



APPENDIX I

Socio economic and Economic Impact Study

November 2010

Environmental Impact Statement – Preliminary

Renewable Power Generation and Resources
Recovery Plant

BARRIO CAMBALACHE OF ARECIBO

EnergyAnswers
Arecibo

Socioeconomic Analysis and Economic Impact Study

RENEWABLE ENERGY AND RESOURCE RECOVERY PLANT

Presented to:

CSA Group



CONTENT

Main Findings	6
Socioeconomic Analysis Findings.....	6
Findings of the Economic Impact Analysis	7
Introduction.....	8
Socioeconomic Analysis.....	10
ARECIBO WITHIN ITS REGION.....	10
Socioeconomic Variables	11
Population and Density.....	11
Population by Age and Sex	13
Education.....	15
Per Capita Income.....	16
Median Household Income	17
Poverty	19
Public Assistance	20
Social Security.....	21
Housing Variables	22
Housing Occupancy.....	22
Value of Housing Units.....	23
Employment Variables.....	24
Labor Force.....	24
Unemployment Rate	25
CAMBALACHE AND ARECIBO’S WARDS	26

Socioeconomic Variables	27
Population and Density.....	27
Population by Age and sex.....	29
Education.....	31
Per Capita Income.....	32
Median Household Income	33
Poverty	36
Public Assistance	37
Social Security.....	38
Housing Variables	39
Housing Occupancy.....	39
Value of Housing units	40
Economic Impact of the Proposed Project	41
Economic Impact of Building the Proposed Project.....	41
Economic Impact During Regular Operations.....	45
Conclusions Regarding the Economic Impact of the Installation	48
Bibliography	49

TABLES

Table 1. Population and Density	11
Table 2. Regional Population Forecast.....	13
Table 3. Population by Age	14
Table 4. Population by Age and Sex.....	15
Table 5. Educational Attainment of Population Aged 25 and Over	16
Table 6. Housing Occupancy.....	22
Table 7. Value for Owner - Occupied Housing Units.....	24
Table 8. Labor Statistics.....	25
Table 9. Population by Age: Arecibo's Wards	29
Table 10. Population by Age and Sex: Arecibo's Wards.....	30
Table 11. Educational Attainment, Population Aged 25 and Over.....	32
Table 12. Per Capita Income	32
Table 13. Median Household Income	34
Table 14. Households Below Poverty Level in 1999	36
Table 15. Households with Public Assistance Income	37
Table 16. Households with Social Security Income in 1999	38
Table 17. Housing Occupancy in Arecibo.....	39
Table 18. Value of Housing Units in Arecibo	40
Table 19. Total Investment in Construction.....	41
Table 20. Employment Coefficients and Income Multipliers for Construction.....	42
Table 21. Employment Generated During Construction Phase	42
Table 22. Income Generated During Construction Phase	43
Table 23. Inflation Forecasts	43
Table 24. Assumptions for Operations	44
Table 25. Fiscal Revenue	44
Table 26. Assumptions on Tax Rates.....	45
Table 27. Direct Employment During Operational Phase.....	46
Table 28. Assumptions on Income and Employment	46
Table 29. Employment Generated by Operations.....	47

Table 30. Personal Income Generated during Operations.....	47
Table 31. Fiscal Impact during Operations.....	48

GRAPHS

Graph 1. Population Density (km ²)	12
Graph 2. Per Capita Income, 1999 (In Dollars).....	17
Graph 3. Median Household Income (in Dollars).....	18
Graph 4. Households Below Poverty Level	19
Graph 5. Households Receiving Public Assistance.....	20
Graph 6. Households with Social Security Income	21
Graph 7. Housing Occupancy	23
Graph 8. Arecibo's Population by Ward.....	27
Graph 9. Population Density in Arecibo's Wards (km ²)	28
Graph 10. Income, 1999 (In Dollars).....	34

MAIN FINDINGS

This document presents a socioeconomic and an economic impact analysis for a *Renewable Energy and Resource Recovery Plant*. The project consists of building a solid waste management plant in the Cambalache ward of the municipality of Arecibo.

The following constitute the main findings of the study:

SOCIOECONOMIC ANALYSIS FINDINGS

- The municipality of Arecibo has the largest population in its region. Nonetheless, the Cambalache ward, where the proposed project would be built, is the least populated ward in the municipality, with only 64 residents and a population density of 7 residents per square kilometer.
- Both Arecibo and Cambalache have higher proportions of female residents aged 65 and over compared to the other wards and municipalities in the region.
- Compared to other wards and municipalities studied, both Arecibo and Cambalache have a higher proportion of residents who have at least a high school diploma. Nonetheless, Cambalache also has the highest proportion of residents with no schooling out of all wards in the municipality.
- The municipality of Arecibo presents favorable economic conditions compared to its region. Of the eight municipalities studied, Arecibo is ranked second and third in terms of per capita income and median household income, respectively. Arecibo also has the smallest proportion of population below the poverty level out of all municipalities studied, and the second smallest proportion of people who receive public assistance income after Camuy.
- The Cambalache ward presents the most favorable socioeconomic profile of all wards in Arecibo, with both per capita and median household incomes well above the levels observed in other wards and the entirety of its population living above the poverty level.
- The proportion of household units in Cambalache worth between \$100,000 and \$199,999 is significantly higher than in other wards in Arecibo, in the municipality, and in the other municipalities in the region.

- Arecibo's employment situation mirrors the Island's. The municipal unemployment rate is slightly higher than Puerto Rico's (17.2% and 16.9%, respectively), but is the lowest in the region.
- Arecibo's labor force decreased between April 2009 and April 2010, and the number of unemployed persons increased by 12.5% (the municipal unemployment rate increased by 2.3 percentage points during this period).

FINDINGS OF THE ECONOMIC IMPACT ANALYSIS

The economic impact study considers the effects that the proposed project would have on the regional economy in terms of employment and income generated. The impact is assessed in two phases: the construction phase, which will last two years, and the regular operations phase. The main findings are summarized below:

- The project will generate 4,283 direct jobs during the two-year construction phase. This represents a 16.3% increase in employment from the current municipal level (26,200). Such an increase in employment would help lower the municipal unemployment rate, which currently stands slightly above Puerto Rico's (17.2% and 16.9%, respectively).
- This increase in employment would introduce \$139.97 millions in direct income into Arecibo's economy.
- The project would also generate 4,004 indirect and induced jobs during the construction phase, which means that the municipal employment level would increase by 31.6% if both directly and indirectly generated jobs are taken into account.
- During the construction phase, income from indirect and induced jobs will amount to \$159.22 millions.
- During the regular operations phase, the project will maintain 150 direct jobs. The facility will maintain on average 722 direct and indirect jobs during regular operations, generating \$19.73 millions in direct and indirect labor income.
- The construction phase will generate \$49 millions in fiscal revenue, and the facility will generate \$2 millions in annual fiscal revenue during regular operations.

INTRODUCTION

This document presents a socioeconomic analysis and an economic impact study for a Renewable Energy and Resource Recovery Plant. The project consists of constructing a solid waste management facility in the Cambalache ward of the municipality of Arecibo. The analysis is carried out following the Regulation of Evaluation and Processing of Environmental Documents”, which requires Environmental Impact Declarations to include important socioeconomic factors related to the execution of the proposed project. Such factors include temporary and permanent employment generated during the construction and operating phases.

The analysis consists of two parts. The first part discusses the socioeconomic conditions of the municipality of Arecibo within a regional context. The analyzed region includes the municipalities of Arecibo, Barceloneta, Camuy, Florida, Hatillo, Manatí, Quebradillas, and Utuado. Conditions in the region are also compared to the socioeconomic condition of Puerto Rico as a whole.

The second part of this study compares the socioeconomic conditions of the Cambalache ward to those of the municipality’s other wards.

The analysis took the following variables into account:

Socioeconomic variables:

- Population and density
- Population growth forecasts
- Population age and sex
- Educational attainment
- Per capita income
- Median household income
- Households below the poverty level
- Households receiving public assistance funds

- Households with Social Security income

Employment variables:

- Labor force
- Employment situation

Housing variables:

- Housing occupancy
- Value of housing units

Except for the employment and population growth forecasts, the analysis uses data from the US Census Bureau's Census 2000.¹ Population growth forecasts utilize data from the Puerto Rico Planning Board. The study also uses employment data from the Department of Labor and Human Resources.

¹ More recent data from the American Community Survey could not be utilized because this survey only covers geographical regions with a population of 20,000 people or more, and one municipality in the region (Florida) has a current estimated population of 16,525.

Socioeconomic Variables

POPULATION AND DENSITY

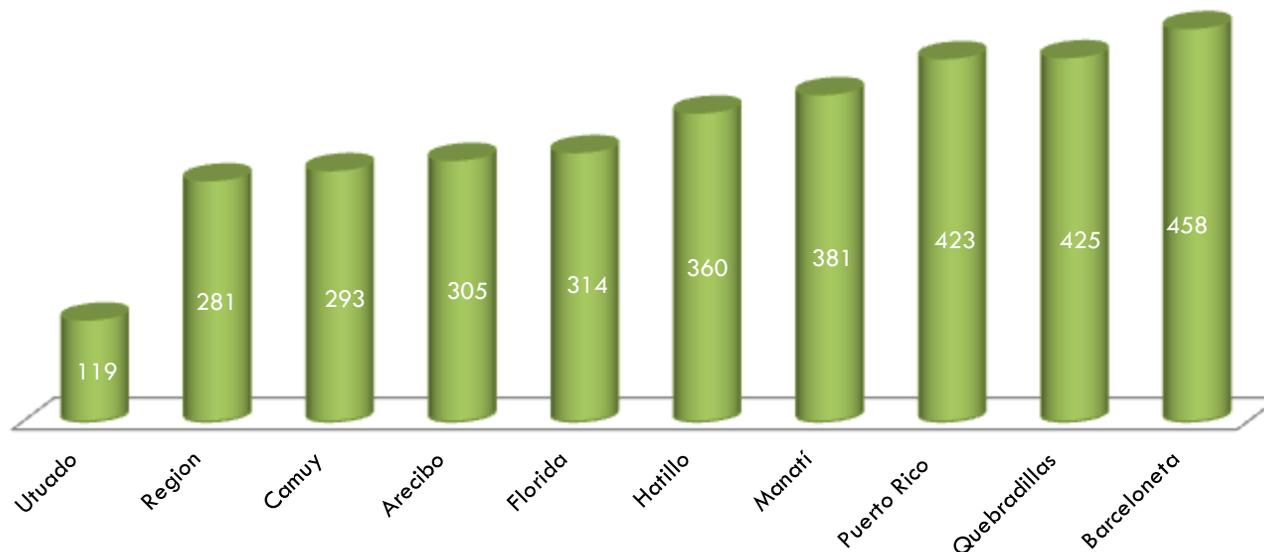
As of 2000, Arecibo had a population of 100,131 people, the largest in the region. Manatí's population amounted to less than half of Arecibo's but remained the second largest in the region (45,409).

Table 1. Population and Density

Population and Density		
Area	Population	Population Density (hab/km ²)
Barceloneta	22,322	458
Camuy	35,244	293
Florida	12,367	314
Hatillo	38,925	360
Manatí	45,409	381
Quebradillas	25,450	425
Utado	35,336	119
Arecibo	100,131	305
Region	315,184	281
Puerto Rico	3,808,610	423

Source: U.S. Census Bureau. 2000 Census of Population and Housing.

Arecibo had 305 residents per sq. km. Barceloneta, Quebradillas, Manatí, Hatillo, and Florida all showed higher levels of population density than Arecibo.

Graph 1. Population Density (km²)

Source: U.S. Census Bureau 2000. Data Set: Census 2000 Summary File 1 (SF 1) 100-Percent Data.

According to the population growth forecast prepared by the Puerto Rico Planning Board, as of July 1st, 2010 Arecibo's population was of 104,955 people. Nonetheless, Arecibo's population growth rate between 2000 and 2010 was slower than almost all others in the region. As of the year 2000, 31.77% of the regional population and 2.63% of Puerto Rico's population resided in Arecibo. According to data from the Planning Board, by 2025 Arecibo will have 29.74% of the regional population and 2.57% of Puerto Rico's population.

Table 2. Regional Population Forecast

Regional Population Forecast							
Municipality	2000 Census	2005	2010	Growth 2000-2010	2015	2020	2025
Barceloneta	22,322	22,968	23,391	4.79%	23,769	24,080	24,434
Camuy	35,244	37,503	39,524	12.14%	41,216	42,763	43,258
Florida	12,367	13,706	15,007	21.35%	16,115	17,212	17,414
Hatillo	38,925	41,439	43,682	12.22%	45,529	47,182	47,800
Manatí	45,409	47,818	49,877	9.84%	51,530	52,893	53,333
Quebradillas	25,450	27,007	28,392	11.56%	29,534	30,516	30,870
Utua	35,336	35,748	35,938	1.70%	36,156	36,166	36,458
Arecibo	100,131	102,986	104,955	4.82%	106,301	107,093	107,348
Region	315,184	329,175	340,766	8.12%	350,150	357,905	360,915
Puerto Rico	3,808,610	3,929,885	4,022,446	5.61%	4,095,642	4,149,291	4,177,077

Note: Census data have a reference date of April 1, 2000. Projected Population data are dated July 1 of each year projected.

Source: P.R. Planning Board, Junta de Planificación, Economic and Social Planning Program, Census Bureau.

POPULATION BY AGE AND SEX

According to data from the Census 2000, most of Arecibo's residents are between the ages of 18 and 64 years of age. This tendency mirrors that of all other municipalities surveyed and of Puerto Rico as a whole. In Arecibo, nearly 61% of residents fall into this age cohort, followed by 27% of residents who are between the ages of 0 and 17 and almost 13% who are 65 or older.

Arecibo has a slightly higher proportion of residents aged 65 or more (12.71%) compared to the Island (11.16%), the region (11.33%), and each municipality in the region. The municipality with the second-largest population in this age cohort is Utua, with 11.86% of its population aged 65 or older.

Table 3. Population by Age

Population by Age				
Area	Total	0-17 Years	18-64 Years	65 Years and Over
Barceloneta	22,322	29.68%	59.40%	10.92%
Camuy	35,244	29.30%	60.32%	10.38%
Florida	12,367	30.68%	60.02%	9.30%
Hatillo	38,925	29.26%	60.36%	10.38%
Manatí	45,409	29.55%	59.42%	11.02%
Quebradillas	25,450	30.03%	60.10%	9.87%
Utado	35,336	30.73%	57.41%	11.86%
Arecibo	100,131	26.58%	60.71%	12.71%
Region	315,184	28.77%	59.90%	11.33%
Puerto Rico	3,808,610	28.67%	60.16%	11.16%

Source: U.S. Census Bureau. 2000 Census of Population and Housing. [Summary File 1 (SF 1) 100-Percent Data].

Male residents make up nearly 48% of Arecibo's population, while female residents constitute almost 52% of the population. This male to female ratio mirrors the region's (49% male and 51% female) and that of Puerto Rico as a whole (48% and 52%, respectively).

Arecibo has a higher proportion of women aged 65 and over (7.03%) than Puerto Rico (6.27%), the region (6.17%), and each municipality in the region. Once again, Utado follows a similar tendency, with 6.23% of its population made up of females aged 65 and over.

Table 4. Population by Age and Sex

Regional Population by Sex and Age									
Area	Total	Male	0-17 Years	18-64 Years	66 Years and Over	Female	0-17 Years	18-64 Years	66 Years and Over
Barceloneta	22,322	48.76%	15.54%	28.21%	5.02%	51.24%	14.14%	31.19%	5.90%
Camuy	35,244	48.91%	15.08%	29.18%	4.65%	51.09%	14.22%	31.15%	5.73%
Florida	12,367	48.59%	15.51%	28.64%	4.44%	51.41%	15.17%	31.38%	4.86%
Hatillo	38,925	48.42%	14.72%	28.91%	4.79%	51.58%	14.54%	31.45%	5.59%
Manatí	45,409	47.88%	15.09%	27.80%	4.99%	52.12%	14.46%	31.62%	6.03%
Quebradillas	25,450	49.20%	15.30%	29.40%	4.50%	50.80%	14.73%	30.70%	5.37%
Utua	35,336	49.45%	16.11%	27.71%	5.63%	50.55%	14.63%	29.69%	6.23%
Arecibo	100,131	48.48%	13.66%	29.15%	5.68%	51.52%	12.92%	31.56%	7.03%
Region	315,184	48.63%	14.77%	28.70%	5.16%	51.37%	14.00%	31.20%	6.17%
Puerto Rico	3,808,610	48.14%	14.67%	28.59%	4.89%	51.86%	14.01%	31.58%	6.27%

Source: U.S. Census Bureau. 2000 Census of Population and Housing.

EDUCATION

Around one in four people aged 25 and over in Arecibo have a high school diploma, a higher percentage than observed in all other municipalities in the region except Barceloneta (26.5%).

Among those with college degrees, most have Bachelor's degrees both in Arecibo (12.10%) as in the other regional municipalities and Puerto Rico (13.57%).

Arecibo has a higher proportion of residents with graduate degrees than other municipalities in the region, particularly in the case of Master's and professional degrees. Nonetheless, Manatí has a higher proportion of residents with Doctoral degrees— 0.47% compared to Arecibo's 0.27%.

In Arecibo, 5.48% of the population had completed no level of schooling, a smaller proportion than observed in all other municipalities in the region except Quebradillas (5.04%).

Table 5. Educational Attainment of Population Aged 25 and Over

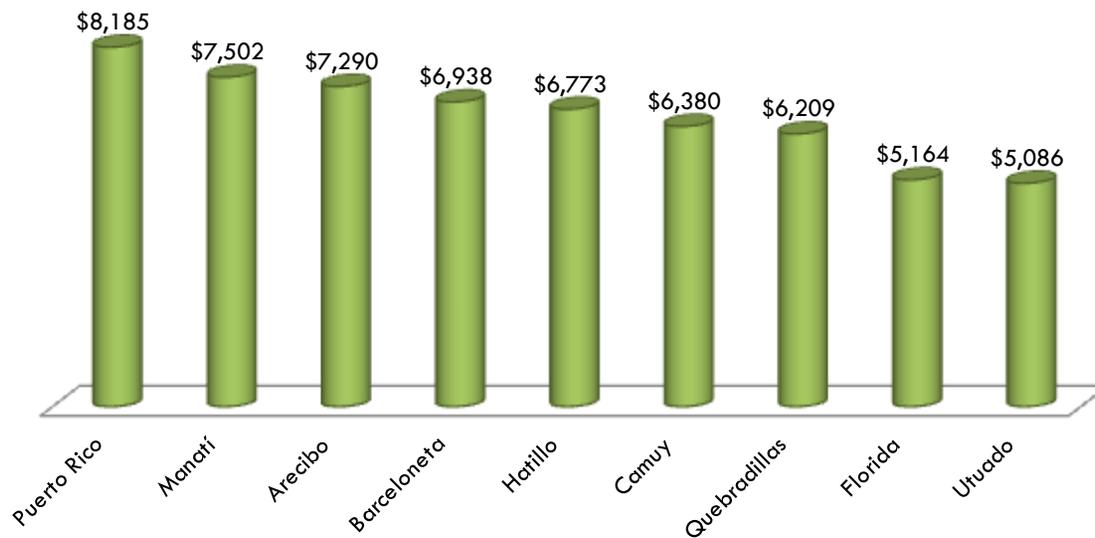
Educational Attainment of Population Aged 25 and Over										
	Barceloneta	Camuy	Florida	Hatillo	Manati	Quebradillas	Utado	Arecibo	Region	Puerto Rico
No schooling	6.66%	6.14%	8.12%	8.78%	5.57%	5.04%	8.14%	5.48%	6.41%	4.88%
Preschool to 6th Grade	17.74%	18.31%	15.87%	16.97%	15.76%	17.88%	19.14%	14.87%	16.57%	13.52%
7th Grade to 12th Grade (no diploma)	23.78%	24.99%	22.76%	22.87%	23.26%	23.78%	23.56%	21.07%	22.77%	21.65%
High School Diploma (Includes GED or other)	26.50%	19.49%	24.81%	19.81%	22.76%	24.99%	20.84%	25.11%	23.12%	22.28%
Some College	9.28%	11.96%	10.70%	10.91%	11.64%	11.76%	9.98%	11.19%	11.07%	12.24%
Associate Degree	6.94%	5.14%	7.71%	5.73%	6.08%	5.38%	6.48%	6.56%	6.20%	7.15%
Bachelor's Degree	8.02%	11.52%	8.61%	11.77%	11.89%	9.44%	10.13%	12.10%	11.12%	13.57%
Master's Degree	0.83%	1.82%	1.25%	1.96%	1.83%	1.06%	0.85%	2.38%	1.76%	2.75%
Professional Degree	0.25%	0.43%	0.10%	0.93%	0.73%	0.67%	0.69%	0.98%	0.74%	1.40%
Doctoral Degree	0.00%	0.20%	0.07%	0.27%	0.47%	0.00%	0.20%	0.27%	0.24%	0.56%

Source: U.S. Census Bureau. 2000 Census of Population and Housing [Summary File 3 (SF 3) - Sample Data].

PER CAPITA INCOME

According to the Census 2000, Arecibo's per capita income was \$7,290. This level falls below Puerto Rico's per capita income of \$8,185. Nonetheless, within the region only Manatí has a slightly higher income per capita (\$7,502). Thus, all municipalities in the region had lower levels of per capita income than Puerto Rico, with Utado occupying the last spot in the list (\$5,086).

Graph 2. Per Capita Income, 1999 (In Dollars)

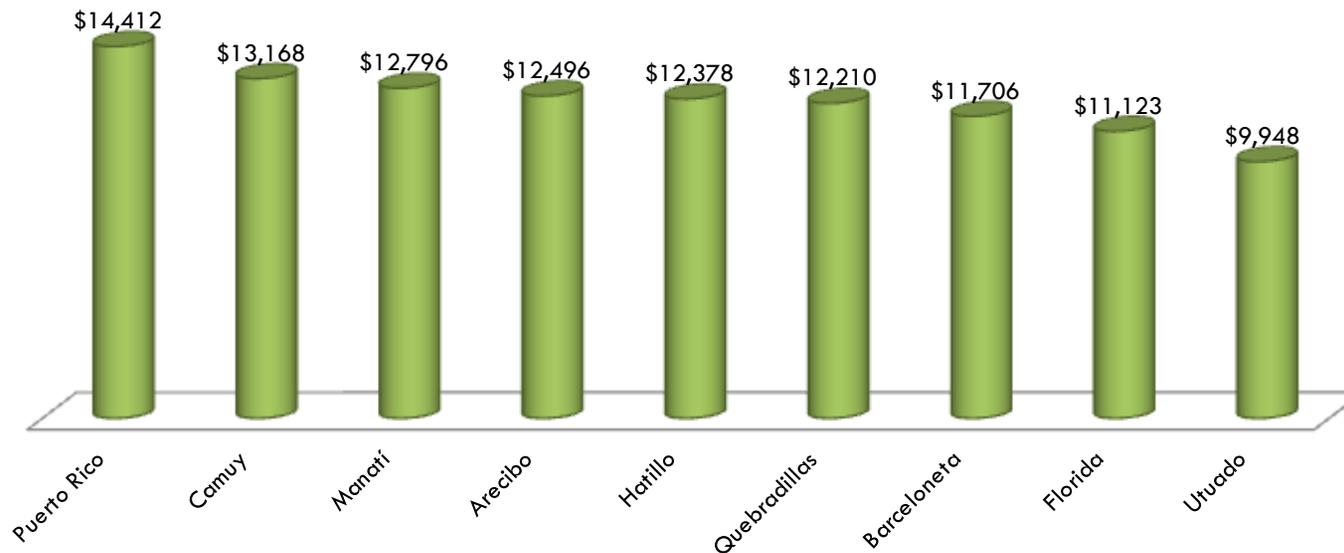


Source: U.S. Census Bureau. 2000 Census of Population and Housing.

MEDIAN HOUSEHOLD INCOME

Arecibo had a lower median household income than Puerto Rico (\$12,496 and \$14,412, respectively). Nonetheless, within the region only Camuy and Manatí reported higher median incomes.

Graph 3. Median Household Income (in Dollars)

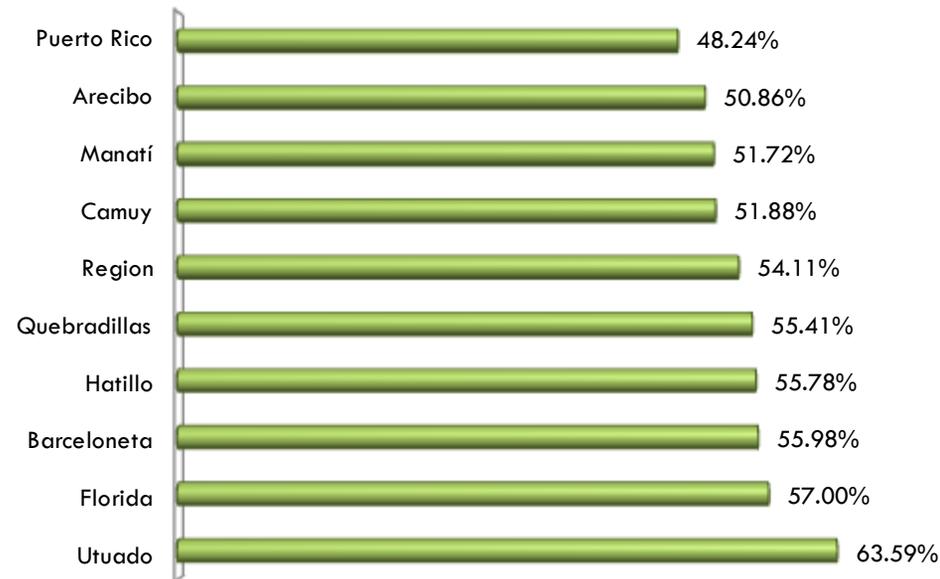


Source: U.S. Census Bureau. 2000 Census of Population and Housing.

POVERTY

Arecibo had a lower proportion of its population below poverty level than any other municipality in the region. Nevertheless, around half of the municipality's population (50.86%) lived below poverty level as of the latest census. Both Arecibo and the other municipalities in the region have slightly higher proportions of their populations below poverty level than Puerto Rico (48.24%).

Graph 4. Households Below Poverty Level

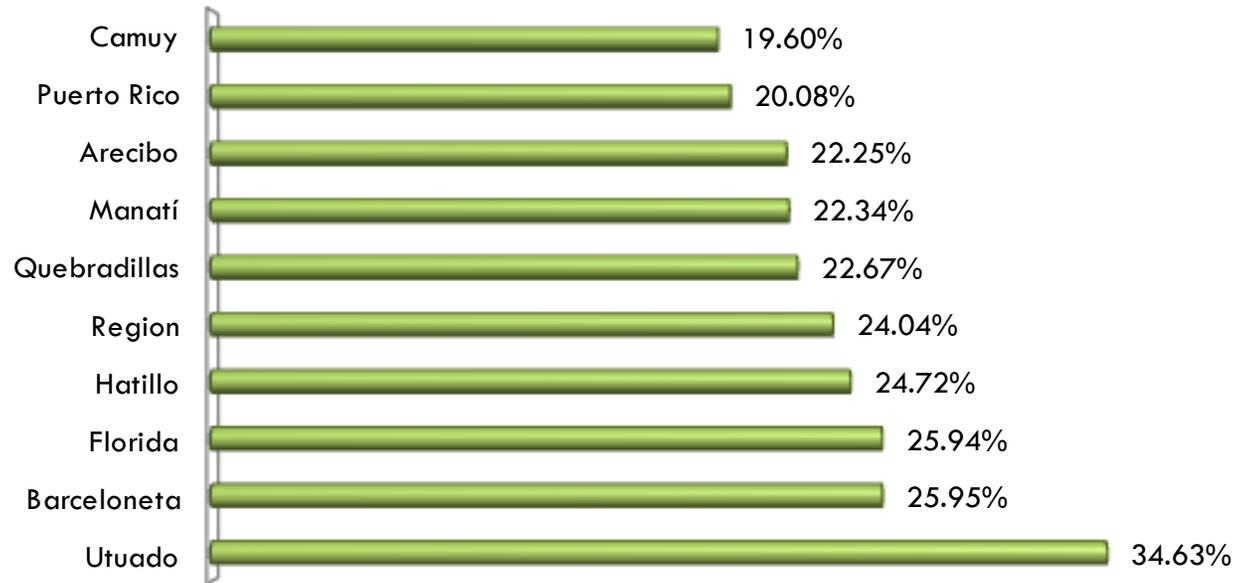


Source: U.S. Census Bureau. 2000 Census of Population and Housing.

PUBLIC ASSISTANCE

Arecibo had a smaller proportion of households receiving public assistance (22.25%) than the region (24.04%). Similarly, Arecibo's proportion is smaller than those observed in the other regional municipalities except Camuy. Utuado had the highest proportion of households that receive public assistance in the region (34.63%).

Graph 5. Households Receiving Public Assistance

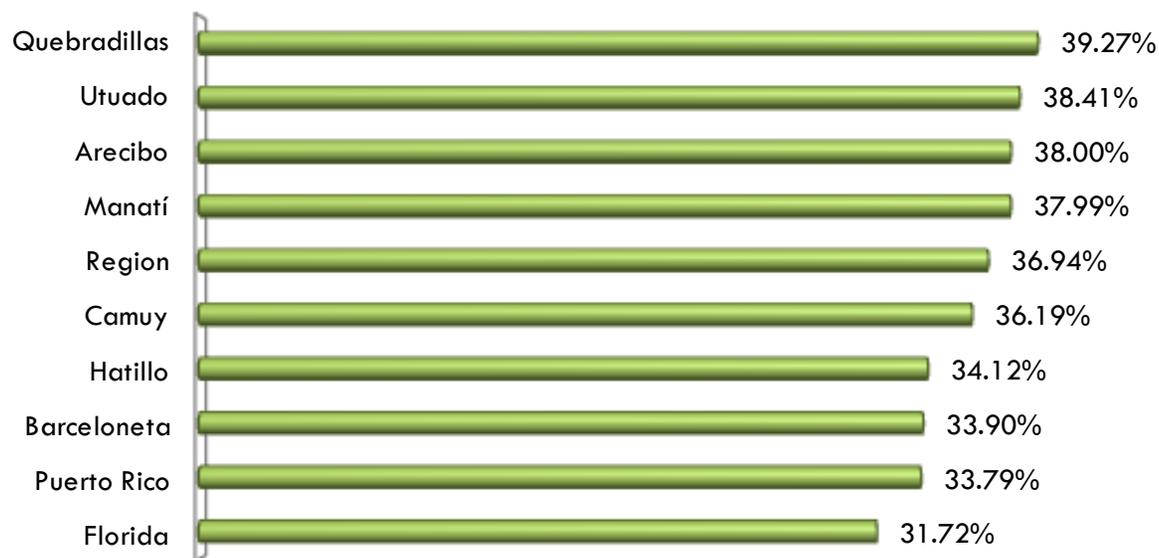


Source: U.S. Census Bureau. 2000 Census of Population and Housing.

SOCIAL SECURITY

The proportion of Arecibo's population receiving Social Security income (38%) as of 2000 surpassed five out of the eight municipalities in the region. Only Quebradillas and Utuado reported higher ratios of people receiving social security funds (39.27% and 38.41%, respectively). The region as a whole had a higher proportion of people who receive social security income (36.94%) than Puerto Rico (33.79%).

Graph 6. Households with Social Security Income



Source: U.S. Census Bureau. 2000 Census of Population and Housing.

Housing Variables

HOUSING OCCUPANCY

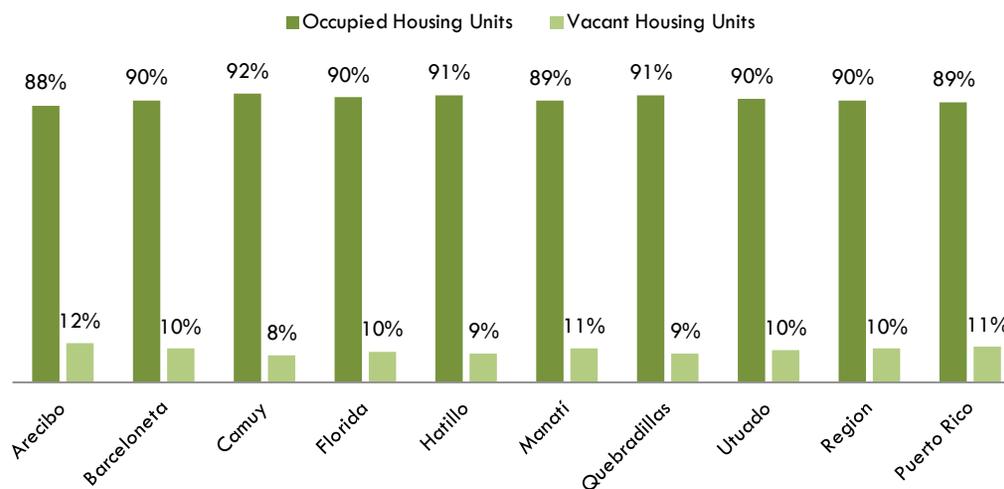
As of 2000, Arecibo's housing stock made up 33% of the region's housing units and 3% of all housing units in Puerto Rico. To that date, 34,245 of 38,974 of the Municipality's units were occupied (88%). Arecibo's occupancy rate was slightly lower than observed in other municipalities in the region and in Puerto Rico as a whole, which means that the municipality has a higher proportion of vacant units than the other areas surveyed.

Table 6. Housing Occupancy

Housing Occupancy			
Area	Total Housing Units in the Sample	Occupied	Vacant
Barceloneta	8,375	7,508 90%	867 10%
Camuy	12,520	11,457 92%	1,063 8%
Florida	4,387	3,962 90%	425 10%
Hatillo	13,929	12,685 91%	1,244 9%
Manatí	17,113	15,266 89%	1,847 11%
Quebradillas	9,095	8,280 91%	815 9%
Utado	12,471	11,207 90%	1,264 10%
Arecibo	38,974	34,245 88%	4,729 12%
Region	116,864	104,610 90%	12,254 10%
Puerto Rico	1,418,476	1,261,325 89%	157,151 11%

Source: U.S. Census Bureau. 2000 Census of Population and Housing. (Summary File 1 (SF 1) 100-Percent Data).

Graph 7. Housing Occupancy



VALUE OF HOUSING UNITS

Most of Arecibo’s occupied housing units are worth between \$50,000 and \$99,000. This trend reflects the one observed in the region and the Island as a whole. Housing units with values in the range of \$10,000 to \$49,000 comprise 33% of Arecibo’s occupied housing stock, again mirroring the trend observed in the region and in Puerto Rico.

Table 7. Value for Owner - Occupied Housing Units

Value for Owner-Occupied Housing Units										
	Barceloneta	Camuy	Florida	Hatillo	Manatí	Quebradillas	Utado	Arecibo	Region	Puerto Rico
Less than \$10,000	2.40%	4.83%	3.36%	2.89%	2.89%	2.22%	3.34%	2.91%	3.10%	2.28%
\$10,000 to \$49,000	35.75%	31.93%	30.83%	31.18%	25.64%	34.92%	39.06%	32.91%	32.46%	24.33%
\$50,000 to \$99,999	54.72%	47.16%	47.88%	44.04%	48.49%	42.75%	42.39%	45.21%	46.10%	45.56%
\$100,000 to \$199,999	6.23%	13.17%	15.59%	16.64%	17.83%	15.78%	13.39%	15.65%	14.87%	21.29%
\$200,000 to \$299,999	0.70%	2.22%	1.33%	2.80%	3.13%	2.43%	1.60%	2.28%	2.25%	4.11%
\$300,000 to \$399,999	0.10%	0.49%	0.00%	1.03%	0.81%	0.93%	0.15%	0.67%	0.61%	1.13%
\$400,000 to \$499,999	0.00%	0.00%	0.00%	0.33%	0.28%	0.21%	0.00%	0.03%	0.11%	0.54%
\$500,000 to \$749,999	0.10%	0.20%	1.00%	0.96%	0.60%	0.52%	0.06%	0.18%	0.38%	0.45%
\$750,000 to \$999,999	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.07%	0.02%	0.14%
\$1,000,000 or more	0.00%	0.00%	0.00%	0.11%	0.32%	0.24%	0.00%	0.09%	0.11%	0.18%

Source: U.S. Census Bureau. 2000 Census of Population and Housing (Summary File 3 (SF 3) - Sample Data).

Employment Variables

LABOR FORCE

The labor force is defined as the civilian, non-institutionalized population aged 16 and over that is currently employed or actively looking for work. According to data from the Department of Labor and Human Resources (DLHR), Arecibo has the largest labor force in the region: 31,600 as of April 2010. Nonetheless, 600 people left the labor force in the municipality between April 2009 and April 2010. During this period, the labor force decreased in the region and in Puerto Rico as well, although it grew in Hatillo and Quebradillas.

Table 8. Labor Statistics

Labor Statistics									
Area	Labor Force		Employment		Unemployment			Unemployment Rate(%)	
	April, 2009	April, 2010	April, 2009	April, 2010	April, 2009	April, 2010	Growth (%)	April, 2009	April, 2010
Barceloneta	7,300	7,200	5,800	5,600	1,500	1,600	6.67%	20.1	22.6
Camuy	12,600	12,600	10,900	10,400	1,700	2,200	29.41%	13.4	17.3
Florida	4,300	4,200	3,500	3,400	800	800	0.00%	18.5	19.0
Hatillo	12,600	12,700	10,700	10,300	1,900	2,400	26.32%	14.9	18.7
Manatí	14,700	14,200	12,000	11,500	2,700	2,700	0.00%	18.4	18.9
Quebradillas	8,500	8,600	7,200	6,900	1,300	1,700	30.77%	15.2	19.9
Utuado	9,040	8,450	7,380	6,650	1,660	1,800	8.43%	18.4	21.3
Arecibo	32,200	31,600	27,400	26,200	4,800	5,400	12.50%	14.9	17.2
Region	101,240	99,550	84,880	80,950	16,360	18,600	13.69%	16.2	18.7
Puerto Rico	1,335,000	1,310,000	1,139,000	1,089,000	196,000	221,000	12.76%	14.7	16.9

Source: P.R. Department of Labor and Human Resources, Local Area Unemployment Statistics, April 2010.

UNEMPLOYMENT RATE

According to data from the DLHR, as of April 2010 Arecibo's unemployment rate stood at 17.2%, below the regional unemployment rate of 18.7% and the rates observed in each municipality in the region. Nonetheless, Arecibo's unemployment rate was slightly higher than Puerto Rico's 16.9%. The municipality's unemployment rate was 5.4 percentage points below Barceloneta's, which had the highest unemployment rate in the region.

Arecibo and the other municipalities in its region (except Utuado) are part of the *San Juan-Caguas-Guaynabo Metropolitan Statistical Area*, where the unemployment rate was 16.2% as of April 2010.² The unemployment in Arecibo increased by 12.5% between April 2009 and April 2010, a larger change than observed in Utuado, Barceloneta, Florida, and Manatí, albeit smaller than the change in unemployment in Puerto Rico (12.76%) and the Region (13.69%).

CAMBALACHE AND ARECIBO'S WARDS

The municipality of Arecibo is composed of the following nineteen wards. This section compares the socioeconomic characteristics of the Cambalache ward, where the proposed project would be constructed, to those of Arecibo's other wards.

- | | |
|-------------------|------------------|
| 1. Arecibo-Pueblo | 11. Hato Abajo |
| 2. Arenalejos | 12. Hato Arriba |
| 3. Arrozal | 13. Hato Viejo |
| 4. Cambalache | 14. Islote |
| 5. Carreras | 15. Miraflores |
| 6. Domingo Ruiz | 16. Río Arriba |
| 7. Dominguito | 17. Sabana Hoyos |
| 8. Esperanza | 18. Santana |

² Government of Puerto Rico, Department of Labor and Human Resources, Local Area Unemployment Statistics, April 2010.

9. Factor

19. Tanamá

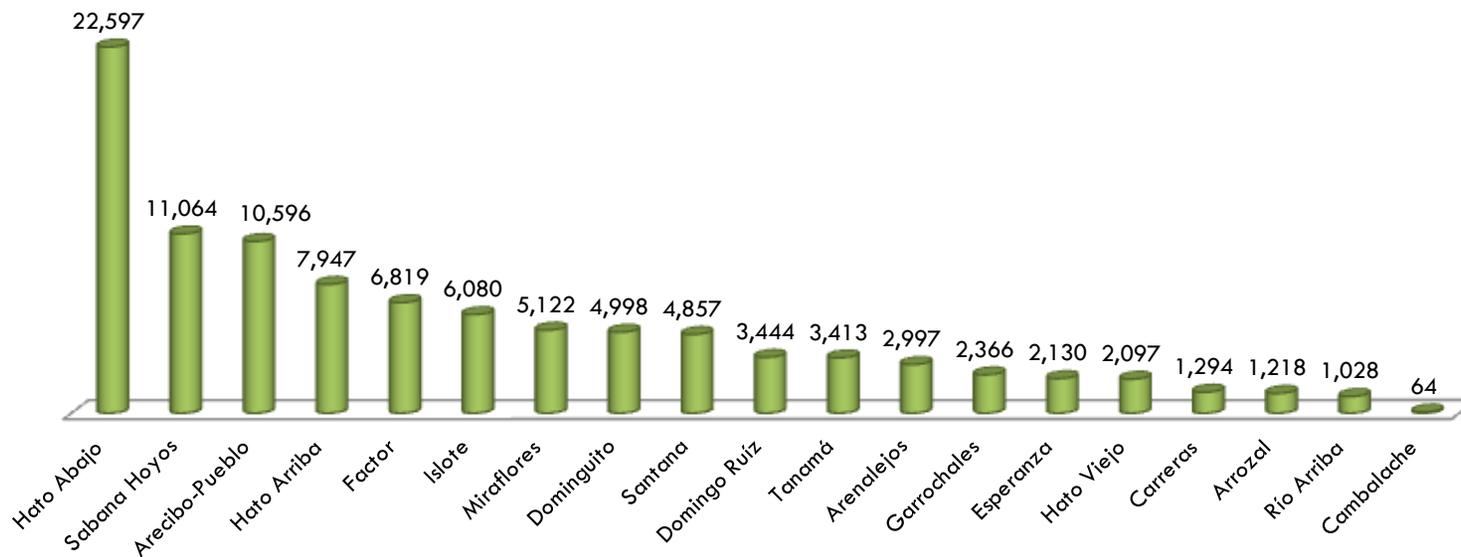
10. Garrochales

Socioeconomic Variables

POPULATION AND DENSITY

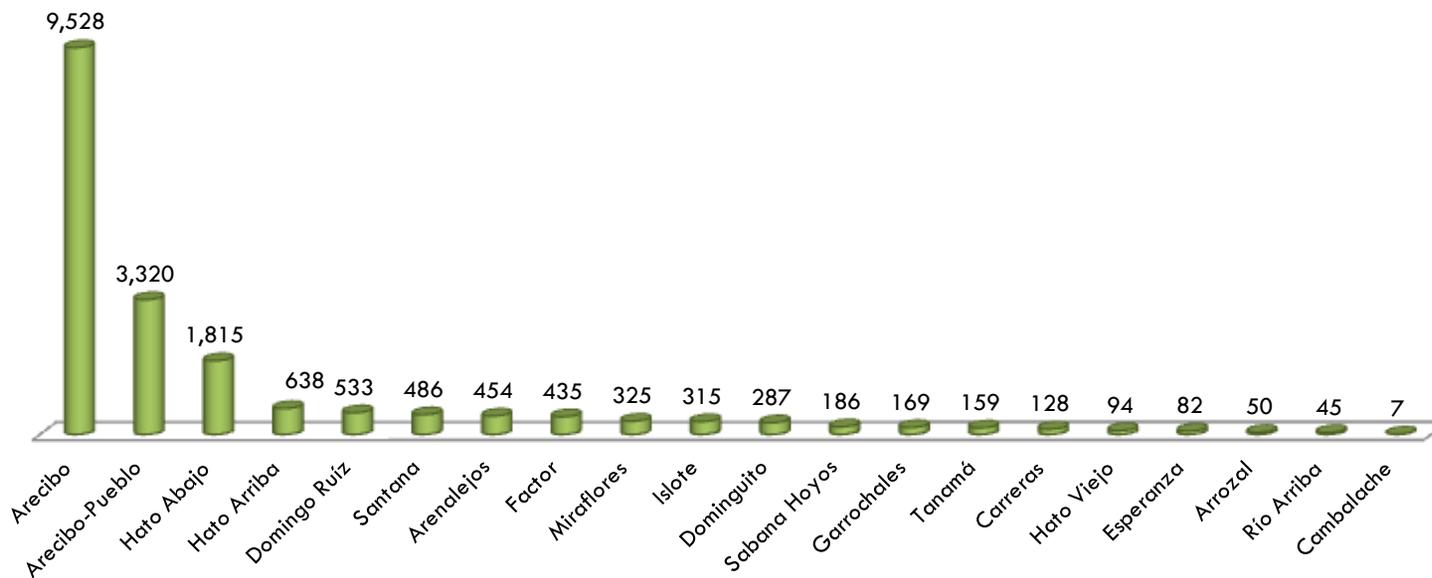
With only 64 residents, Cambalache had the smallest population of Arecibo's nineteen wards. Cambalache also had the lowest population density in Arecibo and in the region, with only seven residents per sq. km.

Graph 8. Arecibo's Population by Ward



Source: U.S. Census Bureau. 2000 Census of Population and Housing (Summary File 1 (SF 1) 100-Percent Data).

Graph 9. Population Density in Arcibo's Wards (km²)



Source: U.S. Census Bureau. 2000 Census of Population and Housing (Summary File 1 (SF 1) 100-Percent Data).

POPULATION BY AGE AND SEX

As in the municipality, the majority of Cambalache’s population was between the ages of 18 and 64 (60.94%). The second largest cohort consisted of residents aged 0 to 17 (23.44%) followed by those 65 or older (15.63%). Notably, Cambalache has a proportionally larger population of people aged 65 and over than any other wards in Arecibo, except for Arecibo-Pueblo.

Table 9. Population by Age: Arecibo’s Wards

Population by Age: Arecibo's Wards							
Area	Total	0-17 Years		18-64 Years		65 Years and Over	
Arecibo-Pueblo	10,596	2,867	27.06%	5,775	54.50%	1,954	18.44%
Arenalejos	2,997	779	25.99%	1,845	61.56%	373	12.45%
Arrozal	1,218	347	28.49%	749	61.49%	122	10.02%
Cambalache	64	15	23.44%	39	60.94%	10	15.63%
Carreras	1,294	397	30.68%	742	57.34%	155	11.98%
Domingo Ruíz	3,444	886	25.73%	2,057	59.73%	501	14.55%
Dominguito	4,998	1,292	25.85%	3,089	61.80%	617	12.34%
Esperanza	2,130	651	30.56%	1,261	59.20%	218	10.23%
Factor	6,819	1,999	29.32%	4,181	61.31%	639	9.37%
Garrochales	2,366	671	28.36%	1,385	58.54%	310	13.10%
Hato Abajo	22,597	5,563	24.62%	13,975	61.84%	3,059	13.54%
Hato Arriba	7,947	2,157	27.14%	4,853	61.07%	937	11.79%
Hato Viejo	2,097	565	26.94%	1,270	60.56%	262	12.49%
Islote	6,080	1,597	26.27%	3,734	61.41%	749	12.32%
Miraflores	5,122	1,437	28.06%	3,234	63.14%	451	8.81%
Río Arriba	1,028	294	28.60%	602	58.56%	132	12.84%
Sabana Hoyos	11,064	2,927	26.46%	7,027	63.51%	1,110	10.03%
Santana	4,857	1,284	26.44%	2,961	60.96%	612	12.60%
Tanamá	3,413	889	26.05%	2,008	58.83%	516	15.12%

Source: U.S. Census Bureau. 2000 Census of Population and Housing [Summary File 1 (SF 1) 100-Percent Data].

Cambalache's population is evenly split between male and female residents. According to the Census 2000, Cambalache had one male resident older than 65 and nine female residents in the same age cohort, comprising 2% and 14% of Cambalache's small population, respectively.

Table 10. Population by Age and Sex: Arecibo's Wards

Population by Age & Sex: Arecibo's Wards									
Geographic Area	Total	Male Population	0-17 Years	18-64 Years	65 Years and Over	Female Population	0-17 Years	18-64 Years	65 Years and Over
Arecibo-Pueblo	10,596	46%	13%	26%	7%	54%	14%	29%	11%
Arenalejos	2,997	48%	13%	29%	6%	52%	13%	33%	7%
Arrozal	1,218	48%	13%	30%	5%	52%	15%	32%	6%
Cambalache	64	50%	14%	34%	2%	50%	9%	27%	14%
Carreras	1,294	49%	16%	27%	6%	51%	15%	30%	6%
Domingo Ruíz	3,444	48%	13%	28%	7%	52%	12%	32%	8%
Dominguito	4,998	49%	13%	30%	6%	51%	13%	32%	6%
Esperanza	2,130	52%	16%	31%	5%	48%	15%	28%	5%
Factor	6,819	48%	16%	28%	4%	52%	14%	33%	5%
Garrochales	2,366	50%	15%	29%	6%	50%	13%	29%	7%
Hato Abajo	22,597	47%	13%	28%	6%	53%	12%	34%	8%
Hato Arriba	7,947	49%	14%	29%	6%	51%	13%	32%	6%
Hato Viejo	2,097	49%	13%	30%	6%	51%	14%	31%	7%
Islote	6,080	49%	13%	30%	6%	51%	13%	32%	6%
Miraflores	5,122	53%	15%	34%	4%	47%	14%	29%	5%
Río Arriba	1,028	49%	15%	29%	6%	51%	14%	30%	7%
Sabana Hoyos	11,064	51%	13%	33%	5%	49%	13%	31%	5%
Santana	4,857	48%	14%	28%	6%	52%	12%	33%	7%
Tanamá	3,413	50%	14%	29%	7%	50%	12%	30%	8%

Source: U.S. Census Bureau. 2000 Census of Population and Housing [Summary File 1 (SF 1) 100-Percent Data].

EDUCATION

Compared to other wards in Arecibo, Cambalache has the highest proportion of residents that never completed any level of schooling, as well as the highest proportion of people with a Bachelor's degree. As of the Census 2000, 26.19% of Cambalache's population

had received no schooling, whereas almost 31% of the population had a Bachelor's degree. Nearly 74% of Cambalache's population had a minimum of high school diploma or equivalent, making Cambalache the ward with the highest ratio of high school graduates.

Table 11. Educational Attainment, Population Aged 25 and Over

Educational Attainment, Population Aged 25 and Over										
Area	No Schooling	Preschool to 6th Grade	7th Grade to 12th Grade (no diploma)	High School Diploma (Includes GED or other)	Some College	Associate Degree	Bachelor's Degree	Master's Degree	Professional Degree	Doctoral Degree
Arecibo-Pueblo	7.25%	16.49%	23.21%	21.50%	9.75%	4.53%	12.02%	2.79%	2.41%	0.06%
Arenalejos	8.50%	11.84%	19.61%	24.67%	11.63%	10.59%	10.69%	2.45%	0.00%	0.00%
Arrozal	17.75%	23.92%	16.51%	27.01%	6.02%	5.25%	3.55%	0.00%	0.00%	0.00%
Cambalache	26.19%	0.00%	0.00%	11.90%	0.00%	14.29%	30.95%	0.00%	16.67%	0.00%
Carreras	11.38%	19.47%	20.35%	29.58%	10.49%	3.16%	4.93%	0.63%	0.00%	0.00%
Domingo Ruíz	5.62%	16.07%	26.62%	22.74%	11.55%	7.08%	7.53%	1.64%	0.50%	0.64%
Dominguito	3.73%	11.97%	26.02%	26.83%	13.23%	5.71%	10.06%	1.69%	0.60%	0.16%
Esperanza	7.03%	22.87%	30.84%	20.92%	6.40%	3.36%	6.71%	1.41%	0.00%	0.47%
Factor	3.81%	12.10%	20.05%	25.35%	11.98%	11.27%	13.59%	1.10%	0.54%	0.22%
Garrochales	3.81%	19.06%	20.67%	25.15%	13.18%	7.22%	8.96%	1.27%	0.67%	0.00%
Hato Abajo	4.51%	10.73%	18.73%	22.51%	12.79%	7.40%	18.15%	3.44%	1.12%	0.61%
Hato Arriba	4.39%	15.68%	17.61%	21.44%	13.30%	5.43%	15.38%	4.05%	2.40%	0.33%
Hato Viejo	11.29%	16.71%	21.41%	30.98%	8.24%	6.27%	4.39%	0.71%	0.00%	0.00%
Islote	7.34%	19.37%	23.99%	24.78%	9.28%	5.75%	8.35%	1.14%	0.00%	0.00%
Miraflores	4.56%	18.40%	23.84%	33.91%	7.52%	4.56%	5.15%	1.66%	0.00%	0.39%
Río Arriba	5.99%	19.20%	31.18%	20.58%	9.98%	2.61%	9.98%	0.00%	0.46%	0.00%
Sabana Hoyos	5.36%	16.52%	19.45%	30.31%	10.63%	7.12%	8.23%	1.61%	0.62%	0.16%
Santana	3.28%	10.86%	17.05%	28.22%	12.56%	7.13%	14.80%	4.01%	1.93%	0.16%
Tanamá	4.10%	20.82%	23.78%	27.61%	8.56%	3.69%	9.66%	1.78%	0.00%	0.00%

Source: U.S. Census Bureau. 2000 Census of Population and Housing [Summary File 3 (SF 3) - Sample Data].

PER CAPITA INCOME

Cambalache had the highest per capita income of all wards in Arecibo: \$28,726. The per capita income in Cambalache was nearly three times as much as Santana's per capita income, the second-highest in the municipality.

Table 12. Per Capita Income

Per Capita Income	
Per Capita Income	
Arecibo-Pueblo	6,511
Arenalejos	8,182
Arrozal	3,436
Carreras	4,012
Cambalache	28,726
Domingo Ruíz	5,753
Dominguito	6,767
Esperanza	5,032
Factor	7,784
Garrochales	9,163
Hato Abajo	8,289
Hato Arriba	8,192
Hato Viejo	4,901
Islote	6,746
Miraflores	5,071
Río Arriba	5,196
Sabana Hoyos	7,530
Santana	9,872
Tanamá	5,751
Arecibo	7,290
Puerto Rico	8,185

Source: U.S. Census Bureau. 2000 Census of Population and Housing [Summary File 3 (SF 3) -

MEDIAN HOUSEHOLD INCOME

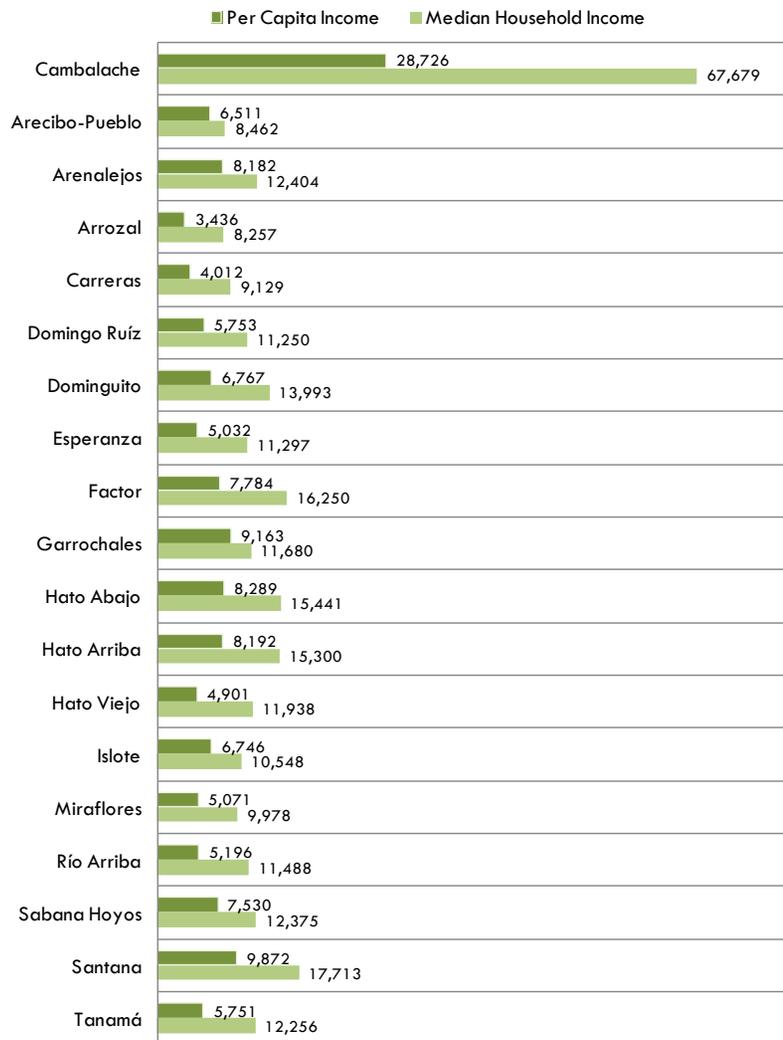
Cambalache also had the highest median household income in Arecibo: \$67,679. Santana once again occupied the second highest spot in this category, although its median household income amounted to only \$17,713, just 26% of Cambalache's. The median household income in Cambalache was more than eight times the median income in Arrozal, the ward with the lowest median household income (\$8,257).

Table 13. Median Household Income

Median Household Income	
	Median Household Income
Arecibo-Pueblo	8,462
Arenalejos	12,404
Arrozal	8,257
Carreras	9,129
Cambalache	67,679
Domingo Ruíz	11,250
Dominguito	13,993
Esperanza	11,297
Factor	16,250
Garrochales	11,680
Hato Abajo	15,441
Hato Arriba	15,300
Hato Viejo	11,938
Islote	10,548
Miraflores	9,978
Río Arriba	11,488
Sabana Hoyos	12,375
Santana	17,713
Tanamá	12,256
Arecibo	12,496
Puerto Rico	14,412

Source: U.S. Census Bureau. 2000 Census of Population and Housing [Summary File 3 (SF 3) - Sample Data].

Graph 10. Income, 1999 (In Dollars)



Source: US Census Bureau, Census 2000.

POVERTY

While a little over half of Arecibo's total population lived below poverty level as of the Census 2000, no household in Cambalache fell into that category. This contrasts heavily with the trend observed in Arecibo's other wards. Factor and Santana wards, which had the proportionally smallest population living in poverty besides Cambalache, had both 42% of their population living in poverty. Seventy three percent (73%) of Arrozal's population lived below poverty level as of 2000.

Table 14. Households Below Poverty Level in 1999

Households Below Poverty Level in 1999			
Area	Total Households in the Sample	Households Below Poverty Level	
Arecibo-Pueblo	10,401	6,576	63%
Arenalejos	2,997	1,384	46%
Arrozal	1,132	824	73%
Cambalache	53	0	0%
Carreras	1,324	916	69%
Domingo Ruíz	3,380	1,846	55%
Dominguito	4,987	2,239	45%
Esperanza	2,118	1,280	60%
Factor	6,786	2,828	42%
Garrochales	2,388	1,182	49%
Hato Abajo	22,727	9,718	43%
Hato Arriba	7,858	3,439	44%
Hato Viejo	2,092	1,242	59%
Islote	5,925	3,455	58%
Miraflores	4,734	3,078	65%
Río Arriba	1,053	606	58%
Sabana Hoyos	10,433	5,580	53%
Santana	4,919	2,052	42%
Tanamá	3,501	2,011	57%

Source: U.S. Census Bureau. 2000 Census of Population and Housing [Summary File 3 (SF 3) - Sample Data].

PUBLIC ASSISTANCE

None of Cambalache's residents received public assistance income as of 2000. Other wards reported between 16% and 37% of their population receiving public assistance, according to the same data source. Carreras had the highest proportion of population receiving public assistance funds (36.47%).

Table 15. Households with Public Assistance Income

Households with Public Assistance Income			
Area	Total Households in the Sample	With Public Assistance Income	
Pueblo	3,935	1,262	32.07%
Arenalejos	1,042	168	16.12%
Arrozal	391	103	26.34%
Cambalache	25	0	0.00%
Carreras	425	155	36.47%
Domingo Ruíz	1,206	230	19.07%
Dominguito	1,711	350	20.46%
Esperanza	657	122	18.57%
Factor	2,266	389	17.17%
Garrochales	861	202	23.46%
Hato Abajo	8,074	1,642	20.34%
Hato Arriba	2,691	511	18.99%
Hato Viejo	676	164	24.26%
Islote	2,106	561	26.64%
Miraflores	1,513	239	15.80%
Río Arriba	343	71	20.70%
Sabana Hoyos	3,466	887	25.59%
Santana	1,701	274	16.11%
Tanamá	1,136	285	25.09%

Source: U.S. Census Bureau. 2000 Census of Population and Housing

[Summary File 3 (SF 3) - Sample Data].

SOCIAL SECURITY

None of Cambalache's households received Social Security income as of the Census 2000, while other wards in Arecibo reported between 27% and 46% of their population receiving such income.

Table 16. Households with Social Security Income in 1999

Households with Social Security Income in 1999			
	Total Households in the Sample	With Social Security Income	
Arecibo-Pueblo	3,935	1,623	41.25%
Arenalejos	1,042	384	36.85%
Arrozal	391	141	36.06%
Cambalache	25	0	0.00%
Carreras	425	156	36.71%
Domingo Ruíz	1,206	481	39.88%
Dominguito	1,711	731	42.72%
Esperanza	657	279	42.47%
Factor	2,266	710	31.33%
Garrochales	861	357	41.46%
Hato Abajo	8,074	3,057	37.86%
Hato Arriba	2,691	953	35.41%
Hato Viejo	676	185	27.37%
Islote	2,106	977	46.39%
Miraflores	1,513	508	33.58%
Río Arriba	343	145	42.27%
Sabana Hoyos	3,466	1,216	35.08%
Santana	1,701	650	38.21%
Tanamá	1,136	452	39.79%

Source: U.S. Census Bureau. 2000 Census of Population and Housing [Summary File 3 (SF 3) - Sample Data].

Housing Variables

HOUSING OCCUPANCY

Around 15.63% of Cambalache's housing units were vacant according to the Census 2000. Cambalache's proportion of vacant units surpassed almost all others in the Municipality, with the exception of Santana and Sabana Hoyos wards (16.50% and 16.11% vacant housing units, respectively).

Table 17. Housing Occupancy in Arecibo

Housing Occupancy in Arecibo					
	Total Housing Units	Occupied Housing Units		Vacant Housing Units	
Santana	2,049	1,711	83.50%	338	16.50%
Sabana Hoyos	4,134	3,468	83.89%	666	16.11%
Cambalache	32	27	84.38%	5	15.63%
Río Arriba	406	346	85.22%	60	14.78%
Esperanza	759	648	85.38%	111	14.62%
Islote	2,451	2,097	85.56%	354	14.44%
Arecibo-Pueblo	4,680	4,005	85.58%	675	14.42%
Tanamá	1,355	1,166	86.05%	189	13.95%
Domingo Ruíz	1,384	1,209	87.36%	175	12.64%
Hato Viejo	763	668	87.55%	95	12.45%
Arrozal	452	399	88.27%	53	11.73%
Miraflores	1,717	1,517	88.35%	200	11.65%
Garrochales	920	813	88.37%	107	11.63%
Dominguito	1,917	1,703	88.84%	214	11.16%
Carreras	474	422	89.03%	52	10.97%
Arenalejos	1,167	1,039	89.03%	128	10.97%
Hato Arriba	3,019	2,735	90.59%	284	9.41%
Factor	2,554	2,318	90.76%	236	9.24%
Hato Abajo	8,741	7,954	91.00%	787	9.00%

Source: U.S. Census Bureau. 2000 Census of Population and Housing [Summary File 1 (SF 1) 100-Percent Data].

VALUE OF HOUSING UNITS

Around 70% of Cambalache's housing units are valued between \$100,000 and \$199,999, while the remaining 30% of housing units are valued between \$10,000 and \$49,999.

Table 18. Value of Housing Units in Arecibo

Value of Housing Units in Arecibo										
Area	Less than \$10,000	\$10,000 to \$49,999	\$50,000 to \$99,999	\$100,000 to \$199,999	\$200,000 to \$299,999	\$300,000 to \$399,999	\$400,000 to \$499,999	\$500,000 to \$749,999	\$750,000 to \$999,999	\$1,000,00 0 or More
Arecibo-Pueblo	5.10%	31.18%	45.90%	13.56%	2.68%	0.63%	0.00%	0.32%	0.63%	0.00%
Arenalejos	4.38%	38.93%	36.09%	17.51%	2.25%	0.83%	0.00%	0.00%	0.00%	0.00%
Arrozal	8.86%	51.80%	31.58%	5.82%	1.94%	0.00%	0.00%	0.00%	0.00%	0.00%
Cambalache	0.00%	30.00%	0.00%	70.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Carreras	9.38%	56.84%	24.93%	7.24%	0.00%	0.00%	0.00%	0.00%	0.00%	1.61%
Domingo Ruiz	0.73%	42.74%	51.14%	4.77%	0.00%	0.62%	0.00%	0.00%	0.00%	0.00%
Dominguito	2.07%	32.03%	45.31%	15.28%	4.06%	0.81%	0.00%	0.00%	0.00%	0.44%
Esperanza	5.01%	37.66%	42.67%	10.76%	1.11%	0.93%	0.00%	0.00%	0.00%	1.86%
Factor	1.30%	26.24%	59.99%	11.84%	0.42%	0.21%	0.00%	0.00%	0.00%	0.00%
Garrochales	2.77%	38.62%	49.69%	5.54%	2.62%	0.00%	0.77%	0.00%	0.00%	0.00%
Hato Abajo	0.89%	19.39%	57.38%	17.88%	2.94%	1.15%	0.00%	0.37%	0.00%	0.00%
Hato Arriba	2.30%	26.51%	36.23%	25.29%	7.56%	1.27%	0.00%	0.84%	0.00%	0.00%
Hato Viejo	10.00%	49.23%	29.04%	11.73%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Islote	3.90%	45.80%	42.26%	7.74%	0.30%	0.00%	0.00%	0.00%	0.00%	0.00%
Miraflores	2.85%	51.84%	33.73%	11.34%	0.00%	0.00%	0.23%	0.00%	0.00%	0.00%
Río Arriba	14.66%	38.72%	29.70%	16.92%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Sabana Hoyos	2.63%	38.70%	42.00%	14.29%	1.71%	0.46%	0.00%	0.00%	0.21%	0.00%
Santana	3.22%	24.93%	42.84%	27.05%	0.88%	1.10%	0.00%	0.00%	0.00%	0.00%
Tanamá	3.24%	43.20%	21.92%	27.86%	3.13%	0.65%	0.00%	0.00%	0.00%	0.00%

Source: U.S. Census Bureau. 2000 Census of Population and Housing [Summary File 3 (SF 3) - Sample Data].

In all other wards in the municipality, most housing units are worth between \$10,000 and \$49,999 (Arenalejos, Arrozal, Carreras, Hato

Viejo, Islote, Miraflores, Río Arriba, and Tanamá); or between \$50,000 and \$99,999 (Arecibo-Pueblo, Domingo Ruiz, Dominguito, Esperanza, Factor, Garrochales, Hato Abajo, Hato Arriba, Sabana Hoyos, and Santana).

ECONOMIC IMPACT OF THE PROPOSED PROJECT

This section estimates the economic impact of the project, that is to say, the amount of jobs and the personal and fiscal income generated by the project, both directly and indirectly. All projects, particularly of this nature, have many other environmental, social, educational, infrastructural, among other effects. None of these non-monetary effects are considered in this analysis; the only effects considered are related to income and employment.

The project's impact was analyzed in two phases: the construction phase and the operational phase, given the different nature of each.

ECONOMIC IMPACT OF BUILDING THE PROPOSED PROJECT

Following the latest cost estimates, investment in the project would amount to \$460 million in 2000 dollars. This sum will be invested in a period of two years, as summarized in the following table.

Table 19. Total Investment in Construction

Total Investment in Construction			
Million Dollars (\$mill)	2011	2012	Total
Investment in Construction	\$236.67	\$243.53	\$480.20

Source: Energy Answer , Inc.

The study assumed that 10.49 jobs would be created per every million dollars invested in the construction. This ratio was calculated by dividing the total amount of construction investment in Puerto Rico by the total amount of employment in the sector in 2006. The result was adjusted for inflation in order to be applied to other time periods.

In order to calculate indirect employment (generated by the needs of the direct employment generated), the number of direct employment was multiplied by the Type I multiplier of indirect employment in construction. Induced jobs are the ones generated by the

consumption expenditure of the direct employment generated. These were calculated by multiplying the direct employment by the Type II multiplier, computed by the P.R. Planning Board and updated by Estudios Técnicos, Inc.

Table 20. Employment Coefficients and Income Multipliers for Construction

Employment Coefficients & Income Multipliers for Construction	
Employment Coefficients (Jobs per Million \$ in Investment, 2006 Dollars)	
Coefficient of Direct Employment	10.49
Coefficient of Direct & Indirect Employment	16.09
Coefficient of Direct, Indirect & Induced Employment	20.29
Year of Employment Coefficient Construction	2006
Income Multipliers for Construction	
Direct & Indirect Income Multiplier (Type I)	1.73
Direct, Indirect & Induced Income Multiplier (Type II)	2.14

Source: Estudios Técnicos, Inc.

The following table summarizes the results of the previous calculations. Constructing the facility would generate 4,300 direct jobs and 4,000 indirect and induced jobs over two years.

Table 21. Employment Generated During Construction Phase

Employment Generated During Construction Phase			
Number of Annual Employment	2011	2012	Total
Employment from Construction, Total	4,145	4,142	8,287
Construction- Direct Employment (#)	2,142	2,140	4,283
Construction- Indirect & Induced Employment	2,003	2,001	4,004

Source: Estudios Técnicos, Inc.

For the purpose of this analysis, employment means “full time equivalent job,” meaning 2,200 hours of paid work either to one or more persons. These jobs may be located on the construction site or elsewhere.

Taking into account average salaries in construction and the annual inflation rate, the total labor income generated during this phase of the project would amount to \$300 million once direct, indirect, and induced effects are taking into account.

Table 22. Income Generated During Construction Phase

Income Generated During Construction Phase			
Million Dollars (\$mill)	2011	2012	Total
Direct Income	\$92.41	\$47.55	\$139.97
Indirect and Induced Income	\$105.12	\$54.09	\$159.22
Income from Construction Activity	\$197.54	\$101.65	\$299.18

Source: Estudios Técnicos, Inc.

The following inflation forecasts were utilized to compute the expected salaries and costs:

Table 23. Inflation Forecasts

Inflation Forecasts	
Inflation	
Projected General Inflation	3.0%
Inflation for Construction	2.9%

Source: Estudios Técnicos, Inc.

The average salary for construction jobs during the first year of construction was estimated to be \$21,570.

The study also considered the fiscal revenue that constructing the proposed project would generate both at the municipal and state level. It should be noted that at the time this report was written, the facility in question was in the process of applying for tax exemptions that would eliminate many of its fiscal obligations. The fiscal impact computed for the study assumes the following:

Table 24. Assumptions for Operations

Assumptions for Operations	
Assumptions on Revenues and Income	
Net Profit Margin (% of Revenues)	3.0%
Effective Corporate Income Taxes	3.5%
Property Tax Exception	90.0%
Municipal Excise Tax Exemption	60.0%
Exemption on Sales Tax for Construction Materials	100.0%

Source: Estudios Técnicos, Inc.

According to the estimates presented in the next table, the construction phase would generate \$49 million in fiscal revenue, of which \$30 would go to the central government and \$19 million to the municipal governments, primarily Arecibo's.

Table 25. Fiscal Revenue

Fiscal Revenue			
Million Dollars (\$mill)	2011	2012	Total
State Construction Permit	\$1.19	\$1.23	\$2.42
Municipal Construction Taxes	\$0.83	\$0.86	\$1.69
Municipal Excise Tax	\$8.34	\$8.59	\$16.93
Personal Income Taxes from Construction	\$13.59	\$6.99	\$20.59
Corporate Taxes from Contractors	\$3.58	\$3.68	\$7.26
Government Revenues from Construction	\$27.54	\$21.35	\$48.89
Fiscal Revenue to Municipal Government	\$9.18	\$9.45	\$18.62
Fiscal Revenue to State Government	\$18.36	\$11.9	\$30.26

Source: Estudios Técnicos, Inc.

These computations rely on the following assumptions regarding tax rates:

Table 26. Assumptions on Tax Rates

Assumptions on Tax Rates	
Average Corporate Tax Rate	15.0%
Tax Rates for Construction	
Construction Permit Cost (\$5.00 per \$1,000 Construction Invest.)	0.50%
Municipal Construction Patents (\$5.00 per \$1,000 Construction Invest.)	0.35%
Municipal Construction Excise Tax	3.50%
Profit Margin Before Taxes in the Construction Business	10.0%
% of Construction Expenditures Paying Sales Tax (IVU)	65.0%
Tax Rate for Operational Phase	
Municipal Excise Tax (Sales Volume)	0.35%
Property Tax Rate for the Municipality of Arecibo	8.4%
Tax Rate for Individual Income Tax	6.8%
State Sales Tax	5.5%
Municipal Sales Tax	1.5%

Source: Estudios Técnicos, Inc. & Municipal Revenue Collection Center

It must be clarified that these parameters are used to calculate fiscal obligations prior to applying any exemptions.

ECONOMIC IMPACT DURING REGULAR OPERATIONS

The operating phase is projected to begin in 2013 and the plant is expected to be operating at capacity by 2014. According to proponents of the project, operating the plant will require 150 direct jobs, nine of which will be managerial positions.

Table 27. Direct Employment During Operational Phase

Direct Employment During Operational Phase	
Employment	Number
Employment from Operational Phase	128
Truck Drivers	13
Management	9
Total	150

Source: Energy Answers, Inc.

To estimate personal income, which comes mostly from salaries, this study used the average salaries in the manufacturing sector for 2009 as reported by the Department of Labor and Human Resources. In order to simplify the assumptions, the facility is assumed to generate \$5 of profit per every square foot. The fiscal effect was calculated under the assumption that no tax exemptions applied.

Table 28. Assumptions on Income and Employment

Assumptions on Income and Employment	
Employment - Direct, Indirect & Induced Multiplier (Type II)	5.500
Income - Direct, Indirect & Induced Multiplier (Type II)	3.456
Average Salary per Employee (2009)	\$32,460
Assumptions on Income and Revenue	
Corporate Net Income per Square Foot	\$5
Efective Corporate Income Taxes	9.54%

Source: Estudios Técnicos, Inc.

Applying these assumptions to the data offered by the proponent of the project yields the following forecast about total employment (direct and indirect) and the corresponding income.

Table 29. Employment Generated by Operations

Employment Generated by Operations								
Number of Annual Employment	2013	2014	2015	2016	2017	2018	2019	Average
Direct Employment for Arecibo RRF	75	150	150	150	150	150	150	125
Indirec and Induced Employment for Arecibo RRF	338	675	675	675	675	675	675	591
Arecibo RRF - Total Operations Employment	413	825	825	825	825	825	825	722

Source: Estudios Técnicos, Inc.

This translates into the following personal income projections. Corporate profits are not taken into account; only personal income derived from salary is included. These average \$20 million a year, \$6million of which consists of direct income paid to direct employees.

Table 30. Personal Income Generated during Operations

Personal Income Generated During Operations								
Million Dollars (\$mill)	2013	2014	2015	2016	2017	2018	2019	Average
Arecibo RRF - Direct Income	\$ 2.74	\$ 5.64	\$ 5.81	\$ 5.99	\$ 6.17	\$ 6.35	\$ 6.54	\$ 5.71
Arecibo RRF - Indirect and Induced	\$ 6.73	\$ 13.86	\$ 14.28	\$ 14.71	\$ 15.15	\$ 15.60	\$ 16.07	\$ 15.42
Arecibo RRF Personal Income Generated	\$ 9.47	\$ 19.51	\$ 20.09	\$ 20.70	\$ 21.32	\$ 21.96	\$ 22.62	\$ 19.73

Source: Estudios Técnicos, Inc.

Ignoring the fiscal exemptions that may apply, the facility would generate an annual fiscal revenue of \$1.98 million. This mostly consists of income taxes paid by employees, both direct and indirect.

Table 31. Fiscal Impact during Operations

Fiscal Impact During Operations								
Million Dollars (\$mill)	2013	2014	2015	2016	2017	2018	2019	Average
Municipal Excise Tax	\$0.01	\$0.02	\$0.02	\$0.02	\$0.02	\$0.02	\$0.02	\$0.02
Real Property Tax		\$0.16	\$0.15	\$0.14	\$0.13	\$0.12	\$0.12	\$0.1
Personal Income Taxes (from employees)	\$0.78	\$1.6	\$1.65	\$1.7	\$1.75	\$1.8	\$1.86	\$1.98
Arecibo RRF - Corporate Income Taxes	\$0.01	\$0.01	\$0.01	\$0.01	\$0.01	\$0.01	\$0.01	\$0.01
Arecibo RRF - Total Fiscal Revenues	\$0.79	\$1.79	\$1.83	\$1.87	\$1.91	\$1.96	\$2.01	\$1.98

CONCLUSIONS REGARDING THE ECONOMIC IMPACT OF THE INSTALLATION

The previous analysis shows that the development and operation of the proposed facility would have substantial financial effects on the regional economy and the Puerto Rican economy in general.

The project is estimated to generate approximately 4,000 jobs a year during the construction phase and 722 during the operational phase, mostly consisting of indirect and induced jobs. This would generate \$300 million in income during the construction phase and \$20 million a year during regular operations.

If the facility were not to obtain any tax exemptions, it would generate \$49 million in taxes during the construction phase and \$2 million a year during regular operations.

BIBLIOGRAPHY

Department of Labor and Human Resources, *Local Area Unemployment Statistics*, April 2010.

P.R. Planning Board, Economic and Social Planning Program, Office of the Census. [http://www.jp.gobierno.pr/Portal_JP]

Bureau of Labor Statistics. [<http://www.bls.gov/>]

US Census Bureau. *2000 Census of Population and Housing*. Retrieved from: [<http://factfinder.census.gov/>]