



AUGUST 30, 2019

AN ECONOMIC EVALUATION OF THE DEFINITIVE
RESTRUCTURING SUPPORT AGREEMENT FOR
OUTSTANDING PREPA'S DEBT, OF PREPA FISCAL
PLAN AND A MODEST PROPOSAL
EXECUTIVE SUMMARY

RAMON J. CAO GARCÍA, PH.D.



AN INDEPENDENT ECONOMIC EVALUATION OF THE DEFINITIVE RESTRUCTURING SUPPORT AGREEMENT (RSA), OF PREPA'S FISCAL PLAN AND A MODEST PROPOSAL

EXECUTIVE SUMMARY

Ramón J. Cao García, Ph. D.
August 30, 2019

In this report it is considered that, as a principle, PREPA should repay as much as possible of its outstanding debt. But, the answer to the question of how much of the outstanding debt can PREPA afford to repay, must take into account the consequences of debt restructuration over the Authority and the economy. This report attempts to make up for some of the limitations identified in the RSA¹ and the Fiscal Plan.²

The analysis in this report begins by describing the rate increases proposed in both documents (RSA and Fiscal Plan), and proposing an alternative. Then, some economic consequences of all considered increases in rates are evaluated. The economic effects, over a five years period,³ taken into account are:

1. Computation of the effects of proposed rate increases and the alternative rate increase on production costs of major industrial sectors over a five years period.
2. Expected impact of proposed rates on the inflation rate.
3. Expected economic effects of the proposals on production, and employment.
4. Expected effects on the quantity of electricity consumed or demanded.

The RSA contains some key elements, which are:

1. The restructured debt is going to be issued in the form of Securitized Bonds, secured by a Transition Charge (TC) to be imposed on PREPA's electricity sales.
2. The TC will begin at 2.768 c/kwh at the first year of validity of RSA, and it is going to be periodically increased up to 4.552 c/kwh at year 24 and thereafter. The TC

¹ Financial Oversight and Management Board for Puerto Rico, *Definite Restructuring Support Agreement*, executed on May 3, 2019.

² *2019 Fiscal Plan for the Puerto Rico Electric Power Authority*, as certified by the Financial Oversight and Management Board for Puerto Rico on June 2019.

³ Rate increases in the RSA are expected to occur over a 47 years period, including raises in rates over the years. Given the state of the sciences, it is unreasonable and unrealistic to attempt to predict consequences over a two generations period of time. In consequence the analysis in this report is limited to a 5 years span.

can be increased up to a maximum of 25% to compensate for Contributions In Lieu of Taxes and Subsidies granted by PREPA.

3. The TC is going to be unavoidable to all users of electricity. Since it will be charged before the meter, if a customer decides to generate his own electricity, he still will have to pay the TC.
4. Two kinds of bonds will be issued:
 - a. Tranche A Bonds: In the amount of 67.5% of principal amount of outstanding bonds. These bonds will be tax exempt, with 40 years maturity and a 5.25% coupon.
 - b. Tranche B Bonds: In the amount of 10% of principal amount of outstanding bonds. These bonds may or may not be tax exempt, with 47 years maturity. Tranche B Bonds will begin to be paid after Tranche A Bonds are paid in full, and any amounts on Tranche B Bonds not paid with Transition Charge Revenues imposed prior to the stated final maturity of the Tranche B Bonds shall not be recoverable by Bondholders.⁴

It should be noted that there is no rationale to justify the face value of Tranche A and Tranche B ratios to outstanding debt. Indeed, the resulting Debt to Total Assets of PREPA, after restructuring the debt is much higher than the corresponding ratios shown by electric power companies in almost all jurisdictions in the US.⁵ It is also noted that, as proposed by RSA, average annual collections from the TC over years 2 to 5 of RSA would be \$615.40 million, but estimated annual debt service for the restructured debt is \$367.93 million. No explanation is offered in the RSA for this apparent incongruity.

Since the RSA does not explain the reasons for restructuring debt in two kinds of securitized bonds, on the proportion of outstanding debt to be restructured, and on the rationality for the amount and structure of the TC, this report develops an alternative approach to restructure PREPA's outstanding debt. That alternative is based on the following criteria:

1. After outstanding debt is restructured, PREPA's Debt to Total Assets Ratio should be equal to the median ratio for comparable electric power utilities in the United States.

⁴ It should be noted that, as proposed in the RSA, the interest in Tranche B Bonds is going to be accrued over time, until Tranche A Bonds are paid in full. If it is assumed that they are going to earn an average interest rate of 7.85% [7.85% is the midpoint between the proposed coupon of 7.00% for tax-exempted Tranche B Bonds and 8.75% for non-tax exempted Tranche B Bonds], then the initial principal of \$904.2 for Tranche B Bonds, will grow to become a Tranche B Bonds principal of \$20,226 million by the 40th year of the RSA.

⁵ See American Public Power Association, *Financial and Operating Ratios of Public Utilities*, Arlington, VA, December 2018.

2. New bonds should be securitized by an Alternative Transition Charge, which will be a rate per kwh consumed by each customer, and included in the electricity bills.
3. Maturity of the bonds of the restructured debt should not exceed 40 years.
4. The rate of interest or coupon for the restructured bond is equal to the proposed in the RSA for Tranche A Bonds.
5. No long-term schedule for the Alternative Transition Charge should be included in any Debt Restructuring Agreement. Instead, the Puerto Rico Energy Bureau should periodically revise the volumetric charge to adjust it to changes in total consumption, and secure adequate payment to bondholders.

On the basis of available information,⁶ it can be concluded that PREPA can afford to pay up to \$4,668 million in restructured debt, without compromising its finances and operations. In consequence, a sensible debt restructuring agreement should be to issue securitized bonds equivalent to 51.2% of principal amount of outstanding bonds.⁷ These bonds, as proposed in RSA, will be tax exempt, with 40 years maturity and a 5.25% coupon. Annual debt service, under this proposal, will be in the order of \$281.4 million, and an initial Alternative Transition Charge (ATC) will amount to 1.91 c/kwh.

After developing this alternative debt restructuring proposal for PREPA's outstanding debt, the report goes on to analyze the economic consequences of possible electricity tariff rates increases, including the effects of: (1) the ATC, (2) the TC proposed in the RSA, (3) the TC proposed in the RSA plus rate increases proposed in PREPA's Fiscal Plan on the basis of optimistic assumptions, and (4) the TC proposed in the RSA plus rate increases proposed in PREPA's Fiscal Plan when more realistic or risk assumptions are considered in the plan. The analysis is limited for the period that ends with fiscal year 2024, because it is unreasonable to attempt to forecast economic consequences over the 47 years period covered by the RSA.

⁶ The information used for this analysis was obtained from:

1. Definitive Restructuring Support Agreement (RSA), May 3, 2019.
2. American Public Power Association, *Financial and Operating Ratios of Public Utilities*, Arlington, VA, December 2018.
3. BDO Puerto Rico, P.S.C., *PREPA Independent Auditors' Report, Independent Auditors' Financial Statements, Required Supplementary Information and Supplemental Schedules for the year ending June 30, 2016*, San Juan, PR, December 18, 2018.

⁷ \$4,668 million (the amount of debt that PREPA could afford to pay), divided by \$9,118 million (the amount of outstanding debt as of June 30, 2016), is equal to 0.511954, or 51.2%. It should be noted that the latest PREPA's Financial Statements are for fiscal year 2016, i.e., before the island was hit hurricanes Irma and María on September 2017. It is quite probable that PREPA's Total Asset at present time are different from those reported at the end of June 2016. In that case, the amount of outstanding debt to be restructured must be revisited.

The analysis begins by determining resulting electricity tariff rates for the four scenarios presented in the previous paragraph.⁸ Yearly tariff rates for each consumer category was computed by adding the proposed rate increase to the average tariff rate for the category in fiscal year 2019.⁹ Table I shows the average for all customers of resulting electricity rates for each of the four scenarios under consideration, and Table II shows the average percentage change in tariff rates for PREPA's three main customers categories. From Table II it can be seen that the ATC scenario is the one that exhibits the lowest tariff rate increase of all four scenarios. With regard to expected situations to be faced by customer categories, commercial customers are the ones with the lowest proportional rate increases, although its rates could increase by up to 45.0%.

8 Possible scenarios considered are:

1. ATC
2. TC
3. TC + Fiscal Plan with no risks
4. TC + Fiscal Plan including risks

It must be pointed out that PREPA Fiscal Plan indicates, on page 63, that:

“ ▪ PREPA's current rate structure is composed of three primary components – Base Rate, Fuel Adjustment and Purchased Power Adjustment Charges, and CILT & Subsidy rate riders. A fourth component includes RSA settlement charges

▪ Three primary categories of customers make up 98% of PREPA's revenue from electricity sales: Commercial (53%), Residential (34%) and Industrial (11%)

▪ PREPA approved a permanent rate structure in FY2017 and implemented it in FY2019. This new rate structure eliminated the 11% gross-up of fuel and purchased power adjustment charges, and created direct cost recovery/pass through rate riders in customer's bills to cover Contributions in lieu of taxes (CILT) and subsidies.

▪ As a new O&M operator comes into place, the rate structure may potentially need to be revised from time to time to reflect changes in operating cost structure as well as incorporate developing trends in rate design.”

⁹ Average tariff paid in Fiscal Year 2019 is computed as the 10 months average from July 2018 to April 2019, as estimated as the proportion of Total Revenues in the category to Total Consumption in the corresponding category. Data was obtained from PREPA's *aee-meta(1) data*, May 2019. It should be pointed out that the Fiscal Plan, p. 62, says that average electricity tariff for all consumers in FY2019 was 18.8 c/kwh. Computations made for this report results in an average tariff of 21.99 c/kwh for the same fiscal year.

Table I

**Required Electricity Tariff Rates Under Different Scenarios
All Customers Average: c/kwh**

Fiscal Year	Alternative TC (ATC)	RSA TC	RSA+ Fiscal Plan: No Risks	RSA + Fiscal Plan w/Risks
FY20	22.99	22.99	22.99	24.94
FY21	23.98	25.45	27.05	29.81
FY22	23.98	25.45	27.05	30.49
FY23	23.98	25.45	27.15	31.39
FY24	23.98	25.69	27.39	32.26

Table II

**Change in Electricity Tariff Rates Under Different Scenarios
Percentage Change from FY 2019 to FY 2024**

Customer Class	ATC	RSA TC	RSA + Fiscal Plan (No Risks)	RSA + Fiscal Plan (Risks Included)
Residential	9.1%	17.5%	25.6%	48.7%
Commercial	8.4%	16.2%	23.6%	45.0%
Industrial	9.8%	18.9%	27.6%	52.5%

Once the analysis of possible electricity tariff rate increases is completed, the report goes to estimate expected consequences of these rate increases over inputs costs by major economic sectors. For that purpose, the 2013 Input-Output Matrix (I/O Matrix) for Puerto Rico was aggregated into eight sectors. Electricity rate increases were computed in the vector electricity and irrigation services for all sectors, except for PREPA, under the assumption that PREPA does not actually pay for the electricity it consumes. The effects of possible rate changes were estimated for fiscal years 2022 and 2024.

Table III summarizes estimated consequences of alternative rate changes on the costs of intermediate inputs, by industrial sectors. Some important considerations can be inferred from the results in the table. In the first place, it can be seen that, in all scenarios, the sectors most affected by increases in electricity rates are:

1. Wholesale and retail trade
2. Government
3. Manufacturing

Table III

Percent Change in Cost of Intermediate Inputs by Industrial Categories under Considered Scenarios

Industrial Sectors	Alternative TC		RSA TC		RSA TC + Fiscal Plan (No Risks)		RSA TC + Fiscal Plan (Risks Included)	
	FY 2022	FY 2024	FY 2022	FY 2024	FY 2022	FY 2024	FY 2022	FY 2024
Agriculture	0.05%	0.05%	0.09%	0.09%	0.13%	0.09%	0.43%	0.26%
Mining & Construction	0.09%	0.09%	0.17%	0.18%	0.25%	0.28%	0.42%	0.51%
Manufacturing	0.19%	0.19%	0.35%	0.37%	0.51%	0.54%	0.85%	1.03%
Wholesale & Retail Trade	0.22%	0.22%	0.91%	0.98%	1.34%	1.48%	2.25%	2.71%
Hospitals & Health Serv.	0.04%	0.04%	0.17%	0.18%	0.25%	0.28%	0.42%	0.51%
Electricity & Irrigation Serv.	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Other Services	0.06%	0.06%	0.26%	0.28%	0.38%	0.42%	0.64%	0.78%
Government	0.15%	0.15%	0.62%	0.66%	0.90%	1.00%	1.51%	1.83%
Overall Average	0.13%	0.13%	0.35%	0.38%	0.52%	0.56%	0.87%	1.05%

It should be noted that these sectors are particularly critical for its consequences upon the local economy:

1. Increases in the operating costs in the commerce sector are usually translated to customers, reducing the purchasing power of the general population, and increasing incentives for emigration.
2. In the case of government, it should be remembered that it faces a serious fiscal crisis, that constrains its spending capacity. An increase in operation costs is going to aggravate its present fiscal crisis.
3. Manufacturing is critical for the Puerto Rican economy, which is based on exporting manufactured goods. Increases in operation costs reduce its (already diminished) capacity to compete in world markets

Construction is another sector that has been stagnant in Puerto Rico for over a decade, with declining employment. Expected increases in input costs are going to promote further adverse effects over the real estate sector of the economy.

The analysis of expected impacts of possible electricity rate increases upon the cost of intermediate inputs, allows to consider expected effects of these changes on the Consumer Price Index. Expected price increases range from a minimum of 0.36% in the case of the ATC for years 2022 and 2024, to a maximum of 2.47% in 2024 in the case of the rates for the RSA TC coupled with the rates proposed in the Fiscal Plan, including highly probable operational risks. These increases in CPI are additional to normal inflation.

It should be noted that, except in the case of the ATC, in all scenarios expected increases in CPI are higher in FY2024, than in FY2022; i.e., they tend to induce cost push inflation.

Table IV informs the expected increase in CPI under each scenario as a percentage of inflation rate in PR over the last ten years. It can be seen that in all scenarios, except the one that only includes the ATC, inflation is expected to accelerate in a significant way. In consequence, the only electricity price increase that the economy appears to be able to afford, without significant inflation, is the Alternative Transition Charge proposed in this report.

Table IV

Expected Increase in CPI in Each Scenario as a Percentage of Local Inflation Rate

	Alternative TC		RSA TC		RSA TC + Fiscal Plan (No Risks)		RSA TC + Fiscal Plan (Risks Included)	
	FY 22	FY24	FY 22	FY 24	FY 22	FY 24	FY 22	FY 24
Expected Increase in CPI as a percentage of Local Inflation Rate	33%	33%	75%	80%	110%	119%	184%	223%

The next topic evaluated in the report is the expected impact of proposed electricity tariff rates increases on the levels of economic activity and employment. To evaluate the expected effects of the increases in electricity rates, an equation was estimated for projecting the Gross National Product at constant prices.

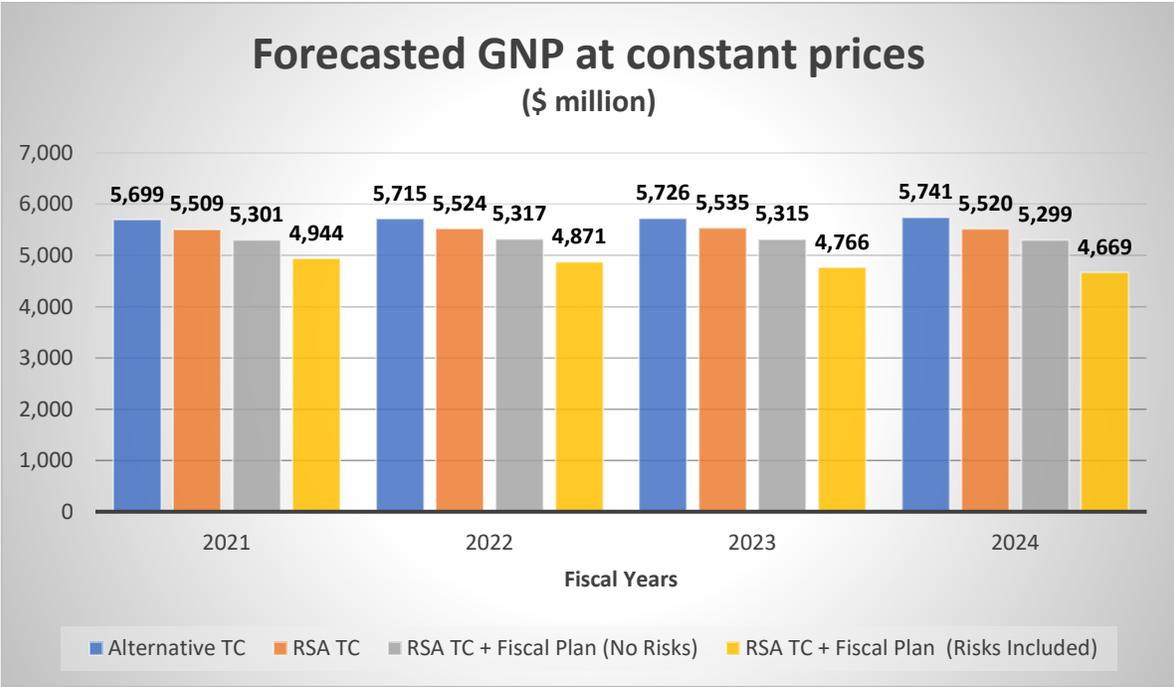


Diagram I

The estimation of expected consequences of alternative possible increases in electricity tariff rates upon local GNP at constant prices (i.e., after taking out the effects of inflation) allows to estimate the possible effects of these rate increases on the employment level in the economy. Table V reports the results obtained. It can be seen that, in the case of the ATC, the economy seems to gradually absorb the increase in electricity rates, and by FY 2024 it is able to generate 2,294 additional jobs, over the employment level of FY 2018. For its part, in the case of the RSA TC, the economy begins to slowly absorb the effects of the initial rate increase, but, since the RSA TC includes an additional rate increase for FY 2024, total employment again declines in FY 2024, with a total loss of 33,382 jobs in FY 2024, which is equivalent to 3.4% of total employment in FY 2018. If the electricity rate increases proposed by the RSA is compounded with the rate increases proposed in the Fiscal Plan with optimistic assumptions, by FY 2024 there is expected to be a net loss of 68,928 jobs in the local economy, an amount that is equivalent to 7.1% of total employment in FY 2018. In the last scenario, where electricity rate increases in the RSA TC are added to those proposed in the Fiscal Plan, including more realistic risk assumptions, the losses in employment are really significant; by fiscal year 2024, is expected that total employment in the economy is going to be reduced by 170,756 jobs, or 17.6% of total jobs in FY 2018.

Table V
Expected Employment Consequences for Each Rate Increase Scenario
(Number of persons)

Fiscal Year	Alternative TC	RSA TC	RSA TC + Fiscal Plan (No Risks)	RSA TC + Fiscal Plan (Risks Included)
2021	-4,414	-35,151	-68,606	-126,315
2022	-1,914	-32,650	-66,105	-138,033
2023	-106	-30,843	-66,388	-155,043
2024	2,294	-33,382	-68,928	-170,756

The Puerto Rican economy has been showing a downward trend in total employment over more than a decade. As a consequence of the structural contraction that has been happening in the local economy. It has been unable to create enough jobs for the population, a situation that has resulted in increased emigration of productive persons and in promoting a more unfair income distribution. From an economic and social point of view, Puerto Rico has to be very careful in adopting measures that have additional adverse effects on employment. Of the four scenarios considered in this report, the ATC is the only one that result in moderate employment loss in the short run and has the capacity to be absorbed by the markets and allow for the economy to be able to generate jobs in the not so long run.

The final topic analyzed in the report is the demand for electricity in Puerto Rico. Demand equations were modeled and estimated for the three main categories of

PREPA’s customers: residential, commercial and industrial. Total electricity consumption was derived from these demand equations, and forecasted for each of the scenarios of electricity tariffs rates increases. This analysis is relevant because the Transition Charges included in the RSA are based on expected PREPA’s total sales of electricity. The results from the analysis are summarized in Table VI and Diagram II.

Table VI

Total Consumption of Electricity Demanded under Different Scenarios (Gwh)

Fiscal Year	ATC	RSA TC	RSA + Fiscal Plan (No Risks)	RSA + Fiscal Plan (Risks Included)	Quantity Assumed in the Fiscal Plan
2021	14,856	14,635	14,407	14,013	14,772
2022	14,670	14,449	14,221	13,730	13,972
2023	14,482	14,261	14,018	13,413	13,491
2024	14,343	14,087	13,845	13,149	13,150

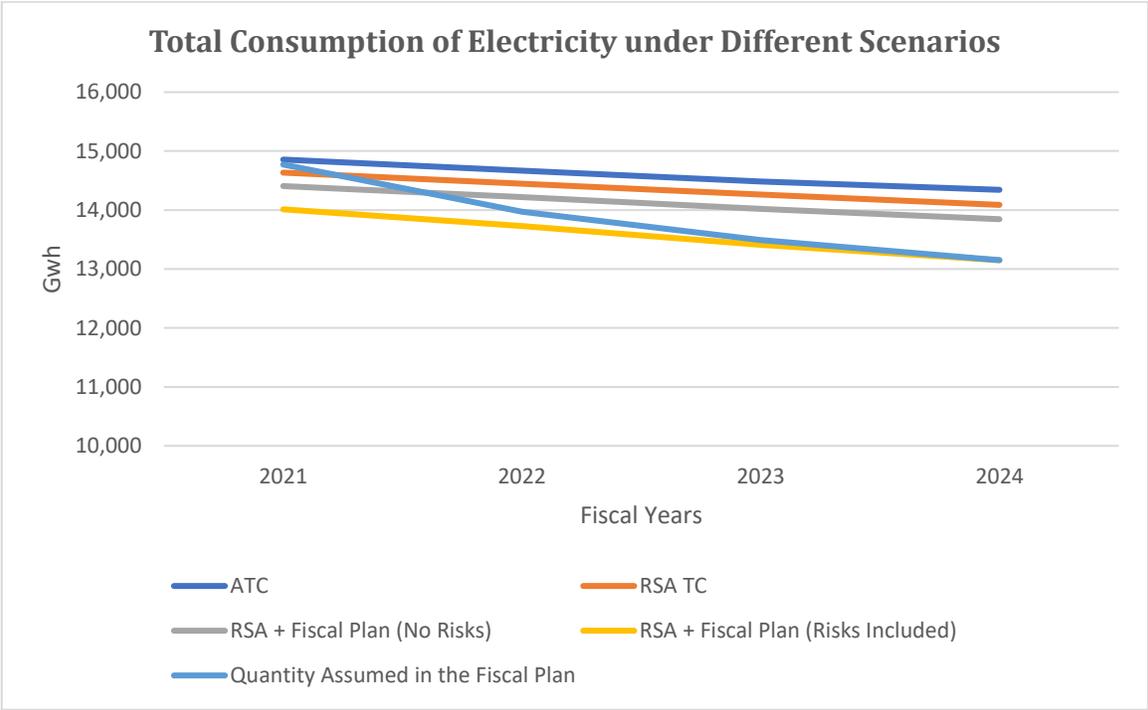


Diagram II

From Table VI and Diagram II, it can be seen that expected electricity consumption in FY 2021 is higher in the ATC scenario than the quantity of Gwh assumed in the Fiscal Plan. In the other scenarios the quantities demanded are lower than the quantity assumed in the Fiscal Plan for that year. But the situation reverses itself for subsequent years. From Fiscal Year 2022, expected consumption of electricity tends to be higher in all scenarios than the forecasts in the Fiscal Plan, with the exception of the scenario that

includes the TC in the RSA and the rates increases proposed in the Fiscal Plan, including identified risks. This tends to indicate that that future electricity consumption could be underestimated by PREPA and the Fiscal Plan. Such an underestimation of future expected electricity could result in overestimating rates in T C schedule in the RSA and, consequently, in overcharging PREPA's customers – also, privatization agreements over electricity generation could result in accords that overcharge PREPA for energy purchased.

In summary, the principal conclusions to be derived from the analysis are:

1. The RSA devotes a lot of effort to describe in detail its scope and content, as well as to develop detailed measures to assure that bondholders will get the payments agreed under it. But the RSA never justifies its rationale, i.e., why the proposed ratio of restructured debt to outstanding debt, which is the reason to have the two proposed tranches for the bonds to be issued under the restructured debt, why the interest payments of Tranche B Bonds will be accrued over time, in a way where at the end of 40 years the nominal value of Tranche B Bonds is going to be in the neighborhood of \$20,226 million.
2. There is neither any justification for the proposed schedule of the volumetric Transition Charge, included in the RSA. Moreover, this schedule has the implicit assumption that PREPA's electricity are going to decline by 64.5% over time, which is completely speculative.
3. Moreover, the RSA does not devote a single line to consider the impacts that it is expected to have on the performance of the Puerto Rican economy, much less about how negative impacts can be mitigated.
4. The report also shows that, when the TC in the RSA is added to electricity tariff rates increases proposed in the last PREPA's Fiscal Plan, the overall rate increases are significant and very difficult for the economy to afford.
5. An alternative proposal to restructure PREPA's outstanding debt is developed in this report, with a corresponding Alternative Transition Charge.
6. When economic consequences of alternative electricity tariffs rates increases are evaluated for the alternative scenarios, it was found that the sectors most affected by increases in electricity rates on the costs of intermediate inputs are:
 - a. Wholesale and retail trade
 - b. Government
 - c. Manufacturing

Such results tend to imply that proposed tariff changes tend to have serious negative consequences on the economy.

7. When the consequences of the proposed rate increases on the general price level were analyzed, it was found that in all scenarios considered, except in the case where the only rate increase is the proposed Alternative Transition Charge, there is a real possibility of cost-push inflation in the economy, with the disruptions it usually causes on resource allocation, diminished production, increased inequality in the distribution of income, and social instability.
8. It was also found that all proposed rate increases tend to significantly reduce the levels of economic activity over time, a much serious outlook for an economy that has been suffering from continuous economic contraction over more than a decade. The only scenario where the economy appears to be able to absorb the rate increase and begins to recover by fiscal year 2024, is the one where the only rate increase is the proposed Alternative Transition Charge.
9. Consequently, all rate increase scenarios result in substantial reductions in employment levels. It should be noted that, notwithstanding optimistic government statements, official statistics document that total employment has been shrinking on the island for over a decade. At this respect, again, the only scenario where the economy appears to be able to absorb the rate increase and begins to recover by fiscal year 2024, is the one where the only rate increase is the proposed Alternative Transition Charge.
10. The report also forecasts electricity consumption for the four scenarios and compares the outcomes with consumption assumed in the Fiscal Plan. The main conclusion is that, except in the scenario that considers the TC in the RSA coupled with the rate increases proposed in the Fiscal Plan including risk factors, the Fiscal Plan appears to underestimate expected future consumption of electricity. If this happen, it posits serious problems:
 - a. The Transition Charge schedule in the RSA depends upon expected future consumption of electricity. If such consumption is underestimated, then the scheduled TC is going to overcharge electricity customers. In consequence, instead of providing a TC schedule in an RSA, what should be done is to provide for periodic reviews of the TC by a competent and independent entity, such as the Puerto Rico Energy Bureau.
 - b. PREPA is in the process of privatizing generation of electric power. If consumption of electricity is not properly forecasted, it will be very difficult for PREPA and the private enterprises to be involved in the process to negotiate sensible privatization accords.

To summarize, the Puerto Rican economy does not appear to be able to afford electricity tariff rates increases proposed in the RSA, much less when these increases are coupled with those proposed in PREPA Fiscal Plan. Instead, the RSA should be carefully reviewed and justified; and PREPA's operations and management must be profoundly reformed to end situations of inefficiency, waste, and other undesirable events, as they

have been frequently denounced by local media, as well as in many audit reports issued by the Puerto Rico Comptroller Office over more than two decades.