps and 2) below-ground pumps inside vaults with heavy covers that cannot be readily removed by field inspectors, such as underground booster stations, which are not inspected. PRASA's WPSs vary in pumping capacity from less than 100 gpm to over 9,000 gpm. A total of 30 above-ground WPSs (3% of total WPSs) were inspected. Each assessment consisted of a site inspection and an interview with the designated personnel. The facilities were evaluated using facility-specific and regional-specific criteria to understand the facility's conditions better and obtain an overview of the Regional Operational Areas. The facility-specific criterion considers its operations, process control, and equipment aspects. The regional-specific criterion considers maintenance aspects carried out on a regional or operational area basis and the staffing and training aspects. In addition, staffing and training were included to evaluate the adequacy of PRASA's assigned monitoring and operations personnel. Refer to the FY2024 ACA for additional details on evaluating the WPSs inspected.

Table 4-10 summarizes the facility ratings for each of the evaluation criteria, as well as the overall facility rating. The average WPS's overall rating was Adequate, with a score of 2.2. The facility-specific criterion accounts for 75% of the weighted factor, as it is the key criterion for assessing the condition of the WPSs. One (1% of inspected WPSs) facility was rated as Unacceptable under this category, which is Villa Santa Catalina, from the Coamo Operational Area. Four (13% of inspected WPSs) facilities were rated as Poor under this category, which includes Niagara from the Coamo Operational Area; Barrazas I from the Carolina Operational Area; Buena Vista from Bayamón Operational Area; and April Gardens (Montones 1) from Humacao Operational Area. Additionally, four WPSs were rated as Poor in the overall rating, and four facilities received an overall rating below 2.0; if left unattended, their condition could deteriorate, downgrading their rating to Poor or Unacceptable in the future. In addition, the overall Regional Evaluation of Operational Areas was rated as Poor, Adequate, and Good.

Table 4-10 WPSs Number and Percentage of Ratings by Category

Rating Range	Facility Evaluation		Regional Evaluation		Overall Rating	
	Number	Percent	Number	Percent	Number	Percent
Unacceptable (0-0.4)	1	3	0	0	0	0
Poor (0.5-1.4)	4	13	9	30	4[1]	14
Adequate (1.5-2.4)	11	37	12	40	13	43
Good (2.5-3.0)	14	47	9	30	13	43
Average Rating	**2.2**		**1.9**		**2.2**	

[1] Numbers rounded, consider sum to 100 percent.

Table 4-11 lists the deficiencies of the facilities rated as Unacceptable or Poor in the facility-specific category.

Table 4-11 WPSs Rated as Unacceptable or Poor in Facility–Specific Category

Facility	2024 Observations
Villa Santa Catalina (South Region, Coamo) Unacceptable	The facility is rated as unacceptable. The facility's personnel need to repair pump #2, the leak on pump #1, and the section of the fence. Also, implement corrosion control measures to safeguard equipment integrity.
Niagara (South Region, Coamo) Poor	The facility is rated as poor. The facility personnel need to repair elapsed time meters and pump leaks and improve pedestal conditions. They also need to implement corrosion control measures to safeguard equipment integrity.
Barrazas 1 (Metro Region, Carolina) Poor	The facility is rated as poor. The facility personnel need to replace exterior lighting bulbs and repair leaks on pump shafts. Also, a new facility sign with emergency phone numbers should be installed.
Buena Vista (Metro Region, Bayamón) Poor	The facility is rated as poor. The facility personnel need to improve vegetation maintenance, repair the fence, and fix leaks on both pump shafts. They also need to replace exterior lighting and install facility signs with emergency phone numbers and a new EGU.
April Gardens (Montones 1) (East Region, Humacao) Poor	The facility is rated as poor. The facility personnel need to repair leaks in the pump shaft and elapsed time meters, implement corrosion control measures to safeguard equipment integrity, replace the access ladder, and improve exterior maintenance to enhance the general appearance.

The observed deficiencies in terms of the regional-specific evaluations for the Cayey, Toa Alta, and Manatí Operational Areas for potable water systems, which were rated as Poor, were the following:

- Inadequate maintenance parts inventory

- Challenges in the parts procurement process, which is slow
- Unavailability of as-built drawings

In addition to the above common deficiencies observed, the Toa Alta and Manatí Operational Areas indicated the unavailability of O&M/vendor manuals and as-built drawings. Furthermore, the Cayey and Manatí Operational Areas indicated insufficient staff.

PRASA's Operational Regions continue efforts under the IMP to install telemetry systems in all facilities to enable monitoring through Remote Operating Centers (ROCs). PRASA expects to properly address the deficiencies with the projected inflow of federal funds to cover (with appropriate contributions from PRASA's internal funds) it needs. PRASA has included several projects to address WPSs in its CIP program, and it is expected to see improvement in the following years.

4.2.2.6 Water Storage Tanks

PRASA owns and operates 1,569 WSTs that vary in storage capacity (size) from 100 to 10M gallons. A total of 30 WSTs were inspected in FY2024. Each assessment consisted of a site inspection and an interview with the designated personnel. The facilities were evaluated using facility-specific and regional-specific criteria to understand the facility's conditions better and obtain an overview of the Regional Operational Areas. The facility-specific criterion considers a specific facility's operations, process control, and equipment. The regional-specific criterion considers maintenance aspects carried out on a regional or operational area basis and the staffing and training aspects. Staffing and training were included to evaluate the adequacy of PRASA's assigned monitoring and operations personnel.

Out of the 30 WSTs inspected, 15 (50%) received a Good rating, 14 (47%) were rated as Adequate, and one (3%) was rated as Poor under the overall rating. Note that there were no Unacceptable facilities, and the average overall rating was in the Adequate range (2.4); two of the WSTs rated Adequate (equivalent to 7% of tanks inspected) received an overall rating below 2.0 and, if left unattended, their condition could deteriorate, downgrading their rating to Poor or Unacceptable in the future. In addition, the overall Regional Evaluation of Operational Areas was rated as Poor, Adequate, and Good. Table 4-12 summarizes the facility ratings by each of the two evaluation criteria and the overall facility rating. Emphasizing the facility-specific criterion, the WSTs rating distribution for this evaluation is as follows: one (3% of inspected WSTs) WSTs were rated as Poor, 11 (37% of inspected WSTs) were rated as Adequate, and 18 (60% of inspected WSTs) were rated as Good.

Table 4-12 WSTs – Number and Percentage of Ratings by Category

Rating Range	Facility Evaluation		Regional Evaluation		Overall Rating	
	Number	Percent	Number	Percent	Number	Percent
Unacceptable (0-0.4)	0	0	0	0	0	0
Poor (0.5-1.4)	1	3	9	30	1	3
Adequate (1.5-2.4)	11	37	12	40	14	47

Rating Range	Facility Evaluation		Regional Evaluation		Overall Rating	
	Number	Percent	Number	Percent	Number	Percent
Good (2.5-3.0)	18	60	9	30	15	50
Average Rating	**2.5**		**1.9**		**2.4**	

The areas of opportunity in each facility that obtained a low score to improve its condition include replacing old equipment with new equipment or modifying the process control strategies. Table 4-13 lists the deficiencies of the facility rated as Poor in the facility-specific category.

Table 4-13 WSTs Rated as Unacceptable in Facility–Specific Category

Facility	2024 Observations
Caná (Metro Region, Bayamón)	The facility personnel need to improve vegetation maintenance. Also, implement corrosion control measures to safeguard equipment integrity. Also, the installation of a new float valve is necessary, and repair the uneven surfaces on the tank roof and to improve the asphalt access to the tank. It is important to address leaks in the check valves and pressure relief.

The observed deficiencies in the Regional evaluations are the same as described in the WPS section for potable water systems. PRASA has included several projects to address WSTs in its CIP, and it is expected to see improvements in the following years. In addition, remote monitoring is still recommended for visualization of tanks' levels and as a preventative measure against water losses in the distribution system. PRASA continues this initiative by providing remote monitoring to those tanks identified as critical in the distribution system. Even though PRASA's Operational Regions are at different stages of the WSTs optimization measures implementation, specifically visualization, all have established goals to achieve this and will continue implementation until all facilities reach visualization.

4.2.2.7 Wastewater Pump Stations

PRASA owns and operates 835 WWPSs, which vary in pumping capacity from less than 100 gpm to over 10,000 gpm, depending on the population density and its proximity to the receiving WWTP. A total of 20 WWPSs were inspected in FY2024. Each assessment consisted of a site visit inspection and an interview with the designated personnel. The inspected facilities predominantly use wet pit-type submersible pumps, although several dry pit-type stations were also inspected. The overall results of the assessments of those stations are described below. Refer to the FY2024 ACA for additional details on the evaluation of the WWPSs inspected.

The facilities were evaluated using facility-specific and regional-specific criteria to understand the facility's conditions better and obtain an overview of the Regional Operational Areas. The facility-specific criterion considers a specific facility's operations, process control, and equipment. The regional-specific criterion considers maintenance aspects carried out on a regional or operational area basis and the staffing and training aspects. Staffing and training were included to evaluate the adequacy of PRASA's assigned monitoring and operations personnel. The facility-specific (Operations/Process Control and Equipment) criterion was assigned a weighting factor of 75%, while the regional-specific (Maintenance/Training/Staffing) criterion was 25%.

Out of the 20 WWPSs inspected, twelve (60%) received an Adequate overall rating, four (20%) received an overall rating of Poor, four (20%) were rated as Good, and none were rated as Unacceptable. Table 4-14 summarizes the facility ratings by each evaluation criteria and the overall facility rating for the facilities inspected.

Table 4-14 WWPSs – Number and Percentage of Ratings by Category

Rating Range	Facility Evaluation		Regional Evaluation		Overall Rating	
	Number	Percent	Number	Percent	Number	Percent
Unacceptable (0-0.4)	0	0	2	10	0	0
Poor (0.5-1.4)	5	25	4	20	4	20
Adequate (1.5-2.4)	10	50	6	30	12	60
Good (2.5-3.0)	5	25	8	40	4	20
Average Rating	**1.8**		**1.8**		**1.9**	

The areas of opportunity in each facility that obtained a low score to improve its condition include replacing old equipment with new equipment or modifying the process control strategies. Table 4-15 lists the deficiencies of the five facilities rated as Poor in the facility-specific category.

Table 4-15 WWPSs Rated as Poor in Facility–Specific Category

Facility	2024 Observations
Villas del Río (East Region, Humacao)	The facility personnel need to repair elapsed time meters, improve wet pit cleaning maintenance, install an exhaust fan, and install new interior lighting bulbs. They also need to implement corrosion control measures to safeguard equipment integrity.
Junquito (East Region, Humacao)	The facility personnel need to repair the elapsed time meters and auto-transfer switch and improve the cleaning maintenance of the wet pit.
Molinos del Río (North Region, Toa Alta)	The facility personnel need to improve cleaning maintenance of bar screens and wet pits, repair elapsed time meters, and replace interior lighting. They also need to implement corrosion control measures to safeguard equipment integrity. Preventive maintenance and scheduling for work orders are not being performed.
San Antonio (West Region, San Germán)	To safeguard equipment integrity, facility personnel need to install elapsed time meters, improve wet pit cleaning, and implement corrosion control measures.
El Hospital (West Region, Mayagüez)	The facility personnel needs to improve the cleaning/maintenance of the wet pit, implement corrosion control measures to safeguard equipment integrity, and replace the fence. Also, install a new emergency generator unit, stairs for the wet pit, and exterior and interior lighting. Lastly, install new pumps with higher capacity to ensure the overall efficiency of the pump station, improve vegetation maintenance, and build a new sidewalk for access to the facility.

The deficiencies observed in terms of the Regional evaluation for the Mayagüez Operational Area for wastewater system, which was rated at the upper end of Unacceptable (0.4), included the following:

- Unavailability of O&M/vendor manuals

- Unavailability of maintenance records
- Inadequate maintenance parts inventory
- Challenges in the parts procurement since the process is slow
- Availability of as-built drawings
- Lack of written procedures to handle emergencies
- Insufficient staff
- Inadequate training

The common deficiencies identified in the Regional evaluations for Bayamón and Toa Alta Operational Areas for wastewater systems, both rated as Poor, were:

- Unavailability of as-built drawings
- Insufficient staff
- Inadequate training

In addition to the common deficiencies mentioned, the Bayamón Operational Area indicated the unavailability of O&M/vendor manuals, inadequate maintenance parts inventory, and challenges in parts procurement since the process is slow. Likewise, three other deficiencies were observed in the Toa Alta Operational Area: the unavailability of the schedule of outstanding work orders, lack of preventive maintenance, and the facilities not being visited daily.

The other operational areas evaluated, Carolina, Manatí, and Coamo, were rated as Adequate and also had some of the previously mentioned deficiencies. Conversely, the Cayey, Humacao, Guayama, and San Germán Operational Areas were rated as Good and had fewer deficiencies compared to the other areas.

The deficiencies identified may not require significant capital upgrades but rather a modification to O&M practices or can be addressed through PRASA's R&R program. PRASA has included several projects to address WWPSs in its CIP, and it is expected to see improvement in the following years.

PRASA's Operational Regions are at different stages of the WWPSs optimization measures implementation, specifically visualization. All have established goals to achieve and will continue to be implemented until visualization at all the facilities is accomplished. As for the telemetry system, PRASA's priority is implementing it first at the WSTs and WPSs, WWPSs, and then the WWTPs and WTPs.

4.3 Buried Infrastructure

Although buried infrastructure (i.e., water meters, water transmission and distribution pipes, buried valves, sewer trunks and collection pipes, and manholes) was not inspected, this section discusses indirect indicators of the condition of the buried infrastructure. PRASA continues to invest in developing and updating its Geographic Information System (GIS) database to better control, record, and manage its buried assets. Also, PRASA slowly continues with its buried infrastructure R&R program, mainly managed and implemented by the Operational Regions and as their assigned budget allows. R&R of distribution (water) and collection (wastewater) pipes, which target pipe breaks and leak-prone areas, are identified by PRASA's Operational Areas and prioritized according to the severity of the problem. Water meter replacements are programmed and managed through PRASA's NRW Reduction Program.

4.3.1 Water Meters

PRASA owns over 1.4M water meters ranging in diameter from 5/8 to 12 inches. PRASA continues its meter replacement initiative under the Revenue Optimization Program. As reported by PRASA, about 880,747 small meters (1-inch in diameter or less) and over 6,023 large meters (greater than 1-inch in diameter) were replaced between FY2009 and FY2024. However, due to PRASA's fiscal situation in the past few years, the initiatives included in the Revenue Optimization Program have been slowed down, and meter replacements are proceeding conservatively. As a result, about 56,962 small and 155 large meters were replaced during FY2024. These replacements were mainly due to maintenance, theft, or special client requests.

Due to available federal funding, PRASA focuses on planning and implementing the 2024 PRASA Fiscal Plan. One of the main initiatives in the Fiscal Plan is implementing a project to modernize PRASA's metering system, improve billings and collections, and reduce NRW. This initiative has been included in the Arcadis Program Management Consultant (PMC) CIP. In addition, PRASA will reactivate its meter replacement initiative utilizing advanced metering technology. Additional information on the metering system and NRW activities and initiatives are included in Section 4.3.2 and Section 5.5.2.

4.3.2 Water Distribution System

Based on PRASA's GIS updated in June 2024, PRASA owns over 15,295 miles of water pipelines, including transmission and distribution pipes ranging from 2 to 72 inches in diameter. As in previous years, Arcadis did not inspect the water transmission and distribution system. However, it is reasonable to assume that a portion of the water distribution system will require structural repairs and rehabilitation to reduce leakage.

NRW is water that has been produced but is not billed to customers. However, not all NRW is due to water losses. NRW has three main components: unbilled authorized consumption, commercial (apparent) losses, and physical (real) losses. Combined, commercial and physical losses comprise the System's water losses. Unbilled authorized consumption comprises unbilled metered and unmetered consumption, including water used by PRASA (measured and estimated) for operational and internal purposes and firefighting. Examples include potable water service provided to PRASA's facilities, water used to wash and clean PRASA's tanks and sanitary pipelines, tanker trucks for communities with deficient water service, firefighter usage, etc.

Table 4-16 summarizes key water distribution system metrics since FY2020, including current levels of water production, water losses, and NRW, as reported by PRASA. PRASA's NRW levels have recently started to decrease in FY2022.

Table 4-16 Water Losses and NRW

Fiscal Year	Total Water Production (MGD)[1]	Water Losses	NRW
		(MGD)	**(MGD)**
FY2020	541	352	359
FY2021	551	356	368
FY2022	519	328	339
FY2023	513	310	328
FY2024	513	322	338

Fiscal Year	Total Water Production (MGD)[1]	Water Losses	NRW
		(MGD)	**(MGD)**
Difference FY2024-2023	**0**	**5**	**4**
Cumulative Difference FY2020-2024	**-28**	**-30**	**-21**

[1] Includes a metering-error adjustment identified by PRASA in its water balance audits.

According to the FY2024 Fiscal Plan, PRASA aims to reduce water losses by 55 MGD by FY2031 by successfully implementing the Water Recovery Office (WRO's) three main programs:

- Master Meters: This initiative includes the installation of water meters at critical facilities to measure water production accurately.
- Pressure Management: This initiative includes installing best practices across the transmission and distribution network.
- Leaks Detection and Reduction: This initiative will aid PRASA with identifying, prioritizing, and resolving major leaks detected in the system.

PRASA recognizes that reducing its NRW and water loss volume and, in turn, its water production will positively affect its operations, financial results (lower O&M expenses and higher revenues, for example), and sustainability practices. Therefore, reducing NRW is one of the top priorities and is one of the main objectives of the 2024 PRASA Fiscal Plan.

In addition, PRASA's NRW office continues to focus on refining the validity and credibility of the data of the annual water audits and reducing NRW by, among other measures, continuing the Revenue Optimization Program, installing flow meters at PRASA facilities to measure more significant percentage of the authorized unbilled consumption and reducing the unmetered production by installing additional flow meters at WTPs to measure daily production to distribution flows adequately. PRASA aims to reach a metered reading of 96% of the water production by the end of FY2025. During FY2024, PRASA exceeded the expected goal of 94%.

4.3.2.1 Leak Monitoring and Control

Table 4-17 shows that leaks reported in FY2024 amounted to 63,174 and the average annual leaks per 100 miles of water piping for recent fiscal years. In FY2024, there was an increase of approximately 3% compared to FY2023.

PRASA's reported rate of leak occurrence continues to be extremely high compared to other utilities in the U.S. and Canada (average annual combined leaks and breaks per 100 miles are between 2.3 and 15.6, with a median of 8.8)[3]. Although this high rate is not surprising, given the existing infrastructure's age, size, complexity, and significant changes in elevations of the System, it still influences PRASA's NRW.

[3] Source: 2023 AWWA Utility Benchmarking: Performance Management for Water and Wastewater.

Table 4-17 Reported Leaks from FY2020 Through FY2024

Fiscal Year	Total Annual Reported Leaks	Annual Leaks per 100 miles Using 15,295 miles of Water Pipeline
2020	56,536	383
2021	56,831	375
2022	58,553	385
2023	61,102	401
2024	63,174	413

Source: PRASA Systems, Applications, and Products in Data Processing (SAP) (Commercial) Database.

Refer to the FY2024 ACA for additional details on statistics related to leaks and the backlog of repairs. Regarding the water storage tank's overflow issues, PRASA has been implementing continuous monitoring of water storage tanks across its Operational Regions to help control and minimize overflow (water losses) occurrences as funds become available and repair prioritization allows. In addition, to help optimize the System's operation and reduce potential leaks through valves, PRASA has included its pressure regulator/sustaining valves in the IMP and has indicated that it is training its employees to carry out the necessary maintenance activities.

4.3.3 Wastewater Collection System

PRASA's GIS, updated in June 2024, shows that PRASA owns approximately 5,864 miles of wastewater pipelines. Although the wastewater collection system was not inspected, it is reasonable to assume that a significant portion of the system will require structural repairs and rehabilitation (replacement) to reduce inflow, infiltration, and overflow occurrences and address the impacts of damaging events, such as earthquakes and hurricanes.

4.3.3.1 Overflow Monitoring and Control

PRASA indicates that overflows reported in FY2024 were 24,452 (refer to Table 4-18). Note that data is unavailable for the frequency of overflows in (a) combined sewer systems compared to separate systems or (b) dry weather overflows (DWOs) compared to wet weather overflows. DWOs are often caused by (a) insufficient cleaning and maintenance of the collection system, resulting in a buildup of roots or grease, restricting or blocking flow, or (b) pump station failures due to old or insufficiently maintained equipment, poor design, or lack of reliable backup power supply. Wet weather overflows indicate leaking sewers, stormwater connections to sanitary sewer systems, or under-sized pipes or pump stations.

Table 4-18 also shows the average annual overflow occurrence per 100 miles of sewer. In FY2024, an average of 489 overflows per 100 miles, compared to 526 in FY2023 and 549 in FY2022. Although Arcadis has not performed an independent analysis to pinpoint the causes of these fluctuations, the trends are noteworthy. From FY2021 to FY2022, reported overflows increased by 5%. In FY2022, there was a slight decrease of 1%. However, from FY2023 to FY2024, a significant reduction of 12% in reported overflows was observed.

PRASA reported rate of overflow occurrence continues to be extremely high compared to other utilities in the U.S. and Canada, with combined operations (average annual overflows) per 100 miles between 1.0 and 7.3 overflows

(with a median of 3.1)[4]. However, this high rate is not surprising given the size and complexity of the System. Contributing factors to these high overflow rates could be aging infrastructure, damages from hurricanes and earthquakes, and inadequate customer use (i.e., illegal connections and discharges).

Table 4-18 Reported Overflows from FY2020 through FY2024

Fiscal Year	Reported Overflows	Annual Overflows per 100 miles Using 5,864 miles of Wastewater Pipeline
2020	27,478	455
2021	28,769	467
2022	28,555	549
2023	27,888	526
2024	24,452	489

Source: PRASA SAP (Commercial) Database.

Refer to the FY2024 ACA for additional details on statistics related to weekly overflows and the backlog of overflow repairs. PRASA continues to work towards improving its sewer overflow response time and metrics tracking across its Operational Regions. Also, PRASA continues with the Fats, Oils, and Grease (FOG) Program, which should continue to impact overflows positively.

4.4 Conclusions

Arcadis visited 188 facilities throughout PRASA's five Operational Regions between March and July of 2024 to conduct a condition assessment of PRASA's facilities. Of the inspected facilities, 80 (43%) were treatment (WTP and WWTP) facilities. The assessment included a visual inspection of the physical condition of the equipment and the facilities, process controls, and an evaluation of the regulatory compliance performance, O&M practices, staffing, and training. Tables 4-19 and 4-20 summarize the inspection's overall rating results. The data indicates that 26% of the facilities inspected in FY2024 are in Good condition, and 64% are in Adequate condition. However, 28% (34 of 120) of the facilities rated as Adequate are below 2.0. If unattended, the condition of these facilities could continue to deteriorate and fall to a Poor or Unacceptable rating in the future.

Ten percent of the facilities are in the Unacceptable to Poor range. The major concern is the facilities' physical condition. However, PRASA expects to properly address several deficiencies highlighted by the projected inflow of federal funds to cover (with appropriate contributions from PRASA's internal funds) the System needs. In addition to the physical condition, the Staffing and Training criterion impacts the overall condition of the facilities. This criterion was mostly affected by the ongoing personnel turnover and the need for certified operators and other support staff for the treatment facilities.

[4] Source: 2023 AWWA Utility Benchmarking: Performance Management for Water and Wastewater.

Table 4-19 2024 vs. 2022 Dams Condition Inspection Results Summary

Asset Category	Unacceptable		Poor		Adequate		Good		Total	
	2024	2022	2024	2022	2024	2022	2024	2022	2024	2022
Dams	0	0	4	0	4	0	0	0	**8**	**0**

Table 4-20 2024 vs. 2023 Asset Condition Inspection Results Summary

Asset Category	Unacceptable		Poor		Adequate		Good		Total	
	2024	2023	2024	2023	2024	2023	2024	2023	2024	2023
Water Treatment Plants	0	0	0	1	43	52	11	4	**54**	**57**
Wastewater Treatment Plants	0	0	4	10	21	13	1	0	**26**	**23**
Wells	0	0	2	3	13	10	5	7	**20**	**20**
Water Pump Stations	0	0	4	3	13	18	13	9	**30**	**30**
Water Storage Tanks	0	0	1	3	14	16	15	11	**30**	**30**
Wastewater Pump Stations	0	0	4	4	12	10	4	0	**20**	**14**
Total	**0**	**0**	**19**	**24**	**120**	**119**	**49**	**31**	**188**	**174**
Percent of Total	**0%**	**0%**	**10%**	**14%**	**64%**	**68%**	**26%**	**18%**	**-**	**-**

The Assessment Inspection Forms for the asset categories (WTP, WWTP, Well, WPS, WST, and WWPS) premises were modified for FY2024, which may reflect changes in the scoring.

Comparing the assessment results by asset category with those of the FY2023 condition assessment for treatment plants (WTPs and WWTPs), positive changes were observed for WTPs and WWTPs. The overall rating for ancillary facilities increased for WPSs, WSTs, and WWPSs. However, for Wells, it decreased.

4.4.1 Dams

PRASA's eight regulated dams are rated as Adequate to Poor conditions. Many of the recommendations from the 2022 and prior inspections saw little or no progress, resulting in the overall depreciation of ratings across the board and on all of the inspected dams. Four dams were rated as Poor, and four as Adequate. Most dams showed deterioration, with notable maintenance issues like vegetation control problems hindering inspections and affecting operational mechanisms. Inadequate maintenance, inaccessible inspection areas, and insufficient monitoring of dam safety instrumentation were common issues across the dams, highlighting the urgent need for systematic maintenance, accessible areas for inspection, operational instrumentation, and comprehensive surveillance and monitoring plans.

Furthermore, the lack of comprehensive surveillance and monitoring plans, as well as incomplete documentation and design records, poses significant risks to dam safety. Recommendations emphasize the importance of prioritizing the restoration of inoperable components like gates, valves, and low-level outlets, conducting Potential Failure Modes Analysis, implementing robust dam safety training programs, and enhancing worker safety

measures. PRASA must address these critical issues promptly to ensure the integrity and safety of the dams and their surrounding areas.

4.4.2 Water and Wastewater Treatment Plants

Compliance with discharge permit limits and drinking water standards varied depending on the plant age, equipment condition, and process control. The overall compliance rating for WTPs was Adequate, with a 2.2 rating, and WWTPs also Adequate, with a 1.9 rating. Based on the regulatory compliance results evaluated for this report, despite some operational (process control) and minor compliance issues, the water treatment facilities are generally producing and delivering potable water. Also, despite some concerns with compliance issues, WWTPs continue conveying and treating wastewater adequately. The WTP compliance results show that facilities generally perform better concerning compliance with the SDWA and effluent discharge parameters.

Note that results might be misleading since several NPDES parameters only had interim limits or required monitoring. Whether the facility can meet the actual (permanent) limits when the interim/monitoring term expires is unknown. It is safe to say that interim limits will likely continue until PRASA can perform improvements, whether capital or non-capital, to improve the facilities' equipment to meet compliance requirements.

Overall, the WTPs inspected are mostly in Adequate condition. To the extent that the physical structures and operational and process controls are maintained or improved, they are expected to continue to serve their intended purpose of providing potable water supply in compliance with applicable regulations. Compared to the FY2023 inspection results, an increase in scoring was observed, except in Regulatory Compliance, which remained constant for FY2024. The Equipment and Maintenance criteria rating scores have remained fairly constant for the past years; this can be attributed to the same equipment being out of service or deteriorating, as previously reported.

The WWTPs generally range from Poor to Good conditions in the overall rating. Out of the 26 facilities inspected, four facilities (15%) received a Poor overall rating, 21 facilities (81%) received an Adequate rating, and one facility (4%) received a Good rating. One of those four facilities had a Poor rating in terms of Equipment and Maintenance. Compared to the FY2023 inspection results, Regulatory Compliance scores increased. The Operations & Process Control, Equipment and Maintenance, and Staffing & Training scores increased compared to the prior fiscal year. The facilities' physical condition is the main concern. Process Control is also challenging in some facilities, even though plant operators indicated that SOPs and control strategies are followed. Also, PRASA must plan and make the necessary improvements to WWTPs and WTPs so that when the interim limits are lifted, the facilities can meet the permanent limits.

4.4.3 Wells, Water and Wastewater Pump Stations, and Water Storage Tanks

Regarding ancillary facilities, the facility criteria rating of Wells, WPS, and WST decreased but remained at the upper end of the Adequate range. PRASA has included in its CIP program several projects to address Wells, WPSs, WSTs, and WWPSs, and it is expected to see improvements in the following years.

PRASA should address the deficiencies identified during inspections to improve the physical condition of its ancillary and treatment facilities, achieve/maintain continuous and consistent compliance, and optimize O&M expenses. Also, PRASA needs to upgrade its STS systems and make the necessary improvements so that when the NPDES interim/monitoring limits are lifted, they have the necessary tools and conditions to meet the permanent limits established in each WTP's NPDES permit. In addition, PRASA should continue to standardize processes and

provide more tools and training to operators regarding process controls and actions to facilitate and improve plant operations and performance and optimize O&M expenses. PRASA should consider operational improvements, including new process control equipment and system automation, since Operators depend on manual operation for several processes. Also, based on the ratings and interviews with the operational staff during the site visits, it is evident that the lack of treatment plant operators and staffing needs is a concern.

4.4.4 Buried Infrastructure

To reduce NRW, PRASA continues to improve its leak detection, repair, and monitoring practices. By applying the established NRW reduction initiatives, PRASA has helped reduce water production and losses. The 2024 PRASA Fiscal Plan WRO's main initiatives are pressure management and optimization, water leak reduction (reported and unreported); WST overflow avoidance; and data quality improvement (reduce estimation), which shall help further reduce physical water losses. The provision of meters or mechanisms to measure the water discarded as part of the System will allow PRASA to separate that water from the actual NRW from unbilled authorized consumption, commercial (apparent) losses, and physical (real) losses. Although the number of sanitary overflows is also high compared to the U.S. States, PRASA has maintained its response time and attention/repair effectiveness to minimize these overflow events' duration and environmental impact. Prompt identification and actions enabled by remote monitoring should help PRASA mitigate overflows in the System. In addition, adding pre-treatment (screens, comminutors) and preventive maintenance to facilities would help lessen overflows.

4.4.5 Outlook

Because of the size and complexity of the System, it is reasonable to state that the System will continue to require significant capital investments and continuous maintenance and repairs. Also, it is likely that as the System ages and new compliance regulations are implemented, an additional O&M budget may be necessary to address maintenance, repairs, and compliance requirements. Nevertheless, the expected CIP investments are anticipated to mitigate the costs of replacing aging infrastructure.

5 O&M Practices and Strategic Plan

5.1 Introduction

Arcadis assessed the adequacy of PRASA's O&M practices, benchmarked O&M budgets, and obtained information from PRASA departments on implementing key operational and strategic initiatives. Arcadis used the information and facility observations obtained through the asset condition assessment efforts presented in Section 4 to develop this section. A summary of the O&M highlights, O&M costs (benchmarked against other industry utilities), and PRASA's Strategic Plan, programs, and operational initiatives are included in this section.

5.2 Facility O&M

Several WTP and WWTP facilities experienced non-compliance with treatment parameters due to inadequate tools for executing O&M practices, outdated versions of O&M manuals and equipment manuals, lack of potable water flow meters, no calibration plan for the chemical feed pumps, insufficient security measures, inconsistent jar tests by operators, inadequate pipe labeling or color coding, poor lighting, and deficient emergency power systems.

Furthermore, issues with the automatic transfer switches and deficient housekeeping were identified. Repairs to fences, gates, and access roads were also found necessary. Despite operational and process control challenges, WTPs effectively deliver potable water, while several WWTPs encounter difficulties related to process control and equipment issues.

PRASA should consider operational procedure improvements like standardization of processes and providing more tools and training to operators on process controls and actions to facilitate and improve plant operations and performance and optimize O&M expenses. Also, including new process control equipment and system automation would benefit PRASA, given that operators continue to depend on manual operation for several processes. There is also room for improvement concerning prioritization, scheduling, and execution of corrective and preventive maintenance activities for optimizing and strengthening the system.

Despite all the challenges faced by PRASA in recent years, including slow recovery from the impact of Hurricanes Irma and María in 2017, a series of earthquakes in 2019 and 2020, the COVID-19 pandemic, Hurricane Fiona in 2022, and Hurricane Ernesto in 2024, most of the facilities have been brought to operational status and continue to serve their intended purpose of providing potable water supply and treating the wastewater. However, it becomes imperative that projects and operational actions necessary to address the damages and improve conditions are implemented to guarantee safe drinking water production and wastewater treatment in compliance with applicable regulations. PRASA expects to properly address the deficiencies with the projected inflow of federal funds to cover (with appropriate contributions from PRASA's internal funds) its needs.

5.3 O&M Costs

PRASA continues to become more efficient by exercising greater management controls to reduce O&M costs and implementing various operational programs and initiatives.

PRASA's FY2024 O&M expenses preliminary projection for the water and wastewater systems (combined) were approximately $790.8M (as of June 2024), of which $717.8M are directly related to the System's O&M. The remaining

$72.9M are related to commercial activities and provision of customer service, including but not limited to staffing and operation of customer service offices island-wide; meter reading; connection and disconnection services; invoice preparation, printing, and distribution; and customer service call centers, among others. PRASA estimates that during FY2024, approximately 73% of its System's O&M budget ($524M) was allocated to the water system and the remaining 27% ($193M) to the wastewater system. Estimated costs per million gallons (MG), per customer account, and per 100 miles of pipe for combined utilities' operations are summarized in Tables 5-1 and 5-2. A comparison to benchmark values is also provided.

Table 5-1 PRASA FY2024 O&M Water System Budget Benchmarks

Performance Indicator	FY2024 PRASA	2023 AWWA Benchmark Median[1]
Cost per Account[2]	$419	$454
Cost per MG Processed[3]	$2,799	$2,492
Cost per 100 miles of pipe[4]	$3,426,365	$2,713,648
Total O&M System FY2024 Results	$524M	-

[1] Source: 2023 AWWA Utility Benchmarking: Performance Management for Water and Wastewater. Values are rounded.
[2] Based on the total accounts at the end of FY2024 of 1,268,372 water accounts.
[3] Based on FY2024, total water production and distribution of approximately 513 MGD of potable water.
[4] Based on 15,295 miles of water pipeline obtained from PRASA's GIS Database.

Table 5-2 PRASA FY2024 O&M Wastewater System Budget Benchmarks

Performance Indicator	FY2024 PRASA	2023 AWWA Benchmark Median[1]
Cost per Account[2]	$246	$402
Cost per MG Treated[3]	$2,298	$2,967
Cost per 100 miles of pipe[4]	$3,305,445	$3,276,467
Total O&M System FY2024 Results	$193M	-

[1] Source: 2023 AWWA Utility Benchmarking: Performance Management for Water and Wastewater. Values are rounded.
[2] Based on the total accounts at the end of FY2024 of 785,687 wastewater accounts.
[3] Based on FY2024, total treatment of an estimated 231 MGD of wastewater.
[4] Based on 5,864 miles of wastewater pipeline obtained from PRASA's GIS Database.

5.3.1 Chemical Expenses

In FY2024, chemical-related expenses were one of the largest operating expenditures at nearly $76M. PRASA's efforts to reduce overall chemical costs include non-capital initiatives such as procurement strategies and better handling of chemical usage. However, rising costs associated with chemical production and the compliance requirements for water quality have offset efforts to generate savings.

PRASA acknowledges that the surge in chemical costs is beyond their control, being primarily driven by market forces of supply and demand. In order to address this challenge, PRASA remains committed to exploring alternative

solutions for chemical usage within the System. Noteworthy progress has been made in the procurement domain, including securing a 3-year contract with Accutech for the economical chemical product AF500 utilized in water treatment plants. Furthermore, ongoing efforts encompass the implementation of an after-hours purchase approval protocol for the swift handling of emergencies, regular enhancements through SAP R/3 software updates to streamline workflows, and the formulation of strategies to curtail chemical consumption.

5.4 Department Updates and Regional O&M Highlights

Arcadis conducted meetings with key PRASA department directors and other personnel to obtain an update on the various initiatives and activities during FY2024. A summary of the information provided by PRASA during the discussions is detailed in the following sub-sections.

5.4.1 Department Updates

5.4.1.1 Corporate Security and Emergency Management Directorate

The Corporate Security and Emergency Management Directorate (CSEMD) monitors KPIs internally to ensure the effectiveness of their operations. These KPIs encompass metrics for security and facility inspections, emergency preparedness and drills, regulatory compliance, and operational responses and service continuity.

The ongoing initiatives by the CSEMD actively expand its Integrated System for Security (ISS) to cover 567 installations, showing a commitment to enhancing security measures. Additionally, pressure meters have been successfully integrated into the gates of the La Plata Dam, marking a significant step towards improving monitoring capabilities. The installation of approximately 103 chlorine gas alarms highlights a proactive approach to safety. All annual chlorine gas simulations have been conducted in compliance with USEPA standards, underlining a dedication to regulatory adherence. Moreover, the acquisition of 90 water cisterns for placement at oasis locations during service interruptions demonstrates foresight in addressing potential challenges. The implementation of a Power BI database aims to enhance the response capacity for the COE (Centro de Operaciones de Emergencias in Spanish), showcasing a focus on operational efficiency. Initiatives such as the ongoing Request for Proposal (RFP) preparation for hiring ISS operators for five years and the exploration of mobile security systems for facilities without fixed ISS coverage reveal a forward-looking approach to security management. Additionally, the planning and schematization of cameras and security component locations in facility improvement projects signify a strategic emphasis on facility safety.

The collaboration with PREPA for the implementation of the Early Warning System in PRASA reservoirs enhances early detection capabilities. Continuous updates of emergency plans and risk analyses in water systems serving over 100,000 inhabitants reflect a commitment to ensuring public safety. Furthermore, optimization of processes for marking excavation notices generated by the excavation, pipes, and demolitions directorate of the Department of Public Works to ensure timely compliance with marking PRASA infrastructure in excavation sites in accordance with current regulations and improvements to the SISC (Sistema de Inspecciones de Seguridad Corporativa in Spanish) application in collaboration with the Systems and Information Technology (IT) Department emphasizes a holistic approach to security and infrastructure management.

Several new initiatives and programs are being implemented, including the digitalization of entry and exit records of visitors and vehicles at facilities. Additionally, efforts are underway to strengthen security systems in the central building and install GPS trackers in PRASA generators. Collaborative work with the IT department is ongoing to

enhance the SISC application to incorporate repair and correction action plans based on inspection findings. Training drills for responding to active shooter events are being conducted, along with improvements to the central building's COE to include dormitory and shower areas for executive staff. Furthermore, an RFP is being developed to update risk analysis in 93 smaller drinking water systems to meet the requirements of America's Water Infrastructure Act (AWIA). GPS trackers are also being installed in tanker trucks for real-time monitoring, while research reports are being automated in Power BI.

The impacts on the CSEMD are significant across various areas. Concerns such as limited infrastructure and resources hinder the expansion of the ISS due to the substantial investment required in technological infrastructure. Organizing drills poses challenges in ensuring the participation of all facilities and municipalities, specifically concerning different emergency types like tsunamis, hurricanes, and earthquakes\ Although acquiring tankers enhances emergency response capabilities for water distribution, limitations in service availability during high-demand situations may present operational challenges.

5.4.1.2 Human Resources

At the end of FY2024, PRASA had a total staff headcount of 4,493. Staff decreased by 1.3% from FY2023 to FY2024; hence, staff limitations remain one of the greatest challenges for achieving efficiency. Staff positions needed island-wide include, but are not limited to, field workers, supervisors, electromechanics, electromechanical assistants for the Maintenance Department, plant operators, plant managers, technical managers, preventive maintenance managers, distribution system managers, compliance specialists in Caguas Operational Area, and licensed engineers.

PRASA’s Human Resources (HR) Department is currently focusing on these main objectives:

1. Achieving PRASA’s headcount goal of 4,800 FTEs by FY2026.
2. Understanding and implementing the requirements included in the series of acts that have been passed in recent years related to labor relations.
3. Adjust employee salary compensation to align with the labor market through a Compensation and Classification Study currently underway.

The recruitment technology called "Smart Tool" was stopped because when it was delivered to the directors, it was deemed not viable. The main reason was the need to update all tasks with all titles, which was extremely tedious and created an additional workload instead of streamlining and simplifying the process, going against expectations. Additionally, after testing the "Smart Tool," it was confirmed that it did not work and, therefore, will not be implemented.

Ongoing initiatives by the HR Department include:

- The Voluntary Pre-Retirement Program, established in FY2016 in response to fiscal constraints, encouraged eligible employees to opt for early retirement voluntarily. While the program is no longer granting benefits to new employees, it continues to support existing beneficiaries.
- Create job requisitions and advertising in various media outlets to attract candidates and qualified resources for the different positions.
- My Portal Application: With this mobile application, employees can view their leave balances, access their W-2 forms, and request training. The My Portal Application will integrate with SAP to obtain employee information.
- Updating in-house training modules and staff qualifications.

- PRASA continued with the new pay scales implemented in FY2023, except for appointed employees, to benefit all labor groups at PRASA. These changes are expected to improve personnel recruiting and retention, which may increase operating efficiencies.
- Compensation and Classification Study in depth review and update.

New initiatives by the HR Department include:

- To centralize, automate HR processes, and streamline HR operations, HR is working on the creation and implementation of two main technological applications in conjunction with the IT Department. These Human Resources and Labor Relations Applications (HRPA) will replace old tools and integrate with the SAP system under SAP Fiori: HR Case Link (CL) and HR Legal Case (LC). HRPA will allow a better administration of HR and Labor Relations processes, enhance data accuracy, reduce manual paperwork, and provide real-time access to relevant HR and Labor Relations operations for decision-making purposes. The solution will also connect all HR processes and operations across all locations to improve communication between the Regional Offices, the Central Office, and its Auxiliary Departments. It will also help the Central Office to monitor and measure HR processes.
- Implementation of a SAP-based tool to ensure work efficiency and employee performance.

5.4.1.3 Customer Service

PRASA's Customer Service Department continues to focus on measuring and implementing metrics to improve invoicing, collections, billing adjustments, customer service complaints, service interruptions, service quality, actual meter readings, and waiting time in commercial offices and call centers.

PRASA is currently operating 12 commercial offices, including Vieques and 5 ORANF offices (Oficina de Recuperación de Agua No Facturada, in Spanish) for a total of 17. The visits can be scheduled by appointments or walk-ins. PRASA has a mobile phone application in which customers can report service interruptions and/or pay their bills. In addition, PRASA has two private call centers currently contracted to assist with customer calls which contracts end in June 2025. PRASA has the option to release a new RFP without including the telephone switch board or extend the actual contracts for two additional years. In January 2025, PRASA will decide as to which route to take since the RFP for the telephone switch board shall be in place.

The Customer Service Department continues to measure KPIs set for measuring actual consumption at each water meter instead of estimating the quantity. In addition, PRASA plans to replace all the water meters in Puerto Rico with ultrasonic technology. PRASA has signed contracts with two proponents and performed two pilots, which were evaluated. The official award notification was announced in December 2024. Full Deployment shall commence during the first quarter of calendar year 2025.

As the Department shifts its efforts into new projects, such as the AMI system, which will not require manual meter readings, the positions at the Department may be restructured as the initiative is being implemented. The Department is currently working on updating SOP Numbers 601 *Adjustment Procedure*, 603 *Connection Request, Reduction of Service Connection Diameter, Extraordinary Works, and Damages Caused by Third Parties*, and 608 *Payment Plans*. Also, other SOPs within the department will need to be updated to include the impact of AMI in Customer Service processes.

During the past several years, PRASA has worked with government accounts to reconcile outstanding balances and accelerate the collection of payments. As a result, government accounts (water consumption) are being read in separate routes and bimonthly throughout all the Regions.

In efforts to collect more funds, PRASA issued an RFP to contract up to two collection agencies to assist with collecting payments but had to cancel since no proposals were received. PRASA performed a Market Sounding study and invited four different collection agencies for an interview on how others use their business. Once all interviews are preformed, PRASA will contract directly with one or two companies by the end of March 2025.

Another initiative for FY2025 is to find the existing derivations and segregate accounts to create new accounts. A proposal was provided to Legal to attend to these cases to open various accounts and install new water meters.

5.4.1.4 Purchasing and Logistics

PRASA's Purchasing and Logistics Department closely monitors a range of KPIs throughout the island to ensure operational efficiency. These KPIs include metrics such as the average days for SOLPE (Solicitud de Pedido in Spanish), insurance time, average days for SOLPE to purchase order (PO) conversion, average days for PO approval, average days for the entire purchase process, emergency orders handling, and biddings and reservations tracking. The department conducts a thorough review of these KPIs every three months and consistently meets the set targets.

On the logistics front, the department has shown significant achievements between 2019 and 2023 with the completion of several Warehouse Management (WM) projects in Aguadilla, Trujillo Alto, Ponce, Arecibo, Humacao, Guayama, Bayamón, and San Juan. Additionally, the department successfully carried out the cylinder tracking project in Puerto Nuevo and introduced reservations in the Fiori system, enabling better cost visibility, streamlined goods receiving, confirmation of transport orders, and creation of outbound and manual transport orders.

Collaborative efforts with the Finance Department have led to successful inventory completions in the warehouses of Aguadilla, Utuado, Carolina, Yauco, and Mayagüez, while the Yauco yard project reached completion. The project for improvements in Fajardo is scheduled to start in January 2025. Efforts are underway to address pending improvements in the Ponce warehouse, especially regarding sliding doors, and to complete inventory in the Coamo warehouse.

The development of SOPs is in progress; this includes reviewing and implementing various procedures to streamline operations. The status includes developing two SOPs, reviewing Procedure 311, *Adding and Removing Materials in the Materials Catalog* to complete the cycle, implementing Procedure 450, *Material Receipt and Inspection,* and having Procedure 319, *Cycle Counting in Authority Warehouses,* under review by the purchasing director. Additionally, projects such as roof repairs, new material bids, and technological enhancements in SAP are being actively pursued to improve operational effectiveness in the long term.

The department is also engaging in procedural reviews and enhancements, bidding regulations, and SAP recordkeeping to ensure compliance with industry standards and optimize procurement processes.

Looking ahead, new initiatives and programs are on the horizon, such as the launch of a new materials catalog in January 2025, coordinating the acquisition of forklifts for WM warehouses in Ponce and Puerto Nuevo, and planning RFPs for the purchase of coagulants and flocculants. These initiatives are part of a broader strategy to enhance departmental efficiency, streamline operations, and adapt to evolving industry demands.

In terms of personnel impacts, the department is experiencing the need for additional staff in various roles across different regions due to voluntary resignations in pursuit of more competitive salaries. Positions such as analysts, warehouse guards, drivers, TSOs, compliance specialists, and supervisors are required to ensure smooth operations and compliance with safety regulations. Additionally, the need for a logistics manager in the West region

underscores the department's commitment to strengthening operational capacity and enhancing service delivery across all regions.

5.4.1.5 Systems and Information Technology

The IT Department continues the development of information technology areas and the implementation of various initiatives to improve software and hardware practices. The most important projects IT worked on during FY2024 include:

1. Manage Engine Service Desk to track service tickets is in production in the IT, WRO, and Printing departments during FY2024.
2. Kronos Upgrades were finished in FY2023. New Kronos will be updated to the cloud into a Software as a Service (SAAS) agreement.
3. All 4 Core Switches were switched. Access switches in all PRASA facilities needed to be switched out.
4. The website was transferred to acueductos.pr.gov. PRASA manages the website, not the Puerto Rico Innovation and Technology Service (PRITS).
5. The merge between SCADA-GIS SAP Platforms was delayed. The project was divided into 2 phases: Integration with SAP-GIS LAM was completed, and Integration with SAP-SCADA is pending an amendment to Accenture's contract to continue.
6. For the PCI Compliance project, IT is currently in the phase of addressing the recommendations identified during the initial review stage of the audit. With this initiative PRASA will ensure compliance with industry standards and will protect the financial information of its clients and maintain the integrity of the business.

The Systems and IT projects that will have the greatest impact on PRASA in FY2025 are:

1. PRASA is looking to change its Telephone Services. An RFP was published in FY2024, a provider was selected, and a contract was signed. Full implementation should be in place by May 2025.
2. The "*Mi acueductos*" app will start developing Phase 2 in February 2025. This phase will have a portal for the client to manage their accounts and a portal to manage express payment.
3. Integration of the AMI system to SAP and Qorder. This project will modify how PRASA will obtain billing reads directly for the meter vendor Head End System (HES). Also, work orders will be modified to obtain the information required from the new meter technology.
4. Validation of all the client's data in SAP. Verify if the email address and Telephone are correct. This validation will be complete third quarter of FY2025.
5. HR requires three upgrades to SAP to improve employees' files. Success Factor is an additional SAP App for employee evaluations; this will be provided as SAAS. The other two files will be integrated into SAP R3: CL will manage all employee recruiting, raises, and reporting, and LC will document all legal files for each employee and maintain a calendar of events.

The IT Department continues to support all the departments within PRASA. Ongoing tasks include maintaining the IT equipment and infrastructure, updating PRASA's website to comply with design guidelines established by the Government of Puerto Rico, and ensuring compliance with PRITS, among others.

5.4.1.6 Communications

PRASA's Communications Department continues to focus on improving the utilization of PRASA's website and social media platforms such as Instagram, Twitter, Facebook, YouTube, and LinkedIn. The quick availability of

information and images from social media also allows PRASA to respond faster to its customers. PRASA continues using social media as an educational platform by constantly sharing information on treatment processes, their infrastructure, and project updates. Social media platforms are also being used to share information on repair status (including pictures of crews working), service interruption, construction projects, special events, retirements, employee and facility recognition programs, official campaigns, etc., to keep the public informed of ongoing matters and resolution of operational situations. Press conferences, design meetings, and other events are also shared on social media. Regional Communications Directors are in charge of producing materials for the accounts, and each director is responsible for addressing comments and messages on the posts. Note that the program to recognize the different facilities is named *Orgullo* and showcases before and after pictures of repairs performed at the facilities.

The Communications Department, in coordination with the IT Department, continues to update and improve PRASA's website, which includes an investor relations section, Consent Decree information, press releases, the virtual office, information related to seasonal events (e.g., water service interruptions, hurricane season, water conservation, etc.), among others. The Department also incorporated an interactive map with information on the Infrastructure Department CIP projects. During FY2024, the website was moved to a secure government domain, and the Communications Department assisted with the content and graphic design.

Various key positions related to the management of the department, their educational program, and the webmaster position are pending to be filled in FY2025. Although the position has not been posted, the Department also needs an editor to improve the videos to be posted on social media.

The Communications Department's ongoing initiatives include:

- The internal newsletter *Boletín Digital,* including updates from all the Regions, is published monthly.
- Through YouTube, the Communications Department has been producing *AcueductosTV*, focusing on educational programs and information on the different departments. Various videos were posted during FY2024.
- The media tour for the infrastructure projects was introduced during FY2022 and continues in place. This tour collaborates with the regional communications directors and the Infrastructure Department to promote CIP projects through social media, radio, TV, and the press.
- Educational events are in person unless the school or center asks for an online course. PRASA's participation in public events is ongoing.
- The Water Conversation Program (South Region Aquifer and the Guajataca Dam) and educational campaigns related to grease traps and clean pipelines are ongoing.
- PRASA continues to use the hashtags #somosAAA and #region.
- A recognition program was implemented in FY2022, and they continue promoting different departments throughout PRASA. The Department also creates posts on social media in collaboration with the HR Department to recognize employees with 20, 25, and 30 years of service. During FY2024, the employees with 20 and 25 years of service will be recognized and will continue to recognize PRASA employees during 2025.
- Assist all departments with campaigns in addition to campaigns for droughts, hurricane season, etc.
- Adopt a Nonprofit Entity – This initiative started in FY2022 to assist a selected entity in each region. PRASA participated in various events during FY2024, including entities in the South and West Regions. During FY2025, an event, *Comedores de la Kennedy,* in the Metro Region was held.
- Visit each region to monitor the progress of all the projects.

- Collaborate in various campaigns with other governmental agencies, including *Administración de Servicios de Salud y Contra la Adicción* (ASSMCA) and *Administración de Desarrollo Socioeconómico de la Familia* (ADSEF), amongst others.
- The Department entered into a contract with a marketing agency to assist with future campaign development.
- Participate in *Feria Fortaleza para Puerto Rico* every month when *La Fortaleza* selects the host municipality. During this activity, PRASA provides a water truck to distribute potable water and perform public outreach activities, including educational sessions for the attendees.
- Agreements were established to obtain internships with the University of Puerto Rico - all campuses.
- The Getting to Know PRASA (*Conócenos*) initiative collaborates with the Puerto Rico Education Department and PRASA's Presidency. Different schools will be selected to participate in visits to various PRASA facilities throughout the Regions. PRASA completed a pilot program for departments within the organization in selected facilities. The next phase is to invite PRASA employees from other areas to visit selected facilities.
- The Annual Tap Water Taste Challenge at Plaza Las Américas Mall has occurred for the last few years. There are two awards, the People Choice and the Judges Award. The winner this FY will get to compete at the national level.
- The Department acquired new sound equipment for each region to use in creating new content. The equipment includes microphones, headsets, and cellphone stabilizers.
- A channel in Telegram was created, *Acueductospr.* The channel communicates positive news and other information happening in PRASA. Subscribers cannot comment on news posted.

Additional initiatives for the Communications Department for FY2025 and beyond include:

- Assist Compliance and Infrastructure Departments with campaigns for the Lead Service Line Inventory and Lead Replacement Program.
- Assist Customer Service and Infrastructure Departments with campaigns for the New Meter Replacement Project.
- Prepare a new image for PRASA with the change of government.

5.4.1.7 Compliance

DBPs have improved over the years through the implementation of the Optimization Program and training focused on DBP handling and procedures. However, DBP control still represents a challenge for a few systems that continue to have exceedances over time. Ongoing efforts are focused primarily on the WTPs process optimization, maintaining low turbidity or organics concentration, and adding the least amount of chlorine to comply with contact time (CT) requirements. PRASA continues to implement several operational strategies, as listed below, in addition to performing water quality modeling to identify the root cause of these non-compliance events and establish corrective actions with control measures. In FY2024, overall compliance metrics for drinking water were 99.8%, while wastewater was 95%.

These are some of the key initiatives that PRASA continues to implement for DBP compliance:

- Installation of in-line equipment to measure precursors of DBP formation
- Elimination/reduction of pre-chlorination
- Increasing the frequency of process tanks/systems cleaning

- Flushing program
- Hydraulic modeling to reduce retention time in tanks
- Lowering pH
- Evaluation of new chemicals for pre-disinfection and coagulation (e.g., polymers, chlorine dioxide)
- Tank levels oscillation
- Increase sampling frequency
- Use of portable TOC equipment
- Site visits and field data gathering
- Optimization of chemical dosing application and training
- Monthly meetings to discuss operational adjustments, challenges, and lessons learned.

PRASA has found that implementing Process Control procedures for reducing turbidity/organics in plants along with distribution system inspections and chlorine samples provide comprehensive data that allows them to address the issue more efficiently.

The Department monitors regulatory compliance in the System and maintains open communication channels with regulatory agencies. Caguas Central Laboratory construction was completed in FY2024 and is currently undergoing the proficiency assessment. This process can take 4-5 months. PRASA expects to have 76% proficiency completed in May 2025. Also, PRASA is recruiting laboratory personnel. PRASA foresees that there will still sampling that will be subcontracted due to technical limitations, staffing, and cost-effective.

PRASA diligently continues allocating efforts and resources to ensure compliance with the Compliance Agreements' requirements (2015 USEPA Consent Decree and 2006 PRDOH Drinking Water Settlement Agreement). Regarding the 2015 USEPA Consent Decree, PRASA continues the implementation of the Sewer System Operation and Maintenance Plan (SSOMP), Areas of Concern, Interim Limits, IMP, and Process Control System (PCS), among others. Also, PRASA continues integrating and updating data collected into the GIS database. In FY2024, PRASA recruited additional personnel to increase and reinforce the Sewer System Maintenance Crews (SSMC) to continue the implementation of the SSOMP. This initiative resulted in an improvement of the Puerto Nuevo Sewer System operation and maintenance. As per the consent decree modified, the reconnaissance effort was divided into several phases and cleaning activities in different areas with compliance timelines associated. Reconnaissance phase 1 was completed, and phase 2 is over 75% of completion. While the cleaning effort of Area 1 was completed, and Area 2 is over 20% of completion. Other phases are on schedule as established in the modified Consent Decree, as summarized in Table 6-4 and Table 6-5. During the period evaluated, 45 defects were identified, and three were corrected. Since the SSOMP's implementation, 330 defects have been identified, of which 220 defects (67%) have been corrected, 33 were included in the CIP, and the remaining are pending repairs.

Regarding the 2006 PRDOH Drinking Water Settlement Agreement, PRASA continues the implementation of the Remedial Measures, Mitigation Measures, Continuous Monitoring, and Future Violations Action Plans, among others. Through the Joint Motion mechanisms PRASA identified additional important corrective measures to address compliance requirements which have been included as part of the CIP projects. PRASA also identified CIP projects to address some facilities' compliance requirements and established the long-term schedule for outstanding projects. Refer to section 6.5 for detailed information regarding the status of each program included in the agreements.

Other compliance initiatives regarding NPDES and pre-treatment are:

- Continue to request interim limits to achieve compliance temporally while assessments, CIP projects, or operational adjustments are completed.
- Contracted consultants to assist with the department's duties.
- Budget allocated for developing a tool to manage data transferring to facilitate the workflow – Compliance Information Management System (CIMS).
- Acquired tablets to facilitate field data collection and data management.
- Standardization of the permit request or renewal process.
- FY2025, it is expected to complete the approval of electronic signatures to begin implementing the Selected Analytical Methods program. This process has experienced delays, while PRASA recognizes that this is crucial to completing the digital inspection process and being able to upload the information to the cloud.

PRASA recognizes that the forthcoming greatest challenges are the new and upcoming regulations due to the complexity, limitations of staff, and budget. Some key regulatory actions that could impact the water system operations include the Fifth Unregulated Contaminant Monitoring Rule (UCMR5), the Revised Lead and Copper Rule Revisions/Improvements (LCRR/LCRI), and the final PFAS Rule. These regulations will require capital improvement to the facilities. As a result, the Infrastructure, Compliance, and Operations Departments work together within the CIP to ensure open communication channels to meet project expectations. Note that the Compliance Department is significantly understaffed, resulting in implementation delays in program initiatives, for example the Environmental Health and Safety Program.

Additional details related to compliance agreements and future regulations can be found in Section 6.

5.4.1.8 Legal

The Legal department, responsible for providing crucial support and guidance within PRASA, oversees a wide array of legal matters and initiatives within the organization. The relationship between the increase in construction projects and the number of claims has been evident, leading to around eight claims being filed on average per month, often tied to incidents like falls, damages (torts), and losses. Notably, a significant portion, roughly 90% of these claims, are covered by insurance and public liability policies. Litigations have been actively managed throughout the year, both in person and remotely, involving administrative staff and court proceedings.

Virtual hearings have been a common occurrence, with an average of eight to nine sessions daily, providing assistance for connection and utilizing dedicated IT offices for administrative and legal proceedings. Investigations continue to be conducted interdepartmentally to address litigations in collaboration with PRASA's Insurance department. Legal support includes approved modifications to the 2015 USEPA Consent Decree and the ongoing monitoring of the 2006 PRDOH Drinking Water Settlement Agreement, directly linked to the Infrastructure Department's prioritization program.

Focusing on case-by-case handling, the legal department has seen no new instances concerning land acquisition, with a decrease in monthly legal deed cases within this fiscal year. Various legal tasks such as document review, RFPs, bidding challenges, and communication drafting are actively ongoing across departments. Additionally, efforts are directed toward the allocation and management of funds, compliance clauses, interinstitutional agreements, land acquisition cases, and expropriation processes.

Regarding staffing, there are existing needs and vacancies, although short-term recruitment plans are currently on hold. The department aims to document its needs thoroughly, considering potential changes in administration and variable turnover rates for vacant positions. Legal services are facilitated through external contracts with multiple law firms, an economic expert, and various entities providing legal advice to the Legal Guidance Office of PRASA.

On the legislative front, laws like Act 59-2023, Act 90-2024, and Act 91-2024 are in place to address public policy issues related to essential services in emergencies, the removal of invasive plants from water reservoirs, and promoting rainwater harvesting in Puerto Rico, respectively.

Ongoing initiatives involve the continuous review and implementation of various documents and applications, such as the *CUSTOMIZA* app, which has been utilized for contract renewals and new contracts. KPIs play a crucial role in tracking contract statuses at different levels, with a specific focus on administrative hearings and responding to bill projects initiated by PRASA. Project development emphasizes bidding processes, funding requirements, and the coordination of land acquisition efforts between the Legal and Infrastructure departments. Future initiatives aim to sustain existing projects, process transition and office reports efficiently, and maintain regular workflow practices.

5.4.1.9 Infrastructure

PRASA's Infrastructure Department continues to oversee and manage PRASA's CIP. The Infrastructure Department also manages the asset damage assessments and estimates for claims negotiations with PRASA's insurance company and FEMA. Currently, the Interim Executive Director for Infrastructure, in coordination with PRASA's EMT, has contracted four PMCs to assist with the CIP implementation. Refer to Section 6 for additional details.

5.4.1.10 Strategic and Corporate Planning

PRASA's Strategic and Corporate Planning Department oversees and manages the Project Management Office (PMO), the IT Department, the Training and Continuing Education Program, the Customer Service Department, and the WRO. Most of the efforts of the Department are towards the WRO and the NRW reduction efforts, the PMO, and the implementation and renewal of the Strategic Plan.

5.4.1.10.1 Strategic Plan

PRASA's latest Strategic Plan is for the FY2021-2025 period. PRASA aims to have a draft of the new Strategic Plan by the end of FY2025 that will encompass a new vision and strategy for FY2026-2031. As PRASA is working on the new strategy for the KPIs in the new plan, they are looking to redesign the tracking methodology within their Power BI. The KPI results were not available for FY2024; therefore, a comparison is not available in this report.

5.4.1.10.2 Project Management Office

The PMO Office is responsible for ensuring the successful execution of the measures outlined in the 2024 PRASA Fiscal Plan and other important internal Strategic and operational projects, such as metering optimization and physical water loss reduction. During FY2024, the office structure was approved, and the process and roles were established. An External Contractor was onboarded to assist PRASA in developing the office, and the contract was extended another year to provide time for PRASA to contract and set up an internal office during FY2025. During the first quarter of FY2025, the PMO and HR Department worked on reclassifying certain roles and setting up the structure required to run the program internally. For FY2026, PRASA aims to fully run the office with internal personnel.

5.4.1.10.3 Water Recovery Office

The WRO focuses on NRW and operational optimization. The WRO goals are to provide continuous support to PRASA's Operations, specifically related to reducing costs, optimizing income, becoming more cost-efficient, determining where to invest and get the most benefits, and standardization throughout all Regions, among others. NRW is a priority for PRASA and is being implemented in all departments. Refer to Section 5.5.2 for additional details on the WRO initiatives. During the first quarter of FY2025, the WRO and HR Department worked on reclassifying certain roles and setting up the structure required to run the program internally. For FY2026, PRASA aims to fully run the project management of the office and only subcontract field employees.

5.4.1.10.4 Customer Service Department

The Customer Service Department continues to focus on four pillars throughout FY2024 to optimize revenue. The first pillar is the improvement of billing accuracy by implementing the pilot and full deployment of the AMI project, where new, more resilient water meters will be installed to collect accurate readings remotely. The second pillar is related to increasing billings collection through contracting collection agencies to settle payments of overdue customer accounts. The third pillar is the client experience improvement, where PRASA plans to update applications, use call centers to report problems, collect payments, and implement a chatbot. The fourth pillar is related to organizational transformation, which includes reorganizing the Department and implementing new strategies, such as remote metering through the AMI project. For more details, please refer to Section 5.4.1.3.

5.4.1.10.5 Training and Continuing Education Department

The Training and Continuing Education Department continues to focus on developing and strengthening the workforce within PRASA. During the first quarter of FY2025, the Training and HR Department worked on reclassifying certain roles and setting up the structure to run the department with the necessary personnel required for all the functions. For more details, please refer to Section 3.2.5.

5.4.2 Regional Updates: Initiatives and Challenges

Meetings with four regional directors and the region's key staff were conducted to assess the progress of each region based on the established KPIs, impacts of the fiscal situation, the ongoing challenges, programs, and initiatives developed in FY2024, overall operational activities updates, and future improvement initiatives. The most common challenges among all Regions are listed below:

- The lack of personnel for O&M activities is mainly due to the workforce deficit caused partly by the population migration to the U.S. and the Voluntary Pre-Retirement Program. Efforts are focused on filling these vacancies. One of the greatest challenges that regional O&M groups experience is finding and keeping operators and electromechanics, among other vacancies.
- Although PRASA has installed remote access for many assets in the System, various telemetry systems are still pending to be installed to achieve full remote visualization of the water facilities. In addition, efforts have been focused on monitoring the water storage tanks remotely. Wastewater systems, in general, have limited remote visualization.
- Aging infrastructure.
- A shortfall in qualified employees has caused an increase in overtime costs and the contracting of external private staff; this represents a direct impact on the System's operations.

PRASA's efforts to maintain and/or reach compliance with DBP parameters (THMs, HAA5, TOC) are currently focused on operational adjustments. As a result of the implementation of SOPs and the Optimization Program, the interviewed Regions reported improvements in compliance with the DBPs requirements while recognizing that additional measures and capital investments may be needed. Also, the Regions continued their efforts to control costs and improve the System's optimization to the extent possible. Other programs implemented during previous fiscal years are proceeding slowly due to the current lack of personnel and funding competing priorities, including reduction of sanitary sewer overflows (SSOs) and combined sewer overflows (CSWOs), NRW reduction, and Energy Consumption Reduction, among others. However, as described more in detail in Section 2, PRASA's fiscal situation looks promising and continues to improve. In addition, PRASA is receiving an inflow of federal funds to cover (with appropriate contributions from PRASA's internal funds) its CIP needs, allowing for a more robust infrastructure and an efficient and resilient System.

Other challenges specific to each region are important to note and summarized below.

- **West Region** – Corrosion resulting in both pipe and equipment renovations needed at the WWTPs and performing plant upgrades are still challenging. Water main breaks, sludge management, and hidden leaks also represent a challenge, particularly for the Aguadilla Operational Area. High energy consumption, lack of spare parts, and maintaining residual chlorine concentrations also represent some of the major challenges faced by the West Region in FY2024. Additionally, during FY2024, the West Region continued with the procedure to identify WPS, improve telemetry between pumps and tanks, address excessive pressure zones, and improve customer service.
- **Metro Region** – The sewer main inspections and cleaning are still challenging due to staff limitations. Despite this limitation, the Metro Region continues cleaning sewer mains and identifying sanitary defects and illegal connections per the SSOMP requirements. Another challenge faced by the Metro Region is the deteriorated condition of the collection system, which often results in expensive emergency projects for sewer line replacements. Additionally, the Metro Region is working to reduce water losses resulting from the water transfers, visualization of wastewater treatment facilities, staffing (approximately 50 vacancies at the time), and transition from gas chlorine to liquid chlorine.
- **North Region** – Unreliability associated with the Island's electrical infrastructure represents for the North Region one of the most significant challenges today. In particular, the water treatment facilities located at Quebradillas, Vega Baja, Lares, and Hatillo-Camuy are currently facing major problems resulting from power outages. Additionally, the North Region continues with the initiative to repair "Fideillos", particularly focusing on unauthorized connections and areas with multiple line breaks due to aged infrastructure, which represents a significant challenge currently faced by the region. Reduction of non-revenue water, the need for emergency generators, and budget limitations for repair/replacement projects were also pointed out by the staff as outstanding improvement areas.
- **South Region** – Funding limitations are still one of the main challenges experienced by the South Region, particularly due to the increase in the cost of chemicals, chlorine supplies, asphalt, and contracted services and due to market volatility. Additionally, despite making progress in recruitment, there are still open positions to be filled, particularly for operators and electrical experts needed for preventive maintenance (approximately 50 vacancies at the time). Moreover, there is a challenge in finding licensed engineers for managerial roles.
- **East Region** – Similarly to other Regions, financial and staff limitations restrain the performance of the East Region in addressing equipment and pipeline corrosion. Emergency projects due to aged infrastructure also result in significant expenses. Additionally, the East Region faced challenges in meeting DBP compliance in

some operational areas. Also, an interim limit for nutrients, such as nitrogen and phosphorus, was not approved for the Caguas RWWTP, which represents a major challenge for the East Region.

The automation program at the Treatment Plant (operating in a cycle of 8-4-8-4) is not being implemented and is not planned to be implemented for all regions.

Refer to Appendix A for a summary of various initiatives and projects being implemented or planned during FY2024 and initiatives planned to be implemented during FY2025, subject to funding availability.

The following two tables (Table 5-3 and Table 5-4) depict a summary of the FY2024 status in terms of telemetry and visualization by PRASA region. The information is presented by the percentage of facilities that currently count with the appropriate and working technology to remotely visualize, record, and transmit the readings of the instrumentation.

Table 5-3 Summary of Telemetry Percentage by Facility[1]

Facility	West Region	Metro Region	North Region	South Region	East Region	Island-wide
Intakes	71	100	6	0	54	38
WTPs	100	100	96	9	80	91
WWTPs	0	0	0	1	8	4
Wells	88	0	45	9	10	30
WSTs	100	100	98	94	63	87
WPSs	94	92	27	5	9	35
WWPSs	17	2	0	11	3	6
Flow meters	100	100	100	100	100	100

[1] Data obtained from PRASA was updated on December 16, 2024.

Table 5-4 Summary of Visualization Percentage by Facility[1]

Facility	West Region	Metro Region	North Region	South Region	East Region	Island-wide
Intakes	71	100	3	0	54	38
WTPs	100	100	93	80	80	88
WWTPs	0	0	0	9	8	4

Facility	West Region	Metro Region	North Region	South Region	East Region	Island-wide
Wells	78	0	23	9	10	23
WSTs	98	100	89	94	63	85
WPSs	88	92	26	5	9	35
WWPSs	-11	2	0	10	3	6
Flow meters	90	70	67	100	100	85

[1] Data obtained from PRASA was updated on December 16, 2024.

5.5 Ongoing Programs and Initiatives

The following sections are additional programs and initiatives that PRASA continued to work on in FY2024 and will continue to be implemented in future fiscal years. Below is a brief description and status of these programs and initiatives.

5.5.1 Integrated Maintenance Program and Asset Management

The IMP continues to be a focal point for the department as it internally monitors KPIs related to repairs, efficiency (time), and costs. IMP metrics are regularly discussed in the Presidency group meetings. There has been an improvement in internal metrics compared to the previous fiscal year, with ongoing monthly monitoring and reporting to the Presidency. Repair times are being closely observed, especially as PRASA is dealing with understaffing and the need to subcontract external personnel. Monitoring activities also focus on ensuring compliance with the Preventive Maintenance Plan, evaluating the aging of corrective actions, and assessing the redundancy of pump stations, with all findings reported to the Presidency.

The IMP has several ongoing initiatives and programs aimed at improving water treatment plants and overall operational efficiency. Currently, 94% of the WTPs have flow meters installed, with SCADA visibility in 112 WTPs. Improvements to SAP PM for IMP process optimization are underway. PRASA has updated and approved 12 procedures related to the IMP, with three already implemented, and the remaining nine procedures are pending approval for implementation. A predictive maintenance program for WTPs and WWTPs using techniques like ultrasound technology and vibration analysis is in place for all regions. The end goal of this initiative is to train PRASA personnel to continue implementing predictive maintenance internally; however, the program continues to be contracted with a private company since PRASA does not have the required personnel.

PRASA is evaluating critical facilities for the Corrosion Control Program and has completed visits to all 895 facilities. The department plans to align facilities where corrosion improvements are a high priority with the CIP to incorporate them into existing projects. Additionally, collaboration with the Infrastructure Department has taken place, integrating developed corrosion protocols into the design phase of CIP and IMP projects. A committee comprising IMP, Operations, Compliance, Safety, and soon the Finance department has been established to supervise and monitor program implementation. They have achieved 92% remote visualization of WSTs during FY2024 and

completed 100% of installations. Additionally, the installation of new panels for WPSs has been completed, with plans for further expansion. Remote monitoring of wells stands at 33% completion in FY2024.

The installation of emergency generator units has progressed, with Phase III reaching 73% completion. Phase IV is ongoing, with the selection of facilities pending budget availability. The Diagnostic towards the Implementation of the Asset Management Program began in August 2023 and is now in the implementation stage. Regions are documenting Maintenance Planning and Scheduling (MPS) to prioritize PRASA's maintenance activities and ensure preventive measures are in place. Biweekly discussions per region are held to review MPS procedures and results for scheduled completion assurance.

PRASA is actively engaging in new initiatives and programs to enhance their operations. They are currently reviewing their control processes to identify areas for automation and improvement, ensuring that all changes are accurately documented and timely. Additionally, there is a focus on identifying training opportunities to keep staff members updated on the latest procedures and practices. Collaborations are also underway with the GIS and IT departments, with initiatives including the integration of SAP and GIS systems, the development of GIS layers for linear assets, and the implementation of a single ID number for assets utilized by both the Finance and IMP Departments. These efforts aim to streamline operations, improve data management, and enhance overall efficiency within PRASA.

The department is facing significant impacts due to staffing shortages across various roles, including electromechanics, electromechanical assistants, technical advisers, maintenance supervisors, managers, maintenance coordinators, directors, administrative staff, and service coordinators. This shortage of personnel can lead to challenges in maintaining operations efficiently. In addition, the introduction of new vehicles has been marred by issues as many vehicles experienced recalls and damage to various parts, posing further challenges to the department's operations and resource management. Addressing these staffing and vehicle-related challenges is crucial to ensure the smooth functioning of the department and its ability to deliver services effectively.

5.5.1.1 Asset Management

Asset management involves balancing costs, opportunities, and risks against the desired performance of assets to achieve an organization's objectives. Asset management also enables an organization to examine the need for and performance of assets and asset systems at different levels. Additionally, it enables the application of analytical approaches towards managing an asset over the different stages of its life cycle (which can start with the conception of the need for the asset through to its disposal and includes managing any potential post-disposal liabilities). It is making the right decisions and optimizing the delivery of value. A common objective is to minimize the whole-life cost of assets. Still, there may be other critical factors, such as risk or business continuity, to be considered objectively in this decision-making.

In August 2023, PRASA began a comprehensive assessment of the utility’s existing Asset Management Program and Organization Structure. During the latter part of 2023 and March 2024, PRASA performed an Asset Management Program Gap Analysis. By April 2024, PRASA had defined and prioritized its Asset Management improvement initiatives and completed a draft of its Strategic Asset Management Program.

5.5.2 Non-Revenue Water Reduction Program

Reducing NRW is a high-priority initiative for PRASA, as it will have both revenue enhancement and expense reduction impacts on finances. Therefore, PRASA has invested in different departments within PRASA to implement this initiative. The two main programs are Metering Optimization and the WRO.

The 2024 Fiscal Plan reported the following improvement in the System in the last five years with regard to the NRW program:

- Annual production of water decreased by 27 MGDs or 5%.
- Authorized consumption increased by 8 MGDs or 4%, mostly as a result of improvements in measurements of internal water use.
- NRW decreased by 14 MGDs or 4%.
- Water losses were reduced by 25 MGDs or 7%.
- Physical losses decreased by 38 MGDs or 13%.

5.5.2.1 Metering Optimization

To reduce commercial water losses and improve customer experience, PRASA has outlined three initiatives under the Customer Service Department. The initiatives include Efficiency and Customer Service Optimization, Commercial Water Loss Reduction, and AMI.

PRASA issued an RFP to obtain new water meter technology and an island-wide AMI system. The AMI system will allow PRASA to read customer meters remotely, increasing meter resiliency and accuracy. In addition, with an AMI system, PRASA will be able to obtain real-time customer consumption data, which benefits both PRASA and the customer, allowing for visibility of service area status.

PRASA entered into a contract with the proponents who participated in the pilot phase of the AMI project. PRASA evaluated the results of the pilots and awarded the contract to a proponent; this will lead to a Master Contract, including the full deployment and a PO to provide water meters and AMI Technology island-wide. Concurrently with the pilot phase, PRASA issued an RFP for the installation of both the water meters and AMI infrastructure island-wide. It is expected that by April 2025, the installation contract(s) will be in place. Having accurate meter readings will allow for more precise identification of unauthorized water consumption users, and the remote readings will improve customer service efficiency.

5.5.2.2 Water Recovery Office

The WRO focuses on recovering physical losses throughout the water distribution system. In pursuing the vision of achieving long-term sustainability, PRASA included the reduction of NRW as one of the three key focus areas of the 2024 PRASA Fiscal Plan and has established three main programs for reducing physical losses to achieve a reduction of 56 MGD by FY2038. These programs are:

- Master Meters – Accurately measure water production by installing water meters at critical facilities.
- Pressure Management – Incorporating pressure management best practices across the transmission and distribution network.
- Leak Detection and Reduction – Improving identification, prioritization, and resolution of major leaks across PRASA assets.

To track water loss, the WRO conducts annual water audits. The WRO is responsible for implementing controls and developing action items to address NRW and meet the established goals. The WRO also is looking at new technologies to identify leaks. The WRO further established the NRW team (“TeamORA”), which includes the WRO staff and integrated operation personnel to address the NRW initiatives more efficiently and effectively in each region. PRASA's WRO includes two contracts, one for oversight and project management and another for office and field personnel. The WRO also includes GIS personnel that support other departments within PRASA.

The WRO continues its outreach to the Regions by implementing Annual NRW symposiums for all employees and the general public at the Colegio de Ingenieros y Agrimensores de Puerto Rico (CIAPR in Spanish). During FY2025, the WRO will participate in the Puerto Rico Water and Environmental Association (PRWEA) Convention to continue spreading knowledge of the office's work and the need to work together to achieve the goals set by the 2024 PRASA Fiscal Plan.

5.5.2.2.1 Master Meters

To accurately measure water production at PRASA’s facilities, water meters at the WTPs and wells must be validated, calibrated, or replaced. During FY2024, the WRO visited facilities to validate the conditions of the master meters. The process for validating a meter is to visit the facility, verify if the meter complies with the run-length upstream/downstream specified by the manufacturer, verify the hydraulics of the pipeline to ensure the meter is reading accurately, and validate the local display with SCADA. In addition, the WRO will purchase new meters that comply with the field conditions if the existing meter is not operational. The goal is to reduce the percentage of estimated water production to 4% or less by the end of FY2026. By FY2028, 100% of the water produced is expected to be measured.

To present visibility of the water produced, the WRO created a dashboard that monitors, with up to two days' delay, the island-wide water production. This tool has helped create conscience at both presidential and regional executive levels to help reduce the amount of water produced.

5.5.2.2.2 Pressure Management

Typically, lowering the water pressure of the system will reduce the amount of water loss by preventing water leaks. As part of the pressure management initiative, WRO has identified 45 NRW Pressure Zones on which to focus its pressure monitoring efforts and adjust pressure zones. Once these areas function at optimal pressure, new areas will be identified and included in the pressure management initiative. WRO expects to visit over 80 pressure zones each year and recover NRW at a rate of approximately 2 MGD per year up to FY2038.

Another pressure management initiative is the implementation of a Visualization and Hydraulic Control Center (VHCC) used to monitor flow, pressure, and tank levels throughout PRASA’s water system. Once implemented, ORA will combine PRASA’s GIS and SCADA information to reduce pressure in certain areas of interest.

5.5.2.2.3 Leak Detection and Reduction

The Leak Detection and Reduction Program, which will be performed in parallel with the Pressure Management Program, covers the whole island and has a 2-person crew assigned to each region. Currently, the WRO team has actively been locating leaks. The Regional Department Director also notifies the WRO team when areas with water deficiencies are identified. Several leaks have been located, reported, and repaired using this approach. The WRO continues to obtain additional funds to expand its field resources.

During FY2024, the WRO recovered approximately 9 MGD, which exceeds their goal for the FY and has a goal of 13 MGD for FY2025.

5.5.3 Project Management Office

On July 1, 2023, the PMO Implementation Project was launched with the purpose of establishing this office, whose main objective is to support the corporation in managing the selection, prioritization, planning and execution of strategic and corporate projects. For this, a structure was created, which is still in the approval process, adapted to the needs of PRASA and taking into consideration its project portfolio. The office has 18 active initiatives within all PRASA departments.

Throughout FY2024, the PRASA PMO achieved the following deliverables:

- **PMO Value Proposition** - this is the value of the PMO to focus on the management of strategic and corporate projects and programs.
- **Organizational Structure of the PMO** – this includes:
  - PMO Governance Board with an established organizational structure, process, and meeting frequency to oversee and support strategic and corporate projects.
  - Organization of the functional areas of the PMO with defined roles and responsibilities.
- **Cultural Change Management Plan and Communication Plan** – this helps to manage organizational change towards the implementation of the PMO in PRASA, seeking continuous improvement, managing risks, and promoting the services and benefits of the office.
- **Project Portfolio Management Practice** – to ensure alignment and prioritization of the projects with the PRASA's Fiscal Plan and evolving corporate strategy.
- **Project Portfolio Dashboard –** this is a tool that provides a high-level overview of all the strategic and corporate projects within the portfolio. It helps the PMO Governance Board members, project teams, and managers to monitor key metrics and performance indicators across multiple projects in one place. The strategic and corporate projects are aligned to PRASA's Fiscal Plan and Strategic Plan. Currently, the PMO Project Portfolio as of the month-end of October 2024, consists of seven programs, which comprise 41 projects. Monthly meetings are held with the PMO Governance Board to monitor the progress of this portfolio.
- **Project Management Framework –** providing a standard methodology, processes, tools, and training/workshop materials to manage projects effectively. This framework is available for all functional areas, not just strategic and corporate projects. Also, PMO support is available to assist with the implementation of departmental projects, should the PMO Governance Board authorize these.
- **Project Management Tool (PM Toolkit) Exhibition –** this was the first event conducted to begin the dissemination of a project management culture in PRASA, where the PMO Value Proposition, Project Management Framework, and the PM Toolkit were explained to various PRASA employees, including VPs and Directors.
- **PMO Methodology Workshops –** these are structured sessions to provide training on the new project management methodologies to provide support to ongoing projects. As of the month-end of October 2024, five sessions have been conducted, leading to the benefit of 57 participants from various PRASA departments. A special session for PRASA Directors is being planned for February 2025.

- **Support two Pilot Projects to validate the Project Management Framework -** wherein in one of the projects, a member of the PMO acts as project manager and coach, and in the second project, another PMO member acts as coach/ facilitator. The first Pilot Project is the New Real-Time Hydraulic Model to Reduce Plant Water Production Levels, and the second pilot project is the Job Classification and Compensation Plan.
- **Implementation of the MS Teams Collaborative Environment** – this allows to promotion of a collaborative work approach while centralizing strategic and corporate project management documentation.
- **Basic Implementation of Microsoft Project for the Web -** this solution was selected as the tool to manage the strategic and corporate portfolio and its corresponding projects.
- **Project Management Network** – this initiative was defined and the first phase was launched in December 2024. This network is focused on enhancing collaboration and two-way communication among project team members, ensuring program/project managers and the PMO share information, ideas, and updates efficiently. This will lead to better decision-making and more successful project outcomes within PRASA.
- **Implementation of Project Portfolio Management Practice within PRASA's IT Department** – this will assist in the selection and prioritization of departmental projects, while ensuring IT's commitment to PRASA's strategic and corporate projects.

For FY2025, the PMO team will continue to provide PMO services while expanding its offerings to support continued growth. The plan for this period is divided into the following three areas:

- **Continue PMO Services and Project Portfolio Support -** Continue with specific services of the PMO Implementation Project. This includes support in the PMO Project Portfolio Management, which includes the two pilot projects mentioned in the previous section.
- **PRASA Project Management Leadership Development -** Identify and develop PRASA leaders who can assume key roles to manage programs and projects effectively.
- **Develop and Implement an Organizational and Cultural Change Management Framework –** this encompasses the development of the Organizational and Cultural Change Management methodology or framework that the different programs and projects will use to create their respective change management plans on the impact of their deliverables within the organization. This work methodology will be aligned with the work methodology that was implemented for Project Management and will consider the integration with the practices of Stakeholder Management, Communication Management, and Risk Management.

5.5.4 Electricity Management Program

PRASA's energy cost is the second largest expense and depends on the fluctuations in electricity rates established by the Puerto Rico Energy Bureau (PREB) based on oil prices. Therefore, PRASA continues implementing initiatives to reduce energy consumption, as summarized below:

- Regional Measures – PRASA continues to implement non-capital energy conservation measures in the System at a regional level. Since FY2013, PRASA has reduced its electricity consumption from over 740M kWh to 660M kWh through facility consolidations, minor repairs, operational optimization, and miscellaneous improvements.
- PPAs – PRASA manages ten facilities under PPAs for lower energy unit costs per kWh than what PRASA pays to PREPA/LUMA. The PPAs allow these facilities to use photovoltaic energy, producing approximately 11.3M kWh per year at a $0.15 per kWh blended rate. Annual savings for these facilities vary based on PREPA rates. The ten facilities operating PPAs and their average annual solar energy production are shown in Table 5-5.

PRASA is now focusing on projects or alternatives to reduce the unit per kWh through additional renewable/alternate energy projects.

Table 5-5 PRASA's Current PPAs Average Annual Solar Energy Production

Facility	Average Annual Solar Energy (M kWh)
El Yunque WTP	3.43
Arecibo RWTP	1.71
Canóvanas WTP	1.71
Cayey WWTP	0.86
Humacao RWWTP	0.86
Aguada WWTP	0.86
Guaynabo - Los Filtros WTP	0.86
Culebra WWTP	0.49
Vieques WWTP	0.33
Arcadia WPS	0.19
TOTAL kWh	**11.30**

PRASA continues to find ways to implement renewable energy in existing facilities. Various renewal energy projects are in the planning and design phases, and Table 5-6 provides additional details for the projects for which PRASA has already identified funds.

Table 5-6 PRASA Renewable Energy Projects

Facility	Type of Renewable Energy	Capacity	Estimated Savings	Status
Santa Isabel WWTP	Solar Panels and wind turbines with Battery Backup	2.7 MW DC 1 MW Wind Turbines	80-95%	Design
Maunabo WWPS	Solar Panels with Battery Backup	280 KW AC	80-95%	Design
Guardarraya WWPS	Solar Panels with Battery Backup	280 KW AC	80-95%	Design
Superacueduct Raw Water Intake MicroGrid	Natural Gas and Solar Panels with Battery Backup	9 MW Natural Gas 10 MW Solar Panels	-	Planning

Facility	Type of Renewable Energy	Capacity	Estimated Savings	Status
Superacueduct WTP	Solar Panels with Battery Backup	2 MW DC	80-95%	Planning

5.5.5 Master Plan Update

PRASA develops its Water and Wastewater Master Plan (Master Plan) every ten years to align with the U.S. Census population information. The latest Master Plan was completed in 2024 for population projection adjustments and to create the roadmap for the next years for a safer, resilient, efficient, and financially viable System.

The Master Plan incorporated the 2015 USEPA Consent Decree and PRDOH agreements amendments, climate change adaption strategies, and electricity management strategies. The 2024 Master Plan update also prioritized the projects included in the CIP horizon. Additionally, a tool was created to facilitate future Master Plan updates based on changes in the operational areas.

5.6 Conclusions

During FY2024, PRASA remained focused in its O&M endeavors on re-establishing the System after the aftermath of hurricanes, the 2020 Earthquakes, staff shortages, and the constant challenges of competing priorities for funding. As described in Section 2, PRASA's fiscal situation looks promising and continues to improve due to the implementation of various financial initiatives and the inflow of federal funds. This positive trajectory positions PRASA to move forward with its CIP, aiming to tackle critical system requirements and address pertinent O&M issues.

Despite certain O&M-related observations made during facility inspections, PRASA O&M practices are adequate. Common challenges identified through the Operational Regions and Departments continue to be funding availability and personnel availability for O&M functions, fleet shortage, aging infrastructure, and length of time to complete and close out maintenance work orders, among others.

PRASA acknowledges the extensive journey ahead in addressing these challenges, which have historically impeded O&M performance. However, PRASA remains hopeful that pivotal operational initiatives will pave the way for indispensable improvements within the System. Initiatives such as the reduction of NRW, enhancements in meter resiliency and accuracy, billing precision through the procurement of advanced metering solutions, and the updated Master Plan all stand as pillars to support the much-needed enhancements in the System's operations and maintenance standards. These strategic initiatives, when realized, are expected to play a pivotal role in transforming and fortifying PRASA's operational landscape.

6 Capital Improvement Program and Regulatory Compliance

6.1 Introduction

PRASA has developed a multi-year CIP to improve and maintain its System and to restore damaged infrastructure to its condition before the 2017 Hurricanes, Hurricane Fiona, and the 2020 earthquakes. The CIP's main objectives are to maintain (renew and replace), modernize (new technology), and simplify the System to achieve operational efficiency and sustainability, protect public health, safeguard environmental quality, enable continued economic development, and meet all regulatory requirements. Additionally, the CIP includes projects aimed at meeting mandatory compliance with the 2015 USEPA Consent Decree, as recently amended, and the 2006 PRDOH Drinking Water Settlement Agreement.

The CIP is a dynamic program that evolves and undergoes revisions as needed, and sources of funds are identified as projects transition from pre-construction to the construction phase to finally reach start-up and commissioning. The CIP is subject to review and approval by PRASA's Governing Board. PRASA's financial circumstances have improved due to the implementation of various initiatives, including recent debt refunding, resulting in debt service savings without increasing the maturities of the refunded debt, and projected inflow of federal funds to cover (with appropriate contributions from PRASA's internal funds) its CIP needs, allowing for more robust infrastructure and more efficient and resilient System. Refer to Section 2 for information on PRASA's fiscal situation and CIP funding strategy.

The CIP presented in this Report refers to the CIP included in the 2024 PRASA Fiscal Plan. The execution of PRASA's CIP is contingent upon funding availability and proper allocation of funds.

6.1.1 CIP Status Updates

PRASA has engaged the services of four PMCs to support its Infrastructure Department in the planning, design, permitting, procurement, construction, and management of the CIP projects in each of the five Regions. As of March 2024, PRASA had 292 active projects in the CIP at different stages for a total investment of $6,928M, as shown in Table 6-1.

Table 6-1 Active CIP Projects by Stage

Stage	Number of Projects	Estimated Investment ($, M)	Percentage (%)
Pre-Planning	2	$1,251	18
Planning	40	$1,206	17
Design	64	$2,121	31
Bidding	70	$1,018	15
Construction	72	$1,179	17
Completed	44	$1533	2
Total	**292**	**$6,928**	**100**

The major projects under construction as of March 2024 include the dredging of Lake Carraízo, the Guayama RWWTP rehabilitation, Enrique Ortega WTP rehabilitation, the Morovis Sur WTP rehabilitation, the Caguas Laboratory, the Dorado, Patillas/Guayama, Ponce, Caguas, Camuy, Isabela/Aguada, Hormigueros/Mayagüez and Salinas/Guayama trunk sewers rehabilitation. In addition, the main projects under design or bidding phases include water meter replacement, Culebrinas WTP rehabilitation, the Buena Vista Community drainage, sewer and water system improvements, the Superaqueduct WTP rehabilitation, the Carolina, Santa Isabel and Mayagüez WWTPs improvements, the elimination of the Maunabo WWTP the Caguas Norte WTP rehabilitation, the Guaynabo WTP rehabilitation and the Superaqueduct microgrid.

6.2 CIP Implementation Management

PRASA's and the PMC's goal is to oversee the implementation and management of CIP projects throughout the pre-construction, construction, and post-construction phases. As part of the pre-construction activities, the PMCs manage key tasks that drive CIP project budgets, such as defining project scopes, negotiating consultant contracts for studies and design services, reviewing project constructability, preparing project construction cost estimates, preparing bid packages, and managing bid processes (in close coordination with PRASA's Bidding Board). As part of the construction management services, the PMCs serve as PRASA's representative on CIP projects and include managing project schedules, negotiating project change orders, and administering construction contracts. In addition, the PMCs support project start-up, training, and closeout activities as part of the post-construction services.

6.3 CIP Project Distribution and Costs

CIP projects are divided into categories, groups, and types. PRASA has implemented a prioritization system to better manage the large and complex CIP. Projects included in the CIP are major capital improvements identified throughout all five Regions, as well as island-wide system improvement initiatives such as integration of technological advancements, telemetry implementation, and general R&R. PRASA developed the CIP with the following key points in mind: a) recovery of the System after hurricanes and earthquake impacts and focus on improving the System efficiency and modernization b) ensuring water quality, c) meeting regulatory commitments as stipulated in the Consent Decree, administrative orders, and other agreements with regulatory agencies and d) determining current and future infrastructure and operational needs identified from System planning studies.

Once the need for a capital improvement project is identified, a project creation form is prepared. The form includes the project scope, preliminary schedule, and cost estimates. The project is then assigned a CIP project number and added to the CIP inventory, which is categorized according to PRASA's classification and prioritization system. Updates to the CIP are presented to PRASA's Governing Board at least once a year for revision and approval.

PRASA allocates costs associated with the construction of facilities to the CIP projects, including direct costs, planning, studies, engineering design, inspection, services during construction, owner-controlled insurance program (OCIP), project management, administrative expenses, financing costs (if applicable) and other expenses related to and inherent to construction. In addition, the CIP cost projections include a contingency reserve for unexpected costs that could arise during the project life cycle. If the contingency is not spent after construction is completed, the reserve is released for other CIP projects.

6.3.1 Project Classification and Prioritization

CIP projects, as defined in the 2024 PRASA Fiscal Plan, are classified into the following categories:

- FAASt or Reconstruction & Recovery Projects – These projects are to repair the infrastructure impacted by the 2017 Hurricanes, the 2020 Earthquakes, and 2022 Hurricane Fiona to industry standards and for the FAASt portion projects to address the impact of the 2017 hurricanes, based on the work plan submitted to FEMA on April 8, 2021, and subsequently updated.
- R&R – These projects are related to renewing or replacing aging infrastructure at or near the end of its useful life (pipelines, pumps, motors, etc.).
- Compliance (Mandatory and Non-Mandatory) – Project required or expected to be required by agreements, including USEPA Consent Decree, PRDOH Drinking Water Settlement Agreement, civil actions, administrative orders, court orders, and other mandatory projects or projects that may result in non-compliance in the future if not addressed.
- Mitigation and Resiliency – Projects to reduce risks posed by natural disasters and protect life and property from future disasters. Also, projects that can withstand and adapt to changing conditions and recover promptly from shock and stresses.
- Quality – These projects are meant to increase the quality of the water and wastewater service provided to the customers.
- Fleet and IT – These projects are intended to replace vehicles in PRASA's fleet and improve IT infrastructure.
- Optimization and Emergencies – These projects aim to increase efficiency and address emergency and contingency needs.
- Safety and Growth – These projects allow System growth and increase security at PRASA's facilities.
- Others – These projects are considered necessary and do not fall under the previous categories.

Projects are further classified as either water or wastewater system projects. Water system projects include improvements or construction of new facilities for water supply, water distribution, WTPs, WPSs, and tanks, among others. Wastewater system projects include projects for improvements or construction of new facilities for wastewater collection, WWTP, and WWPSs.

In addition to project classification, mandatory projects used to be ranked according to a prioritization score. This score resulted from the weighted sum of the evaluation criteria adopted in the 2010 Master Plan and negotiated with regulatory agencies. Four main criteria were selected to prioritize CIP mandatory projects: Regulatory Compliance (40%), Quality of Service and Reliability (30%), Operational Efficiency Improvements (20%), and Population Impacted by the Project (10%). PRASA understands that too much time has passed to use the same criteria, and a clear objective project prioritization process must be established for CIP projects. Therefore, PRASA is updating the methodology for all projects during the 2022 Master Plan project, which is expected to be completed during FY2024. The implementation schedule of future long-term projects will be subject to the prioritization system and funds availability.

In addition, PRASA has identified the following priorities in its pursuit of immediate restoration of all infrastructure damaged by the hurricanes and continued compliance with regulatory agencies:

1. Projects needed to restore the infrastructure damaged by Hurricanes Irma, María and Fiona.
2. Mandatory compliance projects were included in the 2015 USEPA Consent Decree, the 2006 PRDOH Drinking Water Settlement Agreement, and subsequent negotiations.
3. Construction projects that were stopped and postponed with the suspension of the CIP in 2016.
4. R&R needed to rehabilitate and replace its System assets to maintain and improve its service and infrastructure performance.

6.3.2 CIP Metrics and KPIs

PRASA continues to monitor the established project metrics, compliance, and execution through a CIP tracking tool. The tracking tool is used to manage project time, develop a detailed project baseline, track the progress, milestones, and metrics of all projects monthly, keep track of projects on target and off target, and identify causes for delays. In addition, PRASA implemented a module in SAP to review and update its current tracking tool to enhance compliance with the expected execution schedules and costs.

In addition, PRASA continues to implement KPIs to allow for detailed tracking of CIP compliance and success and to evaluate the PMCs' performance. Since construction is typically the phase with the highest potential for deviations in cost and time, PRASA tracks two industry standards KPIs - Cost Performance Index and Schedule Performance Index. The Cost Performance Index measures the cost efficiency of resources committed to the project compared to the budget, assessing whether the project will be completed on budget. The Schedule Performance Index measures the relationship between the executed work against planned work, assessing whether the project will be completed on time.

6.4 PRASA’s CIP (FY2024-FY2038)

PRASA's CIP for FY2024 through FY2038, as included in the 2024 PRASA Fiscal Plan, amounts to $11.3B. Figure 6-1 and Table 6-2 show annual capital expenditures by project category. Almost 80% of PRASA’s CIP comprises Reconstruction & Recovery, Compliance (mandatory and non-mandatory), and Mitigation and Resilience projects of the total forecasted expenditures.

Reconstruction & Recovery, totaling 42% of the total CIP, is $4,766M and is the largest category in terms of dollars throughout this CIP period. Mitigation and Resiliency projects are the second largest expense, with an annual average expenditure of $207.45M and a total of $3,111.8M. Non-Mandatory Compliance is now the third largest expense, with an annual average expenditure of $67.6M and $1,013.8M over the 15-year period.

The total of $11.3B includes $430M to gradually fund a reserve for meter replacement and other infrastructure needs.

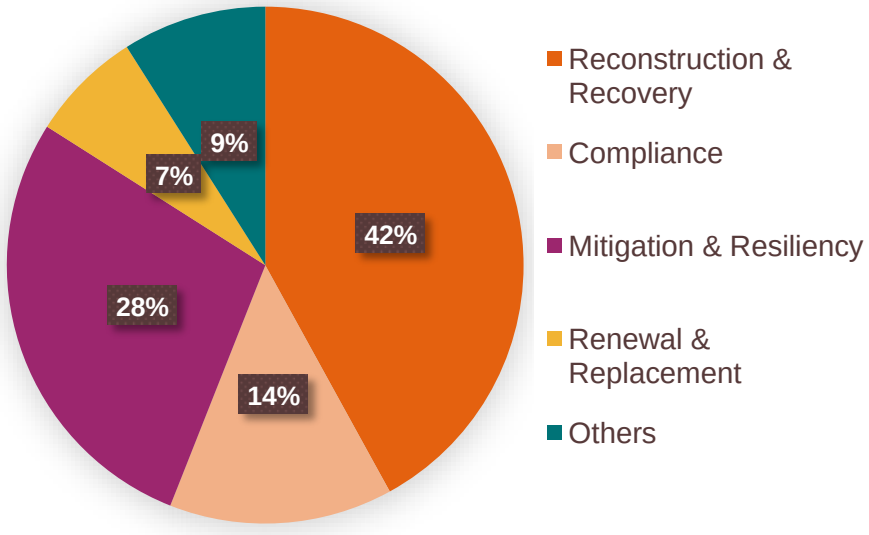


Figure 6-1 PRASA’s CIP Capital Expenditures by Category

Table 6-2 CIP FY2024-FY2038 by Category ($, M)[1]

Project Category	Fiscal Year Ending June 30							
	2024	2025	2026	2027	2028	2029	2030	2031
Reconstruction & Recovery	$239.6	$880.7	$1,319.4	$1,132.9	$610.4	$220.9	$115.6	$96.2
Mandatory Compliance	$32.3	$99.9	$169.7	$107.8	$24.7	$8.9	$18.7	$10.5
Mitigation & Resiliency	$18.2	$96.3	$480.2	$846.3	$369.2	$167.8	$102.6	$183.9
Generators & Meters	$10.7	$14.8	$2.5	$0.7	$3.5	$35.5	$40.5	$34.0
Renewal & Replacement	$74.9	$70.8	$43.2	$35.0	$40.0	$40.0	$40.0	$60.0
Non-Mandatory Compliance	$75.8	$146.7	$266.6	$234.2	$61.1	$24.4	$33.3	$24.2
Quality	$22.1	$45.7	$67.9	$22.0	$3.3	$2.5	$7.8	$0.6
Fleet & IT	$18.1	$11.5	$5.0	$5.0	$8.0	$8.0	$8.0	$8.0
Others	$36.0	$15.3	$26.2	$29.8	$31.2	$30.9	$24.3	$15.9
Total	**$527.7**	**$1,381.8**	**$2,380.6**	**$2,413.7**	**$1,151.4**	**$538.8**	**$390.8**	**$433.3**

[1]Numbers may not add up due to rounding.

Project Category	Fiscal Year Ending June 30							
	2032	2033	2034	2035	2036	2037	2038	2024-2038
Reconstruction & Recovery	$48.8	$23.2	$21.7	$23.7	$11.9	$10.6	$10.6	**$4,766.0**
Mandatory Compliance	$1.8	$1.8	$12.7	$16.3	$9.8	$8.3	$3.5	**$526.8**
Mitigation & Resiliency	$390.8	$340.9	$113.4	$2.0	$0.2	$-	$-	**$3,111.8**
Generators & Meters	$34.0	$34.0	$39.0	$64.0	$64.0	$69.0	$59.0	**$505.2**
Renewal & Replacement	$60.0	$60.0	$60.0	$60.0	$60.0	$60.0	$60.0	**$823.9**
Non-Mandatory Compliance	$64.9	$40.8	$17.3	$8.3	$5.4	$6.6	$4.3	**$1,013.8**
Quality	$-	$-	$-	$-	$-	$-	$-	**$171.9**
Fleet & IT	$8.0	$8.0	$8.0	$8.0	$8.0	$8.0	$8.0	**$127.6**
Others	$9.1	$3.0	$3.0	$2.7	$2.7	$2.7	$2.7	**$235.5**
Total	**$617.4**	**$511.6**	**$275.0**	**$185.1**	**$162.0**	**$165.3**	**$148.1**	**$11,282.6**

[1]Numbers may not add up due to rounding.

PRASA's CIP consists of over 400 projects, of which 292 have already been assigned to PMCs, with a CIP investment estimated at over $7B. As funding allocation is approved for other projects, PRASA will continue distributing the projects within the four PMCs.

6.4.1 Water System Projects

The wastewater system projects include projects to improve compliance (mandated and not mandated), upgrades to WTPs, STSs, water distribution systems, and the construction of new water infrastructure. Total capital expenditures in water system projects for FY2024 through FY2038 are estimated at $3,633M. Approximately $182.2M is allocated for projects classified as Mandatory Compliance, $967.4M is allocated for projects classified as Mitigation & Resiliency, and approximately $2,080M is allocated for projects classified as Reconstruction & Recovery, among others.

6.4.2 Wastewater System Projects

The wastewater system projects include improving compliance, new WWTPs, and upgrading wastewater collection systems. Total capital expenditures in wastewater system projects for FY2024 through FY2038 are estimated at $3,241.5M, of which approximately $232.4M is allocated for projects classified as Mandatory Compliance, $279.9M is allocated for projects classified as Non-Mandatory Compliance, $1,265.6M is allocated for projects classified as Mitigation & Resiliency and approximately $1,391M is allocated for projects classified as Reconstruction & Recovery, among others.

6.4.3 Additional Category Projects

Total capital expenditures for the remaining capital project categories are estimated at approximately $3,977.9M for FY2024 through FY2038. Approximately $2,117.6M is allocated for repairs to infrastructure impacted island-wide by Hurricanes Irma and María and others under the R&R program. Mitigation & Resiliency projects have approximately $878.7M allocated, Meters and Electrical Generators projects have $75.2M, and Fleet and IT projects have $127.6M. The remaining funds are distributed between Compliance, Quality, Safety, Emergencies & Contingencies and Other upgrades.

6.5 Current Regulatory Compliance

One of the main six-year CIP objectives is regulatory compliance with the existing Consent Decree and the 2006 PRDOH Drinking Water Settlement Agreement. In addition, it considers proposed modifications to said Consent Decree and agreement between PRASA and regulatory agencies. Note that the actual cost to meet compliance with the Consent Decree and agreements and PRASA's total capital expenditures may vary substantially depending on:

- The inflationary environment for the costs of labor and supplies needed to implement the compliance program.
- Severe weather conditions could adversely affect construction schedules and consumption patterns.
- Population trends and political and economic developments in Puerto Rico could adversely impact the collection of operating revenues.
- Possibility of new environmental legislation or regulations affecting the System.
- Unanticipated costs or potential modifications to projects resulting from requirements and limitations imposed by environmental laws and regulations.
- The inherent uncertainty in the CIP projects of the magnitude undertaken by PRASA.

The Consent Decree and Drinking Water Settlement Agreement currently in effect with the regulatory agencies are:

- Consent Decree: U.S. v. PRASA and Government of Puerto Rico, Civil Action Number 15-2283 (JAG) – Addresses violations to Sections 301 and 402 of the Clean Water Act (CWA) and regulations promulgated there under, and PRASA's NPDES permits with regards to PRASA's WWTPs, WWPSs, and STSs, as well as several administrative orders.
- 2006 PRDOH Drinking Water Settlement Agreement, Civil Action KPE 2006-0858 (904) as amended – Addresses non-compliance and alleged violations with the Puerto Rico Potable Water Purity Protection Law, as amended, the SDWA and applicable regulations, and the General Environmental Health Regulation. The PRDOH and PRASA are addressing amendments to this Settlement Agreement through independent motions.

In September 2017, upon declarations of the State of Emergency for Hurricanes Irma and María, PRASA submitted a notification to both USEPA and PRDOH invoking force majeure and indicating the possibility of some delays in projects and program due dates. In 2024, USEPA rescinded force majeure associated with these hurricanes, and COVID-19 and penalties came into effect. During the period evaluated, PRASA requested force majeure for the following events:

- Rallies/Labor strike – August 31, 2023
- Hurricane Ernesto – August 14, 2024 (under USEPA evaluation)

By the end of FY2023, PRASA, USEPA, and the U.S. Department of Justice (USDOJ) completed negotiations and modifications to the Consent Decree and notice of lodging was presented in court at the beginning of FY2024 to address the force majeure events. PRASA began enforcement of the modified Consent Decree in 2024, and Biannual Progress Report (BPR) Number 18 summarizes the initiatives and programs implementation efforts carried out. PRASA and the United States negotiated additional modifications to the Consent Decree and the final Consent Decree was approved by the Court in October 2024.

In addition, PRASA continues using the Microsoft Power BI Compliance Monitoring Tool developed in 2019 to facilitate the review, monitoring, and tracking of some programs stipulated in the Consent Decree and the 2006 Settlement Agreement, including remedial measures, interim limits, areas of concern, emergency power generators, capacity management, and corrosion control among others.

6.5.1 Consent Decree and Drinking Water Settlement Agreement Progress Reports

The Consent Decree with USEPA and the Drinking Water Settlement Agreement with PRDOH require PRASA to implement remedial plans, develop and implement CIP projects to bring PRASA's Systems into compliance with regulatory requirements and conduct evaluations concerning specific System's infrastructure and operational issues. For this report, Arcadis reviewed the following progress reports submitted to regulatory agencies:

- 2015 USEPA Consent Decree BPR:
  - Number 16: March 1, 2023, through August 31, 2023
  - Number 17: September 1, 2023, through February 29, 2024
  - Number 18: March 1, 2024, through August 31, 2024
- 2006 PRDOH Agreement Quarterly Progress Reports:
  - Number 62: July 1, 2023, through September 30, 2023
  - Number 63: October 1, 2023, through December 31, 2023
  - Number 64: January 1, 2024, through March 31, 2024
  - Number 65: April 1, 2024, through June 30, 2024

A summary of these progress reports is presented in the following subsections.

6.5.1.1 2015 USEPA Consent Decree – Biannual Progress Reports

In April 2024, USEPA rescinded force majeure associated with Hurricanes Irma and María and COVID-19. As a result, PRASA was notified that they would begin accruing penalties for non-compliance.

The Consent Decree requires PRASA to submit BPRs. BPRs Numbers 16, 17, and 18 reporting from March 1, 2023, through August 31, 2024, summarized below, include applicable programs, standards, and special conditions.

The Consent Decree specifies that PRASA shall continue implementing systemwide remedial measures at all WTPs, STS, and WWTPs and the corresponding sewer system owned and operated by PRASA. Remedial measures are comprised of several projects and action plans as stipulated within the Modified Consent Decree in the Appendices listed below.

- Appendix H includes the base list for remedial measures to address wash water discharges at WTPs, also known as STSs. Only the replacement of Valenciano WTP or an alternative project to eliminate this plant is pending for which an extension was granted for May 31, 2027.
- Appendix I includes the capital projects subject to prioritization.
- Appendix J includes the base list of remedial measures for WWTPs. Revised compliance deadlines and additional measures were included in the Modified Consent Decree.
- Appendix 2 (Modified Consent Decree) includes additional remedial operational measures to address destruction caused by Hurricanes to wash water discharges at WTPs, also known as STSs and WWTPs.

PRASA is working on achieving project dates in Appendices H and J base list projects and Operational Remedial Measures for STSs and WWTPs. The base list includes a total of 35 projects, of which 33 are outstanding, with expected completion dates by 2030, while Operational Remedial were 43 projects with expected completion by December 2024.

PRASA continues to work with high-priority projects related to remedial measures. The completion dates for the projects included in the base list are on schedule. A summary list of the high-priority projects is included in Table 6-3.

Table 6-3 Base List Projects Breakdown [1]

Region	CIP Number	Facility	Type	Project Description
East	3-40-6006	Ceiba Sur	STS	Eliminate the plant with the new Valenciano WTP or an alternate project to eliminate the plant.
East	3-61-5020	Río Grande Estates	WWTP	Divert facility to the private CBUC plant or the Carolina/Fajardo RWWTP.
East	3-13-5065	Caguas	RWWTP	Aguas Buenas/Caguas Sanitary trunk sewer collection system.
Metro	1-11-5067	Bayamón	RWWTP	Overall improvement project: influent headworks, influent pumps, grit removal system, and clarifier's traveling bridges.
Metro	-	Puerto Nuevo	RWWTP	Perform a study to determine the condition of the land portion of the facility's outfall. Install flow proportional chlorination equipment.
Metro	1-66-5111	Puerto Nuevo	RWWTP	Installation of a degritter system.

Region	CIP Number	Facility	Type	Project Description
North	2-24-5007	Corozal	WWTP	Retrofit existing facility to achieve nutrient removal.
South	4-58-5083	Ponce	RWWTP	Phase II: Rehabilitation of trunk sewer (28 kilometers (km)).
South	3-56-5001	Patillas	WWTP	Divert facility to the Guayama RWWTP.
West	5-37-5021	Isabela	WWTP	Diversion of the Isabela WWTP discharge to Costa Isabela Resort.
North	-	Arecibo	RWWTP	Diversion of the Arecibo RWWTP discharge to Barceloneta RWWTP.
South	3-30-5001	Guayama	WWTP	Improvements to Guayama RWWTP: Replace the existing influent screens and relocate screening dumpsters to increase solids removal and improve operational conditions. Improvements to Influent Pump Station. Demolish existing degritting units and influent channels and replace them with new vortex-type degritting units. Demolish both existing primary clarifiers and build two new circular primary clarifiers with the design flow capacity and capable of receiving wasted activated sludge from the secondary treatment. Improvements to secondary biological treatment. Improvements to disinfection system.
South	4-57-5005	Peñuelas	WWTP	Elimination of Peñuelas WWTP: Divert facility to Ponce WWTP or Rehabilitation of Peñuelas WWTP.
South	-	Guayanilla	WWTP	Elimination of Guayanilla WWTP: Divert facility to Ponce WWTP or the more accessible or feasible WWTP.
West	5-50-9105	Mayagüez	RWWTP	Improvements Mayagüez Outfall: Perform structural repairs to the existing outfall.
North	-	Camuy	WWTP	Improvements Camuy Outfall: Perform structural repairs to the existing outfall or divert the facility to Barceloneta WWTP.
East	3-13-9001	Caguas	RWWTP	Improvements to Caguas RWWTP (Repair Primary Clarifier #2).

Region	CIP Number	Facility	Type	Project Description
East	3-23-6247	Comerío	WWTP	Clarifiers Rehabilitation Project (Repair Primary Clarifier # 1).
East	3-76-5002	Vieques	WWTP	Vieques WWTP Improvements (Replace Aeration Tank Air Diffusers).
Metro	2-09-6007	Enrique Ortega	STS	Rehabilitation of the Enrique Ortega Water Treatment Plant (STS, Repair filter press).
North	2-24-5007	Corozal	WWTP	Divert facility to Barceloneta WWTP (Replace Grit Transmission #1, Replace Comminutor # 1 and #2, and Replace flow distribution bar (splitter box) and replace Grit Transmission # 2).
West	-	Aguada	WWTP	Rehabilitation of Aguada WWTP (Repair clarifier units, replace chlorine contact chamber valves, repair influent pump #4).
West	5-48-6007	Maricao	STS	Rehabilitation of Maricao WTP (STS, Repair drying beds).
West	5-50-5028	Mayagüez	RWWTP	Mayagüez RWWTP Improvements (Repair Primary Clarifier #1 scum collector and replace weirs at Clarifiers #1 and #2 and replace Primary Clarifiers bridges).
North	2-26-5002	Dorado	WWTP	New Dorado Trunk Sewer (Replace Rake Screen # 1).
North	2-52-6007	Morovis Sur	STS	Rehabilitation of Morovis WTP (STS, Repair Centrifuge).
West	5-03-6006	Aguadilla	STS	Rehabilitation of Aguadilla Montaña WTP (STS, Repair Thickener and Rehabilitate Sludge Drying Beds).

[1]BPR Number 18 Appendices Nos. 1 and 3.

In addition, as stipulated by the Consent Decree, flow meter devices with flow totalizers and level indicators were installed at the point of discharge for most STS at the WTPs. A total of nine flow meters and totalizers, and eight high-level alarms at STSs were reported out of service. During FY2024, two flow meters, totalizers, and seven high-level alarms at STSs were repaired. Regarding WWTPs, seven flow meters and totalizers were repaired and six are scheduled to be replaced by December 2024.

As part of the remedial measures included in the Consent Decree, PRASA completed analyzing the rain and wastewater flow relationships and infiltration/inflow (I/I) studies for 45 WWTPs sewer basins. As a result, repair projects for the sewer systems with completed I/I studies are included in the prioritization list, with an expected completion of 2034.

6.5.1.1.1 New Sludge Treatment System and Solid Handling

The Consent Decree stipulates that any new WTP that begins operation after the day of lodging shall include an alternative power unit and an STS with sufficient hydraulic capacity to manage wash water discharges. There were no new WTPs constructed in FY2024. All PRASA's STSs have a final NPDES permit or are going through the renovation process.

6.5.1.1.2 Sewer System Operation and Maintenance Plan

PRASA and USEPA agreed to submit a consolidated SSOMP Annual Report beginning May 2019 until the Consent Decree ends. PRASA submitted the 2023 SSOMP Annual Report on May 31, 2024 as agreed. PRASA recruited additional personnel to increase and reinforce the SSMC to continue the implementation of the SSOMP. This initiative resulted in an improvement of the Puerto Nuevo Sewer System operation and maintenance. In addition, PRASA continues integrating and updating data collected into the GIS database. Training in SSOMP-related topics such as regulatory requirements, health and safety, preventive maintenance, and related on-the-job training continue to be provided to PRASA's staff.

Reconnaissance and Cleaning

As per Consent Decree Modification, sewer line reconnaissance activities for sewer lines equal to or greater than 30 inches were divided into three phases, as shown in Table 6-4.

Table 6-4 Schedule and Progress Reconnaissance of Sewer Lines >= 30 inches

Phase	Timeline	Status
Phase 1 East Area	September 30, 2023	• Completed • Approx. 2,170 feet (ft)
Phase 2 Baldorioty Area	December 31, 2024	• In progress • Over 75% of completion • Approx. 4,470 ft
Phase 3 San José Area	June 30, 2026	• In progress • Over 50% of completion • Approx. 6,50 ft • CIP for sewer rehabilitation of "Los Angeles" Trunk Sewer

For reconnaissance of the remaining sewer lines hydraulicly connected to the Puerto Nuevo RWWTP the compliance schedule is shown in Table 6-5.

Table 6-5 Schedule and Progress of Reconnaissance of Sewer Lines Hydraulically Connected to Puerto Nuevo RWWTP

Area	Timeline	Status
Area 2	June 30, 2025	• In progress • Approx. 232,200 ft • Over 20% of completion
Area 3	June 30, 2028	• In progress • Approx. 104,440 ft • Over 10% of completion

Area	Timeline	Status
Area 4	June 30, 2031	• In progress • Approx. 3,600 ft • Less than 10% of completion
Area 5	December 31, 2033	• Under planning

During the reporting period, PRASA completed the bid process for additional sewer line reconnaissance projects for Area 2.

Regarding cleaning activities for the remaining sewer lines (less than 30 inches) hydraulicly connected to the Puerto Nuevo RWWTP, the compliance schedule is shown in Table 6-6.

Table 6-6 Summary of Cleaning of Sewer Lines Hydraulically Connected to Puerto Nuevo RWWTP

Area	Timeline	Status
Area 2	June 30, 2025	• In progress • Approx. 205,100 ft • Over 23% of completion
Area 3	June 30, 2028	• In progress • Over 11% of completion • Approx. 96,400 ft
Area 4	June 30, 2031	• In progress • Approx. 2,800 ft • Less than 0.3% of completion
Area 5	December 31, 2033	• Under planning

Also, the modified Consent Decree considers a Priority Methodology for Cleaning sewer lines that PRASA developed. PRASA submitted the Sewer Cleaning Methodology report in June 2024. After additional revisions required by USEPA, PRASA is currently reviewing the Sewer Cleaning Methodology to address comments. Additional updates will be included in the next bi-annual report. To ensure continuity of sewer cleaning of large-diameter pipes, PRASA contracted companies specialized in this type of work and have completed the inspection and cleaning of Miramar Trunk Sewer, San José Trunk Sewer, and Roberto H Todd Avenue Trunk Sewer.

During the period evaluated, 45 defects were identified, and three were corrected. Since the SSOMP's implementation, 330 defects have been identified, of which 220 defects (67%) have been corrected, 33 were included in the CIP, and the remaining are pending repairs. As required by the modified Consent Decree, PRASA will use the Sewer Defect Repair and Reinspection Criteria as the primary means of determining the relative priority for each sewer defect that hinders or may hinder the operation of the system. No illegal interconnections to the Puerto Nuevo RWWTP sewer system were found during the period evaluated.

As far as the wet and dry weather discharges from CSWO outfalls, the modified Consent Decree requires PRASA to have a calibrated and validated sewer system model for the Puerto Nuevo RWWTP that enables PRASA to estimate, based on CSWO outfall level monitoring and sewer system modeling, the volume of each CSWO discharge. PRASA installed level sensor devices with cellular connectivity to continuously monitor sewer flow depth

to identify discharge occurrences and assess the conditions that may lead to DWOs. CSWO volume will be estimated using model simulations of wet weather events measured by level meters. Modeling is pending calibration and validation for its implementation. PRASA continues to work on the model calibration and validations for the Puerto Nuevo RWWTP.

Fats, Oils, and Grease

Meetings were held with food associations, non-profit organizations, government agencies, and municipalities to discuss the requirements and guidelines of the FOG Control Program. PRASA continues the public education campaign entitled *Tuberías Limpias*. The campaign aims to educate citizens, establishments, and industries about the proper management of FOG. In addition, the campaign has a presence in mass media and social media.

PRASA continues inspecting businesses under the FOG Control Program, including, among others, food service establishments, car washes, and auto repair shops. The inspection schedule was established according to the prioritization system of the program. During inspections, educational material is provided to business owners and general managers. The total number of inspections conducted from March 2023 through August 2024 by region is included in Figure 6-2. During the inspections, PRASA identifies if any FOG Program violations are observed and reserves the right to stipulate penalties to the business.

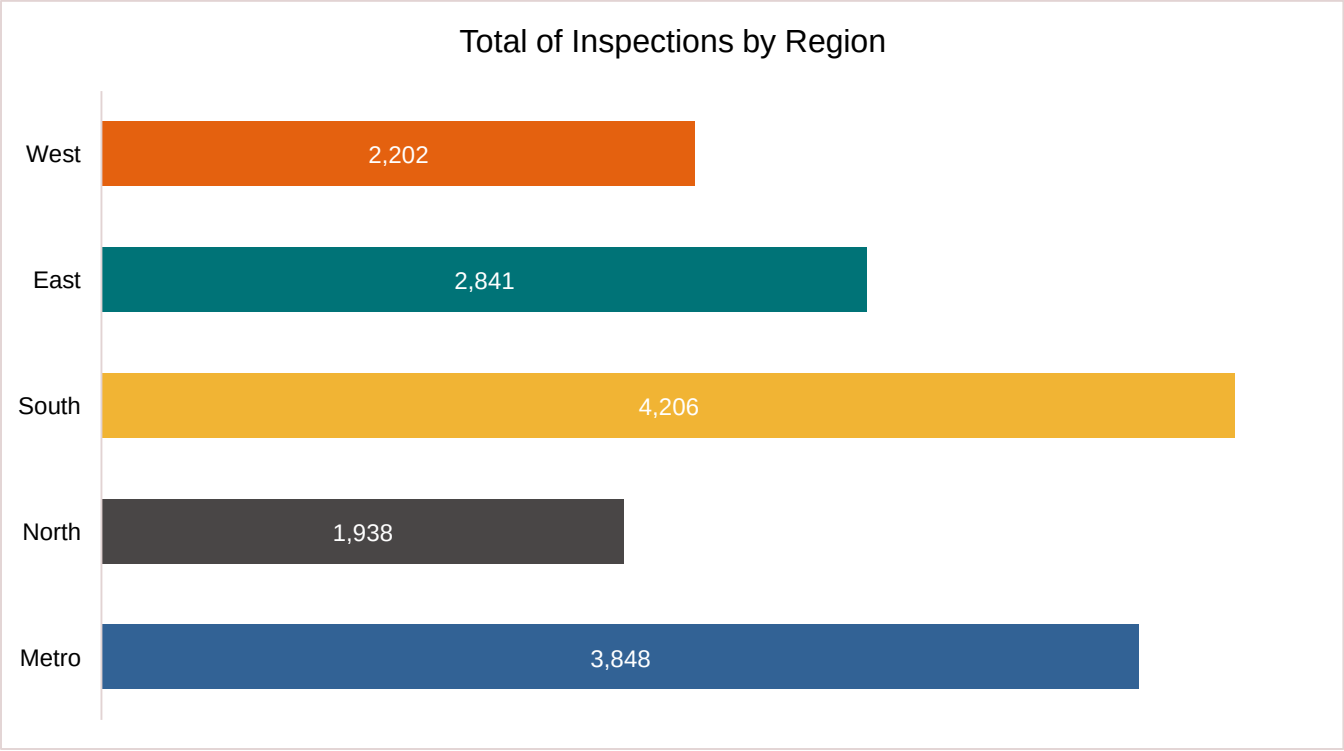


Figure 6-2 FOG Program Inspections Summary from March 2023 through August 2024

SSOs, DWOs, and Unauthorized Release

PRASA continues to use the pictographic method approved by USEPA to approximate SSOs or unauthorized releases. This method identifies through comparison the approximate overflow rate in gpm. Training on the selected method continues to be provided to PRASA personnel associated with sanitary sewer system duties and the 24-hour overflow notification. During the evaluated period, only two DWO events were reported.

6.5.1.1.3 Caño Martín Peña

The Caño Martín Peña projects were not performed during the period evaluated. These projects are contingent upon completing related prerequisite projects to be developed by parties not affiliated with PRASA.

6.5.1.1.4 Puerto Nuevo RWWTP Sewer System Evaluation and Repairs

Barriada Figueroa Project

PRASA completed the requirement stipulated in the Consent Decree as the sewer inventory, and the final mapping report was submitted to USEPA on March 29, 2019.

Sewer System Maps

As PRASA agreed with USEPA, the Puerto Nuevo RWWTP revised maps were included in the consolidated SSOMP Annual Report submitted in May 2024. According to the 2023 SSOMP Annual Report, PRASA continues to expand the management of sewer networks within the Puerto Nuevo RWWTP sewer shed to perform programmatic maintenance efforts successfully. PRASA's GIS capabilities have been expanded to include tracking SSOMP-funded sewer repairs and retrofits based on previous findings of sewer defects. PRASA's GIS is continually updated as new information categories are added, and previously captured information is refined.

6.5.1.1.5 Areas of Concern in the Puerto Nuevo RWWTP Sewer System

As stipulated in Paragraph 36 of the Consent Decree, PRASA currently has 17 active Areas of Concern within the Puerto Nuevo RWWTP Sewer System. PRASA continues executing the required interim measures while the sewer system is assessed and repaired, including inspections and educational campaigns in accordance with the Consent Decree.

6.5.1.1.6 Interim Effluent Limits for WTPs and WWTPs

PRASA continues to monitor compliance with the interim and final NPDES limits. Monthly Discharge Monitoring Reports (DMRs) following the NPDES permit for WWTPs and WTPs are submitted to USEPA as stipulated in the agreement. As depicted in Figure 6-3, PRASA has a combined (STSs & WWTPs) total of 1,130 active interim limits over 158 facilities. The East Region has the highest number of active interim limits for STSs, and the North Region has the highest interim limits for the WWTPs. PRASA uses this dashboard to track when the interim limit for the parameters expires to have enough time to plan and start discussions with USEPA on addressing compliance or renegotiating the limit.

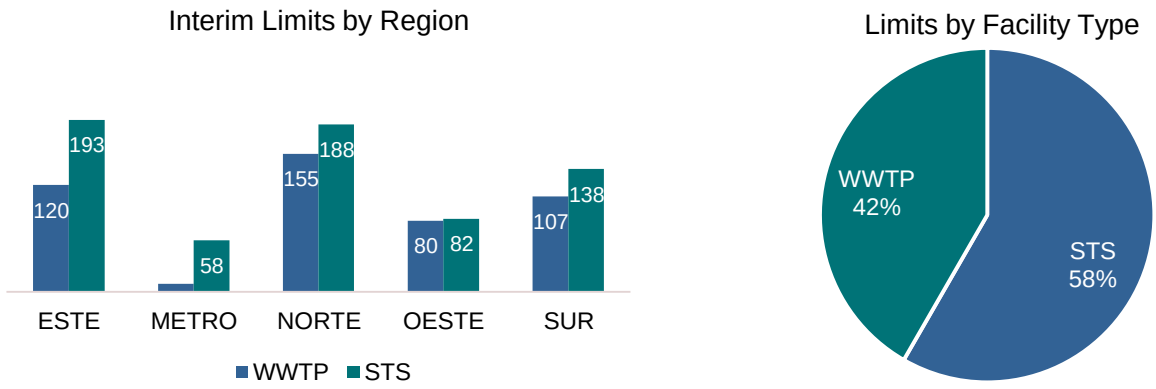


Figure 6-3 Summary of Interim Limits

PRASA continues to seek interim limits protection for NPDES obligations not being complied with, including new restrictive limits of various parameters. PRASA continues to move forward with the CIP planning, design, and construction of several facility improvements that will address treatment process issues and impaired equipment, among other identified deficiencies expected to decrease non-compliance issues. In addition, PRASA continues to conduct in-depth water analysis to determine feasible technologies that could be considered in projects.

6.5.1.1.7 Integrated Maintenance Program

Preventive and corrective maintenance continues to be implemented with limitations due to force majeure events and limitations in personnel. Currently, there is an initiative with the HR Department for intensive recruitment and efforts towards restructuring the IMP. PRASA conducts IMP activities mostly with subcontractors to comply with the requirements.

From March 2021 to August 2024, PRASA executed 15,680 corrective maintenance and 42,832 preventive maintenance work orders. Field assessments included in the approved Corrosion Control Plan (CCP) were completed; however, there were updates made to some of the assessments which were divided into three phases. A summary of the re-assessments is included in Table 6-7.

Table 6-7 Summary of Field Re-Assessment

Phase	# Facilities	Timeline
Phase I	7 facilities	Completed – October 2023
Phase II	36 facilities	Completed – November 2023
Phase III	378 facilities	In progress – June 2025 (53% completed)

In addition, PRASA has defined new strategies for the implementation of this program efficiently and has established the following initiatives:

- Design specifications for materials and construction details to assure corrosion control are being considered as part of the facility's design or rehabilitation projects.

- Maintenance staff are involved in rehabilitation, improvement and design meetings to support and follow up on recommendations related to corrosion control.
- Evaluation of funding mechanisms to address costs associated to corrosion control and facility improvements.
- The Corrosion Control Team continues monthly meetings to discuss program implementation, challenges, among others.
- Established corrosion prevention control guidelines. Findings are documented in SAP to monitor and control the corrective actions and be able to develop metrics for this program.
- Corrosion training and refresher sessions to learn about this topic on how to prevent and manage corrosion.

6.5.1.1.8 Training and Additional Requirements for Operators

The Consent Decree stipulates that all new STS or WWTP operators hired by PRASA must be trained in monitoring, recording, and reporting requirements of the individual NPDES permits as applicable. According to BPR Numbers 16, 17, and 18, PRASA hired a total of 72 operators for STS or WWTP. PRASA offered over 350 training courses for which approximately 42,200 employees participated in in-person and online modalities. Following the recent restructuring of the Training and Continued Education group, improvements to SAP are ongoing to accommodate and adjust the needs as part of the automation process changes regarding PRASA's training program. Implementing online training and digital platform improvements have increased the efficiency of operations.

In addition, PRASA has experienced delays toward license renewal or acquisition of new licenses to comply with the treatment plant required category due to force majeure events. In such instances, supervisors or managers are responsible for the facility's operation. Therefore, PRASA continued to focus on recruiting personnel to reduce vacancies in these positions.

6.5.1.1.9 Process Control System

The PCS has been implemented at PRASA's STSs and WWTPs as stipulated by the Consent Decree. PRASA completed the revisions and updates to the PCS manuals at the STSs and WWTPs in all regions.

6.5.1.1.10 Spill Response and Cleanup Plan

Although PRASA utilized Android technology to facilitate and improve the data reporting process during the period evaluated, it received pushback from field staff. As a result, most of the field data is collected manually on paper. PRASA is working on an initiative with the HR Department to train staff on the data collection technology for use in the field.

6.5.1.1.11 Stipulated Penalties

PRASA continues to monitor and report to the USEPA the NPDES exceedances, including limits, sampling results, and violation codes. On April 24, 2024, force majeure protection was rescinded for Hurricanes Irma and María and COVID-19, and therefore, penalties came into effect as of this date. The total number of penalties conducted from September 2023 through August 2024 by region is included in Figure 6-4.

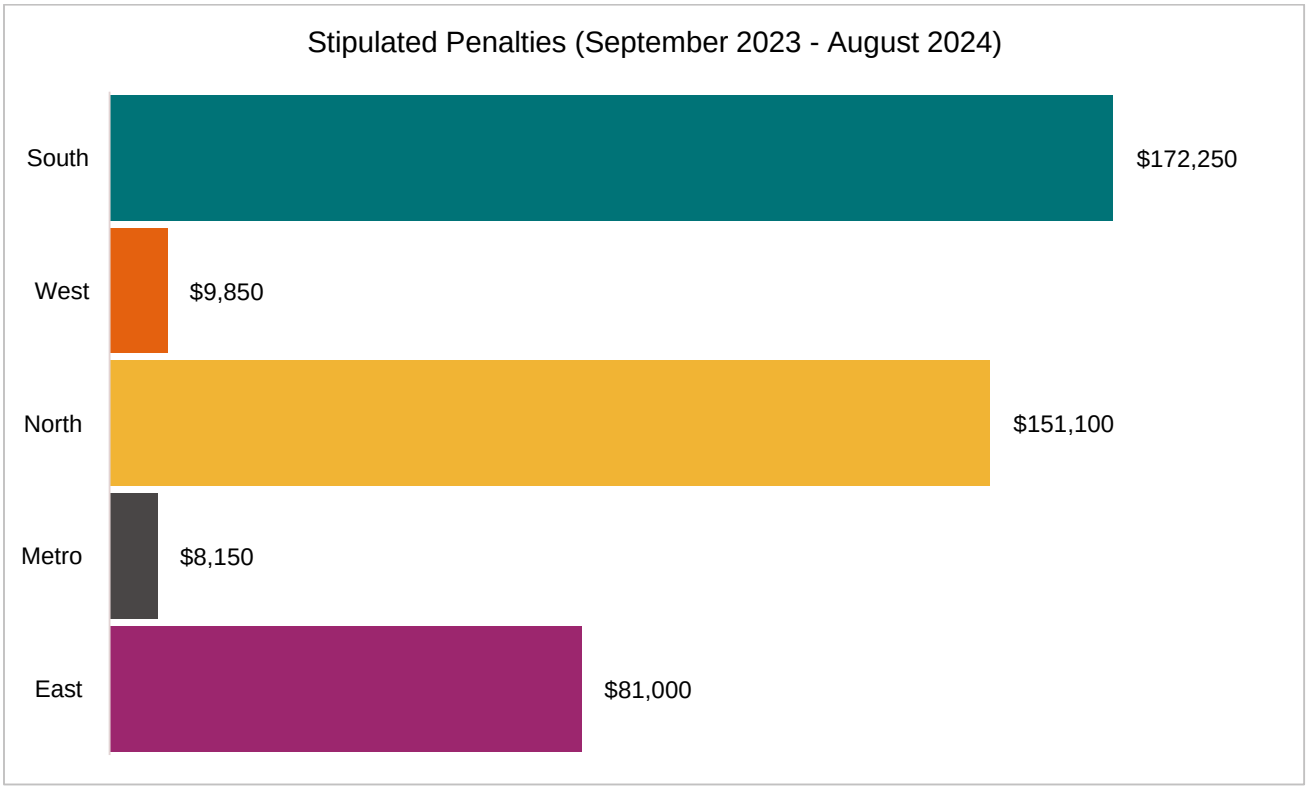


Figure 6-4 Summary of Penalties Accrued by Region

6.5.1.1.12 Wastewater Treatment Capacity and Flow Management

As stipulated in Paragraph 67 of the Consent Decree, PRASA's Existing Sewer Connection Policy, effective management of wastewater treatment capacity is essential for protecting the environment while also allowing economic growth and development in Puerto Rico. PRASA implemented a monthly average permitted flow tracking tool that allows the monitoring, planning, and management of WWTP flows.

6.5.1.2 2006 PRDOH Drinking Water Settlement Agreement

As part of the 2006 Drinking Water Settlement Agreement between PRASA and the PRDOH, PRASA submits a QSAR every quarter. Arcadis reviewed QSARs Number 62 through 65, covering the period from July 1, 2023, through June 30, 2024.

6.5.1.2.1 Remedial Measures

Per the 2006 Drinking Water Settlement Agreement, several remedial actions needed to be implemented in multiple systems or components. These remedial measures were classified as short (LTP1), mid (LTP2), and long-term (LTP3). PRASA completed remedial measures LTP1 and LTP2. A summary of the LTP3 projects and status is included in Table 6-7.

Table 6-8 Long-Term Projects[1]

Region	CIP Number	System	Facility	Project Description	Status
East	-	Culebras	Culebras WTP	Flow Meter	Completed
East	-	Río Blanco	El Duque WTP	WTP rehabilitation	Completed
East	3-40-6005	Juncos Urbano	Ceiba Sur WTP	WTP rehabilitation	In progress
East	-	Juncos Urbano	Quebrada Grande WTP	WTP rehabilitation	Completed
North	2-38-6049	Canalizo	Canalizo WTP	Improvements and expansion	In progress
North	2-20-6107	Frontón	Frontón WTP	Expansion of WTP: installation of 1.0 MGD module including storage tank, treatment, and telemetry system	In progress
North	2-38-6049	La Pica	La Pica WTP	WTP elimination and water transfer to another facility	In progress
West	5-48-6006 5-48-9001	Monte del Estado	Monte del Estado WTP	Intake and WTP rehabilitation	In progress

[1]Source: QSARs Number 62 through 65.

During FY2024, Infrastructure Department continued to move forward with pending LP3 projects and these projects have been assigned a CIP number.

The Continuous Monitoring Program is implemented at all WTPs. At each filter, effluent, and combined filter effluent, turbidity analyzer equipment is installed for continuous monitoring and data reporting to the PRDOH. Also, an in-line chlorine residual analyzer is installed before the first customer for continuous monitoring and data reporting to regulatory agencies. In addition, PRASA calculates and reports the CT as part of the Continuous Monitoring Program monthly requirements. PRASA continues to perform field verification of continuous monitoring equipment installed in treatment facilities to ensure its adequacy and condition for accurate data gathering, reporting, and regular maintenance procedures. In some facilities, equipment was installed in safety hazard locations, limiting its assessment. CIP projects will include these deficiencies as part of the facilities' improvements.

PRASA developed and implemented the Optimization Program and site visits to the water facilities. In addition, the program was expanded to include procedures to reduce, manage and maintain DBPs. PRASA established process controls for reducing turbidity and organics at WTPs. Currently, PRASA continues identifying resources to perform studies and evaluations for chemical optimization. PRASA implemented preventive measures on those systems with frequent DBP violations. The progress and status of the program are summarized in QSAR reports.

6.5.1.2.2 Preventive Measures

As stipulated in the Agreement, the Preventive Measure Program is intended to prevent future violations in Potable Water Systems (PWS). The program requires implementing preventive measures to establish operational controls and vigilance measures to eliminate or minimize violations for the following parameters: Bacteriology, Turbidity, DBPs, and Nitrates. During the evaluation period, PRASA complied with the preventive measures for Bacteriology Turbidity, and Nitrates. However, PRASA continues to evaluate and execute operational adjustments to systems with exceedances in DBPs, including but not limited to pre- and post-chlorine application, CT calculations, continuous flushing program, sample point relocations, and training. Due to the effort over the years in establishing practices and protocols in addition to training, DBPs have become part of the routine operations of PRASA staff.

6.5.1.2.3 Integrated Maintenance Program and Standard Operating Procedures

The IMP aims to ensure the PWSs are operated and maintained in optimum condition. Minimum program requirements established in the Agreement include equipment logs, record keeping/archives, log sheets of activities, maintenance schedule, inventory and storage, and repairs action plan. As the QSARs indicate, this program is fully implemented, while PRASA maintains metrics and monitors its execution utilizing SAP PM software. The following initiatives were included in FY2024:

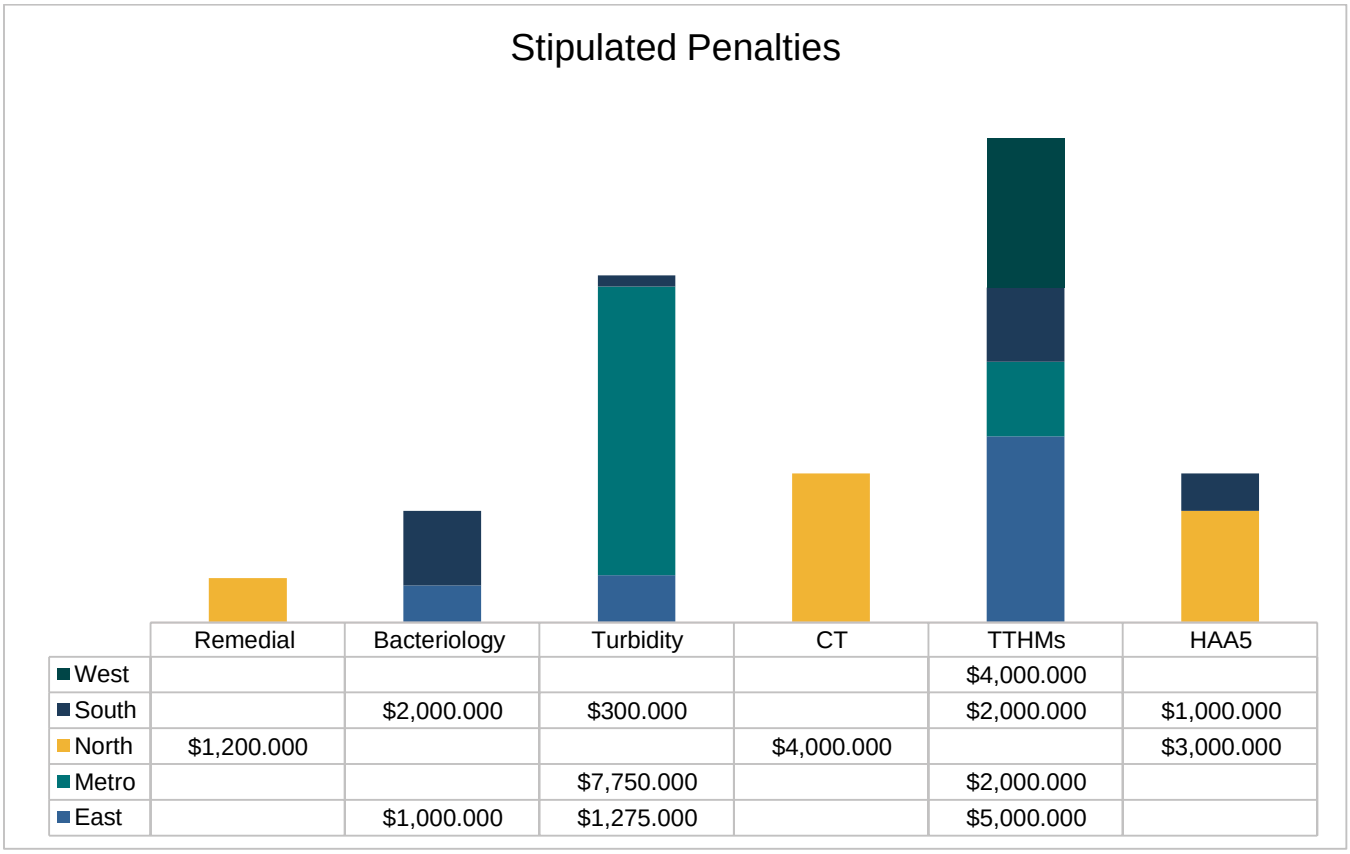
- Revised scope for 13 projects that went to bid. Three were adjudicated in FY2024.
- Revising training modules based on updated procedures. This is expected to be completed in FY2025.
- Completed training of Procedures of Emergency Generators to PRASA Operations personnel.
- In the process of offering training in “Procedimiento 453 Programa de Calibración”.
- Completed updates of “Procedimientos y Manual de Mantenimiento”. Currently pending approval.
- Ongoing effort to encourage the utilization of SAP PM at the WTPs and WWTPs. Currently a refresher training is being offered and is expected to be completed in FY2025.
- Completed site visits to WWTPs as part of the CCP. Currently finalizing the reports and cost estimates.
- In the process of contracting services for training in corrosion control. The training plan is expected to be developed in FY2025.

6.5.1.2.4 Operators Training and Licensure

Operator Training and Licensure Program establishes that PRASA must train all operators and supervisors who work in a PWS and ensure that they are certified in a licensure category according to the facilities they are responsible for. In 2023, PRASA identified 211 employees required to be enrolled in the training program, for which there were still 11 employees pending to complete the training requirements. In 2024, PRASA identified a focal training group of 125 of which 64% have already completed it. PRASA is working with the HR Department to improve training participation.

6.5.1.2.5 Stipulated Penalties

PRASA incurred penalties for exceeding the primary standards, required deliverables, remedial measures, and credit for mitigation measures. Figure 6-5 illustrates the penalty distribution by category and region.



	Remedial	Bacteriology	Turbidity	CT	TTHMs	HAA5
West					$4,000.000	
South		$2,000.000	$300.000		$2,000.000	$1,000.000
North	$1,200.000			$4,000.000		$3,000.000
Metro			$7,750.000		$2,000.000	
East		$1,000.000	$1,275.000		$5,000.000	

Figure 6-5 Stipulated Penalties

During the period evaluated, the penalties amounted to $34.525. As depicted in Figure 6-6, the Primary Standard TTHM category was 38% of the total penalties amount, while Remedial Measures were 3% of the total amount.

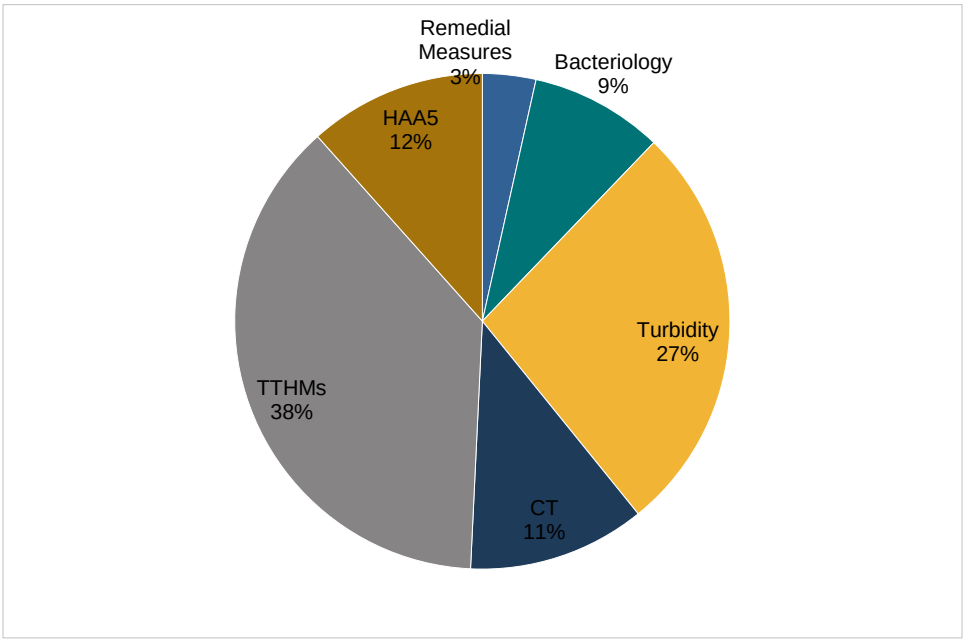
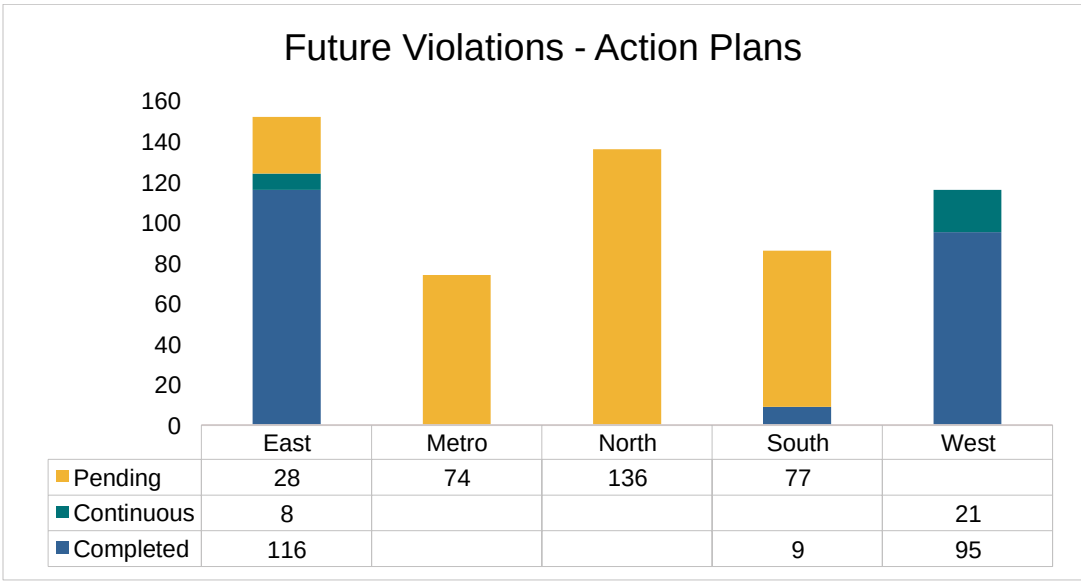


Figure 6-6 Penalty Category Percentage

6.5.1.2.6 Future Violations – Action Plans

The Future Violations Program requires implementing action plans approved by PRDOH that include remedial and/or corrective measures to address non-compliance and systems incurring violations of DPBs, TOC, Long-Term 2 Enhance Surface Water Treatment Rule (LT2ESWTR), and exceedances to lead and copper action level. Figure 6-7 illustrates the number and status of Action Plans by region.



	East	Metro	North	South	West
Pending	28	74	136	77	
Continuous	8				21
Completed	116			9	95

Figure 6-7 Future Violations – Action Plans by Region

There are 315 pending action plans as of the end of FY2024. PRASA is working to address the pending action plans and, in some cases, has requested time extension to the regulatory agency to meet the requirements.

Following the Agreement, once the action plans are developed and approved, PRASA and PRDOH shall request the USDOJ to file a joint motion for remedial measures action plan to become part of the Settlement Agreement formally.

During the period evaluated, the following joint motions were issued to the USDOJ:

- Juncos Urbano remedial measures and interim measures.
- Supplementary project WWTP III time extension and approval.
- Interim measures: Ceiba Sur, Mal Paso, and Río Prieto WTPs.
- Morovis Sur remedial Measure Amendment.
- Roncador WTP improvement to filter to waste.
- Lares Urbano and Utuado Urbano WTPs rehabilitation of filters.
- Esperanza and WTP remedial measure amendment.
- Quebrada WTP remedial measure amendment.
- Ceiba Sur WTP interim measures for filter backwash.
- Pilot study certification for the aeration technology in the WST in the Metropolitano water system.
- Long Term 3 remedial measures for Canalizo and La Pica water systems.
- Lares Espino remedial measure amendment.
- Ponce Nueva and Coto Laurel remedial measures TTHM-HAA5/TOC.

6.5.2 Current Applicable Drinking Water Regulations

PRASA is subject to the SDWA requirements of 1974, as amended in 1986 and 1996. The amendments extended the regulatory responsibility of the USEPA to set national health-based standards for drinking water to protect against natural-occurring and man-made contaminants that may be found in drinking water. SDWA amendments enhanced the existing law by recognizing source water protection, operator's training, funding, and public information as important components for safe drinking water.

Applicable regulatory requirements for PRASA and implementation status are summarized in *Table* 6-9.

Table 6-9 Regulatory Requirements

Regulatory Requirement	Summary of Requirements	Implementation Status
Surface Water Treatment Rule	Require systems that use surface water sources or groundwater sources under the direct influence of surface water (GWUDI) to filter and disinfect water sources.	Implemented
LCRR	The Lead and Copper Rule was revised in 2021. Requires systems to develop a service line inventory to identify and remove lead service lines (LSL) to eradicate potential exposure to lead in drinking water. Further revisions of the rule denominated as LCRI compliance date is November 2027.	In progress
Revised Total Coliform Rule	The Total Coliform Rule requires water systems to routinely monitor for total Coliforms at specific locations throughout the distribution system.	Implemented

Regulatory Requirement	Summary of Requirements	Implementation Status
Disinfectants and Disinfection By-products Rule (Stages 1 and 2)	This rule regulates levels of disinfectants and disinfection by-products. USEPA expects to finalize the rule revision by February 2028.	Implemented
Consumer Confidence Report (CCR) Rule	Requires PRASA to issue an annual report on treated water quality to its consumers. The final revised rule was published on May 14, 2024. Compliance effective date in 2027.	Implemented
Ground Water Rule (GWR)	The GWR is designed to reduce disease incidence associated with harmful microorganisms in drinking water and enhance groundwater users' protection from fecal contamination.	Implemented
Chemical Contaminants Rules	The Chemical Contaminant Rules regulate over 65 contaminants in three categories: inorganic contaminants, volatile organic contaminants, and synthetic organic contaminants.	Implemented
UCMR	The SDWA requires that once every five years, the USEPA issues a new list of no more than 30 unregulated contaminants to be monitored by select public water systems. UCMR 5 requires sample collection for 30 chemical contaminants with a sampling schedule from 2023 through 2025. UCRM5 sampling is ongoing.	Implemented
PFAS National Primary Drinking Water Standard	EPA established a final maximum contaminant level (MCLs) of 4.0 nanograms per Liter (ng/L) or parts per trillion (ppt) for PFOA and PFOS. For PFHxS, PFNA, and GenX Chemicals, MCL is 10 ppt and 1 (unitless for mixtures containing two or more of these chemical contaminants, meaning any combination exceeding that index would be considered a violation).	In progress

The UCMR 5 was published on December 27, 2021. UCMR 5 requires sample collection for 30 chemical contaminants between 2023 and 2025 using analytical methods developed by USEPA and consensus organizations. Consistent with USEPA's PFAS Strategic Roadmap, UCMR5 will provide new data that is critically needed to improve USEPA's understanding of the frequency in which 29 PFAS are found in drinking water systems and at what levels. This data will ensure science-based decision-making and help prioritize the protection of disadvantaged communities. UCMR5 sampling efforts are ongoing.

PFAS are man-made chemicals used in various industries and consumer products, such as carpeting, apparel, upholstery, food paper wrappings, fire-fighting foams, and metal plating. PFAS are prevalent in the environment, and studies have shown them at extremely low levels to have adverse human health effects. The final rule was published on April 10, 2024. USEPA established legally enforceable levels for six PFAS in drinking water: PFOA, PFOS, PFHxS, PFNA, and HFPO-DA as contaminants and PFAS mixtures containing at least two or more of PFHxS, PFNA, HFPO-DA, and PFBS. According to the UCMR5 Data Finder, PRASA has sampled approximately 73 water systems. The final rule requires:[5]

- Public water systems must monitor for these PFAS and have three years to complete initial monitoring (by 2027), followed by ongoing compliance monitoring. Water systems must also provide the public with information on the levels of these PFAS in their drinking water beginning in 2027.

[5] https://www.epa.gov/sdwa/and-polyfluoroalkyl-substances-pfas

- Public water systems have five years (by 2029) to implement solutions that reduce these PFAS if monitoring shows that drinking water levels exceed these MCLs.
- Beginning in five years (2029), public water systems that have PFAS in drinking water that violates one or more of these MCLs must take action to reduce levels of these PFAS in their drinking water and must provide notification to the public of the violation.

Note that PRASA is evaluating the availability of funds in the BIL to assist with implementing the LCRR and PFAS regulatory requirements. In addition, PRASA may identify additional CIP needs to bring the water system into compliance with the Stage 2 Disinfection Byproducts Rule (DBPR). PRASA is implementing changes in its O&M practices to bring or maintain the PWSs in compliance. Further, PRASA became one of the defendants in the case *In RE: Aqueous Film-Forming Foam Products Liability Litigation*, MDL Number 2: 18-mn-2873 (RMG), 2: 23-cv-02352 (RMG), with the Commonwealth of Puerto Rico and other government agencies. PRASA is requesting damages from several PFAS manufacturers regarding PFAS contamination in its raw water, which could impact the treatment of its drinking water and the treatment of its wastewater. PRASA has accepted settlement offers from DuPont and 3M groups, which money will be used to bring the systems into compliance with the new regulation, among other things. The amount of money to be awarded to PRASA will be determined at a later date since damages will be computed using a formula taking into account all the plaintiffs that will participate in the settlement, the amount of contamination found, and water flow in the systems.

6.5.3 Current Applicable Wastewater Regulations

PRASA is subjected to the CWA enacted in 1948, reorganized, and expanded with amendments in 1972. The CWA establishes the structure for regulating the discharging of pollutants into the waters of the U.S. and regulating quality standards for surface waters. As a result, the NPDES permit program was developed to control what a municipal facility can discharge and establishes monitoring and reporting requirements and other stipulations to protect human health and the environment. PRASA has NPDES permits in place for all WWTPs and STS facilities that meet the criteria as required by the regulation. Also, PRASA performs sampling for parameters at the required frequency as established on the NPDES permit, and reporting procedures are recorded on the DMRs. PRASA's Compliance Department has a procedure implemented to ensure NPDES permit renewal occurs within the required period.

Regarding biosolids requirements, the Standards for the Use or Disposal of Sewage Sludge regulates sewage sludge applied to land, fired in a sewage sludge incinerator, or placed on a surface disposal site. It includes pollutant limits, requirements for pathogen and vector attraction reduction, management practices, monitoring, recordkeeping, and reporting, among other requirements. The constituents removed in wastewater treatment plants, composed primarily of grit, scum, sediment, and biological solids, are known as sludge or biosolids, depending on whether they have been stabilized or not. PRASA performs Semi-annual Compliance Report Sludge Management per the 40 CFR Part 503 of the Code of Federal Regulations.

Although several sludge handling methods are in use, a thorough evaluation is necessary to develop a sustainable solution for the overall program. Continued dependence on landfilling of wastewater solids could place PRASA's wastewater and water treatment operations in jeopardy, depending on the capacity and availability of current landfills. Improving the diversity of sludge management by PRASA will require investment in capital and operation and maintenance resources for existing operations and future facilities.

6.6 Future Regulations and Other Regulatory Requirements

The CIP was evaluated for adequacy to comply with future regulations and other regulatory requirements that could impact compliance limits for PRASA's water and wastewater facilities. Concerning the water systems' new discharge limits for residual chlorine, total nitrogen, and total phosphorus, PRASA mostly uses interim limits due to its inability to meet the stringent permit limits. Despite PRASA's compliance with the interim limits, the permit limits established for the parameters are very restrictive. They have resulted in a challenge for PRASA to implement available treatment technologies to comply with the permit requirements. PRASA is evaluating available technologies and/or the consolidation of facilities that could be considered to meet permit requirements. In addition, this challenge has been brought up to the regulatory agencies to explore alternatives to re-evaluate these stringent permit limits.

Regarding wastewater collection systems, PRASA has indicated that once the sewer system improvements in the Puerto Nuevo RWWTP service area are completed, it will expand the program to the rest of the Metro Region and, eventually, to the rest of the island (where applicable). At this time, PRASA does not have a specific timeframe for when this will occur.

6.6.1 Water Future Regulations and Rule Revisions

Regarding the water system, future regulations for PWSs will continue to become more stringent. The following regulatory actions will impact PRASA's water system operations and resources in the future.

- LCRR/LCRI
- CCR Rule
- DBP
- UCMR 6

6.6.1.1 Lead and Copper Rule Revision & Improvements

The USEPA revised the federal Lead and Copper Rule (LCR) on January 15, 2021. USEPA's new LCRR strengthens every aspect of the LCR to better protect communities and children in elementary schools and childcare facilities from the impacts of lead exposure. By October 16, 2024, the LCRR will require community water systems (CWSs) and non-transient non-community water systems (NTNCs) throughout the U.S. to inventory service lines and determine the material of those lines and fittings. On January 20, 2021, federal Executive Order 13990 directed all federal agencies to undertake review and action. Consequently, USEPA delayed the effective and compliance dates established in the LCRR to December 16, 2021, and October 16, 2024, respectively. Furthermore, as USEPA promulgated the revisions to the LCRR under the LCRI some of the rule requirements were delayed to November 1, 2027. Table 6-10 includes the summary of key LCRR/LCRI requirements and the compliance status.

Table 6-10 Lead and Copper Rule Revision/Improvements Summary

Action	Description	Compliance Deadline	Status
Action Level and Exceedances	• Action level of 0.015 milligrams per liter (mg/L) maintained. • New "trigger level" of 0.010 mg/L if exceeded at the 90th percentile. • Additional monitoring, corrosion control treatment (CCT), LSL replacement, and public education to reduce lead in drinking water before exceeding the action level.	November 1, 2027	Not Started
Initial Lead Service Line Inventory	• Develop a service line inventory (USEPA Template). • Create and maintain a the publicly accessible inventory.	Due on October 16, 2024	Completed
Baseline Inventory	• Builds on the initial inventory • Must include information identified on connectors • Any updates or new information on the service line material and locations	November 1, 2027	Not Started
Validation of non-lead service lines	• Must validate a sub-set of the non-lead service lines	December 31, 2034	Not Started
Lead Service Line Replacement Plan (LSLR)	• LSLR Plan must be posted online • All LSL and Galvanized Requiring Replacement (GRR) must be replaced within a 10 year timeframe.	November 1, 2027	In progress
Tap Sampling	• Shifts tap compliance sampling to locations with the highest lead, requiring systems to collect from 100% LSL sites, if available.	January 1, 2028	Not Started
CCT	• Systems with existing CCT that exceed the Action Level or Target Level would be required to conduct a CCT study.	November 1, 2027	Not Started
Tier 1 Public Notice Notification	• Systems with a 90th percentile lead level or customers whose individual lead tap samples exceed 0.015 mg/L must notify customers within 24 hours.	Due on October 16, 2024	Completed
Distribution System and Site Assessment (DSSA)	• Any lead sample (compliance or voluntary) that exceeds 0.010 mg/L, systems would be required to sample water quality parameters within five days and collect a follow-up lead tap sample within 30 days to "find" the cause and then "fix" it within the utility control.	November 1, 2027	Not Started

Action	Description	Compliance Deadline	Status
Schools and Childcare Facilities	• CWSs would need to collect lead samples annually at 20 percent of all schools and childcare facilities.	November 1, 2027	In progress

At PRASA, this effort is being led by the Infrastructure Department with the support of the Compliance Department to ensure compliance with the regulatory requirements. In FY2024, PRASA contracted a consultant to provide services for the development of the service line inventory and other components of the rule. PRASA complied with compliance requirements that were due on October 16, 2024, while continuing proactively working on other aspects of the rule. Final LCRI was published in October 2024 and herein below is a list of the changes:

- Lead action level was reduced to 10 micrograms per liter (µg/L) and removed the triggered level
- Mandates all Lead and GRR service lines replaced within 10 program years (by December 31, 2037)
- Requires connectors in a “Baseline Inventory”
- Requires systems to validate certain non-lead service lines by December 31, 2034
- Must have a complete (no unknowns) inventory by replacement deadline
- Maintains many of the LCRR and Draft LCRI requirements

6.6.1.2 Consumer Confidence Report Rule Revision[6]

The CCR Rule was first promulgated in 1998. The CCR, sometimes called a “Drinking Water Quality Report,” summarizes information about the local drinking water. The rule requires water systems to deliver a CCR to all consumers by delivering a physical copy of the CCR itself or by electronic means, including delivering a notification that the CCR is available by mail or by sending an electronic copy. To expand the reach of the CCR, the rule also requires water systems to make a “good faith” effort to deliver the CCR to non-billpaying consumers. The AWIA of 2018 triggered the CCR revision mandated by Congress. The revisions should improve the readability, clarity, and understandability of CCRs as well as the accuracy of the information presented, improve risk communication in CCRs, incorporate electronic delivery options, provide supplemental information regarding lead levels and control efforts, and require systems that serve 10,000 or more persons to provide CCRs to customers biannually (twice per year).

CCR's final revised rule was promulgated on May 15, 2024, establishing three years for compliance effective date. Starting in 2027, CWS has to meet the new requirements and shall begin reporting compliance monitoring data. These reports must be easier to read and support access to translations in appropriate languages while enhancing information about lead in drinking water. PRASA started conversations regarding planning, resources, and logistics in order to prepare for the 2027 compliance date.

6.6.1.3 Disinfection By-Products Rule Revision

USEPA is currently working towards proposing revisions to the Microbial and Disinfection Byproduct (MDBP) rules, including the Surface Water Treatment Rules and Stage 1 and Stage 2 Disinfectants and DBP Rules. These revisions aim to cover eight contaminant candidates and focus on various aspects, such as setting minimum

[6] https://www.epa.gov/ccr/consumer-confidence-report-rule-revisions

numeric limits for disinfectant residuals, reducing risks from pathogens, improving chloramination, and addressing water quality challenges for consecutive systems. USEPA plans to publish a proposal in the summer of 2025 and finalize the revisions by February 2028, following engagements with relevant organizations and consultations to ensure the proposed rules align with public health protection goals and address concerns regarding data support and implementation capacities within the water utility sector. These efforts aim to enhance public health protection while considering the trade-offs between microbial reduction and DBP formation.

6.6.1.4 UCMR 6

The UCMR was designed to evaluate and prioritize contaminants for inclusion in federal drinking water regulations to protect public health. The rule intends to document the occurrence of the contaminants on the Candidate Contaminant List (CCL) to determine if future regulation is warranted. The anticipated rule proposal date is expected mid-late 2025, and the final rule in late 2026. The sampling schedule is anticipated to be from 2028 – 2030.

6.7 Conclusions

PRASA's comprehensive six-year CIP addresses the System's needs and fulfills PRASA's commitments to reconstructing the damage caused by the 2017 Hurricanes, Hurricane Fiona, the earthquakes, and regulatory requirements. The CIP encompasses a wide range of projects identified by PRASA, as mandated by the Consent Decree and Settlement Agreement, to meet current and future needs. It allocates funding for minor and major repair projects in various categories. Most of the projected CIP investment over the six years is dedicated to Reconstruction and Recovery, Mandatory Compliance, and Mitigation and Resiliency projects. PRASA's six-year CIP also provides funding for essential quality improvements and other infrastructure projects, including water meter replacement, fleet, generators, nonmandatory compliance, and safety measures, which are crucial for maintaining and preserving utility assets.

While PRASA has made initial efforts to assess the potential impact of forthcoming regulations, the full extent of their impact on PRASA's System remains uncertain. Some regulations may necessitate minor process adjustments, while others may require significant capital investments, such as constructing new treatment processes or intensive repair and replacement programs. PRASA remains attentive to potential future regulations, including the LCRR and PFAS, which could affect the System and compliance requirements. PRASA has encountered additional compliance challenges concerning NPDES permit limit requirements for WWTPs and STS at the WTPs. In recent years, NPDES permit limits have become more stringent for certain parameters like total nitrogen, total phosphorous, and residual chlorine, among others. PRASA is conducting investigations and analyses to explore viable alternatives while maintaining open lines of communication with regulatory agencies to ensure future compliance.

However, as the impact of future regulations becomes clearer and NPDES permit limits become more stringent, modifications to the CIP may be necessary to address the resulting needs adequately. Consequently, the reprioritization of CIP requirements and implementation schedules will depend on PRASA's financial capacity.

7 Insurance Program

7.1 Introduction

Section 7.08 of the MAT establishes that “PRASA shall employ an insurance consultant to review the insurance program of the Authority from time to time (but not less frequently than biennially). If the insurance consultant makes recommendations for the increase of any coverage, PRASA shall increase or cause to be increased such coverage following such recommendations, subject to a good faith determination of PRASA that such recommendations in whole or in part are in its best interest.”

Arcadis has reviewed PRASA's current insurance coverage as per the provided policies and determined the adequacy of the received policies considering the type and value of PRASA's fixed assets. Also addressed in the following sections are some outstanding recommendations for PRASA's insurance coverage from previous evaluations. For FY2024, PRASA's Broker of Record (BOR) is Fedelta Insurance, except for the Property policy, which Lone Star handles. The data, opinions, and comments included in this section have been based solely on PRASA’s copies of policies for the 2023-2024 period provided by PRASA for this purpose unless stated otherwise.

7.2 Risk Management

The risk is loss exposure. It is the chance of something happening that will lead to a loss or an undesirable outcome; it is measured in terms of consequences and likelihood. Risk management is an effective process directed toward managing risks and hazards to produce a desired set of results.

The treatment of risk takes the following forms:

- Loss Control:
  - Elimination or reduction of risk by physical, technical, or mechanical means, loss prevention techniques, and loss prevention engineering.
- Contractual transfer:
  - Hold harmless agreements and indemnity agreements in contracts with suppliers, contractors, service providers, and customers agreements.
- Transfer of risk through insurance:
  - Self-insurance.
  - Insurance policies and coverage available from insurance companies.
  - Insurance products and programs available from FEMA and the Government of Puerto Rico, including workers' compensation and health/medical coverage, among others.

7.2.1 PRASA Insurance and Risk Department

The risk management function is an integral part of the management function. Within PRASA, all departments, at all levels, perform risk identification and treatment in conformity with local and federal regulations, including the Occupational Safety and Health Administration (OSHA) regulations. Risk management is applied by employing

independent engineering and consulting firms in planning, design, and construction and by implementing excellence in practices and processes. New construction is carried out following applicable building codes and regulations.

7.2.2 Identification of Risk

The risks affecting PRASA can be broadly categorized as follows:

1. Risks to property, facilities, and physical assets from natural and human causes.
2. Financial risks arising from damage to or loss of physical assets, such as loss of income, interruption of operations, and increased operating expenses to continue operations.
3. Financial risks resulting in management liability related to economic downturns.
4. Regulatory issues that might result in liability or service interruption.
5. Theft of owned and non-owned property.
6. Theft of water production.
7. Liability risks, including suits from third parties for injury or loss of property, fines/penalties, injuries caused by vehicles or properties, advertising injury, products, libel, slander, false arrest/detainment, and injuries occurring on or off-premises.
8. Pollution liability claims and fines.
9. Public authority/errors and omissions liability arises from the financial loss incurred by others that do not result in physical injury to persons or property.
10. Reputation risk includes incidents, events, or human actions that seriously damage the organization's image and reputation.
11. Epidemic or pandemic that causes widespread injury or sickness to PRASA employees.
12. Kidnap, ransom, extortion risks.
13. Privacy and cyber liability arising from alleged failure to secure customer data adequately.
14. Acts of terrorism affecting PRASA's facilities or customers.
15. Strikes and labor unrest cause loss of income, interruption of operations, and increased operating expenses to continue operations.

7.3 Insurance Program Assessment

7.3.1 Property Insurance

The following are the findings and recommendations under the Commercial Property Program currently placed through MAPFRE PRAICO Insurance Company (MAPFRE) and London Markets for policy from April 1, 2023 to April 1, 2024:

- PRASA's schedule of values amounts to $11,021,002,890 of property. PRASA’s property is insured by a primary policy ($150,000,000) issued by MAPFRE (42% of participation) and London & International Markets (58% of participation) in the policy as subscribers, meaning they have agreed to bear their specific percentage portion of each loss. It also includes a First Layer ($150,000,000 XS $150,000,000) on both Insurance companies at the same participation.
- Coverage is written on an “all risks” basis. The policy insures real property (dams, WTPs, WWTPs, WSTs, WPSs, WWPSs, meters, wells, and buried infrastructure), business personal property, and covers business interruption resulting from covered physical damage/loss to the property for up to 18 months.

Major policy limits and deductibles are shown in Table 7-1.

Table 7-1 Property Coverage, Limits, and Deductibles

Coverage	Limit	Deductible
Total Insurable Value (TIVs)	$11,021,002,890 Real Property: $10,321,002,890 Personal Property: $100,000,000 Business Interruption: $600,000,000	As stated below.
Property – All Other Perils (AOP) (including Data Processing, In Transit, and Equipment Breakdown)	$150M per occurrence, combined single limit for property damage and business interruption, excess of applicable deductibles.	$100M combined for property damage and business interruption, including extra expenses.
Windstorm	Included in the $150M limit.	$100M combined for property damage and business interruption, including extra expenses.
Earthquake	$300M combined single limit for property damage and business interruption, excess of applicable deductibles.	$100M combined for property damage and business interruption, including extra expenses.
Flood	$300M combined single limit for property damage and business interruption, excess of applicable deductibles.	$100M combined for property damage and business interruption, including extra expenses.
Business Interruption	Within $150M for AOP, including wind and $300M EQ and flood coverages.	$100M combined for property damage and business interruption, including extra expenses.
Extra Expense	Within $150M property for AOP, including wind, and $300M EQ and flood coverages.	$100M combined for property damage and business interruption, including extra expenses.
Contingent Business Interruption	Within $150M property for AOP, including wind and $300M EQ and flood coverages, subject to a $35M sub-limit.	$100M combined for property damage and business interruption, including extra expenses.
Newly Acquired Locations	Included in $150M property for AOP, including wind, and $300M EQ and flood coverages.	$100M combined for property damage and business interruption, including extra expenses.
Boiler and Machinery	Included in $150M property primary layer.	$100M combined for property damage and business interruption, including extra expenses.

Coverage	Limit	Deductible
Asbestos Sublimit	$1,000,000	$100M combined for property damage and business interruption, including extra expenses.
Professional Fees Sublimit	$2,000,000	$100M combined for property damage and business interruption, including extra expenses.

7.3.2 Policy Observations and Recommendations

This section summarizes previous observations and recommendations made by Marsh Saldaña (Marsh) related to the policy coverage.

1. The named insured under the extended named insured and conditions (page 10 of 145 in the pdf) of the property program should read as follows: “Autoridad de Acueductos y Alcantarillados de Puerto Rico and/or Government of Puerto Rico and/or Gobierno de Puerto Rico Departamento de Hacienda c/o Area de Seguros Públicos and/or PRASA and/or Government of Puerto Rico and/or Government of Puerto Rico Department of Treasury c/o Bureau of Public Insurance and/or any subsidiaries, affiliated associated, newly acquired or controlled Company and or corporation and or individuals as may now be constituted or hereafter formed, as their respective interests may appear for which the Named Insured is responsible for placing insurance and for which no other specific insurance is provided.”
2. The business description throughout the policy contract currently reads Water Company. It is recommended that it be amended to the following: “Water and Wastewater Company, including but not limited to, Dams, Water Manufacturing, Water and Wastewater Treatment Plants including intakes, Water and Wastewater Filtering Plants, and Distribution System, including tanks and pump stations, as per Law 40 of May 1st, 1945, as amended.”
3. To make sure the insurer does not use the “Other Coverage” condition at the time of a covered loss, it is suggested that the following changes be included on the written declaration page, and elsewhere in the policy, stating the covered interests and property covered, considering that PRASA maintains an OCIP Builder’s Risk for its construction projects: “Real and Personal Property of the Assured, including owned, leased or rented, or in which the Assured has an assurable interest. This includes the property of others in the Assured’s care, custody, and control or for which the Assured is legally or contractually liable. Property of the Assured in the care, custody, and control of others, the interest of the Assured in the improvement and betterments to non-owned property, property in the course of construction, renovation, installation, erection or assembly, and while in transit.”
4. Deductibles: The property policy program has a deductible applicable per each occurrence, combined (property damage and business interruption) of $100M. The policy should include a lesser deductible to cover non-catastrophic perils like equipment breakdown (Boiler and Machinery), data processing equipment, transportation, etc.

   PRASA indicates that a change in deductibles on the policy will result on material premium increase; which at current time PRASA is hesitant to undertake.
5. Under Conditions, Item 6, Limit of Liability, in the second paragraph for the earthquake and flood first layer coverage, it is recommended that the phrase “(Not including wind-driven water)” be more specific and mention

that only windstorm-driven water is not included. Therefore, it should read "(Not including windstorm-driven water)".

PRASA indicates it as eliminated from policy after Maria Hurricane and to change it will result in an increase to the premium, thus PRASA did not include it in the current policy, Pending discussion with Insurance about future inclusion.

6. In the Property and Business Interruption Insurance section (page 20 of 145 in the pdf), Definitions, A, iii. Earthquake section, the term (consecutive hours) to determine "an occurrence" and the limits of liability and deductible applicable should be 168 hours, as per ISO Form CP 1040, Earthquake and Volcanic Eruption Endorsement, instead of the current 72 consecutive hours stated on the policy.

   PRASA states that it would not change the 72 hrs as it was approved by the insurance company and will have negative results to PRASA if changed. Recommendation will be eliminated.

7. It should be included on the policy that in the event of inconsistencies between coverage forms, general conditions, special conditions, clauses, or any other written document or statement that is part of the Policy, the broadest coverage, condition, and/or definition shall supersede any other.

   PRASA indicates that wording will be included in next policy renewal period, April 2025.

8. On the General Conditions, page 15 of 145 in the pdf, Item 7 Permissions, letter B, the 90-day reporting requirement condition to the insurer for additions, alterations, repairs, new construction, and/or premises should be deleted. Automatic coverage is already provided, without time limitation, during the policy period for "additional property and interests not exceeding five percent of the total insurable values" on page 18 of 145 in the pdf under Automatic Acquisition/Capital Additions.

   PRASA indicates that they will consult with the BOR and if deemed acceptable, it will be included in next policy renewal period, April 2025.

9. On the General Conditions, page 16 of 145 in the pdf, Item 9 Cancellation, discrepancies were found between the policy and certain insurance requirements in the Bureau of Public Insurance of the Treasury Department. The 45-day cancellation notice from the insurer and the methods for determining premium refunds on the policy contradict the Bureau of Public Insurance requirements. According to the Bureau of Public Insurance, the insurer should give a written cancellation notice with at least 90 days prior notice instead of the 45 days stated on the policy.
   a. In the event of non-payment of premiums, a 90-day written notice is provided by the Bureau instead of the 10 days given in the policy.
   b. With respect to any "unearned premium", the methods for determining premium refunds should always be on a "pro-rata basis", with no distinction of who elects to cancel the insurance program instead of the short rate calculation stated on the policy.
   c. In the sixth paragraph, which relates to the period of limitation for cancellation notices being void by "any law controlling the construction thereof", it is recommended to include after "law" "or any requisite of the Bureau of Public Insurance of the Treasury Department."

   PRASA indicates that they will consult with the BOR and if deemed acceptable, it will be included in next policy renewal period, April 2025.

10. Under the General Conditions, on page 17 of 145 of the pdf, Item 15 Misrepresentation and Fraud, the word "Assured" is too broad and should be limited to executive officers, risk managers, or the person designated by the insured.

    PRASA indicates that wording will be included in next policy renewal period, April 2025.

11. Under the General Conditions, on page 17 of 145 of the pdf, Section 17 Dispute Provisions, Item A and B, limits the ability of PRASA to present a suit in the event of a dispute against the carrier, and it further states that "in the event of the failure of the insurers hereon to pay any amount claimed to be due hereunder, the insurers hereon, at the request of the assured, will submit to the jurisdiction of a court of competent jurisdiction within the United States. It should clearly state that Puerto Rico should be considered the only competent jurisdiction within the United States. We recommend that the wording be amended to read as follows: "will submit to the exclusive jurisdiction of the courts of Puerto Rico."

    PRASA indicates that they will consult with the BOR.

12. Under the General Conditions, on page 19 of 145 of the pdf, Section 24, Off Premises Services Clause, includes an exclusion for overhead transmission lines. It is recommended that said exclusion be deleted.

    PRASA indicates that they will consult with the BOR and if deemed acceptable, it will be excluded in next policy renewal period, April 2025.

13. Under the General Conditions, on page 19 of 145 of the pdf, Section 26, Joint Loss Clause, states that this condition applies "in the event of loss of or damage to property and a disagreement between the insurers of this policy and the insurers of the boiler and machinery policy ….". Only one policy covers both risks; therefore, this Condition should be eliminated.

    PRASA indicates that they will consult with the BOR and if deemed acceptable, it will be included in next policy renewal period, April 2025.

14. Under the General Conditions, on page 21 of 145 of the pdf, Property Excluded, the following modifications are recommended to be made to the exclusions:
    a. Glass should not be excluded.
    b. Excavations, grading, and fillings must be included as property covered. The total insurable costs for buried infrastructure is $5.287 billion, according to the valorization conducted by Malcolm Pirnie in 2006. This represents 51% of the total real property replacement cost insurable values and 48% of the program's total insurable values, including excavation, grading, and filling costs. Therefore, this exclusion should be deleted from the policy contract, or an adjustment in insurable values should be conducted.
    c. Above-ground electrical transmission and distribution lines, poles, and related equipment shall always be covered, regardless of their distance (currently limited to less than 1,000 feet) from assured's generating facilities.

    PRASA will discuss recommendation with BOR and find a proper language to address recommendation and include pipelines and underground infrastructure; but also limit exclusion on excavations to avoid confusion in limit to construction projects.

15. Under Property & Business Interruption Insurance (page 20 of 145 of the pdf), Section 1 Insuring Agreement, states that "the policy insures against all risk of direct physical loss or damage occurring during the policy period to property insured from any external cause except as hereafter excluded ….". Therefore, it is recommended that the word "external" be eliminated.

    PRASA indicates that recommendation will be included in next policy renewal period, April 2025.

16. Page 35 of 145 of the pdf, Addendum B, Asbestos Endorsement, is currently excluded from the listed perils, which it is recommended to be included.

    PRASA indicates that they will consult with the BOR and if deemed acceptable, it will be included in next policy renewal period, April 2025.

7.3.3 Recommendations Unrelated to Policy Contract

This section summarizes previous observations and recommendations made by Marsh unrelated to the policy contract for the policy coverage.

1. The insurable values stated in the policy program are the same as in 2013, based on the cost appraisal performed by Malcolm Pirnie in 2006. Therefore, factors like PRASA's CIP, inflation, acquisitions, etc., have not been considered for at least 16 years. It is strongly recommended that PRASA undertake a new valorization of its assets.

   PRASA states that new valuation is ongoing.

2. The current Probable Maximum Loss (PML) estimates for PRASA for quantifying catastrophic risk exposures were performed in 2010 by Marsh through AIR Worldwide Corporation, based on a valorization study from 2006. Since then, modules, maps, and projections have changed, and new modules might prove economically beneficial to PRASA. This study will provide PRASA and its stakeholders with a scientific report representing the maximum foreseeable loss from catastrophic events, considering various scenarios in terms of intensity and return periods, corroborating if the current limits of insurance carried are adequate or if adjustments shall be made. This analysis may assist PRASA in complying with FEMA's insurance requirements. It is strongly recommended that PRASA undertake a new PML study, which should be performed after a new valorization of PRASA's assets is conducted since any changes in the values of all insurable assets will affect the outcome of this study.

7.3.4 Crime

PRASA maintains a commercial crime policy issued by Chubb Insurance Company (Chubb), providing the coverage and limits shown in Table 7-2 for losses discovered during the policy period.

Table 7-2 Crime Coverage, Limits, and Deductibles

Coverage	Limit	Deductible
Employee Dishonesty	$1M	$50,000
Employee Retirement Income Security Act (ERISA) Extension	$500,000	$0
Forgery or Alteration	$1M	$50,000
On-Premises	$1M	$50,000
Computer Fraud/Fraudulent Transfer Instructions	$1M	$50,000
Audit Expense - For Audit required by State or Federal bodies as a result of employee dishonesty	$150,000	$0
In transit	$1M	$50,000
Securities	$1M	$50,000

Coverage	Limit	Deductible
Claims Expense	$150,000	$0
Voice Initiated Transfer	$1M	$50,000
Voice Computer System Fraud	$1M	$50,000
Extortion Threat to Persons	$100,000	$50,000
Extortion Threat to Property	$100,000	$50,000
Money Orders	$1M	$50,000
Counterfeit Currency	$1M	$50,000
Policy Aggregate	$1M	

7.3.4.1 Crime Coverage Recommendations

This section summarizes previous observations and recommendations made by Marsh for commercial crime coverage but still pending.

1. PRASA should consider increasing the limits of the commercial crime policy in line with peers. Previous analysis indicates that benchmark limits carried by PRASA to those carried by peers and found that limits are well below the $10M in limits carried by peers.

   PRASA indicates that they will consult with the BOR and if the impact in premium is acceptable, it will be included in next policy renewal period, April 2025.

2. PRASA should consider purchasing an ERISA Bond. The commercial crime policy includes a $500,000 ERISA extension. The Employment Retirement Income Security Act of 1979 requires that the fidelity bond be placed with sureties that are Treasury-listed. ERISA bonds have a three-year term; the full-term premium is generally about $500.

   PRASA will analyze budget impact and purchase if possible.

3. PRASA should consider including social engineering coverage. Phishing attacks are a primary source of loss. Therefore, it is recommended that PRASA seek a policy offering this coverage extension. Generally, the same is sub-limited to $250,000. Please note that this coverage always carries a call-back provision, and internal procedures must be consistent with this requirement.

   PRASA indicates that they will consult with the BOR and if deemed acceptable, it will be included in next policy renewal period, April 2025.

4. PRASA should consider including readily available coverages not currently included in the commercial crime insuring agreements. For example, the full limit should also include incoming check forgery and depositors' forgery. In addition, credit debit or charge card forgery should be included.

   PRASA indicates that they will consult with the BOR and if deemed acceptable, it will be included in next policy renewal period, April 2025.

5. The commercial crime policy should be reviewed for inconsistencies in contract language. In addition, the second paragraph No. 6 Notice (page 7 of 57) should be eliminated so that the endorsements and policy forms are consistent with reporting requirements.

7.3.5 General Liability

MAPFRE issued PRASA's commercial general liability program with the limits detailed in Table 7-3. Aggregate limits apply per location, and construction project as per ISO forms CG-2504 (05-09) and CG-2503 (05-09) attached to the MAPFRE policy. A $100,000 self-insured retention (SIR), which contemplates indemnity and claims adjustment expenses, applies to each occurrence. This SIR has a $750,000 aggregate or limits to claims adjustment expenses. Once PRASA pays this amount, the insurance company will pay these claims expenses from the first dollar, and the SIR will apply to Indemnity payments only.

Table 7-3 General Liability Coverages and Limits

Coverage	Limit
General Liability – Each Occurrence	$1,000,000
General Liability – General Aggregate	$2,000,000
Personal and Advertising Injury	$1,000,000
Products-Completed Operations Aggregate	$2,000,000
Employer's Liability Stop-Gap	$1,000,000
Employee Benefits Liability	$1,000,000
Damage to Premises Rented to You	$250,000
Medical Expense	$10,000

7.3.5.1 General Liability Recommendations

This section summarizes previous observations and recommendations made by Marsh not addressed related to general liability coverage.

1. It is recommended that the extended name schedule endorsement be modified to read as follows to correct errors in the present form.
    a. "Autoridad de Acueductos y Alcantarillados de Puerto Rico and/or Government of Puerto Rico and/or Gobierno de Puerto Rico Departamento de Hacienda c/o Area de Seguros Públicos and/or PRASA and/or Government of Puerto Rico and/or Government of Puerto Rico Department of Treasury c/o Bureau of Public Insurance and/or any subsidiaries, affiliated associated, newly acquired or controlled Company and or corporation and or individuals as may now be constituted or hereafter formed, as their respective interests may appear for which the Named Insured is responsible for placing insurance and for which no other specific insurance is provided."

    PRASA indicates that wording modification will be included in the next policy renewal period, April 2025.

2. It is recommended that the “Damage to Premises Rented to You” limit be increased to at least $1,000,000. This is a very latent risk exposure given the large number of rented premises the insured occupies.

   PRASA indicates that it will have their BOR quote the $1M limit and compared to the current $250k limit.

3. It is recommended that terrorism coverage be considered under PRASA’s commercial general liability program. The commercial general liability program excludes coverage for any terrorist event. Considering the insured operations, an act of terrorism is an important and potentially severe exposure with considerable implications.

   PRASA to request quote an evaluate if it can be included.

4. It is recommended that the ISO Form CG 0300 (01-96) “Deductible Liability Insurance” be eliminated to avoid confusion as it is defined by the conditions of the “Special Conditions” Endorsement.

   PRASA indicates that they will consult with the BOR and if deemed acceptable, it will be excluded in next policy renewal period, April 2025.

5. It is recommended that the ISO Form CG 2142 (12-04) “Exclusion, Explosion, Collapse and Underground property Damage Hazard” be eliminated to avoid confusion as it is eliminated by the conditions of the “Special Conditions” Endorsement.

   PRASA indicates that they will consult with the BOR and if deemed acceptable, it will be excluded in next policy renewal period, April 2025.

6. Under the “Special Conditions” endorsement attached to the MAPFRE policy, it is recommended that the following amendments be performed.

   a. The first paragraph of this endorsement should read:

      i. “All the terms and conditions included in this Special Conditions Endorsement replace and supersede any other related or similar conditions contained anywhere else on this policy”.

   PRASA indicates it will be included in next policy renewal period, April 2025.

      ii. Broad Form Named Insured (page 2 of 9, Item 6) should read:

         “Autoridad de Acueductos y Alcantarillados de Puerto Rico and/or Government of Puerto Rico and/or Gobierno de Puerto Rico Departamento de Hacienda c/o Area de Seguros Publicos and/or PRASA and/or Government of Puerto Rico and/or Government of Puerto Rico Department of Treasury c/o Bureau of Public Insurance and/or any subsidiaries, affiliated associated, newly acquired or controlled Company and or corporation and or individuals as may now be constituted or hereafter formed, as their respective interests may appear for which the Named Insured is responsible for placing insurance and for which no other specific insurance is provided.”

   PRASA indicates it will be included in next policy renewal period, April 2025.

      iii. The language used under Erroneous Notice of Occurrence (page 4 of 9, Item 12) is confusing. Therefore, it is recommended that it be substituted with the following:

         “It is agreed that only an executive officer, risk manager, or person designated by the insured, shall be responsible to give notice to the insurer after knowing of an accident, occurrence, claim or suit. Failure to give immediate notice of any loss or damage, or any suit, or to forward to the insurer any demand, notice, summons, or other process received shall not invalidate any claims made by the insured or free the company from any responsibility under this policy.”

   PRASA indicates it will be included in next policy renewal period, April 2025.

7. It is recommended that an endorsement in the policy be included that states that the SIR will not apply to medical expenses; hence, coverage would be the first dollar. The applicability of the medical expenses coverage should be addressed within the policy. PRASA's commercial general liability program provides a $10,000 per person limit for medical expenses, but the policy has a $100,000 SIR.

   PRASA indicates it will be included in next policy renewal period, April 2025.

8. The employee benefits liability coverage form U-110 (1/92) is recommended to change the "Retroactive Date" to the date MAPFRE first wrote this coverage for PRASA. This policy currently illustrates 07/01/2021, which is inconsistent with usual and customary practices, severely limiting the scope of the coverage.

   PRASA indicates that they will consult with the BOR and if deemed acceptable, it will be included in next policy renewal period, April 2025.

7.3.6 Automobile Liability

PRASA maintains automobile liability coverage through MAPFRE for:

Bodily injury and /or property damage caused by any automobile, including hired and non-owned, with a $1,000,000 combined single limit per accident.

7.3.6.1 Automobile Liability Recommendations

This section summarizes previous observations and recommendations made by Marsh not addressed related to automobile liability coverage.

1. It is recommended that the physical damage to owned autos of the insured be included in the policy for specific catastrophic events, which include lightning, fire, explosion, windstorm, hail, flood, and earthquake, with a limit of $2,000,000 per event and subject to a $50,000 per event deductible.

   PRASA indicates it will analyze the current fleet and insured them, however once that is done PRASA will consult with the BOR to discuss the inventory and whether to include recommendation.

2. It is recommended that Form CA 03 01 10 13 "Deductible Liability Coverage" be eliminated from the policy. The policy shows no deductible under the liability coverage; therefore, we understand that the form was included as an oversight.

   PRASA indicates that they will consult with the BOR and if deemed acceptable, it will be included in next policy renewal period, April 2025.

3. It is recommended that the hired and non-owned physical damage coverage be included with a limit of no less than $50,000 per vehicle in case any vehicle is rented or an employee is using their vehicle for work duties. Form U-6 (11-93) "Liability Coverage Exclusion Endorsement" should be eliminated. The language utilized in this endorsement is broad and may present coverage interpretations unfavorable to PRASA. The trailer interchange coverage is recommended to be included in the policy, covering any trailer owned by others. Comprehensive and collision trailer interchange coverage for non-owned trailers, with a physical damage limit of $35,000 for each trailer; $35,000 for each tank/refrigerated unit; $20,000 for each non-refrigerated or van unit; and $15,000 for each flatbed, chassis and generator. All are subject to a $500 comprehensive and collision deductible. Losses to the chassis will be paid on a replacement cost basis.

   PRASA indicates it will analyze the current fleet and insured them, however once that is done PRASA will consult with the BOR to discuss the inventory and whether to include recommendation.

4. It is recommended that the Errors and Omissions (E&O) Endorsement be revised. The wording of the endorsement should read as follows:
   a. "It is hereby understood and agreed that the coverage afforded or the quotation submitted shall not be invalidated or affected by errors, omissions, or improper description of the premises, property, autos, or any other applicable detail."

   PRASA indicates that they will consult with the BOR and if deemed acceptable, it will be included in next policy renewal period, April 2025.

7.3.7 Garagekeeper's

PRASA maintains a garage keeper coverage and is included on a legal liability basis for comprehensive and collision with a limit of $1,000,000 per event for each covered location for "autos left with you for service, repair, storage or safekeeping". Comprehensive coverage is subject to a $250 per event deductible, a maximum of $1,000 per event for loss caused by theft, mischief or vandalism, and collision coverage is subject to a $250 deductible. The premium for this coverage totaled $18,000.

7.3.7.1 Garagekeeper's Recommendations

This section summarizes previous observations and recommendations made by Marsh not addressed related to the garage keeper's coverage.

1. Covered locations should be corrected to "Anywhere in Puerto Rico" instead of anywhere in the Commonwealth, San Juan PR 00901.

   PRASA indicates it will be included in next policy renewal period, April 2025.
2. Garagekeeper's Coverage should be changed to direct primary coverage instead of Legal Liability Only.

   PRASA indicates that they will consult with the BOR and if deemed acceptable, it will be included in next policy renewal period, April 2025.
3. Garagekeeper's coverage from the Primary Insurance box should be marked.

   PRASA indicates that they will consult with the BOR and if deemed acceptable, it will be included in next policy renewal period, April 2025.

7.3.8 Umbrella and Excess Liability

PRASA maintains a primary umbrella policy with a $60M limit excess of the primary general, automobile, and employer's liability policies. The umbrella is otherwise subject to a $5,000 SIR for bodily injury, property damage, and personal and advertising injury losses not covered by the primary insurance. Coverage is provided through MAPFRE.

7.3.8.1 Umbrella and Excess Liability Recommendations

This section summarizes observations and recommendations regarding the umbrella and excess liability coverage.

1. Include the garage liability policy issued by MAPFRE under the commercial umbrella's "Schedule of Underlying Insurance" to achieve the higher limits provided by the excess liability program for any garage liability claim that could exceed policy limits or be excluded from coverage under said program.

PRASA indicates that they will analyze recommendation viability after fleet inventory is completed; if deemed acceptable, it will be included in next policy renewal period.

2. The commercial umbrella program does not include an insuring agreement that would state what terms and conditions apply to the commercial umbrella and whether the excess liability program is following form or not; this needs to be included to avoid any misinterpretations at the time of a large loss which could trigger coverage under the excess liability program.

   PRASA indicates that they will consult with the BOR and if deemed acceptable, it will be included in next policy renewal period, April 2025.

3. A risk exists for a catastrophic failure of a PRASA dam that could potentially cause a very large liability loss, especially if residential communities are located downstream of the dam. In such an event, a $60M total liability limit may not be enough to settle claims if PRASA is found to be negligent.

   PRASA indicates that they will analyze under its insurance strategy and make a decision on the recommendation afterwards.

7.3.9 Directors' and Officers' Liability

PRASA holds $45M in Directors and Officers (D&O) liability insurance for claims filed against directors and officers, employees, and PRASA holdings structured in a primary policy and four excess policies. Coverage is written on a claims-made basis. The primary layer of D&O insurance is subject to a $500,000 SIR for claims against indemnified persons or a claim against PRASA alleging a breach of duties.

Concerning the terms and conditions of the policy, the policy form is a basic D&O liability coverage that provides limited coverage for allegations of wrongful acts made against an insured due to the exclusions added by endorsement.

Coverage is subject to retro dates (prior acts limitations) and prior and pending litigation dates, as summarized in Table 7-4.

Table 7-4 Directors and Officers Liability Program

Insurer	Limit	Retro Date	Prior and Pending Litigation Date
Chubb (Primary)	$15M	July 1, 2007	July 1, 2007
Berkley Insurance Company (First Excess Layer)	$10M excess of $15M	July 1, 2014	Information not included in the policy provided.
Liberty Mutual Insurance Company (Second Excess Layer)	$5M excess of $25M	Underlying	Information not included in the policy provided.
Antilles Insurance Company {Defense Puerto Rico, LLC} (Third Excess Layer)	$10M excess of $30M	July 1, 2021	July 1, 2020

Insurer	Limit	Retro Date	Prior and Pending Litigation Date
Liberty Mutual Insurance Company (Fourth Layer)	$5M excess of $40M	Underlying	July 31, 2020
Total D&O Limit	$45M	-	-

7.3.9.1 D&O Recommendations

This section summarizes previous observations and recommendations made by Marsh related to the D&O coverage that are still pending.

1. Review the retro dates and prior and pending litigation dates – It is strongly recommended that PRASA and their insurance consultant review the retro dates and prior and pending litigation dates of the D&O program. At this time, if a claimant were to mention acts occurring before 2014, only $15M in limits are available. In examining the $10M excess of $30M policy issued by Antilles Insurance Defense of Puerto Rico, the insurance agency is named instead of Antilles Insurance, the insurance carrier, the retro date is July 1st, 2021, and the prior and pending litigation date is July, 1st, 2020. The retro date establishes the date on which coverage begins, and it does not make sense that the prior and pending litigation date is before this date. To optimize coverage, retro dates should be consistent.

   PRASA and Insurance department will verify dates and confirm.

2. Renegotiate the pricing of excess limits of liability as pricing is inverted – Regarding the pricing of the excess limits of liability, all of the policies except for the policy issued by Antilles Insurance have a higher cost per million dollars than the primary policy. PRASA should review and renegotiate increased limits factors to normalize the pricing of the D&O program.

   PRASA indicates that they will consult with the BOR and if deemed acceptable, it will be included in next policy renewal period.

3. Consider purchasing additional limits, including side a difference in condition (DIC) coverage to better align with limits carried by other peers. It should be noted that in addition to the traditional D&O policies carried by PRASA, peers also carry a Side A excess DIC policy with an average limit of $15M. This policy protects only the D&O and has fewer exclusions than a typical D&O policy. If PRASA were to purchase **$60M in total limits**, its D&O program would better align with industry standards.

   PRASA indicates that they will consult with the BOR and if deemed acceptable, it will be included in next policy renewal period.

4. PRASA should consider renegotiating policy exclusions to cover principal risks faced by directors. If carriers are not amenable, consider restructuring coverage and purchasing higher limits of Side A excess DIC coverage.
   a. The primary D&O policy issued by Chubb has a securities exclusion with a carve back providing coverage for claims arising from private placements less than $50M. All other securities claims are excluded. The limit on private placements and the lack of coverage for securities claims should be reevaluated, limits adjusted, and coverage for securities claims sought.
   b. The definition of loss specifically excludes nonmonetary relief, and coverage for defense costs only should be sought.

c. Consider eliminating the specific matter exclusion for regulatory and water prices. It is understood that the D&O policy does not respond to disgorgement remedies; however, this endorsement goes far beyond excluding all claims brought by clients, customers, or any entity on behalf of such clients or customers as it relates to the insured's regulator capacity in establishing tariffs for water consumption to clients, customers, and cogeneration companies.

PRASA indicates that they will consult with the BOR and if deemed acceptable, it will be included in next policy renewal period.

d. Consider eliminating specific matter exclusion related to claims arising from or related to general obligation bonds (GOs), notes or bonds issued by the Government of Puerto Rico, matters related to the Puerto Rico Oversight, Management and Economic Stability Act, or any work-related or advice given that might result in a claim. The wording of this endorsement is very broad and, together with the other exclusions added to the policy, drastically limits coverage under the policy.

PRASA indicates that they will consult with the BOR and if deemed acceptable, it will be included in next policy renewal period.

e. As excess follows from markets, Berkley Insurance Company, Antilles Insurance, and Liberty Mutual, all incorporate the exclusion of the primary Chubb policy. Marsh noted that each excess carrier has incorporated additional and reinstated a more restrictive exclusionary language adopted by each successive excess carrier. The ultimate coverage for securities claims, including private placements, is eliminated in the excess layers, and bankruptcy and insolvency exclusions are added.

PRASA indicates that they will consult options with the BOR.

f. A drop-down endorsement should be requested on the excess layers. While excess policies drop down when the underlying limits are eroded, the drop-down endorsement provides greater flexibility. It would allow PRASA or any other entity to pay any amount under the policy that has not been fully eroded by payment of loss under the policy so that the excess layer is triggered.

PRASA indicates that they will consult options with the BOR and if deemed acceptable, it will be included in next policy renewal period.

5. PRASA should consider including a priority of payments clause to the policy specifying that the insurer is first liable to pay on behalf of the insured persons under Insuring Agreement A (Non-indemnifiable D&O claims); second, the insurer should pay that loss for which they may be liable to pay on behalf of the company under Insuring Agreement B (Corporate Reimbursement), and any payments under Insuring Agreement C (Company Securities Liability) would be made.

PRASA indicates that they will consult with the BOR and if deemed acceptable, it will be included in next policy renewal period.

a. PRASA should consider accepting a noncancelable policy except for nonpayment as offered in the policy contract instead of imposing the government-mandated 90-day cancellation clause.

PRASA indicates that they will consult recommendation with the BOR and if deemed acceptable, it will be included in next policy renewal period.

b. PRASA should consider requesting amendments so that the second layer follows form and drop-down. The second excess layer issued by Liberty Mutual should be amended to eliminate the bankruptcy exclusion, and a drop-down exclusion allowing the underlying limit to be eroded by either payment under the policy or payment of the underlying limit by another source should be added.

PRASA indicates that they will consult recommendation with the BOR and if deemed acceptable, it will be included in next policy renewal period.

c. PRASA should consider incorporating amendments to the claim reporting threshold endorsement. The policy has a claims reporting threshold that allows for periodic bordereaux. Instead of amending Section 7 Defense and Settlement, the endorsement should amend Section 6 Notice. It is recommended that a 45-day grace period be granted after the quarter ends for the reports to be submitted.

PRASA indicates that they will consult recommendations with the BOR and if deemed acceptable, it will be included in next policy renewal period.

7.3.10 Employment Practices Liability

PRASA maintains primary and excess employment practices liability (EPL) policies, providing total limits of $10M in the aggregate annually for employee claims alleging wrongful termination, employment-related misrepresentation, sexual harassment, retaliation, or other violations of an employee's civil rights. A $100,000 SIR applies to each claim. Prior Litigation date of November 30, 2007. Primary coverage ($5M limit) is provided through Chubb. Excess EPL coverage ($5M) is through Berkley Insurance Company. The pricing of the premium for the excess limit of liability is aligned with rates in the market.

7.3.10.1 Employment Practices Liability Recommendations

This section summarizes previous observations and recommendations made by Marsh related to the employment practices liability coverage.

1. PRASA should consider including affirmative coverage by negotiating for loss resulting from a claim made against PRASA by a union on behalf of an employee arising from a labor dispute, negotiation, or proceeding in connection with a CBA otherwise not excluded from the policy.

   PRASA indicates that they will consult options with the BOR to determine cost/benefit, and if deemed acceptable, it will be included in next policy renewal period.

2. PRASA should consider including coverage for defense costs related to Law 80 Statuary Severance claims when the remedy sought is "Mesada".
3. PRASA should consider renegotiating the EPL policy issued by Berkley to eliminate the Known Wrongful Act exclusion. In dealing with labor matters, there is always a chance that a claim might be filed. The exclusionary language is broad and gives the carrier discretion to decline.

   PRASA indicates that they will consult recommendation with the BOR and if deemed acceptable, it will be included in next policy renewal period.

4. The EPL Excess policy should include a drop-down endorsement that would allow excess layers to drop down either when the underlying is eroded by payment or the Insured or another entity pays the amount needed to erode the limit of liability fully.

   PRASA indicates that they will consult options with the BOR and if deemed acceptable, it will be included in next policy renewal period.

7.3.11 Premises Pollution Liability

Chubb provides pollution liability coverage on a claims-made basis at $10M per pollution condition and a $10M annual aggregate limit for all pollution conditions. Coverage is subject to a $250,000 per accident SIR. A retroactive date of July 1, 2002, applies.

7.3.11.1 Premises Pollution Liability Recommendations

This section summarizes previous observations and recommendations made by Marsh regarding the premises' pollution liability coverage.

1. It is recommended that the broad named insured endorsement (CHB PPL-13 01/2017) be modified to read as follows to correct mistakes in the present form.
   a. "Autoridad de Acueductos y Alcantarillados de Puerto Rico and/or Government of Puerto Rico and/or Gobierno de Puerto Rico Departamento de Hacienda c/o Area de Seguros Públicos and/or PRASA and/or Government of Puerto Rico and/or Government of Puerto Rico Department of Treasury c/o Bureau of Public Insurance and/or any subsidiaries, affiliated associated, newly acquired or controlled Company and or corporation and or individuals as may now be constituted or hereafter formed, as their respective interests may appear for which the Named Insured is responsible for placing insurance and for which no other specific insurance is provided."
2. PRASA should consider increasing limits. The aggregate limit may be increased to **$20M** as well.
3. It is recommended that terrorism coverage be considered under PRASA's premises pollution liability program. The premises pollution liability program excludes coverage for any terrorist event. Considering the insured operations, an act of terrorism is an important and potentially severe exposure with considerable implications.

   PRASA indicates that they will consult recommendation with the BOR and if deemed acceptable, it will be included in next policy renewal period.

7.3.12 Accident Liabilities for Travel and Divers

Chubb issued PRASA's accident coverage program for travel with the limits detailed in Table 7-5. The policy has a $2.5M annual aggregate limit. Coverage is available for PRASA employees named as insured. PRASA's premium for this policy is $1,000.

Table 7-5 Accident (Travel) Liabilities

Coverage	Limit
Accidental Death and Dismemberment	$500,000
Accidental Medical Expenses Reimbursement(1)	$7,000
Medical Sickness Reimbursement	$3,500
Emergency Medical Transfer	$50,000
Repatriation of Remains	$5,000

Coverage	Limit
Cancellation and Interruption of Travel	$500
Loss of Personal Belonging	$1,000
Assistance Service	Included

[(1)]If a participant is covered under any medical health plan, the Company will cover the excess medical expenses incurred. If not covered by any medical health plan, the Company will cover charges after applying the $100 deductible.

In addition, PRASA maintains an accident coverage program for divers, as issued by Chubb. The policy has a $750,000 annual aggregate limit. Coverage is available for PRASA employees named as insured. Coverage includes a $250,000 limit for accidental death and $250,000 for accidental dismemberment. PRASA's premium for this policy is $19,900.

7.3.13 Cyber Liability

PRASA acquired cyber liability insurance around December 2023 from Crum & Foster Specialty Insurance Company, thus addressing the need to secure public information and guard against breaches, cyber-attacks, and claims and limit the impact on the Authority. The policy period is from December 30, 2023, to June 30, 2024. The Primary Policy has a $5,000,000.00 annual aggregate limit. Coverage includes $5,000,000.00 for Breah's response with Sublimits, as shown in the following Table.

Coverage	Sublimit
eCrime Loss	$250,000
Dependent Business	$1,000,000
Ransomware/Malware	$5,000,000

Coverage is subject to a retention of $500,000 per accident or event. PRASA's premium for this policy is $91,341.00. Excess Cyber coverage ($5M excess of $5M) is through Liberty Surplus Insurance Corporation. Same retention as Primary.

7.3.13.1 Cyber Recommendations

This section summarizes observations and recommendations related to cyber liability coverage.

1. It is recommended that PRASA complete a cyber self-assessment to determine the potential frequency and severity of a breach, business interruption exposures, and the potential impact of a ransomware attack. It could be useful for negotiations in renewal.

7.3.13.2 Additional Recommendations

1. PRASA should also consider Active assailant coverage: High-profile mass shootings over the last decade in various public and private settings and various attacks involving vehicles have often been carried out with the sole intent of instilling public fear while causing as much loss of life as possible. Although traditional forms of insurance coverage can protect businesses and employees targeted in such attacks, their language can be ambiguous and may have sizable gaps.

   PRASA indicates that they will consult recommendation with the Finance Director and request quotes to evaluate if it could be included in next policy renewal period.

   a. The active assailant or active shooter coverage offers a combination of property and casualty coverage and compliments coverage that you already purchased. It offers affirmative coverage that is triggered by deliberate malicious physical attacks by active assailants who are physically present and armed. These policies can typically offer:
      i. Property damage, business interruption, and extra expense coverage.
      ii. Legal liability coverage.
      iii. Non-physical damage coverage.
      iv. Loss of attraction and denial of access coverage.
      v. Reimbursement for additional expenses can include forensic cleanup, public relations consulting, crisis management, medical services, including psychiatric care, hiring additional staff, and additional security.
      vi. No exclusions for vehicles, attacks by employees, and terrorism.

7.4 Owner-Controlled Insurance Program

PRASA maintains an OCIP for its multi-year CIP. In addition to covering PRASA, the OCIP is designed to insure enrolled contractors and subcontractors (including design professionals for general liability only) of all tiers working on the CIP. The OCIP does not cover vendors, installers, truckers, delivery persons, concrete and asphalt haulers, and/or contractors who do not have dedicated on-site payroll, except as otherwise endorsed in the policy. In addition, the OCIP program provides builder's risk, general liability, umbrella, pollution liability insurance, and miscellaneous errors and omissions professional liability insurance. These coverages are discussed below.

7.4.1 Contractors All Risk –Completed Value Builder's Risk

It is assumed that PRASA maintains the builder's risk policy, and Chubb is the insurer. PRASA did not provide the renewed builder’s risk policy for FY2024 as part of its OCIP program; hence, the policy period included in this report is from July 8, 2024, until June 23, 2025. Coverage applies to all risks of direct physical loss, except as excluded by the policy. The estimated value of all projects is $1,018,297,251 per the project schedule prepared by PRASA and included as part of the policy.

The annual premium is $6,945,194, and the Minimum Earned Premium is $6,924,421. The maximum limit per project value is $73,029,505. Any project with a contract value over $73,029,505 must be reported to Chubb individually. Chubb will then decide on its inclusion into the policy.

Each project is limited to its declared value on the policy, including all coverages and extensions, per one occurrence, including the sub-limits during the policy period. Refer to Table 7-6 for the OCIP builder's risk limits and sub-limits of Liability summary.

Table 7-6 FY2024 OCIP Builder's Risk Limits and Sub-limits of Liability Summary

Coverage	Sub-limit
Maximum Physical Loss of or damage to insured Property per Insured Project	Declared value of the affected project.
Professional Fees	10% of the loss subject to a maximum of $1,000,000. Whichever is less.
Property in Transit	$1,000,000 for any one conveyance.
Principal's Existing Property	$1,000,000 per occurrence and in the aggregate for the policy period.
Offsite Storage	$1,000,000 for any one location.
Expediting Expenses	20% of the loss, subject to a maximum of $1,000,000.
Debris Removal	25% of the loss, subject to a maximum of $1,000,000.
Fire Brigade Charges/Extinguishing Expenses	$250,000 for any one occurrence.
Plans, Blueprints, Drawings, or Other Documents	$250,000 for any one occurrence.

The aggregate limits of liability or the maximum amount Chubb will pay for all losses or damages incurred by all the declared projects and always limited to the declared value of the affected project as it is indicated in the projects' schedule, in one occurrence, and the aggregate in all occurrences during the policy period and resulting from and contributed to or aggravated as summarized in Table 7-7.

Table 7-7 FY2024 Builder's Risk Policy - Limits and Deductibles Summary [1,2,3]

		Deductible	
Coverage	Limit	Projects with Declared Value up to $10,000,000.00	Projects with Declared Value higher than $10,000,000.00
Earthquake	$30,000,000.00	5% of VARTOL, minimum $50,000.00	5% of VARTOL, minimum $100,000.00
Windstorms, ensuing flood and storm surge	$30,000,000.00	2% of VARTOL, minimum $50,000.00	2% of VARTOL, minimum $100,000.00
Flood	$10,000,000.00	2% of VARTOL, minimum $50,000.00	2% of VARTOL, minimum $50,000.00
AOP		$20,000.00 except 10% of loss, minimum $50,000.00 for testing	$20,000.00 except 10% of loss, minimum $50,000.00 for testing

[1] PRASA existing property is the property located on the project site as well as property surrounding the project site belonging to or held under custody, care, or control of persons named in the policy as the insured the deductible is $100,000.
[2] VARTOL is Values at Risk at the Time of Loss.
[3] Natural catastrophic deductibles apply per each affected or damaged project.

7.4.1.1 Contractors All-Risk Recommendations

This section summarizes previous observations and recommendations made by Marsh for the contractors' all-risk coverage.

1. PRASA should request an endorsement to include a "Partial Occupancy Provision" to grant permission for partial occupancy of project areas. Therefore, coverage will not cease or expire due to the partial occupation of any project area or the project's substantial completion.

   PRASA indicates it will be included in next policy renewal period, June 2025.

2. PRASA should include wet works, roads, ways, expressway works, overpasses and bridges, viaducts, and tunneling works. These are usually impacted during the construction of water mains and sewer pipes and should be covered with at least a reasonable sub-limit.

   PRASA indicates it will be included in next policy renewal period, April 2025; if it's at no additional cost.

3. PRASA should delete the special conditions endorsement construction and/or erection time schedule or negotiate a deviation from the schedule of more than the current **four** weeks.

   PRASA indicates that they will consult with the BOR and if deemed acceptable, it will be included in next policy renewal period.

4. PRASA should delete the special conditions endorsement safety measures concerning precipitation and flood.

   PRASA indicates that they will consult with the BOR and if deemed acceptable, it will be included in next policy renewal period.

5. The OCIP Manual limits and some of the sub-limits and deductibles are different from the policy, which could create confusion in the event of a loss.

   PRASA indicates that update of the OCIP manuals is ongoing.

7.4.2 Commercial General Liability

The OCIP commercial general liability policy is a "per occurrence" policy written by Chubb. It includes the limits shown in Table 7-8. Coverage & premium remained the same as the previous year, $2,391,207. The premium basis is the total cost of the named insured for operations performed for the named insured during the policy period by independent contractors, all work or work sublet in connection with each specific project, including the costs of all labor, materials, and such work, whether furnished by the owner, contractor or subcontractors, including fees, allowances, bonuses or commissions made, paid or due. The policy period covers from July 8, 2023 until June 23, 2024.

Table 7-8 OCIP General Liability Coverages and Limits

Coverage	Limit
Each Occurrence	$1,000,000

Coverage	Limit
General liability – General Aggregate	$2,000,000
Personal and Advertising Injury	$1,000,000
Products/Completed Operations - Aggregate	$2,000,000
Employer's Liability Stop Gap	$2,000,000 Each Accident and Aggregate
Damages to Premises Rented to You (Any One Premises)	$250,000
Medical Expense (Any One Person)	$5,000

7.4.2.1 Commercial General Liability Recommendations

This section summarizes previous observations and recommendations made by Marsh related to OCIP commercial general liability coverage.

1. The completed operations coverage extension (page 21 of 44 of the pdf) is for five years from the policy's termination date or renewal(s). The aggregate limit is for an extended period of five years and is not an annual limit. It is recommended that PRASA extend the period to 10 years to cover the full statutory limit (Statute of Limitations Law) and change to an annual aggregate per year. In addition, the period should start from the completion date of each project and not from the policy termination or non-renewal date.

   PRASA indicates it will be included in next policy renewal period; if it's at no additional cost.

2. A $5,000 per claim deductible applies for bodily injury, and a $5,000 per claim deductible applies to property damage for each loss. However, the Deductible Liability Insurance Endorsement Form CG03 00 01 96 also states that the property damage deductible per claim is **$5,000,000** (form reads: "A deducible of $5,000,00 BI per claim and $5,000,000 PD per claim applies"). If this is an oversight, it must be revised or clarified with an endorsement. The policy is silent as to who is responsible for deductibles. The OCIP Manual specifies that the contractor should assume this deductible.

   PRASA indicates that the revised OCIP manual will clarify the applicable deductibles when completed.

7.4.3 Commercial Umbrella Liability

Chubb writes the OCIP commercial umbrella liability policy. The renewal certificate indicates a limit of insurance of $25,000,000 for each occurrence and aggregate in excess of $25,000,000 for each occurrence and aggregate. The schedule of underlying insurance only includes the commercial general liability policy and its insurance limits. The OCIP Manual prepared by a previous producer indicates that the umbrella or excess policy has a limit of $25,000,000. The policy period covers from July 8, 2023, until June 23, 2024. PRASA's premium for this policy is $1,258,530.

7.4.3.1 Commercial Umbrella Liability Recommendations

This section summarizes previous observations and recommendations made by Marsh related to commercial umbrella liability coverage.

1. The completed operations coverage extension is for five years from the policy's termination date or renewal(s). PRASA should consider requesting a change to 10 years to cover the full statutory limit (Statute of Limitations Law) and to begin from the completion date of each specific project.

   PRASA indicates it will be included in next policy renewal period; if it's at no additional cost.

7.4.4 Contractor's Pollution Liability

Chubb writes the OCIP contractor's pollution liability policy. Coverage applies on an occurrence basis and covers pollution arising from construction activities involving PRASA's OCIP. The insurance policy limits are $20,000,000 per occurrence and $20,000,000 aggregate, subject to a $25,000 SIR per pollution incident. The policy covers PRASA and the PRASA OCIP contractors, subcontractors, and consultants' participants. The annual premium for this policy is $786,660 and the policy period covers from July 8, 2023, until June 23, 2024.

7.4.4.1 Contractor's Pollution Liability Recommendations

It is recommended to include a completed operations extension of 10 years after the completion of each project.

PRASA indicates that they will consult with the BOR and if deemed acceptable, it will be included in next policy renewal period.

7.4.5 Professional Liability

PRASA maintains a miscellaneous E&O liability policy through Chubb, providing a $25M per claim limit and annual aggregate limit, subject to a $150,000 per claim deductible. The policy is written on a claims-made basis, and claims and defense costs are included within the limit. The coverage applies to contract administration, design, engineering, consulting, inspection, and construction management, including planning, permitting, regulatory compliance services, land acquisition, construction assistance, procurement assistance, start-up services, testing, and extended commissioning under the PRASA multi-year CIP. The policy includes a one-time reinstatement option for an additional premium equal to 100% of the annual premium. The annual premium for this policy is $1,306,532 and the policy period covers from June 30, 2023, until June 30, 2024.

7.4.5.1 Professional Liability Recommendations

This section summarizes previous observations and recommendations made by Marsh related to professional liability coverage.

1. The value of the contracts under the CIP should be revised versus the limits carried out to ensure adequate risk transfer. Given the influx of funding for projects as a result of hurricanes and other natural disasters, it is probable that PRASA is underinsured.

   PRASA indicates that they are reviewing the ongoing projects quarterly.

2. PRASA should clarify in Extended Reporting Period Endorsement (Endorsement A) the intent to provide an extended reporting period for all projects. Endorsement A includes an extended reporting period for all projects initiated or declared as commencing during the policy period. However, as worded, it appears to restrict coverage for projects begun prior to the policy inception date. It is recommended that the endorsement language be amended to clarify that all projects commenced before the policy inception date as part of the CIP are covered or that a schedule of projects specifically to be covered be included. The endorsement should be

amended to apply to all projects initiated during the “Policy Period” or subsequent to any applicable retroactive date. A specific list of projects would eliminate potential future controversies.

7.5 Conclusions

Key recommendations for PRASA’s insurance program are provided below.

1. The insurable values stated in the policy program are the same as in 2013 based on the cost appraisal performed by Malcolm Pirnie in 2006. Therefore, factors like PRASA’s CIP, inflation, acquisitions, etc., have not been considered for at least 16 years. It is strongly recommended that PRASA undertake a new valorization of its assets. Arcadis Caribe was retained during 2023-2024 to perform an asset valorization update which is expected to be completed at the latest by the end of 2024 or early 2025.
2. The current PML estimates for PRASA for quantifying catastrophic risk exposures were performed in 2010 by AIR Worldwide Corporation based on a valorization study from 2006. Since then, modules, maps, and projections have changed, and new modules might prove economically beneficial to PRASA. This study will provide PRASA and its stakeholders with a scientific report representing the maximum foreseeable loss from catastrophic events, considering various scenarios in terms of intensity and return periods, corroborating if the current limits of insurance carried are adequate or if adjustments shall be made. This analysis may assist PRASA in complying with FEMA’s insurance requirements. It is strongly recommended that PRASA undertake a new PML study, which should be performed after the new valorization of PRASA’s assets is conducted since any changes in the values of all insurable assets will affect the outcome of this study.
3. Once the new valorization of PRASA assets and PML study are completed, PRASA will be better positioned to determine if its current insurance limits and deductibles are adequate.
4. It is recommended that a loss control assessment plan be set in place to reduce the possibility that a loss will occur and reduce the severity of those that do occur. Periodic inspection of WTPs and WWTPs, focusing on safe working conditions and proper maintenance, will be an integral part of the Loss Control Assessment Plan.

   PRASA indicates that after the 2017 Hurricanes and the pandemic, it has updated the Authority safety plans and action plans to reduce loss plus they perform yearly inspections of the treatment plans. Therefore PRASA does not find this additional loss control assessment plan necessary.

8 System Assets and Financial Analysis

8.1 Introduction

Following the MAT (as amended), Arcadis hereby provides a statement of the estimated cost of all additions to the System and the retirements of property made in FY2024. The statement relies on the most recent preliminary data provided by PRASA. Also, Arcadis evaluated PRASA's financial forecast as included in the 2024 PRASA Fiscal Plan and as certified by the Oversight Board on June 11, 2024, and evaluated the appropriateness of rates and charges. A summary of the findings is provided in this section.

8.2 Introduction

Table 8-1 summarizes PRASA's preliminary book value of fixed (capital) assets as of June 30, 2023. Including land and other non-depreciable assets and "Construction (Work) in Progress", the preliminary ending book value balance of PRASA's capital (fixed) assets amounts to $5,595M (net of accumulated depreciation). The fixed assets book value balance for FY2024 will be included in next year's CER.

Table 8-1 Preliminary Fixed Assets Balance through June 30, 2023 ($, M)

	Book Value	Accumulated Depreciation	Net Book Value[1]
Fixed Assets	$10,953.7	($6,135.0)	$4,818.6
Construction (Work) in Progress	$700.0	-	$700.0
Land and other Non-Depreciable Assets	$75.9	-	$75.9
Total Capital (Fixed) Assets	$11,729.6	($6,135.0)	$5,594.6

[1] Based on audited financial statements for FY2023.

Table 8-2 summarizes the fixed assets changes from FY2022 to FY2023.

Table 8-2 Fixed Assets Changes ($, M)

	FY2022 to FY2023[1]
Fixed Assets (Net of Accumulated Depreciation)	($125.0)
Construction (Work) in Progress	$145.9
Land and other Non-Depreciable Assets	$0.8
Total Fixed Asset Changes[2]	$21.6

[1] Based on audited financial statements for FY2023.
[2] Numbers may not add up due to rounding.

8.3 PRASA's Rate Adjustments

In FY2023, after following the process required by Act 21-1985, PRASA implemented a new rate structure and charges, simplifying its rate to only two charges – a base charge and a consumption charge. Additionally, as part of this process, PRASA revised the charges for other service activities such as water connection charges, wholesale charges, etc. The following rate increases and annual adjustments were also approved:

- FY2023 - an increase of 4.95% to the base charges and 2.00% to the consumption charges.
- Annual increases for subsequent years of at least 2.00% but not more than 5.00% annually, up to a cumulative cap of 30.00%.

For FY2024, a rate adjustment of 2.0% was implemented, and for FY2025, starting on July 1, 2024, the minimum required annual rate adjustment of 2.0% was also implemented.

The projected accumulated benefit of future rate increases is $333.5M through FY2029.

8.1 FY2024 Preliminary Results and FY2025-FY2029 Forecast Period

Arcadis reviewed the financial information provided by PRASA, the 2024 PRASA Fiscal Plan, and the FY2025 Annual Budget certified and approved on June 14, 2024, by the FOMB. This section summarizes Arcadis's review and provides an assessment of PRASA's financial condition as it relates to PRASA's financial preliminary results for FY2024 and the reasonableness of PRASA's assumptions in the preparation of the five-year financial projections from FY2025-FY2029 (the forecast period). The sufficiency of the revenues necessary to support the projected operations and capital costs, as shown in Exhibit 1, was evaluated. The evaluation includes revenues, O&M expenses, debt service payments, and required deposits in compliance with the MAT (as amended). Additionally, Exhibit 1 includes the anticipated debt service coverage (DSC) for the forecast period.

The following information provided by PRASA was reviewed:

- MAT as amended and restated.
- Preliminary revenue and expense projections for FY2024.
- Revenue and expense projections for FY2025.
- The 2024 PRASA Fiscal Plan, as certified by FOMB on June 11, 2024.
- PRASA's FY2025 Annual Budget, as certified and approved by FOMB on June 14, 2024.
- Debt service schedules for currently outstanding debt service, preliminary projected debt obligations, and DSCs.
- The amount required to be deposited in the Operating Reserve Fund to make the amount on deposit therein equal to the Operating Reserve Requirement.
- The amount required to be deposited in the Capital Improvement Fund.
- The amount, if any, to be deposited in or used from the Rate Stabilization Account of the Surplus Fund.
- The amount of Operating and Authority Revenues (as per amended MAT) is sufficient to meet the Rate Covenant for FY2025-FY2029.

- The amount received and expected to be received from FEMA due to the impacts from the 2017 Hurricanes Irma and María and Hurricane Fiona in 2022 for expense reimbursement.
- The amounts expected to be received from FEMA and other federal programs to fund PRASA's CIP such as the SRF and RD Programs, the FAASt, ARPA, HMGP, and CDBG.

8.1.1 Operating Revenues

As defined in the MAT, **Operating *Revenues*** *"shall mean all moneys received by or on behalf of the Authority, including (i) the moneys derived by or on behalf of the Authority from the sale of water produced, treated or distributed by, or the collection, transmission, treatment or disposal of sewage by the Systems, (ii) any proceeds of use and occupancy insurance on the Systems or any part thereof, (iii) except as provided in the following sentence, any income from the investments made under this Agreement, (iv) any special assessments, including assessments in the nature of impact fees, (v) amounts, if any, paid from the Rate Stabilization Account into the Operating Revenue Fund in any Fiscal Year minus the amounts, if any, paid from the Operating Revenue Fund into the Rate Stabilization Account during the same Fiscal Year; and (vi) regularly scheduled payments received under any Qualified Swap or Hedge Agreement during such period. In no event shall Operating Revenues include (i) income from the investment of moneys on deposit to the credit of the Construction Fund, proceeds of insurance (except use and occupancy insurance) or condemnation awards (which are required to be deposited directly to the credit of the Capital Improvement Fund), (ii) proceeds of sales of property constituting a part of the Systems (which are required to be deposited directly to the credit of the Capital Improvement Fund), (iii) the proceeds of Bonds or other Indebtedness, (iv) any governmental grants or appropriations available to pay Current Expenses of the Authority, including grants or appropriations received by the Authority and specifically made for the payments of principal of and interest on obligations of the Authority or for reimbursing the Authority for such payments, (v) any amounts received from the Government of Puerto Rico on account of Commonwealth Guaranteed Indebtedness (which is required to be deposited directly in the Commonwealth Payments Fund) or Commonwealth Supported Obligations (which is required to be deposited in the Commonwealth Payments Fund), (vi) any amounts transferred from the Budgetary Reserve Fund to the Trustee and (vii) any termination or similar payment under any interest rate swap or similar hedge agreement received by the Authority (which are required to be deposited directly to the credit of the Capital Improvement Fund)."*

In connection with the issuance of the 2020 Senior Bonds, PRASA and the bondholders executed a Ninth Supplemental Agreement authorizing the amendment of certain provisions in the MAT, subject to, and effective upon compliance with Section 9.02 of the MAT. The proposed amendments include a change to the Operating Revenue definition, further discussed in Sections 8.5 and 8.6. These amendments will become effective upon receiving the written consent of the holders of certain other Outstanding Senior Indebtedness (Federal Lenders), as all the bondholders of the outstanding Senior Bonds have already consented to the change.

PRASA's annual Operating Revenue projections for FY2024 through FY2029, including the 2024 PRASA Fiscal Plan revenue-enhancing initiatives, presented on a cash basis following the MAT, are summarized in Table 8-3.

Table 8-3 PRASA Operating Revenues ($, M)

Fiscal Year	Operating Revenues
FY2024 Projection, based on Preliminary Results	$1,100.9
FY2025 Annual Budget[1]	$1,180.6
FY2026 Projected	$1,218.7
FY2027 Projected	$1,230.7
FY2028 Projected	$1,273.9
FY2029 Projected	$1,316.8

[1] As certified by the FOMB on June 14, 2024.

PRASA's Operating Revenue assumptions are discussed below:

1. **Service Revenues, Net of Subsidies (Exhibit 1, Line 1)** – PRASA's single largest source of revenue is Service Revenues, which includes monthly base charges, volume rate charges for services, and the FY2024 annual rate adjustment. Table 8-4 shows PRASA's Service Revenues (Net of Subsidies) for FY2024 through FY2029.

   Table 8-4 PRASA Service Revenues, Net of Subsidies ($, M)

Service Revenues Category	FY2024 Preliminary[1]	FY2025 Annual Budget	FY2026 Projected	FY2027 Projected	FY2028 Projected	FY2029 Projected
Base Fee and Volume Charges[2]	$1,132.4	$1,118.8	$1,119.0	$1,119.9	$1,120.0	$1,119.3
Rate Increases[3]	0.0	20.2	43.0	66.2	90.0	114.1
Total (Net of Subsidies)[4]	**$1,132.4**	**$1,139.0**	**$1,162.0**	**$1,186.1**	**$1,210.0**	**$1,233.4**

   [1] Preliminary projection as included in the 2024 PRASA Fiscal Plan.
   [2] Includes accumulated revenues generated from rate adjustments implemented FY2018-2023 and the adjustment for billings not collected (net of collections from prior years). Billing to collections adjustments are $(27.6) in FY2024 and $(41.6) for each year from FY2025 through FY2029.
   [3] Includes rate adjustments for FY2025 through FY2029 as presented in the 2024 PRASA Fiscal Plan.
   [4] Numbers may not add up due to rounding.

   Table 8-5 summarizes the number of residential customers who were provided a subsidy for water and wastewater bills as of April 30, 2024.

   Table 8-5 FY2024 Water and Wastewater Subsidized Customer Accounts

Subsidy	Number of Customers	Percent of Total Residential Customers[1]
PAN Subsidy	88,043	7.3%
TANF Subsidy	8,701	0.7%

Subsidy	Number of Customers	Percent of Total Residential Customers[1]
ASES Subsidy	5,245	0.4%
Fixed Tariff (Public Housing)	49,167	4.1%

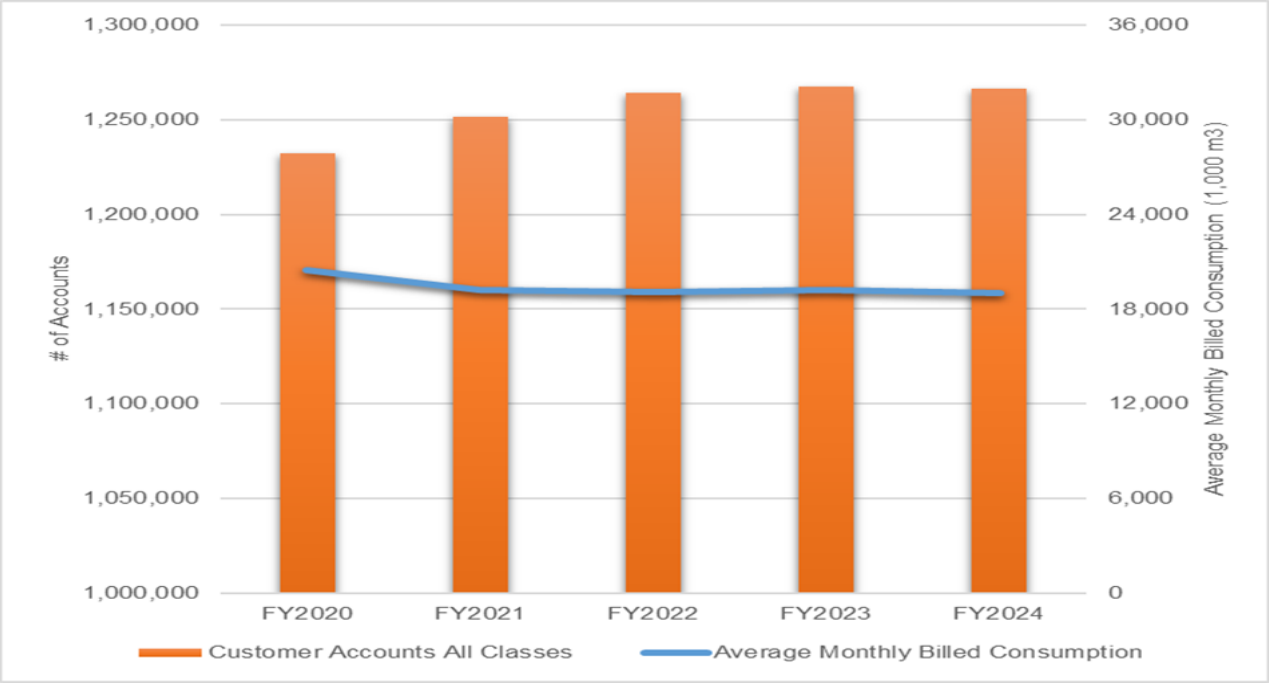
[1] Based on a total number of residential customers of 1,207,487 provided by PRASA as of April 30, 2024.

PRASA's Service Billings projections are based on certain assumptions, including growth and consumption assumptions that could be affected by various factors. Continued economic and population growth uncertainty could negatively impact the consumption patterns of PRASA customers. The 2020 Census data shows a total net population decline of about 440,000 as compared to the 2010 Census, which is an approximate -11.8% change in population[7].

Further discussion of PRASA's Service Revenue assumptions is detailed below.

Growth and Consumption Assumptions

Over the last five years, PRASA has experienced annual increases in its customers or accounts on an average of about 0.6% per year (2020-2024). In FY2024, the total billed consumption decreased by approximately 1.1% compared to FY2023. Figure 8-1 shows the customer accounts and average monthly billed consumptions from FY2020 through FY2024. Tables 8-6 through 8-8 summarize the customer accounts, the average monthly billed consumption by class, and per account for FY2023 and FY2024, respectively.



[7] Source: https://www.census.gov/library/stories/state-by-state/puerto-rico-population-change-between-census-decade.html

Figure 8-1 Customer Accounts and Average Monthly Billed Consumption FY2020-2024

Table 8-6 PRASA Customer Accounts

Fiscal Year	Customer Class				Total
	Residential	Commercial	Industrial	Government	
FY2023[1]	1,208,392	49,653	735	8,649	1,267,429
FY2024[2]	1,207,487	49,917	723	8,641	1,266,768
% Difference	-0.1%	0.5%	-1.6%	-0.1%	-0.1%

[1] Number of accounts by customer class through June 30, 2023.
[2] Number of accounts by customer class through April 30, 2024.

Table 8-7 Average Monthly Billed Consumption by Class (1,000 Cubic Meters)

Fiscal Year	Customer Class				Total
	Residential	Commercial	Industrial	Government	
FY2023[1]	13,690	2,243	1,189	2,108	19,231
FY2024[2]	13,628	2,223	1,238	1,939	19,027
% Difference	-0.5%	-0.9%	4.1%	-8.1%	-1.1%

[1] Based on billed consumption through June 30, 2023.
[2] Based on billed consumption through April 30, 2024.

Table 8-8 Average Monthly Consumption per Account (Cubic Meters)

Fiscal Year	Customer Class				Equivalent Average
	Residential	Commercial	Industrial	Government	
FY2023[1]	11.33	45.18	1,618.13	243.77	15.17
FY2024[2]	11.29	44.53	1,712.09	224.35	15.02
% Difference	-0.4%	-1.5%	5.8%	-8.0%	-1.0%

[1] Based on information through June 30, 2023.
[2] Based on information through April 30, 2024.

In FY2023 and FY2024, the average monthly consumption per account was 15.2 m^3 and 15.0 m^3, respectively. Consumption seems to have leveled out at lower average monthly consumption levels since the 2015 drought. Historically, PRASA has significant water losses within the distribution system. Reducing NRW is a high-priority initiative, as it will have both revenue enhancement and expense reduction impacts on finances. Therefore, PRASA has invested in different departments within PRASA to implement various initiatives to reduce NRW.

In addition, according to the U.S. Census Bureau, Puerto Rico's population had a 1.4% annual decline between 2012 and 2020.[8] On July 1, 2023, the US Census Bureau estimated Puerto Rico's population at 3,205,691, reflecting a decline of over 2% from the 2020 census on April 1, 2020. This population decline trend could be one of the reasons for the water consumption reduction pattern experienced in recent years. However, this significant population decline was not reflected in PRASA's number of active accounts.

Table 8-9 contains the projected macroeconomic indicators included in the 2024 PRASA Fiscal Plan. These indicators include a projection of annual population change and a projection of annual change in Gross National Product through FY2029.

Table 8-9 Macroeconomic Indicators Assumption for Service Revenue Projection

FY	Population Change (Compared to the previous year)	Gross National Product Change (Compared to the previous year)
2025	0.09%	-0.82%
2026	0.04%	-0.14%
2027	0.04%	1.03%
2028	-0.03%	0.57%
2029	-0.10%	0.14%

Considering the projected leveling off in population and the decrease in average monthly billed consumption per account of the past five fiscal years, Arcadis finds the forecast period amounts for Service Billings reasonable.

Rate Increases and Rate Structure Adjustment

Refer to Section 8.3 for updates on PRASA's rate structure. Note that for FY2024, the 2024 PRASA Fiscal Plan projects a 2.0% annual rate adjustment for all customer segments. For FY2025 and beyond, PRASA is also projecting a 2.0% annual rate adjustment across all customer segments, resulting in additional revenues of $20.2M, $43.0M, $66.2M, $90.0M, and $114.1M from FY2025 through FY2029, respectively.

According to the 2024 PRASA Fiscal Plan, the rate adjustments are necessary for PRASA to balance its budget and keep up with increasing operational expenses and are critical for the Authority to achieve fiscal responsibility. Additionally, the rate adjustments are expected to provide PRASA with adequate levels of liquidity for funding its CIP. The 2024 PRASA Fiscal Plan assumes that the additional revenues from the annual rate adjustments will provide PRASA with sufficient funding to meet its current obligations.

Arcadis believes that PRASA's assumptions for Service Revenues are reasonable based on historical results and the above assumptions. In addition, the following items should be noted:

- The continued strain on the economy could continue to affect consumption profiles, resulting in further declines in consumption patterns and/or the number of PRASA customers.

[8] The U.S. Census Bureau shows Puerto Rico population estimate as of July 2012 was 3,634,488 and 3,285,874 as of April 2020 (2020 Census data).

- Future rate increases could vary depending on PRASA's revenue and expense results, as well as PRASA's ability to achieve the expected results from the initiatives included in the 2024 PRASA Fiscal Plan. Alternative revenue-enhancing and cost-saving measures may be attempted before PRASA adjusts its rate over the minimum 2% increase.

Adjustment for Billings Not Collected

Adjustments for billings not collected are netted from PRASA's FY2024 preliminary results and forecast period Service Billings as presented in Exhibit 1, Line 1. For FY2024, collections are projected at 97.5%, and for subsequent years, PRASA has projected to maintain the collections rate at an average of 96.5%. During FY022 and FY2023, the collection rate returned to levels of over 97%.

Arcadis finds PRASA's forecasted amount reasonable. PRASA should closely monitor changes in economic indices and collection results due to the uncertain economic situation in Puerto Rico. Also, the assumed rate of billings not collected could be materially affected if: 1) the proposed rate increases cause customers' payment delinquency rate to increase or 2) there are worsening economic conditions in Puerto Rico.

2. **Transfers to/from the Rate Stabilization Account (Exhibit 1, Line 2)** – Following the MAT, a Rate Stabilization Account, the balance of which is determined in the annual budget, shall be established by PRASA. This account is established within the Surplus Fund, which contains any remaining money after all required deposits are made. Equivalent monthly deposits during the fiscal year must be made into the account equal to the balance outlined in the annual budget. In compliance with the MAT, Operating Revenues shall include all transfers from the Rate Stabilization Account minus any deposits made to the Rate Stabilization Account during the same FY. For the FY2024 projections, PRASA has assumed a transfer to the Rate Stabilization Account of $36M. According to the 2024 PRASA Fiscal Plan, the RSA is projected to be used in fiscal years 2025 and 2026, for $35M and $32M, respectively, to cover increases in electricity, maintenance, and payroll costs.
3. **Other Income (Exhibit 1, Line 3)** – PRASA's Other Income includes Miscellaneous Income, Special Assessments (fees paid by developers), and income from other sources. Miscellaneous Income mainly includes interest income and other miscellaneous revenues. Special Assessments are fees developers pay for construction projects or new development connections. These fees apply to new water and sewer connections to the System. For example, FY2025 fees are $500 each for water and sewer connections ($1,000 total per unit for both). Special Assessments depend on the fees paid by developers of new projects, and it is expected that the current economic situation will continue to impact the local new housing market during the foreseeable future.

   PRASA's Other Income revenues for FY2024 preliminary projections totaled $4.5M. This Miscellaneous Income is mainly from interest income and contributions from developers. PRASA projects $4.5M in additional revenues annually for Other Income during the forecast period. While this is higher than historical averages for this line item, Arcadis finds PRASA's assumptions for Other Income reasonable due to higher-than-normal interest rates expected to boost interest income in the short term. Revisiting projections for this line item will be important if and when interest rates start to decrease.
4. **2024 PRASA Fiscal Plan Revenue Enhancing Initiatives (Exhibit 1, Line 4)** – In addition to the rate adjustments discussed above, PRASA has also included the metering and customer service optimization benefits as a revenue-enhancing initiative in the 2024 PRASA Fiscal Plan. Additional revenues from this initiative are expected to be obtained from FY2025 through FY2029, as summarized in Table 8-10.

Table 8-10 2024 PRASA Fiscal Plan Revenue Enhancing Initiatives ($, M)

Revenue Enhancing Initiatives	FY2025	FY2026	FY2027	FY2028	FY2029
	Projected	Projected	Projected	Projected	Projected
Metering Optimization / AMI Incremental Revenues	$2.1	$20.2	$40.1	$59.5	$78.9
Total Additional Revenues[1]	$2.1	$20.2	$40.1	$59.5	$78.9

[1]No additional revenues were included in FY2024 from other revenue-enhancing initiatives.

Metering Optimization

The main objectives of this initiative are providing resilient meter infrastructure, efficiency and customer service optimization and commercial water loss reductions. According to the 2024 PRASA Fiscal Plan, by increasing the resiliency and accuracy of water meters, PRASA will be able to transition away from estimated commercial losses and achieve greater precision in its measurements and visibility of the situation of its service areas. In addition, by reducing the uncertainty of the System's apparent losses (commercial losses), PRASA will be able to recover revenues lost to theft and unmetered usage and determine with increased accuracy the volume of real physical water losses. With the implementation of this initiative, PRASA expects to be able to plan its CIP needs and guide the renewal and replacement of its linear water mains to reduce physical losses.

Arcadis continues to assist PRASA as the project's technical advisor, including water meters and AMI and the pilot phase as the first step. The results of the pilot were evaluated and used to inform the selection of the type of water meters and reading technology that will be deployed across the island. A transition to full deployment is expected to occur in the first quarter of calendar year 2025.

8.1.2 Authority Revenues (Other Sources of Revenues)

As defined in the MAT **Authority Revenues** *"shall mean Operating Revenues plus (i) any governmental grants or appropriations available to pay Current Expenses of the Authority, including grants or appropriations received by the Authority and specifically made for the payments of principal of and interest on obligations of the Authority or for reimbursing the Authority for such payments, (ii) any amounts received from the Government of Puerto Rico on account of Commonwealth Guaranteed Indebtedness (which is required to be deposited directly in the Commonwealth Payments Fund) or Commonwealth Supported Obligations (which is required to be deposited in the Commonwealth Payments Fund), (iii) any amounts transferred from the Budgetary Reserve Fund to the Trustee and (iv) any amounts received by the Authority from any source of funding that does not otherwise constitute Authority Revenues as reimbursement for Costs of Improvements paid by the Authority in the current or the immediately preceding three fiscal years from Operating Revenues."*

PRASA is not projecting any additional sources of revenue. Therefore, PRASA's Authority Revenues are equivalent to the Operating Revenues for the forecast period from FY2024 through FY2029.

8.1.3 Operating (Current) Expenses

As defined in the MAT, **Current Expenses** *"shall mean the reasonable and necessary current expenses, incurred by the Authority in the ordinary course of business, calculated on an accrual basis, of maintaining, repairing and*

operating the properties constituting the Systems or causing said maintenance, repair and operation, which expenses shall exclude depreciation, reserves for allowances for doubtful accounts and other non-cash reserves or expenses. For purposes of the Rate Covenant and the Annual Budget required by Section 7.02 of the MAT, Current Expenses will be calculated on an accrual basis. For all other purposes of the MAT, Current Expenses will be calculated on a cash basis. Notwithstanding any accounting treatment to the contrary, the amount of any termination or similar payment under any interest rate swap or similar hedge agreement shall, if payable by the Authority, not be taken into account in computing Current Expenses to the extent the same is paid by or on behalf of the Authority from the proceeds of any Indebtedness."

In connection with the issuance of the 2020 Senior Bonds, PRASA and the bondholders executed a Ninth Supplemental Agreement authorizing the amendment of certain provisions in the MAT, subject to, and effective upon compliance with Section 9.02 of the MAT. The proposed amendments include a change to the Operating Revenue definition, further discussed in Sections 8.5 and 8.6. These amendments will become effective upon receiving the written consent of the holders of certain other Outstanding Senior Indebtedness (Federal Lenders), as all the bondholders of the outstanding Senior Bonds have already consented to the change.

PRASA's Operating (Current) Expenses are presented on an accrual basis as required by the MAT. PRASA's preliminary Operational Expenses for FY2024 and operating expense projections for FY2025 to FY2029 net of (i) capitalized expenses, (ii) the 2024 PRASA Fiscal Plan expense reduction initiatives, and (iii) the 2017/2022 Hurricanes impact recoveries are presented in Table 8-11.

Table 8-11 PRASA Operating Expenses ($, M)

Fiscal Year	Operating Expenses Without FEMA Reimbursements	Operating Expenses net of FEMA Reimbursements
FY2024 Preliminary	$831.7	$810.3
FY2025 Annual Budget	$904.1	$903.1
FY2026 Projected	$935.1	
FY2027 Projected	$941.8	
FY2028 Projected	$947.6	
FY2029 Projected	$953.6	

Note: PRASA is not forecasting any FEMA expense reimbursements beyond 2025 related to impacts from the 2017 Hurricanes Irma and Maria and 2022 Hurricane Fiona.

PRASA's projections for Operating (Current) Expenses and associated assumptions are discussed below. Note that for certain expense categories, PRASA has assumed that expenses will increase year-over-year at an inflation rate as included in the 2024 PRASA Fiscal Plan, incorporating the FOMB's inflation rates projections, averaging about 1.68% for the forecast period (FY2025 through FY2029). Puerto Rico's inflation rate at the end of September 2024 was about 1.5%, but projections show a projected increase to approximately 2.2% by September 2025[9].

[9] Source: Trading Economics (https://tradingeconomics.com/puerto-rico/inflation-cpi/forecast)

1. **Payroll and Benefits (Exhibit 1, Line 11)** – Payroll and Benefits, before capitalization, continue to be PRASA's largest expense category.

   - PRASA's FY2024 Payroll and Benefits are projected at $330.1M.
   - For FY2025, PRASA is projecting Payroll and Benefits of $356.3M, incorporating the projected impact of salary pay scale adjustment currently under review.
   - For the remainder of the forecast period, the 2024 PRASA Fiscal Plan is projecting the Payroll and Benefits expense to increase annually on average by approximately 0.89% as follows:
     - FY2026 = $363.3M
     - FY2027 = $364.9M
     - FY2028 = $366.6M
     - FY2029 = $369.1M

   The following main assumptions were applied to develop the Payroll and Benefits Costs according to the 2024 PRASA Fiscal Plan:

   - Headcount of 4,625 employees for FY2024, increasing gradually until reaching 4,800 employees by FY2026 and remaining at that level thereafter.
   - Minimum salaries are based on current legislation and are projected to increase based on preliminary updated job classification and compensation plans.
   - Compliance with the Fiscal Plan Compliance Act (Act 26-2017) as amended, including the following benefits:
     - Maximum overtime factor of 1.5 times the normal pay, and
     - Accrual of a maximum of 15 vacation days.
   - Eighteen days of sick leave per year as set forth by Act 176-2019.
   - Healthcare plan costs are based on the current contract for FY2024 and proposals received for FY2025 and increased by projected healthcare cost inflation thereafter.
   - Pension costs are projected as a "PayGo" expense based on the information provided by the Employees Retirement System (ERS).

   Headcount and Overtime Assumptions

   As of June 30, 2024, PRASA had a total headcount of 4,625 employees and is expected to increase to 4,750 FTE by the end of FY2025. PRASA expects to reach its revised optimal headcount level of 4,800 FTEs by FY2026 and to maintain that level for the duration of the forecast.

   Based on the FY2024 projections through May 31, 2024, the current overtime level is approximately 8.5% of total payroll costs. Overtime is expected to reduce from 8.6% in 2025 to 8.5% in 2029.

   Legislated Acts Assumptions

   Act 26-2017 and Act 176-2019 – Act No. 26 was enacted on April 29, 2017 (Act 26-2017) to ensure compliance with the Government's Fiscal Plan approved and certified by the Oversight Board on May 13, 2017, and re-certified post-Hurricanes Irma and María on June 29, 2018. Among other measures, Act 26-2017 requires all marginal benefits to be the same for all Government of Puerto Rico employees, including all public agencies, instrumentalities, and corporations, such as PRASA. The act froze and reduced some payroll benefits or

compensation, including vacation and sick leave, payout terms of licenses, and bonuses. Subsequently, under Act 176-2019, certain amendments were reverted. Currently, PRASA employees' benefits include the following:

- Vacation licenses accumulate at a rate of 1.25 days per month of service and may be accumulated to up to a maximum of 15 days by the end of each natural year and may accrue up to 60 days.
- Sickness licenses accumulate at a rate of 1.5 days per month of service and may be accumulated to up to 18 days by the end of each natural year.
- Licenses in excess will not be paid out, except for vacation days accrued up to 60 days.
- Elimination of all bonuses, except for Christmas bonuses, which shall have a maximum of $600.
- Extra hours will be compensated at a maximum rate of 1.5 times the regular hourly rate.

The impact of Act 26-2017 and Act 176-2019, as amended, were incorporated in PRASA's Payroll and Benefits costs for the forecast period.

2. **Voluntary Pre-Retirement Program (Act 211-2015)** – As a result of the fiscal crisis, the Puerto Rico

Government enacted Act No. 211 on December 8, 2015 (Act 211-2015), which created a "Voluntary Pre-Retirement Program". Act 211-2015 intends to create a program *"whereby eligible employees of the Government of the Commonwealth of Puerto Rico may voluntarily separate from service by receiving incentives until they meet the requirements for retirement; provide for the requirement of credited years of service needed to qualify for this Program; establish the timeframe for employees to exercise their option to avail themselves of the Voluntary Pre-Retirement Program; provide the special incentives that shall be granted to employees who avail themselves of the Program; provide the requirements needed to implement the Program; and for other related purposes".*

The program incentivized certain eligible employees to voluntarily retire early and receive compensation equal to 60% of their average salary, payout of unused vacation and sick leaves (as per Act 66-2014), and keep their health insurance coverage for two years. These incentives are applicable until they meet the requirements for full retirement. Consequently, the program attempts to reduce the workforce progressively and voluntarily, allowing the economy to transition. Act 211-2015 also stipulates that the resulting vacant positions from the retirement program be eliminated and that agencies take administrative or operational measures to restructure without these positions. The FOMB might authorize maintaining positions if certified to be essential and per the plan submitted by PRASA.

Some eligible PRASA employees occupied managerial or supervisory positions, which may create organizational challenges. As of June 30, 2024, over 350 PRASA employees have retired under the Voluntary Pre-Retirement Program.

Collective Bargaining Agreements Assumptions

On April 6, 2021, the Authority received a partial labor agreement proposal from the UIA, its main labor union. UIA requested that the Authority provide financial information to develop a proposed comprehensive revision to the Authority's CBA, with UIA incorporating amendments to clauses with economic impact. After further discussions by the parties, in February 2022, the Authority and UIA signed a Negotiation Agreement. The Negotiation Agreement, by which the parties mediate before the Puerto Rico Department of Labor (DOL), provides for negotiating revised pay scales, subject to PROMESA and the Fiscal Plan compliance.

Under the Negotiation Agreement, either party can notify the other of its intention to negotiate a revised CBA at least 90 days before July 1st, commencing with July 1, 2022. The CBA will be extended for an additional year if such notification is not received at least 90 days before July 1st.

The Negotiation Agreement also provides for the parties to promote the payment of wage incentives starting in FY2023 for certain difficult recruitment positions such as plant operators and electro-mechanics, payment of a $600 premium by June 30, 2022, to recognize UIA members' employment commitment, and payment of Christmas bonus balances for FYs 2015 (by July 31, 2022) and 2016 (by July 31, 2023), without interest or penalties to active UIA members.

On July 1, 2022, based on a comprehensive analysis done by a third party and agreed upon between UIA, HIEPAAA, and the Managers Association, new pay scales were implemented for the PRASA's employees, providing a minimum salary increase. An incentive for licensed plant operators and electro-mechanicals was also implemented.

As stated in the FY2024 PRASA Fiscal Plan, on March 31, 2023, the UIA requested the negotiation of several economic and non-economic clauses. On September 15, 2023, the Authority reached a negotiation agreement with the UIA to negotiate the referenced clauses of the CBA that are of interest for both, the UIA and the Authority (including the implementation of the upcoming New Classification Plan). The first topics negotiated were UIA's request for an adjustment of meal allowances, and the Authority's request for use of information collected by technological equipment used by UIA's employees. Additional negotiations are pending.

On November 17, 2023, the Authority reached an agreement related to the two initial topics negotiated (meal allowance and the use by PRASA of information from technology devices). The Agreement was approved by both the UIA Executive Committee and the Authority's Governing Board. Subsequently, it was also approved by the Oversight Board in January 2024.

The Authority continues negotiations with the UIA at the DOL regarding other topics that were included in the Negotiation Agreement signed on September 15, 2023.

The UIA requested PRASA to grant salary increases as proposed by House Bill No.1894 which was finally vetoed on May 10, 2024. After the veto, the UIA made demonstrations and held a work stoppage. To solve the conflict, and to allow the implementation of a new Classification Plan, PRASA proposed a one-time payment of $1,000.00 which the UIA finally accepted. On October 7, 2024, the Oversight Board approved the one-time payment, conditioned to among others that no additional negotiations with economic impact will be held until the approval of a new Classification Plan, conditions accepted by the UIA under a stipulation dated November 27, 2024.

The Oversight Board is reviewing the updated Compensation and Classifications Plans. Once approved by the Oversight Board, negotiations with the UIA on such matter should commence. The negotiations are now stayed.

Pension Costs Assumptions

As PRASA's employees and retired employees participate in the ERS, PRASA is responsible for the portion of the net pension liability attributable to its employees.

As provided in a circular letter from the Department of Treasury on June 27, 2017 (Number 1300-46-17), beginning in FY2018, employers that participate in the ERS will have to pay the pension benefit of their retired employees on a Pay-Go basis due to the lack of sufficient liquid assets in the ERS. Therefore, PRASA's FY2024 preliminary projections, FY2025 Annual Budget, and financial projections consider the impact of fully funding

the retirement (pension) benefit payments for PRASA's retired employees on a Pay-Go basis. Also, PRASA eliminated from its projections all the employer contributions to the retirement system, including the Cost-of-Living Allowance contribution and the Annual Additional Contribution to the ERS. The amount projected does not include any additional future contributions to the ERS. For FY2024, PRASA projects $91M to cover employees' retirement benefits on a Pay-Go basis. In its FY2025 Annual Budget, PRASA forecasts $90M in pension Pay-Go costs. Additionally, PRASA projects pension Pay-Go costs to be $90M in FY2026, $88M in FY2027, $87M in FY2028, and $87M in FY2029.

3. **Electric Power (Exhibit 1, Line 12)** – PRASA's FY2024 preliminary projections for electric power total $163.1.0M, $39.4M less than the budgeted amount. The FY2025 Annual Budget assumes an electric power expense of $185.4M for FY2025. The FY2025 Annual Budget is based on electric rates, as projected by the Oversight Board, of a standard PREPA/LUMA rate of $0.275 per kilowatt-hour (kWh). For FY2025, the cost per kWh includes the expected rate increase, due to increases in the base charge and the projected implementation of the pension and legacy charges, among other factors. The assumption of $0.275 per kWh is considered reasonable. PRASA's electricity cost is highly sensitive to PREPA/LUMA rates, with an approximate $6.0M per year impact on PRASA's expense per $0.01 variation in the PREPA/LUMA rate. These rates result in projected electric power expenses of $185.4M in FY2025, $209.4M in FY2026, $209.2M in FY2027, $207.7 in FY2028, and $209.3M in FY2029.

   Arcadis finds PRASA's forecast period projection for Electric Power reasonable. However, based on external factors, including the restructuring of PREPA's debt, the projected cost for electricity, which PRASA expects during the Certified Fiscal Plan Period to continue to be significantly influenced by oil prices, is subject to a high degree of uncertainty and possibly a significant change. PRASA is susceptible to varying electricity prices, and the budget does not include a contingency to manage any unforeseen increases in consumption. Therefore, close monitoring of electric energy usage must continue, and PRASA shall make adjustments as necessary. Additional discussion on PRASA's Electric Power assumptions is provided below.

   Electric Energy Tariff Assumptions

   PRASA's LUMA rate as of February 2024 was $0.238 per kWh. LUMA's projected rate applicable to PRASA for FY2025 is $0.275 per kWh. In recent months, PRASA has indicated that the average PREPA (blended) rate cost has been between $0.233-$0.244 per kWh. For FY2025, the cost per kWh includes the expected rate increase, assuming the charges estimated to be required for PREPA pensions and legacy debt, currently under negotiation and therefore not yet implemented. The assumption of $0.275 per kWh could be considered reasonable and conservative. The PREPA/LUMA rate per kWh is projected to increase to $0.3114 in FY2026, and then decrease in FY2027 and FY2028 to $0.3111 and $0.3070, per kWh respectively. This is followed by a slight increase in FY2029 to $0.3095 per kWh.

   PRASA's projected results of electric power cost consider the projected and expected reductions in consumption through 1) regional measures (facility consolidations, minor repairs, operational optimization, and installations improvements) and 2) reductions in cost per kWh from PPAs that have been completed as part of PRASA's Energy Management Program.

   Purchase Power Agreements

   PRASA has included projected cost savings because of its PPAs and other internal measures. Since 2011, PRASA has had ten facilities under a PPA mechanism that set electricity cost at $0.15 per kWh, which is less than rates charged by PREPA/LUMA. PRASA consumes approximately 10.0M kWh per year. Annual savings from these PPAs vary based on PREPA rates.

Consumption Growth Rate Assumptions

The electric power consumption from PREPA in FY2024 totaled 660M kWh (compared to the 649M kWh budgeted). For FY2025, PRASA is projecting that its total consumption will be 678M kWh, of which 667M kWh will be power consumption bought from PREPA. This PREPA consumption projection considers regional initiatives expected to be achieved in FY2025. For the forecast period, PRASA is projecting an average of 669M kWh will be power consumption bought from PREPA.

4. **Maintenance and Repair (Exhibit 1, Line 13)** – The FY2025 Annual Budget for Maintenance and Repair is $88.8M, about $18.1M more than the FY2024 preliminary projections. According to PRASA, the reason for the increase in the maintenance and repair expenses in the FY2025 Annual Budget versus the FY2024 projections is to comply with the SSOMP required under the Consent Decree with the USEPA, as amended. Arcadis finds the maintenance and repair expense budget reasonable. The 2024 PRASA Fiscal Plan projects Maintenance and Repair expenses of $84.3M, $85.6M, $87.1M, and $88.6M for FY2026 through FY2029, respectively. PRASA includes an annual increase for this cost category based on the projected annual inflation rate, as adjusted by non-recurring expenses.

5. **Chemicals (Exhibit 1, Line 14)** – PRASA's FY2024 preliminary projections for chemical costs amount to $73.7M, $0.3M greater than the budgeted amount. As chemical costs are considered commodities and usually affected by inflation and worldwide demand and supply levels, PRASA's chemical costs have materially increased over the past few years. In addition, PRASA's chemical costs have been on a steady rise during recent years because of cost increases and increased chemical consumption related to ensuring compliance with environmental and health standards. As a result, in FY2025, PRASA is budgeting approximately $76.1M in chemical expenses. For FY2026 through FY2029, PRASA has applied an annual increase based on the assumed inflation rate (1.67% average) on chemical expenses, resulting in expenses of $77.4M in FY2026, $78.6M in FY2027, $80.0M in FY2028, and $81.3M in FY2029.

   Arcadis believes PRASA's forecast period projections for chemical expenses are reasonable. However, chemical expenses could be higher than projected if inflation rates are higher than those assumed in the 2024 PRASA Fiscal Plan, consumption increases due to requirements from regulatory agencies, or inefficient chemical dosing.

6. **Insurance (Exhibit 1, Line 15)** – Preliminary projections for insurance expenses in FY2024 total $24.9M, equal to what was previously budgeted. PRASA has budgeted $28.0M for insurance expenses in FY2025, which is $3.1M higher than the FY2024 preliminary projection. This amount includes adjustments to PRASA's insurance premiums due to the post-hurricane and earthquake emergency claims. PRASA has applied an annual increase based on the assumed adjusted inflation rate (1.67% average over the forecast period) on insurance expenses throughout the forecast period, resulting in insurance expenses of $28.5M in FY2026, $28.9M in FY2027, $29.4M in FY2028, and $29.9M in FY2029.

   Arcadis believes the projections for insurance expenses are reasonable. Several recommendations have been provided to PRASA for their consideration to expand coverages and transfer additional risks through its insurance program. To the extent PRASA adopts these recommendations, premium costs may increase.

7. **Other Expenses (Exhibit 1, Line 16)** – Other Expenses consist largely, among others, of costs directly related to operations, including rentals, security services, billings, collections-related costs, water purchases, sludge disposal, and water transport. FY2024 preliminary projections for Other Expenses total $192.3M, $13.8M more than included in the certified FY2024 Annual Budget. PRASA has included $191.3M for Other Expenses in its FY2025 Annual Budget, which represents a decrease of approximately 0.5% compared to the FY2024

preliminary projections due to decreases in costs attributed to electric generators rentals, fuels and oils, purchases of water, materials and services, and water transport. PRASA is projecting that Other Expenses will increase year-over-year based on the adjusted assumed inflation rate (1.67% average over the forecast period), resulting in Other Expenses of $194.4M in FY2026, $197.6M in FY2027, $200.9M in FY2028, and $204.4M in FY2029.

Arcadis has reviewed PRASA's projections for this expense category and finds the budget amount reasonable. However, PRASA should monitor actual costs, particularly for fuels and oils, given the projected increases that could materialize throughout the FY.

8. **2024 PRASA Fiscal Plan Operating and Capital Expense Savings Initiatives (Exhibit 1, Line 17)** – The Operating and Capital Expense Savings initiatives included in the 2024 PRASA Fiscal Plan are the reduction of physical water losses, electricity cost reduction, AMI Meter Replacement project impact on costs, and new financing for CIP.

   Table 8-12 presents the financial projection of these initiatives for the forecast period.

   Table 8-12 2024 PRASA Fiscal Plan Operating and Capital Expense Savings Initiatives ($, M)

2024 PRASA Fiscal Plan Initiatives	FY2024	FY2025	FY2026	FY2027	FY2028	FY2029
	Preliminary	Annual Budget	Projected	Projected	Projected	Projected
Electricity Cost Reduction	-	-	-	-	-	$3.9
Physical Water Loss Reduction	-	($0.2)	($0.2)	$0.3	$0.6	$0.9
AMI Meter Replacement	-	($3.0)	($3.7)	($3.3)	($2.8)	($2.1)
New Financing for CIP	$90.1	$210.9	$361.5	$288.1	$80.6	$41.0
Total Expense Savings and New CIP Funding[1]	**$90.1**	**$207.7**	**$357.6**	**$285.1**	**$78.4**	**$43.7**

Numbers may not add up due to rounding.

While PRASA is committed to the physical water losses and electricity cost reduction initiatives, given the status of their development, and considering the coordination, planning, and implementation efforts still required to be completed, it is likely that the timing for achieving the projected benefits will not be as expected by PRASA. The new financing for CIP appears optimistic based on the recent execution rate of capital projects and available funding discussed in Section 2.

Physical Losses Reduction Initiative

Physical losses are the largest component of NRW in PRASA's water balance. Therefore, this initiative includes a series of efforts to reduce physical losses and NRW and generate operational savings by continuing the water leak detection program, water pressure management and optimization, and installing master meters at critical facilities. PRASA projects additional costs in the first couple of years and savings starting in FY2027. The net impact amounts are -$0.2M in FY2025, -$0.2M in FY2026, $0.3M in FY2027, $0.6M in FY2028, and $0.9M in FY2029. The total projected savings for the forecast period is $1.4M.

Electricity Cost Reduction

As the System's second largest operating expense, PRASA must continue reducing electricity costs and consumption.

PRASA is focusing on projects or alternatives to reduce the unit cost per kWh through additional renewable/alternate energy projects, maximizing the availability of federal funds.

Based on the funding availability and project status, the following four microgrid projects are expected to be implemented and financed with hazard mitigation funds (FEMA-HMGP 406):

1. Superaqueduct raw water pump station: The project consists of implementing a microgrid for the raw water pumping station, with an annual energy consumption of approximately 60M kWh, or approximately 10% of PRASA's yearly consumption. This pumping station would operate totally off-grid and would be powered by liquid natural gas and photovoltaic energy as the main energy source combined with BESS. This project would increase resiliency for one of PRASA's main facilities, which pumps 100MGDs to one of PRASA's main water filtration plants that process 20% of the island's total water production. The project is expected to be operational starting in FY2029.
2. Superaqueduct WTP: Project for the implementation of a microgrid at the Superaqueduct WTP, with a current annual energy consumption of approximately 2.2M kWh. This microgrid will be powered by photovoltaic energy (existing PPA photovoltaic system plus additional photovoltaic panels) combined with BESS. This microgrid project is expected to be operational starting in FY2029.
3. Santa Isabel WWTP: Project for the implementation of a microgrid at the Santa Isabel WWTP, with an annual energy consumption of approximately 3M kWh powered by photovoltaic energy combined with a BESS and, eventually, wind power (if viable). The project is expected to be operational starting in FY2030.
4. Maunabo WWTP and WWPS: Assumes the implementation of a microgrid at the Maunabo WWTP that will be converted to a WWPS with an estimated annual energy consumption of 0.3M kWh. This microgrid would be powered by photovoltaic energy combined with BESS and is expected to be operational starting in FY2029.

The actual electricity cost savings to be produced by these measures will largely depend on the funding availability, the cost of electricity supplied by PREPA/LUMA, the implementation timing, and the regulatory framework (for instance, the impact of the new net-metering framework to be defined by PREB in the future). The projected cost savings amount is expected to start in FY2029 at an amount of $3.9M.

AMI Meter Replacement

Cost-effectively investing in water metering infrastructure is projected to result in long-term cost savings. Replacing existing mechanical meters with more precise smart meter technology is expected to offer benefits such as lower maintenance and repair costs. It is also expected to result in increased productivity and maximization of available resources, as discussed in the 2024 PRASA Fiscal Plan. This will include remote reading capabilities and real-time water flow data.

In FY2025, PRASA's Fiscal Plan projects an additional $3.0M of expenses resulting from the implementation of this initiative; this is due to the expenses needed to start the program outweighing the level of savings. The net impact is additional costs of $3.7M in FY2026, $3.3M in FY2027, $2.8M in FY2028, and $2.1M in FY2029. These efforts are projected to eventually result in net savings by FY2030.

New Financing for CIP

After restructuring the Federal Debt, PRASA recovered access to future funding from USEPA SRF Loans and the USDA RD Program. As a result, the FY2024 preliminary projections expect new financing for CIP through these two programs for $90.1M for FY2024 and $210.9M in the FY2025 Annual Budget. For the remainder of the forecast period, the 2024 PRASA Fiscal Plan projects to receive $361.5M in FY2026, $288.1M in FY2027, $80.6M in FY2028, and $41.0M in FY2029 from these programs for their CIP. These funds include additional appropriations available to PRASA under the BIL and SAHFI programs.

9. **Capitalized Expenses (Exhibit 1, Line 18)** – PRASA contracted Arcadis during FY2022 to review and update the annual operating costs that are eligible to be capitalized to CIP. The recommendations included in the updated report reduce PRASA's capitalization rate from 3.7% (per a study completed in April 2017 by an external consultant hired by PRASA) to 2.7%. FY2024 preliminary projections for capitalized expenses amount to $23.1M. PRASA has included in its FY2025 Annual Budget $25.1M for capitalized expenses based on the capitalization rate of 2.7% of operating expenses. For FY2026 through FY2029, PRASA is projecting capitalized expenses of $25.9M, $26.1M, $26.3M, and $26.5M, respectively.

10. **Hurricanes' Impact on Operating Expenses (Exhibit 1, Line 20)** – PRASA's total 2017/2020 hurricanes and 2020 earthquakes impact on operating expenses amounted to approximately $238M. The major components included as part of these incremental expense estimates include:
    - Overtime payroll for employees working during the emergency
    - Maintenance, diesel refueling, and logistics for emergency power generators
    - Rentals of generators
    - Water distribution services (i.e., oasis)
    - Security measures and services
    - Contracted chemical and bacteriological analysis

Arcadis reviewed the MAT, as amended, to determine the adequacy of the allocation of insurance proceeds and FEMA reimbursements/grants to be obtained due to the impact of the federally declared disasters. Arcadis requested PRASA's legal opinion on this matter. As provided by PRASA's legal advisor, FEMA funds shall not be treated as Operating or Authority Revenues. FEMA does not provide grants to substitute Operating Revenues. Rather, FEMA funds are directed at disaster-related expenses to be used exclusively to cover costs of the eligible emergencies, permanent works, or resiliency projects approved by FEMA. To the extent FEMA funds are received by PRASA, as mentioned, such funds shall not be subject to the gross pledge set forth under the MAT as these funds cannot be used to pay bondholders. FEMA funds shall, therefore, be deposited to the credit of the Current Expense Fund if they are intended to reimburse PRASA for Current Expenses. The received FEMA grants for repairing, replacing, or reconstructing the damaged or destroyed property should be applied to the Capital Improvement Fund.

In its FY2024 projections, PRASA includes a net deposit of $21.4M from FEMA funds to the credit of the Current Expense Fund for the reimbursement of PRASA's operating expenses concerning the impacts of Hurricanes Irma and María. In FY2025, PRASA has budgeted a net deposit of $1M for the impact of the 2020 earthquakes and Hurricane Fiona in 2022. No additional deposits are included in the periods from FY2026 through FY2029.

8.2 Debt Service

8.2.1 Master Agreement of Trust

The MAT contains specific DSC requirements that must be met by PRASA, including, but not limited to, a Rate Covenant. As stated in the Rate Covenant defined in the 2012 MAT, as amended, PRASA has covenanted to establish and collect rates, fees, and charges so that it meets the following four independent requirements, which are calculated annually no later than six months after the end of each FY based on Operating Revenues and Authority Revenues outlined in PRASA's most recent audited financial statements:

- Operating Revenues shall be sufficient to be at least equal to 250% of annual debt service concerning Senior Indebtedness for the current FY.
- Operating Revenues shall be sufficient to be at least equal to 200% of annual debt service concerning Senior Indebtedness and Senior Subordinate Indebtedness for the current FY.
- Operating Revenues shall be sufficient to be at least equal to 150% of annual debt service concerning all Bonds and Other System Indebtedness for the current FY.
- Authority Revenues shall be sufficient to be at least equal to:
  - Annual debt service on Indebtedness
  - Current expenses
  - the amounts, if any, necessary to be deposited in any Senior Debt Service Reserve Account, Senior Subordinate Debt Service Reserve Account, or Subordinate Debt Service Reserve Account to restore the amount on deposit therein to the amount of the applicable Debt Service Reserve Requirement provided that each such Accounts will be deemed to be funded at the applicable Debt Service Reserve Requirement for so long as the deposits required by the MAT are being made;
  - the amount, if any, necessary to be deposited in the Operating Reserve Fund to maintain the balance therein at the Operating Reserve Fund Requirement; and
  - the amount, if any, necessary to be deposited in the Capital Improvement Fund and the Rate Stabilization Account of the Surplus Fund following the Annual Budget for the current FY.

Should PRASA decide to issue additional debt while any debt issued under the MAT (as amended) is outstanding, the additional bonds test (ABT) requirements of the MAT would also have to be met. The ABT is a measure of whether DSC will still be met after the proposed additional bonds are issued. The ABT requirements that PRASA must meet include the following:

- Senior Bonds ABT
  - Operating Revenues are at least equal to 2.5x Senior Bonds' maximum annual debt service.
  - Operating Revenues are at least equal to 1.5x maximum annual debt service on all System Indebtedness.
- Senior Subordinated Bonds ABT
  - Operating Revenues are at least equal to 2.0x combined Senior Bonds and Senior Subordinate Bonds maximum annual debt service.
  - Operating Revenues are at least equal to 1.5x maximum annual debt service on all System Indebtedness.
- Subordinated Bonds ABT

- Operating Revenues are at least equal to 1.5x maximum annual debt service on all System Indebtedness.

A summary of PRASA's MAT DSC and ABT requirements is presented in Table 8-13.

Table 8-13 2012 MAT DSC Requirements Summary, as amended

Lien Level	Debt Secured	DSC for ABT (MADS)[1]	DSC for Covenant Test	In Default if DSC not Achieved?
Senior	2008, 2020, 2021, 2022 Bonds and SRF & RD Loans	2.5/1.5	2.5	Yes
Senior Subordinate	Not currently applicable	2.0/1.5	2.0	Yes
Subordinate	Not currently applicable	1.5	1.5	Yes
Below Subordinate	Commonwealth Guaranteed Indebtedness	N/A	1.0	No
Below Subordinate	Commonwealth Supported Obligations (CSO)	N/A	1.0	No

[1] Two tests apply to future debt. The first test is Operating Revenues divided by existing and proposed debt service (at the existing lien level); the second test is Operating Revenues divided by existing and proposed debt service (regardless of lien level) plus specified Reserve Fund deposits.

Following the MAT, the flow of funds shall be as follows:

- Senior, Senior Subordinate and Subordinate debt (and any debt secured on a parity therewith) take priority over current Operating Expenses.
- CGI and CSO would continue to be funded/paid only after funding of current operating expenses and other funds with priority over CGI and CSO.
- PRASA shall deposit all revenues in the Operating Revenue Fund to make the required deposits set forth below. The Trustee transfers the moneys on deposit in the Operating Revenue Fund to the following funds in the following order:
  - Senior Bond Fund – to fund principal and interest payments on Senior Indebtedness;
  - Senior Debt Service Reserve Fund – to fund deficiencies in the reserve fund upon the issuance of additional Senior Bonds or withdrawals or valuation losses;
  - Senior Subordinate Bond Fund – to fund principal and interest payments on Senior Subordinate Indebtedness;
  - Senior Subordinate Debt Service Reserve Fund – to fund deficiencies in the reserve fund upon the issuance of additional Senior Subordinate Bonds or withdrawals or valuation losses;
  - Subordinate Bond Fund – to fund principal and interest payments on Subordinate Indebtedness;
  - Subordinate Debt Service Reserve Fund – to fund deficiencies in the reserve fund upon the issuance of additional Subordinate Bonds or withdrawals or valuation losses;
  - Current Expense Fund (a new fund under the MAT) – to fund current operating expenses of PRASA;
  - Operating Reserve Fund – to fund Operating Reserve requirements and to pay reimbursement obligations on Operating Reserve Facilities;

- Capital Improvement Fund – to fund the Capital Improvement Fund Requirement;
- Commonwealth Payments Fund – to fund principal and interest payments on CGI and CSO; and
- Surplus Fund – to fund the Rate Stabilization Fund and, after that, for any lawful purpose.

In connection with the issuance of the 2020 Senior Bonds, PRASA and the bondholders executed a Ninth Supplemental Agreement authorizing the amendment of certain provisions in the MAT, subject to and effective upon compliance with Section 9.02 of the MAT. The proposed amendments, summarized below, are contained in the form of the Second Amended and Restated Master Agreement of Trust (the "Second Amended and Restated Trust Agreement"). These amendments will become effective upon receiving the written consent of the holders of certain other Outstanding Senior Indebtedness (Federal Lenders), as all the bondholders of the outstanding Senior Bonds have already consented to the change.

The proposed amendments, as outlined in the Second Amended and Restated Trust Agreement, among other items, would:

1. *Revise the pledge of the Authority Revenues from a "gross revenue pledge" to a "net revenue pledge" by changing the order of monthly deposits of Revenues with the Trustee, such that the order of monthly deposits in the flow of funds to provide for the payment, both before and after the occurrence of an Event of Default, of Current Expenses prior to the Authority making monthly deposits for debt service on Bonds and Other System Indebtedness.*
2. *Revise the definition of "Annual Debt Service" to clarify that, consistent with the Authority's historical calculation thereof, Annual Debt Service is calculated based on when the Authority is required to make deposits to the respective Bond Funds rather than when the date on which principal and interest is due and payable.*
3. *Change the term "Operating Revenues" to "Revenues" and clarify that such term does not include (a) revitalization charges imposed pursuant to Act 68-2018 or similar mandatory, non-bypassable charges imposed by law to secure securitization bonds and (b) any funds received from the federal government required to be used to pay Current Expenses or Costs of Improvements or required to reimburse the Authority for Current Expenses or for Costs of Improvements.*
4. *Amend the Rate Covenant coverage levels.*
5. *Amend the tests for the issuance of additional Bonds to require that Revenues provide the coverage levels.*
6. *Eliminate the references in the Trust Agreement to Commonwealth Supported Obligations, which obligations are not indebtedness of the Authority, not payable from Revenues, and would not cause the occurrence of an Event of Default if not paid.*
7. *Clarify the timing of delivery of audit reports to the Trustee and the CE.*
8. *Eliminate references to the Term Loan Fund and Budgetary Reserve Fund, which no longer exist; add a force majeure definition and modify the Current Expense Fund and Cost of Improvement definitions.*
9. *Amend the definition of Debt Service Reserve Facility to require that a provider of any such facility be rated in one of the two highest long-term rating categories by at least two nationally recognized statistical rating organizations instead of by two such organizations then rating the Authority's Bonds.*

The proposed amendments would be made under Section 9.02 of the MAT. However, these will not become effective unless and until the Federal Lenders have consented to that. PRASA cannot assure whether it will continue to seek all such consents when they will be obtained or if they can be obtained at all. Until the required consents have been obtained, the MAT will remain in effect without the proposed amendments.

8.2.2 Debt Service Coverage

A summary of PRASA's existing debt service obligations and coverages for FY2024 through FY2029 are presented in Exhibit 1 and summarized in Tables 8-14 through 8-17. Estimated debt service amounts include projected payments on the 2020, 2021, and 2022 Bonds, other existing debt, and payments for maintaining required debt service reserves, as applicable. Other System Indebtedness in parity with Senior bonds includes the SRF and USDA RD Loans, which started in July 2019 after the federal debt modification.

The CGI included until June 2019, the 2008 Revenue Refunding Commonwealth Guaranteed Bonds, the USDA RD Bonds, and the SRF Loans. On June 30, 2016, PRASA entered into various forbearance agreements with both (i) USDA and (ii) the PRIFA, the Department of Natural and Environmental Resources (DNER), and the DOH (all three for the SRFs), which were later extended in various occasions until July 2019 when agreements were reached between all parties.

Upon execution of the Seventh Supplemental Agreement of Trust dated July 26, 2019, the following amendments were made concerning the CGI:

1. Amendment to Section 1.02 of the MAT, Definition of "Commonwealth Guaranteed Indebtedness" was amended to read as follows: "Commonwealth Guaranteed Indebtedness" shall mean any obligations of the Authority that are designated as Commonwealth Guaranteed Indebtedness by the Authority and Authority's Puerto Rico Aqueduct and Sewer Authority Revenue Refunding Bonds, Series 2008 but shall not include any loans from the United States Department of Agriculture, Rural Development, Rural Utilities Service or obligations of the Authority to the Puerto Rico Infrastructure Financing Authority evidencing revolving loans pursuant to the Puerto Rico Water Pollution Control and Drinking Water Treatment Revolving Funds or any loans granted by the Commonwealth Revolving Funds under the provisions of the Federal Clean Water Act of 1972, as amended and the Federal Safe Drinking Water Act of 1996, as amended.
2. Amendment to Section 2.20 of the MAT adding a paragraph regarding Trustee notifications to each Fiduciary for and Holder of (as applicable) in Other System Indebtedness.
3. Amendment to Section 8.10 of the MAT regarding Waivers of Events of Default.

Renegotiated terms of PRASA's SRF and RD debt obligations, reclassified as Senior Level Debt per the Seventh Supplemental Agreement of Trust dated July 26, 2019, are summarized in Table 8-14.

Table 8-14 Renegotiated Terms for SRF and RD Debt

Debt Category	SRF	RD
Outstanding Debt Balances, including future loans of $26M for SRF and accrued interests for RD	$595,777,017.21	$402,931,464.55
Term	30 years	40 years
Rate	0% until year 10 and 1.0% after that	2.0%
Payment Terms	Biannual principal-only payment of $5M in Years 1-10; biannual principal and interest payments of $13.7M in Years 11-30	Biannual principal and interest payments of $5M in Years 1-10, increasing to $8.5M in Years 11-40
Maturity Date	7/1/2049	7/1/2059

Debt Category	SRF	RD
Debt Level	Senior	Senior

On December 17, 2020, PRASA issued its 2020 Series A and Series B Revenue Refunding Bonds (the "2020 Senior Bonds") for $1,351.3M and $18.8M, respectively, to refund some of its outstanding 2008 senior bonds. The proceeds of the 2020 Senior Bonds were used to:

4. Refinance the then-outstanding 2008 Revenue Bonds Series A and Series B (Senior Lien) issued under the MAT, excluding the non-callable convertible capital appreciation bonds with a balance of $87.2M as of the refunding date, which was subsequently due in full on June 30, 2024.
5. Refinance all of PRASA's currently outstanding Revenue Refunding Bonds, 2008 Series A and 2008 Series B, each guaranteed by the Government of Puerto Rico.
6. Pay costs of issuance of the 2020 Senior Bonds. The par amount of the refunded bonds amounted to $1,427.6M (the 2020 Senior Bonds were issued at a premium to par).

The issuance of the 2020 Senior Bonds to refund a portion of PRASA's senior bonds resulted in a reduction in total debt service payments over the next 27 years of approximately $348.2M and the termination of the Commonwealth Guarantee over the Revenue Refunding Bonds, 2008 Series A, and B. This results in an average annual debt service savings of about $13M.

The 2020 Senior Bonds are classified as Senior Debt and are not guaranteed by the Commonwealth. Therefore, no CGI remains outstanding after the Federal Debt modification in July 2019 and the issuance of the 2020 Senior Bonds.

On August 25, 2021, the Authority issued its 2021 Senior Bonds in a total principal amount of $1,089.8M. In addition, on June 15, 2022, PRASA completed the issuance of its 2022 Senior Bonds in a total principal amount of $565.2M to refinance in the aggregate all of the Authority's 2012 Series A and B senior revenue bonds (2021/2022 Senior Bonds). The issuance of the 2021/2022 Senior Bonds results in a reduction in average annual senior debt service of $22M, total debt service savings to final maturity of approximately $569.7M or approximately $361.5M NPV savings, representing 20% of the refunded par amount.

The Puerto Rico Public Finance Corporation (PFC) has an outstanding note, the proceeds of which were used to finance the construction of the North Coast Superaqueduct System (the "PFC Superaqueduct Note"), which is considered a CSO under the MAT, subordinate to the payment of Senior, Senior Subordinate and Subordinate Indebtedness and CGI debt. The PFC Superaqueduct Note is contractually payable "solely" from Commonwealth budgetary appropriations. Until 2006, the Commonwealth (directly or indirectly through budgetary appropriations) had made all debt service payments on the CGI and CSO, including the PFC Superaqueduct Note. In 2006, to help alleviate its budget constraints, the Commonwealth requested that PRASA, as part of its actions to restore its operations to financial self-sufficiency, recommence, in respect of the CGI and begin, in respect of the PFC Superaqueduct Note, to make debt service payments on said obligation during fiscal years where sufficient funds are available. The PFC Superaqueduct Note remains a limited obligation of PRASA, payable solely from appropriations made by the Government. As provided in the MAT, the obligation to make CSO payments is not cumulative and, therefore, does not carry forward to future periods, and failure to make the payments or required deposits related to this debt is not an event of default under the MAT.

On January 20, 2022, AAFAF, on behalf of PFC, entered into a Restructuring Support Agreement (the "PFC RSA") with holders of a majority of those certain Series 2011A, Series 2011B, and Series 2012A Commonwealth

Appropriation Bonds (the "PFC Bonds"). The PFC RSA provides for the restructuring and discharging of the PFC Bonds under a Title VI Qualifying Modification (the "PFC Qualifying Modification"). The PFC RSA further provides that the Notes, including by the Authority, for the repayment of the PFC Bonds, will be canceled and extinguished under the PFC Qualifying Modification, and the Authority will be discharged from any liability arising from or related to such promissory notes.

On October 25, 2022, AAFAF, on behalf of the PFC and the Oversight Board, launched a solicitation of the PFC Qualifying Modification. On October 28, 2022, the Oversight Board, as the Title VI Administrative Supervisor, commenced a Title VI proceeding in the U.S. District Court for the District of Puerto Rico.

On December 30, 2022, the Court entered an order approving the PFC Qualifying Modification. On January 12, 2023, the PFC Qualifying Modification became effective. The PFC Bonds and Notes were thus discharged and extinguished. Therefore, PRASA does not hold any outstanding PFC debt or obligations.

A summary of PRASA's debt service obligations and projections for FY2024 and the forecast period are presented in Tables 8-15 and 8-16, respectively. FY2024 debt service obligations totaled $249.1M of Senior lien obligations.

Table 8-15 FY2024 Debt Service Obligations and Preliminary Results ($, Thousands)

Debt Category	FY2024 Preliminary Results
Senior Debt	$249,111
Senior Subordinated Debt	-
Subordinated Debt	-
Total	**$249,111**

Table 8-16 FY2025 - FY2029 Debt Service Obligations ($, Thousands)

Debt Category[1]	FY2025 Projection	FY2026 Projection	FY2027 Projection	FY2028 Projection	FY2029 Projection
Senior Debt	$249,374	$258,446	$264,431	$269,007	$269,998
Senior Subordinated Debt	-	-	-	-	-
Subordinated Debt	-	-	-	-	-
Total Debt	**$249,374**	**$258,446**	**$264,431**	**$269,007**	**$269,998**

The DSC results presented in Table 8-17 for the forecast period have been calculated using the Rate Covenant requirements per the MAT, as amended, and debt service obligations.

Table 8-17 FY2024 - FY2029 Debt Service Coverage

Debt Service Level	DSC Requirement	FY2024 Preliminary DSC	FY2025 DSC	FY2026 DSC	FY2027 DSC	FY2028 DSC	FY2029 DSC
Senior Debt[1]	**2.50**	4.42	4.73	4.72	4.65	4.74	4.88

Debt Service Level	DSC Requirement	FY2024 Preliminary DSC	FY2025 DSC	FY2026 DSC	FY2027 DSC	FY2028 DSC	FY2029 DSC
Senior Subordinated Debt[1]	**2.00**	4.42	4.73	4.72	4.65	4.74	4.88
Subordinated Debt[1]	**1.50**	4.42	4.73	4.72	4.65	4.74	4.88
All Obligations[2]	**1.00**	1.00	1.00	1.00	1.00	1.00	1.00

[1] DSC calculated for Operating Revenues.
[2] DSC calculated for Authority Revenues.

As shown in Table 8-17, PRASA's Operating Revenues and Authority Revenues are projected to be sufficient to meet Senior Lien debt service payments during the forecast period. Also, PRASA projects to meet the 1.0x DSC on All Obligations every year of the forecast period. The final DSC for FY2024 will be recalculated after the FY2024 Audited Financial Statements issuance to determine if PRASA met the Rate Covenant Requirements.

8.3 Reserves and Other Deposits Requirements

8.3.1 Debt Service Reserve Funds

Following the MAT, as amended, Reserve Funds for Senior Debt, Senior Subordinate, and Subordinate Debt must be maintained in a reserve account at least equal to:

(i) The amount outlined in the Supplemental Agreement authorizing the issuance of a particular Series of Bonds or

(ii) If not otherwise specified in a Supplemental Agreement authorizing the issuance of a particular Series of Bonds, the lesser of:

- Maximum Annual Debt Service on the Outstanding Bonds secured by such Account, payable in any FY for the related Bonds.
- Ten percent (10%) of the proceeds of the Outstanding Bonds secured by such an Account, calculated following the Code.
- 125% of the average Annual Debt Service for the payment of the principal of and interest on the Outstanding Bonds secured by such Account.

Debt service costs include the required contributions to the debt service reserves created and funded with 2008 bond proceeds for the benefit of the 2008 Bonds. Should future bond issuances include required reserves, PRASA plans to contribute the additional funds in each reserve with a portion of the bond issuance proceeds, as necessary.

8.3.2 Operating Reserve Fund

The Sixth Supplemental Agreement to the MAT amended Section 5.10 (a) and (c) of the Operating Reserve Fund to read as follows:

(a) *In each month, the Trustee shall deposit to the Operating Reserve Fund (i) beginning on the first Business Day of the month and after making the deposits required by Section 5.02 (b) (i) through (vii), an amount of the Authority Revenues equal to 1/60 of the amount, if any, necessary to restore the amount on deposit therein to the Operating Reserve Requirement and to pay interest on any reimbursement obligations due with respect to an Operating Reserve Facility. Earnings on moneys held in the Operating Reserve Fund shall be retained therein.*

(b) *In lieu of or in addition to cash or investments, at any time, the Authority may cause to be deposited to the credit of the Operating Reserve Fund, an Operating Reserve Facility, in the stated amount equal to all or a portion of the application Operating Reserve Requirement. Any withdrawals from the Operating Reserve Fund made in accordance with the above paragraph (b), shall be made first from any cash or investments on deposit therein and then to the extent no such cash or investments are available, from a draw on any Operating Reserve Facility.*

Per the Sixth Supplemental Agreement to the MAT, PRASA is cash funding the reserve and deposited $5.8M in the Operating Reserve Fund during FY2024. For FY2025, PRASA is projecting to deposit $8.5M in the Operating Reserve Fund to comply with the MAT requirement of 90 days of current expenses of such year. In future years, PRASA is projecting to deposit the required funds in the Operating Reserve Fund to align the balance with the increases in Operating Expenses, seeking to always maintain three months of current expenses in deposit.

8.3.3 Capital Improvement Fund

Following the MAT, a Capital Improvement Fund must be established and funded for each FY in an amount equal to the greater of:

(i) The amount set forth in the annual budget for such FY or
(ii) The amount recommended by the Consulting Engineer.

Equal monthly deposits over the FY must be deposited to the Fund to make the balance of the Fund equal to the annual requirement. In addition, the following must be credited to the Fund:

(i) The proceeds of any condemnation awards,
(ii) The proceeds of insurance (other than use and occupancy insurance),
(iii) The proceeds of sales of property constituting a part of the Systems, and
(iv) The proceeds of any termination or similar payment received by PRASA under any interest rate swap or similar hedge agreement.

PRASA deposited $32.6M from Operating Revenues in the Capital Improvement Fund during FY2024 to finance a portion of its projected CIP. This deposit is net from the FEMA/ARPA proceeds and other restricted funds, and the PRASA FY2024 Fiscal Plan New Federal Funds initiative is estimated at $90.1M (excluding the costs related to such funds as they are already included as a part of the debt service) for FY2024.

In its FY2025 Annual Budget, PRASA projects to make deposits to the Capital Improvement Fund of $19.4M from Operating Revenues, net from FEMA/ARPA proceeds and net from the PRASA FY2024 Fiscal Plan New Federal Funds initiative estimated at $210.9M (excluding the costs related to such funds as they are already included as a part of the debt service).

From FY2026 through FY2029, PRASA projects to make deposits in the Capital Improvement Fund in the amounts of $18.5M, $23.0M, $54.7M, and $89.6M from Operating Revenues, net from the New Federal Funds initiative

estimated at $361.5M, $288.1M, $80.6M, and $41.0M, respectively (excluding the costs related to such funds as they are already included as a part of the debt service).

8.3.4 Construction Fund

Following the MAT, a Construction Fund must be established and funded with the following deposits:

(i) the amounts required to be deposited under the resolution of the Board authorizing the issuance of particular Series of Bonds or the applicable Supplemental Agreement and,
(ii) any moneys of the Authority that may properly be deposited to the credit of said Fund, or the proceeds of any grants received from any source, to be used for the purpose of paying the Cost of Improvements.

PRASA has not included any deposits into the Construction Fund for the forecast period.

8.3.5 Commonwealth Payments Fund

The Commonwealth Payment Fund includes deposits related to CGI and CSO debt. As previously discussed, there is no outstanding CGI balance after the Federal Debt modification in July 2019 and the issuance of the 2020 Senior Bonds.

There is also no outstanding CSO balance since January 2023, when the PFC Bonds were canceled and extinguished under the PFC Qualifying Modification; therefore, the PRASA was discharged from any liability arising from or related to such promissory notes, and PRASA does not hold any outstanding PFC debt or obligations thereunder.

As no CGI or CSO debt is outstanding, PRASA projects no deposits for the Commonwealth Payment Fund.

8.3.6 Surplus Fund and Rate Stabilization Account

After all the deposits required by the MAT, as amended, have been accordingly made, any remaining moneys shall be deposited to the credit of the Surplus Fund, which includes the Rate Stabilization Account. Accordingly, the FY2024 projections include a $36M transfer to the Rate Stabilization Account, while the FY2025 Annual Budget includes a transfer from the Rate Stabilization Account of $35M. The 2024 PRASA Fiscal Plan also includes transfers from the Rate Stabilization Account for $32M in FY2026. Transfers are not planned beyond FY2026.

8.4 Conclusions

PRASA's forecast (Exhibit 1) reflects the financial projections in the 2024 PRASA Fiscal Plan certified by the Oversight Board on June 11, 2024. With PRASA's projected additional revenues, cost savings, new federal funds, and proposed rate increases, the forecast reflects a total surplus of $11.9M from FY2024 through FY2029.

Operating Revenues are projected to be sufficient to meet Senior Lien debt service payments and meet Rate Covenant DSC requirements for Senior Lien Debt. Authority Revenues are projected to be sufficient every year of the forecast period to meet All Obligations per the MAT. Therefore, PRASA is projecting to meet its Rate Covenant requirement of 1.0x coverage of its current obligations throughout the forecast period. In meeting these requirements, PRASA must consider its rates' overall sustainability and affordability, given the overall economic situation affecting Puerto Rico and recent trends affecting customer consumption profiles.

The following events could have material negative effects on PRASA's forecast, which may negatively impact PRASA's financial situation in the future:

- Lower revenues or savings achieved, or timeliness of the 2024 PRASA Fiscal Plan initiatives.
- Lower funding than expected from FEMA proceeds and other projected federal funds.
- Higher energy costs because of higher consumption and/or higher PREPA/LUMA electric costs (per kWh).
- Higher than expected annual inflation rates.
- Higher than budgeted personnel costs related to salaries, benefits, and incentives to improve employee retention at PRASA.
- Higher construction costs due to the supply-demand situation of materials and equipment.
- Unforeseen natural disasters.
- Stagnant / decreasing population projections.

The probability of PRASA meeting its forecast is conditioned on the following:

1. **PRASA's continuing ability to maintain its Service Revenues, billings, and collections in a challenging economic environment** – Further decline in non-residential consumption, additional burden on the island's financial situation, and continuing population shifts could affect PRASA's billings and/or collections.
2. **PRASA's ability to successfully implement its Fiscal Plan initiatives** – PRASA's 2024 Fiscal Plan includes certain revenue-enhancing and cost-reduction initiatives. Any changes to the funding, framework, and execution of these initiatives would significantly alter PRASA's projected financial results. Therefore, although PRASA has committed to implementing the initiatives described in this Report, there is a possibility that the projected results and, more specifically, the timing of those results may not be achieved.
3. **PRASA's ability to address operational needs while meeting its budgetary assumptions and goals** – PRASA's System continues to require increased maintenance and repairs, additional operations staff, and other operational investments for general System upkeep. As a result, the System's needs could exceed the levels assumed by PRASA in its forecast, thereby materially affecting operating expenses.

9 Conclusions

Based on our review, we offer the following statements and conclusions concerning PRASA's financial and operational conditions.

9.1 PRASA's Fiscal Situation

Puerto Rico's Government has grappled with notable economic and demographic hurdles in recent years, significantly affecting PRASA. Alongside the economic downturn in the region, PRASA, similar to other municipal water and wastewater utilities, confronts various pressing issues. These include challenges related to affordable service delivery, aging infrastructure, substantial non-revenue water NRW, compliance with regulatory mandates, susceptibility to climate change and natural disasters, declining population and water usage, workforce-related difficulties, and escalating requirements for capital investment and R&R.

Puerto Rico has endured adverse economic, infrastructural, and operational repercussions due to Hurricanes Irma and María in 2017, a sequence of earthquakes in 2019 and 2020, the COVID-19 pandemic, and Hurricane Fiona in 2022. PRASA's financial situation has shown signs of improvement, attributed to adopting diverse strategies. These encompass debt restructuring, measures to augment revenue, federal disaster recovery aid, and acquiring loans and grants from the SRF.

Based on the 2024 Certified Fiscal Plan, PRASA has identified certain measures to ensure continued progress in PRASA's long-term fiscal condition and to ensure the Authority can continue to provide safe, reliable, and affordable water and wastewater services. Four broad categories of measures are incorporated in the Post-Measures Financial Results:

- Revenue Enhancement Measures, which target adequate cost recovery levels executed through future rate adjustments and improvements in billing accuracy.
- Expense Reduction Measures by reduction of PRASA's overall expenditures through operational optimization, mostly by reducing physical water losses and electricity costs.
- New Financing for CIP by securing additional federal funding to finance the CIP.
- Enabling Measures, which will enact measures to facilitate the successful implementation of the Fiscal Plan key measures and to provide for operational sustainability throughout the organization.

PRASA remains steadfast in its commitment to build upon prior achievements, especially in the system's condition, enhancing operational efficiencies and ensuring the timely and cost-effective execution of its CIP. These specific areas are anticipated to receive attention, utilizing anticipated federal funding inflows (combined with appropriate contributions from PRASA's internal resources). This funding is intended to cover the CIP necessities, fostering PRASA's objective to fortify its infrastructure and build more effective and resilient water and wastewater systems.

Chapter 2 of the FY2024 CER Report particularly addresses Puerto Rico's Oversight Management and Economic Stability Act and PRASAs Fiscal Plan, the federal debt modification, the senior debt refunding, rate adjustments, current energy management status, federal funds for disaster recovery and resilience, and funding status.

9.2 Organization and Management

In January 2022, PRASA completed a labor capacity and productivity assessment to determine the optimal staffing levels. The study identified the need (including amendments to incorporate updates on Customer Service and Infrastructure Departments) of 5,030 employees. Based on the initiatives PRASA is currently implementing, the optimal headcount is expected to be lower than established in 2022 by approximately 200 employees. Based on the FY2024 total headcount of 4,493 employees, PRASA will ideally need to hire 307 additional employees to reach a headcount of 4,800 FTEs by FY2026. Below is a summary of PRASA's strategy to address the employee gap:

- Recruiting key technical and operating personnel, such as plant operators, electromechanics, and other workers for operations.
- Progressively recruiting personnel for positions left open as the pre-retired employees reach full retirement age.
- Filling headcount needs in the Infrastructure, Customer Service and Compliance Departments, among others.

It is important to note that PRASA still struggles to fill vital operational positions in its Operations Department, including roles like field workers, supervisors, electromechanics, electromechanical assistants for the Maintenance Department, plant operators, plant managers, technical managers, preventive maintenance managers, distribution system managers, compliance specialist, and licensed engineers. This scarcity results in overtime work, delayed repairs, or inadequately staffed services, impacting operational efficiency.

Other sections covered under Chapter 3 of the FY2024 CER Report include updates in the board of directors, executive management team, staffing profile, labor relations, and training.

9.3 Condition of System Assets

Arcadis conducted asset condition assessments for various WTP and WWTP facilities and examined a sample of associated auxiliary facilities. Between March and July 2024, Arcadis undertook assessments across PRASA's five Operational Regions, visiting 188 facilities. Among these, 80 were WTP and WWTP facilities. The evaluation involved a thorough visual inspection encompassing equipment, facility conditions, process controls, and an appraisal of regulatory compliance performance, O&M practices, staffing, and training.

Each facility was inspected using an asset management application called Fulcrum. Fulcrum includes scoring and weighting criteria developed by Arcadis. The gathered data revealed that 26% of the facilities inspected in FY2024 were classified as in Good condition, while 64% were deemed Adequate. Within the facilities rated Adequate, 28% (34 out of 120) scored below 2.0. Left unaddressed, these facilities have the potential to experience continued deterioration, possibly leading to a downgrade to Poor or Unacceptable ratings in the future.

Ten percent of the facilities are in the Unacceptable to Poor range, which is an improvement of 4% when compared to FY2023. The major concern is the facilities' physical condition. However, PRASA expects to properly address several deficiencies highlighted by the projected inflow of federal funds to cover (with appropriate contributions from PRASA's internal funds) the System needs. In addition to the physical condition, the Staffing and Training criterion impacts the overall condition of the facilities. This criterion was mostly affected by the ongoing personnel turnover and the need for certified operators, engineers, and other support staff for the treatment facilities.

PRASA's eight regulated dams were rated as Adequate to Poor condition. No dam received a combined rating of Good inspections. Overall, there was no improvement of ratings in any indicators due to the lack of improvements to address deficiencies noted in the previous inspection. However, Isabela has an ongoing CIP construction project that should address some or all of the observations.

Overall, the WTPs inspected are mostly in Adequate condition, with a 2.2 rating. Based on the regulatory compliance results evaluated for this report, despite some operational (process control) and minor compliance issues, the water treatment facilities are generally producing and delivering potable water.

The WWTPs generally range from Poor to Good conditions in the overall rating. Out of the 26 facilities inspected, 4 facilities (15%) received a Poor overall rating, 21 facilities (81%) received an Adequate rating, and one facility (4%) received a Good rating. Compared to the FY2023 inspection results, Regulatory Compliance scores increased. The Staffing & Training, Operations & Process Control, together with the Equipment and Maintenance scores increased when compared against the prior fiscal year. The facilities' physical condition is the main concern. Process Control is also challenging in some facilities, even though plant operators indicated that standard operating procedures and control strategies are followed.

Regarding ancillary facilities, the facility criteria rating of wells, WPS, and WST decreased but remained at the upper end of the Adequate range. To the extent that the physical structures and operational and process controls are maintained or improved by CIP initiatives, the facilities are expected to continue to serve their intended purpose.

The 2024 PRASA Fiscal Plan WRO's main initiatives are pressure management and optimization, water leak reduction (reported and unreported); WST overflow avoidance; and data quality improvement (reduce estimation), which shall help reduce physical water losses.

9.4 O&M Practices and Strategic Plan

Several WTP and WWTP facilities reported exceedances in compliance treatment parameters during the evaluation period and/or lacked the appropriate tools for the execution of appropriate O&M practices, including lack or outdated versions of O&M manuals, equipment manuals, jar tests not being performed consistently, lack of potable water meter, no calibration plan for the chemical feed pumps, inadequate pipe labeling or color coding, poor lighting, and deficient emergency power systems. Furthermore, issues with the automatic transfer switches and deficient housekeeping were identified. Repairs to fences, gates, and access roads were also found necessary. Despite some operations and process control issues, the WTPs delivered potable water adequately. Various WWTPs face challenges due to process control or equipment issues.

PRASA's FY2024 O&M expenses preliminary projection for the water and wastewater systems (combined) were approximately $790.8M (as of June 2024), of which $717.8M are directly related to the System's O&M. The remaining $72.9M are associated to commercial activities and provision of customer service. In FY2024, chemical-related expenses were one of the largest operating expenditures at nearly $76M. PRASA's efforts to reduce overall chemical costs include non-capital initiatives such as procurement strategies and better handling of chemical usage.

Chapter 5 of the FY2024 CER Report addresses in more detail the following topics: department updates, strategic and corporate planning, regional updates, and ongoing programs and initiatives developed by PRASA.

9.5 Non-Revenue Water Reduction Program

Reducing NRW is a high-priority initiative for PRASA, as it will have both revenue enhancement and expense reduction impacts on finances. Therefore, PRASA has invested in different departments within PRASA to implement this initiative. The two main programs are Metering Optimization and the WRO.

To reduce commercial water losses and improve customer experience, PRASA has outlined three initiatives under the Customer Service Department. The initiatives include Efficiency and Customer Service Optimization, Commercial Water Loss Reduction, and AMI.

The WRO focuses on recovering physical losses throughout the water distribution system. In pursuing the vision of achieving long-term sustainability, PRASA included the reduction of NRW as one of the focus areas of the 2024 PRASA Fiscal Plan and has established three main programs for reducing physical losses to achieve a reduction of 64.1 MGD by FY2028. These programs are:

- Master Meters – Accurately measure water production by installing water meters at critical facilities.
- Pressure Management – Incorporating pressure management best practices across the transmission and distribution network.
- Leak Detection and Reduction – Improving identification, prioritization, and resolution of major leaks across PRASA assets.

PRASA will continue with the NRW Reduction Program and enter into a contract with the proponents who will participate in the pilot phase of the AMI project. Concurrently with the pilot phase, PRASA plans to have a separate bid for the installation of both the water meters and AMI infrastructure island-wide. It is expected that by January 2025, the installation contracts will be in place.

The 2024 PRASA Fiscal Plan reported the following improvement in the System in the last five years with regards to the NRW program:

- Annual production of water decreased by 27 MGDs or 5%.
- Authorized consumption increased by 8 MGDs or 4%, mostly as a result of improvements in measurements of internal water use.
- NRW decreased by 14 MGDs or 4%.
- Water losses were reduced by 25 MGDs or 7%.
- Physical losses decreased by 38 MGDs or 13%.

9.6 Capital Improvement Program and Regulatory Compliance

PRASA has engaged the services of four PMCs to support its Infrastructure Department in the planning, design, permitting, procurement, construction, and management of the CIP projects in each of the five Regions. As of March 2024, PRASA had 292 active projects in the CIP at different stages for a total investment of $7B.

PRASA's CIP for FY2024 through FY2038, as included in the 2024 PRASA Fiscal Plan, amounts to $11.3B.

Reconstruction & Recovery, totaling 42% of the total CIP, is $4,766M and is the largest category in terms of dollars throughout this CIP period. Mitigation and Resiliency projects are the second largest expense, with an annual average expenditure of $207.45M and a total of $3,111.8M. Non-Mandatory Compliance is now the third largest expense, with an annual average expenditure of $67.6M and $1,013.8M over the 15-year period.

The total of $11.3B includes $430M to gradually fund a reserve for meter replacement and other infrastructure needs.

PRASA continues to work on the requirements of the Consent Decree with USEPA and the Drinking Water Settlement Agreement with PRDOH. In addition, it continues to consider the proposed modifications to said Consent Decree and Drinking Water Settlement Agreement between PRASA and regulatory agencies in its CIP.

While PRASA has begun to identify the potential impact of new regulations, the full impact of future regulations and other regulatory requirements on PRASA's System is unknown. In some cases, future regulations and additional regulatory requirements are expected to require minor process changes and, in other cases, major capital improvements, such as the construction of new treatment processes and intensive repair programs. PRASA is vigilant of potential future regulations, such as the Lead and Copper Compliance Rule and the PFAS groups, that may impact the System and compliance requirements. Also, PRASA has experienced additional compliance challenges regarding NPDES permit limit requirements for WWTPs and STS discharges at the WTPs. Over the past years, the NPDES permit limits became more stringent for certain parameters such as total nitrogen, total phosphorous, and residual chlorine, among others. PRASA is currently performing investigations and analysis to explore feasible alternatives while continuing communication with regulatory agencies to achieve compliance in the future.

PRASA expects to address the deficiencies with the projected inflow of federal funds to cover (with appropriate contributions from PRASA's internal funds) its System needs in addition to the funds available due to the debt restructuring initiative.

9.7 Insurance Program

PRASA's insurance program, including risk management, policies, and the OCIP, was reviewed to determine if it is appropriate for the System. Several key recommendations for PRASA's insurance program are provided below and recommended they be implemented promptly.

1. The insurable values stated in the policy program are the same as in 2013 based on the cost appraisal performed by Malcolm Pirnie in 2006. Therefore, factors like PRASA's CIP, inflation, acquisitions, etc., have not been considered for at least 16 years. It is strongly recommended that PRASA undertake a new valorization of its assets. Arcadis Caribe was retained during 2023-2024 to perform an asset valorization update, which is expected to be completed at the latest by 2025.
2. The current PML estimates for PRASA for quantifying catastrophic risk exposures were performed in 2010 by AIR Worldwide Corporation based on a valorization study from 2006. Since then, modules, maps, and projections have changed, and new modules might prove economically beneficial to PRASA. This study will provide PRASA and its stakeholders with a scientific report representing the maximum foreseeable loss from catastrophic events, considering various scenarios in terms of intensity and return periods, corroborating if the current limits of insurance carried are adequate or if adjustments shall be made. This analysis may assist PRASA in complying with FEMA's insurance requirements. It is strongly recommended that PRASA undertake a new PML study, which should be performed after the new valorization of PRASA's assets is conducted since any changes in the values of all insurable assets will affect the outcome of this study.

PRASA should implement these recommendations to expand coverage and transfer additional risks through its insurance program. To the extent that PRASA adopts these recommendations, premium costs may increase, and these additional costs should be considered in future financial forecasts.

9.8 Financial Analysis

PRASA’s forecast reflects the financial projections included in the 2024 PRASA Fiscal Plan certified by the Oversight Board on June 11, 2024. With PRASA’s projected additional revenues, cost savings, new federal funds, and proposed rate increases, the forecast reflects a total surplus of $11.9M from FY2024 through FY2029.

Operating Revenues are projected to be sufficient to meet Senior Lien debt service payments and meet Rate Covenant DSC requirements for Senior Lien Debt. Authority Revenues are projected to be sufficient in every year of the forecast period to meet All Obligations per the MAT. Therefore, PRASA is projecting to meet its Rate Covenant requirement of 1.0x coverage of its current obligations throughout the forecast period.

The probability of PRASA meeting its forecast is conditioned on the following:

- PRASA's sustained capacity to uphold its Service Revenues, billing, and collection processes faces challenges in the current economic climate. Persistent decreases in non-residential consumption, additional burden on the island’s financial situation, and ongoing population shifts could affect PRASA's billing and/or collection operations.
- PRASA's successful execution of its Fiscal Plan initiatives is contingent upon certain revenue-boosting and cost-cutting measures outlined in its 2024 plan. Any alterations to these initiatives' funding, structure, or implementation would markedly impact PRASA's anticipated financial outcomes. While PRASA has pledged to implement several initiatives detailed in this report, there remains a possibility that the projected outcomes, particularly their timing, might not be attained.
- PRASA's capability to fulfill operational requirements within its budgetary assumptions and objectives is crucial. The system continues to require increased maintenance, repairs, an expanded operations workforce, and other investments for its overall maintenance. Consequently, should the system's necessities surpass the levels anticipated by PRASA in its projections, expenses could be substantially impacted.

Arcadis has relied on certain assumptions and information provided by PRASA regarding the conditions that may exist or future events to develop the conclusions included in this section. Arcadis believes the information and assumptions are reasonable but has not independently verified information provided by PRASA and others. Therefore, to the extent that actual future conditions differ from those assumed in this report, the actual results will vary from those forecasts.

Arcadis has not determined the validity and enforceability of any contracts, agreements, existing laws, rules, or regulations applicable to PRASA and its operations. For this report, Arcadis has assumed that all such contracts, agreements, laws, rules, and regulations will be fully enforceable following their terms.

Exhibit 1

Financial Forecast FY2024-2029

EXHIBIT 1

	PRASA FINANCIAL FORECAST PRO FORMA[a] ($, Thousands)	FY2024 PRELIMINARY [b]	FY2025 ANNUAL BUDGET	FY2026 PROJECTION	FY2027 PROJECTION	FY2028 PROJECTION	FY2029 PROJECTION
	OPERATING REVENUES						
1.	Service Revenues (Base Fee and Service Charges, Net o	$1,132,430	$1,118,781	$1,119,005	$1,119,875	$1,119,960	$1,119,262
2.	Transfer from / (to) Rate Stabilization Account	(36,000)	35,000	32,000	-	-	-
3.	Other Income (Miscelaneous/Special Assessments)	4,500	4,500	4,500	4,500	4,500	4,500
4.	Fiscal Plan - Revenue Enhancing Initiatives [d]	-	22,316	63,218	106,287	149,421	193,018
5.	**Total Operating Revenues [Sum Lines 1-4]**	**$1,100,930**	**$1,180,597**	**$1,218,723**	**$1,230,662**	**$1,273,881**	**$1,316,780**
	ADDITIONAL REVENUES						
6.	Transfer from Budgetary Reserve Fund	0	0	0	0	0	0
7.	General Fund Grants/Appropriations/Contributions	0	0	0	0	0	0
8.	Reimbursements to the Authority Revenues	0	0	0	0	0	0
9.	**Total Other Sources of Revenue [Sum Lines 7-9]**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**
10.	**Total Authority Revenues [Line 5 + Line 9]**	**$1,100,930**	**$1,180,597**	**$1,218,723**	**$1,230,662**	**$1,273,881**	**$1,316,780**
	OPERATING EXPENSES						
11.	Payroll and Benefits	$330,135	$356,266	363,271	364,891	366,565	369,084
12.	Electric Power	163,088	185,372	209,429	209,206	207,668	209,345
13.	Maintenance and Repair	70,710	88,838	84,268	85,644	87,092	88,600
14.	Chemicals	73,721	76,138	77,363	78,626	79,956	81,340
15.	Insurance	24,879	28,026	28,477	28,942	29,431	29,940
16.	Other Expenses	192,336	191,303	194,383	197,555	200,896	204,374
17.	Fiscal Plan - Cost Saving Initiatives [e]	-	3,232	3,809	3,029	2,256	(2,627)
18.	Capitalized Operating Expenses	(23,129)	(25,061)	(25,947)	(26,133)	(26,294)	(26,461)
19.	**Total Operating Expenses [Sum Lines 11-18]**	**$831,740**	**$904,116**	**$935,053**	**$941,760**	**$947,570**	**$953,593**
	EXPENSE REIMBUREMENTS						
20.	Expected FEMA Reimbursements[f]	(21,408)	(1,000)	0	0	0	0
21.	**Total Additional Expenses [Line 20]**	**-$21,408**	**($1,000)**	**$0**	**$0**	**$0**	**$0**
22.	**Total Operating Expenses [Line 19 + Line 21]**	**$810,332**	**$903,116**	**$935,053**	**$941,760**	**$947,570**	**$953,593**
	DEPOSITS						
23.	Deposit to the Senior Debt Fund	$249,111	$249,374	$258,446	$264,431	$269,007	$269,998
24.	Deposit to the Senior Debt Service Reserve Fund	0	0	0	0	0	0
25.	Deposit to the Senior Subordinate Bond Fund	0	0	0	0	0	0
26.	Deposit to the Senior Subordinate Debt Service Reserve Fund	0	0	0	0	0	0
27.	Deposit to the Subordinate Bond Fund	0	0	0	0	0	0
28.	Deposit to the Subordinate Debt Service Reserve Fund	0	0	0	0	0	0
29.	Deposit to the Current Expense Fund	0	0	0	0	0	0
30.	Deposit to the Operating Reserve Fund[g]	$5,794	8,519	5,726	0	0	0
31.	Deposit to the Capital Improvement Fund (Net of Projected New Federal Funds and FEMA Reimbursement)	32,566	19,426	18,546	23,046	54,656	89,603
32.	Deposit to the Construction Fund	0	0	0	0	0	0
33.	Deposit to the Commonwealth Payments Fund	0	0	0	0	0	0
34.	Deposit to the Surplus Fund	0	0	0	0	0	0
	Deposit to the Rate Stabilization Account	0	0	0	0	0	0
35.	**Total Deposits, excluding existing deposits available in the Current Expense Fund [Sum Lines 23-28 and 30-34]**	**$287,471**	**$277,319**	**$282,718**	**$287,477**	**$323,663**	**$359,601**
36.	**Deposits [Line10-Line 22-Line 35-Line 30]**	**$3,126**	**$161**	**$951**	**$1,425**	**$2,648**	**$3,586**
	DEBT SERVICE PAYMENTS DUE						
37.	Senior (S)[h]	$249,111	$249,374	$258,446	$264,431	$269,007	$269,998
38.	***DS Coverage Required = 2.50***	***4.42***	***4.73***	***4.72***	***4.65***	***4.74***	***4.88***
39.	Senior Subordinated (SSUB)	0	0	0	0	0	0
40.	***DS Coverage Required = 2.00***	***4.42***	***4.73***	***4.72***	***4.65***	***4.74***	***4.88***
41.	Subordinated (SUB)	0	0	0	0	0	0
42.	***DS Coverage Required = 1.50***	***4.42***	***4.73***	***4.72***	***4.65***	***4.74***	***4.88***
43.	Commonwealth Guranteed Indebtedness (CGI)	0	0	0	0	0	0
44.	Commonwealth Supported Obligations (CSO)	0	0	0	0	0	0
45.	Debt Not Covered Under the MAT	0	0	0	0	0	0
46.	**Total Debt Service Including Debt Not Covered Under the MAT, Net of Existing Deposits**	**$249,111**	**$249,374**	**$258,446**	**$264,431**	**$269,007**	**$269,998**
47.	***DS Coverage on All Obligations (Coverage Require***	***1.0***	***1.0***	***1.0***	***1.0***	***1.0***	***1.0***

[a] *Numbers may not add up due to rounding.*

[b] *Based on projected results as presented in PRASA's June 11th, 2024 Fiscal Plan.*

[c] *Includes additional revenues from implemented rate increases FY 2019-2024.*

[d] *Projected additional revenues from initiatives included in 2024 PRASA Fiscal Plan.*

[e] *Projected operating and capital expense reductions from initiatives included in Fiscal Plan. Excludes New Financing for CIP initiative (netted from line 31).*

[f] *FEMA funding or other reimbursement of operating expenses. FEMA funds shall be deposited to the credit of the Current Expense Fund as they are used to reimburse PRASA for Current Expenses.*

[g] *Including the impact on overhead from operating expense reduction initiatives.*

[h] *Includes expected future debt service for SRF and RD loans.*

Appendix A

Ongoing and Future Initiatives and Projects by Operational Region

Appendix. A

Ongoing and Future Initiatives and Projects by Operational Region

Region	Initiatives and Projects	Description
West	Optimization Initiatives	• Pipe renovations. • Continue measuring water leaks. • Measure the volume of leaks and repairs in the Aguadilla Operational Area. • Replace larger pumps with smaller ones. • Projects to efficiently manage blower runtime. • Project to develop Standard Operating Procedures (SOPs) for reducing chemicals dosing at 11 Water Treatment Plants (WTPs) to optimize operations. • Purchase flow meters for chemical dosing. • The greatest challenge for wastewater remains the STS system and residual chlorine at Discharge Point 001. • Project for chemicals optimization and reduction, particularly for chlorine and bisulfite application.
	Compliance	<u>WTP:</u> • In FY2024, challenges such as deficiencies in STS equipment and sludge management persist and are being addressed through the CIP. • A spare parts initiative ensures that each area has sufficient parts on-site to maintain uninterrupted operation. • Budget allocations with private companies are in place for equipment repairs. • The installation of CL17 in-line chlorine meters at most wells in FY2024 resulted in reduced chlorine application. <u>Wastewater treatment Plants (WWTPs):</u> • Historical violations of Enterococcus parameters in Mayagüez WWTP and Aguada WWTP were rectified in FY2024 through operational changes. • The Aguada Operational Area specifically faces challenges related to sludge management.
	Non-Revenue Water (NRW)	• The region was assigned an NRW reduction of 3.2 MG. • Water leaks in Aguadilla Operational Area pose significant challenge. • The main two goals of the region are to achieve 100%-meter readings at the WTPs and to continue reducing water losses. • The region maintains an annual contract with a subcontractor for technical support. The results have been very successful, and this initiative will continue in FY2025. • The NRW committee meets regularly to discuss report findings and establish a prioritization plan to address issues such as high-pressure zones and leaks. An ongoing renovation project in Aguada is addressing leakages in the water distribution system. • The region has a limited number of staff for pictometry. • Measurement of physical losses across county lines is ongoing. • The region continues to gather field data and monitoring pressure regulators.
	Fleet	• Continue efforts for fleet acquisition to increase fleet availability. • During FY2024, the region received 20 vehicles. • Currently, the preventive maintenance crane is out of service. • The region rents two to three diggers. • Continue contracting out private companies for maintenance support. • In case flushing trucks are needed, a purchase order (PO) is in place for rental purposes.
	Staffing	• Recruitment continues to be a challenge. • Vacancies in the following areas are ongoing: operators, electromechanics, plant managers, distribution system managers, and engineers (preventive maintenance manager).

Region	Initiatives and Projects	Description
	Projects	• "Sistema Sanitario Comunidad Lomas Verdes, Barrio Isleta" is currently awaiting contract signature. • The elimination of the Isabela WWTP is pending funding approval. • Projects in the planning phase include: – D&B infiltration and inflow improvements Mayagüez (I/I) and – Rehabilitation of Rincón Well Intake. • Projects in the design phase include: - Improvements to Rio Añasco Raw Water Intake; - Rehabilitation of pump stations Phase 1 - West (FAAST); - Rehabilitation of wastewater pumping stations Phase 1 - West (FAAST); - Rehabilitation of wells Phase 1 - West (FAAST); - Rehabilitation of Aguada WWTP (FAAST); - Rehabilitation of Aguadilla (Montaña) WTP (FAAST) and dredging of two water sources (lakes); - Rehabilitation of Aguadilla (Montaña) WTP and dredging of two water sources (lakes) are in the construction phase; - Rehabilitation of Las Marías WWTP (FAAST); - Rehabilitation of Lajas WWTP; - Improvements to the Las Marías distribution system; - Rehabilitation of the Orama water intake by Maricao WTP; - Rehabilitation of Monte del Estado WTP (FAAST); - Rehabilitation of Maricao WTP; - Rehabilitation of Ponce de León WTP (FAAST); - Rehabilitation of Miradero WTP and Intake (FAAST); - Rehabilitation of the Mayagüez outfall (FAAST); - Rehabilitation of Guajataca WTP and Intake (FAAST); and - Design and build installation of 12" pipeline on PR-115 in Rincón (FAAST). • Projects in the bid phase include: - The rehabilitation of pump stations Phase 2 - West (FAAST) is currently on hold, bid for 2033; - Rehabilitation of the raw water intake Monte del Estado WTP (FAAST); - Improvements to the Mayagüez WWTP (FAAST); - Rehabilitation of the raw water system Miradero WTP in Mayagüez (FAAST) (CDBG-DR); and - Design/construction of 10" Ø pipeline facility on PR-111 and PR-444 and rehabilitation of pump station Cuchillas I. • Project in the construction phase include: – The rehabilitation and expansion of Culebrinas WTP and – Installation of the 3.5 MGD floating raw water intake for Guajataca WTP.
Metro	Optimization Initiatives and Energy Consumption	• Regular visits and inspections of all WSTs are conducted by operations staff to identify cracks, calculate water losses, and establish repair work plans. • Staff collects information on the status of facilities' packing media regularly and develops repair plans accordingly. • Operational improvements in WTP/WWTP/Water Pump Station (WPS) in the region continued with the installation of VFDs in FY2024. • An ongoing initiative is in place to optimize all automatic valves of WPS and wastewater pump station (WWPS).
	Compliance	• The system's flushing program and tank clean-up initiative continue. • Tank oscillation and potential tank elimination are being considered to reduce retention time. • Application of chemicals in raw water sources to reduce organics is ongoing. • An aerator was installed inside the Talanco 1 Water Storage Tank (WST) in Trujillo Alto, and electrical issues were corrected during FY2024. • Compliance with disinfection by-products (DBPs) has been maintained. • No WWTP overflows were experienced in the last year.

Region	Initiatives and Projects	Description
	NRW	• Hidden leaks were addressed through ongoing repairs during the fiscal year. • The NRW Department subcontracted services from Asterra Technology to identify potential leaks using advanced moisture detection technology. • NRW data estimation was in progress, specifically regarding water transfers to other regions, with an emphasis on reducing losses and installing water meters. • All drains were being regularly measured, and pressure management was carried out through sectorization and valve detection. • The focus remained on reducing water losses during transfers to other regions, monitoring overflow risks in Water Storage Tanks (WSTs) with telemetry, and preventing and controlling water leakages, especially in the municipality of San Juan.
	Fleet	• New vehicles were received in various operational areas: 14 in San Juan, 7 in Guaynabo, 14 in Carolina, and 8 in Bayamón. • Despite receiving a total of 43 new vehicles, there is still a need for more units to meet the current operational requirements. • The rate of new vehicle acquisitions compared to depreciation is reported to be low. • While flushing trucks were received in December 2023, there is a continued need for additional trucks.
	Staffing	• The region is currently understaffed with approximately 50 open positions. • Operator contracts at the Puerto Nuevo RWWTP are privately held. • Recruitment continues to pose a challenge for the region. • There is a need for 17 additional operators in the region.
	Projects	• Improvements to the Sergio Cuevas WTP is currently in the design phase. • Rehabilitation of the Enrique Ortega WTP is currently in the construction phase. • A significant number of emergency projects are dedicated to the replacement of sewer lines. • Urgent projects have been included in the CIP and were prioritized.
North	Optimization Initiatives	• Continues installation of telemetry systems for visualization in facilities. • Sectorization and pressure control in designated areas. • Monitoring tank oscillations.
	Compliance	<u>DBP compliance:</u> • Mitigation initiatives on Manatí, Jayuya, Coto Sur, and Corozal systems. • Achievement and maintenance of compliance. <u>Manatí system:</u> • No significant DBP breach data currently reported. • Observation for increased chlorine in the Superacueduct WTP. • Activities include flushing, tank level control, telemetry, new service area expansion, and customer identification. <u>Coto Sur system:</u> • Tank oscillation increased in FY2024 to support DBP compliance efforts in the region.

Region	Initiatives and Projects	Description
	NRW	• Goal: Maintain system pressure between 25 to 60 psi. • Initiative: Pressure reduction to reduce NRW. • Stand-by Wells: Boquilla, Cruz Rosa, Rábanos used for emergencies. • Operational updates: Various systems implementing pressure reductions. • Sectorization benefits: Reducing ruptures based on pressure, capacity, and demand. • The San Juan Cement in Dorado, Quebrada Arenas in Vega Baja, Monaco in Manatí, and Piletas in Lares water pump stations are undergoing projects for pump replacement and technology improvements. • Tank upgrades: Completed at Quebrada Arenas in Vega Baja, Franquez Twin Tanks in Vega Baja, and La Casona in Ciales. The Cordillera WTP tank and the Buena Vista "Cuesta del Rio" tank in Arecibo are next to be upgraded. • Technology integration: Telemetry for visualization aiding in water loss quantification. • Wireless upgrade: Reduced WSTs visualization due to ongoing 5G technology modifications. • Meter installation: Ongoing for compliance, evaluating meters showing deficiencies.
	Fleet	• New fleet received in FY2024. • Impact on availability: Severe due to deterioration, age, and lack of replacement funds. • Risk to operations: Slow PO approval phase affecting fleet availability. • Recent additions: Van masters, pipe layers, and other vehicles in FY2024. • Maintenance: Handled by a private company for diggers and upkeep. • Total deliveries: 51 vehicles from 2022, 2023, and 2024. By Operational Area: - Toa Alta: 9 - Manatí: 16 - Arecibo: 17 - Utuado: 9
	Staffing	• Staffing situation: Understaffed with vacancies in key positions. • Active headcount: Currently stands at 750. • Open positions: 22 for operators, three technical managers, one maintenance manager, and 20 team leaders in electromechanics and electromechanical assistants. • Recruitment approach: Hiring private external staff to fill positions. • Budget allocation: The region allocating around $200,000 annually for private contractors.
	Projects	Refer to Appendix B.
South	Optimization of Operations	• The Salinas Aquifer Restoration is no longer an emergency due to increased levels post-Hurricane Fiona. • Construction of the new *New Salinas WTP* is ongoing to alleviate demand on the 14 wells in the area. • Hydraulic modeling at El Tuque (Brisa) aimed to eliminate or reduce capacity at Brisas I and Brisas II, but the initiative proved infeasible. • Evaluation by Jacobs consulting for Monte Pelado system and potential elimination of the Monte Pelado WPS. • Baramaya WPS evaluation targeting a 9-hour reduction in running time. • A project at Coto Laurel WTP successfully eliminated NPDES discharge and linked to the Ponce Wastewater System; evaluation ongoing for implementation at Ponce Nueva WTP. • Rehabilitation project at Ponce Nueva WTP involving the installation of push buttons to connect plant discharge to the sewer system in progress. • Transition to liquid chlorine ongoing in several systems, with about 32% of the region using liquid chlorine, including specific areas like Yauco Operational Area, Toa Vaca WTP in FY2023, Ponce Nueva WTP, Coto Laurel WTP, and Guayama WTP in FY2024. • Evaluation of different polymers to adjust dosing for reducing chemical consumption presents a challenge.

Region	Initiatives and Projects	Description
	Compliance	• Comprehensive evaluation of 14 systems that showed non-compliance. The evaluation extends from the WTP to the distribution system to identify the root cause of the exceedances. • Ponce Nueva WTP (DBPs and TOC) starting up in July 2023 with a $12M investment from SRF. • Rehabilitation and upgrade of operational systems and equipment. • Sodium permanganate installation in Ponce Nueva WTP. • Super Pulsator technology rehabilitation. • Rehabilitation ongoing at Guayama WWTP with process capacity changes. • Infrastructure projects funded by FEMA for Arroyo Trunk Sewer consolidation and elimination of several WWTPs. • Multiple measures for DBP compliance implementation. • Various region-wide initiatives for DBP control and plant optimization. • Utilization of guides for turbidity monitoring and DBP reduction. • Metrics in place to measure process optimization. • Brochure detailing sampling points, including DBP point and coordinates, remains active. • Completed installation of sodium permanganate at Coto Laurel WTP.
	NRW	<u>Initiatives to address NRW:</u> • Continued drainage flow metering and acquisition of flow meters for fire hydrants flushing. • Pressure adjustments. • Correction of hidden leaks. • Installation of meters and wells. • Installation of flow meters at WTPs and digital pressure gauges (coquitrols). <u>WTPs:</u> • Completion of the Ponce Vieja WTP in FY2024. • All WTPs equipped with mechanisms for raw and production measurement. <u>Presidency Initiatives for system optimization:</u> • Installation of digital pressure gauges (coquitrols). • Installation of regulators and sustaining valves for operational adjustments. • Implementation in Yauco and Ponce Operational Areas. • Virtual recording of “camiones cisternas” data. • Visualization and monitoring of tank overflow via SCADA system. • Identification and repair of hidden leaks. • Installation of YDOC in 100% of WSTs, with five facilities currently out of service. • Hydrant flow meter acquisitions and water flushing procedures ongoing. • Ongoing initiative for monitoring and loss controls.
	Fleet	• New vehicles are being acquired for the region's fleet, funded within a limited budget. • Fleet received in FY2024: four dump trucks, four HV507s, four flatbeds, and four pipe layers. • Future fleet deliveries to include cranes for preventive maintenance. • Dump trucks rented for Ponce and Coamo Operational Areas. • Limited fleet poses challenges for day-to-day operations. • Old units face parts acquisition challenges due to high costs. • Regional staff handling light mechanic work and heavy repairs. • Additional vehicles needed, with an acquisition request already submitted. • Active contract with regional private workshops. • Contracts with private companies in place. • Heavy equipment acquisitions crucial for the region's fleet. • Fleet limitations noted across the region. • Contracts established for lightweight mechanics in all operational areas.

Region	Initiatives and Projects	Description
	Staffing	• Progress made in recruitment, but open positions remain, especially for operators and electrical experts for preventive maintenance. • Difficulty in finding engineers with required first license for managerial roles. • Some success in filling operator positions. • Region has 50 vacant positions, encompassing both union and managerial roles. • Maintenance of contracts with private crews for support.

Region	Initiatives and Projects	Description
	Projects	• Rehabilitation of Ponce WWTP (FAAST) is currently on hold. • Elimination of Ponce Vieja WTP - Project will be placed on the planning phase to create a hydraulic sampling plan. • Rehabilitation of communication network and critical equipment at Patillas membrane WTP for is currently in the evaluation phase. • The rehabilitation of the sanitary trunk sewer from Salinas to Guayama, which had collapsed after Hurricane María, is a project that is partially constructed and currently in progress. • Increase capacity of Guaraguao WTP: PMC with RD and PRASA funds under evaluation. • NRW and water extraction control investigating and identifying hidden water leaks/main breaks. • In general, due to the particularities of the South Region there are ongoing initiatives to find sources and ways of bringing additional capacity of raw water to the systems. • Guánica WWTP – replacement of degritter. • Ponce WTP – raw water intake was relocated. Previously it obtained water from Toa Vaca and now is from Portugués. This was an old intake that was rehabilitated in addition to repairs of sections of pipe. • Rehabilitation of the Vertedero well in Juana Díaz. • Projects is currently in the contract phase include: - NRW - D&B for the Replacement and Renewal of Potable Water Pipelines (Non-Revenue Water Projects) South Region (FAAST). • Projects in the planning phase include: - The Bauta Tunnel; - Repairs for damages caused by Hurricane Fiona; - Rehabilitation of Wastewater Pump Stations Trunk Salinas and Puente Jobos; - Rehabilitation of Orocovis WWTP (FAAST-25); and - Ponce Northern Aqueduct. • Projects in the design phase include: - Rehabilitation of WWPS Phase 1 - South (FAAST); - Rehabilitation of Guilarte WTP (FAAST); - Elimination of Maunabo WWTP and construction of new trunkline Maunabo-Patillas (FAAST); - Rehabilitation of Malpaso LT2 WTP; - New Salinas WTP (FAAST); - Replacement of Sanitary Sewer and Drinking Water System in the Urban Center of Salinas (FAAST); - Rehabilitation of Santa Isabel WWTP (FAAST); - Elimination of Apeadero WTP and improvements to the distribution system of Aceituna WTP (FAAST); - Rehabilitation of Río Prieto WTP (FAAST); - Toa Vaca Dam Rehabilitation (FAAST); and - Elimination of Guayanés WTP to become Peñuelas Urbano WTP: Peñuelas Urbano WTP CIP Project 60% design. • Projects in the bid phase include: - Rehabilitation of multiple segments System A/S Barriada La Esperanza, Guánica (FAAST); - Replacement of Raw Water Pipeline Penstock Carite III to Guayama WTP; - Rehabilitation of Jaguas Pasto WTP (FAAST); - Sewer System Community El Gato, Phase II in Orocovis; - Rehabilitation of Peñuelas WTP (FAAST); - Rehabilitation of Jagüeyes WTP (FAAST); and - Design and Construction of Crossings Well and Improvements to Piazza Tank (ARPA). • The following project is currently in the construction phase: - Guayama WWTP Improvements (≈ $92M).

Region	Initiatives and Projects	Description
East	Optimization Initiatives and Energy Consumption	• <u>Pipe Ruptures:</u> Projects include the Renewal of Drinking Water Piper for FY2024. • <u>Energy Consumption Reduction:</u> - PRASA continues to aim for a target reduction of 0.5%. - Variable Frequency Drives (VFDs) installed in Caguas Sur (Raw water) and El Yunque WTP. - Other energy consumption completed in FY2024 were carried out through the Infrastructure Department.
	Compliance	<u>DBP Compliance:</u> • Measures implemented to ensure compliance with DBP limits in the region. <u>WTPs:</u> • Cayey Urbano WTP and Río Blanco WTP (Vieques and Culebra systems) faced DBP incompliance in FY2024. • Implemented measures like water storage tank cleaning and chemical addition at Cayey Urbano WTP to meet DBP limits. <u>WWTPs:</u> • Successfully negotiated interim limits for nutrient removal (nitrogen and phosphorus) in several WWTPs with stricter permit requirements. • Approval pending for Caguas WWTP, posing a challenge for the region. • Cayey WWTP faced enterococci concentration issues in FY2024, which were corrected.
	NRW	• The goal is to achieve less than 76.12 MGD annually; reached 76.78 MGD in FY2024. • Implemented initiatives to prevent NRW occurrences: - Pressure adjustments - Correction of hidden leaks - Sectorization - Optimization • Installation of a flow meter at Cerro Gordo, San Lorenzo WTP. • Ongoing installation of digital pressure gauges (coquitrols). • Measurement of water transfers from Cayey to Salinas and El Yunque to Loíza. • Flow meters needed for transfers to Canóvanas and Naranjito. • The flow meter from the Superaqueduct to Piedras Blancas WST is currently out of service in FY2025. • All WTPs equipped with mechanisms to measure or estimate raw water and water production.
	Fleet	• New vehicles acquired for the region's fleet in FY2024. • Received vehicles include pipe layers (tuberas), trucks, and mini flushing vehicles. • Requirement for more trucks still exists. • Hiring utility repairs to strengthen brigades. • Contracting brigades for drinking water and sanitation. • Improved vehicle repair delivery in the current fiscal year. • The region hosts six to seven repair workshops.
	Staffing	• Understaffed situation persists despite recruitment efforts. • Vacancies remain for technical managers, operators, electromechanics, and compliance specialists in the Caguas Operational Area. • Dedicated team for detecting and addressing water leaks. • Pipeline repairs handled by subcontracted staff.

Region	Initiatives and Projects	Description
	Projects	• Urgent projects (Caguas WWTP, El Yunque WTP, and Caguas Norte WTP) have been included in the CIP and were prioritized. • Replacement of the Synchronization System – Generators for the El Yunque WTP. • D&B for the installation of 800 linear meter of 6"Ø PVC DR-14 pipe at Calabaza Ward (Sector Playita) (REN.311204). • Rehabilitation of the blowers for the Caguas WWTP (FAAST). • Design and Construction of the New Buena Vista Tank (FAAST). • Valenciano– Distribution System is currently in the technical design report. • Rehabilitation of Río Blanco Reservoir Area is currently in the technical memorandum under PMC revision. • Rehabilitation of the Guayabota WTP and Intake. • D&B for the Advance Metering Infrastructure Warehouse (FAAST) awaiting the Legal department's opinion on the notification letter. • Projects that are currently on hold include: - Rehabilitation of the Comerío WWTP (FAAST); - Sanitary System in the Camacho Sector, Quebrada (Montesol) Ward; - Rehabilitation of the Gurabo Intake; anf - Río Blanco WTP – Microgrid PMC received instruction from PRASA to hold consultant contracting process. • Projects in the contract phase include: - Aguas Buenas-Caguas Trunk Sewer Phase III; and - Extension to the Mulas Tizas Aqueduct System (FAAST) – NRW. • Projects in the planning phase include: - PRASA Electrical Power Reliability and Resilience Program; - Improvements to Minillas Raw Water Intake; - Rehabilitation of the Comerío WTP (FAAST); - Improvements to Kioskos WWPS, Luquillo; - Improvements to Río Grande Elderly WWPS; - New WTP Espino Ward, San Lorenzo (CDBG-MIT); and - Rehabilitation of the Yabucoa WWTP (FAAST). • Projects in the design phase include: - Rehabilitation WWPS Phase 1 – East (FAAST); - Aibonito WWTP Tertiary Filters; - Improvements to the Potable Water Distribution System of Aibonito; - Rehabilitation of the Las Bocas WTP and Intake (FAAST); - Rehabilitation of the Barrancas WTP and Intake (FAAST); - Rehabilitation of the Barrancas WTP and Intake (FAAST); - Improvements to Caguas WWTP (FAAST); - Las Picuas WWTP Elimination; - Distribution System Improvements - Comerío Tank (2 million); - Rehabilitation of Switchgear Fajardo WWTP (FAAST); - Rehabilitation of the Humacao WTP (FAAST); - Valenciano Intake; - Rehabilitation of the Río Blanco WTP (FAAST); and - Cerro Gordo FP RWI & PS. • Projects in the bid phase include: - Improvements to the Potable Water Distribution System of Aibonito; - Rehabilitation of the Caguas Norte WTP (FAAST); - Improvements to El Yunque WTP (FAAST); - New Intake for the Yunque (Mameyes) WTP (FAAST); - Rehabilitation of the Farallón WTP (FAAST); - Improvements to the Aqueduct System in the La Piedra and Pasto Viejo Sectors; - Design/Construction of the Power Line Expansion and Improvements to Ciudad Primavera WWPS; and • Termination to Valenciano WTP First Stage and Improvements to Ceiba Sur Raw Water Intake.

Appendix B

North Region CIP Projects

Appendix B

North Region CIP Projects

CIP No.	Project Description	Municipality	Construction Completion Date	Total Cost	Type of Project
CIP.2149001	Rehabilitation of Troncal Sanitaria Camuy (FAAST)	Camuy	6/17/2027	$ 75,965,661	Wastewater
CIP.2265000	Wastewater Com. San Carlos, Ampliación EB Monte Elena	Dorado	11/30/2025	$ 12,038,948	Wastewater
CIP.2265002	New Dorado Trunk Sewer	Dorado	8/5/2024	$ 31,313,839	Wastewater
CIP.2526006	Rehabilitation of PF Morovis Sur (FAAST-25)	Morovis	4/28/2026	$ 56,032,559	Potable Water
CIP.2549000	Mejoras al Sistema de Transmisión y Distribución de Naranjito (FAAST)	Naranjito	9/15/2026	$ 42,342,139	Potable Water
CIP.2709010	Mejoras a sistema Alc. Teefrans, Arecibo (FAAST)	Arecibo	2/15/2027	$ 12,033,510	Wastewater
CIP.2755056	Completion of Sandin Sanitary Sewer System	Vega Baja	5/30/2025	$ 13,063,142	Wastewater
CIP.7349002	Hatillo - Nuevo Sistema de Distribución de Agua Barrio Campo Alegre, Sectores 10	Hatillo	4/15/2025	$ 9,353,015	Potable Water
CIP.2095052	42" Diameter Trunk Sewer From PR-684 to South of the Barceloneta WWTP (FAAST)	Barceloneta	12/20/2024	$ 31,434,394	Wastewater
CIP.2206107	Rehabilitation de la PF Frontón y la Toma (FAAST) (PL-32 y PL-68)	Ciales	12/4/2025	$ 27,180,550	Potable Water
CIP.2346015	Rehabilitation de la PF Hatillo-Camuy (FAAST)	Hatillo	6/15/2026	$ 46,798,769	Potable Water
CIP.2426099	Rehabilitation de la PF Indiera Alta y la Toma (FAAST) (PL-17 y PL-46)	Lares	7/19/2026	$ 7,193,455	Potable Water
CIP.2426100	Rehabilitation de la PF Lares Nueva Espino y la Toma (FAAST) (PL-9)	Lares	4/12/2025	$ 27,025,130	Potable Water
CIP.2755055	Rehabilitation of Sanitary Trunk Sewer Vega Baja (FAAST)	Vega Baja	2/24/2025	$ 9,522,602	Wastewater
CIP.2526007	Rehabilitation de la PF Morovis Urbano (FAAST)	Morovis	7/16/2026	$ 8,040,000	Potable Water

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PRASA's FY2024 North Region CIP Projects

CIP No.	Project Description	Municipality	Construction Completion Date	Total Cost	Type of Project
CIP.2246106	Toma PF Negros (FAAST-25) (PL-33)	Corozal	2/15/2026	$ 5,789,793	Potable Water
CIP.2385003	Coabey Ward Sanitary sewer system - Phase II	Jayuya	7/16/2024	$ 11,160,269	Wastewater
CIP.2387002	Relocation of Jesus Cruz Miranda Pump Station	Jayuya	6/16/2024	$ 4,944,253	Potable Water
CIP.2475021	Rehabilitation de la PAS Barceloneta (FAAST-25) (PL-92)	Barceloneta	7/23/2029	$ 29,804,876	Wastewater
CIP.2596004	Rehabilitation de la PF Quebradillas y La Toma (FAAST-25)	Quebradillas	9/30/2026	$ 29,752,104	Potable Water
CIP.2736007	Rehabilitation de la PF Santa Isabel en Utuado y la Toma (FAAST-25) (PL-51)	Utuado	1/5/2028	$ 10,690,837	Potable Water
CIP.2739001	Mejoras a la Toma de Aguas Crudas del Lago Viví	Utuado	2/26/2026	$ 5,357,124	Potable Water
CIP.2079002	Terminación de la Rehabilitation de la Trocal Sanitaria de 42" La Puntilla	Arecibo	3/15/2025	$ 15,751,313	Wastewater
CIP.2079004	Design Build Improvements to "Cerro Marquez" Pump Station & 2.0 MG TWST	Arecibo	1/30/2025	$ 9,658,046	Potable Water
CIP.2079006	Rehabilitation of Radioville SSS	Arecibo	4/15/2027	$ 15,310,963	Wastewater
CIP.2269001	Diseño/ Construcción de Tubería 4" y 2" Comunidad Villa 2000 en Dorado (FAAST)	Dorado	10/15/2024	$ 2,169,550	Renovation and Replacement
CIP.2526008	D/C Mejoras al Sistema de Distribución de Morovis (FAAST)	Morovis	10/15/2026	$ 17,278,338	Potable Water
CIP.2547001	Naranjito WTP	Naranjito	1/9/2028	$ 57,867,756	Potable Water
CIP.2709001	Design & Build for the replacement of 6" Ø pipe in Sector El Tocon Ward Quebrada Cruz at PR-824, Toa Alta (FAAST)	Toa Alta	5/28/2024	$ 1,819,337	Renovation and Replacement
CIP.2709002	Tubería de 4" PVC SDR-14 en la Comunidad Villa Esperanza, Toa Alta	Toa Alta	12/20/2025	$ 3,133,236	Renovation and Replacement

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CIP No.	Project Description	Municipality	Construction Completion Date	Total Cost	Type of Project
CIP.2349003	Diseño Construcción Tubería 16" Carr. 119 Hatillo hacia Camuy (FAAST)	Hatillo	6/15/2025	$ 10,452,476	Renovation and Replacement
CIP.2329004	Diseño Construcción Rehabilitation E/B Sistema Ciales Pozas (FAAST)	Ciales	5/21/2025	$ 5,259,920	Renovation and Replacement
CIP.2479000	Diseño/ Construcción de Tubería de 8" PVC SDR-14 en el Bo. Boquillas, Manatí (FAAST)	Manatí	11/3/2024	$ 2,321,708	Renovation and Replacement
CIP.2009103	EB San Juan Cement - Rehabilitation de Estaciones de Bomba Fase 1- Norte (FAAST)	Dorado	8/30/2026	$ 565,957	Potable Water
CIP.2009103	EB Maricao #2 - Rehabilitation de Estaciones de Bomba Fase 1- Norte (FAAST)	Vega Alta	8/30/2026	$ 565,957	Potable Water
CIP.2009103	EB Abras - Rehabilitation de Estaciones de Bomba Fase 1- Norte (FAAST)	Corozal	8/30/2026	$ 565,957	Potable Water
CIP.2009103	EB Piletas - Rehabilitation de Estaciones de Bomba Fase 1- Norte (FAAST)	Lares	8/30/2026	$ 565,957	Potable Water
CIP.2009103	EB Mónaco - Rehabilitation de Estaciones de Bomba Fase 1- Norte (FAAST)	Manatí	8/30/2026	$ 565,957	Potable Water
CIP.2009103	EB La Cuarta - Rehabilitation de Estaciones de Bomba Fase 1- Norte (FAAST)	Ciales	8/30/2026	$ 565,957	Potable Water
CIP.2009103	EB Quebrada Arenas - Rehabilitation de Estaciones de Bomba Fase 1- Norte (FAAST)	Vega Baja	8/30/2026	$ 565,957	Potable Water
CIP.2009103	EB Arenas 86 - Rehabilitation de Estaciones de Bomba Fase 1- Norte (FAAST)	Utuado	8/30/2026	$ 565,957	Potable Water
CIP.2009103	EB Cortés #2 - Rehabilitation de Estaciones de Bomba Fase 1- Norte (FAAST)	Manatí	8/30/2026	$ 565,957	Potable Water
CIP.2009103	EB El Green - Rehabilitation de Estaciones de Bomba Fase 1- Norte (FAAST)	Arecibo	8/30/2026	$ 565,957	Potable Water

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PRASA's FY2024 North Region CIP Projects

CIP No.	Project Description	Municipality	Construction Completion Date	Total Cost	Type of Project
CIP.2009103	EB Corcovada - Rehabilitation de Estaciones de Bomba Fase 1-Norte (FAAST)	Hatillo	8/30/2026	$ 565,957	Potable Water
CIP.2009001	Tanque Quebrada Arena - Rehabilitation de Tanques Fase 1 - Norte (FAAST)	Vega Baja	3/4/2025	$ 580,660	Potable Water
CIP.2009001	Tanque Gemelos Quebrada Arena - Rehabilitation de Tanques Fase 1 - Norte (FAAST)	Vega Baja	3/4/2025	$ 580,660	Potable Water
CIP.2009001	Tanque La Casona - Rehabilitation de Tanques Fase 1 - Norte (FAAST)	Ciales	3/4/2025	$ 480,660	Potable Water
CIP.2009001	Tanque PF Cordillera - Rehabilitation de Tanques Fase 1 - Norte (FAAST)	Ciales	3/4/2025	$ 430,660	Potable Water
CIP.2009001	Tanque Cuesta del Rio - Rehabilitation de Tanques Fase 1 - Norte (FAAST)	Hatillo	3/4/2025	$ 580,660	Potable Water
CIP.2009001	Tanque Gemelos de Padilla - Rehabilitation de Tanques Fase 1 - Norte (FAAST)	Corozal	3/4/2025	$ 580,660	Potable Water
CIP.2009001	Tanque Rompe Presiones Cuchillas - Rehabilitation de Tanques Fase 1 - Norte (FAAST)	Corozal	3/4/2025	$ 380,660	Potable Water
CIP.2009001	Tanque La Costanera - Rehabilitation de Tanques Fase 1 - Norte (FAAST)	Corozal	3/4/2025	$ 380,660	Potable Water
CIP.2009001	Tanque Roche - Rehabilitation de Tanques Fase 1 - Norte (FAAST)	Manatí	3/4/2025	$ 1,230,663	Potable Water
CIP.2009104	EBAS Toa Linda - Rehabilitation EBAS Fase 1 - Norte (FAAST)	Toa Alta	12/15/2026	$ 634,058	Wastewater
CIP.2009104	EBAS Piñas - Rehabilitation EBAS Fase 1 - Norte (FAAST)	Toa Alta	12/15/2026	$ 634,058	Wastewater
CIP.2009104	EBAS Jardines de Toa Alta - Rehabilitation EBAS Fase 1 - Norte (FAAST)	Toa Alta	12/15/2026	$ 634,058	Wastewater
CIP.2009104	EBAS Monte Rey - Rehabilitation EBAS Fase 1 - Norte (FAAST)	Corozal	12/15/2026	$ 634,058	Wastewater

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CIP No.	Project Description	Municipality	Construction Completion Date	Total Cost	Type of Project
CIP.2009104	EBAS Palmas del Sol - Rehabilitation EBAS Fase 1 - Norte (FAAST)	Lares	12/15/2026	$ 634,058	Wastewater
CIP.2009104	EBAS Villa Borinquen - Rehabilitation EBAS Fase 1 - Norte (FAAST)	Lares	12/15/2026	$ 634,058	Wastewater
CIP.2009104	EBAS Unibón #2 - Rehabilitation EBAS Fase 1 - Norte (FAAST)	Morovis	12/15/2026	$ 634,058	Wastewater
CIP.2009104	EBAS Unibón #4 - Rehabilitation EBAS Fase 1 - Norte (FAAST)	Morovis	12/15/2026	$ 634,058	Wastewater
CIP.2009104	EBAS Unibón #3 - Rehabilitation EBAS Fase 1 - Norte (FAAST)	Morovis	12/15/2026	$ 634,058	Wastewater
CIP.2009104	EBAS Cruz Rosario - Rehabilitation EBAS Fase 1 - Norte (FAAST)	Morovis	12/15/2026	$ 634,058	Wastewater
CIP.2009104	EBAS Valle Barahona - Rehabilitation EBAS Fase 1 - Norte (FAAST)	Morovis	12/15/2026	$ 634,058	Wastewater
CIP.2009104	EBAS Las Vegas - Rehabilitation EBAS Fase 1 - Norte (FAAST)	Florida	12/15/2026	$ 634,058	Wastewater
CIP.2009106	Pozo Manatí #1 - Rehabilitation de Pozos Fase 1- Norte (FAAST)	Manatí	9/15/2025	$ 700,952	Potable Water
CIP.2009106	Pozo Ciudad Real - Rehabilitation de Pozos Fase 1- Norte (FAAST)	Vega Baja	9/15/2025	$ 506,993	Potable Water
CIP.2009106	Pozo Alturas de Vega Baja - Rehabilitation de Pozos Fase 1- Norte (FAAST)	Vega Baja	9/15/2025	$ 541,540	Potable Water
CIP.2009106	Pozo Algarrobo - Rehabilitation de Pozos Fase 1- Norte (FAAST)	Vega Baja	9/15/2025	$ 736,713	Potable Water
CIP.2009106	Pozo Villa Pinares - Rehabilitation de Pozos Fase 1- Norte (FAAST)	Vega Baja	9/15/2025	$ 550,055	Potable Water
CIP.2009106	Pozo Sabana Pike #2 - Rehabilitation de Pozos Fase 1- Norte (FAAST)	Vega Baja	9/15/2025	$ 537,488	Potable Water
CIP.2009106	Pozo La Gloria - Rehabilitation de Pozos Fase 1- Norte (FAAST)	Vega Baja	9/15/2025	$ 573,855	Potable Water
CIP.2009106	Pozo Vega Baja #3 - Rehabilitation de Pozos Fase 1- Norte (FAAST)	Vega Baja	9/15/2025	$ 736,427	Potable Water

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CIP No.	Project Description	Municipality	Construction Completion Date	Total Cost	Type of Project
CIP.2009106	Pozo Florida #9 - Rehabilitation de Pozos Fase 1- Norte (FAAST)	Florida	9/15/2025	$ 488,028	Potable Water
CIP.2009106	Pozo Garrochales - Rehabilitation de Pozos Fase 1- Norte (FAAST)	Arecibo	9/15/2025	$ 732,551	Potable Water
CIP.2009106	Pozo Talaveras #1 - Rehabilitation de Pozos Fase 1- Norte (FAAST)	Camuy	9/15/2025	$ 537,488	Potable Water
CIP.2009106	Pozo Shalom - Rehabilitation de Pozos Fase 1- Norte (FAAST)	Hatillo	9/15/2025	$ 575,847	Potable Water
CIP.2009106	Pozo Bajadero - Rehabilitation de Pozos Fase 1- Norte (FAAST)	Arecibo	9/15/2025	$ 473,011	Potable Water
CIP.2009106	Pozo Tiburones - Rehabilitation de Pozos Fase 1- Norte (FAAST)	Barceloneta	9/15/2025	$ 481,172	Potable Water
CIP.0800074N	EBAS Sabana Hoyos 3 - Emergency Generators - Phase 2 North	Arecibo	6/13/2024	$ 203,298	Generators
CIP.0800074N	EBAS Paseo Reales - Emergency Generators - Phase 2 North	Arecibo	6/13/2024	$ 136,799	Generators
CIP.0800074N	EBAS Islote 1 - Emergency Generators - Phase 2 North	Arecibo	6/13/2024	$ 254,896	Generators
CIP.0800074N	EBAS Los Aires - Emergency Generators - Phase 2 North	Arecibo	6/13/2024	$ 201,194	Generators
CIP.0800074N	EBAS Hacienda Toledo - Emergency Generators - Phase 2 North	Arecibo	6/13/2024	$ 178,088	Generators
CIP.0800074N	EBAS Dominguito 2 - Emergency Generators - Phase 2 North	Arecibo	6/13/2024	$ 224,913	Generators
CIP.0800074N	EBAS Carrizales - Emergency Generators - Phase 2 North	Hatillo	6/13/2024	$ 197,984	Generators
CIP.0800074N	EBAS Hatillo Playa - Emergency Generators - Phase 2 North	Hatillo	6/13/2024	$ 255,945	Generators
CIP.0800074N	EBAS Terranova - Emergency Generators - Phase 2 North	Quebradillas	6/13/2024	$ 215,298	Generators
CIP.0800074N	EBAS Alturas de Utuado - Emergency Generators - Phase 2 North	Utuado	6/13/2024	$ 176,465	Generators
CIP.0800074N	EBAS Bufalo - Emergency Generators - Phase 2 North	Barceloneta	6/13/2024	$ 177,353	Generators

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PRASA's FY2024 North Region CIP Projects

CIP No.	Project Description	Municipality	Construction Completion Date	Total Cost	Type of Project
CIP.0800074N	EBAS Villa del Manatí - Emergency Generators - Phase 2 North	Manatí	6/13/2024	$ 167,926	Generators
CIP.0800074N	EBAS Dos Rios - Emergency Generators - Phase 2 North	Ciales	6/13/2024	$ 278,592	Generators
CIP.0800074N	EBAS Las Guavas - Emergency Generators - Phase 2 North	Ciales	6/13/2024	$ 277,885	Generators
CIP.0800074N	EBAS Brisas de Jagua - Emergency Generators - Phase 2 North	Ciales	6/13/2024	$ 237,453	Generators
CIP.0800074N	EBAS Bo. Pesas - Emergency Generators - Phase 2 North	Ciales	6/13/2024	$ 204,571	Generators
CIP.0800074N	EBAS Unibón 4 - Emergency Generators - Phase 2 North	Morovis	6/13/2024	$ 179,640	Generators
CIP.0800074N	EBAS Cruz Rosario - Emergency Generators - Phase 2 North	Morovis	6/13/2024	$ 239,199	Generators
CIP.0800074N	EBAS Torrecillas 2 - Emergency Generators - Phase 2 North	Morovis	6/13/2024	$ 234,226	Generators
CIP.0800074N	EBAS Torrecillas 5 - Emergency Generators - Phase 2 North	Morovis	6/13/2024	$ 139,327	Generators
CIP.0800074N	EBAS Valle San Luis - Emergency Generators - Phase 2 North	Morovis	6/13/2024	$ 241,400	Generators
CIP.0800074N	EBAS Parcelas Márquez - Emergency Generators - Phase 2 North	Vega Baja	6/13/2024	$ 173,154	Generators
CIP.0800074N	EBAS Alturas de Vega Baja - Emergency Generators - Phase 2 North	Vega Baja	6/13/2024	$ 259,022	Generators
CIP.0800074N	EBAS Guárico Viejo - Emergency Generators - Phase 2 North	Vega Baja	6/13/2024	$ 266,022	Generators
CIP.0800074N	EBAS Villa Los Pescadores - Emergency Generators - Phase 2 North	Vega Baja	6/13/2024	$ 187,453	Generators
CIP.0800074N	EBAS Dorado del Mar - Emergency Generators - Phase 2 North	Dorado	6/13/2024	$ 285,581	Generators
CIP.0800074N	EBAS Costa de Oro - Emergency Generators - Phase 2 North	Dorado	6/13/2024	$ 241,989	Generators

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CIP No.	Project Description	Municipality	Construction Completion Date	Total Cost	Type of Project
CIP.0800074N	EBAS Dorado Club - Emergency Generators - Phase 2 North	Dorado	6/13/2024	$ 253,562	Generators
CIP.0800074N	EBAS Treasure Point - Emergency Generators - Phase 2 North	Vega Alta	6/13/2024	$ 183,215	Generators
CIP.0800074N	EBAS GE - Emergency Generators - Phase 2 North	Vega Alta	6/13/2024	$ 209,265	Generators
CIP.0801002N	EB Piletas - Emergency Generators - Phase 3 North	Lares	2/16/2024	$ 184,958	Generators
CIP.0801002N	PF Las Delicias - Emergency Generators - Phase 3 North	Ciales	2/16/2024	$ 184,958	Generators
CIP.0801002N	Pozo Floridas 9 - Emergency Generators - Phase 3 North	Florida	2/16/2024	$ 184,958	Generators
CIP.0801002N	Pozo Pajonal 1 - Emergency Generators - Phase 3 North	Florida	2/16/2024	$ 154,958	Generators
CIP.0801002N	Pozo Monte Bello 5 - Emergency Generators - Phase 3 North	Manatí	2/16/2024	$ 134,958	Generators
CIP.0801002N	Pozo Monte Bello 2 - Emergency Generators - Phase 3 North	Manatí	2/16/2024	$ 134,958	Generators
CIP.0801002N	EB TK La Trocha - Emergency Generators - Phase 3 North	Manatí	2/16/2024	$ 124,958	Generators
CIP.0801002N	Pozo Manatí 1 - Emergency Generators - Phase 3 North	Manatí	2/16/2024	$ 234,958	Generators
CIP.0801002N	Pozo Manatí 2 - Emergency Generators - Phase 3 North	Manatí	2/16/2024	$ 284,958	Generators
CIP.0801002N	EB Abras - Emergency Generators - Phase 3 North	Corozal	2/16/2024	$ 124,958	Generators
CIP.0801002N	Aguas Crudas Intermedio Negros - Emergency Generators - Phase 3 North	Corozal	2/16/2024	$ 284,958	Generators
CIP.0801002N	EBTK Achiotes 2 - Emergency Generators - Phase 3 North	Naranjito	2/16/2024	$ 144,958	Generators
CIP.0801002N	EB Achiotes 1 - Emergency Generators - Phase 3 North	Naranjito	2/16/2024	$ 184,958	Generators
CIP.0801002N	EB Loma del Viento - Emergency Generators - Phase 3 North	Naranjito	2/16/2024	$ 224,958	Generators

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CIP No.	Project Description	Municipality	Construction Completion Date	Total Cost	Type of Project
CIP.0801002N	EBTK Lomas 2 - Emergency Generators - Phase 3 North	Naranjito	2/16/2024	$ 184,958	Generators
CIP.0801002N	EB - PZ Palonal 2 Emergency Generators - Phase 3 North	Florida	2/16/2024	$ 184,958	Generators
CIP.0801002N	EBTK Los Cerros - Emergency Generators - Phase 3 North	Naranjito	2/16/2024	$ 184,958	Generators
CIP.0801002N	EBTK El Convento - Emergency Generators - Phase 3 North	Toa Alta	2/16/2024	$ 124,958	Generators
CIP.0801002N	EB Pámpanos 2 - Emergency Generators - Phase 3 North	Vega Alta	2/16/2024	$ 184,958	Generators
CIP.0801002N	EB Pámpanos 1 - Emergency Generators - Phase 3 North	Vega Alta	2/16/2024	$ 244,958	Generators
CIP.0801002N	EB Sabana Hoyos 2 - Emergency Generators - Phase 3 North	Vega Alta	2/16/2024	$ 184,958	Generators
CIP.2346016	Diseño-Construcción de Tubería de 6" y 4" en el Bo. Bayaney	Hatillo	1/31/2025	$ 1,460,964	Potable Water
CIP.2246116	Rehabilitación de la PF Negros (FAAST-25)	Corozal	10/30/2027	$ 27,281,802	Potable Water
CIP.2071000	Mejoras al Sistema de Distribución de Arecibo (FAAST)	Arecibo	3/15/2029	$ 111,496,713	Potable Water
CIP.4556009	Rehabilitación de la PF Sanamuertos (FAAST) (PL-13 y PL-43)	Orocovis	7/15/2026	$ 10,289,893	Potable Water
CIP.2269002	Eliminación de Varias PAS del Norte	Dorado	11/29/2028	$ 966,074,442	Wastewater
CIP.2547002	Construcción de Toma de Aguas PF Naranjito	Naranjito	6/15/2025	$ 11,955,102	Potable Water
CIP.2009106	Pozo Pajonal #1 - Rehabilitation de Pozos Fase 1- Norte (FAAST)	Florida	9/15/2025	$ 1,027,130	Potable Water
CIP.2386047	Rehabilitation de la PF Jayuya Urbano y la Toma (FAAST)	Jayuya	6/15/2027	$ 21,920,000	Potable Water
CIP.2736005	Rehabilitation de la PF Mameyes Limón (Arriba) y la Toma (FAAST) (PL-11 y PL-50)	Utuado	8/15/2026	$ 6,691,802	Potable Water
CIP.2736006	Rehabilitation de la PF Mameyes Utuado y la Toma (FAAST) (PL-16 y PL-49)	Utuado	3/15/2027	$ 9,429,992	Potable Water

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CIP No.	Project Description	Municipality	Construction Completion Date	Total Cost	Type of Project
CIP.2269000	Mejoras Sistema Distribución de Dorado/Vega Alta (Dorado Twist) (FAAST)	Dorado	3/24/2025	$ 1,438,417	Renovation and Replacement
CIP.2389000	Renovación Tubería 4" AP D.I. Sector Cuesta del Cementerio (FAAST)	Jayuya	3/24/2025	$ 573,534	Renovation and Replacement
CIP.2389001	Improvements Tetuan III Com. Inst Water Pipeline 4"/2" PVC-SDR (FAAST)	Utuado	3/24/2025	$ 899,268	Renovation and Replacement
CIP.2419001	Mejoras al Sistema de Rio Lajas, Dorado (FAAST)	Dorado	3/24/2025	$ 3,282,567	Renovation and Replacement
CIP.2526009	Diseño/Construcción. de Tubería de 4" y 2" PVC SDR-14 Sec. Los Pedrozas (FAAST)	Morovis	3/24/2025	$ 748,372	Renovation and Replacement
CIP.2386049	Eliminación de la PF Canalizo y PF Pica (FAAST)	Jayuya	9/15/2026	$ 28,000,000	Potable Water

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