

Puerto Rico Public-Private Partnerships Authority

Desirability and Convenience Study for the Puerto Rico Maritime Transportation Services Project

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April 2018



General Disclosure

This Desirability and Convenience Study (the “Study”) has been prepared pursuant to the requirements of Act No. 29-2009, as amended, also known as the Puerto Rico Public-Private Partnerships Act (“Act”) and the Regulation for the Procurement, Evaluation, Selection, Negotiation and Award of Participatory Public-Private Partnership Contracts under Act No. 29-2009, as amended (“Regulation”). This Study seeks to determine whether it is advisable and convenient for the Government of Puerto Rico (“Government”) to procure a Public-Private Partnership (“P3” or “PPP”) that consists of the operation and maintenance of the public maritime transportation services currently provided by the Puerto Rico and Island Municipalities Maritime Transportation Authority (“MTA”) within the San Juan Bay (“Metro Service”) and between the Municipality of Ceiba and the Municipal Islands of Vieques and Culebra (“Island Service”) and the operation of the maintenance facility located in Isla Grande, San Juan (collectively, the “Project”).

The Study was formulated in accordance to Section 7(b) of the Act and the different sections of the Regulation regarding the Desirability and Convenience Study of the Puerto Rico Public-Private Partnerships Authority (“Authority”). This Study was commissioned under the supervision of the Authority and in consultation with its technical advisors, Steer Davies Gleave (“SDG”) and KPFF Consulting Engineers (“KPFF”), legal counsels Pietrantonio, Mendez & Alvarez LLC (“PMA”) and Hunton and Williams (“H&W”), and procurement and financial advisor, KPMG LLP (“KPMG”) (collectively, the “Advisors”).

This Study contains the results of KPMG’s analysis of SDG and KPFF’s technical inputs. KPMG also reviewed SDG and KPFF’s inputs, assumptions and estimates contained herein,

and provided recommendations to the Authority for delivery and structure of the Project.

This Study is based on information provided by the MTA, the Authority, and market information obtained from sources believed to be reliable, and estimates and assumptions made by SDG, KPFF, and KPMG. Actual results may vary from those anticipated in this Study. Changes in local, state and federal laws, or shifts in the overall economic condition of Puerto Rico may occur that can alter the assumptions and conclusions presented in this Study. It is recommended that further analysis and due diligence be conducted in subsequent phases of the Project.

In order to gauge industry interest in the Project, the Authority is asking for comments in connection with the Study. The comments must be submitted in writing to the following email: rfq-ferrysystem@p3.pr.gov. The Authority will acknowledge receipt of those comments submitted by email within two (2) business days of receipt. The Authority may also, but will not be obliged to, respond or ask follow-up questions regarding the comments received. **The deadline for submitting comments is Friday, May 5, 2018 on or before 5:00 p.m. (AST).**

As new information becomes available, the Authority will continue to evaluate and analyze the desirability and convenience of the Project as a P3. The Authority does not make any representation or warranty whatsoever, including representations or warranties as to the accuracy or completeness of the information contained herein, including estimates, forecasts, or extrapolations. In addition, the Study includes certain projections and forward-looking statements with respect to future performance that reflect certain assumptions and are subject to significant business, economic and competitive uncertainties and contingencies, many of which are beyond the control of the



Authority and the MTA. Accordingly, there can be no assurance that such projections and forward-looking statements will materialize. The actual results may vary from the anticipated results and such variations may be material. The Authority, the MTA, and the Advisors expressly disclaim any liability for any representations or warranties, expressed or implied, contained herein or for any omissions from this Study or any related matters.

The Act and the Authority's regulation, as well as all applicable Puerto Rico and federal laws and regulations, will govern the dissemination of this Study.



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Executive Summary

Introduction

In order to provide a safe, reliable, and continuous ferry transportation service to the citizens and visitors of Puerto Rico, there is a need to revitalize MTA assets and increase the efficiency of the current service, as the majority of MTA vessels and facilities have approached the end of their service life. In order to achieve the desired objectives of the Project, the Authority is considering a P3 delivery method. This Study aims to determine the feasibility of the Project by comparing the traditional business as usual (as defined in Section 4) (“Business as Usual”) method with an innovative P3 delivery approach.

The Advisors have facilitated the development of this Study at the request of the Authority, acting on behalf of the Government and the MTA.

Objectives of the Study

The purpose of this Study is to help evaluate the feasibility of procuring the Project through a P3 as an alternative to the existing operating model utilized by the Government.

This Study describes the need and objectives for delivering the Project, assesses and compares the value of various delivery model options, describes the key assumptions behind the inputs utilized to develop a quantitative analysis, and quantitatively evaluates the preferred delivery models. Based on these items, the Study aims to discuss the preferred delivery approach for the Authority in procuring the Project.

To address the major needs of revitalizing Puerto Rico’s maritime transportation infrastructure and addressing the current conditions faced by the MTA, the Authority plans to achieve a

number of objectives through the procurement of the Project, including one of the major hurdles in procurement of an infrastructure project in Puerto Rico- the island’s current fiscal and economic condition. The Authority’s objectives include navigating these risks and procuring the Project in light of this situation by mitigating or transferring the majority of Project risks, and reducing exposure to Government funding.

Given the deteriorating asset conditions of the MTA ferry service, which has been plagued by major maintenance backlogs and unreliable service, the Authority expects to enhance service reliability and ensure safety of employees and customers, increase and optimize revenue, and reduce costs through private sector innovation and expertise. Ultimately, the Project’s procurement is expected to reduce the amount of public funding required to efficiently operate the service. By shifting the risks of the Project to a party who is best able to manage them, the Authority can seek to deliver one of the first P3 projects in Puerto Rico following the financial crisis.

Project Need

The MTA has been challenged by the task of maintaining the ferry operation in a state of good repair and providing consistent and reliable service desired by the people of Puerto Rico and its visitors. Current facilities and vessels are in operation beyond their typical service life, given the inefficiency of the public sector and the uncertainty of available funding – both of which have led to increased maintenance costs, service issues, poor ferry conditions, and safety concerns.

Further, given the reliance of the MTA on Government subsidies, it is important that the Authority procure the Project with a delivery method that limits credit exposure to the



Government. As historical results suggest, it remains inefficient and costly to maintain the Project under the Business as Usual method. As the Project aims to become one of the first P3 projects to be delivered while in the midst of the Puerto Rico financial crisis, the delivery method will need to adapt to current economic and fiscal circumstances while contributing to achieve a real incremental effect on long-term growth for the island.

Implementation of the Project will address the structural issues of terminals and other facilities, and fund the acquisition of new vessels dependent on available Government and U.S. Federal Transit Administration (“FTA”) funding. Further, procuring the Project is expected to introduce additional commercial activities as well as efficiencies that will drive down costs and ultimately reduce the public subsidy required by the Government.

Qualitative Assessment

This Study evaluates the delivery models that may be available to the Government as procurement options for the Project. These include both the traditional Business as Usual delivery model that the Government currently employs to provide the ferry service through the MTA, as well as alternative delivery P3 options, including but not limited to the following: (1) a demand risk option, where a private party assumes the risks associated with collection of revenue; and (2) an availability payment option, where the Government assumes the risks associated with collection of revenue.

Under both P3 delivery models, the private party will be responsible for the operation, maintenance, improvement, and management of the Project, with the Government retaining ownership of the Project’s assets. The three

models reflect a range of alternatives along a spectrum of risk transfer solutions.

When evaluating the Availability Payment P3 (as defined in Section 4), it was determined that the drawback of this structure is a private party’s unwillingness to assume the ongoing credit risks associated with exposure to Puerto Rico’s current fiscal situation, as well as the uncertainty of funds available to the MTA to pay a continuous availability payment to a private party.

Therefore, following qualitative analysis of the various delivery models, the traditional Business as Usual model and the operation, maintenance, improvement, and management structure where a private party is responsible for farebox and other revenue (“Demand Risk P3”) were selected for further quantitative evaluation.

Quantitative Analysis

The overall results of the analysis demonstrate that the Demand Risk P3 approach is estimated to provide the greatest reduction in the public subsidy required to continue to operate the ferry service. The Demand Risk P3 approach is estimated to require a subsidy of \$261 million over the life of the Project on a present value basis, compared to \$487 million if the Project remains under operation by the Government, resulting in \$227 million savings over the life of the Project. The Demand Risk P3 approach further provides the additional advantages of spurring innovation and delivering a more efficient and reliable operation and management of the ferry service.

Conclusion

Although the Business as Usual option offers familiarity, it does little to fulfill many of the Authority’s and the MTA’s procurement



objectives such as risk allocation, cost reduction, or expanding resources available for critical capital investment. Alternatively, procuring the Project as a Demand Risk P3 introduces private sector experience and expertise, resulting in reduced cost exposure, increased revenue, and the transfer of substantial risk from the MTA to the private sector. Partnering with a private party is further supported by Puerto Rico's current economic and fiscal environment and is expected to result in a public subsidy that is \$227 million less than that required under the Business as Usual model on a present value basis, inclusive of the foregone revenue associated with the Business as Usual case. In addition to this direct monetary benefit, utilizing a Demand Risk P3 will result in the Project being more efficient, innovative, and better positioned to serve the needs of the ferry's riders.



Section 1 – Objectives of the Study & Procurement



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1.1 Study Objectives

The Study was requested by the Authority in order to determine and evaluate the feasibility of delivering the Project through an innovative method such as a P3 option, compared to the Business as Usual method currently implemented by the MTA. This Study aims to assess and compare the feasibility of different Project delivery models, analyze the benefits of each delivery model, and identify the preferred method for the Authority to consider in delivering a Project that meets the MTA's and the Authority's objectives and goals.

The steps taken in this Study to achieve the MTA's and the Authority's objectives are as follows:

- Identify the objectives and need for the Authority and the MTA to procure a private party to enhance the Project's service, reliability, safety, and ultimately reduce the need for public funding support
- Assess the value that each delivery model brings and select the models that best meet the Authority's and MTA's objectives for further quantitative analysis
- Describe the input values utilized to compare each of the selected models
- Quantitatively evaluate through a Value for Money ("VfM") analysis the selected delivery models based on input values
- Convey the results of the VfM analysis highlighting the preferred delivery model based on the quantitative analysis and the Authority's and the MTA's objectives.

1.2 Procurement Objectives

Discussion between the Government, the Authority, the MTA and the Advisors has resulted in the following goals to be achieved through the procurement of the Project. The objectives listed below ensure consistency in the focus of the analysis presented in this Study, and the selected procurement method should reflect the objectives listed herein. The delivery options for the Project analyzed in this Study will be evaluated against the procurement objectives listed below in identifying the preferred method of Project delivery. The procurement objectives for the Project are as follows:

Procurement Objectives

- Maintain customer and crew safety
- Improve the quality of service and reliability
- Increase resources for vessel and terminal maintenance
- Streamline workforce to provide an efficient amount of employees
- Allocate project risks and responsibilities to the party best able to manage them
- Increase revenue by introducing and improving ancillary revenue sources
- Reduce costs through innovation and private sector experience
- Decrease the amount of public funding required to operate the Project by pricing the service to better reflect operating costs
- Reduce exposure to the current fiscal situation in Puerto Rico
- Modernize public services and build a stronger and more resilient infrastructure
- Become the first P3 project to be delivered while in the midst of the financial crisis and adapt to current economic and fiscal circumstances



1.3 Study Participants

The Government, through the Authority and the MTA, has assembled as a team to evaluate the feasibility of delivering the Project as a P3. The participants in the Study and procurement of the Project and their respective roles are described in more detail as follows:

Department of Transportation and Public Works

Puerto Rico Department of Transportation and Public Works (“DTOP”) is the executive department responsible for the regulation of transportation and public works in Puerto Rico. DTOP will oversee the Project as an essential component of the Government’s long-term transportation initiatives, which will be implemented, in this case, by the MTA.

Puerto Rico and Island Municipalities Maritime Transportation Authority

The MTA was pursuant to Act No. 1-2000, as amended, otherwise known as the Puerto Rico and Island Municipalities Maritime Transport Authority Act (the “MTA Act”). The MTA Act established the MTA as a public corporation which owns ferry assets currently used to provide maritime services to Fajardo, Vieques, Culebra, San Juan, and Cataño. MTA’s purpose is to control, administer, operate and maintain the maritime transportation service and related assets in Puerto Rico.

Puerto Rico Public-Private Partnerships Authority

The Authority is the sole entity responsible for the implementation of P3s in Puerto Rico. The Authority promotes an ongoing collaboration between the public and private sector to promote sustainable economic development

and establish Puerto Rico as a global competitor in the industry of goods and services. The Authority is leading the procurement of the Project along with the MTA.

The Advisors were appointed by the Authority who commissioned this Study, and provided insight and advised the Authority on the procurement of the Project.



Section 2 – Statement of Need & Project Overview



Section 2 – Statement of Need & Project Overview

2.1 Statement of Need

The Government recognizes that the quality and level of service for maritime transportation is linked to the stability and sustainability of a cohesive and robust operating and funding plan. For various reasons, the MTA has been challenged by the task of maintaining the ferry operation in a state of good repair and providing consistent and reliable service desired by the people of Puerto Rico and its visitors. The MTA is facing a fundamental challenge as it looks to remain financially sustainable over the long-term. There are critical and inter-related elements of this challenge:

- the Government’s General Fund is under financial pressure
- the ferry system is currently operating under a poor level of service
- there is limited capability to promote and improve the level of service
- assets are in need of repair, introducing safety concerns for users of the ferry system

Public Funding

The Government, its agencies, public corporations and instrumentalities are currently in the midst of profound fiscal adjustments as a result of ongoing financial crisis. Since the crisis and amid fiscal oversight, the Government has taken steps to reduce its obligations, which includes optimizing the amount of public support that it provides for services such as the MTA. Uncertainty in the availability of future funds is a key concern to properly operating, maintaining, and investing in the MTA to ensure a safe and reliable service for residents of Puerto Rico and its visitors.

Poor Level of Service

The MTA aims to provide and maintain a reliable, efficient ferry system; however, the current level of service remains inefficient and unreliable, which increases the amount of public support required to operate the service. Currently, reduced vessel reliability and a high level of unscheduled trips have both disrupted service, and contributed to unsustainable operating costs. The service is currently priced at levels that are generating demand levels that are frequently unmet by current sailings. In addition, the lack of a consolidated ticket collection system has resulted in long lines and uncertain capacity, resulting in unreliability to the service.

Limited Ability to Improve the Service

Current operations of the ferry suggest limited ability for the MTA to improve the service. Improvements that have not been made, for different reasons, include:

- Lack of fare increases since 1987, which only cover less than 6% of operating expenses
- Lack of consolidated ticket system
- No exploration of ancillary revenue sources
- Inadequate and ineffective marketing
- Lack of funds to acquire new vessels

Assets are in Need of Repair

As costs increase without a commensurate increase in revenue, the lack of funding creates deferred maintenance backlogs and further increases in costs, reductions in service, and uncertainty surrounding passenger safety. For instance, the main Fajardo terminal facilities were closed due to structural problems and following hurricanes Maria and Irma, the existing facilities suffered serious damage affecting overall services. Many of the vessels that are used to transport passengers are also well



beyond their useful lives. Without adequate transportation via a ferry service, passengers have no access to the vital services needed on each island.

Given that MTA services are a catalyst for tourism and economic development, as well as highly essential to the residents of Puerto Rico and its visitors, there is a profound need to enhance the services of the MTA by addressing operational issues, increasing costs, and reductions in revenue.

2.2 Current MTA Operations

The current services provided by the MTA are described below:

Operations

The residents in the Island Municipalities have no other options provided by the Government to reach the main island. In order to effectively develop both islands to their social and economic potential, a reliable ferry service must be provided to link residents, businesses, and tourists to the offshore islands, connect island residents to the essential services (i.e., health, education, and commercial services) that are provided in the main island, and safely transport island residents in the event of a storm or emergency event.

Currently, the MTA operates three scheduled ferry services with 13 vessels in 5 terminals, running 7 days per week. The services are split into two main categories: Metro Services and Island Services.

Metro Service

The Metro Service operates between the Metropolitan Region of San Juan (comprised of the municipalities of Bayamón, Cataño,

Guaynabo, San Juan, and Carolina). The following map shows the services provided between San Juan and Cataño.



Island Service

The Island Service connects the islands of Vieques and Culebra to Fajardo on the main island. The following map shows the services provided which link Vieques and Culebra to Fajardo.



In addition to passenger services, the MTA also provides cargo and fuel transportation to the islands of Vieques and Culebra, as well as transportation for special events. MTA also operates a maintenance facility in Isla Grande, San Juan.

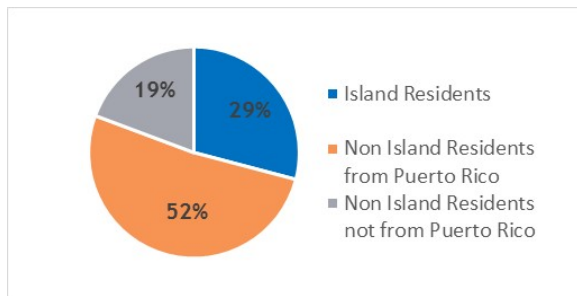
Passenger Demographics

The Metro Service is primarily used by commuters to Old San Juan and by visitors to Old San Juan for leisure purposes. The Island Service serves two distinct markets: the first is island residents, for whom the ferries provide the only affordable travel option (\$2.00 and \$2.25 for Vieques and Culebra each way, respectively) to

the main island of Puerto Rico. The other market served is visitors, primarily, but not exclusively, from the main island of Puerto Rico.

An extensive survey was conducted to better understand the passenger market using the Vieques and Culebra (“Municipal Islands”) services. Surveys were carried out between August 3, 2015 and August 10, 2015, yielding 1,200 completed surveys. The survey results suggest that Municipal Island residents account for less than one-third of passengers.

Island Service Passenger Demographics



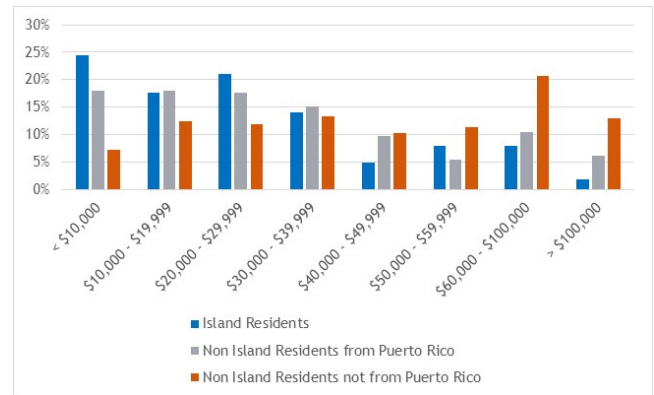
The survey results also suggested that 77% of non-residents traveling to the Municipal Islands are primarily doing so for vacation. Residents of the Municipal Islands traveling to the Puerto Rico mainland have varying reasons for doing so, including work, visiting relatives or friends, shopping, or personal business.

Overall, 77% of respondents identified themselves as Puerto Ricans, while 44% of the respondents were visitors living in the continental United States.

Household Income of Island Service Passengers

Household income for respondents who are visitors from outside Puerto Rico is significantly higher than for residents of the Municipal Islands. For such visitors, 45% have a household income over \$50,000, while only 18% of residents do. In comparison, 63% of residents

have household incomes below \$30,000, while only 31% of visitors from outside Puerto Rico have incomes in this range. The Island Service passengers who are residents of Puerto Rico, but not of the Municipal Islands, have income levels between those of these two groups, as shown in the chart below.



Travelers flying between the Municipal Islands and the main island of Puerto Rico were also surveyed for comparison. The air travel market was found to be quite distinct from ferry users. They generally have higher income levels than those using the ferries, with perhaps the most striking difference being where these users reside. Results of the sample of non-ferry users were overwhelming indicating that users are from outside of Puerto Rico.

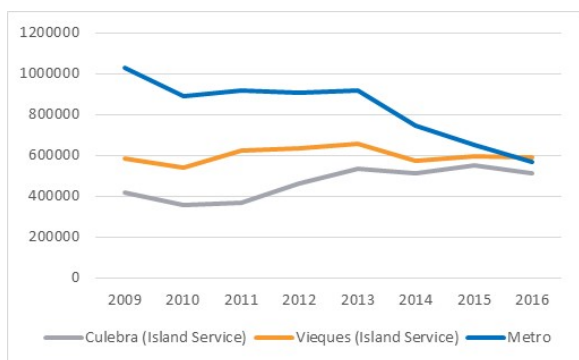
Based on the results of the survey, the following can be concluded regarding the current operations of Metro and Island Services:

- Most travelers are Puerto Rico residents traveling for leisure purposes with slightly higher income than residents of the Municipal Islands
- Municipal Island residents have lower income than other users of the service and cannot afford other means of transportation
- Ridership may increase if service attracts non-residents on vacation or leisure

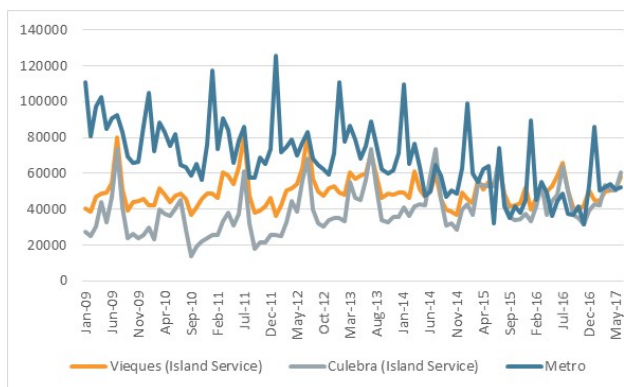
Ridership

The charts below show annual and monthly ridership for the Island and Metro Services. For the Island Service, ridership displays a strong seasonal pattern related to tourism activity, with large peaks in July. From 2009 to 2016, ridership on the Vieques and Culebra service has been fairly constant. Metro ridership peaks in January of each year. However, overall ridership has decreased following a reduction of service in early 2014 and subsequent intermittent service.

MTA Annual Historical Ridership



MTA Monthly Historical Ridership



Current Vessels

¹ In dry dock, USCG Certificate of Operation pending, as of 30 January 2018

Metro Service Vessels

The current Metro Service fleet consists of the following vessels:

Name	Year Built	# Passengers
Amelia	1989	146
Covandonga	1990	146
La Decima	2009	46
La Princesa	2009	146

Of these vessels, the Covandonga and Amelia are past their expected service life and should be replaced with new vessels having similar passenger capacity. La Decima is a viable backup vessel but does not have the passenger capacity to serve as a primary vessel on this route. La Princesa has adequate passenger capacity but does not have the speed necessary to provide the level of service that may be required during peak demand periods.

Island Service Vessels

The Islands Service fleet currently consists of the following vessels:

Name	Year Built	# of Passengers
Passenger-Only Vessels		
Caribeña ¹	2004	236
Cayo Blanco ²	2009	600
Fajardo II ²	1996	272
Vieques II ²	1996	523
Passenger + Cargo Vessels		
Cayo Largo ¹	2008	300
Cayo Norte ²	1995	198
Isla Bonita ¹	2012	355
Isleño ¹	2004	204
Santa Maria ¹	1990	137

The MTA is currently in the process of conducting a complete survey of the Metro and Island Service vessels to determine the current

² In service as of 30 January 2018

conditions of the fleet, as suggested in the MTA's 2017-2026 Fleet Maintenance Plan.

Current Facilities

Metro Service Terminals

The Metro Service connects terminals in Old San Juan and in Cataño. The terminals provide two operating slips, passenger waiting areas, ticket booths, and spaces available to rent for concessionaires. The terminal in Cataño also provides an overnight moorage/maintenance slip and a small maintenance shop for general maintenance and light repairs.

Island Service Terminals

Fajardo

The primary terminal for the Island Service is currently in Fajardo and it includes two vehicle loading ramps, three slip for loading passengers, a vehicle holding and freight staging area, ticket booths, a passenger waiting area, and several administration, maintenance and storage buildings.

The primary terminal for the Island Service will move to a new terminal within the former Naval Station Roosevelt Roads in Ceiba. This new terminal will include two combination freight and passenger operating slips, two passenger-only operating slips at Pier 2 and a moorage / maintenance area.

Culebra and Vieques

The terminals in Culebra and Vieques provide loading facilities for both passengers and vehicles as well as ticket booths and administrative offices. The terminal in Vieques provides spaces available to rent for concessionaires.

Isla Grande Maintenance Facility

The maintenance facility in Isla Grande includes a Synchrolift™ ship lift that can handle most of the vessels in the MTA fleet for hull inspections, cleaning, maintenance and repairs as well as a series of transfer rails that allow multiple vessels to be served at the same time. Other yard equipment includes cranes, forklifts, trucks and miscellaneous portable equipment. The maintenance facility also includes an office building, warehouse, and shops building. The shops building includes facilities for welding, pipe fitting, carpentry, sheet metal work, and electrical repairs.

Ticketing

The current ticketing system requires customers to purchase tickets in-person at the terminal in Fajardo, resulting in long lines and leaving some passengers unable to make their desired sailing. The service would greatly benefit from an online system that allows for reservations ahead of time, and electronically publishes the number of tickets that are available at a given moment in time.

Given the need to upgrade current vessels and facilities to provide a reliable, safe, and efficient service, the Authority expects to procure the Project and achieve the goals and benefits discussed herein. An overview of the Project is discussed in the section below.

Current Subsidy Levels

Given the poor level of service of the MTA, the lack of ability to improve operations, and the inability to generate sufficient farebox revenue to cover its' obligations, the MTA has historically relied on a subsidy from the Government to continue to operate the ferry service, and account for significant losses that the MTA's



operation assumes. This subsidy has totaled roughly \$26 million, \$29 million, and \$17 million in fiscal years 2014, 2015, and 2016, respectively. Further, in fiscal 2016, the MTA received \$13 million in cigarette excise tax revenue. The MTA is expected to receive \$16 million in fiscal year 2017 from the General Fund. In the past, the Highways and Transportation Authority and Puerto Rico Ports Authority have also been sources of funds to cover the MTA's operating cash shortfall.

The subsidy provided to the MTA has been minimal as it relates to the overall needs of the MTA to sufficiently operate the ferry service. In past years, the MTA has requested significantly higher amounts from the Government and due to fiscal constraints has not been allocated the total requested funds. The continued shortfall in requested funds has resulted in the current unreliable levels of service despite the MTA's intent to operate in an efficient manner.

Certain transit-related expenses incurred by the MTA are eligible for federal grants and other fund reimbursements. These grants have been received historically and are expected to fund portions of the Project's investments, capital improvement and maintenance costs. Under both the Business as Usual and Demand Risk P3 approach, the Authority also plans to use these funds to pay for certain terminal enhancements, vessel acquisition and maintenance costs.

The federal grants that the Authority has proposed to be available to the Project consist of Section 5307, 5337, and 5311 funds, which will likely total between \$39 million and \$89 million. The Authority has also identified available funding included in the Statewide Transportation Improvement Program ("STIP") No. 2, which is currently programmed for certain MTA facility improvements, operations and service initiatives related to the Project.

Available funding included in the STIP totals around \$55.8 million.

2.3 Project Overview

In order to improve the service of MTA's ferry system, the Authority, acting in collaboration and as an agent of the MTA, is contemplating the establishment of a P3 for the management, operation, maintenance, and improvement of the Project, which includes Metro and Island Services, and the maintenance facility located in Isla Grande, San Juan. Collectively, the enhancements are expected to provide additional revenue streams such as cargo, concessions, and parking. In light of recent developments in the Caribbean as a result of Hurricanes Irma and Maria, the Authority and the MTA are also interested in assessing the potential feasibility of providing maritime services (which may include any combination of transportation, docking, and engineering etc.) and developing additional routes to nearby Caribbean islands and/or developing a port hub for other regional maritime transportation providers. The development and establishment of a regional port hub and additional routes to the Caribbean islands in close proximity to Puerto Rico represent a significant opportunity to increase ridership and enhance the potential revenue generated from the operation of the Project.

The Project takes place and focuses on existing MTA operations and the development of a new ferry route from the Municipality of Ceiba (former Naval Station Roosevelt Roads). The scope of work comprises the rehabilitation and remodeling of existing facilities at the Fajardo terminal, improvements to the Vieques and Culebra terminals and the remodeling of existing structure and new docks at the Ceiba location. It also contemplates the replacement of vessels. The Authority also plans to use the



aforementioned funds to pay for such enhancements, vessel acquisition and maintenance costs.

The main components of the Project are described in the following sections.

Fajardo Operation Facilities

The main terminal facilities were closed due to structural problems, and thus services have been accommodated in alternate areas as a temporary solution. After hurricanes Irma and Maria, the existing facilities suffered serious damage, affecting overall services, availability of trips, and timely schedule keeping. As a result, a new terminal will be constructed in Pier 2 at the former Naval Station Roosevelt Road at Ceiba. A private party will have the right to operate the service out of the Ceiba Terminal once complete.

Proposed Ceiba Terminal Facilities

The proposed Project contemplates the construction of new terminal and support buildings at Pier 2 as part of the Roosevelt Roads Redevelopment effort. Existing buildings will be re-purposed where possible and new operating slips will be built along with new parking areas and a new truck/freight queuing area. A new overnight moorage and light maintenance facility will be constructed at Pier 2. The Pier 2 facilities will be able to accommodate 6 of the 7 vessels in the Islands Service fleet.

The ferry service will continue to be operated out of the Fajardo terminal while the Ceiba terminal is under construction. The Ceiba terminal and associated facilities are expected to be paid for by the Government, either from appropriated funds, FTA grants, and other sources of federal funds.

Vieques Terminal

Vieques main terminal is located in the area known as Isabel II. The terminal facility has been operating for almost seventy five years. The construction of the canopy area was completed in 2004, and the last dredging occurred in 1998. Operational facilities are located in a two-story building which is currently not being utilized, and the first floor being used for administrative purposes. The second floor is not used in its maximum capacity and is in need of a general upgrade, remodeling and redistribution of spaces.



The proposed scope of work is organized in two main areas:

- Design or reconfigure and build new sidewalks and other paved existing areas in compliance with the Americans with Disabilities Act.
- General improvements and remodeling of the main Terminal building, including the reconfiguring of principal elements of passengers circulation, new control and checkpoint areas, interior remodeling of administrative offices with infirmary, employees' resting area, and kitchen,

storage and bathrooms spaces, for a total of 1,600 sq. ft.

The Authority expects to continue discussions with the USDA as the Project procurement progresses.

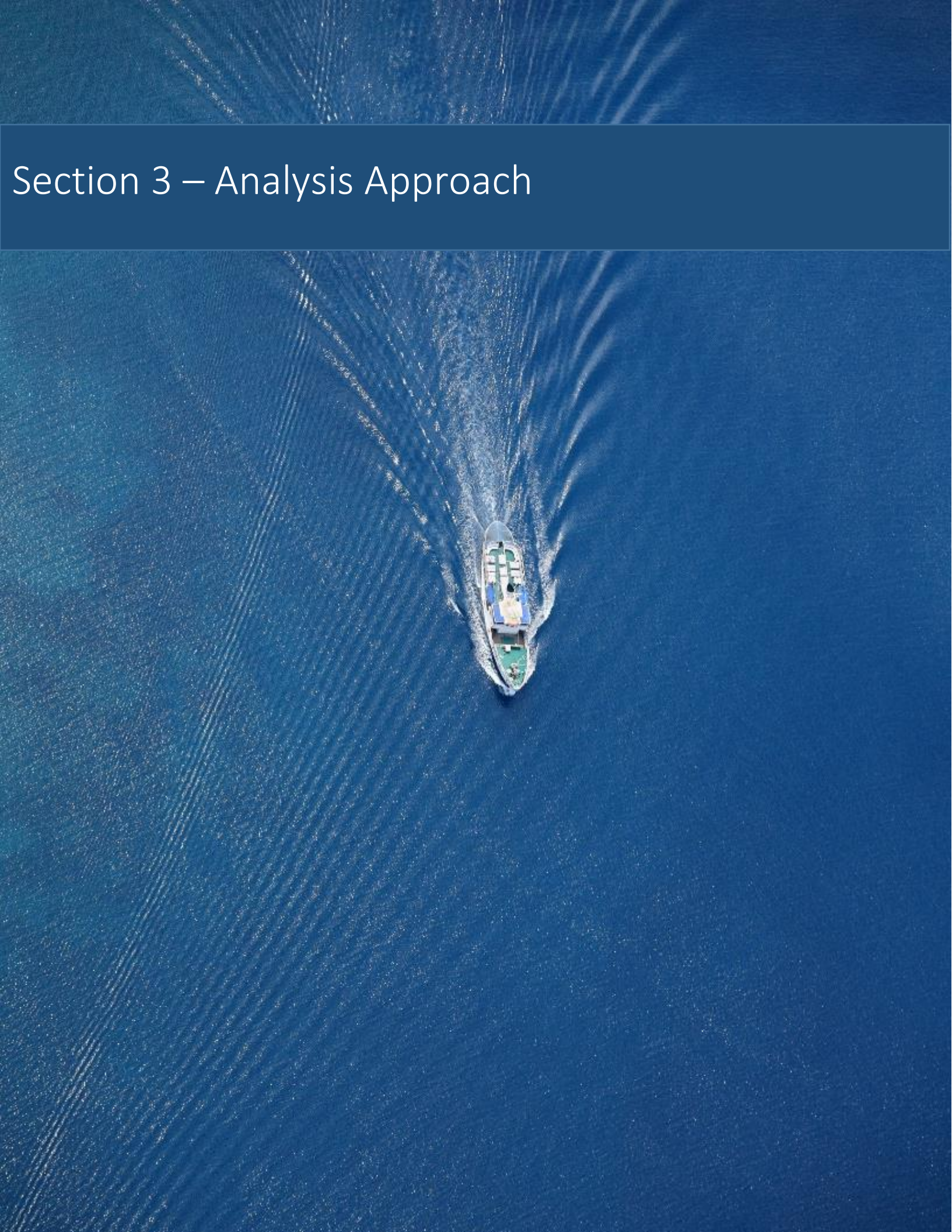
2.4 Available Project Funding

Funding the Project under both procurement scenarios presents a considerable challenge to the MTA and the Authority given the lack and uncertainty of available future funds, as well as fiscal oversight, among other challenges. Considering the ongoing need for public support, the Government will likely need to appropriate general revenue funds or other monies to finance an annual gap created by a lack of farebox and other revenue in covering the Project's obligations. Historically, the funds appropriated to the MTA by the Government to cover the shortfall have been insufficient and have resulted in maintenance backlogs, reduced service quality, and increased costs. Under the Business as Usual procurement approach, it is unlikely funds will be sufficient to operate the Project in an efficient and effective manner that eliminates the ferry's current issues.

To mitigate the credit risks associated with Puerto Rico's ability to fund this ongoing subsidy payment under the Demand Risk P3 approach, the Authority has initiated preliminary discussions with several different entities such as the United States Department of Agriculture ("USDA") in connection with financial assistance to the Project, in the form of a financial backstop. Receiving this payment guarantee from the USDA would reduce the exposure to credit risks and the current economic environment in Puerto Rico, which a private party may be unwilling to assume in the Demand Risk P3 approach to procuring the Project. Thus, securing a private party to operate, maintain, improve, and manage the Project may be contingent on the approval of the USDA loan guarantee, or another source of financial backstop.



Section 3 – Analysis Approach



Section 3 - Analysis Approach

3.1 Scope of Work

The Advisors were requested to assist the Authority in developing the Study to identify the optimal Project delivery method for Puerto Rico by comparing both innovative and traditional procurement methods. The analysis aims to understand the key qualitative considerations of each option and articulates the financial impact of the options analyzed herein. Both the qualitative and quantitative analyses are described in the following sections.

3.2 Approach

The approach used in this analysis focuses on evaluating potential project delivery options and determining the most appropriate option for the Project considering both qualitative and quantitative factors. Methodologies utilized as part of this analysis are based on generally accepted principles used by state and local governments when evaluating the case for investment and evaluating the various approaches to project delivery. Analyses of this type are routinely used by government agencies and public sector project sponsors in the U.S. and globally for making and supporting decisions. The following key activities were undertaken as part of this scope:

- **Identifying Project Goals and Objectives:** The initial stages of the analysis involved discussions with the Government, the Authority, the MTA, and other affiliated entities to identify the key objectives for the Project. These objectives ensured the consistency and focus of the following steps in the analysis and verify the selected procurement model is consistent with the parties' procurement intentions.
- **Qualitative Assessment:** During this phase of the analysis, a range of potential delivery models are evaluated against the project objectives. The outcome of this first-level delivery model screening is to identify if the established goals can best be achieved via alternative procurement methods versus a traditional Business as Usual method.
- **Inputs Analysis:** SDG, KPFF, and KPMG were consulted to provide information, preliminary revenue and cost estimates, expected O&M and lifecycle requirements, among other inputs. Assumptions were based on historical operating, maintenance, and financial data, market precedent, current market conditions in Puerto Rico, and discussions with local experts. Relying upon this information, a preliminary cost estimate of needs to complete the Project, functional requirements, and future expectations for a project of this nature was developed. These inputs were used as the basis for the financial modeling during the next phase of the analysis.
- **Affordability Analysis:** An affordability analysis was developed to evaluate the Project's ability to generate the necessary revenues to pay for the Project's obligations.
- **Value for Money Analysis:** A quantitative assessment was also performed based on the VfM comparison of the Business as Usual model against the alternative delivery methods. VfM is a fundamental component in the evaluation of project delivery models to examine the financial implications of each model in a structured "apples-to-apples" analysis. This is done by comparing estimates of the total risk-adjusted costs of operating, improving, managing, and maintaining the Project under each model over a comparable expected contract life.



- **Conclusion and Next Steps:** A combined summary of the outputs obtained through the qualitative assessment, the affordability analysis and the VfM analysis for the different delivery models is included in further sections. The process to accomplish the procurement of the Project is also discussed herein.



Section 4 – Project Delivery Options Assessment



Section 4 – Project Delivery Options Assessment

4.1 Approach

This section describes select delivery model options available for the Project and includes their respective benefits and considerations. Based on the outcome of the qualitative assessment, the preferred delivery models are advanced for further quantitative analysis.

As part of this Study, the advisors have evaluated a broad spectrum of delivery models to develop the Project, including traditional and P3 options. The following segments of the Study provide a high-level summary of the qualitative delivery model analysis that was performed to determine which models were best suited to deliver the Project. Each delivery method was evaluated in light of the procurement objectives identified in Section 1.

Business as Usual

The Business as Usual option is the continued delivery of services by the MTA, representing Project delivery by the Government with no change to the current structure. The Business as Usual case assumes the Government takes on all risk associated with the Project, including operating, maintenance, funding/financing, vessel purchases, and other risks.

This has been the traditional approach for the MTA and the operation of the ferry system. For this delivery method, Puerto Rico retains the risk and responsibility for all elements of the Project from inception through perpetuity, including but not limited to implementation and operation of the new Ceiba terminal, maintenance of existing terminals, maintaining the shipyard facility, purchasing vessels, maintaining vessels, as well as operating the service, including paying for

labor and fuel costs, among others. To continue to operate the ferry service utilizing the same Business as Usual approach, Puerto Rico would have to fund the acquisition of new vessels, or continue to maintain the current vessels, which may be unfit to continue operating given the vessels' age. Puerto Rico may also have to maintain and repair current terminal facilities, the shipyard facility, and continue to operate ferry service. Key characteristics of this delivery approach include:

- **Familiarity and acceptance** – The delivery model is familiar to Puerto Rico as the current ferry service is provided by the MTA. As the Project is under direct control of MTA, continuing to operate in this fashion is relatively straightforward.
- **Funds appropriation process** – Despite current fiscal constraints, Puerto Rico needs to continue to appropriate general revenue funds to pay for the operation and maintenance of the ferry service throughout the Project term. A lack of availability of resources for ongoing maintenance and lifecycle costs, as well as acquisition of new vessels, has historically led to an increase in costs and significant deferral of O&M and major maintenance, as well as new vessel purchases. As the majority of the assets required to continue operation of the service (both terminals and vessels) are well beyond their useful life, continued deferral of rehabilitation work may render future service incapable of transporting passengers.
- **Value** – While value may be created due to familiarity with the Business as Usual operating method, public sector



operations may result in higher costs due to inefficiencies. Additionally, the long-term value of the assets is negatively impacted due to the uncertainty of O&M and major maintenance funding for the life of the Project.

- **Risks retained by Puerto Rico** - There is an inability to incentivize project participants under the Business as Usual model to avoid overruns and delays on maintenance, project performance, and other common risks in operating this type of infrastructure project. These risks are retained by the MTA during operations and have historically been problematic resulting in deferred maintenance and increased issues and costs with lifecycle capital improvements, as well as service reductions and uncertain ferry capacity. Puerto Rico retains all risk and responsibility for the long-term performance of the Project under a Business as Usual approach.

P3 Approach

Under a P3 approach, the Project will be procured with a private party responsible for the operation, maintenance, improvement, and management of the Project. It is expected that the Project will be procured in two phases, with Phase I acting as a transition period to ensure the operation is smoothly transferred to the private sector. During the Phase I period, the private party should enhance and make the ferry service more efficient, reducing costs and optimizing the service prior to the Phase II period.

During the term of the Project, the private party will be responsible for the collection of all farebox and ancillary revenue, and it is expected that the Government will provide a subsidy

payment to the private party for operating the service. The amount of the subsidy payment to the private party will be made net of farebox and ancillary income. Net subsidy payments as well as defined funding will compensate the private party for funding investments during Phase I and Phase II, as well as the costs incurred to reasonably operate the ferry service. As the asset is fully transitioned to the private party after the Phase I period, the Government expects the ferry operation's subsidy to be substantially reduced.

During the Project's term, the private party will be responsible for the operation, maintenance, management, and improvement of the Project, including the risks associated with any necessary capital investment of local funds for the matching required on FTA federal funds in vessels, terminals, and ports that are not covered by FTA or other funds through the Government. However, the Government expects to fund a significant portion of capital improvements through the use of grants obtained for such purposes. The private party will be responsible for the management and execution of capital improvements.

During Phase II, the Government will specify the service requirement in terms of minimum frequency and total capacity leaving it to the private sector operator to ensure the service is operational during these periods. It is expected that the private party will commercially maximize the asset during the Phase II period, including additional commercial activities, trips, and other revenue enhancements.

During both phases, the Government will retain ownership of the Project's assets, and at the end of the term all management responsibility of the Project will revert to the Government.



Two different P3 delivery models have been analyzed for this Study, utilizing the aforementioned P3 structure:

1. Demand Risk P3 Approach

This type of procurement provides Puerto Rico maintenance and lifecycle cost benefits, revenue enhancement, and in addition, the transfer of significant risk to the private sector partner. Given the current unwillingness of private parties to assume the risk of exposure to Puerto Rico's credit quality, it is important that the Government identify available funding to provide to the private party for operating and maintaining the asset. Although a private party is assuming the risk of sufficient farebox being available to cover the Project's obligations, it is likely a subsidy will be provided to the private sector for operating the asset.

Key characteristics of this delivery approach include:

- **Risk transfer to private sector** – Under this type of procurement method, risks associated with the operation, management, improvement, and maintenance of the Project are transferred to the private sector. This procurement method transfers Project risks to the party best able to manage them.
- **Revenue maximization approach** – The private partner is incentivized to earn a return, therefore maximization of revenue throughout the Project term is a strong incentive to maintain Project performance.
- **Innovation** – By transferring the risks associated with the Project to a private party, the ferry service receives enhanced operations resulting from the private sector's experience and

innovation. This Project knowledge may lead to significant value and efficiency and can help to avoid future project issues, and lead to reduced costs for the Government in the long run.

- **Reduction in Public Support** – Under this delivery model, Puerto Rico could reduce the amount of public support that is needed for the ferry service given the shift in revenue risk to the private sector. Further, private sector efficiencies and expertise may drive down costs and increase revenue for the service, which would ultimately reduce the amount of public funds required to maintain the service.
- **Less familiar delivery model** – This delivery model is not as familiar to Puerto Rico and might be perceived as a loss of direct control over the Project.

2. Availability Payment P3 Approach

Under this scenario, the private party remains responsible for the operation, maintenance, improvement, and management of the Project.

The main difference in the two structures is the payment mechanism to the private party. Under this structure, the Government will pay an availability payment that is part fixed, part index-linked at the start of the contract for the duration of the operating period. An availability payment is a single, annual unitary payment made to the private sector by the public sector sized to cover the cost of vessel acquisition, terminal and shipyard improvements, ongoing maintenance, lifecycle or major rehabilitation and replacement costs, taxes, transfers to reserves and returns to equity, among other items.

In this scenario, the Government would assume the risk of generating sufficient farebox and other revenue to cover availability payments



made to the private operator. A shortfall in revenue would not affect the amount of payments that are made to the private party, thus the Government assumes demand risk – or the risk/reward associated with revenue being sufficient to cover payments made to a private party.

In addition to the key characteristics identified above for the Demand Risk P3 model, this delivery approach includes:

- **Performance-based incentives** - Financial incentives imposed by the contract structure, which include deductions to availability payments if established standards in the contract are not achieved, act as a powerful motivator toward incentivizing high performance.



4.2 Results of Project Delivery Options Assessment

The chart below compares the objectives with each procurement method analyzed.

Project Objective Considerations	Delivery Method		
	Business as Usual	Private Sector Availability Payment	Private Sector Demand Risk
<i>Maintain customer and crew safety</i>	●	●	●
<i>Improve the quality of service and reliability</i>	○	●	●
<i>Increase resources for vessel and terminal maintenance</i>	○	●	●
<i>Streamline workforce to provide an efficient amount of employees</i>	○	●	●
<i>Allocate project risks and responsibilities to the party best able to manage them</i>	○	●	●
<i>Increase revenue by introducing and improving ancillary revenue sources</i>	○	●	●
<i>Reduce costs through innovation and private sector experience</i>	○	●	●
<i>Decrease the amount of public funding required to operate the Project by pricing the service to better reflect operating costs</i>	○	◐	●
<i>Reduce exposure to the current fiscal situation in Puerto Rico</i>	○	○	◐
<i>Provide a boost in economic activity for the entities involved in the operation, maintenance and other portions of the Project</i>	◐	◐	●
<i>Modernize public services and build a stronger and more resilient infrastructure</i>	◐	●	●
<i>Become the first P3 project to be delivered after the financial crisis and adapt to current economic and fiscal circumstances</i>	○	◐	●
<i>Achieve the Governor’s priority of implementing the MTA ferry Project as a P3</i>	○	●	●



As can be seen in the chart, the Demand Risk P3 approach is the method of procurement that satisfies the majority of the Project objectives considerations.

The qualitative analysis conducted herein determined that the private sector operating model that transfers the risk of managing, operating, maintaining, and improving the Project as well as a private party assuming demand risks (Demand Risk P3) associated with the ferry service is the most optimal delivery model option for the Project when evaluated against the procurement objectives.

When evaluating the Availability Payment P3 model, it was determined that the drawback of this structure is a private party's unwillingness to assume the credit risks associated with exposure to Puerto Rico's current fiscal situation. Further, given the fiscal situation, it remains uncertain as to whether Puerto Rico would have available funds to make ongoing contractually obligated payments to a private party for operating the assets. When the Authority conducted market sounding discussions, private parties' unwillingness in assuming this risk was evident.

Therefore, the private sector operating model that transfers the risk of managing, operating, maintaining, and improving the Project as well as the private party assuming demand risks will undergo further quantitative analysis herein and will be compared with the Business as Usual delivery option.



Section 5 – Affordability Analysis



Section 5 - Affordability Analysis

5.1 Introduction

The affordability assessment discussed in this section involves a detailed, quantitative analysis that compares the preferred Demand Risk P3 approach to the Business as Usual approach. A financial model was developed for the Project that takes into consideration estimated Project ridership, revenue, and the costs associated with operating the ferry service, acquiring new vessels, maintaining current vessels, and improving and maintaining the terminal facilities and maintenance facility for the Project. The inputs utilized for the development of the model used in the Business as Usual and Demand Risk P3 portions of this analysis discussed below were derived from SDG, KPFF, and KPMG leveraging historical and expected future MTA operating and financial information, market precedent, publicly available data sources, and local insight. The inputs are preliminary estimates and should continually be refined as the Project progresses.

The analysis herein considers the costs and revenues associated with each segment in nominal year of input values and the present value associated with each input. Nominal dollar estimates are helpful when looking at cash flows over a long period of time, as the values consider the effects of inflation. To derive nominal values, the inputs (presented in real U.S. dollars) were indexed to a long-term inflation rate of 2.2%. The present value of each input refers to the current value of expected future dollar amounts, discounted back to the present using a discount rate.

The inputs utilized for the development of the model used to discern the affordability of the Project are discussed below.

5.2 Ridership Inputs

The preferred Demand Risk P3 approach seeks to minimize the subsidy that the ferry system incurs. This is done with measures that both increase revenues and lower costs, lowering overall ridership but maintaining a service equipped to meet the needs of Municipal Island residents and cater to a smaller tourist population.

This modeling approach takes the Island Service and Metro Service separately.

Island Service

Starting with the Island Service, several points were taken into consideration in arriving at this minimization point, the following being the most important: (1) the historically stagnant fare level; (2) the vulnerability of Municipal Island residents using the service for work and school commutes as opposed to other users utilizing the service for leisure purposes; and (3) rising operational costs. Given these points, the Demand Risk P3 case raises fare levels for all users with a fare scheme that sets higher fares for non-residents of the Municipal Island relative to Municipal Island residents, subject to FTA approval while reducing service levels. The resulting Demand Risk P3 case increases revenue while cutting costs, although it is still expected that a subsidy, while significantly lower than the current one, will be required.

Given the fact that there is no recent historical instance of price changes on the Island Service to use as the basis for arriving at a fare elasticity, comparable services and previous studies were used to model the responsiveness of users to



fare increases. Income levels of the three distinct user groups – Municipal Island residents, Puerto Rico main island residents, and non-residents of Puerto Rico – and their corresponding trip purposes were used to inform how each would respond to fare increases relative to each other. Over the relevant fare range resident responsiveness to changes in fares is inelastic, with an elasticity of -0.1. Visitors have a more elastic responsiveness to changes in fare given their higher proportion of discretionary trips, with visitors from outside Puerto Rico having the lower elasticity of the two groups given their higher incomes (-0.36 and -0.55 arc elasticities for nonresidents from outside Puerto Rico and nonresidents from Puerto Rico, respectively).

Seating capacity for the Island Service has, however, varied over time. These observed changes formed the basis for modeling how demand would respond to the reduced service defined in the Demand Risk P3 case. The relatively high elasticity was adjusted to account for the fact that, although the service was supply-constrained in the past, the higher fares in this scenario should mean a lower responsiveness to seating capacity. Again, given the differing trip purposes among the user groups, in addition to the fact that the ferry service currently gives preference to Municipal Island residents, it is expected that reduced capacity will have a minimal effect on demand from that user group.

Responsiveness to fare and service changes form the basis for the base year Island service inputs in the Demand Risk P3 case. Employment forecasts and assumptions about Puerto Rico's economic recovery in the wake of hurricanes Irma and Maria form the foundation of their forecast over the project timeline. Puerto Rico non-farm employment has proved to be a successful predictor of ridership over the model estimation period and for future year forecasts.

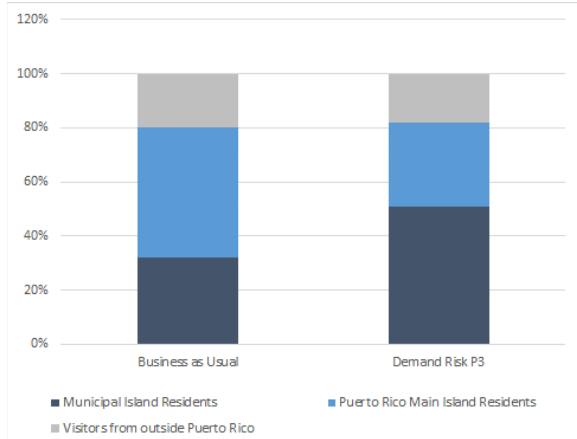
Thus, the ridership inputs are forecast to grow at a moderate rate similar to the one employment projects.

It is worth noting that although the seating capacity available following the reduction of the sailing schedule in the Demand Risk P3 Case, the extent of which is described below, accommodates demand at the start of Phase II, the moderate growth projected means forecasted ridership brushes up against and surpasses this limit during the Project's timespan. Vessel reconfiguration will likely be necessary during Phase II to meet this demand. Although the growth projected seems reasonable given the trend of the past few years, there is however, uncertainty surrounding Puerto Rico's recovery from the recent hurricanes. Similar situations of recovery from natural disaster, such as New Orleans' in the aftermath of hurricane Katrina, suggest a return to trend growth at a lower level following emigration, which is assumed in this model as well.

The Business as Usual case considers no fare or capacity changes, but makes use of the same assumptions regarding future-year ridership growth.

As shown below, this fare structure alters the composition of users. In the Demand Risk P3 case, Municipal Island residents account for 51% of ridership, as opposed to 32% in the Business as Usual case. While increasing revenues, this scenario accounts for the importance of this ferry service to that population.





These ridership forecasts were originally developed considering a Fajardo terminal on Puerto Rico’s main island. Considering the user base, these forecasts are adaptable to a Ceiba terminal given the assumption that a mode of transportation exists to connect Municipal Island residents to the Fajardo site. As Municipal Island residents have no viable alternative for consistently and regularly taking these trips, they should continue making them to the Ceiba terminal as long as there isn’t an excessive burden in getting to their final destination. Although there will be marginal differences in time given sailing distances (the Vieques route will be shorter and the Culebra route will be slightly longer), ridership shouldn’t be extremely sensitive to this variation.

Metro Service

The Metro Service inputs have a similar foundation, save for the second point that was taken into account for the Island service – the vulnerability of Municipal Island residents. Given that the service is heavily used by commuters, the fare will increase and be set uniformly at \$2.50 for all users, subject to FTA approval. Again, the Metro Service doesn’t have recent historical price changes to inform fare elasticity, so findings from similar services were used to inform a -0.3 elasticity to the fare change.

5.3 Revenue Inputs

Before Fare Increases

In the Business as Usual scenario, with no changes to the fare structure and with ridership inputs described above, the Island Service is projected to generate farebox revenue of \$2.1M and the Metro Service is projected to generate farebox revenue of \$330,000 in 2019. With no changes to the current operational structure, the only other main source of revenue is cargo. Under the current system cargo revenue is projected to be \$2M in 2019. It is expected that the ferry system would operate similarly in Phase I (2019-2022) in both the Business as Usual and Demand Risk P3 scenarios, hence the projected revenue in the Demand Risk P3 scenario is the same as above. Over this three-year period no significant revenue growth is expected.

After Fare Increases

The main source of revenue in both the Demand Risk P3 and Business as Usual cases is farebox revenue. As described above, the Demand Risk P3 case seeks to raise revenue while lowering costs to reduce the subsidy required, while keeping in mind the social and economic benefits from delivering a reasonably-priced service to Municipal Island residents. The Business as Usual case, conversely, maintains the current fare levels beyond Phase I. The revenues projected for these two cases are \$4.2M and \$2.1M for the Island services, respectively; \$700,000 and \$330,000 for the Metro Service, respectively, in 2022, the first year of Phase II.

The following offer additional revenue streams in the Demand Risk P3 case: Cargo, concessions, and parking facilities. However, in light of recent developments in the Caribbean as a result of Hurricanes Irma and Maria, the Authority and

the MTA are also interested in assessing the potential feasibility of providing maritime services (which may include any combination of transportation, docking, and engineering etc.) and developing additional routes to nearby Caribbean islands and/or developing a port hub for other regional maritime transportation providers. The development and establishment of a regional port hub and additional routes to the Caribbean islands in close proximity to Puerto Rico represent a significant opportunity to increase ridership and enhance the potential revenue generated from the operation of the Project.

Similar to passenger fares, cargo fees haven't risen in recent years, which presents an opportunity for additional revenue. Using a system that raises fees on larger items, such as cars and bicycles, to more closely reflect the amount of space they occupy and the cost of transporting them, and lowers or eliminates fees on smaller items, such as chairs and umbrellas, the Island Service has the potential to generate additional revenue (\$2.4M as opposed to \$2M in the Business as Usual case in the first year of Phase II).

The passenger survey conducted in 2015 and described in Section 2 of this study forms the basis of estimates of revenue from concession sales. Sixty percent of respondents indicated that they were likely to purchase amenities such as food or drinks either on-board or at the Fajardo terminal, and it is assumed a similar level of demand would hold for Island Service running to and from the Ceiba terminal as well. Based on expressed interest in various items (including sandwiches, soft drinks, beer and wine, and sit-down dining) an estimate of \$2.70 in purchases per passenger may be assumed. This would yield an estimated \$1.6 million a year in gross revenue. After assuming operational costs of these concessions to be 90% of revenue, this

analysis assumes the private sector may earn an additional \$160,000 in the first year of concession operations. Due to its commuter-oriented focus and shorter trip length, the Metro service isn't anticipated to be capable of generating significant revenue from concession sales.

Both the Ceiba terminal and the Cataño terminal sites have a limited area that could be used to generate parking revenue. Taking into consideration the need for employee parking and for staging area for boat purposes, there could be about 150 spaces available for parking. At the market parking rate in the two areas, this could generate an additional \$270,000 in revenue a year.

5.4 O&M Inputs

Business as Usual

Island Service

The Island Service assumes service from Ceiba to Culebra and Ceiba to Vieques on the current schedule. This schedule provides the following level of service:

- Culebra – Ceiba Passenger-Only: 3 round-trips per day
- Culebra – Ceiba Cargo (Ro-Pax): 2 round trips per day
- Vieques – Ceiba Cargo (Ro-Pax): 4 round trips per day (large ferry); 1 round trip per day (small ferry)

In addition to the above trips, 2 fuel trips per week are assumed to each island. Passengers are not allowed on the ferries during these fuel delivery trips. Current service also includes additional unscheduled runs as needed to return visitors to the main island on busy days or when



requested by the local municipalities to support special events.

Labor

Labor costs are estimated based on the historical information from the MTA plus benefits totaling 50% of the base hourly rate. For the Metro service, Maintenance Base, and administrative staff, overtime is estimated at one hour per day. For the Islands Service, overtime is estimated at 2 hours per day.

Fuel and Lubricant Costs

Fuel costs are based on the estimated fuel consumption of the primary vessel on each route at \$2.50 per gallon based on current local prices for diesel fuel. Lubricant costs are estimated as 10% of the fuel costs. Currently, fuel for the MTA ferries is purchased through an agreement with the Puerto Rico Integrated Transit Authority (“PRITA”) that provides discount bulk pricing. This discount is assumed to be 10%.

General Vessel Maintenance

General Maintenance costs are estimated as fixed cost per round trip. These costs include miscellaneous parts, cleaning supplies, and light, daily maintenance conducted by the vessels’ operating crews, either while underway or dockside at the vessel’s homeport. These costs are based on typical costs incurred by other operators of similar services.

General Terminal Maintenance

General Maintenance costs are estimated as a fixed annual cost. This cost includes miscellaneous parts, cleaning supplies, contracted maintenance and repairs, and utilities. Assuming major investments are made in the three Islands Service terminals in the first three years of the project, the annual

maintenance costs the terminals is estimated to be \$100,000 for the next five years, \$150,000 per year for the ten following years, and \$200,000 for the last years of the contract.

Metro Service

Labor

Labor costs are estimated based on historical MTA information plus benefits totaling 50% of the base hourly rate and one hour per day of overtime at 1.5 times the base hourly rate.

Fuel and Lubricant Costs

Fuel costs are based on the estimated fuel consumption of the primary vessel on each route at \$2.50 per gallon based on current local prices for diesel fuel. Lubricant costs are estimated as 10% of the fuel costs. Currently, fuel for the MTA ferries is purchased through an agreement with PRITA that provides discount bulk pricing. This discount is assumed to be 10%.

General Vessel Maintenance

General Maintenance costs are estimated as fixed cost per round trip. These costs include miscellaneous parts, cleaning supplies, and light, daily maintenance conducted by the vessels’ operating crews, either while underway or dockside at the vessel’s homeport. These costs are based on typical costs incurred by other operators of similar services.

General Terminal Maintenance

General Maintenance costs are estimated as a fixed annual cost. These costs include miscellaneous parts, cleaning supplies, contracted maintenance and repairs, and utilities. Assuming the necessary capital improvements are made in the first three years of the project, the estimated terminal



maintenance cost for the Cataño and Old San Juan terminals is \$50,000 for the next five years, \$100,000 for the following 10 years, and \$150,000 for the last years of the contract.

Support Services

Shipyard Labor

Shipyard labor costs are estimated based on historical information from the MTA, plus benefits totaling 50% of the base hourly rate and one hour per day of overtime at 1.5 times the base hourly rate.

Central Administration Labor

Central administration labor costs are estimated based on historical information from the MTA plus benefits totaling 50% of the base hourly rate and one hour per day of overtime at 1.5 times the base hourly rate.

General Shipyard Maintenance Costs

Assuming the ship lift is repaired and other necessary repairs are made in the first three years of the project, general shipyard maintenance costs are estimated to be \$100,000 for the next five years, \$150,000 per year for the following ten years, and \$200,000 for the last years of the study period.

General Administrative Costs

Insurance, professional services, general, and administrative costs are assumed to continue at their current levels throughout the project period.

Demand Risk P3

Island Service

The Island Service assumes service from Ceiba to Culebra and Ceiba to Vieques on the current schedule. This schedule provides the following level of service:

- Culebra – Ceiba Passenger-Only: 2 round-trips per day
- Culebra – Ceiba Cargo (Ro-Pax): 1 round trip per day
- Vieques – Ceiba Cargo (Ro-Pax): 2 round trips per day (large ferry); 1 round trip per day (small ferry)

In addition to the above trips, 2 fuel trips per week are assumed to each island. The P3 service does not include any unscheduled runs. This represents approximately a 40% reduction in the overall level of service to the islands.

Under the Demand Risk P3 operation, the Islands Service fleet is expected to consist of the following seven vessels:

Name	Year Built	# of Passengers
Passenger-Only Vessels		
Caribeña	2004	236
Cayo Blanco	2009	600
Vieques II/New Vessel	1996	523
Passenger + Cargo Vessels		
Cayo Largo	2008	300
Cayo Norte/New Vessel	1995	198
Isla Bonita	2012	355
Isleño	2004	204

The Vieques II and Cayo Norte are at or nearing the end of their expected service life and are recommended to be replaced during the first three years of the project. The characteristics of the new vessel should be similar to those of the Isla Bonita as recommended in the 2017-2026 Fleet Management Plan.

Labor

Labor costs are estimated based on historical information from the MTA plus benefits totaling 30% of the base hourly rate. For the Metro service, Maintenance Base, and administrative staff, overtime is estimated at one hour per day. For the Islands Service, overtime is estimated at 2 hours per day.

As a result of the projected reduction in the number of round-trips made each day, the labor cost assumes a single split-shift each day for each vessel and the terminals, with a 4-hour service window in the morning and a 4-hour service window in the afternoon. As a result of the reduction in staff and benefits, the P3 labor cost is estimated to be approximately 50% of the public sector labor cost.

Some labor cost savings are expected to be realized during the first three years of the project. This savings is estimated to be 20% the first year, 30% the second year, and 40% the third year.

Fuel & Lubricants Cost

Fuel costs are based on the estimated fuel consumption of the primary vessel on each route at \$2.50 per gallon. Lubricant costs are estimated as 10% of the fuel costs. For the first three years of the project, fuel savings are estimated at 10% of the Public Sector operations fuel cost. Starting in year 4, the fuel costs are based on the reduced level of service described above.

It is assumed that the current bulk purchase discount is not available to the private sector operator.

General Vessel Maintenance

General Maintenance costs are estimated as fixed cost per round trip. These costs include miscellaneous parts, cleaning supplies, and light, daily maintenance conducted by the vessels' operating crews, either while underway or dockside at the vessel's homeport. For the first three years of the contract, the general vessel maintenance costs are estimated to be 90% of the Public Sector operations cost.

General Terminal Maintenance

General Maintenance costs are estimated as a fixed annual cost. This cost includes miscellaneous parts, cleaning supplies, contracted maintenance and repairs, and utilities. Assuming major investments are made in the three Islands Service terminals in the first three years of the project, the annual maintenance costs for the terminals are estimated to be \$100,000 for the next five years, \$150,000 per year for the ten following years, and \$200,000 for the last years of the contract.

Metro Service

Under the Demand Risk P3 operation, the Metro Service is expected to be reduced to a commute-hour only service, with a corresponding reduction in costs. Of the current Metro Service fleet, the Amelia and Covadonga are recommended to be replaced within the first three years of the project with vessels having similar characteristics and modern engines and equipment. La Princesa is recommended to be kept in the fleet as a backup vessel and La Decima is recommended to be sold as the ship is too small for the commute-period only service anticipated. New vessel prices are based on recent deliveries for comparable passenger-only ferries.



Name	Year Built	# of Passengers
Passenger-Only Vessels		
Amelia	1989	143
Covadonga	1989	144
La Princesa	2009	150
La Decima	2009	49

Labor

Labor costs are estimated based on historical information from the MTA plus benefits totaling 30% of the base hourly rate and one hour per day of overtime at 1.5 times the base hourly rate. During the first three years of the project, labor cost savings are estimated at 20%, 30%, and 40% of the Public Sector operations labor cost.

During Phase II of the project, the vessel crews and terminal staff are assumed to work a split shift, with a service window during the morning commute period and another during the afternoon commute.

Fuel & Lubricants Cost

Fuel costs are based on the vessel speeds required to maintain the current schedule and \$2.50 per gallon for diesel fuel. Lubricant costs are assumed to be 10% of fuel costs.

General Vessel Maintenance

General Maintenance costs are estimated as fixed cost per round trip. These costs include miscellaneous parts, cleaning supplies, and light, daily maintenance conducted by the vessels' operating crews, either while underway or dockside at the vessel's homeport. Vessel maintenance costs are expected to be reduced approximately 10% during the first three years of the project.

General Terminal Maintenance

General Maintenance costs are estimated as a fixed annual cost. This cost include miscellaneous parts, cleaning supplies, contracted maintenance and repairs, and utilities. Assuming the necessary capital improvements are made in the first three years of the project, the estimated terminal maintenance cost for the Cataño and Old San Juan terminals is \$50,000 for the next five years, \$100,000 for the following 10 years, and \$150,000 for the last years of the contract.

Support Services

Shipyard Labor

Shipyard labor costs are estimated based a gradual reduction in staff size to approximately 75% of the current staff by the end of the third year of the project. In addition, benefits are expected to be reduced to 30% of the base hourly rate and an average of one hour per day of overtime at 1.5 times the base hourly rate is assumed for the shipyard staff.

Central Administration Labor

Central administration labor costs are estimated based on a gradual reduction in staff size to approximately 50% of the current staff by the end of the third year of the project. In addition, benefits are expected to be reduced to 30% of the base hourly rate. It is assumed the staff will continue to work one hour per day of overtime at 1.5 times the base hourly rate.

General Shipyard Maintenance Costs

Assuming the ship lift is repaired and other necessary repairs are made in the first three years of the Project, general shipyard maintenance costs are estimated to be \$100,000 for the next five years, \$150,000 per year for the



following ten years, and \$200,000 for the last years of the study period.

General Administrative Costs

Insurance costs are assumed to continue at their current levels throughout the project period. Professional services, general, and administrative costs are assumed to gradually be reduced to 50% of their current costs.

5.5 Lifecycle Inputs

Business as Usual

Dry docking and refit costs for the continued public sector operation are assumed to be as estimated in the 2017-2026 Fleet Maintenance Plan.

Demand Risk P3

Vessel Refits

Vessels are assumed to be given a general refit approximately every 10 years of service. During the refit, engines and generators will be replaced or overhauled, interiors will be refitted, machinery such as air conditioning units and deck gear will be overhauled or replaced, and the vessel's electronics and navigation equipment will be updated as necessary. For the Islands Service vessels, each refit is estimated to cost \$5 million. For the smaller Metro Service vessels, each refit is estimated to cost \$500,000. Refit costs are distributed over two 6-month periods to reflect the duration of the work. Refits are assumed to be coordinated with regularly scheduled dry dock periods and the refit cost includes the costs normally associated with dry docking.

Dry Docking

Per USCG regulations, each vessel is required to be dry docked at least twice in every five year period for hull inspections. In addition to inspections, vessel will receive new bottom paint and general hull maintenance during dry docking periods, as well as major maintenance. Dry docking of Islands Service vessels is estimated at \$500,000 per period and for the Metro Service vessels it is estimated at \$150,000.

5.6 Initial Investments

Business as Usual

Island Service

Hurricane Damage Repairs

Recent damage from hurricane Maria is expected to be repaired prior to the start of the Project using FEMA funding under a separate contract.

New Ceiba Terminal

The cost estimate for the construction of the new Ceiba terminal is based on work performed as part of a previous P3 effort. However, given the Ceiba terminal is expected to be financed by FTA, MARAD or other means of public grant funding, the costs were not included in this analysis.

Vessel Purchases

Vessel acquisition costs were based on the 2017-2026 Fleet Maintenance Plan. The cost for new vessels is distributed over three 6-month periods, to reflect progress payments made during construction.

Metro Service



Vessel Purchases

Vessel acquisition costs were based on the 2017-2026 Fleet Maintenance Plan. The cost for new vessels is distributed over two 6-month periods, to reflect progress payments made during construction.

Support Services

Isla Grande Shiplift Repairs

The estimated cost to repair the Isla Grande ship lift is based on inputs developed by the MTA taking into account current market estimates.

Isla Grande Shipyard Improvements

The estimated cost to improve the Isla Grande ship lift is based on inputs developed by the MTA taking into account current market estimates.

Demand Risk P3

Hurricane Damage Repairs

Recent damage from hurricane Maria is expected to be repaired prior to the start of the project using FEMA funding under a separate contract.

Island Service

New Ceiba Terminal

The cost estimate for the construction of the new Ceiba terminal is based on work performed as part of a previous P3 effort. However, given the Ceiba terminal is expected to be financed by FTA, MARAD or other means of public grant funding, the costs were not included in this analysis.

Vessel Purchases

For the Islands Service, two new vessels to replace are recommended to be acquired during the first three years at a cost of approximately \$15 million each. This cost is based on recent deliveries of Ro-Pax ferries with capacity similar to that of the Isla Bonita.

Metro Service

Vessel Purchases

For the Metro Service, two new vessels are recommended at \$5 million each.

Support Services

Isla Grande Shiplift Repairs

The estimated cost to repair the Isla Grande shiplift is based on inputs developed by the MTA taking into account current market estimates.

Isla Grande Shipyard Improvements

The estimated cost to improve the Isla Grande ship lift is based on inputs developed by the MTA taking into account current market estimates.

5.7 Results of Affordability Analysis

The financial model that was developed for the Project that takes into consideration the aforementioned inputs surrounding the Project's ridership, revenue, and the costs associated with operating the ferry service, such as O&M, lifecycle, and other investment costs. Utilizing the inputs, the financial model was developed to depict a cash flow scenario that analyzes the affordability of the Project under both the Business as Usual and Demand Risk P3 delivery option.



Business as Usual

The results of the affordability analysis indicate that Project revenue under the Business as Usual scenario is not sufficient to cover O&M, lifecycle, and other investments needed to sufficiently operate the Project. This shortfall has historically been realized by the MTA. While subsidies from the Government have enabled the MTA to continue to operate, they have been insufficient to properly operate and maintain the ferry, as suggested by the quality and condition of the service and assets. The affordability analysis suggests that an estimated public funds contribution of \$487 million on a present value basis over the Project's term, is required to accomplish the Project, under which all risks will be borne by the Government.

Demand Risk P3

Under the Demand Risk P3 approach, the results of the affordability analysis indicate that Project revenue is also not sufficient to cover O&M, lifecycle, and other investments needed to operate the Project. The shortfall in this scenario will also need to be realized by the MTA, through the use of a public funds contribution. As the Project is conceptualized as a full demand risk project, a private party will not assume these risks without a contribution from the Government.

Given the private sector's ability to bring efficiencies, reduce costs, and increase revenue, the amount of public subsidy that will be required under the Demand Risk P3 case is \$227 million less than the Business as Usual method, representing savings to the Government of Puerto Rico. The net shortfall in the Demand Risk P3 case totals \$261 million on a present value basis over the Project's term.



Section 6 – VfM Analysis



Section 6 – VfM Analysis

6.1 VfM Analysis

VfM analysis is a commonly recognized measure in assessing the merits of a P3 project vis-à-vis a public sector's traditional procurement method, as the analysis captures the full life-cycle costs for both procurement methods, adjusted for project risks retained by the public sector over the term of a project. The all-in costs for each model are compared on a present value basis so that the net costs of each model can be compared in a consistent manner. Completion of a VfM analysis requires identification, allocation and assessment of project risks under each procurement model to simulate the expected risk premium that will be priced by private sector proponents. The procurement model that results in the lowest cost is deemed to represent the most valuable procurement option for the public sector.

The portions of this section attributable to Project risk discuss the differences between the Business as Usual operation of the ferry service and a Demand Risk P3 procurement, where a private operator assumes the responsibility and risk associated with the Project. The Demand Risk P3 case will reflect the estimated reduction in costs that are assumed by a private partner, and the increase in revenue as a result of increased innovation and efficiency.

The remaining segments in this section provide an overview of the delivery models utilized in the VfM analysis as well as explain the results of the comparison.

6.2 Components of VfM Analysis

Revenue includes all farebox, cargo, parking, and other commercial activities revenue. Each

segment of the ferry service as well as the delivery method may have different revenue generation ability, however farebox revenue is the primary revenue generator for the ferry service under both procurement methods.

Operations and Maintenance Costs includes recurring costs of operating and maintaining the ferry service. These costs primarily consist of routine terminal and vessel maintenance, labor, fuel, insurance and other general and administrative costs.

Rehabilitation and Replacement Costs includes the cost of the rehabilitation and replacement of Project assets as they reach the end of their service life, such as dry docking and refitting of vessels.

Other Investment Costs includes the costs associated with major terminal rehabilitation and improvement works and new vessel purchases. These items are typically more costly and occur less frequently than other cost segments.

Efficiencies are included in the cost estimates of the Demand Risk P3 scenario to reflect the expected savings resulting from private sector practices employed in a competitive environment such as optimization of a project's total cost of ownership and leveraged innovation and technology.

6.3 Overview of Delivery Models

Business as Usual

Under the Business as Usual model, the MTA would continue to operate and maintain the ferry service, and would assume the risk and responsibility of the long-term performance of the Project. Further, the Government would be required to continue to identify funding for the



upfront costs associated with operations, maintenance and other investment costs for the duration of the Project's life, and would assume the costs associated with any unpredictable deviations from the established budget. This current scenario has resulted in deferred maintenance backlogs, uncertain service, and a ferry service that is operating beyond its useful life in most aspects.

Demand Risk P3

The Demand Risk P3 model estimates a 20-year contract between the MTA and a private party to assume the majority of Project risks over the contract term. The operating term is based on market precedent for similar projects and considers factors such as the potential service life of the asset, the time required for a private party to receive a return on their investment, as well as pay any financing for capital works on the Project, if applicable.

As previously discussed, under the Demand Risk P3 model, a private party will be responsible for the majority of Project risks over a two-phased approach.

The Project will commence at the Ceiba Terminal and consist of the improvement of existing operations of the MTA for the Island Service, Metro Service and the operation, maintenance and improvement of the Maintenance Facility. The Developer will provide the Ferry Services from Pier 2 located in the former Roosevelt Roads Naval Station in the Municipality of Ceiba ("Pier 2"). Such Ferry Services will commence once Federal and/or Government authorities have concluded certain agreed upon capital improvements to Pier 2 and approval to commence operations from FTA has been received.

During Phase I, the private party will assume the responsibilities of the ferry service under an agreement with the MTA. During Phase I, a

private party is expected to optimize the workforce, implement efficiencies in ticketing, routes, maintenance, and other operations. The private party may also be responsible for implementing capital plans set out by the Government, however will not be required to fund those capital improvements. It is expected that a subsidy will be made to the private party throughout the Phase I transition period.

During Phase II, the private party will have the obligation to operate the ferry service and assume the majority of Project risks including demand risk (i.e. sufficiency in farebox revenue to cover obligations) and the risk to finance any capital improvements outside of the Government's requirements, if necessary. Further, the private party will be expected to bear the risk of maintenance and other operating costs such as fuel and labor. It is expected that the Government will still provide public funding support to the ferry service during Phase II. The amount of support, however, is expected to be reduced.

6.3 Risk Introduction

Value can be achieved by selecting the delivery model and the structuring of the contract that allows for the allocation of risks to the parties best able to manage them. To maximize value, the Government should retain responsibility for those risks that it is best able to manage, and shift the risks that it is not best able to manage to the private sector. Oftentimes, the Government should assume risks related to environmental approvals, permitting, etc. where the Government usually has direct control over those processes.

Those risks that can be eliminated or mitigated by the private party should be transferred, most notably risks associated with operating and maintaining the ferry service. Any risk transferred to the private sector will be priced



into the bid by the private sector entity. Therefore, analyzing and quantifying these risks is a central component of VfM analysis. Risks can be accounted for in two different categories: project specific risks and systematic risks.

Project Specific Risk

Project Specific Risks are those risks that are idiosyncratic or unique to a project. While such risks impact the financial return for a specific project, investors can avoid them by diversifying their investment portfolio. Project specific risks therefore are accounted for by adjusting the project cash flow. The quantification of project risks also enables the public owner to plan for expected contingency amounts to be carried by private bidders and the public owner, respectively.

Systematic Risk

Systematic Risks, on the other hand, result from changes in macroeconomic conditions and therefore affect all assets on the market. The extent to which a given asset is affected by changes in macroeconomic conditions is reflected in the return demanded by investors for investing in the asset, and hence in the discount rate. The risk profile of any given project varies based on the procurement method selected and where on the risk transfer profile that procurement method falls.

Under the Demand Risk P3 operating scenario, risks are transferred from the public sector to the private sector, as the private sector is the party best able to manage them. The following section analyzes the different risks that are transferred to the private sector, and the result, or quantification of savings that transferring these risks provide to the private sector.

6.4 Risk Analysis

The following risks are transferred to the private sector entity that will be responsible for operating, maintaining, managing, and improving the Project over the stated term. Each risk discussed is then quantified as the expected result of a private sector party introducing efficiencies, cost savings measures, and increasing revenue, which results in lower public funding needed by the Government. The quantified amount represents the savings to the Government by transferring the risk.

Revenue Risk

Revenue risk relates to the generation and collection of revenue over the Project term, and the risk associated with demand of the ferry, or ensuring that revenue is sufficient to cover Project obligations. Under the Business as Usual scenario, the MTA retains the risks of collection of all farebox and other revenue, and assumes the risk of ensuring that such revenue is sufficient to cover the Project's obligations. The Government has to make up any shortfall in revenue, and has historically obligated general revenue funds to cover the deficit. However, given the uncertainty and lack of funding, this has led to shortfalls which tend to cause major maintenance backlogs and extending the service life of assets.

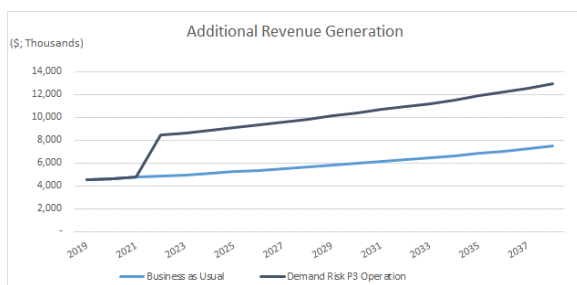
By shifting the risks of generating and collecting revenue over the Project term, and the risk associated with demand of the ferry, or ensuring that revenue is sufficient to cover Project obligations, the private party is incentivized to maximize revenue to cover its obligations and generate a return. It is expected that the private party will receive an ongoing payment from the Government to cover the costs to reasonably operate the ferry service. Further, it is expected that the private sector will introduce additional



revenue generation capabilities, as the private sector’s motive is maximization of profit. As mentioned in the revenue inputs section, the private sector is expected to increase fares, while understanding the necessary nature of the service to Puerto Ricans. Further, the Demand Risk P3 case offers additional revenue streams in increasing cargo pricing, introducing the availability of concessions, and parking.

The Demand Risk P3 assumes fare increases on cargo and passengers, as well as the introduction of additional revenue items, which accounts for the increases in revenue over the Business as Usual case. For the Demand Risk P3 case revenue assumptions optimize the level between ridership and fare increases, such that revenue is maximized at a point where an additional fare increase would not result in additional revenue, given elasticity in ridership. For concessions, the Demand Risk P3 case assumes 60% of ridership purchases concession items at an estimate of \$2.70. Parking is estimated at 150 spaces, purchased at the market parking rate.

The results of the revenue optimization from the Demand Risk P3 case suggest the Project is able to achieve significantly higher levels of revenue throughout the Project’s term compared to the Business as Usual case, as shown in the chart below:



Operating & Maintenance Risk

Operating and maintenance risks refer to the costs associated with operating and maintaining the ferry service, including the costs to operate

and maintain vessels, terminals, and general support for the service.

Vessel & Terminal O&M

Vessel and terminal O&M costs comprise a substantial portion of the total cost to operate the ferry service, as these costs include fuel, lubricants, and general upkeep of the terminal and vessels. Under the Business as Usual case, the MTA is responsible for all costs associated with vessel and terminal O&M. Currently, the MTA does not operate under an optimized service method, sailing additional trips due to a variety of factors, including lack of ship capacity. Further, due to deferred maintenance, costs associated with general vessel maintenance are increasing as ships operate beyond their service life. The terminals have also been in operation well beyond the typical service life, resulting in higher costs to maintain an adequate terminal area.

Under the Demand Risk P3 delivery method, the risks associated with operating and maintaining the vessels and terminals are shifted to the private sector. It is expected that the private party will optimize sailings and only incur costs associated with additional sailings when it’s economical to the Project, reducing fuel costs. Further, the private sector is expected to purchase new vessels and make the O&M process more efficient, which should cut down on these costs throughout the term of the Project. Terminals are expected to be improved leading to a reduction in the costs to operate the terminal area.

The Demand Risk P3 adjustments for vessel and terminal O&M costs primarily surround the larger costs associated with vessel operations, such as fuel and vessel maintenance. Assumptions for fuel costs were developed utilizing the number of optimized routes compared to current routes at a rate of \$3 per gallon. Private sector efficiency adjustments for

fuel costs stem from the optimization of trips, which reduces the amount of fuel needed to operate the service. The price of fuel remains the same in both cases. Private sector efficiencies for vessel maintenance were assumed at 10% of the MTA’s Business as Usual costs.

Labor

Labor costs also comprise a significant portion of the total O&M costs associated with the Project. Under the Business as Usual scenario, the number of employees and the costs associated with the employees is the responsibility of the MTA.

Under the Demand Risk P3 scenario, the risks and costs associated with staffing are borne by the private sector. It is expected that the private sector will bring efficiencies in all aspects of the Project’s service which will result in a fewer number of employees needed to operate the service. These cost savings will ultimately reduce the amount of public funding that the Government is required to provide to operate the ferry.

The Demand Risk P3 adjustments for labor costs focus on optimizing staff and benefits to a level commensurate with the amount of vessels and trips required to operate the service. The resulting savings that reflect private sector efficiency in optimizing the workforce were assumed at 50% of the MTA’s Business as Usual costs.

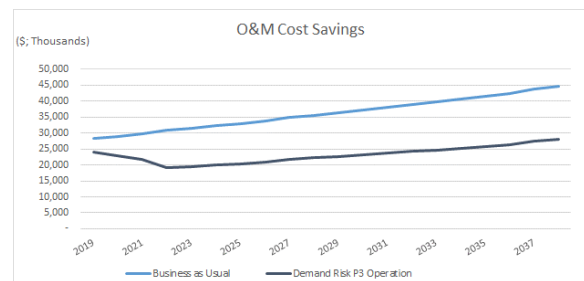
Support Costs

Under the Business as Usual scenario, general support costs are the responsibility of the public sector, and include costs such as general and administrative, professional services, insurance, and labor.

Under a Demand Risk P3 approach, the risks associated with these costs are the responsibility of the private sector, who bring efficiencies,

expertise, and the knowledge to implement standard cost reduction exercises and streamline the support processes. Private sector efficiencies in support costs for were estimated at a reduction in support staff by 50%-75% of the MTA’s Business as Usual case, and a 30% reduction to benefits. General and administrative costs were assumed at 50% of the current cost in the Demand Risk P3 case. Insurance estimates remained the same in both cases.

The following graph shows the total O&M cost savings by implementing the Demand Risk P3 case.



Lifecycle Risk

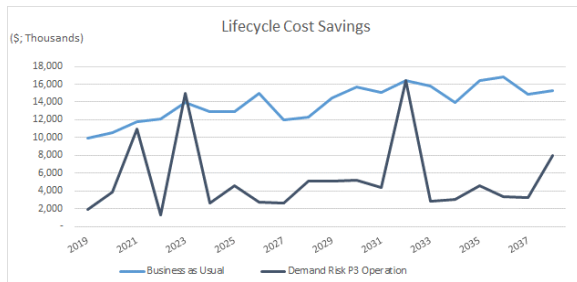
Lifecycle risk relates to the costs associated with dry docking and refitting vessels, which the MTA currently assumes the risks and costs associated with. Under the Business as Usual approach, the MTA will continue to assume these risks.

Under the Demand Risk P3 approach, a private party will assume the costs associated with dry docking and refitting vessels, and will be responsible with adhering to the requirements of the U.S. Coast Guard.

Total lifecycle costs were estimated to be significantly reduced in the Demand Risk P3 compared to the MTA’s Business as Usual case, given the efficiencies that a private party implements. Efficiencies realized by the private sector stem from the acquisition of new vessels,

and more sound management of maintenance, resulting in less dry docking and refitting costs.

The following graph shows the total lifecycle cost savings by implementing the Demand Risk P3 case.



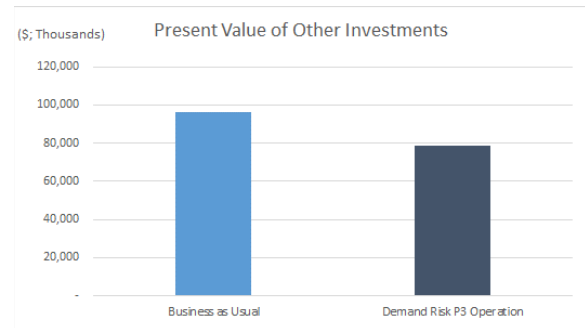
Initial Investment Risk

Initial investment risk relates to the costs associated with purchasing new vessels, and terminal and shipyard improvements. Under the Business as Usual approach, the MTA will assume the risks and associated costs with these items.

Under the Demand Risk P3 approach, the private party will be responsible for completing capital improvement items as defined by the MTA, including new vessel purchases. The MTA is expected to fund the Phase I improvements and vessel acquisitions with FTA funding. However, any additional approaches to commercially maximize the asset during Phase II will be the responsibility of the private party, effectively shifting the risk away from the MTA. The MTA will, however, provide a payment to the private party to cover the costs of reasonably operating the ferry service. Initial investment costs are typically substantial, but less frequent throughout the Project’s term.

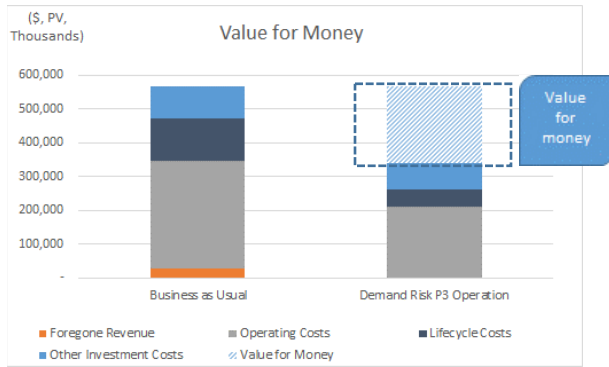
The present value of initial investment costs is expected to be 18% less in the Demand Risk P3 case than the Business as Usual case.

The following graph shows the total initial investment cost savings by implementing the Demand Risk P3 case.



6.5 Results of VfM

The overall results of the analysis demonstrate that the Demand Risk P3 approach is estimated to provide the greatest reduction in public subsidy that is required by the MTA to continue to operate the ferry service. The Demand Risk P3 approach is estimated to require a subsidy of \$261 million over the life of the Project on a present value basis, compared to \$487 million if the Project remains under operation by the MTA, resulting in \$227 million savings over the life of the Project. Further, the Demand Risk P3 approach provides the additional advantages of spurring innovation and providing for more efficient and reliable operations and management of the ferry service. These results highlight quantitatively the benefits attributed to effective risk transfer and capturing the efficiencies inherent in the Demand Risk P3 approach. The chart below captures the value for money that is achieved, or essentially the amount of savings that the MTA will incur as a result of implementing the Demand Risk P3 method. The chart includes foregone revenue as an additional cost under the Business as Usual method, which is calculated as the difference in revenue created by the Demand Risk P3 case and the Business as Usual method.



As noted above, the Demand Risk P3 operating model requires a private party to assume the risks of generating and collecting revenue over the Project term, and the private party is expected to introduce additional revenue generation capabilities, as the private sector’s motive is maximization of profit. As mentioned in the revenue inputs section, the private sector is expected to increase fares, while understanding the necessary nature of the service to Puerto Ricans. Further, the Demand Risk P3 case offers additional revenue streams in increasing cargo pricing, introducing the availability of concessions, and parking. By transferring revenue risks to the private sector under a Demand Risk P3 scenario, the Project is expected to generate an additional \$28 million over the Project’s term from the Business as Usual scenario, on a present value basis.

The Demand Risk P3 operating model adds value in ensuring the long-term operational integrity of the Project, as the private party retains the risk and responsibility for the long-term performance of the Project. Under the Demand Risk P3 operating model, the costs savings that result from the private party managing O&M risks totals \$107 million on a present value basis.

Further, the Demand Risk P3 operating model transfers the risks associated with lifecycle and other investments, which primarily include dry docking, refitting of vessels, terminal improvements, and new vessel purchases. While a portion of these items will be funded via FTA

funds from the MTA, cost savings are expected as a result of the private sector’s innovation and efficiency. Cost savings resulting from a private party managing lifecycle and initial investment risks total \$91 million on a present value basis.

The analysis on a collective basis shows that the Demand Risk P3 procurement option may achieve lifetime savings of approximately \$227 million on a present value basis, assuming the foregone revenue associated with the Business as Usual case.

Section 7 – Conclusions & Next Steps



Section 7 – Conclusions & Next Steps

7.1 Conclusions

The MTA faces the ongoing challenge of maintaining existing ferry operations in a state of good repair and providing consistent and reliable service, despite the current challenging economic conditions in Puerto Rico. Capital investment is needed to improve current service levels and asset conditions, yet there is little certainty in the availability of future public funds to make meaningful improvements. Falling revenue in a rising cost environment has resulted in deferred maintenance, asset replacement backlogs and reduced vessel reliability. In the face of these issues, enhanced MTA services are critical for future economic and tourism development, as well as for the residents and visitors of Puerto Rico.

Business as Usual

The Business as Usual option represents the sustained delivery of services by the MTA. All Project risk is borne by Puerto Rico, including operations and maintenance, funding/financing, vessel purchases, and others. While this delivery model is familiar to Puerto Rico, it fails to meet many of the procurement objectives as outlined by the Authority. This comfortability may be offset by higher costs due to inefficiencies and expense ambiguity surrounding O&M and major maintenance.

By continuing to operate the ferry service, the MTA fails to reduce the amount of public subsidy needed to maintain service or increase the pool of resources available for vessel maintenance. In effect, the Business as Usual option maintains the status quo, which historically has not resulted in the highest quality service. Major

maintenance backlogs are likely to continue, given the lack of funding availability from Puerto Rico's general revenue funds. As the Business as Usual approach represents a Government procured option, there is no opportunity to leverage private sector ferry expertise to create operational efficiencies. Completion of these objectives would be the sole responsibility of the MTA, which would also be tasked with increasing ferry ridership and utilization. In effect, the Business as Usual option would result in a required subsidy value of \$487 million in order to implement the Project over the stated term.

Demand Risk P3

By procuring the Project as a Demand Risk P3, Puerto Rico is able to satisfy many of its procurement objectives. Notably, the Demand Risk P3 is highly adaptive to Puerto Rico's current economic and fiscal environment. This delivery method decreases Puerto Rico's exposure to Project risks and reduces the amount of public subsidy needed to effectively maintain service. This is achieved by allocating Project risks and responsibilities to the party best able to manage them and transferring significant cost responsibility in exchange for farebox and ancillary revenue. The Demand Risk P3 model encourages the private party to maximize revenue to earn a strong return.

Under the Demand Risk P3 model, revenue is anticipated to increase despite lower overall ridership. This revenue growth assumes that fares are raised for users, with lower fares set for Municipal Island residents relative to non-residents. In addition, introducing and optimizing ancillary offerings, including cargo, concessions, and parking, is anticipated to



generate incremental revenue. When compared to the Business as Usual model, total revenue is expected to be \$28 million higher over the Project’s term, compared to the Business as Usual method on a present value basis.

Leveraging private sector expertise will allow for the introduction of operational efficiencies. Such efficiencies will help increase ferry quality of service and reliability, improve O&M cost certainty, and streamline the ferry workforce. Such cost reductions are driven by the removal of unscheduled runs, labor optimization, and less fuel consumption. Total costs savings including O&M, lifecycle, and initial investments as a result of implementing the Demand Risk P3 case total roughly \$198 million over the Project’s term, on a present value basis.

As such, it is recommended that the Authority procure the Project under the Demand Risk P3 procurement method, as it results in a public subsidy that is \$227 million less than that required under the Business as Usual model, on a present value basis, inclusive of the foregone revenue associated with the Business as Usual case. Further, by procuring the Project utilizing a Demand Risk P3 delivery model, the Project will be more efficient, innovative, and streamlined, at a reduced cost to the Government.

7.2 Next Steps

Timeline

Following the adoption of the Study in the second quarter of 2018, formal procurement will commence in the first week of June 2018 with the issuance of the RFQ. Shortlisting and one on one meetings will be completed leading up to the publication of the Final RFP in September 2018. The final steps of the P3 procurement process, project award and financial close, will be reached during the first quarter of 2019. The timeline below summarizes the expected next steps of the Project. The expected dates for each step are subject to change.

