PREPA Ex. 4.0

**COMMONWEALTH OF PUERTO RICO**

**PUERTO RICO ENERGY COMMISSION**

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| IN RE: THE PUERTO RICO ELECTRIC POWER AUTHORITY | **No.** CEPR-AP-2015-0001 |
| INITIAL RATE REVIEW | **SUBJECT:** TESTIMONY IN SUPPORT OF PETITION |

Direct Testimony of


**RALPH ZARUMBA**

Director, Navigant Consulting, Inc.

**EUGENE GRANOVSKY**

Managing Consultant, Navigant Consulting, Inc.


On behalf of the

Puerto Rico Electric Power Authority

May 27, 2016

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# I. INTRODUCTION

## A. Witness Identification

Q. **Please state your name, title, employer, and business address.**

A. We are Ralph Zarumba and Eugene Granovsky. We are collectively sponsoring this testimony.

Ralph Zarumba is a Director at Navigant Consulting, Inc. ("Navigant"), a global business and advisory firm. His business address is 30 S. Wacker Drive, Suite 3100, Chicago, Illinois 60606.

Eugene Granovsky is a Managing Consultant at Navigant. His business address is 30 S. Wacker Drive, Suite 3100, Chicago, Illinois 60606.

Q. **On whose behalf are you testifying?**

A. We are testifying as a panel on behalf of the Puerto Rico Electric Power Authority ("PREPA"), a publicly-owned (public power) electric utility and instrumentality of the Government of the Commonwealth of Puerto Rico (the "Commonwealth").

## B. Summary of Testimony

Q. **What is the purpose of your testimony?**

A. We are testifying in support of PREPA's Petition requesting that the Puerto Rico Energy Commission (the "Commission") approve and establish new rates for PREPA. More specifically, our testimony presents and supports what is commonly referred to as the "rate design" of the proposed "permanent" rates.

In brief, the proposed rate design: (1) updates tariffs to reflect the costs of the utility, (2) gives PREPA the opportunity to recover its "revenue requirement" (its costs of

offering and providing service to its Customers), (3) moves toward a more equitable allocation of the revenue requirement to Customers, (4) implements legislative initiatives, (5) promotes a clean energy solution, and (6) improves the transparency of rates and bills.

## C. Professional Background & Education

Q. **Would each of you please describe your educational background and professional experience?**

A. Yes. My name is Ralph Zarumba. My resume, which reviews my education, professional qualifications, and experience in detail, is attached is PREPA Exhibit ("Ex.") 4.01.

My name is Eugene Granovsky. My resume, which reviews my education, professional qualifications, and experience in detail, is attached as PREPA Ex. 4.02.

## D. Additional Attachments

Q. **In addition to your resumes, are there any additional exhibits to your testimony?**

**A.** Yes. We are sponsoring the following additional exhibit: PREPA Ex. 4.03.

Q. **Did you prepare, or have prepared under your supervision, any of the Schedules and other papers submitted to the Commission under its Regulation No. 8720 as support for and attached to PREPA's Petition for new rates?**

*A.* Yes, we prepared or have had prepared under our supervision certain of the Schedules and other papers: Schedules A-6 (also supported by other witnesses, see PREPA Ex. 5.0), H-1, H-2, H-3, H-4, H-5, H-6, J-1, J-2, J-3, J-4, J-5, L-1, M-1, M-2, M-3, and N-1.

## II. ISSUES IMPACTING PREPA'S TARIFFS IN GENERAL

### A. Rate Design Objectives

Q. **What are the overall objectives of PREPA's proposed rate design as reflected in its proposed tariffs?**

A. The overall objectives of PREPA's rate design are to:

1. Update tariffs to reflect the economic costs of the utility. The current tariff design is several decades old and does not reflect the economics of the utility. The new design in part uses the marginal cost of service study sponsored by Mr. Shlatz (PREPA Ex. 9.0) for guidance on setting specific tariff components closer to marginal cost.
2. Recover PREPA's current revenue requirement. The current tariffs are not recovering the revenue requirement of the utility and need to be increased in order for PREPA to re-attain financial health. See PREPA Ex. 5.0.
3. Equitable allocation of the revenue requirement. Currently a very wide difference exists between allocated (embedded) costs as reflected in the embedded cost of service study ("ECOSS") and the level of cost recovery of various tariff classes. See PREPA Ex. 8.0. Moving each tariff class to cost of service, however, would trigger very significant increases for some customer classes. The proposed revenue allocation reflects the ratemaking principle of gradualism and is a first step to an equitable allocation of the revenue requirement to each tariff class.
4. Implement certain legislative initiatives. A number of legislative initiatives in Puerto Rico impact electricity tariffs. The proposed tariff design implements these initiatives in a practical and rationale manner.

5. Promote a clean energy solution. The Commonwealth has adopted a policy promoting clean electric power generation. PREPA's tariffs have been designed to promote and subsidize clean energy.

6. Implement Transparency. The existing tariffs bundle and combine a number of charges which does not provide customers information on what costs are included in their electric bills. An effort has been made to unbundle costs and in the case of subsidies quantify the costs of these programs on customers' bills.

## B. Redesign of the Fuel Cost Adjustment and the Purchased Power Cost Adjustment Clauses

Q. **Please describe the existing Fuel Cost Adjustment ("FCA") and Purchased Power Cost Adjustment ("PPCA") clauses of PREPA's tariffs.**

A. PREPA's current FCA and PPCA capture the total cost of fuel and purchased power, respectively. Further, the FCA and PPCA are increased ("grossed-up") by 1 divided by 0.89 in order to fund Contributions in Lieu of Taxes ("CILT") and other subsidies which PREPA is legislatively mandated to provide to customers. This results in a 12.36%[1] gross-up.

Q. **Have you identified shortcomings in the existing FCA and PPCA mechanisms?**

A. Yes. We have identified the following shortcomings in the existing FCA and PPCA mechanisms:

[1] 12.36 = (1/.89).

1. The full costs of fuel and purchased power are captured through the FCA and PPCA, making these mechanisms the largest component of the bills of nearly all customers. The importance of these mechanisms is overstated on a revenue basis.
2. The PPCA contains the entire costs of the purchased power agreements from AES, EcoElectrica, and other suppliers to PREPA. A significant level of costs captured in the PPCA mechanism are not volumetric but related to the fixed cost of operating these generating units. However, the PPCA mechanism is volumetric. Therefore, the price signals (an economic and ratemaking term relating to incentives to consume at an efficient level) sent to customers are distorted. PREPA Ex. 8.09 provides an estimate of the fixed versus volumetric costs associated with the purchased power contracts for the test year, which in this case is Fiscal Year 2014 (July 1, 2013, to June 30, 2014). As PREPA Ex. 8.09 demonstrates, 44 percent of the costs of these agreements are not volumetric.
3. A gross-up factor of 12.36 percent is inappropriate for funding legislatively mandated CILT and other subsidies. During time periods of high fuel costs, the 12.36 percent factor has the potential to over-collect compared to the level of CILT and other subsidies, whereas during low fuel cost periods it will under-collect compared to the level of CILT and other subsidies. PREPA Ex. 4.03 presents a comparison of the revenues which were estimated to be received from the gross-up of the FCA and the PPCA and the actual costs of CILT and other subsidies for FY 2017.

Q. **What is the proposal for the redesign of the FCA and the PPCA?**

A. The proposed FCA and PPCA clauses will contain a reconciling mechanism that moves the average cost of fuel and purchased power for the test year into base rates. The FCA and PPCA clauses will capture the deviation from the average cost of fuel and purchased power for the test year period. The averages for the year period will be included in base rates. The increment above or below the amounts captured in base rates will be the FCA and PPCA factors.

Q. **Why is the proposed approach superior to the existing design of the FCA and the PPCA?**

A. The proposed approach provides an advantage for PREPA and its customers for the following reasons:

1. Greater flexibility is provided to develop the pricing design, which allows for linking what is a significant percentage of the tariff to a volumetric pricing design. Currently, the price signal sent to customers assumes that the cost of fuel and purchased power is volumetric whereas in reality a significant amount of these costs are unrelated to kilowatt hour ("kWh") consumption.
2. The fixed costs associated with purchased power agreements will no longer be assessed to customers on a volumetric basis. The cost allocation will occur based upon a methodology in the embedded cost of service study, which is proposed by PREPA and will be reviewed by the Commission. See our second and separate panel direct testimony, PREPA Ex. 8.0. As a result, the resulting tariff design will not be biased toward a volumetric approach that distorts costs.

3. The recovery of CILT and other subsidies have been removed from the FCA and PPCA and placed in a separate reconciling clause. CILT and other subsidies are not a fuel or purchased power expense. Removing the CILT and subsidies provides two benefits: (1) the cost recovery is improved and (2) the level of transparency is increased for customers' bills.

Q. **What is the level of fuel cost that is captured in base rates in your proposal?**

A. The level of fuel cost in base rates was determined by dividing the forecasted cost of fuel in the FY 2017 by forecasted FY 2017 sales stated in kWh. Specifically, the amount of fuel costs forecasted for FY2017 is $655,968,367 and total forecasted FY 2017 kWh sales is 17,268,325,180 kWh resulting in $0.03799 per kWh of fuel cost in base rates.

Q. **What is the level of purchased power cost that is captured in base rates in your proposal?**

A. The level of purchased power cost captured in base rates is $0.04748 per kWh. The level of purchased power cost in base rates was determined by dividing the projected cost of purchased power of $819,906,882 by projected FY 2017 sales of 17,268,325,180 kWh.

Q. **How often will the cost of fuel of $0.03799 per kWh in base rates change?**

**A.** The cost of fuel in base rates is proposed to remain constant until such time as new base rates are proposed. If the proposed Formula Ratemaking Mechanism included in this filing (see PREPA Ex. 7.0) is adopted, then the next adjustment to base rates and the level of fuel in base rates will change in three years.

148 Q. **How often will the cost of purchased power of $0.04748 per kWh in base rates**
149 **change?**
150 A. Similarly to fuel, the cost of purchased power in base rates is proposed to remain constant
151 until new base rates are proposed.

152 Q. **Will the FCA and PPCA be reconciled?**
153 A. Yes. The costs, sales, and revenues under the FCA and PPCA will be reconciled
154 separately and regularly in order to achieve accuracy and avoid over and under-recovery.

155 Q. **How often will the FCA and PPCA be reconciled?**
156 A. The reconciliation will occur during quarterly updates.

157 Q. **Please describe how the reconciliation mechanism will operate.**
158 A. The actual costs, sales and revenues from the PPCA and FCA mechanisms for two
159 months of a quarter will be known when the quarterly mechanism is filed. However, the
160 third month will not be known. Therefore, PREPA proposes that the reconciliation will
161 capture the first and second months of the current quarterly cycle and the third (*i.e.* final)
162 month of the previous quarterly period. The proposed timing avoids the complication of
163 re-estimating the costs, sales and revenues associated with the mechanism.

164 Q. **How will PREPA prepare estimates of the cost of fuel and purchased power used in**
165 **proposed quarterly factors?**
166 A. The cost of fuel will be prepared using production cost models consistent with current
167 practice. The production cost model currently used by the company is PROMOD, which
168 is widely used in the electric power industry. The projections of the cost of purchased

power will be produced using budget models prepared by PREPA for non-fuel elements of the cost calculation. PROMOD projections will be used for the fuel consumption elements.

Q. **What if the forecasts used to prepare the FCA and PPCA are inaccurate (i.e., either over- or under-recovering of costs)? Does the proposal include a mechanism to provide a "mid-course correction" in the case of significant variances?**

A. Yes. We recommend that a 10 percent bandwidth be incorporated into the calculations so that, if a variation meets or exceeds the bandwidth, then that would trigger a recalculation. The mechanism would work as follows:

1. Each month when actual data becomes available, the FCA / PPCA factor will be recalculated using the original forecast data and newly available actual data.
2. If the recalculated factor will differ from the targeted cost recovery level by 10 percent, in either direction, then the FCA / PPCA factors will be recalculated to target the actual expenses incurred. The calculations will be filed with the Energy Commission for expedited approval before they are implemented.

Q. **Will the calculations and detailed work papers which support the FCA and PPCA calculations be available to the Commission?**

A. Yes. We propose that during the course of this proceeding, a technical conference be convened to discuss the data requirements and format of the filing.

Q. **Given your proposal, what is the forecasted FCA and PPCA for the test year?**

A. If customers consume electric power following a pattern that is consistent with average consumption for the PREPA system as a whole, the starting cost of the FCA and PPCA will be zero. This cost is explained by the fact that the average of fuel in that customer's base rate will be equal to the system average. In the case that fuel cost is more than projected, the FCA will be a positive charge, and in the case that fuel cost is less than projected, the FCA will be a credit. The same is true for the PPCA.

Q. **Are you including a cash working capital component of the FCA and PPCA mechanisms?**

**A.** Yes. The amount of fuel and purchased power costs proposed to be included in base rates reflects a relatively low price of fuel, and it is possible in the future that the price of fuel could spike (have a sharp and significant rise in a short period). There is a time value of money associated with a utility's incurring a cost before it recovers the cost, such as would be associated with PREPA's carrying the costs of a fuel price spike for some time before they are reflected in the FCA and PPCA and recovered. A severe spike could even create a liquidity (cash flow) issue for PREPA. No cash working capital for the fuel and purchased power expenses was included, however, in PREPA's proposed revenue requirements. See PREPA Ex. 5.0. Therefore, a separate calculation of working capital will be included in the FCA and PPCA cost adjustments.

## C. CILT and Other Subsidies

Q. **You previously referred to Contribution in Lieu of Taxes or CILT. What is CILT?**

A. As a publically owned entity, PREPA does not pay property taxes. However, PREPA is required to compensate municipalities using a mechanism entitled Contribution in Lieu of Taxes (CILT).

Q. **Is CILT a common expense for publically owned utilities?**

A. Yes. Most public power utilities are required to pay CILT or other similar assessments.

Q. **What is the amount CILT and these other subsidies?**

A. The amount of CILT is $51,783,821 and other subsidies not including CILT are $168,312,921 in the proposed revenue requirement. In total, the sum of CILT and subsidies is 6.4 percent of the revenue requirement.

12 EG

Q. **Are these subsidies discretionary?**

A. No. PREPA is required to provide these subsidies. It is our understanding that these subsides are legislatively mandated.

Q. **How are these costs currently recovered?**

A. As is described above, CILT and the other subsidies currently are recovered as a "gross-up" of the fuel and purchased power cost adjustment mechanisms. However, the existing approach is an inexact approach to recovering these costs and PREPA has often under-recovered these costs.

Q. **What is the design of the proposed mechanism?**

A. The proposed recovery mechanism will be reconciling clauses for the CILT and other subsidies. No risk will exist for PREPA to under- or over-recover the costs incurred, and thus these risks also are eliminated for its customers.

Q. **How will the reconciliation mechanism operate?**

The mechanism will operate in a similar manner to the fuel and purchased power cost adjustment described above, except that they will not start at zero because the test year amount is not included in base rates. However, the reconciliation will only occur annually.

Q. **Have you prepared an estimate of the values for these mechanisms for the first year of operation?**

A. Yes. PREPA Schedule E-8 provides the initial CILT and Other Subsidies charge calculations which are proposed for the first year of the proposed electric tariffs.

Q. **Will the CILT and subsidies charges be bypassaable by customers operating Distributed Energy Resources?**

A. No. These charges are intended to supported the operations of municipal customers and programs which have been determined to serve the good of the Commonwealth of Puerto Rico such as low income assistance for energy bills. Allowing any group of customers to bypass these costs would be inequitable.

## D. Proposed Transition Charges

Q. **Please describe the proposal to securitize PREPA's debt.**

A. Act 4-2016 provided PREPA with the opportunity to restructure PREPA's debt. The Commission is currently reviewing certain aspects of the proposal in Docket No. CEPR-AP-2016-0001. Various steps need to be accomplished to achieve the restructuring, many of which are outside the scope of this rate case.

Q. **What impact would the restructuring have on PREPA if it is approved by the Commission and the restructuring is effectuated?**

A. The restructuring would reduce PREPA's overall revenue requirement in both the short- and long-term. The overall impact on the revenue requirement is quantified in PREPA Ex. 5.0.

Q. **What mechanism will be used to collect revenues from customers to service the debt?**

A. Act 4-2016 specified that residential customers will be assessed a monthly Transition Charge on a per service agreement basis. Non-residential customers will be assessed a Transition Charge on a kWh basis. PREPA Ex. 6.00 in Docket No. CEPR-AP-2016-0001 details the calculation of these charges and provides estimates of the Transition Charges.

Q. **How was the debt service used in the pricing design?**

A. The approach that follows describes how the cost of service analysis addressed the issue of the Transition Charges without distorting the pricing design.

The embedded cost of service study (ECOSS) included the debt service through the Transition Charges (including a gross-up for revenue lags and uncollectables) and the

legacy debt service not captured in the Transition Charges in the revenue requirement of the utility. The study allocated costs to each tariff class and ignored the existence of the Transition Charges. The resulting revenue requirement for each tariff class was determined and shown in PREPA Schedule G-1.

1. The expected Transition Charge revenues were deducted on a tariff class basis from the results of the ECOSS.
2. The resulting revenue requirement is the targeted level of revenues which are expected to be recovered from bases rates and various cost adjustment mechanisms.

The figure below demonstrates the above process.


278
279

280 Q. **Does the existence of the Transition Charges change the cost allocation in the**
281 **ECOSS?**

282 A. It would not materially change. A slight difference exists for the treatment of bad debt in
283 the Transition Charges.

284 **III. ELECTRIC RATING PERIOD STUDY**

285 Q. **Does PREPA currently differentiate its tariffs by season and Time of Use ("TOU")?**

286 A. PREPA has a limited offering of TOU tariffs (TOU-T and TOU-P) and does not
287 differentiate tariffs by season.

288 Q. **Do you recommend that PREPA's tariffs should be differentiated by season and**
289 **TOU?**

290 A. No, but we should explain why in some detail. In order to answer that question, Navigant
291 prepared an Electric Rating Period Study.

292 Q. **What is an Electric Rating Period Study?**

293 A. An Electric Rating Period study identifies time periods when PREPA's costs are either
294 unusually high or low. An Electric Rating Period study focuses upon the following:

295 1. Does the utility cost structure exhibit significant levels of seasonality? In other
296 words, are costs higher or lower during certain months of the year?
297 2. Are daily cost patterns apparent in the utility cost structure? Specifically, are
298 certain hours associated with high costs than other hours?
299 3. Should weekend time periods have costs which differ form weekdays?

300 Q. **What variables did you analyze in the electric rating period study?**

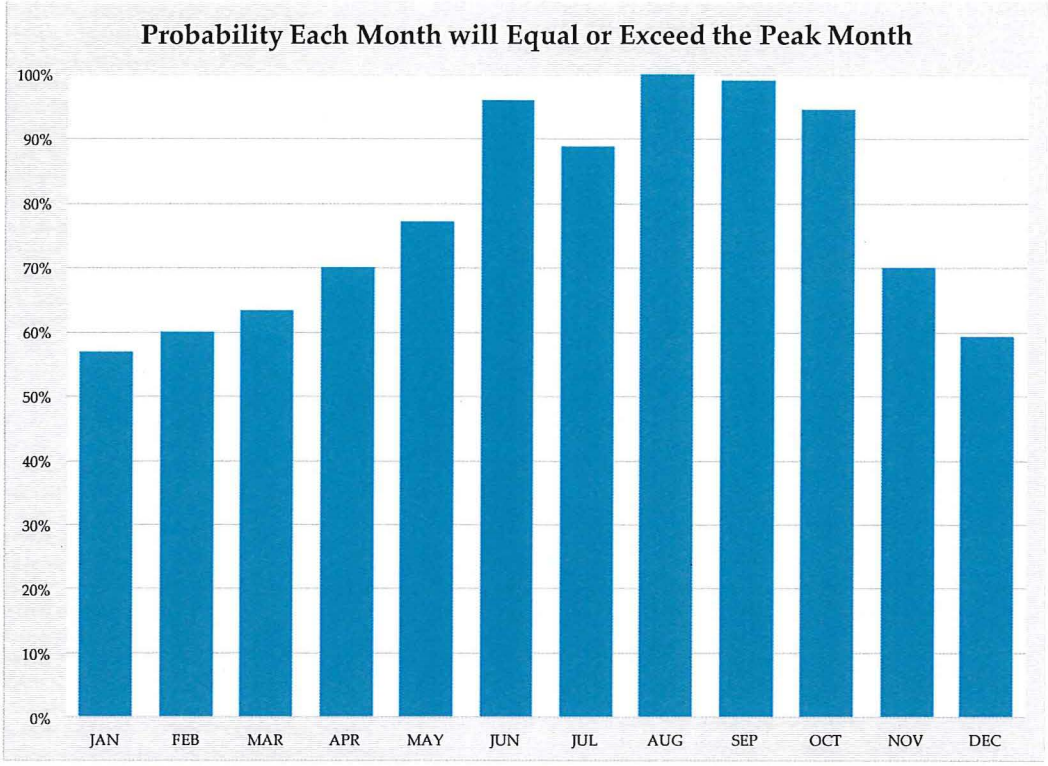
301 A. We analyzed historical hourly loads and projected Marginal Energy Costs ("MEC").

302 **A. <u>Analysis of Seasonality</u>**

303 Q. **Please describe the analysis of seasonality.**

304 A. Navigant's analysis of historical seasonal loads was performed on hourly load data for
305 the time period 2008 through 2014. We determined the normal probability that a given
306 month would be the peak load for the year. The results of the statistical analysis indicate
307 that the months of June through October, excluding July, demonstrate a normal

probability exceeding 90% that a peak will occur. The figure below illustrates the results of this analysis.




Q. **Do you feel that the evidence in the study would support the creation of a high cost season for electric tariffs?**

A. Some evidence exists, but it is not a strong argument for the creation of a high cost season. The high costing period season would capture five of twelve months.

Q. **Does evidence exist which would support a higher energy price for the June through October time periods?**

A. The differences between the MEC for June through October versus November through March are shown in the table below:

| | June through October | November through May |
|---|---|---|
| **Average Marginal Energy Cost** | **$71.19** | **$66.05** |

319

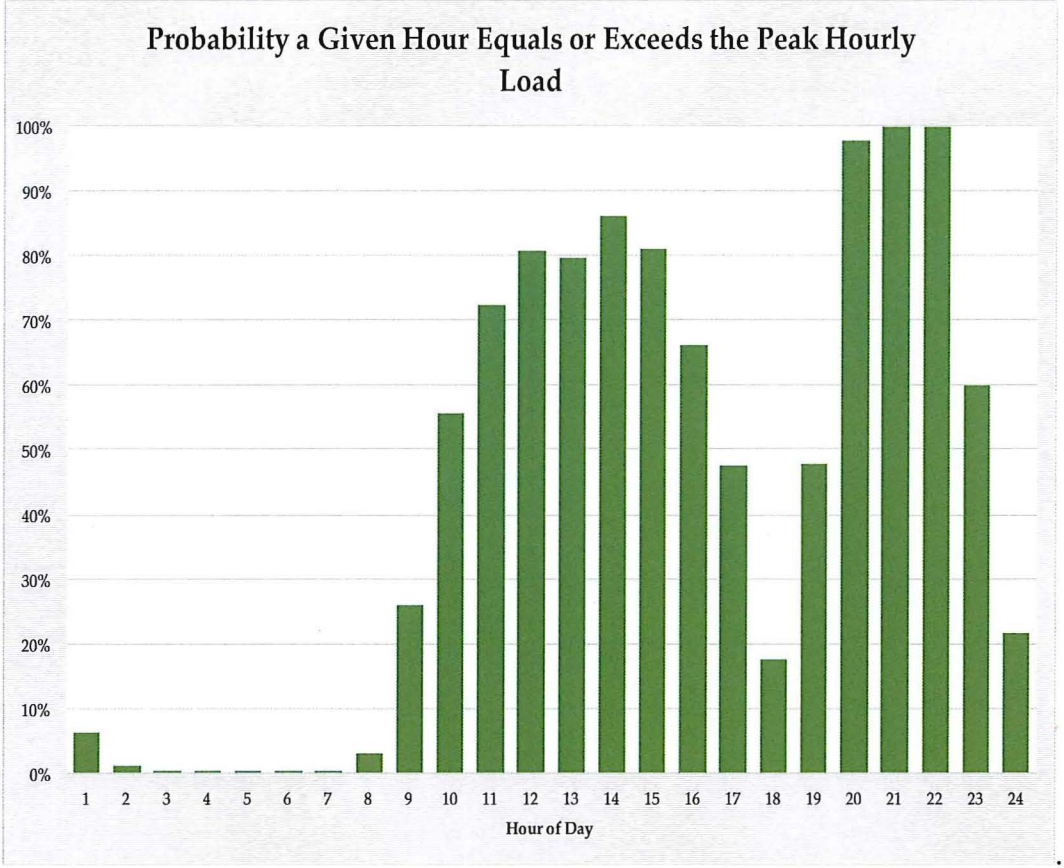
320 **B. Time-Of-Use Analysis**

321 Q. **Have you performed a Time-Of-Use analysis of loads and MEC?**

322 A. Yes. The analysis adopted the same hypothesis analysis approach previously described
323 in the seasonality analysis.

324 Q. **Please describe the results of your analysis?**

325 A. PREPA's daily loads have two peaks. The first occurs in midafternoon (H14) and the
326 second in the evening (H21) with the evening load being the higher of the two.
327 Therefore, an on-peak time period can be either broadly defined as H10 through H23 or
328 narrowly defined as H20 through H22.

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330 Q. **Have you analyzed MEC for on-peak versus off-peak time periods as defined above?**

331 A. The table below shows the average MEC for the broad and narrow time periods as

332 defined above.

| | On-Peak | Off-Peak |
|---|---|---|
| **Average MEC – Narrow On-Peak of H20-H22** | **$85.95** | **$65.18** |
| **Average MEC – Broad On-Peak of H10-H23** | **$72.92** | **$60.59** |

333

334 Q. **What are your recommendations regarding the definition of an on-peak time**
335 **period?**

336 A. We are reticent to recommend the broad definition of an on-peak time period due to the
337 rapid increase of rooftop photovoltaic ("PV") generation. If the current PV growth trend
338 continues, it is possible the peak in loads which occur earlier in the day (i.e., H10 through
339 H17) could be significantly depressed.

340 There is an argument for a narrower definition of on-peak periods.

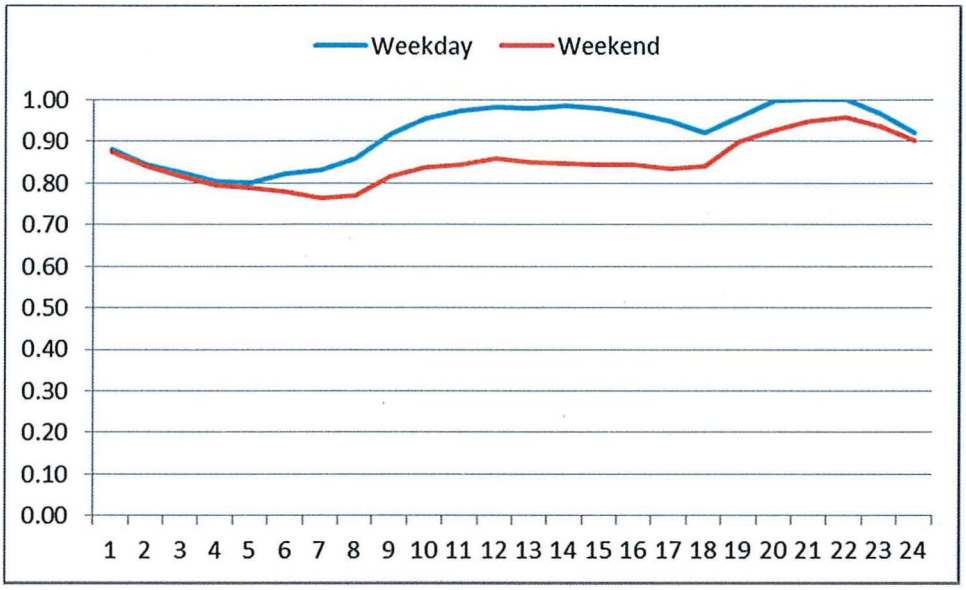
341 **C. Analysis of Weekends Versus Weekdays**

342 Q. **Have you performed an analysis to support or reject a price differential for**
343 **weekdays versus weekends?**

344 A. Yes. We used approaches similar to those used for the seasonality analysis discussed
345 above using hourly loads.

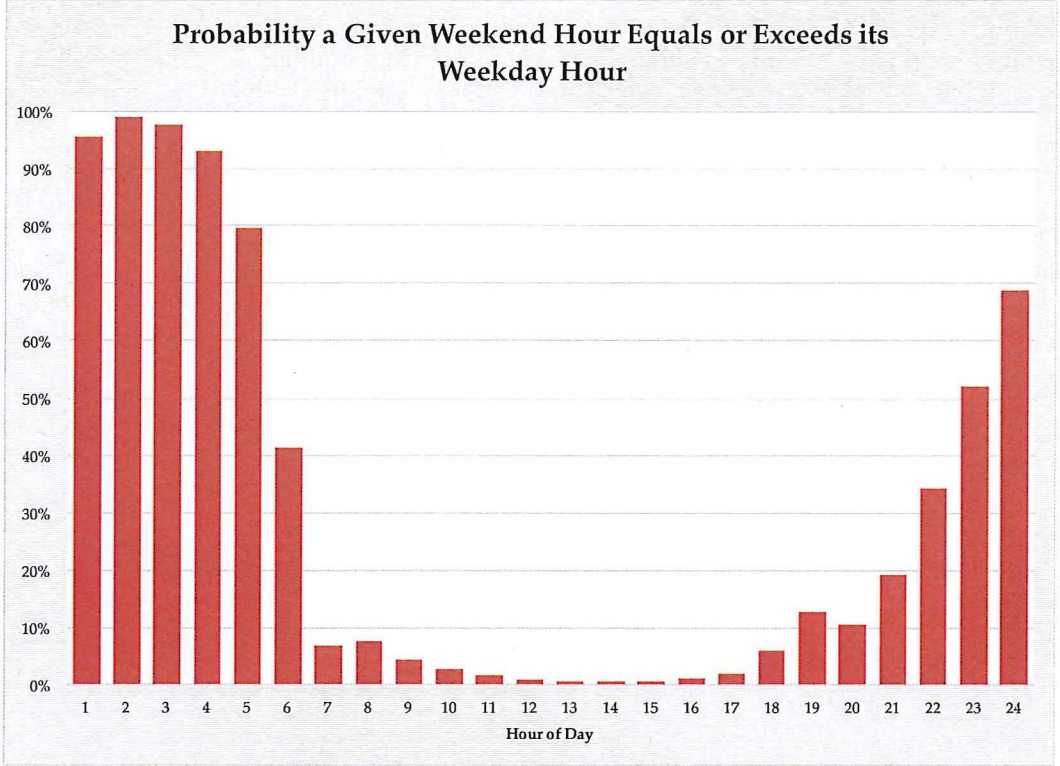
346 Q. **Please summarize your findings.**

347 A. The figure below illustrates the compares the unitized load profiles for weekdays versus
348 weekends.




Inasmuch as the general load shapes of weekdays versus weekends are similar during most weekend hours (with the exception of overnight hours of H24 through H5) are below that of weekdays.

We performed a second test of the weekend time periods which calculated the normal probability that hours during a narrowly defined on-peak time period would equal the daily peak. The results of the normal probability analysis are shown in the figure below and indicate the difference in the weekday versus weekend loads are not different on a statistical basis.




358

359 Q. **Do you recommend that weekends be considered on-peak or off-peak?**

360 A. Again, the evidence in not compelling. Inasmuch as during a significant part of the days
361 the hourly weekend loads are below that of a weekday the difference in the weekend and
362 weekday peak hour is not statistically significant which would therefore imply that no
363 difference in the peaks exist.

364 **D. <u>Conclusions</u>**

365 Q. **What are your final recommendations regarding the Rating Period Analysis?**

366 A. We are recommending no changes at this time for the following reasons:

367 1. The evidence supporting specific definitions for a seasonal and TOU period is not
368 compelling. Inasmuch as some evidence exists it is not extremely strong.

2. Puerto Rico is experiencing significant growth in the installation of photovoltaic distributed energy resources ("DER"). If this trend continues, the seasonal and diurnal load shapes could significantly change, which would in turn potentially change the shapes of the MEC. As a result, any definitions implemented as a result of this proceeding would potentially need to be changed in the next several years, triggering costs for both PREPA and its customers.
3. PREPA is proposing a number of significant changes in its pricing design as is detailed below. Because the evidence for implementing seasonal and TOU pricing differentials is not compelling, we recommend that the universal introduction of seasonality and TOU pricing differential be deferred until the rate proceeding.
4. We recommend that the existing TOU tariffs, TOU-P and TOU-T, be retained until the next full rate proceeding.

We therefore suggest that a new Rating Period Study be performed in PREPA's next rate request.

## IV. MITIGATION OF THE RATE INCREASES

Q. **Does Navigant propose to adopt the revenue allocations produced in the ECOSS when preparing the proposed tariffs?**

A. No. We propose to mitigate the revenue allocations for the following reasons:

1. As previously discussed, many of the data inputs used in the ECOSS were estimated due to data being dated or unavailable. Inasmuch as it is Navigant's opinion that the studies provided in this proceedings are fair and the best quality

given PREPA's circumstances, we recognize that better information may be available in the future which could possibly change the results of this study.

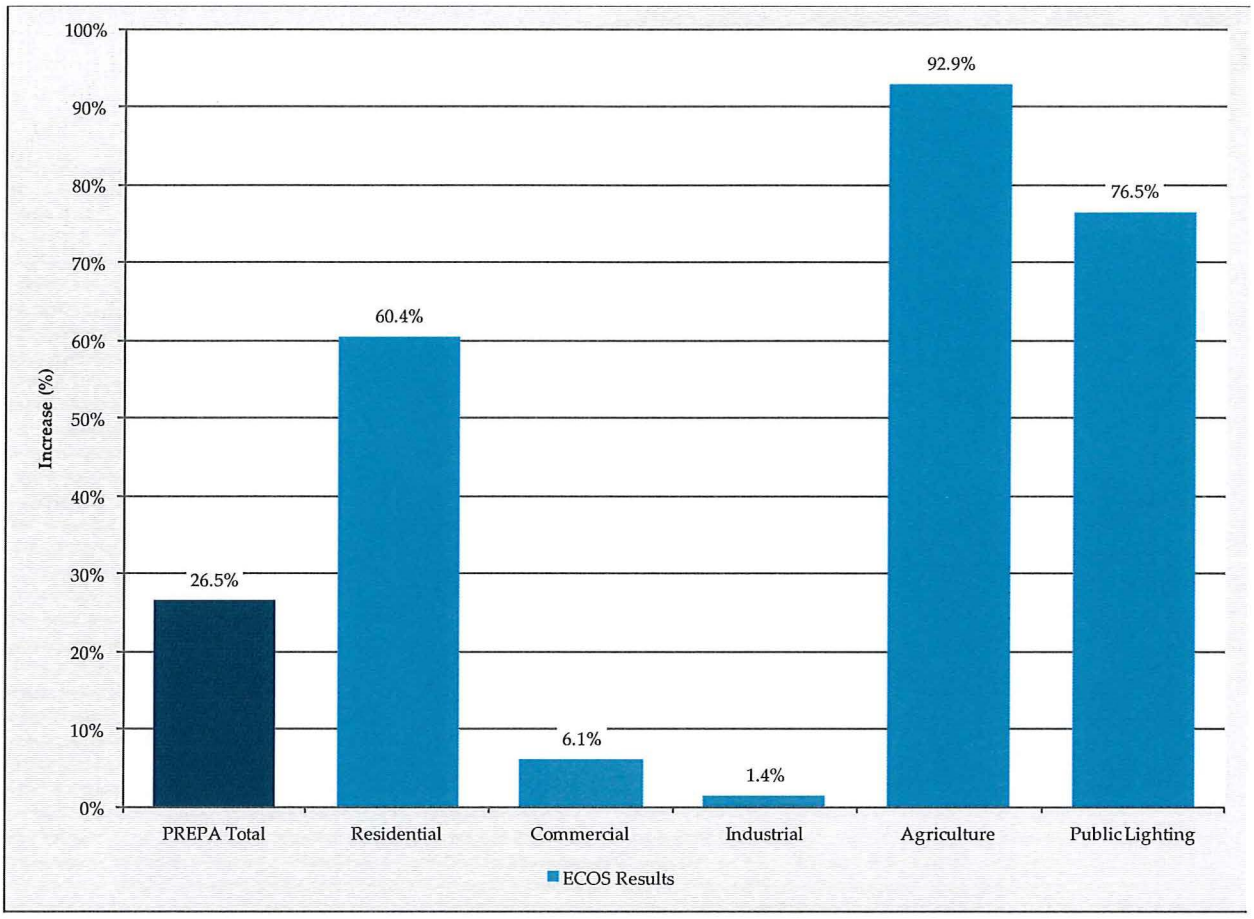
2. Ratemaking principles recognize that gradualism generally is required when significantly moving tariff classes closer to cost of service. It has been over a quarter century since a complete PREPA base rate change has occurred and many of the proposed changes to certain tariffs, especially residential customers, are too large to be accomplished in a single proceeding.

We therefore propose that the revenue allocations produced by the ECOSS be significantly mitigated.

Q. **What approach have you developed to allocate the revenue requirement to each tariff class?**

A. We have developed the following process to allocate the revenue requirement:

1. Adopt the Results of the Embedded Cost of Service Study. The process began by adopting the ECOSS target revenues by customer class as previously discussed. The results are demonstrated below in the figure below.



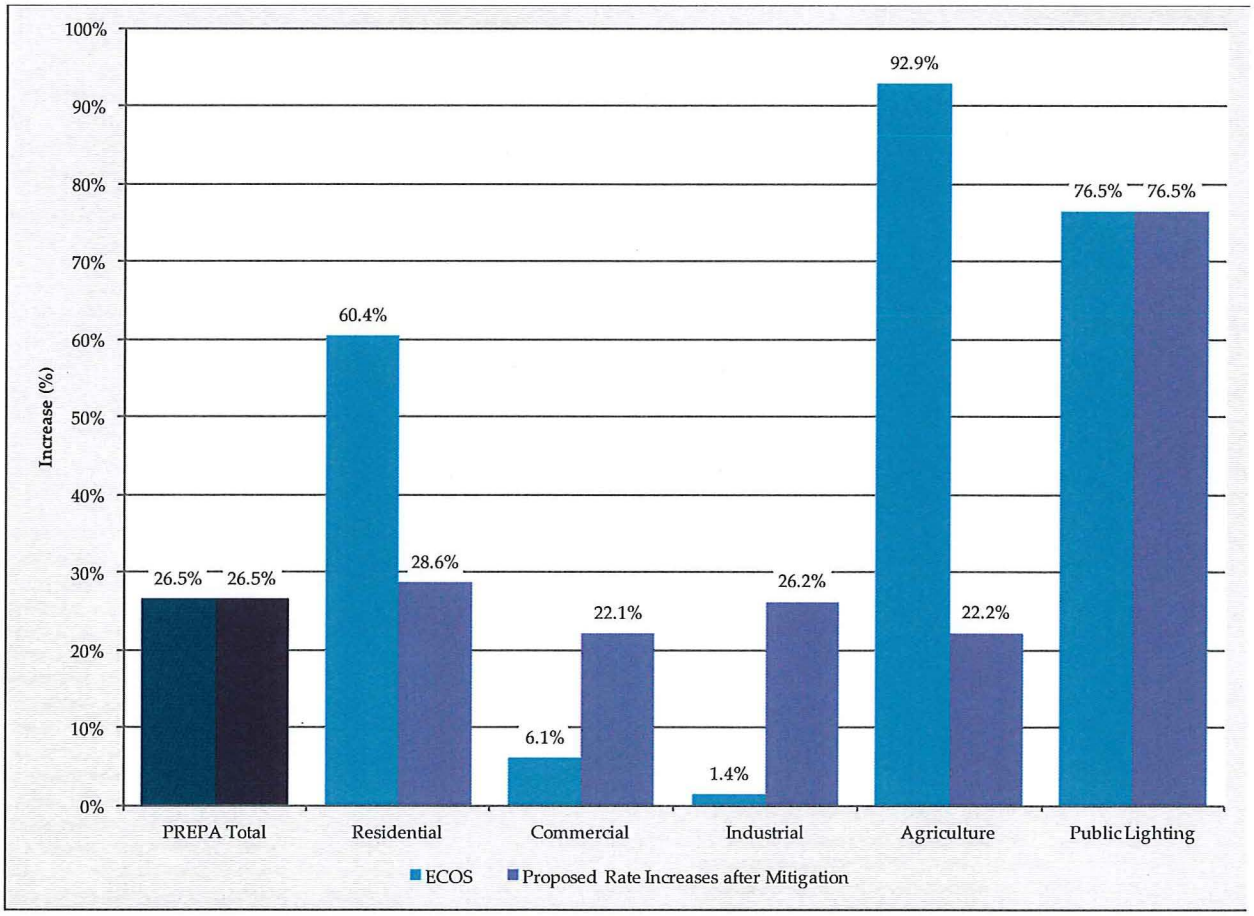

2. Remove the Securitization Revenue Requirement from the Total Revenue Requirement. The Transition Charges involve a reconciling clause with its own true-up mechanism, so any over- or under-collection should have no impact on PREPA's own revenues.

3. Public Lighting tariffs were moved to Full Cost of Service. Public Lighting is a subsidized class, and therefore required a redistribution of the overall revenue requirement. Therefore, adverse customer impacts are artificially high.

4. Eliminate any Decreases Justified by the Embedded Cost of Service. If any classes required a decrease in overall rates those decreases were eliminated. The

resulting dollars were allocated by kWh to the other classes (namely, Residential and Agricultural).

5. Establish Mitigation Limits for Rate Increases. Finally, the total Residential class increase was limited to within 5 percent of the total increases of the other customer classes.




**Q. What threshold was chosen to determine the maximum rate increase by customer class?**

A. It was determined that residential customers should not experience an increase that was more than 5 percent in excess of that provided to the non-lighting customer classes. The

426 5 percent threshold was chosen based upon judgment and reflects the opinions of
427 PREPA's management, the experience of the Navigant team, and socio-economic factors
428 on the island.

429 Q. **What are the resulting revenue adjustments proposed in your pricing design?**
430 A. PREPA Schedule H-1a provides the proposed adjustments in the level of revenues by
431 customer class. PREPA Schedule H-1b provides the proposed adjustments in the level of
432 revenues by tariff.

433 **V. <u>TARIFF UNBUNDLING</u>**

434 Q. **Please describe tariff unbundling.**
435 A. Tariff unbundling is the process of splitting a tariff into various cost elements. At a high
436 level, cost elements generally follow the functions of an electric utility (i.e., generation,
437 transmission, and distribution) but are often extended to subcomponents of each function.

438 Q. **Why are tariffs unbundled?**
439 A. Different customers purchase different services from the utility. Tariffs are unbundled in
440 order to match the services which a customer receives with the revenues they pay to the
441 utility.

442 Q. **Has PREPA traditionally unbundled its tariffs?**
443 A. Some limited unbundling has already occurred. Customers served under primary and
444 transmission tariffs (e.g., GSP, GST, LIS) are served under tariff designs which unbundle
445 the demand and energy charges.

Q. **What is the advantage of unbundled tariffs?**

A. Unbundled tariffs have the following advantages:

1. The price signals sent to customers are improved. The customer can make informed decisions about consuming one more or less of a component of electric service.
2. Cross-subsidization problems are reduced. A bundled tariff provides greater ability for cross-subsidization compared to an unbundled tariff. The rationale for the reduction in cross-subsidization is customers are purchasing a quantity of a specific good (e.g., energy) without purchasing the other component of electric service (e.g., capacity).

Q. **Has tariff unbundling become more important in the past several years?**

A. Yes. Several decades ago when PREPA's tariffs were last redesigned, the utility was essentially the sole provider of electric service to customers. However, with the passage of time, customers have been provided other options for receiving all or a portion of their electric service. Therefore, unbundling of tariffs is necessary in order to properly price the subcomponents of electric service used by each customer and avoid cross-subsidization.

Q. **Can you provide examples of tariff unbundling which has been adopted in the electric power industry?**

A. Yes. The following are examples of tariff unbundling for electric service in the United States.

1. In 1996, the Federal Energy Regulatory Commission ("FERC") issued the groundbreaking "Order 888" which mandated that all jurisdictional electric utilities offer wholesale transmission access to all market participants. Previously most wholesale transactions bundled generation and transmission service. Order 888 required that jurisdictional utilities unbundle generation and transmission service and file with the FERC Open-Access Transmission Tariffs ("OATT") which allowed wholesale customers to unbundle transmission service from generation service thus facilitating the development of competitive wholesale markets. Further, the FERC recognized that customers purchasing only transmission services may be required to use certain "ancillary services" may be provided by the generation function which is an example of further bundling.
2. On the U.S. mainland, seventeen (17) jurisdictions have adopted retail electric open-access which enables end-users to procure generation services from third party providers. In order to facilitate these transactions, each jurisdiction was required to unbundle tariffs in order to separate the generation component(s) from the other tariff components.

Q. **How did you unbundle the PREPA tariffs?**

A. A separate ECOSS was performed excluding the expected Transition Charges revenues (including lag). Specifically, the total revenue requirement is $3,462,194,772 including the Transition Charges of $503,264,236. The new ECOSS is based upon a total revenue requirement of $2,958,930,536.

Q. **How was mitigation addressed when setting unbundled charges?**

A. An exercise in 100% cost-based unbundling would have ignored the mitigation which was previously discussed. For example, a cost-based unbundling of Tariff GRS (discussed later in our testimony) would result in $0.11527/kWh for Production, $0.00993/kWh for Transmission, and $0.07545/kWh for Distribution, totaling $0.20065/kWh. This exceeds the mitigated average price of $0.17409/kWh. The following process was followed to accomplish the unbundling:

1. CILT and Subsidies were subtracted from the average prices of $0.17409/kWh.
2. The ratio of the unmitigated G/T/D functional prices were used to determine how to split the remainder of the revenue requirement per kWh less CILT and subsidy charges ($0.16086/kWh).
3. The resulting unbundled tariff prices are $0.09241/kWh for Production, $0.00796/kWh for Transmission, and $0.06049/kWh for Distribution[2].

The example above is our unbundling approach for a tariff with only an energy and fixed charge. For tariffs which include demand charges, we used the Demand classes of Production Demand, Transmission Demand, and Distribution Demand to set the ratios.

## VI. CUSTOMER CREDITS FOR DISTRIBUTED ENERGY RESOURCES

Q. **What challenges does PREPA face in developing a tariff which compensates customers for operating DER?**

A. Act 57 and Act 4 reflect a policy that PREPA promote distributed / renewable resources. However, Act 57 and Act 4 also reflect a general policy that tariffs should be cost-based while also avoiding cross-subsidies, albeit along with other policies, some of which are

[2] Direct Assignment was grouped in within the Distribution function.

competing. Therefore, a pricing strategy has been developed which complies with the above competing goals.

Q. **Please describe the challenges faced when developing pricing for DER?**

A. There are several challenges.

1. Customers without DER are subsidizing customers with DER. As is shown in PREPA Ex. G-1 of the ECOSS, the required increased for Tariff GRS 112 customers, under which a typical residential customer would fall, with DER is 538 percent compared to 47 percent for those customers without DER.
2. Most of PREPA's tariffs are bundled and DER customers require unbundled service because they are serving some of their needs with the DER. However, the price signal from the bundled tariff does not differentiate those products which are needed and unneeded, which triggers cross-studies which could negatively impact both participating and non-participating customers.
3. Many of the DER technologies which are being installed (e.g., photovoltaic) are intermittent in nature and therefore needs firm capacity to back up the service provided by these units.
4. The costs of distribution and transmission systems are currently bundled with generation costs. Therefore, no mechanism exists to properly compensate the utility (and thus avoid cross-subsidies from other customers) for the costs incurred by these customers.

Q. **What are the potential solutions which PREPA could adopt in regard to DERs?**

A. Some potential solutions are as follows:

1. Generation operating behind the meter avoids the incremental cost of the tariff under which the customer is served. In the case of tariffs with very high volumetric charge such as Tariff GRS, the compensation provided to consumers could be as high as $0.17409[3] cents per kWh.
2. PREPA could adopt an avoided cost standard such as is articulated in the Public Utilities Regulatory Policy Act of 1978 ("PURPA"). PURPA specified that Qualifying Facilities ("QF") be paid avoided costs. Testimony sponsored by Mr. Shlatz for the marginal cost study (PREPA Ex. 9.0) has provided estimates of marginal costs which, for a high load factor customer, could range from $0.081/kWh to $0.090/kWh based upon voltage.

Q. **What is the proposed solution for non-renewable DER equipment?**

A. Consistent with PURPA we propose that PREPA adopt an avoided cost standard consistent with PURPA for electric generation. Generators would be compensated based upon avoided cost. The avoided cost calculation would include a component equal to avoided energy costs, avoided generation capacity costs and avoided distribution capacity costs.

Q. **What is the primary advantage of an avoided cost standard?**

A. The primary advantage of an avoided cost standard is that participating customers are provided a level of compensation equal to the avoided cost of the utility which avoids cross-subsidization. A level compensation in excess of avoided cost would trigger increased costs to non-participating customers.

[3] This value includes CILT and Subsidies.

Q. **Do any shortcomings exist to using the avoided cost standard?**

A. It could be argued that the avoided cost standard undercompensates DER operators because:

1. The price signal for generation is short-run and will not sustain new investment,
2. Environmental externalities are ignored if the cost of externalities is not captured in the avoided cost estimates, and
3. The cost of the transmission and distribution system are ignored.

Q. **Are the avoided costs which have been adopted from the marginal cost study short-run estimates?**

A. No, they are long-run. The capacity component of generation, transmission, and distribution costs have been included in the estimates. For reasons discussed below, transmission expenses have not been included. The energy costs reflect the expected MEC for FY 2017. Our proposal is to update the MEC annually to reflect electric market conditions.

Q. **Were the marginal costs of transmission and distribution included in the avoided cost estimates?**

A. The avoided cost of transmission is zero, which is explained in Mr. Shaltz's testimony. However, an marginal distribution cost of $35.63/kW-yr has been included in the avoided cost estimate.

Q. **What is your proposal for providing a credit for customers operating renewable DER?**

A. PREPA faces a different legal standard from renewable resources. In brief, PREPA is required to support the development of these resources. We therefore propose a full credit equal to each customer's energy charge (excluding CILT, Subsidies, and Securitization). These credits are demonstrated in each rate-specific tariff below[4].

Q. **Given the level of compensation afforded these customers what impact will the net metering customers have on other customers?**

A. Net metering customers will increase the rates to non-participating customers. The reason for the increased rate pressure is that the level of compensation afforded these customers exceeds the costs which the balance of the customers are avoiding.

Q. **How significantly are NEM customers being subsidized using the proposed credit?**

A. Using Tariff GRS as an example, the total subsidy for NEM customers is $0.07086/kWh, which is the GRS energy charge of $0.16086/kWh minus the upper bound of the marginal energy cost of $0.090/kWh, representing a 79[5]% premium which would need to be recovered from other customers. The lifecycle cost of a rooftop photovoltaic unit is estimated to be $0.1478/kWh.

Q. **Do you recommend that the cost recovery for the excess compensation for NEM customers be recovered in any specific manner?**

A. Yes. The excess of the compensation above avoided cost should be recovered through the subsidies rider. Our rationale for this treatment is to explicitly recognize that the

[4] LRS, RFR, and RH3 customer classes were excluded from Net Metering, as they are low income customers who are already being heavily subsidized.

[5] 0.16086/0.090 = 1.79.

premium paid over avoided cost is triggering cost shifting to other customer groups which is increasing their average price.

Q. **Do you believe that the current NEM pricing policy should be continued in the future.**

A. No. The policy is providing compensation to customers for the unbundled cost of transmission which has a marginal cost of zero and the unbundled cost of distribution which has a marginal cost which is less than the avoided cost. These network costs should be non-bypass able. NEM customers are using these systems but allowed to avoid payment for these assets. The current policy will not provide for the economic sustainability of PREPA and triggers cross-subsidies to other customers.

## VII. OTHER TARIFF PROPOSALS

Q. **Are you proposing any new tariffs?**

A. We are proposing two riders which are designed to encourage economic growth in Puerto Rico and to retain / get back load which is lost due to non-economic bypass.

Q. **Please describe the economic development rider.**

A. The economic development rider would provide a negotiated discount for a period of three to five years in exchange for creating new jobs on the island.

Q. **How would the discount be determined?**

A. We recommend that the level of discount be negotiated and driven by the level employment created and the cost to serve the load.

Q. **Would the Energy Commission be allowed to review the proposed discount?**

A. Yes. PREPA would not be allowed to implement the tariff until it is reviewed and approved by the Energy Commission.

Q. **Please describe the load retention rider?**

A. PREPA's average cost are significantly above their marginal costs. Therefore, any new load reduced average costs to all customers. Conversely, if load is lost a high probability that costs will increase to all customers. As a result, the PREPA desires to have the flexibility to selectivity discount tariffs is a verified risk can be demonstrated that load will be lost.

Q. **Please describe the process that PREPA will follow.**

A. The process that PREPA will follow is described below:

1. After a threat of loss of load has been identified PREPA will prepared a detailed analysis of the cost of service the incremental load. Marginal cost analysis would be used to perform the analysis.
2. The revenues the customer would pay under existing tariffs would be quantified and compared to the cost to serve that load.
3. The cost of the customers' bypass threat would be estimated. The bypass threat could be any number of technologies and would be specific to each customer.
4. The necessary discount would be negotiated with the customer by PREPA and filed as a confidential document with the Energy Commission. The Energy Commission would review the submission and rule on its validity. If approved, the negotiated discount would be implemented by PREPA.

635 Q. **Is PREPA also submitting any rider at the direction of the Commission?**

636 A. Yes, an energy efficiency rider.

637 Q. **Please describe the energy efficiency rider.**

638 A. The Energy Commission has requested that PREPA submit such a rider in our rate
639 request. We have complied to the best extent possible given the limited amount of
640 information on any energy efficiency programs which will ultimately be implemented.

641 Q. **How will the rider operate?**

642 A. For any costs incurred for energy efficiency programs, PREPA will be able to recover
643 those costs, plus working capital, on a cash basis. The rider will reconcile quarterly in
644 conjunction with the fuel and purchased power cost adjustments

645 Q. **PREPA currently provides a fuel oil subsidy for certain low-usage residential**
646 **customers. How is it incorporated into your proposed rate design?**

647 A. PREPA currently provides a fuel oil subsidy for select residential customers. While we
648 do not propose changing which customers receive this subsidy, we do believe the subsidy
649 structure could be simplified.

650 PREPA's current structure provides a different level of subsidy based on the
651 usage up to 425kWh. The subsidy decreases as customer usage increases. Any user
652 between 400kWh and 425kWh are required to receive the same total $ subsidy. Navigant
653 believes that the current system of a graduated subsidy is complex and difficult to
654 administer. Therefore, it is proposed to apply a 34 percent discount to fuel costs for all

customers using less than 400 KWH. For customers using between 400 and 425 KWH will receive the same discount on a dollar basis as a customer using 400 KWH.

## VIII. PROPOSED TARIFF DESIGNS

Q. **Have you prepared a proposed Base Rate Pricing Design for PREPA?**

A. Yes. The proposed Base Rate Pricing Design for each tariff is detailed in PREPA Schedules H-2 and H-3, which is a proposal based upon the revenue requirement associated with the restructuring. An alternative rate design is included as PREPA Schedule N-1, which is based upon the non-restructuring revenue requirement.

Q. **Would you please describe the current tariffs?**

A. The existing tariffs are antiquated and do not reflect the existing cost structure of the utility. This shortcoming triggers the inefficient consumption of electric power by PREPA's customers which in the long-run increases costs.

Q. **When was the last tariff review performed by PREPA?**

A. We are informed by the management of PREPA that the last change to tariffs occurred in 1989. However, that adjustment did not address the structure of the tariffs but simply changed the level of the charges. The last time the structure of the tariffs was updated was 1979.

Q. **What process did you follow to update the tariffs?**

A. The process we followed (this work generally was performed in the first instance by Mr. Zarumba) is summarized below:

5. Review existing tariff structures. We made a complete review of the existing tariffs structures, their design and determined the type(s) of customers served.
6. Determined revenue sufficiency. We compared the revenues produced by each tariff with the results of the ECOSS.
7. Evaluated the pricing design of each tariff with the results of the Marginal Cost study. We used the marginal cost study to provide information on the economic cost to serving customers, the appropriateness of the tariff element design and price level.
8. Develop proposed tariffs. We developed proposed tariffs based upon the analyses described above. After the initial proposals were developed, we performed detailed rate impact studies based, evaluated the results and adjusted the tariff design as appropriate.

Q. **Have you considered using fixed charges to pay PREPA's obligations to bondholders?**

A. Yes, Schedule L-1 is included where PREPA's obligations to bondholders are allocated to all customers by non-CILT kWh Sales. For non-residential customers a volumetric charge was created, and for residential customers a per-service-agreement charge was created. We did not adopt this concept for rate design.

## A. Tariff Design Proposals

Q. **Please list the tariff designs you have included in your testimony.**

A. The tariff designs we have provided are as follows:

1. Schedule M-1. A rate design which adopts a fixed monthly charge equal to the incremental cost to serve that customer; demand charges where appropriate; and energy charges to recover the balance of the revenue requirement.
2. Schedule M-2. An unbundled rate design proposal. PREPA's actual proposal includes unbundling, along with other features, as we discussed earlier.
3. Schedule M-3. The tariff design proposed by PREPA.
4. Schedule N-1. The proposed tariff design assuming that a Formula Rate Mechanism is not adopted. This scenario assumes that the restructuring agreement has been rejected because formula ratemaking is a requirement of the Restructuring Support Agreement ("RSA").

Please note that the following discussion of the proposed rate design thus applies to Schedule M-3.

## B. Tariff GRS

Q. **What is Tariff GRS?**

A. Tariff GRS is PREPA's general service tariff applicable to residential (i.e., domestic) customers that have not been placed into a residential Lifeline tariff. Tariff GRS currently captures approximately 86 percent of residential sales as measured in kWh, as well as approximately 31 percent of all sales as measured in kWh. Encompassing 76% of customers, GRS is PREPA's largest tariff by both customers served and kWhs sold.

Q. **Please describe the existing design of Tariff GRS.**

A. Tariff GRS contains a fixed charge of $3.00 per month, a first block energy charge of $0.04350 for the initial 425 kWh used, and a second block energy charge of $0.04970 for

all consumption in excess of 425 kWh. The FCA and PPCA apply to this tariff, and are accounted for by varying volumetric charges, depending on market pricing of fuel. A subset of GRS customers receive the fuel oil subsidy.

Q. **Please provide your assessment of the design of Tariff GRS.**

A. No rationale exists for the inverted energy charge. The energy charges, for both the first and second blocks, are significantly in excess of the bundled marginal cost to serve these customers when the existing FCA and PPCA are included.

Q. **What is the proposed Tariff GRS design?**

A. Inasmuch as the ECOSS indicates that an increase of 50 percent is justified for this tariff class, such an increase would trigger significant rate shock for these customers. Therefore, a rate increase of 28.6 percent, including the Transition Charge, is proposed for these customers, after adopting the aforementioned mitigation approach.

The initial Transition Charge for residential customers is proposed to be $11.98. Due to this large fixed charge, the existing fixed charge for the GRS class has been removed entirely. However, if the Energy Commission rejects or alters the SPV proposal, PREPA may wish to revise our residential rate design. Further, even if the Energy Commission accepts the Company's proposal we find it reasonable to include a fixed charge in base rates in the future.

Additionally, we see no cost justification to the inverted block rate design because the prices necessary to recover the revenue requirement significantly exceed bundled marginal cost. For example, the marginal cost at a secondary voltage is $0.093/kWh.

Instead, we propose a single energy charge which captures the average cost of fuel and purchased power in the test year. This charge will be further unbundled to show the exact volumetric charge for each energy piece, which includes generation, transmission, and distribution. The resulting all-in energy charge is $0.16086 per kWh. On their bill, the customer will see a $0.09242 per kWh Generation Energy Charge, a $0.00796 per kWh Transmission Energy Charge, and a $0.06050 per kWh Distribution Energy Charge.

Finally, there will be a small volumetric charge for both CILT and Subsidies, which will be priced at $0.00303 per kWh and $0.01020 per kWh, respectively.[6]

Q. **Have you estimated customer impacts based upon the proposed rate design?**

A. Yes. Detailed rate impacts have been calculated for all customers. The results of this analysis are detailed in PREPA Schedule H-4a.

## C. Tariff RH3

Q. **What is Tariff RH3?**

A. Tariff RH3 is PREPA's tariff applicable to Government administered residential Public Housing use. There are two sub-classes of the RH3 tariff, one pertaining to customers which consume over 425 kWh a month, and another that pertains to customers with a subsidized cost of fuel that consume less than 425 kWh a month.

Q. **Please describe the existing design of Tariff RH3.**

[6] Earlier in our testimony, we described the revised FCA and PPCA mechanisms. We will not repeat that discussion in Section VIII(B) through (R) of our testimony.

A. Tariff RH3 contains a fixed charge of $2.00 per month, a first block energy charge of $0.00100 for the initial 425 kWh consumed, and a second block energy charge of $0.03300 for all consumption in excess of 425 kWh. The FCA and PPCA apply to this tariff, and are accounted for by varying volumetric charges, depending on market pricing of fuel. All RH3 customers with usage under 425 kWh receive the fuel oil subsidy.

Q. **Please provide your assessment of the design of Tariff RH3.**

A. Tariff RH3 is a lifeline tariff provided to low income customers. An inverted block rate design is appropriate because it would be undesirable to offer a discount for unlimited usage.

Q. **What is the proposed Tariff RH3 design?**

The proposed RH3 tariff will retain the inverted block structure, with a first block energy charge of $0.10211 for the first 425 kWh, and a second block charge of $0.16086 for all consumption in excess of 425 kWh. The second block energy charge is set to the GRS fully bundled energy charge. These two charges will include the FCA and PPCA. Additionally, the existing fixed charge of $2.00 will be removed, as the residential transition charge is expected to be $11.98 a month. Finally, RH3 will also have a CILT charge of $0.00303 per kWh. RH3 will incur no subsidy charge due to their status as a lifeline class.

Q. **Have you estimated customer impacts based upon the proposed rate design?**

A. Yes. Detailed rate impacts have been calculated for all customers. The results of this analysis are detailed in PREPA Schedule H-4b.

## D. Tariff LRS

**Q. What is Tariff LRS?**

A. Tariff LRS is PREPA's tariff applicable to residential customers who fulfill the Nutritional Assistance Programs. There are two sub-classes of the LRS tariff, one pertaining to customers with a subsidized cost of fuel which must consume under 425 kWh a month, and another that pertains to customers with no consumption limitations.

**Q. Please describe the existing design of Tariff LRS.**

A. Tariff LRS contains a fixed charge of $3.00 per month, a first block energy charge of $0.01460 for the initial 425 kWh and a second block energy charge of $0.04970 for all consumption in excess of 425 kWh. The FCA and PPCA apply to this tariff, and are accounted for by varying volumetric charges, depending on market pricing of fuel.

**Q. Please provide your assessment of the design of Tariff LRS.**

A. Similar to tariff RH3, tariff LRS is a lifeline tariff provided to low income customers. An inverted block rate design is appropriate because it would be undesirable to offer a discount for unlimited usage.

**Q. What is the proposed Tariff LRS design?**

The LRS proposed class Tariff will retain the inverted block charge structure, with a first block charge of $0.13239 for the first 425 kWh, and a second block charge of $0.16086 for all consumption in excess of 425 kWh. The second block energy charge is set to the GRS fully bundled energy charge. These two charges will include FCA and PPCA. Additionally, the existing fixed charge of $3.00 will be removed, as the residential

transition charge is expected to be $11.98 a month. Finally, LRS will also have a CILT charge of $0.00303 per kWh. LRS will incur no subsidy charge due to their status as a lifeline class.

Q. **Have you estimated customer impacts based upon the proposed rate design?**

A. Yes. Detailed rate impacts have been calculated for all customers. The results of this analysis are detailed in PREPA Schedule H-4c.

## E. Tariff RFR

Q. **What is Tariff RFR?**

A. Tariff RFR is PREPA's tariff applicable to customers that live in public housing under the Public Housing Administration and decide to apply for a low-income fixed rate. There are three sub-classes of tariff RFR, one of which pertains to customers that live in one room housing, another pertains to customers that live in two-three room housing, and the final sub-class pertains to four or five room housing.

Q. **Please describe the existing design of Tariff RFR.**

A. Tariff RFR contains separate rates for each of the tariff's three sub-classes, all of which contain identical structures of a fixed charge and an energy charge applied to energy consumption in excess of a predetermined amount. Tariff RFR 105 has a fixed charge of $30.00 per month and an energy charge of $.05 for all consumption in excess of 600 kWh. Tariff RFR 106 has a fixed charge of $40.00 per month and an energy charge of $.05 for all consumption in excess of 800 kWh. Tariff RFR 107 has a fixed charge of

820 $50.00 per month and an energy charge of $.05 for all consumption in excess of 1000
821 kWh. The FCA and PPCA do not apply to tariff RFR.

822 Q. **Please provide your assessment of the design of Tariff RFR.**
823 A. The structure of RFR is legislatively mandated. As a result, we have adopted the rate
824 designed mandated per legislation, with the exception of the transition charge, which has
825 been added.

826 Q. **What is the proposed Tariff RFR design?**
827 A. Per recent legislation, the RFR tariff will remain largely unchanged, as the fixed charges
828 and the kWh thresholds will be the same. However, each of the three sub-tariffs will now
829 have an excess energy charge that is equal to the fully bundled energy charge given to
830 GRS customers, which is $0.16086 per kWh. In addition, all excess kWh will include the
831 CILT charge of 0$.00303.

832 Q. **Have you estimated customer impacts based upon the proposed rate design?**
833 A. Yes. Detailed rate impacts have been calculated for all customers. The results of this
834 analysis are detailed in PREPA Schedule H-4d.

835 **F. <u>Tariff GSS</u>**

836 Q. **What is Tariff GSS?**
837 A. Tariff GSS is PREPA's tariff applicable to non-residential customers at a secondary
838 distribution voltage with an overall load that is less than 50 kVA. Tariff GSS currently
839 captures 12 percent of all sales as measured in kWh.

Q. **Please describe the existing design of Tariff GSS.**

Tariff GSS contains a fixed charge of $5.00 per month and a volumetric energy charge of $0.07670 per kWh. The FCA and PPCA apply.

Q. **Please provide your assessment of the design of Tariff GSS.**

*A.* Tariff GSS is serving an overly broad group of customers. An argument exists for it to be broken into multiple tariffs. However, information is not available at this time for an informed redesign of this tariff.

Q. **What is the proposed Tariff GSS design?**

A. The fixed charge for GSS will be increased from $5.00 to $10.00. Like tariff GRS, the GSS energy charges will be unbundled to show the charge for generation, transmission, and distribution. The all in energy charge of GSS will be $.17509 per kWh. On their bill, a customer will see a Generation Energy Charge of $0.10937 per kWh, a Transmission Energy Charge of $0.01092 per kWh, and a Distribution Energy Charge of $0.05480 per kWh. GSS will also pay a CILT charge of $0.00303, as well as a subsidy charge of $0.01020. Finally, GSS will pay the non-residential transition charge, which is estimated to be $0.03055 per kWh.

Q. **Have you estimated customer impacts based upon the proposed rate design?**

A. Yes. Detailed rate impacts have been calculated for all customers. The results of this analysis are detailed in PREPA Schedule H-4e.

**G. <u>Tariff GSP</u>**

Q. **What is Tariff GSP?**

A. Tariff GSP is PREPA's general service tariff for customers at primary distribution voltage. Tariff GSP currently captures 26 percent of all sales as measured in kWh, and is PREPA's second largest tariff.

Q. **Please describe the existing design of Tariff GSP.**

A. Tariff GSP contains a fixed charge of $200.00 per month, a first block energy charge of $0.03600 for the first 300 kWh per kW of max demand, and a second block energy charge of $0.02800 for consumption over 300 kWh per kW of max demand. The FCA and PPCA apply. GSP customers also pay a ratcheted demand charge of $8.10 per kVA, as well as an excess demand charge of $10.00 per kVA.

Q. **Please provide your assessment of the design of Tariff GSP.**

A. Our assessment is (1) the definition of the demand charge is overly complex and without cost justification, and (2) the load factor rate design for the energy charges is also without cost justification.

Q. **What is the proposed Tariff GSP design?**

A. The GSP fixed charge will remain at $200.00 per month. The inverted block charges will be removed, and replaced with a single energy charge of $0.11116 per kWh. GSP customers will also have a CILT charge of $.00303 per kWh, as well as the subsidy charge of $.01020 per kWh. The GSP demand charge will be unbundled into generation, transmission, and distribution, with charges of $7.79, $1.64, and $2.57 per kVA respectively. The demand charges will be based on un-ratcheted kVA per month, and

there will be no excess demand charge. GSP will also pay the non-residential transition charge, which is estimated to be $.03055 per kWh.

Q. **Have you estimated customer impacts based upon the proposed rate design?**

A. Yes. Detailed rate impacts have been calculated for all customers. The results of this analysis are detailed in PREPA Schedule H-4f.

## H. Tariff TOU-P

Q. **What is Tariff TOU-P?**

A. Tariff TOU-P is PREPA's time-of-use tariff for customers at primary distribution voltage.

Q. **Please describe the existing design of Tariff TOU-P.**

A. Tariff TOU-P contains a fixed charge of $200.00 per month, an on-peak energy charge of $0.05000 for on-peak kWh, and an off-peak energy charge of $0.01100 for all consumption of off-peak kWh. Tariff TOU-P also includes an on-peak demand charge of $8.10 per kVA during on-peak hours, and an off-peak demand charge of $1.10 per kVA during off-peak hours. The FCA and PPCA apply.

The on-peak period is currently defined as 9:00 a.m. to 10:00 p.m. during weekdays (Monday-Friday), excluding certain Holidays[7]. All other hours are defined as off-peak.

Q. **Please provide your assessment of the design of Tariff TOU-P.**

[7] This includes the following Holidays: New Year's Day; Three Kings Day; Good Friday; United States Independence Day; Constitution of the Commonwealth of Puerto Rico; Labor Day; Discovery of Puerto Rico; Thanksgiving Day; Christmas Day.

A. The definition of the on-peak period is inconsistent with the results of the aforementioned rating period analysis.

Q. **How do you recommend reconciling the difference between the rating period study and the on-peak period defined in TOU-P?**

A. Given the vastness of other changes, we recommend keeping the on-peak definition as is currently defined, but closing time of use tariffs to new customers. As mentioned in the rating period analysis, we would then re-evaluate this discrepancy in a later rate case.

Q. **What is the proposed Tariff TOU-P design?**

A. The TOU-P fixed charge of $200.00 per month will remain unchanged. The on-peak energy charge will be $0.10616, while the off-peak energy charge will be $0.09116. TOU-P will also pay the CILT charge of $0.00303 per kWh, as well as the subsidy charge of $0.01020 per kWh. The TOU-P demand charge will be unbundled into generation, transmission, and distribution, with charges of $7.79, $1.64, and $2.57 per kVA respectively. These are the same unbundled demand charges applied to GSP, and similarly to GSP, will be based on un-ratcheted demand, and will not include an excess demand charge. TOU-P will also pay the non-residential transition charge, which is estimated to be $.03055 per kWh.

Q. **Have you estimated customer impacts based upon the proposed rate design?**

A. Yes. Detailed rate impacts have been calculated for all customers. The results of this analysis are detailed in PREPA Schedule H-4g.

## I. Tariff GST

**Q. What is Tariff GST?**

A. Tariff GST is PREPA's general industrial service tariff for transmission customers. Tariff GST currently captures 19 percent of sales as measured in kWh.

**Q. Please describe the existing design of Tariff GST?**

A. Tariff GST contains a fixed charge of $450.00 per month, a first block energy charge of $0.02800 for the first 300 kWh per KW of max demand, and a second block energy charge of $0.02400 for consumption over 300 kWh per KW of max demand. The FCA and PPCA apply. GST also contains a demand charge of $7.70 per kVA, and an excess demand charge of $9.60 per kVA.

**Q. Please provide your assessment of the design of Tariff GST.**

A. GST is structurally identical to GSP and it suffers from similar shortcomings as described above.

**Q. What is the proposed Tariff GST design?**

A. The GST fixed charge of $450.00 per month will remain unchanged. The block structure energy charges will be removed, and replaced with a single energy charge of $0.10002 per kWh. GST will also pay the CILT charge of $0.00303 per kWh, as well as the subsidy charge of $0.01020 per kWh. The GST demand charge will be unbundled into generation and transmission, but there will be no distribution demand charge. Generation demand will be $7.79 per kVA, and transmission will be $1.64 per kVA. There will be no

excess demand charge. GST will also pay the non-residential transition charge, which is estimated to be $.03055 per kWh.

Q. **Have you estimated customer impacts based upon the proposed rate design?**

A. Yes. Detailed rate impacts have been calculated for all customers. The results of this analysis are detailed in PREPA Schedule H-4h.

## J. Tariff LIS

Q. **What is Tariff LIS?**

A. Tariff LIS is PREPA's tariff for large industrial customers, defined as industries connected to 115 kV service with a demand equal to or higher than 12,000 kW and less than 25,000 kW. LIS customers are also required to have a minimum of 0.8 load factor.

Q. **Please describe the existing design of Tariff LIS.**

A. Tariff LIS contains a fixed charge of $450.00 per month, a first block energy charge of $0.01600 for the first 584 kWh per kW of max demand, and a second block energy charge of $0.01000 for consumption over 584 kWh per kW of max demand. Tariff LIS also contains both a demand charge of $6.00 per kVA, and an excess demand charge of $9.60 per kVA. The FCA and PPCA apply.

Q. **Please provide your assessment of the design of Tariff LIS.**

A. LIS is structurally identical to GSP and it suffers from similar shortcomings as described above. Additionally, we could find no justification for the 584 kWh per kW of max demand block definition.

960 Q. **What is the proposed Tariff LIS design?**

961 A. The LIS fixed charge of $450.00 per month will remain unchanged. The block structure
962 energy charges will be removed, and replaced with a single energy charge of $0.09002
963 per kWh. LIS will also pay the CILT charge of $0.00303 per kWh, as well as the subsidy
964 charge of $0.01020 per kWh. The LIS demand charge will be unbundled into generation
965 and transmission, but there will be no distribution demand charge. Generation demand
966 will be $7.79 per kVA, and transmission will be $1.64 per kVA. The basis demand will
967 be un-ratcheted, and there will be no excess demand charge. LIS will also pay the non-
968 residential transition charge, which is estimated to be $0.03055 per kWh.

969 Q. **Have you estimated customer impacts based upon the proposed rate design?**

970 A. Yes. Detailed rate impacts have been calculated for all customers. The results of this
971 analysis are detailed in PREPA Schedule H-4i.

972 **K. <u>Tariff TOU-T</u>**

973 Q. **What is Tariff TOU-T?**

974 A. Tariff TOU-T is PREPA's time of use tariff for customers at transmission voltage.

975 Q. **Please describe the existing design of Tariff TOU-T?**

976 A. Tariff TOU-T contains a fixed charge of $450.00 per month, an on-peak energy charge of
977 $0.03900 for on-peak kWh, and an off-peak energy charge of $0.01000 for all
978 consumption of off-peak kWh. Tariff TOU-T also includes an on-peak demand charge of
979 $7.70 per kVA during on-peak hours, and an off-peak demand charge of $1.00 per kVA
980 during off-peak hours. The FCA and PPCA apply.

The peak time definitions are identical to that of TOU-P, as mentioned above.

Q. **Please provide your assessment of the design of Tariff TOU-T.**

A. TOU-T is structurally identical to TOU-P and it suffers from similar shortcomings as described above. We also propose to disallow new customers to this tariff.

Q. **What is the proposed Tariff TOU-T design?**

A. The TOU-T fixed charge of $450.00 per month will remain unchanged. The on-peak energy charge will be $0.09502 per kWh, and the off-peak energy charge will be $0.08002 per kWh. TOU-T will also pay the CILT charge of $0.00303 per kWh, as well as the subsidy charge of $0.01020 per kWh. The TOU-T demand charge will be unbundled into generation and transmission, but there will be no distribution demand charge. Generation demand will be $7.79 per kVA, and transmission will be $1.64 per kVA. The basis for demand will be un-ratcheted, and there will be no excess demand charge. TOU-T will also pay the non-residential transition charge, which is estimated to be $0.03055 per kWh.

Q. **Have you estimated customer impacts based upon the proposed rate design?**

A. Yes. Detailed rate impacts have been calculated for all customers. The results of this analysis are detailed in PREPA Schedule H-4j.

## L. Tariff SBS

Q. **What is Tariff SBS?**

A. Tariff SBS is PREPA's standby service tariff.

Q. **Please describe the existing design of Tariff SBS.**

A. Tariff SBS currently mimics the structures of GST and TOU-T. However, the only two customers on the SBS tariff use the TOU-T structure, which contains a fixed charge of $450.00 per month, an on-peak energy charge of $0.03900 for on-peak kWh, and an off-peak energy charge of $0.01000 for all consumption of off-peak kWh. Tariff SBS also includes an on-peak demand charge of $7.70 per kVA during on-peak hours, and an off-peak demand charge of $1.00 per kVA during off-peak hours. The FCA and PPCA apply.

Q. **What is the proposed Tariff SBS design?**

A. Tariff SBS is proposed to be closed and all customers moved to GST, given the fact that TOU-T will be locked to additional customers.

Q. **Have you estimated customer impacts based upon the proposed rate design?**

A. Yes. Detailed rate impacts have been calculated for all customers. The results of this analysis are detailed in PREPA Schedule H-4k.

## M. Tariff GAS

Q. **What is Tariff GAS?**

A. Tariff GAS is PREPA's general service tariff for agricultural customers.

Q. **Please describe the existing design of Tariff GAS.**

A. Tariff GAS contains a fixed charge of $10.00 per month, and a single energy charge of $0.05400 per kWh. The FCA and PPCA apply.

Q. **What is the proposed Tariff GAS design?**

A. The GAS fixed charge will remain at $10.00 per month. The energy charge will be increased to $0.15303 per kWh. GAS will also pay the CILT charge of $0.00303 per kWh, and the subsidy charge of $0.01020 per kWh. GAS will also pay the non-residential transition charge, which is estimated to be $0.03055 per kWh.

Q. **Have you estimated customer impacts based upon the proposed rate design?**

A. Yes. Detailed rate impacts have been calculated for all customers. The results of this analysis are detailed in PREPA Schedule H-4l.

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## N. Tariff PPBB

Q. **What is Tariff PPBB?**

A. Tariff PPBB is PREPA's tariff for power producers at bus bar, and applies to AES and EcoElectrica.

Q. **Please describe the existing design of Tariff PPBB.**

A. Tariff PPBB contains a fixed charge of $450.00 per month, and an energy charge of $0.02610 per kWh. Tariff PPBB also includes a demand charge of $7.40 per kVA, and an excess demand charge of $10.00 per kVA. The FCA and PPCA apply.

Q. **What is the proposed Tariff PPBB design?**

A. The PPBB fixed charge of $450.00 per month will remain unchanged. The energy charge will be increased to $0.09022 per kWh. PPBB will also pay the CILT charge of $0.00303 per kWh, as well as the subsidy charge of $0.01020 per kWh. PPBB will have a generation demand charge of $7.79 per kVA. There will be no excess demand charge.

PPBB will pay the non-residential transition charge, which is estimated to be $0.03055 per kWh.

## O. Tariff PLG

**Q. What is Tariff PLG?**

A. Tariff PLG is comprised of PREPA's public lighting tariffs.

**Q. Please describe the existing design of Tariff PLG.**

A. Tariff PLG contains a separate volumetric energy charge depending on the type of light being used. The FCA and PPCA apply.

**Q. What is the proposed Tariff PLG design?**

A. Tariff PLG will retain all current lighting tariff structures, but the energy charge will be scaled up to match ECOS.

## P. Tariff USSL

**Q. What is Tariff USSL?**

A. Tariff USSL is PREPA's tariff for unmetered services.

**Q. Please describe the existing design of Tariff USSL.**

A. Tariff USSL contains a fixed charge of $4.60 per month, and an energy charge of $0.0767 per kWh.

**Q. What is the proposed Tariff USSL design?**

A. USSL will pay a fixed charge of $4.60 per month, and an energy charge of $0.18050 per kWh. USSL will also pay the CILT charge of $0.00303 per kWh, and the subsidy charge

of $0.01020 per kWh, as well as the non-residential transition charge, which is estimated to be $0.03055 per kWh.

**Q. Tariff CATV**

Q. **What is Tariff CATV?**

A. Tariff CATV is PREPA's tariff for Cable TV services.

Q. **Please describe the existing design of Tariff CATV.**

A. Tariff CATV contains a fixed charge of $5.00 per month, and an energy charge of $0.07670 per kWh.

Q. **What is the proposed Tariff CATV design?**

A. CATV will pay a fixed charge of $5.00 per month, and an energy charge of $0.17410 per kWh. CATV will also pay the CILT charge of $0.00303 per kWh, and the subsidy charge of $0.01020 per kWh, as well as the non-residential transition charge, which is estimated to be $0.03055 per kWh.

**R. Tariff LP-13**

Q. **What is Tariff LP-13?**

A. Tariff LP-13 is PREPA's tariff for sports field lighting where admission is collected.

Q. **Please describe the existing design of Tariff LP-13.**

A. Tariff LP-13 contains a first block charge of $0.09000 for the first 100kWh of max demand, and a second block charge of $0.08000 for excess of 100kWh of max demand. FCA and PPCA apply.

Q. **What is the proposed Tariff LP-13 design?**

A. LP-13 will pay an energy charge of $0.29374 per kWh. LP-13 will also pay the CILT charge of $0.00303 per kWh, and the subsidy charge of $0.01020 per kWh, as well as the non-residential transition charge, which is estimated to be $0.03055 per kWh.

## IX. CONCLUSION

Q. **Does this complete your direct testimony?**

A. Yes.

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No. CEPR-AP-2015-0001
PREPA Ex. 4.0

**ATTESTATION**

Affiant, Ralph Zarumba, being first duly sworn, states the following:

The prepared pre-filed Direct Testimony and the Schedules and Exhibits attached thereto and the Schedules I am sponsoring constitute the direct testimony of Affiant in the above-styled case. Affiant states that he would give the answers set forth in the pre-filed Direct Testimony if asked the questions propounded therein at the time of the filing. Affiant further states that, to the best of his knowledge, his statements made are true and correct.

Ralph Zarumba

Affidavit No. 3,578

Acknowledged and subscribed before me by Ralph Zarumba, of the personal circumstances above mentioned, in his capacity as a Director of Navigant Consulting, Inc., who is personally known to me or whom I have identified by means of his driver's license number from Illinois 2651-7345-9297, in San Juan, Puerto Rico, this 26th day of May 2016.

Public Notary

JAIME J. ORTIZ RODRIGUEZ
PUERTO RICO
NOTARIO PUBLICO

EXENTO PAGO ARANCEL
LEY 47
4 DE JUNIO DE 1982

No. CEPR-AP-2015-0001
PREPA Ex. 4.0

**ATTESTATION**

Affiant, Eugene Granovsky, being first duly sworn, states the following:

The prepared pre-filed Direct Testimony and the Schedules and Exhibits attached thereto and the Schedules I am sponsoring constitute the direct testimony of Affiant in the above-styled case. Affiant states that he would give the answers set forth in the pre-filed Direct Testimony if asked the questions propounded therein at the time of the filing. Affiant further states that, to the best of his knowledge, his statements made are true and correct.

Eugene Granovsky

Affidavit No. 3,579

Acknowledged and subscribed before me by Eugene Granovsky, of the personal circumstances above mentioned, in his capacity as a Managing Consultant at Navigant Consulting, Inc., who is personally known to me or whom I have identified by means of his driver's license number from Illinois G-651-2008-4214, in San Juan, Puerto Rico, this 26 th day of May 2016.

Public Notary

JAIME J. ORTIZ RODRIGUEZ
PUERTO RICO
NOTARIO PUBLICO

EXENTO PAGO ARANCEL
LEY 47
4 DE JUNIO DE 1982