

ENTSO-E Proposal for Regional Coordination Centre Post- Operation and Post-Disturbances Analysis and Reporting Methodology in accordance with Article 37 (1) i) of the Regulation (EU) 2019/943 of the European Parliament and of the Council of 5 June 2019 on the internal market for electricity

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Table of Contents

| | |
|--|----|
| Whereas | 3 |
| Article 1 General Overview and RCC Investigation Treshold Definition | 4 |
| Article 2 Process of Investigation..... | 4 |
| Article 3 Triggers for detection..... | 6 |
| 3.1 Formal Triggers..... | 6 |
| 3.2 TSOs/RCCs triggers | 6 |
| Article 4 Communication..... | 7 |
| Article 5 Data Collection | 7 |
| Article 6 Expert panel | 8 |
| Article 7 Factual report | 9 |
| Article 8 Final report | 10 |
| Article 9 RCC recommendations | 11 |
| Article 10 Implementation of the Proposal..... | 11 |
| Article 11 Language..... | 11 |
| Glossary..... | 12 |

DRAFT

All TSOs, taking into account the following,

Whereas

1. The Regulation (EU) 2019/943 on the internal market for electricity adopted by the European Union and of the Council of 5 June 2019 (hereafter referred to as “Regulation”¹. The Regulation was developed and adopted as part of the European Union’s Clean Energy Package for All Europeans.
2. Article 35 of this Regulation establishes regional coordination centres (RCCs) while Article 37 enlists the RCCs tasks and their roles. Article 37(i), mandates the RCCs to carry out post-operation and post-disturbances analysis and reporting while Annex I of the Regulation provides further details:
 - i. “6.1 Regional coordination centres shall investigate and prepare a report on any incident above the threshold referred to in point 4.2² (of Annex I in Regulation (EU) 2019/943). The regulatory authorities in the system operation region and ACER may be involved in the investigation upon their request. The report shall contain recommendations aiming to prevent similar incidents in future.
 - ii. 6.2 Regional coordination centres shall publish the report. ACER may issue recommendations aiming to prevent similar incidents in future.”
3. This document is a methodology developed by the European Network of Transmission System Operators for Electricity (ENTSO-E) and representatives of the RCCs in accordance with the Regulation (EU) 2019/943 and in particular, Article 37 (1) i) and (5) on the obligation of the RCCs to carry out post-operation and post-disturbances analysis and reporting. It provides definitions, describes the process of investigations, enlists the investigation triggers, explains the data collection process, indicates the work of the expert panel and guides the RCCs in the process of preparation of the post-disturbances report. This document is hereafter referred to as the ‘methodology’.
4. The ENTSO-E’s methodology on the “Incident Classification Scale (ICS)” approved on 04 December 2019³ was used to support the development of the Regional Coordination Centre Post-Operation and Post-Disturbances Analysis and Reporting Methodology.
5. This methodology is subject to public consultations and ACER approval.
6. Non-European Union countries (Third-countries) are not legally mandated to abide with processes described by this methodology however they are invited to follow it together with the EU Member States.

¹ European Union (2019), Regulation (EU) 2019/943 on the internal market for electricity adopted by the European Union and of the Council of 5 June 2019, Brussels, Belgium <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32019R0943>.

² All transmission system operators shall agree on a threshold above which the impact of actions of one or more transmission system operators in the emergency, blackout or restoration states is considered significant for other transmission system operators synchronously or non-synchronously interconnected

³ ENTSO-E (2019), Incidents Classification Scale, Brussels, Belgium https://eepublicdownloads.entsoe.eu/clean-documents/SOC%20documents/Incident_Classification_Scale/200629_Incident_Classification_Scale_Methodology_revised_and_in_use_as_of_2020.pdf.

Article 1 General Overview and RCC Investigation Treshold Definition

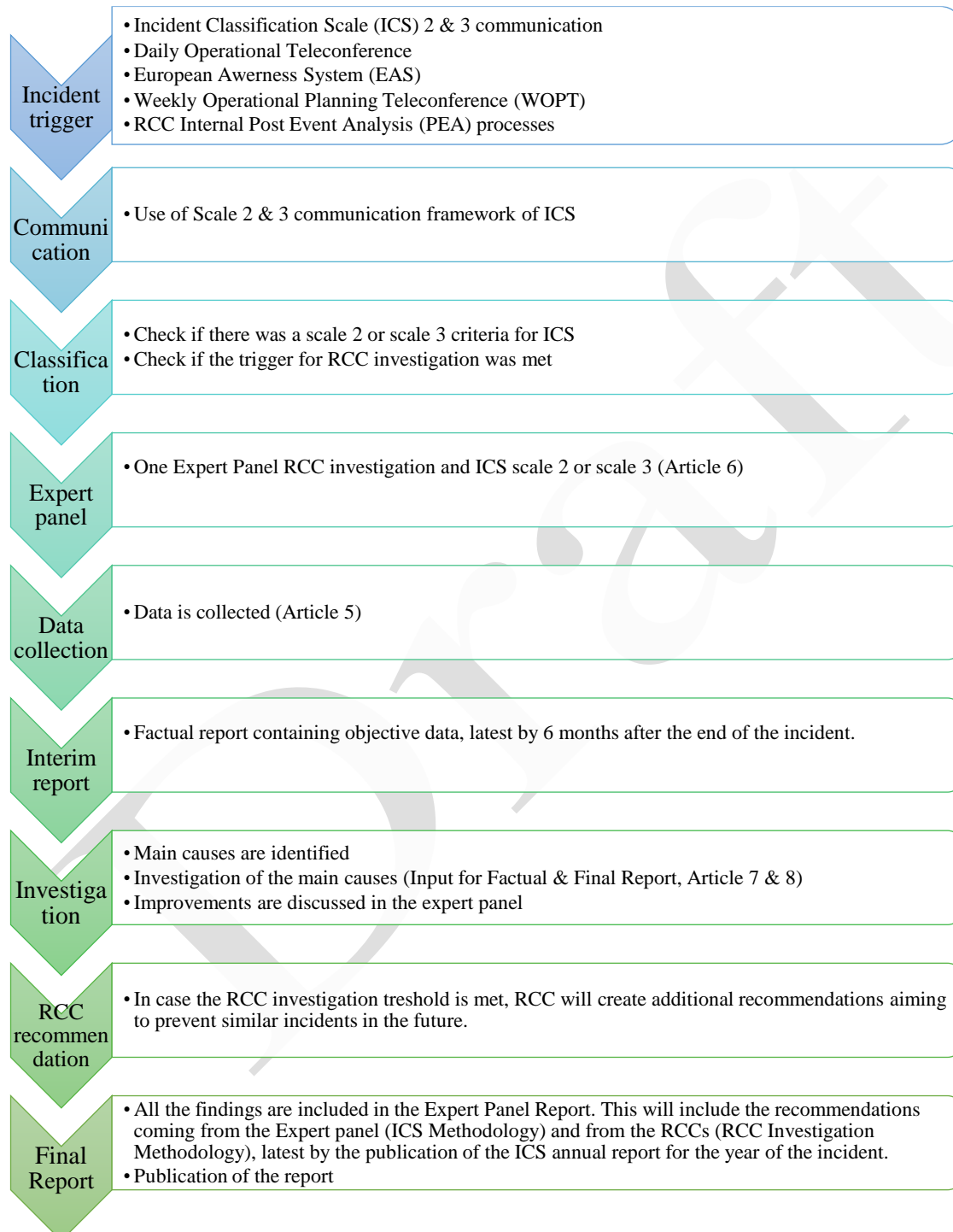
The default threshold for the two regulations is defined as being exceeded if as a result of certain actions taken by a transmission system operator (TSO) being in Emergency, Blackout or Restoration system state, another TSO has moved from Normal or Alert System State to Emergency System State⁴.

Article 2 Process of Investigation

After the incident threshold is triggered, a detailed report shall be prepared by an expert panel defined in Article 8. The RCC and ENTSO-E Incident Classification Scale (ICS) Subgroup investigations will be handled by the same expert panel (further information under Article 3). The ICS annual report shall contain the explanations of the reasons for incident based on the investigation of the incidents according to article 37(i) of Regulation on the internal market for electricity (EU) 2019/943.

⁴ SOC acknowledges the following proposal to define a default threshold, for all ENTSO-E TSOs , required in Article 6 (5) of NC ER and in Annex I point 4.2 of Regulation (EU) 2019/943

Figure 1. RCC Investigation Process



Where the RCC Investigation Process refers to the “Incident Classification Scale (ICS) 2 & 3 communication” it pertains to the [ENTSO-E Incidents Classification Scale \(2019\)](#).

Article 3 Triggers for detection

3.1 Formal Triggers

When the default threshold is triggered, the Incident Classification Scale (ICS) Subgroup is informed about at least a scale 2 event. The RCC investigation threshold is triggered when at least two TSOs are in Emergency state. The ICS scale 2 criteria is triggered when at least one TSO is in Emergency state. TSOs single point of contacts (SPOCs) inform the ENTSO-E ICS Subgroup and RCC Investigation SPOCs (see chapter 5) about a scale 2 event in their system within one week as per the ICS methodology⁵. If in case at least one TSO declared Emergency state, each RCC Investigation SPOC will participate to the alignment call to check if this methodology should apply.

The ICS scale 2 and scale 3 communication process, as per the Chapter 6 of the ICS methodology⁶, will be used as the main trigger to detect such incidents. The ICS scale 2 and 3 events are notified in the EAS by declaring at least Emergency state. In this process the RCC Investigation SPOCs will discuss with the ENTSO-E ICS Subgroup whether the conditions of the thresholds are fulfilled. In such situations where more than one TSO is in emergency state the RCC Investigation SPOCs, and the ENTSO-E ICS Subgroup, as well as ACER and relevant national regulatory authorities (NRAs) will form an expert panel to investigate the event(s).

3.2 TSOs/RCCs triggers

RCC internal Post Event Analysis processes:

RCCs are performing many processes for the TSOs. The RCCs will have a Post Event Analysis (PEA) “service” where at least on a weekly basis a check is completed to review if any incidents met the defined RCC Investigation threshold. Additionally, when at least one TSO activates an emergency state in EAS the relevant RCCs will make a PEA to determine if the RCC investigation threshold is met.

Daily Operational Teleconference:

Daily Operational Teleconference is a part of each Day Ahead Congestion Forecast (DACF) process of the Coordinated Security Analysis (CSA) service for RCCs. During the Daily Operational Teleconference, the relevant information is shared among other TSOs and RCCs on a daily basis. During the Daily Operational Teleconference, TSOs raise the major incidents that happened during that day.

Weekly alignment calls with TSOs / RCCs:

RCCs who are holding the Weekly Operational Planning Teleconference (WOPT) calls can use this framework to receive information from TSOs regarding incidents that happened during the last week.

During the WOPT call a section is provided in the WOPT document where TSOs raise the major incidents that happened. TSOs shall also mention for every incident (where at least one TSO was in Emergency) whether the threshold was met.

⁵ ENTSO-E (2019), Incidents Classification Scheme, Brussels, Belgium https://eepublicdownloads.entsoe.eu/clean-documents/SOC%20documents/Incident_Classification_Scale/200629_Incident_Classification_Scale_Methodology_revised_and_in_use_as_of_2020.pdf.

⁶ Ibid.

Article 4 Communication

The TSO in whose control area the incident occurred will report the event and shall inform the ENTSO-E ICS Subgroup in due time and not later than one week after the start of the incident. RCC Investigation SPOCs from each RCC will be part of this communication. The respective TSO will also mention whether the RCC investigation threshold was reached. TSOs affected by the scale 2 and scale 3 incidents shall inform their national regulatory authorities before the expert panel investigation is launched according to article 15(5) of SO GL. The RCC and ENTSO-E ICS Subgroup investigations will be handled by the same expert panel. ENTSO-E Secretariat will inform NRAs and ACER about the upcoming investigation in due time before it is launched and not later than one week in advance of the first meeting of the expert panel.

Article 5 Data Collection

To perform relevant analysis of the incident, the expert panel shall use the data reported by the affected TSOs in the ICS reporting tool covering the data listed in Annex 1 and Annex 3 of the ICS methodology, and depending on the type of the incident, additional data may be necessary for the investigation.

The expert panel shall gather the additional data and information, deemed necessary for the investigation, in the form of a questionnaire, that is to be filled and provided to the expert panel by the affected and other relevant TSOs and from RCCs if needed.

Steering Group Operations under ENTSO-E System Operations Committee nominates the RCC leader and the CGM merging entity. The RCC leader will be a backup for the merging process.

The merging entity will do the whole process from gathering Individual Grid Models (IGMs), merging them and ensuring the quality of the Common Grid Model (CGM) files (compliant with other RCCs).

Article 6 Expert panel

An expert panel will conduct the investigation on ICS scale 2 and 3 incidents and also the RCC investigation. The expert panel will consist of the following members:

Expert panel leader:

- The leader of the expert panel: Steering Group Operations under ENTSO-E System Operations Committee shall nominate an expert from TSO or RCC not affected by the incident as the leader of the expert panel to ensure neutrality of the investigation;
- The nominated expert panel leader shall act as coordinator for the RCC investigation process assuring the Methodology is followed.

Expert panel members:

- Expert panel members: each RCC affected by the incident shall appoint an expert to represent the RCC in the expert panel;
- Each TSO affected by the incident shall appoint an expert to represent the TSO in the expert panel;
- Relevant representative(s) of the ENTSO-E System Operation Committee (SOC);
- Steering Group Operations under ENTSO-E System Operations Committee shall nominate a representative of ENTSO-E ICS Subgroup to ensure that the procedure for the investigation of scale 2 and scale 3 incidents is followed;
- National Regulatory Authorities and ACER will participate on their request to the incident investigation;

In case of ICS scale 2 or scale 3 incident in the synchronous areas of Great Britain or Ireland and Northern Ireland, when the incident affects only one TSO, a TSO internal investigation is conducted. The affected TSO shall also inform its respective regulatory authority before the investigation is launched. This case is not valid for the RCC investigation process as the threshold requires at least two TSOs to be in an emergency state.

The Expert Panel shall prepare a detailed report, firstly a factual report and lastly a final public report.

Article 7 Factual report

The expert panel shall prepare a factual report that provides information on the following items to the extent that is relevant to the incident:

- Description of the system conditions before the event:
 - Market schedules in different time frames
 - Physical flows in different time frames
 - Net Transfer Capacity (NTC)
 - Net positions and Area Control Error (ACE)
 - Production of the running power plants
 - Out of service power plants (planned and unplanned)
 - Renewables production
 - Real consumption load at the moment of the event and the forecast load in D-1
 - Planned and unplanned outages
 - Grid topology and Phase Shifting Transformers (PST) tap position.
- Sequence of events:
 - Description of all violations of operational security limits and other consequences
 - Alarms in the control centres before and after the event
 - Tripped elements with time and reason (provide information from protection devices)
 - Wide Area Monitoring System measurements.
- Description of measures that were or should have been activated by TSOs:
 - Automatic Defence Actions
 - Manual actions and countermeasures.
- Description of the system conditions after the event.
- Communications between control centres.
- Classification of the incident regarding ICS and verifying whether the RCC investigation threshold has been met;
- Impact in the market:
 - Prices before and after the incident
 - Market interruption due to the event

Each TSO and RCC that provided information shall approve the factual correctness of its information contained in the report, before the expert panel proceeds with performing further analysis and preparing the final report. The list with the investigation items is assumed indicative and non-exhaustive and shall be agreed by the Expert Panel.

Article 8 Final report

The expert panel shall prepare the final report that shall include the information from the factual report and additionally information on the following items to the extent that is relevant to the incident:

- The analysis on the causes of the incident;
- The evaluation of the activated remedial actions and measures from system defence plan;
- The evaluation of the actions of TSO employees in charge of real-time operation of the transmission system;
- The description of the functioning of the network element(s);
- Technical analysis of the event:
 - Steady-state calculations
 - Dynamic model calculations
 - N-k violations before the incident;
 - Analysis of main causes and consequences.
- The findings and conclusions with explanations of the reasons for the incident;
- The Expert Panel recommendations based on the conclusions of the investigation;
- RCC recommendations based on the investigation (see Article 9).

The method used to analyse incidents should be based on a well-known method such as the “fault tree analysis” (in line with the ICS methodology).

The final report of incident scale 2 and 3 shall be available on a common online environment.

The list with the investigation items is assumed indicative and non-exhaustive and shall be agreed by the Expert Panel.

Article 9 RCC recommendations

The RCC will provide recommendations aiming to prevent similar incidents in the future. Recommendations can be provided in the following fields:

- Improving the quality of the provided Individual Grid Models (IGMs)
- Activation of Critical Grid Situation (CGS) process in accordance with the existing CGS procedures
- Implementation of remedial actions proposed by RCC as a result of Day Ahead Congestion Forecast (DACF) and Intraday Congestion Forecast (IDCF) process if additional analyses show that such actions have not been applied.
- Merging of Individual grid models
- Security analysis
- Remedial action assessment
- Sensitivity analysis
- Specific grid studies
- RCC processes (e.g.: Coordinated Security Analysis, Capacity calculation, Outage Planning Coordination and Short-Term Adequacy)

Any other relevant recommendations can be gathered via the Expert Panel, e.g.: from the ENTSO-E.

A TSO may deviate from RCC recommendation in accordance with Article 42(2) of Regulation 2019/943 and may require a review of the recommendation in accordance with Article 42(3) of Regulation 2019/943.

Article 10 Implementation of the Proposal

The RCCs shall apply this methodology within 6 months from 1st of June 2022 or 6 months after the decision has been taken by ACER in accordance with Article 37(5) of the Regulation 2019/943 and published on ACER's website, if ACER's decision was issued after 1st of June 2022.

Article 11 Language

The reference language for this Proposal shall be English. For the avoidance of doubt, where TSOs need to translate this Proposal into their national language(s), in the event of inconsistencies between the English version published by ACER and any version in another language, the relevant TSOs shall, in accordance with national legislation, provide the relevant national regulatory authorities with an updated translation of the Proposal.

Glossary

| | |
|---------|---|
| ACE | Area Control Error |
| ACER | European Agency for the Cooperation of Energy Regulators |
| CGS | Critical Grid Situation |
| CSA | Coordinated Security Analysis |
| DACF | Day Ahead Congestion Forecast |
| EAS | European Awareness System |
| ENTSO-E | European Network of Transmission System Operators for Electricity |
| ICS | Incident Classification Scale Methodology |
| IDCF | Intraday Congestion Forecast |
| NRA | National regulatory Authority |
| NTC | Net Transfer Capacity |
| PEA | RCC Internal Post Event Analysis (PEA) processes |
| PST | Phase Shifting Transformers |
| RCC | Regional coordination centres |
| SOC | ENTSO-E System Operation Committee (SOC) |
| SPOCs | TSOs single point of contacts |
| TSO | Transmission system operator |
| WOPT | Weekly Operational Planning Teleconference |