

To	Puerto Rico P3 Authority		
Cc			
From	Steer Davies Gleave		
Date	27 October 2017		
Project	Public-Private Partnership for Maritime Services in Puerto Rico	Project No.	22826202

Introduction

1. Steer Davies Gleave (SDG), as part of their contract as technical advisors for the P3 for Maritime Transportation Services in Puerto Rico, has been asked to develop several ridership and revenue analyses related to ferry services between the municipality of Fajardo and the municipal islands of Culebra and Vieques (the Puerto Rico Island Ferry System) currently operated by Autoridad de Transporte Marítimo (ATM).
2. The P3 Authority is interested in assessing the revenue potential of charging differential fares to resident and non-resident users of the Ferry System. Farebox recovery at current fares (\$2.25 for Culebra and \$2.00 for Vieques) is under 6%. In particular, the P3 Authority is interested in an analysis of revenue impacts from raising the tolls differentially among non-resident visitors to Vieques or Culebra (meaning users of the ferries who do not live on either Vieques or Culebra) who reside in Puerto Rico, non-resident visitors to Vieques and Culebra who hold residence outside Puerto Rico, and residents of the two islands.
3. In August 2015 SDG conducted a survey of users of the Island Ferry System¹. The survey generated 1,200 responses and was deemed to be representative of the users of the system. The survey found:
 - (a) The largest user-group of the Ferry System is non-residents who reside outside Puerto Rico
 - (i) For the service to and from Culebra, island residents accounted for 23% of trips, non-island residents from Puerto Rico accounted for 53% of trips, and non-island residents from outside Puerto Rico accounted for 24% of trips
 - (ii) For the service to and from Vieques, island residents accounted for 34% of trips, non-island residents from Puerto Rico accounted for 50% of trips, and non-island residents from outside Puerto Rico accounted for 16% of trips
 - (b) Non-residents tend to be more affluent, with median household incomes of close to \$45,000 for non-residents from outside Puerto Rico, \$35,000 for non-island residents from Puerto Rico, and \$25,000 for Vieques and Culebra residents
 - (c) 4 out of 5 non-residents surveyed were using the ferry for vacation/leisure travel; residents were mostly using the service for work/commuting, personal business (medical visits, dropping off or picking up children) and shopping

¹ Steer Davies Gleave, 2015. *Passenger Survey Summary and Analysis*. Report submitted to the Puerto Rico P3 Authority.

4. As residents are using the ferries for non-leisure purposes, and as there are no affordable alternative travel options, there is great interest in maintaining fares as affordable as possible for this segment of the market. For both non-resident groups, whose usage is primarily for leisure purposes, there is similarly interest in pricing ferry travel at levels that will reduce operating subsidy requirements.
5. Using ridership and cost models previously developed by SDG and KPFF Consulting Engineers (KPFF) we have examined scenarios combining one of two fare levels for island residents, one of three fare levels for non-residents from Puerto Rico, and one of three fare levels for non-residents from outside Puerto Rico, for a total of $(2) \times (3) \times (3) = 18$ scenarios. The fares considered follow below:
 - (a) Resident fares: \$3.50 and \$4.50 per trip
 - (b) Non-Resident from Puerto Rico fares: \$7.50, \$10.00, and \$12.50 per trip
 - (c) Non-Resident from outside Puerto Rico fares: \$10.00, \$12.50, and \$15.00 per trip
6. Previous research suggests that the revenue-maximizing fare where differential pricing isn't allowed is \$10 for ferry users, which appears to be a reasonable level given the incomes of users on the one hand but also that only air travel is an alternative. Splitting the overall demand curve into the three groups of users described above, and assuming they display different sensitivities to the fare given their differing incomes and trip purposes, also as described above, we believe differential pricing may allow the Ferry System to return higher revenues.
7. The effect of raising the fares for both services increases revenues while reducing ridership. Under current fares, ridership in 2015 was 1.2 million trips and revenues were close to \$2.5 million. At fares of \$4.50 for residents, \$7.50 for non-residents from Puerto Rico, and \$15.00 for non-residents from outside Puerto Rico, revenues are **\$5.93 million**. At fares of \$3.50 for residents, \$7.50 for non-residents from Puerto Rico, and \$15.00 for non-residents from outside Puerto Rico, revenues are **\$5.88 million**. At fares of \$4.50 for residents, \$7.50 for non-residents from Puerto Rico, and \$12.50 for non-residents from outside Puerto Rico, revenues are **\$5.83 million**.
8. **We do not investigate reduced service scenarios here.** The impacts of reducing service levels were investigated in a previous report submitted by SDG to the P3 Authority. With service levels consistent with those in the published schedules, operating costs would be roughly \$20.9 million a year, leaving a need for over \$15 million in operating subsidy under all the scenarios considered.

Table 1: Estimated Annual Ridership at Differing Differential Pricing Fare Levels

Scenario Fares			Annual Ridership				Annual Revenue			
Resident	Non-Resident-PR	Non-Resident - nonPR	Resident	Non-Resident-PR	Non-Resident - nonPR	Total	Resident	Non-Resident-PR	Non-Resident -nonPR	Total
4.5	7.5	15	238,932	402,769	121,976	763,677	\$ 1,075,194	\$ 3,020,765	\$ 1,829,644	\$ 5,925,603
3.5	7.5	15	294,284	402,769	121,976	819,029	\$ 1,029,993	\$ 3,020,765	\$ 1,829,644	\$ 5,880,402
4.5	7.5	12.5	238,932	402,769	138,930	780,630	\$ 1,075,194	\$ 3,020,765	\$ 1,736,621	\$ 5,832,579
4.5	10	15	238,932	289,080	121,976	649,988	\$ 1,075,194	\$ 2,890,800	\$ 1,829,644	\$ 5,795,638
3.5	7.5	12.5	294,284	402,769	138,930	835,982	\$ 1,029,993	\$ 3,020,765	\$ 1,736,621	\$ 5,787,379
3.5	10	15	294,284	289,080	121,976	705,340	\$ 1,029,993	\$ 2,890,800	\$ 1,829,644	\$ 5,750,438
4.5	10	12.5	238,932	289,080	138,930	666,942	\$ 1,075,194	\$ 2,890,800	\$ 1,736,621	\$ 5,702,615
4.5	7.5	10	238,932	402,769	157,878	799,578	\$ 1,075,194	\$ 3,020,765	\$ 1,578,776	\$ 5,674,734
3.5	10	12.5	294,284	289,080	138,930	722,293	\$ 1,029,993	\$ 2,890,800	\$ 1,736,621	\$ 5,657,414
3.5	7.5	10	294,284	402,769	157,878	854,930	\$ 1,029,993	\$ 3,020,765	\$ 1,578,776	\$ 5,629,534
10	10	10	111,622	289,080	157,878	558,580	\$ 1,116,222	\$ 2,890,800	\$ 1,578,776	\$ 5,585,797
4.5	10	10	238,932	289,080	157,878	685,890	\$ 1,075,194	\$ 2,890,800	\$ 1,578,776	\$ 5,544,769
4.5	12.5	15	238,932	210,314	121,976	571,222	\$ 1,075,194	\$ 2,628,923	\$ 1,829,644	\$ 5,533,762
3.5	10	10	294,284	289,080	157,878	741,241	\$ 1,029,993	\$ 2,890,800	\$ 1,578,776	\$ 5,499,569
3.5	12.5	15	294,284	210,314	121,976	626,574	\$ 1,029,993	\$ 2,628,923	\$ 1,829,644	\$ 5,488,561
4.5	12.5	12.5	238,932	210,314	138,930	588,176	\$ 1,075,194	\$ 2,628,923	\$ 1,736,621	\$ 5,440,738

3.5	12.5	12.5	294,284	210,314	138,930	643,527	\$ 1,029,993	\$ 2,628,923	\$ 1,736,621	\$ 5,395,538
4.5	12.5	10	238,932	210,314	157,878	607,123	\$ 1,075,194	\$ 2,628,923	\$ 1,578,776	\$ 5,282,893
3.5	12.5	10	294,284	210,314	157,878	662,475	\$ 1,029,993	\$ 2,628,923	\$ 1,578,776	\$ 5,237,693