GOVERNMENT OF PUERTO RICO
PUBLIC SERVICE REGULATORY BOARD
PUERTO RICO ENERGY BUREAU

IN RE: THE UNBUNDLING OF THE ASSETS OF THE PUERTO RICO ELECTRIC POWER AUTHORITY	**CASE NO.:** NEPR-AP-2018-0004 **SUBJECT:** May 18, 2021 Initial Technical Hearing

MOTION IN COMPLIANCE WITH BENCH ORDER ENTERED DURING THE MAY 18, 2021 TECHNICAL HEARING

TO THE HONORABLE PUERTO RICO ENERGY BUREAU:

1. On February 5, 2021, the Puerto Rico Energy Bureau of the Public Service Regulatory Board (the "Energy Bureau") issued a *Resolution and Order* setting the procedural calendar for the captioned case. The procedural calendar established that the Initial Technical Hearing would be held on May 18, 2021 (the "Technical Hearing"). The Technical Hearing was held accordingly.

2. During the Technical Hearing, the Energy Bureau asked for additional information or clarification of certain items discussed and included in the Puerto Rico Electric Power Authority's (the "Authority") presentation that was projected during the Technical Hearing and titled *Unbundled Rates for Wheeling-Initial Technical Hearing* (the "Bench Order"). The requests for clarifications included the following:

a. Marginal Cost Results-Energy (Slide 6) - Range of prices and load values in heat maps.

b. Uniform Services Agreement (Slide 17)- algorithm of charges to Imbalance Performance Provisions.

c. Recommendations on items to be discussed during workshops before the implementation of Uniform Services Agreement - Checklist of Items for Finalizing the Uniform Services Agreement.

3. In compliance with the Bench Order, the Authority hereby submits responses and information addressing the Energy Bureau's requests made during the Technical Hearing. Exhibit A.

WHEREFORE, it is hereby requested that the Energy Bureau accept this filing and deem the Authority in compliance with the Bench Order.

RESPECTFULLY SUBMITTED.

In San Juan, Puerto Rico, this 28th day of May 2021.

s/ Joannely Marrero Cruz
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CERTIFICATE OF SERVICE

It is hereby certified that, on this same date, I have filed the above motion with the Office of the Clerk of the Energy Bureau using its Electronic Filing System at https://radicacion.energia.pr.gov/login, and a courtesy copy of the filling was sent via e-mail to hrivera@oipc.pr.gov, ramonluisnieves@rlnlegal.com; manualgabrielfernandez@gmail.com; ccf@tcm.law.

In San Juan, Puerto Rico, this 28th day of May 2021.

/s Joannely Marrero Cruz
Joannely Marrero Cruz

Exhibit A

Follow-Up Items to the May 18 Technical Hearing

May 27, 2021

1. Provide range of prices and load values in heat maps.

Provided below in each chart. Figure 2-5 reflects marginal energy costs, while Table 2-9 reflects load weighted marginal energy costs, both based on the information provided to Guidehouse at the time. LUMA intends to revise these analyses when access to additional data post June 1, 2021 is possible. As noted in the conference, the figure and table were mislabelled, and this is corrected below.

Figure 2 5. Marginal Energy Costs

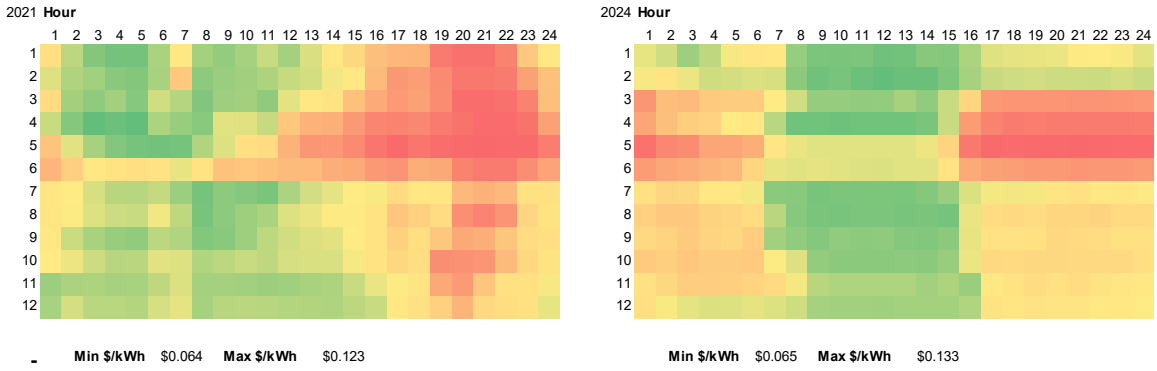

Figure 2 3. System Load Heat Maps 2021 and 2024

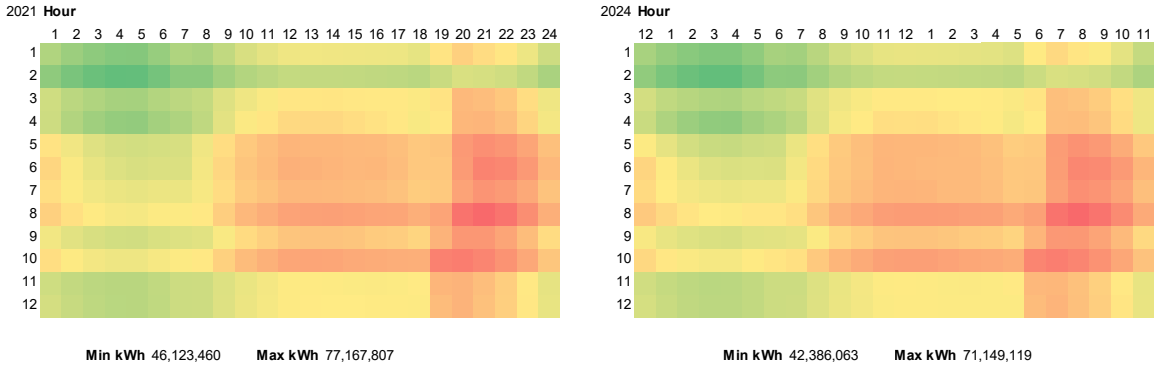

Table 2-1. Load Weighted Marginal Energy Costs

	2021	2022	2023	2024
Weighted MEC ($/kWh)	0.0873	0.0816	0.0838	0.0921

2. **Provide algorithm for performance charges for imbalance.**

Default Uniform Services Agreement:

$$PC_y = MAX\left[AI_y - \left(B_y * AL_y\right); 0\right] * AP_y * 10\%$$

Where:

$PC_y =$ Performance Charge for year y

$$AI_y = \sum_{h=1}^{8760} (L_h - G_h)$$

$$AL_y = \sum_{h=1}^{8760} (L_h)$$

$L_h =$ Customer load times 1+loss factor for hour h

$G_h =$ Generation supplied for hour h

$B_y =$ Bandwidth for year y

$AP_y =$ Average Imbalance Rate for year y

Alternative Uniform Services Agreement:

$$APC_y = \left[AIC_y - \left(B_y * ALC_y\right)\right] * 10\%$$

Where:

$APC_y =$ Alternative Performance Charge for year y

$$AIC_y = Absolute\ Value\ of \sum_{h=1}^{8760} (L_h - G_h) * IR_h$$

$$ALC_y = \sum_{h=1}^{8760} (L_h * IR_h)$$

$L_h =$ Customer load times 1+loss factor for hour h

$G_h =$ Generation supplied for hour h

$B_y =$ Bandwidth for year y

$AP_y =$ Average Imbalance Rate for year y

$IR_h =$ Imbalance rate for hour h

Guidehouse ran two example scenarios (assumes 10 hours in a year to illustrate) through each mechanism to demonstrate impact. The first scenario shows generation habitually below load while the second shows generation habitually above load. Table 1 shows the impact of both scenarios using the Default Uniform Services Agreement mechanism. Table 2 shows the impact of both scenarios using the Alternative Uniform Services Agreement mechanism.

Table 1. Default Uniform Services Agreement Mechanism

Default Uniform Services Agreement								
Generation less than Load					**Generation more than Load**			
Hour	**Load (L)**	**Generation (G)**	**Imbalance Price (IP)**		**Hour**	**Load (L)**	**Generation (G)**	**Imbalance Price (IP)**
h1	10	3	$ 30.00		h1	10	18	$ 30.00
h2	11	3	$ 30.60		h2	11	18	$ 30.60
h3	12	3	$ 31.21		h3	12	18	$ 31.21
h4	11	3	$ 31.84		h4	11	18	$ 31.84
h5	13	3	$ 32.47		h5	13	18	$ 32.47
h6	14	3	$ 33.12		h6	14	18	$ 33.12
h7	11	3	$ 33.78		h7	11	18	$ 33.78
h8	10	3	$ 34.46		h8	10	18	$ 34.46
h9	9	3	$ 35.15		h9	9	18	$ 35.15
h10	8	4	$ 35.85		h10	8	18	$ 35.85
1=sum L		Total Load	109		1=sum L		Total Load	109
2=Sum G		Toatal Generation	31		2=Sum G		Toatal Generation	180
3=1-2		Annual Imbalance (kWh)	78		3=1-2		Annual Imbalance	-71
4=Defined by USA		Bandwidth Percent	60%		4=Defined by USA		Bandwidth Percent	60%
5=4*1		Bandwidth	65.4		5=4*1		Bandwidth	65.4
6=max(3-4,0)		kWh in excess of	12.6		6=max(3-4,0)		kWh in excess of	0
7=average of IP		Average Inblance Price	$ 32.85		7=average of IP		Average Inblance	$ 32.85
8=7*6		Bandiwth times Average	$ 413.90		8=7*6		Bandiwth times	$ -
9=Defined by USA		Penalty Pecent	10%		9=Defined by USA		Penalty Pecent	10%
10=8*9		Charge	$ 41.39		10=8*9		Charge	$ -

Table 2. Alternative Uniform Services Agreement Mechanism

Alternative Uniform Services Agreement															
Generation less than Load								**Generation more than Load**							
Hour	**Load (L)**	**Generation (G)**	**Imbalance Price (IP)**	**LC=L*P**	**GC=G*P**	**IC=(L-G)*P**		**Hour**	**Load (L)**	**Generation (G)**	**Imbalance Price (IP)**	**LC=L*P**	**GC=G*P**	**IC=(L-G)*P**	
h1	10	3	$ 30.00	$ 300.00	$ 90.00	$ 210.00		h1	10	18	$ 30.00	$ 300.00	$ 540.00	$ (240.00)	
h2	11	3	$ 30.60	$ 336.60	$ 91.80	$ 244.80		h2	11	18	$ 30.60	$ 336.60	$ 550.80	$ (214.20)	
h3	12	3	$ 31.21	$ 374.54	$ 93.64	$ 280.91		h3	12	18	$ 31.21	$ 374.54	$ 561.82	$ (187.27)	
h4	11	3	$ 31.84	$ 350.20	$ 95.51	$ 254.69		h4	11	18	$ 31.84	$ 350.20	$ 573.05	$ (222.85)	
h5	13	3	$ 32.47	$ 422.15	$ 97.42	$ 324.73		h5	13	18	$ 32.47	$ 422.15	$ 584.51	$ (162.36)	
h6	14	3	$ 33.12	$ 463.71	$ 99.37	$ 364.35		h6	14	18	$ 33.12	$ 463.71	$ 596.20	$ (132.49)	
h7	11	3	$ 33.78	$ 371.63	$ 101.35	$ 270.28		h7	11	18	$ 33.78	$ 371.63	$ 608.13	$ (236.49)	
h8	10	3	$ 34.46	$ 344.61	$ 103.38	$ 241.22		h8	10	18	$ 34.46	$ 344.61	$ 620.29	$ (275.68)	
h9	9	3	$ 35.15	$ 316.35	$ 105.45	$ 210.90		h9	9	18	$ 35.15	$ 316.35	$ 632.70	$ (316.35)	
h10	8	4	$ 35.85	$ 286.82	$ 143.41	$ 143.41		h10	8	18	$ 35.85	$ 286.82	$ 645.35	$ (358.53)	
1=sum LC				Total Load Cost		$ 3,566.61		1=sum LC				Total Load Cost		$3,566.61	
2=sum GC				Total Generation Value		$ 1,021.33		2=sum GC				Total Generation Value		$5,912.85	
3=sum IC				Annual Imbalance Cost		$ 2,545.29		3=sum IC				Absolute Value Annual Imbalance Cost		$2,346.23	
4=Defined by USA				Bandwidth Percent		60%		4=Defined by USA				Bandwidth Percent		60%	
5=4*1				Bandwidth		$ 2,139.97		5=4*1				Bandwidth		$2,139.97	
6=4*5				Costs in excess of bandwidth		$ 405.32		6=4*5				Costs/Value in excess of bandwidth		$ 206.27	
9=Defined by USA				Penalty Pecent		10%		9=Defined by USA				Penalty Pecent		10%	
10=6*9				Charge		$ 40.53		10=6*9				Charge		$ 20.63	

3. Checklist of Items for Finalizing the Uniform Services Agreement.

Discussions should include, but may not be limited to:

(A) Credit Terms
- a. Consideration for credit quality of ESP
- b. Potential amount of credit exposure
- c. Computation of collateral based on potential exposure and credit quality
- d. Determination of billing responsibilities – ESP vs PREPA
  - i. Ramifications on PREPA's billing system to track multiple contractual terms for customers with different ESPs or different price plans from ESP
  - ii. Process for partial payments
  - iii. Credit terms for PREPA to each ESP
  - iv. Payments to ESP for PREPA collections relative to customers' billing cycles

(B) Imbalance Charges & Performance Charge
- a. Symmetrical performance for over or under supply of generation relative to ESP load obligations
- b. Incorporation of actual prices in performance charges
- c. Determination of imbalance rate (set after the fact or pre-set with true-up)
- d. Auditing provisions for ESPs for imbalance rate

(C) Customer return policies
- a. ESP default vs ESP return or customer return

(D) Customer sign-up process and timing
- a. Timing of customer transition (to or from ESP)
- b. Notification process and requirements

(E) Standby Rate
- a. Application (when it applies)
- b. Structure (demand versus energy)

(F) Ancillary Services
- a. Determination of charging mechanisms/placeholders
- b. Process for determining when charges will be applied
  - i. What will be in place
  - ii. What mechanisms are needed

(G) Eligibility
- a. Customers
- b. ESP