

**STATE OF ILLINOIS**  
**ILLINOIS COMMERCE COMMISSION**

COMMONWEALTH EDISON COMPANY	:	
	:	
Petition for Establishment of Performance	:	Docket No. 22-0067
Metrics Under Section 16-108.18(e) of the	:	On Rehearing
Public Utilities Act.	:	

Direct Testimony on Rehearing of

**PATRICK M. ARNS**

Director of Distribution Planning, Smart Grid, and Innovation  
Commonwealth Edison Company

## TABLE OF CONTENTS

I.	INTRODUCTION .....	1
A.	Witness Identification .....	1
B.	Purpose and Conclusions of Direct Testimony on Rehearing .....	1
C.	Attachments to Direct Testimony on Rehearing.....	3
II.	DISCUSSION .....	3
A.	Definition of MEDs .....	3
1.	Criterion 2: NESC-Based Definition .....	8
2.	Criteria 1 & 3: Events Outside of ComEd’s Control .....	24
B.	Intervenor-Proposed Tracking Metrics .....	26
III.	CONCLUSION.....	37

1   **I.    INTRODUCTION**

2       **A.    Witness Identification**

3   **Q.    What is your name and business address?**

4   A.    My name is Patrick M. Arns. My business address is 2 Lincoln Centre, Oakbrook Terrace,  
5       Illinois 60181.

6   **Q.    Are you the same Patrick M. Arns that submitted Rebuttal (ComEd Ex. 5.0 CORR,**  
7       **5.01, 5.02), Supplemental Rebuttal (ComEd Ex. 12.0, 12.01), Surrebuttal Testimony**  
8       **(ComEd Ex. 19.0), and a Declaration (ComEd Ex. 35.0), in this proceeding on behalf**  
9       **of Commonwealth Edison Company (“ComEd”)?**

10 A.    Yes.

11       **B.    Purpose and Conclusions of Direct Testimony on Rehearing**

12 **Q.    What is the purpose of your Direct Testimony on Rehearing?**

13 A.    My Direct Testimony on Rehearing addresses two of the three topics granted rehearing, as  
14       identified in the November 14, 2022 Notice of Commission Action and clarified in the  
15       December 1, 2022 Amended Notice of Commission Action. First, with respect to the topic  
16       on rehearing of the “Definition of Major Event Day (MED) in [Performance] Metrics 1  
17       and 2,” I discuss the Commission’s additional criteria for defining MEDs adopted in the  
18       Order issued September 27, 2022 and issues arising from those criteria.

19       Second, with respect to the topic on rehearing of “Clarifying the construct of  
20       intervenor-proposed tracking metrics,” I explain that certain intervenor-proposed tracking  
21       metrics are too vague or burdensome for ComEd to fulfill or require information not  
22       available to ComEd.

23           The Direct Testimony on Rehearing of my colleague, ComEd witness Mr. Brian  
24           Kirchman (ComEd Ex. 37.0), addresses the third topic on rehearing, “Specifying peak load  
25           reduction incentive targets” for the Peak Load Reduction performance metric.

26   **Q.   What are the conclusions of your Direct Testimony on Rehearing?**

27   A.   Concerning the definition of MEDs used to calculate performance on Performance Metrics  
28           1 and 2, the Commission should retain the Order’s definition of MED that is based on the  
29           Institute of Electrical and Electronic Engineers (“IEEE”) Standard 1366 definition, subject  
30           to the 1 minute or less interruption exclusion previously agreed to by ComEd and Staff and  
31           adopted by the Order. The Commission should *not* include the three additional criteria into  
32           its MED definition (especially Criterion 2 concerning the National Electrical Safety Code  
33           (“NESC”) requirements) because they are too vague and impractical to implement and  
34           result in Performance Metrics 1 and 2 no longer being reasonably within ComEd’s control  
35           to achieve. Alternatively, the Commission could adopt Criteria 1 (modified) and 3, but not  
36           Criterion 2.

37           Concerning the intervenor-proposed tracking metrics that (1) are too vague or  
38           incompletely defined to implement; (2) are unreasonable and burdensome; and/or (3)  
39           require information that is not within ComEd’s control, they should be either reformed to  
40           correct their shortcomings, or alternatively be removed from ComEd’s Multi-Year  
41           Performance and Tracking Metrics Plan (“Plan”) for 2024-2027.

42       **C.     Attachments to Direct Testimony on Rehearing**

43       **Q.     Are there any attachments to your Direct Testimony on Rehearing?**

44       A.     Yes. ComEd Ex. 36.01 (Confidential and Proprietary) contains the title page, table of  
45           contents, and relevant excerpts of the 2017 NESC. ComEd Ex. 36.02 (Confidential and  
46           Proprietary) contains the title page and relevant excerpts from the 1926 version of the  
47           NESC. Please note that the two exhibits are proprietary copyrighted documents published  
48           by the IEEE and thus designated as “Confidential and Proprietary” pursuant to ComEd’s  
49           proposed Protective Order submitted January 31, 2022 and amended on March 7, 2022,  
50           which was granted by the Notice of Administrative Law Judges’ Ruling on March 21,  
51           2022. Redacted public versions of the exhibit are also being provided in accordance with  
52           the Protective Order.

53       **II.    DISCUSSION**

54       **A.     Definition of MEDs**

55       **Q.     How does the definition of MEDs relate to Performance Metrics 1 and 2?**

56       A.     Performance Metric 1 is intended to measure overall system reliability using System  
57           Average Interruption Duration Index (“SAIDI”), while Performance Metric 2 will measure  
58           reliability performance in environmental justice (“EJ”) and Restore, Reinvest, Renew  
59           (“R3”) communities using four measures – SAIDI; System Average Interruption  
60           Frequency Index (“SAIFI”); Customers Experiencing Multiple Interruptions (“CEMI”);  
61           and Customers Experiencing Long Interruption Duration (“CELID”). Two of these indices  
62           – SAIDI and SAIFI – involve MEDs in their calculations. More specifically, the definition  
63           of what constitutes an MED will determine how unusual events are identified. The broader

64 implication is that the definition of an MED will determine whether those unusual events  
65 are included or excluded from the SAIDI and SAIFI measures of reliability performance.

66 **Q. Is there an industry-standard definition for MEDs commonly used when calculating**  
67 **SAIDI and SAIFI?**

68 A. Yes, the IEEE Standard 1366 is commonly used in the electric utility industry when  
69 calculating reliability indexes. At a high level, IEEE Standard 1366 identifies MEDs as  
70 statistical outliers.

71 More specifically, the IEEE Standard 1366 definition of MED is a day that  
72 experiences a “major event.” A major event is an event that “exceeds reasonable design  
73 and or operational limits of the electric power system.” ComEd Ex. 5.01 at 19. The  
74 determination of whether an event qualifies as an MED is based on an objective measure  
75 of whether the daily SAIDI exceeds a threshold value,  $T_{MED}$ .  $T_{MED}$  is calculated using five  
76 years of daily SAIDI/SAIFI measurements to determine a value that exceeds 2.5 times the  
77 standard deviation of a logarithmic distribution. *See id.*, at 26. This calculation is called  
78 the “2.5 Beta Method.” The 2.5 Beta Method provides an objective methodology to  
79 separate unusual, high-impact events that exceed system design or operational limits. Any  
80 day with daily SAIDI/SAIFI greater than the threshold value is classified as an MED and  
81 excluded from the calculation of SAIDI/SAIFI, in recognition that utility performance  
82 under the unusual conditions on that day are not representative of the utility’s overall  
83 reliability.

84 **Q. Does the IEEE Standard 1366 exclude events within the utility's control when**  
85 **defining an MED?**

86 A. Yes. The IEEE Standard 1366 defines a "major event" as one that "exceeds reasonable  
87 design and or operational limits of the electric power system," such as extreme weather  
88 conditions, like severe flooding, tornadoes, and derechos. *See* ComEd Ex. 5.01 at 19. In  
89 other words, an MED is an event beyond a utility's control. If an event meets the IEEE  
90 Standard 1366 definition of an MED, the event is excluded from IEEE's reliability metrics,  
91 including SAIFI and SAIDI. *See* ComEd Ex. 5.01 at 26.

92 **Q. Did ComEd propose the IEEE Standard 1366 definition of MEDs during the initial**  
93 **phase of this proceeding?**

94 A. Yes. As I testified in the initial phase of the proceeding, ComEd's proposal for the SAIDI  
95 calculation for Performance Metrics 1 and 2 is based on the IEEE definition of MEDs. *See*  
96 e.g., Arns Reb., ComEd Ex. 5.0 CORR at 6:122-7:128. In addition, ComEd and Staff  
97 reached agreement to exclude interruptions lasting one minute or less in their calculations.  
98 Arns Sur., ComEd Ex. 19.0 at 3:57-59. The Order implicitly adopted both in its definition  
99 of MEDs for purposes of the performance metrics. Order at 103.

100 **Q. How did the Order further modify the definition of MEDs for measuring**  
101 **Performance Metrics 1 and 2?**

102 A. In the Order, the Commission further modifies the IEEE definition of MED by adopting  
103 three new criteria for what qualifies as an MED:

- 104 1. MEDs must result from outages that result from an event outside of the Company's  
105 control, such as an extreme weather event or terrorist or cyberattack on the system.

2. In the case of MEDs resulting from extreme weather, conditions must exceed National Electrical Safety Code requirements as specified in 83 Ill. Admin. Code 305 (“Part 305”) and other provisions within the Code.

3. MEDs may not result from a planned event within the Company’s control, such as maintenance activities on a non-storm day.

Order at 103.

**Q. Does the Order also provide how many MEDs can be included in the SAIDI and SAIFI calculations for purposes of Performance Metrics 1 and 2?**

A. Yes. The IEEE Standard 1366 *excludes all* MEDs from the calculation of reliability because, by definition, MEDs are statistical anomalies that are not representative of a utility’s day-to-day reliability performance. The Order is almost a complete reversal of this standard – it requires ComEd to *include all* MEDs except for five MEDs when calculating Performance Metrics 1 and 2 (“five MED exclusion”). It is my understanding, as a non-lawyer, that the Order’s five MED exclusion does not fall into the scope of Rehearing. However, I mention it because the five MED exclusion is related to the Order’s modified MED definition, and that definition’s practicality in the context of the performance metrics.

**Q. What is your understanding of the purpose of the three criteria?**

A. While I am not a lawyer, it is my understanding that the Commission was concerned that the IEEE definition of MEDs did not sufficiently distinguish between controllable (i.e., a mistake or oversight by ComEd) versus uncontrollable interruptions. Order at 103.

**Q. Are the three criteria necessary to fulfil this purpose?**



128 A. No, they are not necessary. The IEEE Standard 1366 already defines “a major event” as  
129 an event beyond a utility’s control. *See* IEEE Standard 1366-2012, provided as ComEd  
130 Ex. 5.01 at 19. As such, the two criteria that attempt to differentiate the controllable and  
131 uncontrollable outages when defining an MED – Criteria 1 and 3 – are superfluous.  
132 Criterion 2 also does not fulfill this purpose because the standard it provides – the NESC  
133 standard – is not relevant to whether an outage triggering event, like extreme weather, was  
134 within ComEd’s control. I also have other concerns about the three new criteria.

135 **Q. Can you explain your other concerns generally about the Order’s three new MED**  
136 **definition criteria?**

137 A. Yes. Simply put, the three criteria, especially Criterion 2, unnecessarily “muck it up” and  
138 result in performance metrics that are not practicable or reasonably within ComEd’s control  
139 to achieve. The three criteria add ambiguity and impracticality to an otherwise objective  
140 standard for determining MEDs. The lack of guidance in the Order leaves the criteria  
141 unclear as to their meaning and application. Most importantly, the NESC-based definition  
142 under Criterion 2 does not clearly explain how it should apply to different weather events.  
143 As I demonstrate below, Criterion 2 almost certainly renders the Order’s five MED  
144 exclusion meaningless. The practical impact is that *all* MEDs will be included in the  
145 calculation of the reliability indices, rendering Performance Metrics 1 and 2 likely beyond  
146 ComEd’s reasonable control to achieve.

147 It is for these reasons, which I explain below in detail, that the three criteria should  
148 be eliminated from the definition of MEDs. Alternatively, Criteria 1 (if modified) and  
149 Criteria 3 could be retained, and Criteria 2 deleted.

150 **Q. Were these three criteria analyzed by ComEd, Staff, and the other parties during the**  
151 **initial phase of this proceeding?**

152 A. No. The three criteria were introduced into the proceeding for the first time in the  
153 Administrative Law Judges' Proposed Order on August 19, 2022. Therefore, there is no  
154 underlying evidentiary record specifically regarding the three criteria.

155 **1. Criterion 2: NESC-Based Definition**

156 **Q. Can you summarize your concerns about Criterion 2, which states that “[i]n the case**  
157 **of MEDs resulting from extreme weather, conditions must exceed National Electrical**  
158 **Safety Code requirements as specified in 83 Ill. Admin. Code 305 (“Part 305”) and**  
159 **other provisions within the Code” to qualify as an MED?**

160 A. Simply put, Criterion 2 is impractical and results in performance metrics beyond ComEd's  
161 control to achieve. First, Criterion 2 lacks definitions for several key terms. Second, it  
162 invokes the NESC. The NESC rules are intended to safeguard employees and the public  
163 during installation, operation, and maintenance of utility facilities; they have no relevance  
164 to MEDs or the definition of MEDs. The Order does not provide any guidance on how the  
165 NESC should be applied to weather events days when determining if they meet Criterion  
166 2's definition of an MED. Third, as I will demonstrate with a recent weather example and  
167 historical data, the likely lasting impact of Criterion 2 is that no weather event will qualify  
168 as MEDs for purposes of calculating Performance Metrics 1 and 2, rendering the Order's  
169 five MED exclusion worthless and Performance Metric 1 and part of Performance Metric  
170 2 likely outside of ComEd's control to achieve.

171 **Q. Is “extreme weather”, as used in Criterion 2 (“[i]n the case of MEDs resulting from**  
172 **extreme weather,...”), defined in the Order?**

173 A. No.

174 **Q. What kind of weather results in MEDs (under the IEEE Standard 1366 definition) in**  
175 **ComEd’s service territory?**

176 A. Weather events are the most common causes of unplanned outages in ComEd’s service  
177 territory that result in MEDs. Microbursts, derechos, and tornadoes may cause damage to  
178 wires, poles, and equipment both directly and indirectly through fallen trees and debris.  
179 Heavy rain and flooding can result in uprooted trees and damaged overhead and  
180 underground facilities. In snowstorms or ice storms, the weight of the precipitation can  
181 cause tree branches or wires to break and damage other equipment. Lightning can lead to  
182 fallen trees or directly damage overhead and underground equipment, even when lightning  
183 protection is installed. These weather conditions often lead to other causes of outages as  
184 well, including flying debris and other foreign objects, vehicle accidents, and fires. During  
185 an extreme weather event, ComEd may also conduct intentional outages that are  
186 nevertheless beyond its control. For example, ComEd may be required to de-energize  
187 equipment for emergency repairs or to ensure system integrity.

188 **Q. Criterion 2 invokes the NESC (“[i]n the case of MEDs resulting from extreme**  
189 **weather, conditions must exceed National Electrical Safety Code requirements as**

190 **specified in 83 Ill. Admin. Code 305 (“Part 305”) and other provisions within the**  
191 **Code”). Can you describe the NESC at a high level?**

192 A. Yes. The NESC is an industry standard for the safe installation, operation, and  
193 maintenance of electric power and communication utility systems. It is a proprietary  
194 document authored and published by the IEEE, and it contains provisions related to various  
195 aspects of safeguarding persons and facilities. The NESC is used when utility facilities are  
196 being designed, built, and maintained. The NESC is not intended as a design specification  
197 or as an instruction manual. *See* Rule 10 (Purpose), 2017 National Electrical Safety Code  
198 C2-2017, provided as ComEd Ex. 36.01 at 26-27. The NESC currently in effect was  
199 published in 2017; an updated version of the NESC, which will go into effect on February  
200 1, 2023, was published in August 2022. While the NESC is a voluntary standard, many  
201 states and governmental entities, including the Commission, have adopted all or part of the  
202 NESC as legal requirements.

203 **Q. Has Illinois adopted the NESC as a legal requirement?**

204 A. Yes, Illinois has adopted part of the NESC. Specifically, Part 305 of the Commission’s  
205 rules (also referred to as “Part 305”) adopt portions of the 2017 NESC by reference. 83 Ill.  
206 Admin. Code 305.20. Part 305 concerns the “practical safeguarding of persons during the  
207 installation, operation, or maintenance of electric supply and communication lines and their  
208 associated equipment. It contains minimum requirements considered necessary for the  
209 safety of employees and the public.” 83 Ill. Admin. Code 305.10.

210 **Q. Criterion 2 refers to “National Electrical Safety Code requirements as specified in ...**  
211 **[Part 305]...” Can you briefly describe those NESC requirements that have been**  
212 **adopted within Part 305?**

213 **A.** Yes. Part 305.20 adopts by reference wholesale four portions of the 2017 version of the  
214 NESC:

- 215 • **Section 2 (Definitions of Special Terms)** – this section defines the terms used in  
216 the NESC. For example, “conduit” is defined as a structure containing one or more  
217 ducts. *See generally*, 2017 NESC Section 2, provided as ComEd Ex. 36.01 at 34.
- 218 • **Section 9 (Grounding Methods of Electric Supply and Communications**  
219 **Facilities)** – “[t]he purpose ... of this section is to provide practical methods of  
220 grounding, as one of the means of safeguarding employees and the public from  
221 injury that may be caused by electrical potential.” 2017 NESC Rule 90; *see* ComEd  
222 Ex. 36.01 at 47. For example, Rule 92.A requires, among other things, that for  
223 direct-current systems 750 V and below, connections are to be made only at supply  
224 stations, whereas for systems over 750 V connections must be made at both the  
225 supply and load stations. 2017 NESC Rule 92.A; *see* ComEd Ex. 36.01 at 47.
- 226 • **Part 2 (Sections 20-27: Safety Rules for the Installation and Maintenance of**  
227 **Overhead Electric Supply and Communication Lines)** – “[t]he purpose of Part  
228 2 ... is the practical safeguarding of persons during the installation, operation, or  
229 maintenance of overhead supply and communication lines and their associated  
230 equipment.” 2017 NESC Rule 200; *see* ComEd Ex. 36.01 at 49. For example, Rule  
231 250 (General loading requirements and maps), provides overhead lines loading  
232 requirements related to ice and wind conditions. *See* ComEd Ex. 36.01 at 57.

- **Part 3 (Sections 30-39: Safety Rules for the Installation and Maintenance of Underground Electric Supply and Communication Lines)** – “[t]he purpose of Part 3 ... is the practical safeguarding of persons during the installation, operation, or maintenance of underground or buried supply and communication cables and associated equipment.” 2017 NESC Rule 300; *see* ComEd Ex. 36.01 at 62. For example, Rule 313 contains requirements concerning the inspection and tests of underground lines and equipment. *See* ComEd Ex. 36.01 at 63.

**Q. Do any of the four portions of the 2017 NESC that are incorporated by reference into Part 305 expressly concern extreme weather?**

A. Yes, but those portions of the NESC that mention weather are limited in number and in scope. The following are those 2017 NESC sections incorporated by reference that expressly mention weather elements (wind, ice, frost, and lightning):

- **Rule 250 (Safety Rules for Overhead Lines: General loading requirements and maps)** discusses loading requirements for overhead structures for wind and ice conditions, *i.e.*, the weather conditions and their consequent forces that a structure must be designed to withstand. It provides guidance on the conditions that the utility’s overhead structures must endure for (1) combined ice and wind district loading; (2) extreme wind loading; (3) extreme ice with concurrent wind loading. These objective measures relate to wind speeds when developing loading requirements including the 2017 NESC Figure 250-2(b) (Basic wind speeds)), which specifically requires that structures must be able to withstand winds of up to 90 miles per hour in three second gusts at 33 feet above ground. *See* ComEd Ex.

36.01 at 60. Rule 250 includes structural loading requirements that apply to both components (*e.g.*, distribution line) and supporting facilities (*e.g.*, wooden poles).

- **Rule 323 (Manholes, Handholes, and Vaults)** concerns manholes, handholes, and vaults. It states that when hydraulic, frost, or other uplift<sup>1</sup> is encountered, the structures shall either be of sufficient weight or adequately restrained so as to withstand the force. 2017 NESC Rule 323A.4; *see* ComEd Ex. 36.01 at 65. Essentially, Rule 323 provides that the structure should be designed to either be heavy enough or be restrained enough to not be shifted upwards by known external forces in the ground, so designs must account for anticipated frost conditions.
- **Rule 239 (Lightning Protections).** Certain 2017 NESC references to lightning protection have been incorporated by reference into Part 305. These provisions specifically concern the use of protective devices to limit surge voltages that might be encountered during lightning storm events. For example, Rule 239D.4 provides that “[g]uards that completely enclose grounding conductors of lightning-protection equipment shall be of nonmetallic materials or shall be bonded at both ends to the grounding conductor.” *See* ComEd Ex. 36.01 at 51.

**Q. Does the Order clarify what is meant by “other provisions within the Code”? (“[i]n the case of MEDs resulting from extreme weather, conditions must exceed National**

---

<sup>1</sup> In this context, “uplift” refers to other known vertical forces on the manhole, handhold, or vault that would push it up instead of down.

**Electrical Safety Code requirements as specified in 83 Ill. Admin. Code 305 (“Part 305”) and other provisions within the Code”). Order at 103.**

A. No. In my non-legal reading of the September 27 Order, the Order does not clarify if “the Code” refers to the NESC or the Illinois Administrative Code. It also does not explain what is meant by “other provisions.”

**Q. To pull this together, do all of the types of “extreme weather” that result in MEDs in ComEd’s service territory have a corresponding NESC rule, whether in Part 305 or in the entirety of the 2017 NESC?**

A. No. Not every type of weather that can cause (directly or indirectly) an outage in ComEd’s service territory has a corresponding NESC rule.

For example, Table 1 below lists the days in 2021 that met the IEEE Standard 1366 definition of an MED (in descending order based on SAIDI). Table 1 also includes the weather conditions, top causes of outages, and the maximum wind gusts and speeds in the service territory and the airport where the wind was recorded.<sup>2</sup>

**Table 1<sup>3</sup>**

MED	CUSTOMER MINUTE INTERRUPTIONS	SAIDI	WEATHER CONDITIONS	TOP 3 CAUSE CATEGORIES / CAUSE DETAILS BASED ON % OF TOTAL CUSTOMER MINUTE INTERRUPTIONS	O'HARE MAX WIND GUST	MAX SUSTAINED WIND SPEED IN SERVICE TERRITORY	AIRPORT WITH MAX WIND SPEED IN SERVICE TERRITORY
8/10/2021	121,286,557	29.8	LIGHTNING, RAIN, WIND	Tree Related - Limb Broken - Primary (50%), Weather Related - Wind / Tornado (21%), and Weather Related - Lightning (18%)	58	36	KMDW MIDWAY APT
8/11/2021	36,471,244	9.0	LIGHTNING, RAIN, WIND	Tree Related - Limb Broken - Primary (41%), Weather Related - Wind / Tornado (31%), and Weather Related - Lightning (12%)	49	32	KARR SUGAR GROVE

<sup>2</sup> The source for wind speeds is Iowa State University. Iowa State University has an application programming interface (API) that ComEd uses to retrieve data from the automated surface observing systems (ASOS) stations. <https://mesonet.agron.iastate.edu/>

<sup>3</sup> “Max wind gusts” refers to wind bursts. “Max sustained wind speed” refers to wind speeds that are sustained winds determined by averaging observed values over a two-minute period. “Rain” refers to heavy rain and ensuing flooding, both of which can slow down outage restoration.



6/20/2021	16,133,889	4.0	RAIN, TORNADO, WIND	Weather Related - Wind / Tornado (64%), Tree Related - Limb Broken - Primary (15%), and Weather Related - Lightning (10%)	28	22	KPNT ODELL & KARR SUGAR GROVE
7/29/2021	12,860,908	3.2	RAIN, WIND	Tree Related - Limb Broken - Primary (39%), Weather Related - Wind / Tornado (28%), and Weather Related - Lightning (14%)	48	29	KPWK NORTHBROOK
12/15/2021	10,681,965	2.6	WIND	Weather Related - Wind / Tornado (59%), Tree Related - Limb Broken - Primary (20%), and Overhead Equipment Related - Malfunction (5%)	60	39	KDKB DEKALB
8/24/2021	9,441,156	2.3	LIGHTNING, RAIN, WIND	Tree Related - Limb Broken - Primary (33%), Weather Related - Lightning (23%), and Weather Related - Wind / Tornado (17%)	47	30	KSQI ROCK FALLS
10/25/2021	9,406,979	2.3	LIGHTNING, RAIN, WIND	Tree Related - Limb Broken - Primary (36%), Weather Related - Wind / Tornado (27%), and Weather Related - Lightning (13%)	46	36	KMDW MIDWAY APT
9/7/2021	9,086,760	2.2	HAIL, LIGHTNING, RAIN, WIND	Tree Related - Limb Broken - Primary (43%), Weather Related - Wind / Tornado (29%), and Weather Related - Lightning (15%)	37	45	KC09 MORRIS
10/24/2021	5,625,581	1.4	LIGHTNING, RAIN, WIND	Tree Related - Limb Broken - Primary (32%), Weather Related - Wind / Tornado (16%), and Weather Related - Lightning (14%)	40	33	KLOT ROMEOVILLE
12/16/2021	5,197,019	1.3	WIND	Weather Related - Wind / Tornado (57%), Tree Related - Limb Broken - Primary (21%), and Intentional - Emergency Repairs (7%)	63	37	KC09 MORRIS

Several of the 2021 MEDs involved rain, and one each involved hail and tornadoes. There are no NESC rules that specifically address rain, hail and tornadoes.<sup>4</sup> Several of the 2021 MEDs involve lightning, but the NESC rules that mention lightning (*e.g.*, Rule 239D.4) relate to design elements of the surge protections devices for lightning.

**Q. Does the Order explain how an outage caused by extreme weather should be evaluated under Criterion 2 as an MED if the weather event, or specific conditions of the weather event, do not have a corresponding NESC rule?**

**A.** No.

**Q. All of the 2021 MEDs provided in Table 1 involve wind, which (for the sake of argument) has an objectively applicable NESC rule (2017 NESC Rule 250 - Safety**

---

<sup>4</sup> ComEd has experienced several MEDs in which there were tornadoes reported with wind speeds greater than 100 MPH based on the Enhanced Fujita Scale (EF Scale). Such microbursts are not captured by the 22 local National Weather Service (“NWS”) weather stations, so it is impossible to know whether, where, and when such winds occurred. That is why the June 20, 2021 MED entry in Table 1 acknowledges a tornado, but only provides maximum recorded wind speeds of 22 mph.

**Rules for Overhead Lines: General loading requirements and maps). What would be the result if Criterion 2 were applied to the 2021 extreme weather events provided in Table 1?**

A. In order for an extreme weather event to meet the definition of an MED, “conditions must exceed National Electrical Safety Code requirements as specified in 83 Ill. Admin. Code 305 (“Part 305”) and other provisions within the Code.” Order at 103. While all of the 2021 MEDs involved wind, none of them had “conditions” that exceeded 2017 NESC Rule 250 (i.e., 90 miles per hour for a 3 second gust wind speed at 33 feet above the ground). Therefore, none of the extreme weather events in 2021 would qualify as an MED under Criterion 2.

**Q. Turning to the practical implementation of Criterion 2, does the Order provide guidance on how ComEd should evaluate an outage resulting from severe weather to determine if it meets the definition of an MED under Criterion 2?**

A. No. The Order does not provide any practical guidance or process for how an extreme weather event should be analyzed under Criterion 2 to determine if the event meets the definition of an MED.

**Q. Without such guidance, will there be practical difficulties applying Criterion 2 to severe weather events?**

A. Yes. In addition to Criterion 2’s ambiguous language, and the fact that it is unclear how extreme weather events without an NESC corollary should be evaluated, there are additional practical difficulties with Criterion 2’s application. For example, because the NESC focuses on facility and equipment design, it is inherently hyperlocal, *i.e.*, focused

on the particular pole or wire involved in the outage. In order to apply Criterion 2 to a particular outage during an extreme weather event, ComEd would need to identify the location of every ComEd facility/equipment that experienced an outage during the event. This in and of itself would be challenging in the wake of a system-wide storm that impacts ComEd's 11,000 square mile service territory, or when the relevant equipment is damaged by the severe weather event. For each facility/equipment involved in the outage, ComEd would then identify the facility/equipment's date of design and installation (and if relevant, modification) determine which version(s) of the NESC applies. ComEd would also need to collect weather data specific to each location of every facility/equipment outage to determine whether the local weather exceeded the condition described in the NESC.

**Q. Why would you need to determine the date of design, installation and modification of the facility/equipment in question?**

A. Criterion 2 requires a determination of whether "conditions" exceeded the NESC. To determine the relevant "conditions", ComEd would first have to determine which version of the NESC applied to the facility/equipment at issue. The NESC is used when utility facilities are being designed, built, and maintained. Therefore, the relevant NESC version applicable to a facility/equipment involved in an outage will generally be the version that was in place at the time the facility/equipment was designed, installed, or modified.<sup>5</sup>

The NESC has been updated periodically. For example, the current standard under 2017 NESC Rule 250 that overhead structures (like poles) must withstand winds of 90

---

<sup>5</sup> For existing installations, the NESC generally provides that existing installations that comply with prior editions of the code generally do not need to be modified to comply with the current version of the rules with a limited number of exceptions. 2017 NESC Rule 013B.2; provided as ComEd Ex. 36.01 at 29.

340 miles per hour in three second gusts at 33 feet above ground was not adopted until 2002.  
341 Earlier versions of the NESC did not use the same wind velocities as the current 2017  
342 NESC. *See e.g.*, 1926 NESC Rule 250, provided in ComEd Ex. 36.02 at 5-7. (which  
343 included the similar loading districts, of which Illinois is in the “Heavy” district, but  
344 strength requirements were based on radial ice and wind pressure considerations that  
345 generally allowed for lower designed wind velocities, requiring structures to withstand  
346 winds of approximately 55 miles per hour).

347 **Q. How would ComEd determine the applicable NESC version to determine the relevant**  
348 **“conditions” for analysis under Criterion 2?**

349 A. It will be difficult and not practicable to implement. During an extreme weather event,  
350 there are frequently multiple outages, so the dates of design, installation, and modification  
351 would have to be collected for each facility/equipment involved in the outage, which is  
352 tedious and time consuming, especially if an extreme weather event impacted ComEd’s  
353 entire service territory.

354 In addition, the application of Criterion 2 may vary based on the age of the different  
355 facilities/equipment (and thus different applicable NESC versions), which would lead to  
356 inconsistent (and confusing) results. For example, a pole installed in 2020 that was  
357 involved in a weather-related outage would be subject to a different NESC standard for  
358 wind speed (and thus different “conditions” would apply Criterion 2) than an adjacent pole  
359 installed in 2000.

**Q. Are you saying that ComEd's older facilities and equipment are not in compliance with current relevant NESC requirements?**

A. Not at all. My hypothetical is meant to show how the words of Criterion 2 would literally be implemented. It in no way is meant to reflect how ComEd maintains and operates its distribution grid in practice. To be sure, the reality is that ComEd's internal requirements generally exceed the NESC *minima*, and we ensure that every structure complies with the minimum NESC requirements, if not better. ComEd has a variety of internal processes and procedures in place to ensure that its facilities are designed and constructed in compliance with the NESC and other applicable requirements.

ComEd standards have always been based on satisfying all applicable NESC, National Electrical Code (NEC), IEEE, and other relevant standards. ComEd system design (Engineering Standard Practice or "ESPs") has always required meeting the strength requirements for the applicable grade of construction through calculation. ESPs are designed to ensure that all applicable codes, including the NESC, are incorporated and, in many cases, exceeded. All ComEd designers are trained on the applicable ESPs to ensure that ComEd continues to install well-designed facilities and perform beyond the minimum requirements set out in the NESC. All ComEd designs are reviewed for quality assurance prior to construction.

ComEd also employs technology to help ensure that its structures comply with NESC. For example, ComEd uses PoleForeman, a Windows® based structural analysis application for use by engineers and technicians who design and maintain overhead utility lines. The application is populated with ComEd specific data, which includes but is not limited to conductors, line hardware and related strength ratings, guy ratings, and primary

construction and configuration. PoleForeman is designed to assist in classing wood utility poles and sizing guy strands to ensure they meet the selected strength requirements outlined in the selected NESC Grade of Construction criteria.

**Q. Does ICC Staff review ComEd’s reliability and performance for compliance with NESC and other code requirements?**

A. Yes. ComEd submits an annual Electric Reliability and Customer Satisfaction Survey Report (“Reliability Report”) in accordance with Section 411.120, 83 Ill. Admin. Code 411.120. The Reliability Report describes, among other things, the number and duration of planned and unplanned interruptions, number and causes of controllable interruptions, and interruptions caused by other entities.<sup>6</sup>

ICC Staff is to conduct a triennial assessment of ComEd’s annual Reliability Report and reliability performance for the previous calendar years, which then the Commission reviews and adopts. 83 Ill. Admin. Code 411.140(a). To date, Staff has not identified any noncompliance with any applicable Commission rules or NESC requirements related to weather conditions in their assessments.<sup>7</sup>

Additionally, while not the focus of the audit, the 2022 Baseline Grid Audit conducted by auditor Liberty Consulting Group on behalf of the Commission in ICC Docket 21-0737, did not identify any findings of noncompliance with any applicable

---

<sup>6</sup> ComEd’s Reliability Reports from 2012 through 2021 are publicly available on the Commission’s website ([www.icc.illinois.gov/industry-reports/electric-reliability](http://www.icc.illinois.gov/industry-reports/electric-reliability)).

<sup>7</sup> ICC Docket Nos. 21-0307 (2019 ComEd assessment); 19-0792 (2017 ComEd assessment); 19-0791 (2014 ComEd assessment); 15-0416 (2013 ComEd assessment); 15-0185 (2012 ComEd assessment).

Commission rules or NESC requirements during its audit of ComEd's distribution system from 2010 through 2020.<sup>8</sup>

**Q. Returning back to the topic of applying Criterion 2, would it be difficult to determine if the extreme weather exceeded a condition described in the NESC?**

A. Yes, it would be impracticable and difficult to make that determination because ComEd does not have access to ubiquitous hyper-localized weather information. Take, for example, wind speed, overhead lines and facilities, and 2017 NESC Rule 250. The 22 NWS weather stations in ComEd's service territory do not collect the localized wind speed for each and every ComEd overhead structure that may experience an outage during the windstorm to determine if the local conditions exceeded 90 mph wind gusts for 3 seconds or more. To obtain such granular data for all its overhead facilities, ComEd would have to hire external meteorologists to track such data for every weather event to determine whether it would qualify as an MED, or install significantly more weather stations at multiple locations on every circuit in ComEd's service territory. Both options are very costly.

**Q. Can you use a recent extreme weather outage example to show how difficult it will be in practice to determine if an event qualified for an MED under Criterion 2?**

A. Yes. On November 5, 2022, northern Illinois experienced a windstorm ("November 5 Windstorm"). A low-pressure system tracked along the Mississippi River while rapidly intensifying, leading to strong and damaging winds in ComEd's service territory. Peak

---

<sup>8</sup> The "Final Report Baseline Distribution Grid Assessment of Commonwealth Edison Company" is available at: <https://icc.illinois.gov/programs/climate-and-equitable-jobs-act-implementation>.

421 measured wind gusts ranged from 55 to 75 miles per hour, and a wind gust of 77 miles per  
422 hour was measured at DuPage Airport. Additionally, a line of showers produced a brief  
423 EF-0 tornado with peak winds of 80 miles per hour in certain areas of ComEd's service  
424 territory. The November 5 Windstorm affected over 131,000 customers with a storm  
425 SAIDI of 4.2 minutes. Major drivers for the storm SAIDI were weather related –  
426 wind/tornado interruptions (53%), tree related - limb broken – primary interruptions (28%),  
427 and intentional - emergency repairs (5%).

428 The November 5 Windstorm qualifies as an MED under the IEEE Standard 1366  
429 definition, as well as the IEEE Standard 1366 definition modified with the 1 minute or less  
430 interruptions. The November 5 Windstorm also qualifies as an Extreme Weather Event  
431 Day ("EWED") under EIMA (Public Act 097-0616). The November 5 Windstorm was  
432 also not within ComEd's control; ComEd does not control the weather.

433 We cannot determine if the November 5 Windstorm would qualify as an MED  
434 under Criterion 2, however. Practically all outages experienced on November 5 were  
435 related to overhead lines. Therefore, under the 2017 NESC Rule 250, overhead structures  
436 must withstand winds of 90 miles per hour in three second gusts at 33 feet above ground  
437 (assuming for simplicity that the 2017 NESC is the applicable version for each outage  
438 location). But those conditions were never reached or exceeded. None of the 22 NWS  
439 weather stations reported wind gusts over 90 miles per hour. It is unclear whether the wind  
440 speeds at each outage location exceeded 90 miles per hour because ComEd does not have  
441 localized weather sensors at each outage location. Therefore, the November 5 Windstorm  
442 appears to have failed to satisfy Criterion 2 and would not be considered an MED for  
443 purposes of calculating Performance Metrics 1 and 2 (and potentially excluded). Rather,



it would be included in the reliability (SAIDI and SAIFI) calculations for Performance Metrics 1 and 2, making the performance metrics' annual goals much more difficult for ComEd to achieve.

**Q. Has ComEd conducted a historical analysis of Criterion 2?**

A. Yes. After the September 27 Order was issued, ComEd conducted an analysis of the MEDs caused by extreme weather events over the last 10 years in its service territory to see if they would have still met the definition of an MED if Criterion 2 had been in place.<sup>9</sup> To perform its analysis, ComEd used publicly available measurement data from the 22 NWS weather stations within or near the ComEd service territory.

**Q. What were the results of ComEd's analysis?**

A. The results were revealing. Based on publicly available NWS data, it appears that *none* of the MEDs ComEd has experienced over the last 10 years would qualify as an MED if they had been subjected to Criterion 2.

As I mentioned earlier, one of the very few NESC rules relevant to objectively measurable elements of weather events, NESC Rule 250 (Safety Rules for Overhead Lines: General loading requirements and maps), specifically requires that structures must be able to withstand winds of up to 90 miles per hour in three second gusts at 33 feet above ground. ComEd Ex. 36.01 at 60.

---

<sup>9</sup> All of the days that qualify as an MED under the IEEE Standard 1366-2012 in the last 10 years were extreme weather days.

The highest measured wind gust for the Chicagoland area was 87 mph in 1894.<sup>10</sup>  
That means that *none* of the historical weather events over the last 10 years that otherwise  
have qualified as an MED under the industry-standard IEEE definition would have  
qualified as an MED under the Commission's modified definition.

In other words, all of the extreme weather events, including the 2020 Derecho,  
would have been included in ComEd's SAIDI calculations for purposes of Performance  
Metrics 1 and 2 under the Order's modified MED definition.

**Q. What do the analyses of Criterion 2 as it is applied to the November 5 Windstorm and  
the 10-Year Historical MEDs indicate?**

A. The analyses of the 10-year historical MEDs and the current November 5 Windstorm MED  
indicate that if Criterion 2 remains part of the Commission's MED definition, then it is  
very likely that no severe weather events in ComEd's service territory would ever qualify  
as an MED for purposes of Performance Metrics 1 and 2. All severe weather events, which  
would otherwise qualify as an MED under IEEE Standard 1366, would be reflected in the  
calculations of SAIDI and SAIFI. Such an outcome would render the Order's five MED  
exclusion meaningless. It would also ignore the Commission's explicit rejection of Staff's  
recommendation to include all MEDs in the Performance Metrics calculations. Order at  
102. Finally, it would also make achievement of Performance Metrics 1 and 2 not  
reasonably in ComEd's control to achieve.

**2. Criteria 1 & 3: Events Outside of ComEd's Control**

---

<sup>10</sup> National Weather Service – National Oceanic and Atmospheric Administration, Official  
Extreme Weather Records for Chicago, IL, *available at* [www.weather.gov/lot/Chicago\\_records](http://www.weather.gov/lot/Chicago_records) (last  
accessed October 23, 2022).

**Q. Earlier in your testimony, you described Criteria 1 and 3 “superfluous”. Can you elaborate on your statement?**

A. Yes. While I am not a lawyer, it is my understanding that Criteria 1 and 3 (and 2) were conceived because the Commission was concerned that the IEEE definition of MEDs did not sufficiently distinguish between controllable (*i.e.*, a mistake or oversight by ComEd) versus uncontrollable interruptions. Order at 103. However, as I explained earlier, the IEEE Standard 1366 already defines “a major event” as an event beyond a utility’s control. IEEE Standard 1366-2012 at 3, provided as ComEd Ex. 5.01 at 19. As such, Criteria 1 and 3 are not necessary. They (with Criterion 2) should not be included in the Commission’s MED definition.

With that said, unlike Criterion 2, ComEd finds Criteria 1 and 3 rather inoffensive, as explained in ComEd’s BOE (at pages 19-20) and RBOE (at page 14). Therefore, in the alternative, the Commission could retain Criteria 1 (with modifications described below) and Criteria 3 in its MED definition, but eliminate Criterion 2 for the reasons provided above.

**Q. In the alternative, how could Criterion 1 be modified?**

A. Criterion 1’s examples of outage events that are outside of the Company’s control (extreme weather event or terrorist or cyberattack on the system) are misleading in their extremeness. The examples imply that all uncontrollable outages are caused by “big” events, like extreme weather and terrorism. Actually, there is a wide spectrum of events outside ComEd’s control that can cause outages, ranging from “big events” (such as derechos) to more mundane events (like metallic (*i.e.*, mylar) celebration balloons). If the Commission

were to retain Criterion 1, to prevent inadvertent narrowing, and reduce room for disagreement on its interpretation, ComEd recommends that the clause in Criterion 1 “such as an extreme weather event or terrorist or cyberattack on the system” be stricken.

**B. Intervenor-Proposed Tracking Metrics**

**Q. Please provide an overview of the tracking metrics adopted by the Commission in its Order.**

A. The Order adopts a total of 31<sup>11</sup> tracking metrics, which ComEd will track annually from 2024 through 2028, and report on annually. Order at 210-227. The 31 tracking metrics consist of 16 ComEd-proposed tracking metrics and an additional 15 intervenor-proposed tracking metrics.

Many of the intervenor-proposed tracking metrics contain multiple components that make up a single metric. For example, NRDC’s “tracking metric for any demand response-related tariff or program” (Tracking Metric 5 in the Plan) contains 19 distinct tracking components. See Plan at 20-22. In another example, CUB/EDF’s grid flexibility tracking metric (Tracking Metric 15 in the Plan) contains 16 separate components. *Id.*, at 28-29. In all, the adoption of the intervenor-proposed tracking metrics will require ComEd to implement at least 100 separate reporting streams. A table of the tracking metrics, along

---

<sup>11</sup> In addition to ComEd’s 16 tracking metrics, the Commission’s Order adopts 18 additional intervenor-proposed tracking metrics, including “the first nine tracking metrics (Interconnection Category) proposed by the Solar Intervenors.” (Order at 223). The Solar Parties acknowledged that three of its proposed tracking metrics were addressed by ComEd’s Tracking Metrics 11 and 12 and therefore no longer necessary for approval (specifically, the “Total front-of-the meter DERs deployed; Total behind-the-meter DERs deployed; Total of new front-of-meter and behind-the-meter DERs deployed in the last calendar year” proposed tracking metrics). *See* JSP Init. Br. at 44. Therefore, the ComEd Performance and Tracking Metrics Plan filed in this docket does not include those three JSP proposed tracking metrics in its 31 tracking metrics.

with the proposing intervenor party (if not ComEd), and the issues associated with the respective tracking metric, is provided as Table 2.

**Table 2**

Category	Tracking Metric	Proposing Party (if not ComEd)	Issue (if any)
Emissions Reductions	1. Emissions Reductions Supported by ComEd Programs		
	2. ComEd Net GHG Emissions		
	3. Marginal Greenhouse Gas Emissions Reduction Index	CUB/EDF	
	4. Emissions Reductions from Electrification Index	CUB/EDF	
	5. Report Tracking Metrics for Any Demand Response-related Tariff or Program (19 components)	NRDC	Vague/Incompletely defined components; unreasonable/burdensome components; information not available to ComEd
	6. Managed EV Charging (4 components)	NRDC	Information not available to ComEd
	7. V2G Export Compensation (3 components)	NRDC	
	8. EV EMS Cost Savings (3 components)	NRDC	Information not available to ComEd
	9. Direct Current Fast Charging Load	NRDC	Information not available to ComEd
Grid Flexibility	10. DERMS and Managed Charging Network Availability		
	11. DERMS Participation		
	12. Cumulative DER Interconnected to ComEd Distribution System		
	13. Annual DER Interconnected to		

	ComEd Distribution System		
	14. EV Load and Participation		
	15. Grid Flexibility Tracking Metrics (16 components)	CUB/EDF	Vague/incompletely defined components
Cost Savings	16. Avoided Outage Cost Due to Grid Modernization Investments		
	17. Number of NWA Opportunities		
	18. DER projects pending capacity-constrained interconnection	JSP	
	19. Number of pending interconnection requests with cost estimate and current status	JSP	
	20. Interconnection upgrade cost estimates as compared to actual interconnection cost	JSP	
	21. Total costs of interconnection upgrade by project and feeder	JSP	
	22. Total time measured in days to complete key milestones of interconnection process	JSP	
	23. Hosting capacity for DERs	JSP	Unreasonable/burdensome
Diversity in Jobs and Opportunities	24. % Tier 1 Spend with Illinois Businesses		
	25. % Diverse Professional Services Spend		
	26. Number of Diverse Contractors Completing ComEd Development Programs		
Equity in Allocation of	27. IEEE and All-In Regional SAIDI		

Grid Planning Benefits	28. DSM Program Equitable Participation		
	29. Financial Assistance Outreach & Education		
	30. Customers Exceeding Minimum Service Levels		
	31. Equitable Grid Planning Metric (3 components)	CUB/EDF	Information not available to ComEd

**Q. Has ComEd developed a plan on how to track the approved tracking metrics?**

A. Yes. Pursuant to the Order, on November 22, 2022, ComEd submitted its Plan, which outlines how ComEd will measure each performance and tracking metric. As required by the Order, ComEd sought feedback from Staff and intervenors prior to finalizing the Plan. However, as noted in the Plan and in Table 2 above, there are several intervenor-proposed tracking metrics that ComEd identified as (1) too vague or incompletely defined, (2) unreasonable and overly burdensome, and/or (3) requiring information that is not available to ComEd.

**Q. What does ComEd recommend for those tracking metrics that it has identified as too vague, burdensome and/or requiring information outside of ComEd's control?**

A. While I am not a lawyer, it is my understanding that Section 16-108.18(e)(2)(A) requires tracking metrics approved by the Commission to be "specific, measurable, and achievable." ILCS 220 5/16-108.18(e)(2)(A). For those tracking metrics that ComEd has identified as lacking in one or more capacities (specifically Tracking Metrics 5, 6, 8, 9, 15, 23, and 31), ComEd requests that those tracking metrics either be reformed to correct their shortcomings, or alternatively be removed from the Plan.

**Q. Why is it important to remedy or otherwise remove these tracking metrics from the Plan?**

A. There are two reasons. First, while I am not a lawyer, it is my understanding that the tracking metrics must be “reasonable and appropriate” as well as “specific, measurable, and achievable.” 220 ILCS 5/16-108.18(e)(3) and (e)(2)(A). There are several intervenor-proposed tracking metrics that fail to satisfy these criteria. Second, ComEd should not be required to implement, and ComEd’s customers should not bear the costs of tracking metrics that are not useful or efficient.

**Q. Starting with the first bucket, which intervenor-proposed tracking metrics are so vague or incompletely defined that ComEd is not able to track the information?**

A. There are two tracking metrics that are so vague that they fall into the first bucket: **Tracking Metrics 5 and 15.**

- **Tracking Metric 5 (Any Demand Response-Related Tariff or Program)** was proposed by NRDC and contains 19 components. Some of the components are extremely vague and not defined. For example, as proposed by NRDC, one of the components simply states: “Peak Impact Persistence” (Component 16). It is not clear what the terms “peak impact” or “persistence” mean in this context, how the metric should be measured and reported, and what the value of such data would be. For components like Component 16, ComEd notes in the Plan that it cannot measure that component and that it will not be able to report a value. *See, e.g.,* ComEd Multi-Year Performance and Metrics Plan at 21.



NRDC, which proposed the metric in the initial phase of this proceeding, did not provide any explanation or additional detail about Tracking Metric 5 in its testimony or briefs. Additionally, NRDC did not provide any feedback or clarification when ComEd circulated for stakeholder review the draft Plan, which stated ComEd's inability to fulfill portions of Tracking Metric 5.

- **Tracking Metric 15 (Grid Flexibility)** was proposed by CUB/EDF and contains 16 components. At least two components are incompletely defined. First, one component requires data on “the number of circuits that enabled back-feed” (Component 12) but does not explain what “enabled back-feed” means. ComEd’s Plan incorporates its educated guess as to what the phrase means – in the Plan, ComEd notes, “[f]or purposes of this tracking metric, ComEd is interpreting the phrase [enabled back-feed] to mean capability for energy to flow in multiple directions on the circuit.” Plan at 29. Nevertheless, the Commission should either clarify what is required by this component, or eliminate this component. Further, the component requiring information on “the number of circuits that have reached hosting capacity” (Component 13) does not explain what it means to have “reached hosting capacity.” Again, ComEd’s Plan incorporates its best guess at what CUB/EDF may have meant – ComEd states in the Plan, “[t]o the extent this component seeks information about circuits that still have available hosting capacity, ComEd will refer to its Hosting Capacity Map” (Plan at 29) – but the

Commission should either clarify what is required by this component, or eliminate this component.

CUB/EDF, which proposed the metric in the initial phase of this proceeding, did not provide any clarifications or additional detail about Tracking Metric 15 in its testimony or briefs, such as what information was sought or how that information will be used to develop future performance metrics. Additionally, CUB/EDF did not provide any feedback or clarification when ComEd circulated for stakeholder review the draft Plan, in which ComEd explained its inability to fulfill portions of Tracking Metric 15.

**Q. Regarding the next bucket, which tracking metrics are unreasonable or burdensome for ComEd to track?**

A. Two intervenor-proposed tracking metrics (**Tracking Metrics 5 and 23**) are unreasonable and will be burdensome for ComEd to track because ComEd will be required to expend resources to collect information that is already publicly available elsewhere.

**Q. Why is NRDC's Tracking Metric 5 unreasonable or burdensome?**

A. Several of the 19 components comprising Tracking Metric 5 (Any Demand Response-Related Tariff or Program) seek information that is readily available from other sources, particularly PJM:

- Total MW participating in regional transmission operation capacity market (Component 3);
- Percentage of event hours called in top 100 ComEd and PJM system hours (Component 9);

- Generation resource mix in ComEd's PJM zone during top 100 system hours (Component 17); and
- Generation resource mix in ComEd's PJM zone during hours when DR was called (Component 18).

*See also* Plan at 22-23.

Tracking Metric 5 also calls for information that is internally duplicative, that is, some of its components seek the same information:

- Number of events called (Component 8): duplicative of Tracking Metric 5, Component 5 – Number of times a contingency or other event is called
- Energy shift by hour (Component 14): duplicative of Tracking Metric 5, Component 11 – Average and hourly peak times.

*See also* Plan at 22-23.

As I noted earlier, NRDC did not provide additional information about Tracking Metric 5 during the initial proceeding, such as why NRDC could not contact the third party directly for the requested information, or how the tracked information would be used to develop future performance metrics. NRDC also did not provide any reaction to ComEd's statements within the draft Plan when it was circulated for stakeholder review.

**Q. What does ComEd propose occur with these components of Tracking Metric 5?**

A. These components of Tracking Metric 5 should be removed from the Plan. Tracking metrics are supposed to collect and track data within ComEd and ComEd's control. Requiring ComEd to collect and report data that is available publicly from other sources is not a good use of ratepayer resources. Additionally, ComEd would not be able to validate

data sourced from a third party. It is not an efficient use of ratepayer resources to fund the collection and reporting of duplicative information. Therefore, these components should be removed from the Plan.

**Q. Why is Tracking Metric 23 unreasonable or burdensome?**

A. **Tracking Metric 23 (Hosting Capacity for DERs)**, was proposed by the Joint Solar Parties (“JSP”) - comprised of the Solar Energy Industries Association, the Coalition for Community Solar Access, and the Illinois Solar Energy Association – and requires ComEd to provide a “periodic[] update on the percentage of substation transformers by transformer nameplate rating with hosting capacity remaining of (i) over 20%, (ii) less than 20% but over 10%, and (iii) less than 10%, with associated mapping.” Plan at 33-34. ComEd already provides similar information on a per-feeder basis via its hosting capacity map, which is on a publicly available website and updated annually. The tracking metric will require ratepayer-funded investments in IT modifications and other resources merely to duplicate the same information with more frequency. Because Tracking Metric 23 seeks information that is already publicly available, it should be removed from the Plan.

JSP did not provide additional information about Tracking Metric 23 during the initial proceeding, such as why ComEd’s existing hosting capacity map was insufficient, or how this information would be used to develop future performance metrics. JSP also did not provide any feedback or reaction to ComEd’s statements within the draft Plan when it was circulated for stakeholder review.

**Q. Concerning the third bucket, which tracking metrics require information that is not within ComEd's control?**

A. The Order adopts several intervenor-proposed tracking metrics that seek information that does not exist or is out of ComEd's control, specifically Tracking Metrics 5, 6, 8, 9, and 31.

**Q. What information do the NRDC-proposed Tracking Metrics 5, 6, 8, and 9 seek that are out of ComEd's control to gather and report?**

A. The following NRDC tracking metrics (or components of a tracking metric) call for information that is out of ComEd's control to gather and report:

- **Tracking Metric 5 - Component #3 (Total MW participating in RTO capacity market)** – requires information available only to PJM. Therefore, ComEd has stated that it will report data that is publicly available through PJM reporting on bid-in capacity marketing submissions. See Plan at 22.
- **Tracking Metric 6 (Managed EV Charging)** – requires information on the number of customers who have chosen to purchase an EV, as well as the amount of energy or load being utilized by those vehicles, outside of programs and rates that are actively managed by ComEd. Therefore, ComEd proposes to provide information with respect to those EV customers participating in ComEd programs and on rates that ComEd manages, such as the number of customers that have opted to inform ComEd that they have purchased an EV and the number of those customers who are participating on a time-varying rate or other managed charging programs or tariffs. See Plan at 24.

- **Tracking Metric 8 (EV EMS Cost Savings)** – requires information on customers who have an Electric Vehicle Energy Management System (EV EMS) installed but is not participating in a ComEd EV EMS-related program. Also, ComEd does not currently have an EV EMS-related program. The Plan proposes information ComEd would track if and when such a program is established. See Plan at 25.
- **Tracking Metric 9 (Direct Current Fast Charging Load)** – seeks information about DCFC-only load in ComEd’s service territory. Currently, it is not possible for ComEd, or any party, to determine and track DCFC-only load in ComEd’s service territory. Also, ComEd does not currently have a DCFC-related program or a DCFC-specific rate. Accurate tracking would only be available where customer meters serve exclusively DCFC loads, and ComEd would have no control or access to DCFC installations on customer premises unless such information is publicly reported elsewhere. See Plan at 26.

NRDC did not provide any additional information about Tracking Metrics 5, 6, 8, and 9 during the initial proceeding, or explain how this information would be used to develop future performance metrics. When ComEd circulated the draft Plan for stakeholder review, NRDC did not provide any feedback or reaction.

**Q. What information does Tracking Metric 31 seek that is out of ComEd’s control to gather and report?**

**A. Tracking Metric 31 (“Equitable Grid Planning”),** proposed by CUB/EDF, consists of three components. The second component requires ComEd to track the “total amount of distribution system investments that have a direct, locational impact on the reliability,

safety, affordability, environmental objectives, and economic objectives of EIECs.”  
However, it is not possible for ComEd (or any party) to track distribution system  
investments by community because the same capital investment may physically span  
multiple communities, or may support service in multiple communities. The  
interconnected nature of the electric system makes it impossible to separately identify  
which investments serve which communities. *See* Plan at 37.

CUB/EDF did not provide any additional information about Tracking Metric 31  
during the initial proceeding, or provide a methodology by which ComEd could track these  
investments. CUB/EDF also did not explain how this information would be used to  
develop future performance metrics. When ComEd circulated the draft Plan (which  
contained this critique of Tracking Metric 31) for stakeholder review, CUB/EDF did not  
provide any feedback or reaction.

**Q. Should the tracking metrics, or components of tracking metrics, that seek  
information outside of ComEd’s control to gather and report, be removed from the  
Plan?**

A. Yes. Again, while I am not a lawyer, it is my understanding that tracking metrics must  
seek information within ComEd’s control to track and report. Those tracking metrics, or  
components of tracking metrics, seeking information that is out of ComEd’s control to  
gather and report, should be removed from the Plan.

### **III. CONCLUSION**

**Q. Does this complete your Direct Testimony on Rehearing?**

A. Yes.