

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

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IN RE: REVIEW OF THE PUERTO RICO
ELECTRIC POWER AUTHORITY
INTEGRATED RESOURCE PLAN

CASE NO.: NEPR-AP-2023-0004

SUBJECT: Motion to Correct Second
Supplemental Brief of Amicus Curiae Robert
A. Garcia Cooper, Filed May 7, 2026,
Regarding IEEE Std 1366-2022 Major Event
Day Threshold Computation and Associated
Reliability Indices

**MOTION TO CORRECT SECOND SUPPLEMENTAL BRIEF OF AMICUS CURIAE
ROBERT A. GARCIA COOPER**

TO THE HONORABLE PUERTO RICO ENERGY BUREAU:

COMES NOW Robert A. Garcia Cooper, in his individual capacity as state-certified Engineer in Training (EIT, Certificate No. 28591), licensed Expert Electrician (Perito Electricista, License No. 10971), PhD student in electrical engineering at the University of Puerto Rico at Mayaguez, published researcher in energy systems and resilience economics, and Senior Member of the Institute of Electrical and Electronics Engineers (IEEE), and respectfully submits this Motion to Correct the Second Supplemental Brief of Amicus Curiae Robert A. Garcia Cooper filed May 7, 2026, in the above-captioned proceeding.

I. NATURE OF THE ERROR AND SCOPE OF CORRECTION

The SAIDI, SAIFI, CAIDI, and MAIFI values reported in Section II of the Second Supplemental Brief filed May 7, 2026, resulted from two implementation errors in the computation of the daily system SAIDI values used to determine the Major Event Day threshold under IEEE Std 1366-2022, Section 4.5.

The first error concerned the events included when computing daily system SAIDI for MED threshold calibration. IEEE Std 1366-2022 defines SAIDI in terms of sustained interruptions exceeding five minutes in duration. The daily system SAIDI values used in the rolling cumulative window for MED threshold calibration should accordingly reflect sustained interruptions only. The original computation included all events regardless of duration, incorporating momentary interruptions of five minutes or less into the daily SAIDI totals. This overstated the daily system SAIDI values used for calibration and inflated the MED threshold parameters.

The second error was in the formula used to compute individual event durations. For events with durations exceeding 24 hours, the formula returned only the hours remaining within the final calendar day of the event rather than total hours elapsed, discarding any complete days. An event spanning 34 hours would be recorded as 10 hours rather than 34. Events with durations under 24 hours were unaffected. This error disproportionately understated the most prolonged outage events in the dataset, which are precisely those most likely to occur on Major Event Days, suppressing the daily SAIDI values for the most severe days and reducing the probability that those days would exceed the MED threshold.

Together these two errors produced incorrect daily SAIDI totals for the MED threshold calibration window, which in turn produced incorrect estimates of alpha, beta, and MED-T. Because the full burden and MED-excluded reliability indices are derived from the same underlying event-level data partitioned by whether each event occurred on a correctly classified Major Event Day, the misclassification of MED days affected every reliability metric reported for both conditions across all four years of the study period.

Both errors were identified when the petitioner rebuilt the computation from the raw event-level outage data with corrected implementations of both the daily SAIDI calculation and the duration extraction. The corrected computation also draws on the extended Tormos Dataset through April 2025¹, compared to the original computation which used data through May 2024². This correction is submitted promptly to ensure the Commission's record reflects accurate values before any final order on the 2025 IRP relies on the figures as originally stated.

II. CORRECTED MAJOR EVENT DAY THRESHOLD PARAMETERS AND CLASSIFICATION

The corrected rolling cumulative window computation yields the following MED threshold parameters from the full dataset covering June 2021 through April 2025:

¹ Raw outage event data produced by LUMA Energy in connection with Tormos-Aponte y Castro-Sitiriche v. LUMA Energy, LLC, Case No. MZ2024CV02187, covering June 1, 2021 through April 30, 2025

² Raw outage event data produced by LUMA Energy in connection with Fernando Tormos-Aponte v. LUMA Energy, LLC, Case No. SJ2024CV04490, covering January 1, 2021 through May 31, 2024

$\alpha = 1.599779702$

$\beta = 0.860176804$

$MED-T = 42.53051047$ customer-minutes per day

The corrected MED threshold of 42.53 customer-minutes per day is lower than the filed value of 45.43 for two reasons. The programming errors described in Section I distorted the daily SAIDI values used for threshold calibration, producing a modestly elevated MED-T on the same data. The larger share of the reduction reflects the extension of the calibration dataset through April 2025, which improved the rolling window estimate. That a lower threshold derived from a more complete and more accurately computed record identifies more Major Event Days is not a permissive result. It is a more accurate one.

Under the corrected parameters, 24 Major Event Days are identified across the study period, compared to 15 in the original computation. The corrected classification by year is as follows:

2021: 6 Major Event Days

(June 1, June 10, August 31, September 26, September 27, September 28)

2022: 7 Major Event Days

(April 6, April 9, September 18, September 19, September 23, September 25, November 14)

2023: 0 Major Event Days

2024: 10 Major Event Days

(February 6, June 3, June 12, August 14, August 15, August 16, August 22, August 23, October 3, and December 31)

2025 (January through April, partial year): 1 Major Event Day

The filed computation identified 15 Major Event Days and reported no Major Event Days in 2024. The corrected computation identifies 10 Major Event Days in 2024 alone. This reclassification is the primary driver of the corrections to the 2024 full burden and MED-excluded reliability indices reported in the original brief.

III. CORRECTED SYSTEM RELIABILITY INDICES

The corrected reliability indices for both conditions across the full study period are as follows. All indices are computed from the same Tormos Dataset event-level outage data described in the Second Supplemental Brief filed May 7, 2026, using the corrected MED threshold parameters stated in Section II above.

Full Burden (All Events Included):

Year	SAIDI	SAIFI	CAIDI	MAIFI
2021	42.1	17.0	2.5	16.6
2022	200.7	18.1	11.1	17.5
2023	35.2	16.0	2.2	17.2
2024	80.3	21.1	3.8	17.8

MED-Excluded (Major Event Days Removed):

Year	SAIDI	SAIFI	CAIDI	MAIFI
2021	32.1	14.2	2.3	16.2
2022	34.5	14.6	2.4	17.1
2023	35.2	16.0	2.2	17.2
2024	40.9	16.6	2.5	17.1

IV. CORRECTION TO SPECIFIC STATED CLAIMS

The following claims stated in Section II of the Second Supplemental Brief filed May 7, 2026, require correction as a direct consequence of the MED threshold error.

A. Filed MED Threshold Parameters

Section II of the Second Supplemental Brief stated: “The parameters derived from the full available dataset are: alpha equals 1.5481, beta equals 0.9072, yielding MED-T of 45.43 customer-minutes per day. Under this threshold, 15 Major Event Days were identified across the 47-month study period.”

Corrected: The corrected parameters are alpha equals 1.599779702, beta equals 0.860176804, yielding MED-T of 42.53 customer-minutes per day. Under the corrected threshold, 24 Major Event Days are identified across the study period.

B. MED Exclusion Percentages

Section II of the Second Supplemental Brief stated the following MED exclusion values:

2021: Full burden SAIDI 38.2 hours; MED-excluded SAIDI 28.6 hours; MED methodology renders 25.1 percent of annual duration burden invisible to the reporting record.

2022: Full burden SAIDI 55.6 hours; MED-excluded SAIDI 30.1 hours; MED methodology renders 45.9 percent of annual duration burden invisible to the reporting record.

2023: Full burden SAIDI 34.8 hours; MED-excluded SAIDI 34.2 hours; difference 1.7 percent.

2024: Full burden SAIDI 34.6 hours; MED-excluded SAIDI 33.1 hours; difference 4.3 percent.

Corrected:

2021: Full burden SAIDI 42.1 hours; MED-excluded SAIDI 32.1 hours. MED methodology renders 23.8 percent of annual duration burden invisible to the reporting record.

2022: Full burden SAIDI 200.7 hours; MED-excluded SAIDI 34.5 hours. MED methodology renders 82.8 percent of annual duration burden invisible to the reporting record.

2023: Full burden SAIDI 35.2 hours; MED-excluded SAIDI 35.2 hours. Zero Major Event Days were identified in 2023 under the corrected computation. There is no difference between conditions.

2024: Full burden SAIDI 80.3 hours; MED-excluded SAIDI 40.9 hours. MED methodology renders 49.1 percent of annual duration burden invisible to the reporting record.

C. The 2022 Comparative Claim

Section II of the Second Supplemental Brief stated: “The 2022 figure warrants specific attention because it is documented through the Tormos Dataset already in this record. A utility applying IEEE Std 1366-2022 MED methodology could report 30.1 hours of SAIDI for 2022 and be fully compliant with the standard. The actual ratepayer experience was 55.6 hours, approximately 85 percent higher.”

Corrected: A utility applying IEEE Std 1366-2022 MED methodology could report 34.5 hours of SAIDI for 2022 and be fully compliant with the standard. The actual full burden ratepayer experience under the corrected computation was 200.7 hours, approximately 482 percent higher than the MED-excluded figure. The corrected 2022 full burden SAIDI of 200.7 hours reflects the cumulative customer impact of 7 correctly classified Major Event Days in calendar year 2022. The scale of the correction to the 2022 figure is itself indicative of the magnitude of the original implementation errors: a threshold inflated by those errors allowed events of genuine catastrophic magnitude to escape MED classification and remain absorbed in the baseline rather than studied separately as the standard intends.

D. SAIFI Trend

Section II of the Second Supplemental Brief stated: “In the MED-excluded scenario, SAIFI rose from 13.59 in 2021 to 15.45 in 2023, a 13.7 percent increase in chronic baseline interruption frequency.”

Corrected: In the MED-excluded scenario, SAIFI rose from 14.20 in 2021 to 16.00 in 2023, a 12.7 percent increase in chronic baseline interruption frequency. The direction of the trend finding is unchanged.

E. CAIDI

Section II of the Second Supplemental Brief stated that CAIDI “remained relatively stable across the four-year study period at approximately 2.1 to 2.2 hours.”

Corrected: In the MED-excluded scenario, CAIDI is 2.3 hours in 2021, 2.4 hours in 2022, 2.2 hours in 2023, and 2.5 hours in 2024. The corrected MED-excluded CAIDI does not remain stable at 2.1 to 2.2 hours; it shifts upward to 2.5 hours in 2024, a year in which 10 correctly classified Major Event Days generated 39.4 additional hours of SAIDI not visible in the MED-excluded figure. In the full burden condition, CAIDI reaches 11.1 hours in 2022, directly reflecting the extraordinary duration burden concentrated in the 7 MED-classified days of that year. The interpretive argument in the original brief, that CAIDI cannot distinguish a system failing more frequently from one being restored more slowly, remains fully valid and is reinforced by the corrected values.

F. Momentary Interruption Share

Section II of the Second Supplemental Brief stated the following momentary interruption shares in the MED-excluded scenario:

2021: SAIFI 13.59, MAIFI 16.48; momentary interruptions represent 54.8 percent of total interruptions.

2022: SAIFI 13.93, MAIFI 17.29; momentary interruptions represent 55.4 percent of total interruptions.

2023: SAIFI 15.45, MAIFI 17.32; momentary interruptions represent 52.8 percent of total interruptions.

2024: SAIFI 15.00, MAIFI 16.00; momentary interruptions represent 51.6 percent of total interruptions.

Corrected:

2021: SAIFI 14.20, MAIFI 16.22; momentary interruptions represent 53.3 percent of total interruptions experienced by Puerto Rico customers.

2022: SAIFI 14.63, MAIFI 17.12; momentary interruptions represent 53.9 percent of total interruptions.

2023: SAIFI 16.00, MAIFI 17.20; momentary interruptions represent 51.8 percent of total interruptions.

2024: SAIFI 16.60, MAIFI 17.09; momentary interruptions represent 50.7 percent of total interruptions.

The corrected momentary shares range from approximately 51 to 54 percent rather than 52 to 55 percent. The substantive finding that momentary interruptions represent the majority of total customer interruptions on a frequency basis across all four years of the study period is confirmed without qualification by the corrected data.

G. Full Burden MAIFI

Section II of the Second Supplemental Brief reported full burden MAIFI values of 16.91 (2021), 17.74 (2022), 17.53 (2023), and 16.50 (2024).

Corrected: Full burden MAIFI is 16.62 (2021), 17.54 (2022), 17.20 (2023), and 17.77 (2024). The corrected 2024 full burden MAIFI of 17.77 is modestly higher than the filed value of 16.50, reflecting the reclassification of 10 Major Event Days in 2024 and the recomputation of the full burden condition. The overall level and pattern of MAIFI across the study period is not materially altered by the correction, but the specific values require replacement in the record.

V. EFFECT ON ARGUMENTS ADVANCED IN OTHER SECTIONS

The correction to the reliability indices does not affect the legal and regulatory arguments advanced in Sections I, III, and IV of the Second Supplemental Brief. The analysis of the Melendez testimony, the forced outage rate discussion, and the six structural omissions identified in Section IV of that filing were each grounded in evidence independent of the petitioner's MED threshold computation. None of those arguments relied on the specific index values now corrected.

The corrected data reinforces rather than weakens the substantive arguments of the brief. A 2022 full burden SAIDI of 200.7 hours instead of 55.6 hours, and a 49.1 percent MED exclusion in 2024 instead of 4.3 percent, are corrections in the same direction as the original findings and of greater magnitude. The argument regarding the dual-condition reporting recommendation of IEEE Std 1366-2022, Section 4.5.1, is strengthened by the corrected figures. The absence of MAIFI from

LUMA's regulatory submissions, and the interpretive limitations of CAIDI as a standalone reliability signal, are both addressed correctly in the original brief and require no revision.

VI. REQUEST FOR RELIEF

The petitioner respectfully requests that the Energy Bureau accept this Motion to Correct and replace the reliability index values stated in Section II of the Second Supplemental Brief filed May 7, 2026, with the corrected values presented in Sections III and IV of this motion. The petitioner further requests that any reference to the petitioner's computed reliability indices in any final order or ruling in this proceeding reflect the corrected values set forth herein rather than the values as originally filed.

VII. DECLARATION

In compliance with Section 7.01(B)(4) of Regulation No. 8543, the petitioner declares as follows:

- A) No party or lawyer in this proceeding assisted in drafting this motion to correct.
- B) No party or lawyer in this proceeding contributed funds or any other type of resource for the preparation or submission of this motion to correct.
- C) No person other than the petitioner contributed funds or any other type of resource for the preparation or submission of this motion to correct.

Respectfully submitted,

In San Juan, Puerto Rico, on October 24, 2026.



Robert A. Garcia Cooper

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CERTIFICATE OF SERVICE

I hereby certify that on October 24, 2026, a copy of this Motion to Correct was filed with the Office of the Clerk of the Puerto Rico Energy Bureau using its electronic filing system, and that electronic copies were served upon all parties of record in Case No. NEPR-AP-2023-0004 as reflected in the most recent Certificate of Service filed in this proceeding

Robert A. Garcia Cooper