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for Electricity

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Revision History

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1	0	2016-12-07	Approved by MC
2	0	2018-11-08	Enhancements to support external pole splitting and loss calculation process Corrections Approved by MC.

98

99 **NOTE CONCERNING WORDING USED IN THIS DOCUMENT**

100 The force of the following words is modified by the requirement level of the document in which
101 they are used.

102 **MUST:** This word, or the terms “REQUIRED” or “SHALL”, means that the definition is an
103 absolute requirement of the specification.

104 **MUST NOT:** This phrase, or the phrase “SHALL NOT”, means that the definition is an absolute
105 prohibition of the specification.

106 **SHOULD:** This word, or the adjective “RECOMMENDED”, means that there may exist valid
107 reasons in particular circumstances to ignore a particular item, but the full implications must be
108 understood and carefully weighed before choosing a different course.

109 **SHOULD NOT:** This phrase, or the phrase “NOT RECOMMENDED”, means that there may exist
110 valid reasons in particular circumstances when the particular behaviour is acceptable or even
111 useful, but the full implications should be understood, and the case carefully weighed before
112 implementing any behaviour described with this label.

113 **MAY:** This word, or the adjective “OPTIONAL”, means that an item is truly optional. One vendor
114 may choose to include the item because a particular marketplace requires it or because the
115 vendor feels that it enhances the product while another vendor may omit the same item. An
116 implementation which does not include a particular option **MUST** be prepared to interoperate
117 with another implementation which does include the option, though perhaps with reduced
118 functionality. In the same vein an implementation which does include a particular option **MUST**
119 be prepared to interoperate with another implementation which does not include the option
120 (except, of course, for the feature the option provides.)

121 **DEPRECATED:** this word means that a previously permitted entity should no longer be used in
122 new implementations as in a future release the object in question may be suppressed.

123

124 1 Scope

125 The scope of this implementation guide is to describe how to implement the data exchanges
126 related to the Common Grid Model Alignment (CGMA) platform. These data exchanges can be
127 split in two larger parts: the first is the core CGMA process ending with the provision of balanced
128 netted area positions and balanced gross flows on all (unsplit) DC lines. The second supports
129 the external pole splitting and loss calculation for TSOs connected to DC lines linking different
130 synchronous areas.

131 2 Terms and Definitions

132 **CGM:** Common Grid Model

133 **CGMA:** Common Grid Model Alignment; a process that ensures the availability of a set of
134 balanced netted area positions and balanced DC flows for all optimisation areas covered for
135 those target time-horizons for which CGMs are built but for which market schedules are not
136 available. CGMA involves applying a set of rules and methods, notably including the CGMA
137 algorithm, to the CGMA input data in order to obtain the CGMA output data (which include the
138 CGMA results).

139 **CGMA input data:** For the purposes of this implementation guide, the terms "CGMA input data"
140 and "PPD" can be used interchangeably.

141 **CGMA output data:** The CGMA output data have three components: 1. the CGMA results; 2.
142 the CGMA input data originally sent to the CGMA platform; 3. the substituted and / or modified
143 CGMA input data (if applicable).

144 **CGMA results:** The CGMA results are the outcome of applying the CGMA algorithm to the
145 CGMA input data (the PPD) and consist of, for each relevant optimisation area and for each
146 relevant scenario, the following elements:

147 --balanced netted area position

148 --balanced gross flows on all DC lines (where applicable)

149 Also, part of the CGMA results are

150 --indicative AC flows per electrical border

151 --AC net positions

152 CGMA results are a subset of the CGMA output data.

153 **CGMA target time-horizon:** The time period for which CGMA results are to be obtained. In the
154 case of the (D-2) target time-horizon, for example, this will typically encompass the twenty-four
155 individual hours (respectively twenty-three or twenty-five for daylight saving) from 00:00h two
156 days after the day on which the CGMA calculations are run until 24:00h of that day. The CGMA
157 target time-horizon will thus typically encompass multiple scenarios.

158 **CGMA platform:** The IT System which, among other tasks, runs the CGMA algorithm.

159 **Optimisation area:** Basic geographical reference unit for the CGMA process. CGMA input data
160 are provided on the level of optimisation areas and so are the CGMA results. Each optimisation
161 area corresponds exactly to a geographical area for which an individual grid model is prepared;
162 i.e., there is a one-to-one correspondence between optimisation areas and IGMs.

163 **CGMA area:** The CGMA area corresponds to the CGM area. The CGM area is the set of (i)
164 bidding zones whose TSOs contribute their individual grid model (IGM) to the CGM plus (ii) the
165 interconnections linking these bidding zones with bidding zones that do not contribute an IGM
166 to the CGM (i.e., are not part of the CGM Area). Note that in the context of CGMA the term
167 "optimisation area" (rather than "bidding zone") is used. [1] explains the relevant area concepts.

168 **Netted area position:** The term "netted area position" (which is used in, for example, the
169 ENTSO-E RG CE Schedule Reporting Process Implementation Guide; version for approval as
170 of 2016-08-10) corresponds to the term "net position" used in [1]. The net position is defined as
171 the "the netted sum of electricity exports and imports for each market time unit for a bidding
172 zone" (Article 2(5) of Regulation 2015/1222). Implicit in this definition is that a "net position" (as
173 opposed to an "AC net position") always comprises both AC and DC flows into and out of a
174 bidding zone. Note that in the context of the CGMA platform and the CGMA algorithm, the term
175 "optimisation area" (rather than "bidding zone") is used. [1] explains the relevant area concepts.
176 The "netted area position" (net position) is expressed in the unit MW. Note that a number of
177 additional concepts are derived from the concept of "netted area position"; namely the
178 preliminary "netted area position"; the "netted area AC position" (see below), the absolute
179 maximum netted area position, the absolute minimum netted area position, and the balanced
180 netted area position.

181 **Netted area AC position:** The term "netted area AC position" (which is used in, for example,
182 the ENTSO-E RG CE Schedule Reporting Process Implementation Guide; version for approval
183 as of 2016-08-10) corresponds to the term "AC net position" used in [1]. The "netted area AC
184 position" is obtained by subtracting from the "netted area position" (net position) for an
185 optimisation area all DC flows into and out of that optimisation area.

186 **Feasibility range:** A set of two figures expressed in the unit MW that, together with the
187 preliminary netted area position, indicate the range of balanced netted area positions (weakly
188 greater than and (weakly) smaller than the preliminary netted area position that a TSO accepts
189 ex ante for a given scenario.

190 **DC flow:** Flow on a DC line (i.e., direct current line). Any DC flow – i.e., including both
191 preliminary and balanced DC flows – can be stated in terms of the flow at the exporting end of
192 the DC line or the importing end of the DC line. The difference between the export and the
193 import value corresponds to losses on the DC line. DC flows are expressed in the unit MW. In
194 the PPD all DC flows are provided as gross values (flow at the exporting end) for unsplit links
195 whereas the PSLCD contain split poles (where applicable) and implicit losses (when using
196 virtual scheduling areas).

197 **PPD:** Pre-processing data. A set of data that serve as input for the CGMA algorithm. For each
198 scenario and for each optimisation area a separate set of pre-processing data needs to be
199 provided. The following types of data make up the pre-processing data:

200 --preliminary netted area position (mandatory)

201 --feasibility range (mandatory)

202 --preliminary gross DC flows (mandatory for optimisation areas linked to another optimisation
203 area in a different synchronous area by DC line) at the exporting end

204 --maximum gross DC flows (export/import) (mandatory for optimisation areas linked to another
205 optimisation area in a different synchronous area by DC line) at the exporting end

206 --absolute minimum and/or maximum netted area position (optional)

207 **PPD gate closure time:** The PPD gate closure time is that time after which the CGMA platform
208 will, in principle, no longer accept pre-processing data for a given set of scenarios. [1] states
209 the PPD gate closure times.

210 **PSLC:** Pole split and loss calculation. Refers to the process of external pole split and loss
211 calculation after the CGMA platform has delivered balanced gross DC flows.

212 **PSLCD:** Pole split and loss calculation data. Based on the results of the CGMA optimisation all
213 TSOs connected to DC lines linking different synchronous areas will have to submit externally
214 calculated flows for their DC lines (on the level of single poles if applicable). Depending on the
215 way the TSO has modelled the DC line in its individual grid model the results might contain both
216 gross and net values for DC flows (when using the simplified modelling approach) or not (when
217 using the embedded modelling approach).

218 PSLCD gate closure time: The PSLCD gate closure time is that time after which the CGMA
219 platform will, in principle, no longer accept pole split and loss calculation data for a given set of
220 scenarios. [1] states the PSLCD gate closure times.

221 PSLC results: After validation of the PSLCD by the CGMA platform the PSLC results will be
222 provided. They contain the netted area AC position and values for each DC line (on the level of
223 split poles if applicable). Depending on the way the TSO has modelled the DC line in its
224 individual grid model the results might contain both gross and net values for DC flows (when
225 using the simplified modelling approach) or not (when using the embedded modelling
226 approach).

227 **RSC:** Regional Security Coordinator. An organisation providing certain services for and/or on
228 behalf of TSOs. RSCs are also involved in the CGMA business processes and, in this context,
229 are referred to as "Alignment Agents" in [1].

230 **Substitute data:** If one or more elements of the PPD are missing at PPD gate closure time, the
231 missing elements are replaced by substitute (pre-processing) data.

232

233 3 The common grid model alignment (CGMA) business processes

234 3.1 Overview

235 The business requirements of CGMA, refer to reference [1], lead to several use cases of data
236 exchange which are described in this chapter. Each use case is supported by one or more
237 document exchange processes, as it is described in later subsections of this chapter.

238 3.2 Overall business context

239 CGMA provides, for all relevant target time-horizons, a set of balanced netted area positions
240 and balanced gross DC flows which are consistent for the entire CGMA area. It does so by
241 applying the CGMA algorithm to the pre-processing data (CGMA input data).

242 For each scenario and for each optimisation area a separate set of pre-processing data needs
243 to be provided. The following types of data make up the pre-processing data:

- 244 • preliminary netted area position (mandatory)
- 245 • feasibility range (mandatory)
- 246 • preliminary gross DC flows (mandatory for optimisation areas linked to another
247 optimisation area in a different synchronous area by DC line) at the exporting end
- 248 • maximum gross DC flows (export/import) (mandatory for optimisation areas linked to
249 another optimisation area in a different synchronous area by DC line) at the exporting
250 end
- 251 • absolute minimum and/or maximum netted area position (optional)

252 PPD are created by TSOs or by parties acting on behalf of TSOs and are collected by the CGMA
253 platform. There is a gate closure time after which the CGMA platform will, in principle, no longer
254 accept pre-processing data for a given set of scenarios. ("PPD gate closure time").

255 The set of PPD is complete when PPD are available for all optimisation areas (i.e., the entire
256 CGMA area). The CGMA platform may request substitute data from the Pan European
257 Verification Function (PEVF) if PPD are missing after PPD gate closure time. Substitute data
258 then serve to complete the set of PPD.

259 The CGMA platform calculates the CGMA results, which consist of a set of

- 260 • balanced netted area positions;
- 261 • balanced netted area AC positions;
- 262 • indicative AC flows per electrical border;
- 263 • balanced gross DC flows at the exporting end.

264 The CGMA results can be used by a TSO or by a party acting on behalf of a TSO to update an
265 individual grid model.

266 For TSOs connected to DC lines linking different synchronous areas the core CGMA process is
267 followed by an additional set of activities called the external pole splitting and loss calculation.

268 After the CGMA platform has provided the CGMA results these TSOs will externally calculate
269 the flows on their DC lines by splitting the DC lines into single poles (if applicable) and calculate
270 the losses. The results from this calculation will then be sent back to the CGMA platform by
271 respecting the PSLCD gate closure time and be validated by the CGMA platform.

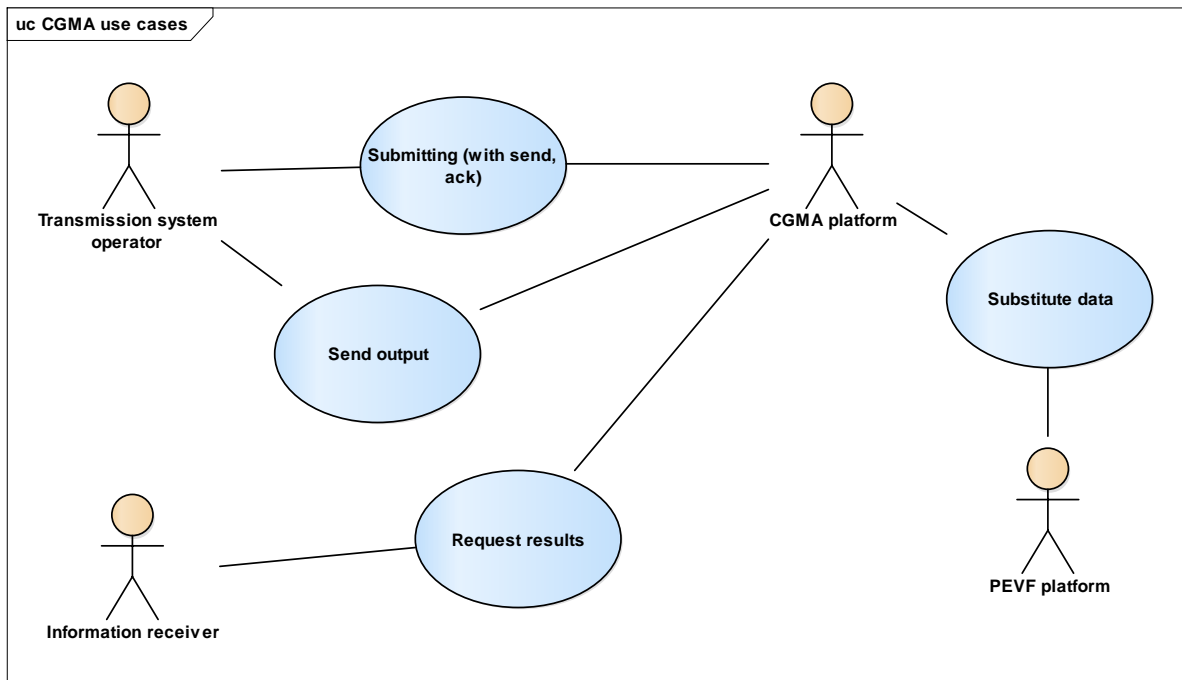
272 The PSLC results provided by the CGMA platform contain

- 273 • balanced netted area AC positions

- 274 • balanced DC flows on the level of split poles (if applicable): Depending on the modelling
275 approach of the DC lines these DC flows implicitly contain both gross and net values
276 (when using the simplified modelling approach) or not (when using the embedded
277 modelling approach).

278 **3.3 Use cases**

279 Use cases of CGMA data exchange are schematically presented in Figure 1. More detailed
280 descriptions of individual use cases and the actors involved can be found in Table 1 and Table
281 2.



282

283 **Figure 1 – Use cases**

284 Table 1 gives a list of actors involved in CGMA data exchange.

285

Table 1 – Actor labels and descriptions

Actor label	Actor description
Transmission system operator	A TSO, or any other actor on behalf of a TSO, who is responsible for providing pre-processing data of a particular optimisation area.
CGMA platform	The Common Grid Model Alignment platform is responsible for collecting and validating pre-processing data as well as pole split and loss calculation data. It executes the CGMA algorithm and provides the results. It maintains input and output data of algorithm runs.
PEVF platform	The Pan European Verification Function platform holds matched schedules of exchanges between areas. It may provide netted area positions and DC flows, which serve as substitute data for missing CGMA PPD.
Information receiver	Any actor, e. g. a TSO or RSC, who wants to use CGMA or PSLC results.

286

287 Table 2 gives a list of use cases for CGMA data exchange.

288

Table 2 – CGMA data exchange

Use case label	Actors involved	Action description and assertions
Submitting PPD (with send, ack)	TSO, CGMA platform	A TSO or RSC submits a complete set of pre-processing data (PPD) for a particular optimisation area. The CGMA platform checks submitted PPD. It fully accepts or rejects a set of PPD. The action shall be executed only before PPD gate closure time.
Send CGMA output	TSO, CGMA platform	The CGMA platform provides the TSO with a detailed set of its PPD originally transmitted to the CGMA platform, substituted / modified PPD (if applicable), and CGMA results. In addition, the CGMA platform is generating a similar output for the entire CGMA area containing all optimisation areas. The action shall be executed only after the CGMA algorithm run successfully terminated with final results for the target time horizon.
Submitting PSLCD (with send, ack)	TSO, CGMA platform	A TSO or RSC submits a complete set of pole split and loss calculation data (PSLCD) for a particular optimisation area which is linked by one or more DC lines. The CGMA platform checks submitted PSLCD. It fully accepts or rejects a set of PSLCD. The action shall be executed only before PSLCD gate closure time.
Send PSLC output	TSO, CGMA platform	The CGMA platform provides the TSO with the results from its validated PSLCD. In addition, the CGMA platform is generating a similar output for the entire CGMA area containing all optimisation areas.
Substitute data	CGMA platform, PEVF platform	The CGMA platform requests netted area positions and DC flows of a particular optimisation area. The action may be executed only after PPD gate closure time.
Request CGMA results	CGMA platform, Information receiver	An information receiver, e. g. a TSO or RSC, requests CGMA results of any particular optimisation area within the entire CGMA area or for the entire CGMA area. The action shall be executed only after the CGMA algorithm run successfully terminated with final results for the target time horizon.
Request PSLC results	CGMA platform, Information receiver	An information receiver, e. g. a TSO or RSC, requests PSLC results for any particular optimisation area within the entire CGMA area or for the entire CGMA area. The action shall be executed only after PSLCD have been validated.

289

290 3.4 Document exchange processes

291 3.4.1 Overview

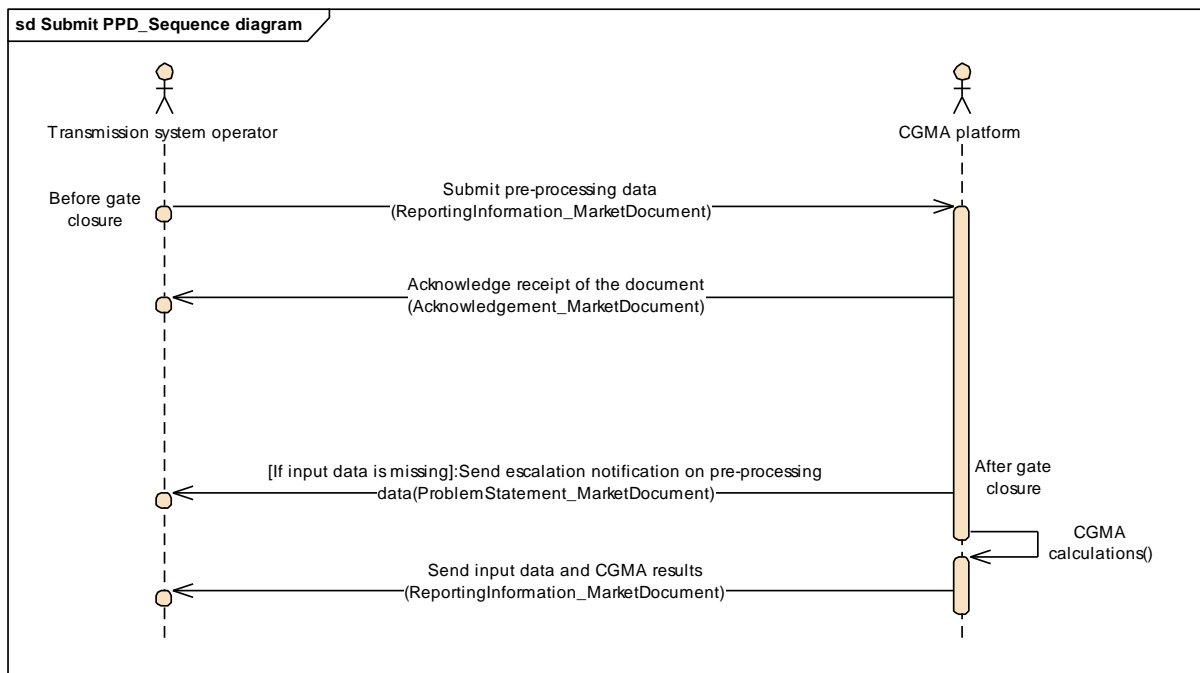
292 The use cases are supported by nine document exchange processes:

- 293 • Submit pre-processing data
- 294 • Send escalation notification on pre-processing data
- 295 • Send input data and CGMA results
- 296 • Request substitute data
- 297 • Request CGMA results

- 298 • Submit pole split and loss calculation data
- 299 • Send escalation notification on pole split and loss calculation data
- 300 • Send PSLC results
- 301 • Request PSLC results

302 Figure 2 shows a sequence diagram of the three document exchange processes 3.4.2 Submit
303 pre-processing data, 3.4.3 Send escalation notification on pre-processing data, and 3.4.4 Send
304 input data and CGMA results .

305



306

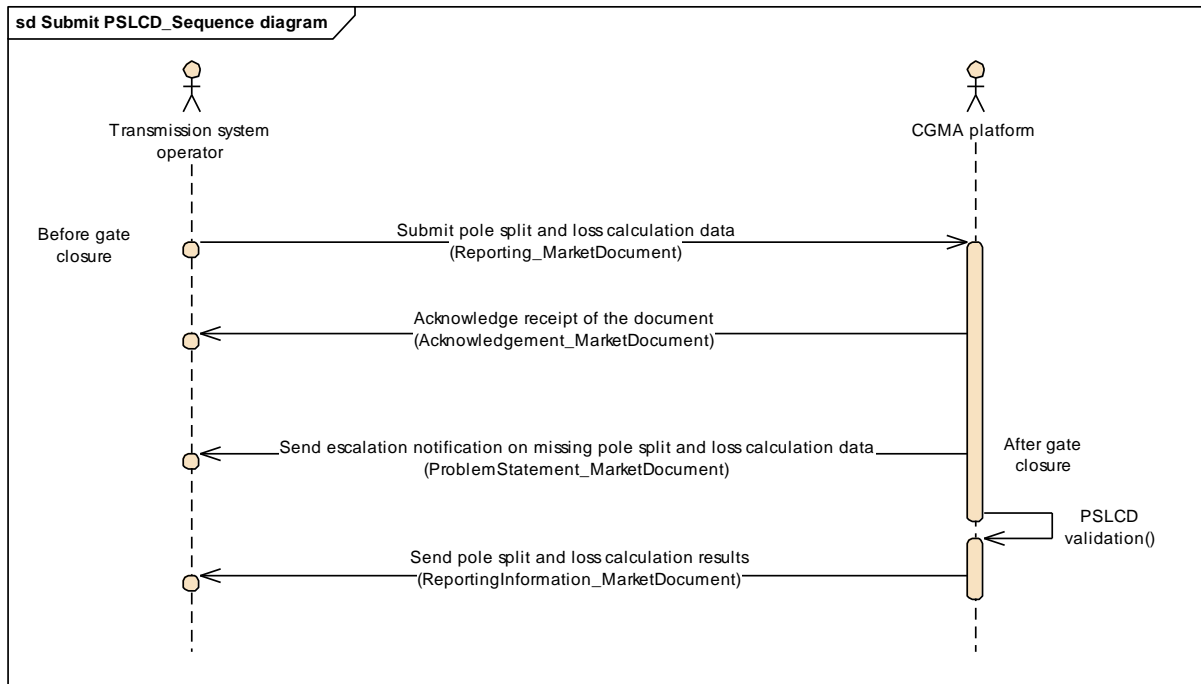
307 **Figure 2 – Sequence diagram for submission of PPD**

308 Figure 3 shows a sequence diagram of the three document exchange processes 0

309 Submit pole split and loss calculation data, 0

310 Send escalation notification on pole split and loss calculation data and 3.4.9 Send PSLC results.

311 Note that in contrast to the submission of PPD by TSOs/RSCs and the provision of optimisation
312 output by the CGMA platform (called the core CGMA process) the provision of validated PSLC
313 results by the CGMA platform is based on the ReportingInformation_MarketDocument
314 dependency tables used by PEVF to support a unique interface for subsequent IGM creation
315 tools from both platforms with different scenarios (CGMA: D-2, PEVF: D-1, ID). Please refer to
316 [6] for more details on this specific implementation of the Reporting Information Market
317 Document.



318

319

Figure 3 – Sequence diagram for submission of PSLCD

320 **3.4.2 Submit pre-processing data**

321 Before PPD gate closure time, a TSO should initiate document exchange by submitting PPD to
 322 the CGMA platform. The platform acknowledges the receipt of a document. If PPD contained in
 323 the submitted document were rejected by the platform, it sends a negative acknowledgement
 324 to the TSO, which gives a list of rejected PPD and reasons for rejection.

325 This process may be executed more than once.

326 A complete set of PPD consists of the time series listed in Table 3.

327 **Table 3 – Time series of pre-processing data**

Label	Description	BusinessType
Preliminary netted area position	A TSO's best forecast of the netted area position for an optimisation area. The feasibility range of adjustments must also be given and is part of the PPD. However, it is not transmitted as a separate business type. Mandatory.	B65
Minimum value of netted area position	That value which a balanced netted area position must not fall below for a given optimisation area. Optional.	B69
Maximum value of netted area position	That value which a balanced netted area position must not exceed for a given optimisation area. Optional.	B70
Preliminary DC gross flow	A TSO's best forecast of the DC gross flow at the exporting end for a given DC line. Mandatory for each given DC line.	B68
Minimum value of gross DC flow	That value which a balanced DC gross flow must not fall below for a given DC line. Optional.	B72
Maximum value of gross DC flow	That value which a balanced DC gross flow must not exceed for a given DC line. Mandatory for each given DC line.	B71

328 **3.4.3 Send escalation notification on pre-processing data**

329 After PPD gate closure time, the CGMA platform sends notification to a TSO if PPD are missing,
330 which is relevant for the TSO's optimisation area.

331 **3.4.4 Send input data and CGMA results**

332 After the CGMA platform has successfully terminated a CGMA run with final results for the
333 target time horizon, it sends to the TSO the CGMA algorithm input and CGMA results which are
334 relevant for the TSO's optimisation area. In case of any modification of PPD provided by a TSO
335 (by CGMA platform and/or RSC) the document will contain both the original input data and the
336 modified input data reporting the changes using the marketObjectStatus entity.

337 The time series of input data and CGMA results are listed in Table 4 and Table 5

338 .

339 **Table 4 – Time series of input data**

Label	Description	BusinessType
Preliminary netted area position	The netted area position of an optimisation area used as input to the CGMA algorithm. It may be substituted with values from PEVF (if applicable for the target time horizon) or modified by a RSC. A feasibility range of adjustments must also be given. However, it is not transmitted as a separate business type. It may be modified by a RSC or CGMA platform. Mandatory. Repeated occurrence in case of modifications.	B65
Minimum value of netted area position	The minimum netted area position of an optimisation area used as input to the CGMA algorithm. It may be modified by a RSC or CGMA platform. Optional. Repeated occurrence in case of modifications.	B69
Maximum value of netted area position	The maximum netted area position of an optimisation area used as input to the CGMA algorithm. It may be modified by a RSC or CGMA platform. Optional. Repeated occurrence in case of modifications.	B70
Preliminary DC gross flow	A DC gross flow at the exporting end for a given DC line used as input to the CGMA algorithm. It may be substituted with values from PEVF (only D-2) or modified by a RSC or CGMA platform. Mandatory for each given DC line. Repeated occurrence in case of modifications.	B68
Minimum value of gross DC flow	A minimum DC gross flow for a given DC line used as input to the CGMA algorithm. It may be modified by a RSC or CGMA platform. Optional. Repeated occurrence in case of modifications.	B72
Maximum value of gross DC flow	A maximum DC gross flow for a given DC line used as input to the CGMA algorithm. It may be modified by a RSC or CGMA platform. Mandatory for each given DC line. Repeated occurrence in case of modifications.	B71

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342

343

Table 5 – Time series of CGMA results

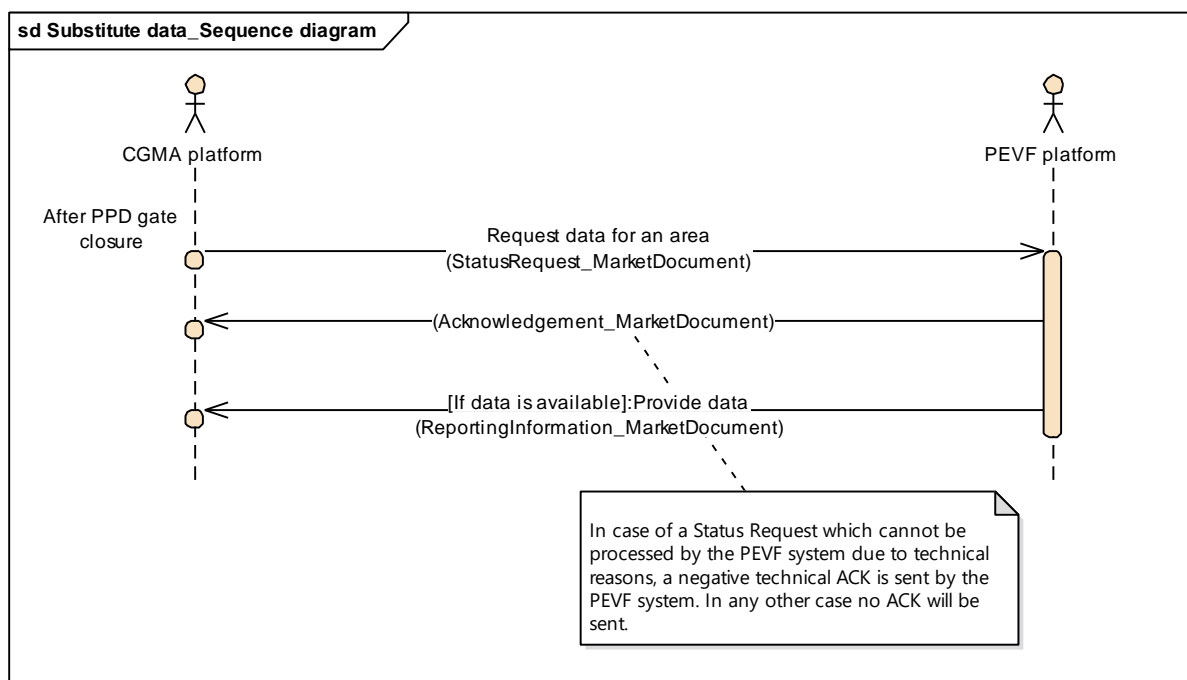
Label	Description	BusinessType
Balanced netted area position	The balanced netted area position of an optimisation area. A balanced netted area position is characterised by the fact that the sum of all netted area positions of the entire CGMA area is zero. Mandatory.	B65
Balanced netted area AC position	The balanced netted area AC position of an optimisation area is obtained by subtracting from the balanced netted area position all balanced DC flows into and out of that optimisation area. Mandatory.	B64
Indicative AC flow	It is the hypothetical flow on the aggregate of all AC tie lines of an electrical border between two optimisation areas. It results from the adjustments to the preliminary netted area positions of all optimisation areas made by the CGMA algorithm. Indicative AC flows are an artefact of the CGMA algorithm, and do not correspond to physical flows. Mandatory.	B73
Balanced DC gross flow	The flow at the exporting end of the DC line. Balanced flows on DC lines have the following properties: (i) the sum of all balanced netted area positions of the entire CGMA area is zero; (ii) the flow at the exporting end of each DC line is consistent with the flow at the importing end of the DC line corrected for losses on the DC line. Mandatory for each given DC line.	B68

344

345 **3.4.5 Request substitute data**

346 Figure 4 shows the sequence diagram.

347



348

Figure 4 – Sequence diagram for request substitute data

349

350 The process may only be executed after PPD gate closure time.

351 Document exchange is initiated by the CGMA platform requesting data from PEVF platform.
352 PEVF platform replies by sending the netted area AC position and DC flows of the requested
353 area, if these data are available.

354 The time series of substitute data are listed in Table 6.

355 **Table 6 – Time series of substitute data**

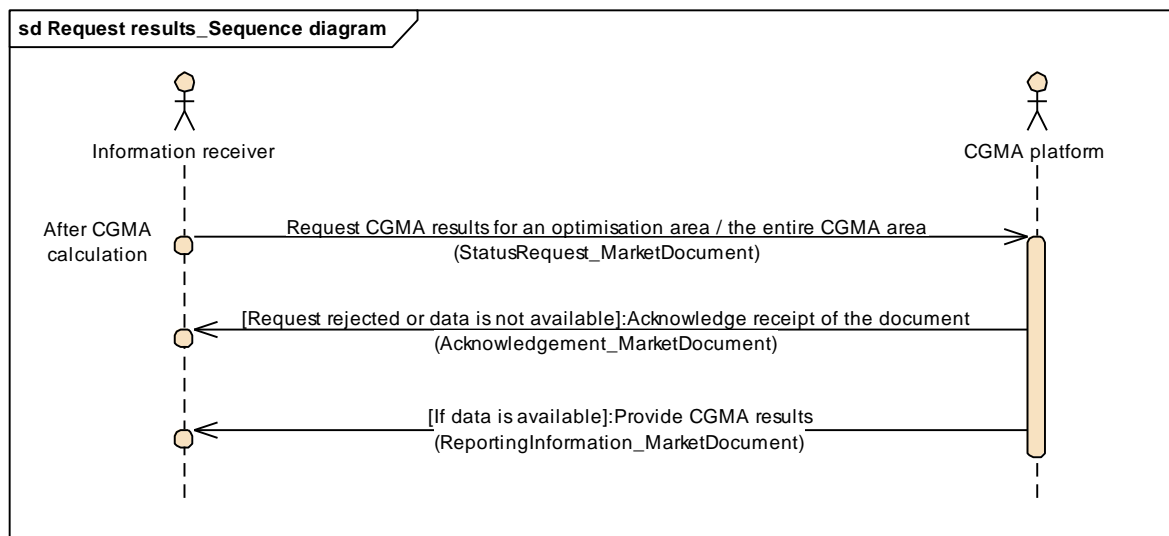
Label	Description	BusinessType
Netted area AC position	The netted AC area position for an optimisation area. Mandatory.	B64
Aggregated netted external schedule	The aggregated netted external schedule for each boundary point of a DC link. Mandatory for each given boundary point.	B63

356

357 **3.4.6 Request CGMA results**

358 Figure 5 shows a sequence diagram.

359



360

361 **Figure 5 – Sequence diagram for request CGMA results**

362 The process may only be executed after the CGMA algorithm run successfully terminated with
363 status final.

364 Document exchange is initiated by the Information receiver requesting CGMA result data from
365 CGMA platform. CGMA platform replies by sending CGMA results, if these data are available.
366 In any other case, CGMA platform replies an Acknowledgement_MarketDocument with problem
367 details.

368 CGMA results consist of the time series listed below in the table.

369

370

Table 7 – Time series of CGMA results

Label	Description	BusinessType
Balanced netted area position	The netted area position of an optimisation area. A balanced netted area position is characterised by the fact that the sum of all netted area positions of the entire CGMA area is zero. Mandatory.	B65
Balanced netted area AC position	The balanced netted area AC position of an optimisation area is obtained by subtracting from the balanced netted area position all balanced DC flows into and out of that optimisation area. Mandatory.	B64
Indicative AC flow	It is the hypothetical flow on the aggregate of all AC tie lines of an electrical border between two optimisation areas. It results from the adjustments to the preliminary netted area positions of all optimisation areas made by the CGMA algorithm. Indicative AC flows are an artefact of the CGMA algorithm, and do not correspond to physical flows. Mandatory.	B73
Balanced DC gross flow	The flow at the exporting end of the DC line. Balanced flows on DC lines have the following properties: (i) the sum of all balanced netted area positions of the entire CGMA area is zero; (ii) the flow at the exporting end of each DC line is consistent with the flow at the importing end of the DC line corrected for losses on the DC line. Mandatory for each given DC line.	B68

371

3.4.7 Submit pole split and loss calculation data

373 Before PSLC gate closure time, only TSOs with DC lines linking different synchronous areas
374 should initiate document exchange by submitting PSLCD containing the DC flows (the document
375 type is Reporting_MarketDocument labelled as “B26 = Aggregated netted external schedules”
376 for consistency with PEVF data formats) per boundary point for each DC link to the CGMA
377 platform. The platform acknowledges the receipt of a document. If PSLCD contained in the
378 submitted document were rejected by the platform, it sends a negative acknowledgement to the
379 TSO, which gives a list of rejected PSLCD and reasons for rejection.

380 This process may be executed more than once.

381 A complete set of PSLCD consists of the time series listed in Table 11.

Table 8 – Time series of pole split and loss calculation data

Label	Description	BusinessType
Aggregated netted external schedule	The DC flow (labelled as aggregated netted external schedule) for each boundary point of a DC link. Mandatory.	B63

383

3.4.8 Send escalation notification on pole split and loss calculation data

385 After PSLCD gate closure time, the CGMA platform sends notification to a TSO if PSLCD are
386 missing, which is relevant for the TSO's optimisation area.

3.4.9 Send PSLC results

388 After the CGMA platform has validated all PSLC input data it will create a final document with
389 the following time series.

390

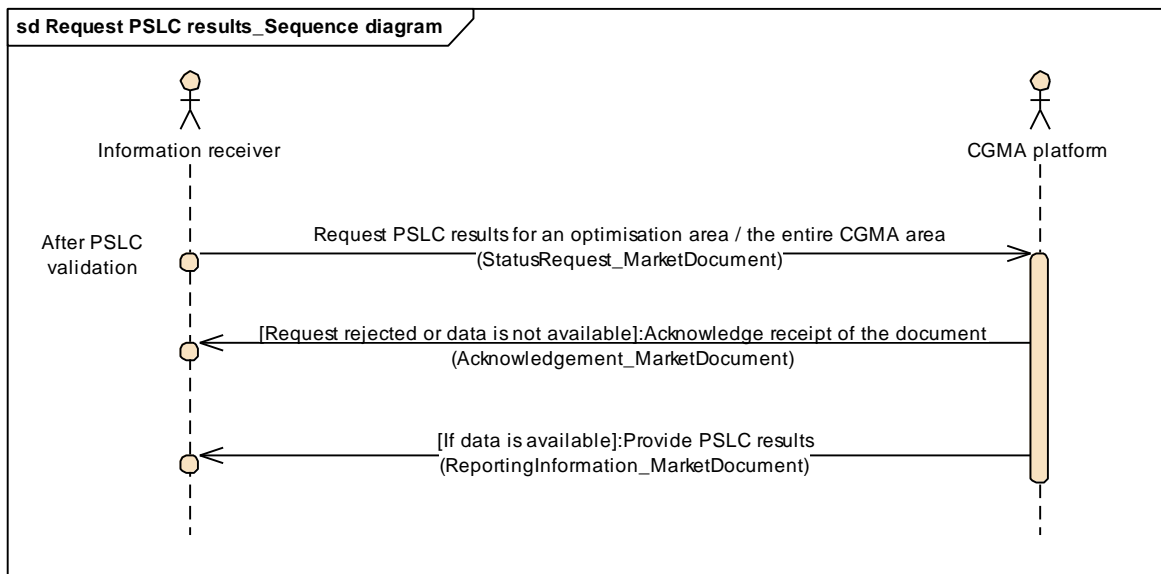
Table 9 – Time series of PSLC

Label	Description	BusinessType
Balanced netted area AC position	The netted AC area position for an optimisation area. Mandatory.	B64
Aggregated netted external schedule	The DC flow (labelled as aggregated netted external schedule) for each boundary point of a DC link. Mandatory for each given boundary point.	B63

391

392 **3.4.10 Request PSLC results**

393 Figure 6 shows a sequence diagram.



394

Figure 6 – Sequence diagram for request PSLC results

395

396 The process may only be executed after the CGMA algorithm run successfully terminated with
 397 status final and all pole split and loss calculation data were successfully validated (or computed
 398 by the CGMA platform by using fixed quotations and percentage values in case they were not
 399 submitted or successfully validated).

400 Document exchange is initiated by the Information receiver requesting PSLC result data from
 401 CGMA platform. CGMA platform replies by sending PSLC results, if these data are available.
 402 In any other case, CGMA platform replies an Acknowledgement_MarketDocument with problem
 403 details.

404 PSLC results consist of the time series listed below in the table.

405

Table 10 – Time series of PSLC

Label	Description	BusinessType
Balanced netted area AC position	The netted AC area position for an optimisation area. Mandatory.	B64
Aggregated netted external schedule	The DC flow (labelled as aggregated netted external schedule) for each boundary point of a DC link. Mandatory for each given boundary point.	B63

406

407 **4 General rules for document exchange**

408 **4.1 General rules**

409 The document exchange processes of CGMA described in the previous chapter require sending
410 and receiving various EDI documents. The EDI documents to be used are

- 411 • Reporting_MarketDocument, refer to reference [5];
- 412 • ReportingInformation_MarketDocument, refer to reference [7];
- 413 • Acknowledgement_MarketDocument IEC62325-451-1, refer to reference [2];
- 414 • ProblemStatement_MarketDocument IEC62325-451-5, refer to reference [3];
- 415 • StatusRequest_MarketDocument IEC62325-451-5, refer to reference [4].

416 These EDI documents shall be used to carry out the communication tasks

- 417 • **submit** - The document contains data to be processed by the receiver.
- 418 • **get** - The document specifies a request for data to be provided by the receiver.
- 419 • **reply** - It is the reaction to receiving a submit or get document.
- 420 • **send** - The document contains data which may be processed by the receiver.

421 Table 11 gives an overview, which EDI document shall be used to carry out the communication
422 tasks of document exchange processes (DEP). Note that dependency tables of using
423 ReportingInformation_MarketDocument are provided in chapter 0 of this document. The
424 abbreviations used in the table (e.g., RID) are explained below the table.

425 **Table 11 – List of documents for CGMA process exchanges**

DEP chapter	DEP label	send/submit/get document	reply document	reply conditions
3.4.2	Submit pre-processing data	RID	EAD	RID fully accepted.
				Syntax error or fully rejected due to semantic error in PPD or fully rejected due to closed PPD submission gate.
3.4.3	Send escalation notification on pre-processing data	EPSD	none	
3.4.4	Send input data and CGMA results	RID	none	
3.4.5	Request substitute data	ESR	RID	ESR fully accepted and requested data is available.
			EAD	Negative EAD in case the ESR cannot be processed due to a technical reason.
3.4.6	Request CGMA results	ESR	RID	ESR fully accepted and requested data available.
			EAD	Syntax error or semantic error in ESR header or error in request attributes.
			EAD	Requested data not available.
3.4.7		RD	EAD	RD fully accepted.

DEP chapter	DEP label	send/submit/get document	reply document	reply conditions
	Submit pole split and loss calculation data			Syntax error or fully rejected due to semantic error in PSLCD or fully rejected due to closed PSLCD submission gate.
3.4.8	Send escalation notification on pole split and loss calculation data	EPSD	none	
3.4.9	Send PSLC results	RID	none	
3.4.10	Request PSLC results	ESR	RID	ESR fully accepted and requested data available.
			EAD	Syntax error or semantic error in ESR header or error in request attributes.
			EAD	Requested data not available.

426 Note: RD - Reporting_MarketDocument; **RID** - ReportingInformation_MarketDocument; **EAD** - Acknowledgement_MarketDocument; **EPSD**
427 - ProblemStatement_MarketDocument; **ESR** - StatusRequest_MarketDocument

428 **4.2 Notes about using StatusRequest_MarketDocument in CGMA document exchange**

429 The header of StatusRequest_MarketDocument shall contain the information listed in Table 12.

430 **Table 12 – StatusRequest_MarketDocument header values**

Attribute	Value
mRID	Identification of the request
type	B20: Status request for a reporting information market document
sender_MarketParticipant.mRID	The identification of the sender.
sender_MarketParticipant.marketRole.type	The role of the sender.
receiver_MarketParticipant.mRID	The identification of the receiver.
receiver_MarketParticipant.marketRole.type	The role of the receiver. A39: Data provider
createdDateTime	UTC time.

431

432 The body of StatusRequest_MarketDocument shall contain a list of attribute-value pairs.
433 Allowed attributes and their dependencies are listed in Table 13

434 .

435

436 **Table 13 – StatusRequest_MarketDocument AttributeInstanceComponent values**

attribute	values dependencies	description
type	B19: Reporting information market document. B29: PS&LC results document Mandatory.	Type of the reply document. Can be either CGMA results or PSLC results.
domain.mRID	EIC of single optimisation area / EIC of CGMA area. Mandatory.	Reply document shall contain data relevant for that optimisation area / the entire CGMA area.
Process.processType	A33: Year ahead. A32: Month ahead. A31: Week ahead. A45: Two days ahead. Mandatory.	
time_Period.timeInterval	UTC time. Mandatory.	Start time of CGMA target time interval.

437

438 **4.3 Notes about using ProblemStatement_MarketDocument as an escalation**
439 **notification**

440 The header of ProblemStatement_MarketDocument shall contain the information listed in Table
441 14.

442 **Table 14 – ProblemStatement_MarketDocument header values**

Attribute	Value
mRID	Unique identification of the document.
revisionNumber	Version of the document.
type	A34: Escalation document
sender_MarketParticipant.mRID	The identification of the sender.
sender_MarketParticipant.marketRole.type	The role of the sender. A39: Data provider (CGMA platform)
receiver_MarketParticipant.mRID	The identification of the receiver.
receiver_MarketParticipant.marketRole.type	The role of the receiver. A04: System operator A44: RSC
createdDateTime	UTC time.
period.timeInterval	CGMA target time horizon covered by the document
expected_MarketDocument.type	B19: Reporting information market document B26: Aggregated netted external schedule document
expected_MarketDocument.createdDateTime	UTC time. The gate closure time.
expected_MarketDocument.process.processType	A33: Year ahead. A32: Month ahead. A31: Week ahead. A45: Two days ahead.
domain.mRID	The optimisation area of concern.
Reason.code	A91: Expected document not received.

443

444 **4.4 Notes about using Reporting_MarketDocument to submit pole split and loss**
445 **calculation data**

446 Table 15 gives the rules governing attributes and elements of Reporting_MarketDocument
447 header. Please refer to [5] for more details on the implementation of the Reporting Market
448 Document.

449

450

Table 15 – Reporting_MarketDocument header

	Attribute	Description and dependencies
Reporting_MarketDocument	mRID	Document identification.
	revisionNumber	Version of the document.
	type	B26: Aggregated netted external schedule document
	process.processType	A45: Two days ahead.
	sender_MarketParticipant.mRID	The identification of the sender.
	sender_MarketParticipant.marketRole.type	The role of the sender. A04: System operator A44: RSC
	receiver_MarketParticipant.mRID	The identification of the receiver.
	receiver_MarketParticipant.marketRole.type	The role of the receiver. A39: Data provider (CGMA platform)
	createdDateTime	UTC time.
	time_Period.timeInterval	CGMA target time horizon covered by the document.
	domain.mRID	The optimisation area of concern.
	Subject_Domain.mRID	The optimisation area of concern.

451

452 The document should contain one or more elements of TimeSeries class.

453 Table 16 gives the rules governing the attributes and sub-elements of
454 Reporting_MarketDocument.TimeSeries elements.

455

Table 16 – Reporting_MarketDocument.TimeSeries elements

	Attribute	Description and dependencies	
		DC flow	
TimeSeries	mRID	Identification of the time series.	
	businessType	B63 = Aggregated netted external schedule	
	product	8716867000016: Active Power	
		import	export
	in_Domain.mRID	Identification of the optimisation area. Must match both domain.mRID and Subject_Domain.mRID. Mandatory.	Identification of the importing area. Mandatory.
	out_Domain.mRID	Identification of the exporting area . Mandatory.	Identification of the optimisation area. Must match both domain.mRID and Subject_Domain.mRID. Mandatory.
	connectingLine_RegisteredResource.mRID	Identification of the DC link. Mandatory.	
	quantity_Measure_Unit.name	MAW: MW	
	curveType	A01: Sequential fixed size block A02: Point. A03: Variable block.	
	.Period	timeInterval	Time interval covered by elements of Point class.
resolution		Resolution used in the Point class.	
.Period.Point	position	Position in the time series. Mandatory.	
	quantity	Value of the flow (no signed value). Mandatory.	

456

457

458 **5 Using the ReportingInformation_MarketDocument in CGMA**

459 **5.1 Overview**

460 According to Table 11, the ReportingInformation_MarketDocument is used in six different
461 processes of CGMA document exchange. For each process, specific rules for using
462 ReportingInformation_MarketDocument, so called dependencies, are defined in subsections of
463 this chapter.

464 **5.2 Rules governing ReportingInformation_MarketDocument to submit pre-
465 processing data**

466 Table 17 gives the rules governing attributes and elements of
467 ReportingInformation_MarketDocument header.

468 **Table 17 – ReportingInformation_MarketDocument header**

	Attribute	Description and dependencies
ReportingInformation_MarketDocument	mRID	Document identification.
	revisionNumber	Version of the document.
	type	B19: Reporting information market document.
	process.processType	A33: Year ahead. A32: Month ahead. A31: Week ahead. A45: Two days ahead.
	sender_MarketParticipant.mRID	The identification of the sender.
	sender_MarketParticipant.marketRole.type	The role of the sender. A04: System operator A44: RSC
	receiver_MarketParticipant.mRID	The identification of the receiver.
	receiver_MarketParticipant.marketRole.type	The role of the receiver. A39: Data provider (CGMA platform)
	createdDateTime	UTC time.
	time_Period.timeInterval	CGMA target time horizon covered by the document.
	domain.mRID	The optimisation area of concern.
	dataset_MarketDocument.mRID	Not used.
	dataset_MarketDocument.revisionNumber	Not used.
	docStatus	Not used.
	referenced_DateAndOrTime.date	Not used.
	referenced_DateAndOrTime.time	Not used.
Reason	Not used.	

469

470 The document should contain one or more elements of TimeSeries class.

471

472 Table 18 gives the rules governing the attributes and sub-elements of
473 ReportingInformation_MarketDocument.TimeSeries elements.

474 **Table 18 – ReportingInformation_MarketDocument.TimeSeries elements**

	Attribute	Description and dependencies			
		Netted area position or maximum and minimum netted area position values		DC flow or maximum and minimum DC flow values	
TimeSeries	mRID	Identification of the time series.			
	businessType	B65: Netted area position. The net AC and DC position of the optimisation area.		B68: DC gross flow	
		B70: Maximum netted area position. B69: Minimum netted area position.		B71: Maximum DC gross flow. B72: Minimum DC gross flow.	
	product	8716867000016: Active Power			
		import	export	import	export
	in_Domain.mRID	Identification of optimisation area. Mandatory.	Not used.	Identification of optimisation area. Mandatory.	Identification of the importing area. Mandatory.
	out_Domain.mRID	Not used.	Identification of optimisation area. Mandatory.	Identification of the exporting area. Mandatory.	Identification of optimisation area. Mandatory.
	connectingLine_RegisteredResource.mRID	Not used.		Identification of the DC link. Mandatory.	
	measurement_Unit.name	MAW: MW			
	curveType	A02: Point.			
	marketObjectStatus.status	Not used.			
	Reason	Not used.			
.Period					
	timeInterval	Time interval covered by elements of Point class.			
	resolution	Resolution used in the Point class.			
.Period.Point	position	Position in the time series. Mandatory.			
	quantity	Value of the netted area position, flow or minimum / maximum (no signed value). Mandatory.			
	posFR_Quantity.quantity	Positive feasibility range (no signed value). Mandatory for BusinessType B65. Not used otherwise.		Not used.	
	negFR_Quantity.quantity	Negative feasibility range (signed value). Mandatory for BusinessType B65. Not used otherwise.		Not used.	
	Reason	Not used.			

475

476 **5.3 Rules governing ReportingInformation_MarketDocument to reply substitute data**

477 Table 19 gives the rules governing attributes and elements of
478 ReportingInformation_MarketDocument header.

479 **Table 19 – ReportingInformation_MarketDocument header**

	Attribute	Description and dependencies
ReportingInformation_MarketDocument	mRID	Document identification.
	revisionNumber	Version of the document.
	type	B19: Reporting information market document.
	process.processType	A01: Day ahead
	sender_MarketParticipant.mRID	The identification of the sender.
	sender_MarketParticipant.marketRole.type	The role of the sender. A32: Market Information Aggregator (PEVF platform)
	receiver_MarketParticipant.mRID	The identification of the receiver.
	receiver_MarketParticipant.marketRole.type	The role of the receiver. A33: Information Receiver (CGMA platform)
	createdDateTime	UTC time.
	time_Period.timeInterval	CGMA target time horizon covered by the document.
	domain.mRID	The optimisation area of concern.
	dataset_MarketDocument.mRID	Not used.
	dataset_MarketDocument.revisionNumber	Not used.
	docStatus	A01 = Intermediate A02 = Final
	referenced_DateAndOrTime.date	Not used.
	referenced_DateAndOrTime.time	Not used.
Reason	B08 = Data not yet available.	

480

481 The document should contain one or more elements of TimeSeries class.

482 Table 20 gives the rules governing the attributes and sub-elements of
483 ReportingInformation_MarketDocument.TimeSeries elements.

484

Table 20 – ReportingInformation_MarketDocument.TimeSeries elements

	Attribute	Description and dependencies			
		Netted area position		DC flow	
TimeSeries	mRID	Identification of the time series.			
	businessType	B64: Netted area AC position. The net AC position of the optimisation area.		B63 = Aggregated netted external schedule	
	product	8716867000016: Active Power			
		import	export	import	export
	in_Domain.mRID	Identification of the optimisation area. Mandatory.	Identification of the synchronous area. Mandatory.	Identification of the optimisation area. Mandatory.	Identification of the importing area. Mandatory.
	out_Domain.mRID	Identification of the synchronous area. Mandatory.	Identification of the optimisation area. Mandatory.	Identification of the exporting area. Mandatory.	Identification of the optimisation area. Mandatory.
	connectingLine_RegisteredResource.mRID	Not used.		Identification of the DC link. Mandatory.	
	measurement_Unit.name	MAW: MW			
	curveType	A01: Sequential fixed size block A03: Variable block.			
	marketObjectStatus.status	Not used.			
	Reason	B30 = Data unverified B31 = Data verified A26 = Default Time Series applied A30 = Imposed Time Series from nominated party's Time Series A54 = Global position not in balance			
.Period	timeInterval	Time interval covered by elements of Point class.			
	resolution	Resolution used in the Point class.			
.Period.Point	position	Position in the time series. Mandatory.			
	quantity	Value of the netted area position or flow (no signed value). Mandatory.			
	posFR_Quantity.quantity	Not used.		Not used.	
	negFR_Quantity.quantity	Not used.		Not used.	
	Reason	Not used.			

485

486 5.4 Rules governing ReportingInformation_MarketDocument to send input data and
487 CGMA results

488 Table 21 gives the rules governing attributes and elements of
489 ReportingInformation_MarketDocument header.

490

Table 21 – ReportingInformation_MarketDocument header

	Attribute	Description and dependencies
ReportingInformation_MarketDocument	mRID	Document identification.
	revisionNumber	Version of the document.
	type	B19: Reporting information market document.
	process.processType	A33: Year ahead. A32: Month ahead. A31: Week ahead. A45: Two days ahead.
	sender_MarketParticipant.mRID	The identification of the sender.
	sender_MarketParticipant.marketRole.type	The role of the sender. A39: Data provider (CGMA platform)
	receiver_MarketParticipant.mRID	The identification of the receiver.
	receiver_MarketParticipant.marketRole.type	The role of the receiver. A04: System operator A44: RSC
	createdDateTime	UTC time.
	time_Period.timeInterval	CGMA target time horizon covered by the document.
	domain.mRID	The optimisation area of concern.
	dataset_MarketDocument.mRID	Not used.
	dataset_MarketDocument.revisionNumber	Not used.
	docStatus	Not used.
	referenced_DateAndOrTime.date	Not used.
	referenced_DateAndOrTime.time	Not used.
Reason	Not used.	

491

492 The document should contain one or more elements of TimeSeries class.

493 Table 22 gives the rules governing the attributes and sub-elements of
494 ReportingInformation_MarketDocument.TimeSeries elements.

495

Table 22 – ReportingInformation_MarketDocument.TimeSeries elements

	Attribute	Description and dependencies			
		netted (AC) area position or maximum and minimum netted area position values		DC flow or maximum and minimum DC flow values or indicative AC flow	
TimeSeries	mRID	Identification of the time series.			
	businessType	B64: Netted AC area position. B65: Netted area position. The net AC and DC position of the optimisation area. B69: Minimum netted area position. B70: Maximum netted area position.	B68: DC gross flow B71: Maximum DC gross flow. B72: Minimum DC gross flow. B73: Indicative AC flow.		
	product	8716867000016: Active Power.			
		import	export	import	export
	in_Domain.mRID	Identification of the optimisation area. Mandatory.	Not used.	Identification of the optimisation area. Mandatory.	Identification of the importing area. Mandatory.
	out_Domain.mRID	Not used.	Identification of the optimisation area. Mandatory.	Identification of the exporting area. Mandatory.	Identification of the optimisation area. Mandatory.
	connectingLine_RegisteredResource.mRID	Not used.		Identification of the DC link. Mandatory for B68: DC gross flow, Not used for indicative AC flow (B73).	
	measurement_Unit.name	MAW: MW			
	curveType	A02: Point.			
	marketObjectStatus.status	Coded description of a time series. To be used for providing information about life cycle status. A29: Submitted. (The object was submitted to be processed by CGMA platform.) A30: Substituted. (CGMA platform used data originating from PEVF platform.) A31: Modified. (The values were modified by RSC or CGMA platform.) A32: Result. (The object is the final result of CGMA algorithm.) Mandatory.			
	Reason	Not used.			
	.Period				
timeInterval		Time interval covered by elements of Point class.			
	resolution	Resolution used in the Point class.			
.Period.Point	position	Position in the time series. Mandatory.			
	quantity	Value of the netted (AC) area position, flow or minimum / maximum (no signed value). Mandatory.			

	Attribute	Description and dependencies			
		netted (AC) area position or maximum and minimum netted area position values		DC flow or maximum and minimum DC flow values or indicative AC flow	
TimeSeries	mRID	Identification of the time series.			
	businessType	B64: Netted AC area position. B65: Netted area position. The net AC and DC position of the optimisation area. B69: Minimum netted area position. B70: Maximum netted area position.	B68: DC gross flow B71: Maximum DC gross flow. B72: Minimum DC gross flow. B73: Indicative AC flow.		
	product	8716867000016: Active Power.			
		import	export	import	export
	in_Domain.mRID	Identification of the optimisation area. Mandatory.	Not used.	Identification of the optimisation area. Mandatory.	Identification of the importing area. Mandatory.
	out_Domain.mRID	Not used.	Identification of the optimisation area. Mandatory.	Identification of the exporting area. Mandatory.	Identification of the optimisation area. Mandatory.
	connectingLine_RegisteredResource.mRID	Not used.		Identification of the DC link. Mandatory for B68: DC gross flow, Not used for indicative AC flow (B73).	
	measurement_Unit.name	MAW: MW			
	curveType	A02: Point.			
	marketObjectStatus.status	Coded description of a time series. To be used for providing information about life cycle status. A29: Submitted. (The object was submitted to be processed by CGMA platform.) A30: Substituted. (CGMA platform used data originating from PEVF platform.) A31: Modified. (The values were modified by RSC or CGMA platform.) A32: Result. (The object is the final result of CGMA algorithm.) Mandatory.			
	Reason	Not used.			
	posFR_Quantity.quantity	Positive feasibility range (no signed value). Mandatory for BusinessType B65. Not used otherwise.	Not used.		
	negFR_Quantity.quantity	Negative feasibility range (signed value). Mandatory for BusinessType B65. Not used otherwise.	Not used.		
	Reason.code	May optionally be provided. A63 = Time Series modified.			
	Reason.text	Optionally used to provide additional information about the reason for modification in case of marketObjectStatus.status A30: Substituted, or A31: Modified.			

497 **5.5 Rules governing ReportingInformation_MarketDocument to reply CGMA results**

498 Table 23 gives the rules governing attributes and elements of
499 ReportingInformation_MarketDocument header.

500 **Table 23 – ReportingInformation_MarketDocument header**

	Attribute	Description and dependencies
ReportingInformation_MarketDocument	mRID	Document identification.
	revisionNumber	Version of the document.
	type	B19: Reporting information market document.
	process.processType	A33: Year ahead. A32: Month ahead. A31: Week ahead. A45: Two days ahead.
	sender_MarketParticipant.mRID	The identification of the sender.
	sender_MarketParticipant.marketRole.type	The role of the sender. A39: Data provider (CGMA platform)
	receiver_MarketParticipant.mRID	The identification of the receiver.
	receiver_MarketParticipant.marketRole.type	The role of the receiver. A04: System operator A44: RSC
	createdDateTime	UTC time.
	time_Period.timeInterval	CGMA target time horizon covered by the document.
	domain.mRID	The optimisation area of concern.
	dataset_MarketDocument.mRID	Not used.
	dataset_MarketDocument.revisionNumber	Not used.
	docStatus	Not used.
	referenced_DateAndOrTime.date	Not used.
	referenced_DateAndOrTime.time	Not used.
Reason	Not used.	

501

502 The document should contain one or more elements of TimeSeries class.

503 Table 24 gives the rules governing the attributes and sub-elements of
504 ReportingInformation_MarketDocument.TimeSeries elements.

505

Table 24 – ReportingInformation_MarketDocument.TimeSeries elements

	Attribute	Description and dependencies				
		Netted (AC) area position		DC flow or indicative AC flow		
TimeSeries	mRID	Identification of the time series.				
	businessType	B64: Netted AC area position. B65: Netted area position. The net AC and DC position of the optimisation area.		B68: DC gross flow B73: Indicative AC flow.		
	product	8716867000016: Active Power.				
		import	export	import	export	
	in_Domain.mRID	Identification of the optimisation area. Mandatory.	Not used.	Identification of the optimisation area. Mandatory.	Identification of the importing area. Mandatory.	
	out_Domain.mRID	Not used.	Identification of the optimisation area. Mandatory.	Identification of the exporting area. Mandatory.	Identification of the optimisation area. Mandatory.	
	connectingLine_RegisteredResource.mRID	Not used.		Identification of the DC link. Mandatory for B68: DC gross flow Not used for B73: Indicative AC flow.		
	measurement_Unit.name	MAW: MW.				
	curveType	A02: Point.				
	marketObjectStatus.status	A32: Result. (The object is the final result of CGMA algorithm.) Mandatory.				
	Reason	Not used.				
	.Period					
		timeInterval	Time interval covered by elements of Point class.			
resolution		Resolution used in the Point class.				
.Period.Point	position	Position in the time series. Mandatory.				
	quantity	Value of the netted (AC) area position or flow (no signed value). Mandatory.				
	posFR_Quantity.quantity	Not used.				
	negFR_Quantity.quantity	Not used.				
	Reason	Not used.				

506

507 5.6 Rules governing ReportingInformation_MarketDocument to send PSLC results

508 Table 25 gives the rules governing attributes and elements of
509 ReportingInformation_MarketDocument header.

510

Table 25 – ReportingInformation_MarketDocument header

	Attribute	Description and dependencies
ReportingInformation_MarketDocument	mRID	Document identification.
	revisionNumber	Version of the document.
	type	B29: PS&LC results document
	process.processType	A45: Two days ahead.
	sender_MarketParticipant.mRID	The identification of the sender.
	sender_MarketParticipant.marketRole.type	The role of the sender. A39: Data provider (CGMA platform)
	receiver_MarketParticipant.mRID	The identification of the receiver.
	receiver_MarketParticipant.marketRole.type	The role of the receiver. A04: System operator A44: RSC
	createdDateTime	UTC time.
	time_Period.timeInterval	CGMA target time horizon covered by the document.
	domain.mRID	The optimisation area of concern.
	dataset_MarketDocument.mRID	Not used.
	dataset_MarketDocument.revisionNumber	Not used.
	docStatus	A02 = Final
	referenced_DateAndOrTime.date	Not used.
	referenced_DateAndOrTime.time	Not used.
Reason	Not used.	

511

512 The document should contain one or more elements of TimeSeries class.

513 Table 26 gives the rules governing the attributes and sub-elements of
514 ReportingInformation_MarketDocument.TimeSeries elements.

515

Table 26 – ReportingInformation_MarketDocument.TimeSeries elements

	Attribute	Description and dependencies			
		Netted area position		DC flow	
TimeSeries	mRID	Identification of the time series.			
	businessType	B64: Netted area AC position. The net AC position of the optimisation area.		B63 = Aggregated netted external schedule	
	product	8716867000016: Active Power			
		import	export	import	export
	in_Domain.mRID	Identification of the optimisation area. Mandatory.	Identification of the synchronous area. Mandatory.	Identification of the optimisation area. Mandatory.	Identification of the importing area. Mandatory.
	out_Domain.mRID	Identification of the synchronous area. Mandatory.	Identification of the optimisation area. Mandatory.	Identification of the exporting area. Mandatory.	Identification of the optimisation area. Mandatory.
	connectingLine_RegisteredResource.mRID	Not used.		Identification of the DC link. Mandatory.	
	measurement_Unit.name	MAW: MW			
	curveType	A01: Sequential fixed size block A03: Variable block.			
	marketObjectStatus.status			Coded description of a time series. To be used for providing information about life cycle status. A29: Submitted. (The object was submitted to be processed by CGMA platform.) A30: Substituted. (The values were computed by the CGMA platform.)	
	Reason	Not used.			
.Period	timeInterval	Time interval covered by elements of Point class.			
	resolution	Resolution used in the Point class.			
.Period.Point	position	Position in the time series. Mandatory.			
	quantity	Value of the netted area position or flow (no signed value). Mandatory.			
	posFR_Quantity.quantity	Not used.			
	negFR_Quantity.quantity	Not used.			
	Reason			Optionally used to provide additional information about the reason for modification in case of marketObjectStatus.status A30: Substituted.	

516

517 5.7 Rules governing ReportingInformation_MarketDocument to reply PSLC results

518 Table 27 gives the rules governing attributes and elements of
519 ReportingInformation_MarketDocument header.

520

Table 27 – ReportingInformation_MarketDocument header

	Attribute	Description and dependencies
ReportingInformation_MarketDocument	mRID	Document identification.
	revisionNumber	Version of the document.
	type	B29: PS&LC results document
	process.processType	A45: Two days ahead.
	sender_MarketParticipant.mRID	The identification of the sender.
	sender_MarketParticipant.marketRole.type	The role of the sender. A39: Data provider (CGMA platform)
	receiver_MarketParticipant.mRID	The identification of the receiver.
	receiver_MarketParticipant.marketRole.type	The role of the receiver. A04: System operator A44: RSC
	createdDateTime	UTC time.
	time_Period.timeInterval	CGMA target time horizon covered by the document.
	domain.mRID	The optimisation area of concern.
	dataset_MarketDocument.mRID	Not used.
	dataset_MarketDocument.revisionNumber	Not used.
	docStatus	A02 = Final
	referenced_DateAndOrTime.date	Not used.
	referenced_DateAndOrTime.time	Not used.
Reason	Not used.	

521

522 The document should contain one or more elements of TimeSeries class.

523 Table 28 gives the rules governing the attributes and sub-elements of
524 ReportingInformation_MarketDocument.TimeSeries elements.

525

Table 28 – ReportingInformation_MarketDocument.TimeSeries elements

	Attribute	Description and dependencies			
		Netted area position		DC flow	
TimeSeries	mRID	Identification of the time series.			
	businessType	B64: Netted area AC position. The net AC position of the optimisation area.		B63 = Aggregated netted external schedule	
	product	8716867000016: Active Power			
		import	export	import	export
	in_Domain.mRID	Identification of the optimisation area. Mandatory.	Identification of the synchronous area. Mandatory.	Identification of the optimisation area. Mandatory.	Identification of the importing area. Mandatory.
	out_Domain.mRID	Identification of the synchronous area. Mandatory.	Identification of the optimisation area. Mandatory.	Identification of the exporting area. Mandatory.	Identification of the optimisation area. Mandatory.
	connectingLine_RegisteredResource.mRID	Not used.		Identification of the DC link. Mandatory.	
	measurement_Unit.name	MAW: MW			
	curveType	A01: Sequential fixed size block A03: Variable block.			
	marketObjectStatus.status			Coded description of a time series. To be used for providing information about life cycle status. A29: Submitted. (The object was submitted to be processed by CGMA platform.) A30: Substituted. (The values were computed by the CGMA platform.)	
	Reason	Not used.			
.Period	timeInterval	Time interval covered by elements of Point class.			
	resolution	Resolution used in the Point class.			
.Period.Point	position	Position in the time series. Mandatory.			
	quantity	Value of the netted area position or flow (no signed value). Mandatory.			
	posFR_Quantity.quantity	Not used.			
	negFR_Quantity.quantity	Not used.			
	Reason			Optionally used to provide additional information about the reason for modification in case of marketObjectStatus.status A30: Substituted.	

526

527

528 **5.8 Additional rules governing the use of TimeSeries**

529 For the time series data used in the data exchanges as being described in chapters 5.2, 5.4
530 and 5.5 the netted AC area position and netted area position of an optimisation area are always
531 provided using two time series.

532 • One time series for import into the optimisation area A with in_Domain.mRID =
533 "mRID_A", out_Domain.mRID = "" (empty).

534 • One time series for export from the optimisation area A with in_Domain.mRID = ""
535 (empty), out_Domain.mRID = "mRID_A".

536 • These two time series shall have the same Period.resolution and the same
537 Period.timeInterval. For a given Point.position, the Point.quantity of one time series
538 must be zero, whereas the Point.quantity of the other time series may have a value
539 larger than zero (pair of netted values). Point.quantity of both time series must be zero
540 when the netted area position of the optimisation area is zero for the given
541 Point.position.

542 • A feasibility range (Point.posFR_Quantity.quantity and Point.negFR_Quantity.quantity)
543 shall be provided for every point.quantity. If PPD contain more than one time series of
544 BusinessType A65 (import and export values in one document), the TSO has to make
545 sure that the feasibility ranges for a given Point have the same values in both time
546 series. Otherwise the PPD will be rejected due to inconsistency. This applies to all kinds
547 of net positions (zero, import, export).

548 DC flows as well as indicative AC flows of an optimisation area A towards another area B are
549 always provided through the use of two time series.

550 • One time series for import into the optimisation area A with in_Domain.mRID =
551 "mRID_A", out_Domain.mRID = "mRID_B".

552 • One time series for export from the optimisation area A with in_Domain.mRID
553 = "mRID_B", out_Domain.mRID = "mRID_A".

554 • These two time series shall have the same Period.resolution and the same
555 Period.timeInterval. For a given Point.position, the Point.quantity of one time series
556 must be zero, whereas the Point.quantity of the other time series may have a value
557 larger than zero (pair of netted values). Point.quantity of both timeseries must be zero
558 when there is no flow between the two areas for the given target time interval.

559 **5.9 ReportingInformation_MarketDocument XML schema**

560 The XSD file to be used with this implementation guide is urn:iec62325.351:tc57wg16:451-n:
561 reportinginformationdocument:2:1. Further details on the UML model and schema can be found
562 in [7].

563

564 **6 References**

- 565 [1] All TSO's Common Grid Model Alignment Methodology in accordance with Article 25 (3)(c)
566 of the Common Grid Model Methodology
- 567 [2] Acknowledgement_MarketDocument (EAD) IEC 62325-451-1
- 568 [3] ProblemStatement_MarketDocument (EPSD) IEC 62325-451-5
- 569 [4] StatusRequest_MarketDocument (ESR) IEC62325-451-5
- 570 [5] Reporting Document UML Model and Schema Version 1.0 (19th January 2017)
- 571 [6] PEVF Implementation Guide Version 01 / Release 00 (11th April 2018)
- 572 [7] Reporting Information Document UML Model and Schema Version 1.0 (19th January 2017)