Commission Regulation (EU) 2017/1485 of 2 August 2017 establishing a guideline on electricity transmission system operation (Text with EEA relevance)

PART IV

LOAD-FREQUENCY CONTROL AND RESERVES

TITLE 1

OPERATIONAL AGREEMENTS

Article 118

Synchronous area operational agreements

1 By 12 months after entry into force of this Regulation, all TSOs of **[**[F1]the GB synchronous area**]** shall jointly develop common proposals for:

a the dimensioning rules for FCR in accordance with Article 153;

b additional properties of FCR in accordance with Article 154(2);

c the frequency quality defining parameters and the frequency quality target parameters in accordance with Article 127;

[F2]d . . . . . .

e the methodology to assess the risk and the evolution of the risk of exhaustion of FCR of the synchronous area in accordance with Article 131(2);

f the synchronous area monitor in accordance with Article 133;

g the calculation of the control program from the netted area AC position with a common ramping period for ACE calculation for a synchronous area with more than one LFC area in accordance with Article 136;

h if applicable, restrictions for the active power output of HVDC interconnectors between synchronous areas in accordance with Article 137;

i the LFC structure in accordance with Article 139;

j if applicable, the methodology to reduce the electrical time deviation in accordance with Article 181;

k whenever the synchronous area is operated by more than one TSO, the specific allocation of responsibilities between TSOs in accordance with Article 141;

l operational procedures in case of exhausted FCR in accordance with Article 152(7);

m [F3]... measures to ensure the recovery of energy reservoirs in accordance with to Article 156(6)(b);

n operational procedures to reduce the system frequency deviation to restore the system state to normal state and to limit the risk of entering into the emergency state in accordance with Article 152(10);

[F4]o . . . . . .

p requirements concerning the availability, reliability and redundancy of the technical infrastructure in accordance with Article 151(2);

q common rules for the operation in normal state and alert state in accordance with Article 152(6) and the actions referred to in Article 152(15);

[F5]r . . . . . .
[F6]s . . . . . .
t if applicable, [F7]... limits for the exchange of FCR between the TSOs in accordance with Article 163(2);
u **[**[F8]if applicable,**]** the roles and responsibilities of the reserve connecting TSO, the reserve receiving TSO and the affected TSO as regards the exchange of FRR and RR defined in accordance with Article 165(1);
v **[**[F9]if applicable,**]** the roles and responsibilities of the control capability providing TSO, the control capability receiving TSO and the affected TSO for the sharing of FRR and RR defined in accordance with Article 166(1);
[F10]w . . . . . .
[F10]x . . . . . .
[F10]y . . . . . .
[F10]z . . . . . .
[F11]aa . . . . . .

2 All TSOs of **[**[F12]the GB synchronous area**]** shall submit the methodologies and conditions listed in Article 6(3)(d) for approval by **[**[F13]the regulatory authority**]**. Within 1 month after the approval of these methodologies and conditions, all TSOs of **[**[F14]the GB**]** synchronous area shall conclude a synchronous area operational agreement which shall enter into force within 3 months after the approval of the methodologies and conditions.

Textual Amendments

F1 Words in Art. 118(1) substituted (E.W.S.) (31.12.2020) by The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533), reg. 1(2), **Sch. 1 para. 79(2)(a)** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

F2 Art. 118(1)(d) omitted (E.W.S.) (31.12.2020) by virtue of The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533), reg. 1(2), **Sch. 1 para. 79(2)(b)** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

F3 Words in Art. 118(1)(m) omitted (E.W.S.) (31.12.2020) by virtue of The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533), reg. 1(2), **Sch. 1 para. 79(2)(c)** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

F4 Art. 118(1)(o) omitted (E.W.S.) (31.12.2020) by virtue of The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533), reg. 1(2), **Sch. 1 para. 79(2)(d)** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

F5 Art. 118(1)(r) omitted (E.W.S.) (31.12.2020) by virtue of The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533), reg. 1(2), **Sch. 1 para. 79(2)(d)** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

F6 Art. 118(1)(s) omitted (E.W.S.) (31.12.2020) by virtue of The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533), reg. 1(2), **Sch. 1 para. 79(2)(d)** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

F7 Words in Art. 118(1)(t) omitted (E.W.S.) (31.12.2020) by virtue of The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I.

2019/533), reg. 1(2), **Sch. 1 para. 79(2)(e)** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

F8 Words in Art. 118(1)(u) inserted (E.W.S.) (31.12.2020) by The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533), reg. 1(2), **Sch. 1 para. 79(2)(f)** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

F9 Words in Art. 118(1)(v) inserted (E.W.S.) (31.12.2020) by The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533), reg. 1(2), **Sch. 1 para. 79(2)(f)** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

F10 Art. 118(1)(w)-(z) omitted (E.W.S.) (31.12.2020) by virtue of The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533), reg. 1(2), **Sch. 1 para. 79(2)(g)** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

F11 Art. 118(1)(aa) omitted (E.W.S.) (31.12.2020) by virtue of The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533), reg. 1(2), **Sch. 1 para. 79(2)(g)** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

F12 Words in Art. 118(2) substituted (E.W.S.) (31.12.2020) by The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533), reg. 1(2), **Sch. 1 para. 79(3)(a)(i)** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

F13 Words in Art. 118(2) substituted (E.W.S.) (31.12.2020) by The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533), reg. 1(2), **Sch. 1 para. 79(3)(a)(ii)** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

F14 Words in Art. 118(2) substituted (E.W.S.) (31.12.2020) by The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533), reg. 1(2), **Sch. 1 para. 79(3)(b)** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

Article 119

LFC block operational agreements

1 By 12 months after entry into force of this Regulation, all TSOs of each LFC block shall jointly develop common proposals for:

a where the LFC block consists of more than one LFC area, FRCE target parameters for each LFC area defined in accordance with Article 128(4);

b LFC block monitor in accordance with Article 134(1);

c ramping restrictions for active power output in accordance with **[**[F15]Article 137(4)**]**;

d where the LFC block is operated by more than one TSO, the specific allocation of responsibilities between TSOs within the LFC block in accordance with Article 141(9);

e if applicable, appointment of the TSO responsible for the tasks in Article 145(6);

f additional requirements for the availability, reliability and redundancy of technical infrastructure defined in accordance with Article 151(3);

g operational procedures in case of exhausted FRR or RR in accordance with Article 152(8);

h the FRR dimensioning rules defined in accordance with Article 157(1);

i the RR dimensioning rules defined in accordance with Article 160(2);

j where the LFC block is operated by more than one TSO, the specific allocation of responsibilities defined in accordance with Article 157(3), and, if applicable, the specific allocation of responsibilities defined in accordance Article 160(6);

k the escalation procedure defined in accordance with Article 157(4) and, if applicable, the escalation procedure defined in accordance with Article 160(7);

l the FRR availability requirements, the requirements on the control quality defined in accordance with Article 158(2), and if applicable, the RR availability requirements and the requirements on the control quality defined in accordance with Article 161(2);

m if applicable, any limits on [F16]... the exchange of FRR or RR between the LFC areas of an LFC block of a synchronous area consisting of more than one LFC block defined in accordance with Article 163(2), Article 167 and Article 169(2);

[F17]n . . . . . .

[F18]o . . . . . .

[F19]p . . . . . .

q coordination actions aiming to reduce the FRCE as defined in Article 152(14); and

r measures to reduce the FRCE by requiring changes in the active power production or consumption of power generating modules and demand units in accordance with Article 152(16).

2 All TSOs of each LFC block shall submit the methodologies and conditions listed in Article 6(3)(e) for approval by **[**[F20]the regulatory authority**]**. Within 1 month after the approval of these methodologies and conditions, all TSOs of each LFC block shall conclude an LFC block operational agreement which shall enter into force within 3 months after the approval of the methodologies and conditions.

Textual Amendments

F15 Words in Art. 119(1)(c) substituted (E.W.S.) (31.12.2020) by The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533), reg. 1(2), **Sch. 1 para. 80(2)(a)** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

F16 Words in Art. 119(1)(m) omitted (E.W.S.) (31.12.2020) by virtue of The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533), reg. 1(2), **Sch. 1 para. 80(2)(b)** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

F17 Art. 119(1)(n) omitted (E.W.S.) (31.12.2020) by virtue of The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533), reg. 1(2), **Sch. 1 para. 80(2)(c)** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

F18 Art. 119(1)(o) omitted (E.W.S.) (31.12.2020) by virtue of The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533), reg. 1(2), **Sch. 1 para. 80(2)(c)** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

F19 Art. 119(1)(p) omitted (E.W.S.) (31.12.2020) by virtue of The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533), reg. 1(2), **Sch. 1 para. 80(2)(c)** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

F20 Words in Art. 119(2) substituted (E.W.S.) (31.12.2020) by The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533), reg. 1(2), **Sch. 1 para. 80(3)** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

Article 120

LFC area operational agreement

By 12 months after entry into force of this Regulation, all TSOs of each LFC area shall establish an LFC area operational agreement that shall include at least:

(a) the specific allocation of responsibilities between TSOs within the LFC area in accordance with Article 141(8);

(b) the appointment of the TSO responsible for the implementation and operation of the frequency restoration process in accordance with Article 143(4).

Article 121

Monitoring area operational agreement

By 12 months after entry into force of this Regulation, all TSOs of each monitoring area shall establish a monitoring area operational agreement that shall include at least the allocation of responsibilities between TSOs within the same monitoring area in accordance with Article 141(7).

[F21]Article 122

Imbalance netting agreement

. . . . . .

Textual Amendments

F21 Arts. 122-126 omitted (E.W.S.) (31.12.2020) by virtue of The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533), reg. 1(2), **Sch. 1 para. 81** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

[F21]Article 123

Cross-border FRR activation agreement

. . . . . .

Textual Amendments

F21 Arts. 122-126 omitted (E.W.S.) (31.12.2020) by virtue of The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533), reg. 1(2), **Sch. 1 para. 81** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

[F21]*Article 124*

Cross-border RR activation agreement

. . . . . .

Textual Amendments

F21 Arts. 122-126 omitted (E.W.S.) (31.12.2020) by virtue of The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533), reg. 1(2), **Sch. 1 para. 81** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

[F21]*Article 125*

Sharing agreement

. . . . . .

Textual Amendments

F21 Arts. 122-126 omitted (E.W.S.) (31.12.2020) by virtue of The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533), reg. 1(2), **Sch. 1 para. 81** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

[F21]*Article 126*

Exchange agreement

. . . . . .

Textual Amendments

F21 Arts. 122-126 omitted (E.W.S.) (31.12.2020) by virtue of The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533), reg. 1(2), **Sch. 1 para. 81** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

TITLE 2

FREQUENCY QUALITY

Article 127

Frequency quality defining and target parameters

1 The frequency quality defining parameters shall be:

a the nominal frequency [F22]...;

b the standard frequency range [F22]...;

c the maximum instantaneous frequency deviation [F22]...;

d the maximum steady-state frequency deviation [F22]...;

e the time to restore frequency [F22]...;

f the time to recover frequency [F23]...;

g the frequency restoration range [F24]...;

h the frequency recovery range [F25]...; and

i the alert state trigger time [F26]....

2 The nominal frequency shall be 50 Hz [F27]....

3 The default values of the frequency quality defining parameters listed in paragraph 1 are set out in Table 1 of Annex III.

4 The frequency quality target parameter shall be the maximum number of minutes outside the standard frequency range per year per synchronous area and its default value per synchronous area are set out in Table 2 of Annex III.

5 The values of the frequency quality defining parameters in Table 1 of Annex III and of the frequency quality target parameter in Table 2 of Annex III shall apply unless all TSOs of **[**[F28]the GB synchronous area**]** propose different values pursuant to paragraphs [F29]... 7 and 8.

[F30]6 . . . . . .

7 All TSOs of the GB **[**[F31]synchronous area**]** shall have the right to propose in the synchronous area operational agreement values different from those set out in Tables 1 and 2 of Annex III regarding:

a time to restore frequency;

b the alert state trigger time; and

c the maximum number of minutes outside the standard frequency range.

8 The proposal for modification of the values pursuant to paragraph [F32]... 7 shall be based on an assessment of the recorded values of the system frequency for a period of at least 1 year and the synchronous area development and it shall meet the following conditions:

a the proposed modification of the frequency quality defining parameters in Table 1 of Annex III or the frequency quality target parameter in Table 2 of Annex III takes into account:

(i) the system's size, based on the consumption and generation of the synchronous area and the inertia of the synchronous area;

(ii) the reference incident;

(iii) grid structure and/or network topology;

(iv) load and generation behaviour;

(v) the number and response of power generating modules with limited frequency sensitive mode — over frequency and limited frequency sensitive mode — under frequency as defined in Article 13(2) and Article 15(2)(c) of Regulation (EU) 2016/631;

(vi) the number and response of demand units operating with activated demand response system frequency control or demand response very fast active power control as defined in Articles 29 and 30 of Regulation (EU) 2016/1388; and

(vii) the technical capabilities of power generating modules and demand units;

b all TSOs of the synchronous area shall conduct a public consultation concerning the impact on stakeholders of the proposed modification of the frequency quality defining parameters in Table 1 of Annex III or the frequency quality target parameter in Table 2 of Annex III.

9 All TSOs shall endeavour to comply with the values for the frequency quality defining parameters or for the frequency quality target parameter. All TSOs shall verify the fulfilment of the frequency quality target parameter at least annually.

Textual Amendments

F22 Words in art. 127(1)(a)-(e) omitted (E.W.S.) (31.12.2020) by virtue of The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533), reg. 1(2), **Sch. 1 para. 82(2)(a)** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

F23 Words in Art. 127(1)(f) omitted (E.W.S.) (31.12.2020) by virtue of The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533), reg. 1(2), **Sch. 1 para. 82(2)(b)** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

F24 Words in Art. 127(1)(g) omitted (E.W.S.) (31.12.2020) by virtue of The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533), reg. 1(2), **Sch. 1 para. 82(2)(c)** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

F25 Words in Art. 127(1)(h) omitted (E.W.S.) (31.12.2020) by virtue of The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533), reg. 1(2), **Sch. 1 para. 82(2)(d)** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

F26 Words in Art. 127(1)(i) omitted (E.W.S.) (31.12.2020) by virtue of The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533), reg. 1(2), **Sch. 1 para. 82(2)(e)** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

F27 Words in Art. 127(2) omitted (E.W.S.) (31.12.2020) by virtue of The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533), reg. 1(2), **Sch. 1 para. 82(3)** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

F28 Words in Art. 127(5) substituted (E.W.S.) (31.12.2020) by The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533), reg. 1(2), **Sch. 1 para. 82(4)(a)** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

F29 Word in Art. 127(5) omitted (E.W.S.) (31.12.2020) by virtue of The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533), reg. 1(2), **Sch. 1 para. 82(4)(b)** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

F30 Art. 127(6) omitted (E.W.S.) (31.12.2020) by virtue of The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533), reg. 1(2), **Sch. 1 para. 82(5)** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

F31 Words in Art. 127(7) substituted (E.W.S.) (31.12.2020) by The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533), reg. 1(2), **Sch. 1 para. 82(6)** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

F32 Words in Art. 127(8) omitted (E.W.S.) (31.12.2020) by virtue of The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533), reg. 1(2), **Sch. 1 para. 82(7)** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

Article 128

FRCE target parameters

F33 1 . . . . . .

F33 2 . . . . . .

F33 3 . . . . . .

4 Where an LFC block consists of more than one LFC area, all TSOs of the LFC block shall specify in the LFC block operational agreement the values of the FRCE target parameters for each LFC area.

5 For the GB **[**F34 synchronous area**]** the Level 1 FRCE range shall be equal to or larger than 200 mHz and the Level 2 FRCE range shall be equal to or larger than 500 mHz.

6 All TSOs of the GB **[**F35 synchronous area**]** shall endeavour to comply with the following FRCE target parameters of a synchronous area:

a the maximum number of time intervals outside the Level 1 FRCE range shall be less than or equal to the value in the Table of Annex IV as a percentage of the time intervals per year;

b the maximum number of time intervals outside the Level 2 FRCE range shall be less than or equal to the value in the Table of Annex IV as a percentage of the time intervals per year.

7 All TSOs shall verify, at least annually, that the FRCE target parameters are fulfilled.

Textual Amendments

F33 Art. 128(1)-(3) omitted (E.W.S.) (31.12.2020) by virtue of The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533), reg. 1(2), **Sch. 1 para. 83(2)** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

F34 Words in Art. 128(5) substituted (E.W.S.) (31.12.2020) by The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I.

2019/533), reg. 1(2), **Sch. 1 para. 83(3)** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

F35 Words in Art. 128(6) substituted (E.W.S.) (31.12.2020) by The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533), reg. 1(2), **Sch. 1 para. 83(4)** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

Article 129

Criteria application process

The criteria application process shall comprise:

(a) the collection of frequency quality evaluation data; and

(b) the calculation of frequency quality evaluation criteria.

Article 130

Frequency quality evaluation data

1 The frequency quality evaluation data shall be:

a for the synchronous area:

(i) the instantaneous frequency data; and

(ii) the instantaneous frequency deviation data;

b for each LFC block of the synchronous area, the instantaneous FRCE data.

2 The measurement accuracy of the instantaneous frequency data and of the instantaneous FRCE data, where measured in Hz, shall be 1 mHz or better.

Article 131

Frequency quality evaluation criteria

1 The frequency quality evaluation criteria shall comprise:

a for the synchronous area during operation in normal state or alert state as determined by Article 18(1) and (2), on a monthly basis, for the instantaneous frequency data:

(i) the mean value;

(ii) the standard deviation;

(iii) the 1-,5-,10-, 90-,95- and 99-percentile;

(iv) the total time in which the absolute value of the instantaneous frequency deviation was larger than the standard frequency deviation, distinguishing between negative and positive instantaneous frequency deviations;

(v) the total time in which the absolute value of the instantaneous frequency deviation was larger than the maximum instantaneous frequency deviation, distinguishing between negative and positive instantaneous frequency deviations;

(vi) the number of events in which the absolute value of the instantaneous frequency deviation of the synchronous area exceeded 200 % of the standard frequency deviation and the instantaneous frequency deviation was not returned to [F36]... the frequency restoration range for the GB **[**[F37]synchronous area**]**, within the time to restore frequency. The data shall distinguish between negative and positive frequency deviations;

(vii) for the GB **[**[F38]synchronous area**]** the number of events for which the absolute value of the instantaneous frequency deviation was outside of the frequency recovery range and was not returned to the frequency recovery range within the time to recover frequency, distinguishing between negative and positive frequency deviations;

[F39]b . . . . . .

c for the LFC blocks of the GB [F40]... synchronous area, during operation in normal state or alert state in accordance with Article 18(1) and (2), on a monthly basis and for a data-set containing the average values of the FRCE of the LFC block over time intervals with a length of one minute: the number of events for which the absolute value of the FRCE exceeded the maximum steady-state frequency deviation and the FRCE was not returned to 10 % of the maximum steady-state frequency deviation within the time to restore frequency, distinguishing between negative and positive FRCE.

2 All TSOs of **[**[F41]the GB synchronous area**]** shall specify in the synchronous area operational agreement a common methodology to assess the risk and the evolution of the risk of exhaustion of FCR in the synchronous area. That methodology shall be performed at least annually and shall be based at least on historical instantaneous system frequency data for not less than 1 year. All TSOs of **[**[F41]the GB synchronous area**]** shall provide the required input data for this assessment.

Textual Amendments

F36 Words in Art. 131(1)(a)(vi) omitted (E.W.S.) (31.12.2020) by virtue of The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533), reg. 1(2), **Sch. 1 para. 84(2)(a)(i)** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

F37 Words in Art. 131(1)(a)(vi) substituted (E.W.S.) (31.12.2020) by The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533), reg. 1(2), **Sch. 1 para. 84(2)(a)(ii)** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

F38 Words in Art. 131(1)(a)(vii) substituted (E.W.S.) (31.12.2020) by The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533), reg. 1(2), **Sch. 1 para. 84(2)(b)** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

F39 Art. 131(1)(b) omitted (E.W.S.) (31.12.2020) by virtue of The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533), reg. 1(2), **Sch. 1 para. 84(2)(c)** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

F40 Words in Art. 131(1)(c) omitted (E.W.S.) (31.12.2020) by virtue of The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533), reg. 1(2), **Sch. 1 para. 84(2)(d)** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

F41 Words in Art. 131(2) substituted (E.W.S.) (31.12.2020) by The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I.

2019/533), reg. 1(2), **Sch. 1 para. 84(3)** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

Article 132

Data collection and delivery process

1 The data collection and delivery process shall comprise the following:

a measurements of the system frequency;

b calculation of the frequency quality evaluation data; and

c delivery of the frequency quality evaluation data for the criteria application process.

2 The data collection and delivery process shall be implemented by the synchronous area monitor appointed in accordance with Article 133.

Article 133

Synchronous area monitor

1 All TSOs of **[**F42the GB synchronous area**]** shall appoint one TSO of that synchronous area in the synchronous area operational agreement as synchronous area monitor.

2 The synchronous area monitor shall implement the data collection and delivery process of the synchronous area referred to in Article 132.

3 The synchronous area monitor shall implement the criteria application process referred to in Article 129.

4 The synchronous area monitor shall collect the frequency quality evaluation data of its synchronous area and perform the criteria application process, including the calculation of the frequency quality evaluation criteria, once every 3 months and within 3 months after the end of the analysed period.

Textual Amendments

F42 Words in Art. 133(1) substituted (E.W.S.) (31.12.2020) by The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533), reg. 1(2), **Sch. 1 para. 85** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

Article 134

LFC block monitor

1 All TSOs of a LFC block shall appoint one TSO of that LFC block in the LFC block operational agreement as LFC block monitor.

2 The LFC block monitor shall collect the frequency quality evaluation data for the LFC block in accordance with the criteria application process referred to in Article 129.

3 Each TSO of a LFC area shall provide the LFC block monitor with the LFC area measurements necessary for collecting frequency quality evaluation data for the LFC block.

4 The LFC block monitor shall deliver the frequency quality evaluation data of the LFC block and its LFC areas once every 3 months and within 2 months after the end of the analysed period.

Article 135

Information on load and generation behaviour

In accordance with Article 40, each connecting TSO shall have the right to request the information necessary from SGUs to monitor the load and generation behaviour related to imbalances. That information may include:

(a) the time-stamped active power setpoint for real-time and future operation; and

(b) the time-stamped total active power output.

[F43]Article 136

Ramping period within the synchronous area

. . . . . .

Textual Amendments

F43 Art. 136 omitted (E.W.S.) (31.12.2020) by virtue of The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533), reg. 1(2), **Sch. 1 para. 86** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

Article 137

Ramping restrictions for active power output

[F44]1 . . . . . .

[F45]2 . . . . . .

3 All connecting TSOs of an HVDC interconnector shall have the right to determine in the LFC block operational agreement common restrictions for the active power output of that HVDC interconnector to limit its influence on the fulfilment of the FRCE target parameter of the connected LFC blocks by agreeing on ramping periods and/or maximum ramping rates for this HVDC interconnector. Those common restrictions shall not apply for imbalance netting, frequency coupling as well as cross-border activation of FRR and RR over HVDC interconnectors. All TSOs of **[**[F46]the GB synchronous area**]** shall coordinate these measures within the synchronous area.

4 All TSOs of an LFC block shall have the right to determine in the LFC block operational agreement the following measures to support the fulfilment of the FRCE target parameter of the LFC block and to alleviate deterministic frequency deviations, taking into account the technological restrictions of power generating modules and demand units:

a obligations on ramping periods and/or maximum ramping rates for power generating modules and/or demand units;

b obligations on individual ramping starting times for power generating modules and/or demand units within the LFC block; and

c coordination of the ramping between power generating modules, demand units and active power consumption within the LFC block.

Textual Amendments

F44 Art. 137(1) omitted (E.W.S.) (31.12.2020) by virtue of The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533), reg. 1(2), **Sch. 1 para. 87(1)(a)** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

F45 Art. 137(2) omitted (E.W.S.) (31.12.2020) by virtue of The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533), reg. 1(2), **Sch. 1 para. 87(1)(a)** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

F46 Words in Art. 137(3) substituted (E.W.S.) (31.12.2020) by The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533), reg. 1(2), **Sch. 1 para. 87(1)(b)** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

Article 138

Mitigation

Where the values calculated for the period of one calendar year concerning the frequency quality target parameters or the FRCE target parameters are outside the targets set for **[**[F47]the GB synchronous area**]** or for the LFC block, all TSOs of **[**[F48]the GB synchronous area**]** or of the relevant LFC block shall:

(a) analyse whether the frequency quality target parameters or the FRCE target parameters will remain outside the targets set for **[**[F47]the GB synchronous area**]** or for the LFC block and in case of a justified risk that this may happen, analyse the causes and develop recommendations; and

(b) develop mitigation measures to ensure that the targets for **[**[F47]the GB synchronous area**]** or for the LFC block can be met in the future.

Textual Amendments

F47 Words in Art. 138 substituted (E.W.S.) (31.12.2020) by The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533), reg. 1(2), **Sch. 1 para. 88(3)** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

F48 Words in Art. 138 substituted (E.W.S.) (31.12.2020) by The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533), reg. 1(2), **Sch. 1 para. 88(2)** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

TITLE 3

LOAD-FREQUENCY CONTROL STRUCTURE

Article 139

Basic structure

1 All TSOs of **[**F49the GB synchronous area**]** shall specify the load-frequency-control structure for the synchronous area in the synchronous area operational agreement. Each TSO shall be responsible for implementing the load-frequency-control structure of **[**F50the GB synchronous area**]** and operating in accordance with it.

2 The load-frequency control structure of **[**F51the GB synchronous area**]** shall include:

a a process activation structure in accordance with Article 140; and

b a process responsibility structure in accordance with Article 141.

Textual Amendments

F49 Words in Art. 139(1) substituted (E.W.S.) (31.12.2020) by The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533), reg. 1(2), **Sch. 1 para. 89(2)(a)** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

F50 Words in Art. 139(1) substituted (E.W.S.) (31.12.2020) by The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533), reg. 1(2), **Sch. 1 para. 89(2)(b)** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

F51 Words in Art. 139(2) substituted (E.W.S.) (31.12.2020) by The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533), reg. 1(2), **Sch. 1 para. 89(3)** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

Article 140

Process activation structure

1 The process activation structure shall include:

a a FCP pursuant to Article 142;

b a FRP pursuant to Article 143 F52...

F52c . . . . . .

2 The process activation structure may include:

a a RRP pursuant to Article 144;

F53b . . . . . .

F54c . . . . . .

F55d . . . . . .

e F56... a time control process pursuant to Article 181.

Textual Amendments

F52 Art. 140(1)(c) and word omitted (E.W.S.) (31.12.2020) by virtue of The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533), reg. 1(2), **Sch. 1 para. 90(2)** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

F53 Art. 140(2)(b) omitted (E.W.S.) (31.12.2020) by virtue of The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533), reg. 1(2), **Sch. 1 para. 90(3)(a)** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

F54 Art. 140(2)(c) omitted (E.W.S.) (31.12.2020) by virtue of The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533), reg. 1(2), **Sch. 1 para. 90(3)(a)** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

F55 Art. 140(2)(d) omitted (E.W.S.) (31.12.2020) by virtue of The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533), reg. 1(2), **Sch. 1 para. 90(3)(a)** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

F56 Words in Art. 140(2)(e) omitted (E.W.S.) (31.12.2020) by virtue of The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533), reg. 1(2), **Sch. 1 para. 90(3)(b)** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

Article 141

Process responsibility structure

1 When specifying the process responsibility structure, all TSOs of **[**F57the GB synchronous area**]** shall take into account at least the following criteria:

a the size and the total inertia, including synthetic inertia, of the synchronous area;

b the grid structure and/or network topology; and

c the load, generation and HVDC behaviour.

2 By 4 months after entry into force of this Regulation, all TSOs of **[**F58the GB synchronous area**]** shall jointly develop a common proposal regarding the determination of the LFC blocks, which shall comply with the following requirements:

a a monitoring area corresponds to or is part of only one LFC area;

b a LFC area corresponds to or is part of only one LFC block;

c a LFC block corresponds to or is part of only one synchronous area; and

d each network element is part of only one monitoring area, only one LFC area and only one LFC block.

3 All TSOs of each monitoring area shall continuously calculate and monitor the real-time active power interchange of the monitoring area.

4 All TSOs of each LFC area shall:

a continuously monitor the FRCE of the LFC area;

b implement and operate a FRP for the LFC area;

c endeavour to fulfil the FRCE target parameters of the LFC area as defined in Article 128; and

d have the right to implement one or several of the processes referred to in Article 140(2).

5 All TSOs of each LFC block shall:

a endeavour to fulfil the FRCE target parameters of the LFC block as defined in Article 128; and

b comply with the FRR dimensioning rules in accordance with Article 157 and the RR dimensioning rules in accordance with Article 160.

6 All TSOs of **[**F59the GB synchronous area**]** shall:

a implement and operate a FCP for the synchronous area;

b comply with FCR dimensioning rules in accordance with Article 153; and

c endeavour to fulfil the frequency quality target parameters in accordance with Article 127.

7 All TSOs of each monitoring area shall specify in the monitoring area operational agreement the allocation of responsibilities between TSOs in the monitoring area for the implementation of the obligation set out in paragraph 3.

8 All TSOs of each LFC area shall specify in the LFC area operational agreement the allocation of responsibilities between TSOs in the LFC area for the implementation of the obligations set out in paragraph 4.

9 All TSOs of each LFC block shall specify in the LFC block operational agreement the allocation of responsibilities between TSOs in the LFC block for the implementation of the obligations set out paragraph 5.

10 All TSOs of **[**F60the GB synchronous area**]** shall specify in the synchronous area operational agreement the allocation of responsibilities between TSOs in the synchronous area for the implementation of the obligations set out in paragraph 6.

F61 11 . . . . . .

Textual Amendments

F57 Words in Art. 141(1) substituted (E.W.S.) (31.12.2020) by The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533), reg. 1(2), **Sch. 1 para. 91(2)** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

F58 Words in Art. 141(2) substituted (E.W.S.) (31.12.2020) by The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533), reg. 1(2), **Sch. 1 para. 91(3)** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

F59 Words in Art. 141(6) substituted (E.W.S.) (31.12.2020) by The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533), reg. 1(2), **Sch. 1 para. 91(4)** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

F60 Words in Art. 141(10) substituted (E.W.S.) (31.12.2020) by The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533), reg. 1(2), **Sch. 1 para. 91(4)** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

F61 Art. 141(11) omitted (E.W.S.) (31.12.2020) by virtue of The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533),

reg. 1(2), **Sch. 1 para. 91(5)** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

Article 142

Frequency containment process

1 The control target of FCP shall be the stabilization of the system frequency by activation of FCR.

2 The overall characteristic for FCR activation in **[**F62the GB synchronous area**]** shall reflect a monotonic decrease of the FCR activation as a function of the frequency deviation.

Textual Amendments

F62 Words in Art. 142(2) substituted (E.W.S.) (31.12.2020) by The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533), reg. 1(2), **Sch. 1 para. 92** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

Article 143

Frequency restoration process

[F631 The control target of the FRP shall be to regulate the FRCE towards zero within the time to restore frequency.**]**

2 The FRCE is:

a the ACE of an LFC area, where there is more than one LFC area in a synchronous area; or

b the frequency deviation, where one LFC area corresponds to the LFC block and the synchronous area.

3 The ACE of a LFC area shall be calculated as the sum of the product of the K-Factor of the LFC area with the frequency deviation plus de subtraction of:

a the total interconnector and virtual tie-line active power flow; and

b the control program in accordance with Article 136.

F644 . . . . . .

F655 . . . . . .

Textual Amendments

F63 Art. 143(1) substituted (E.W.S.) (31.12.2020) by The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533), reg. 1(2), **Sch. 1 para. 93(2)** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

F64 Art. 143(4) omitted (E.W.S.) (31.12.2020) by virtue of The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533),

reg. 1(2), **Sch. 1 para. 93(3)** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

F65 Art. 143(5) omitted (E.W.S.) (31.12.2020) by virtue of The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533), reg. 1(2), **Sch. 1 para. 93(3)** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

Article 144

Reserve replacement process

1 The control target of the RRP shall be to fulfil at least one of the following goals by activation of RR:

a progressively restore the activated FRR;

b support FRR activation;

c [F66]... to progressively restore the activated FCR and FRR.

2 The RRP shall be operated through instructions for manual RR activation in order to fulfil the control target in accordance with paragraph 1.

Textual Amendments

F66 Words in Art. 144(1)(c) omitted (E.W.S.) (31.12.2020) by virtue of The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533), reg. 1(2), **Sch. 1 para. 94** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

Article 145

Automatic and manual frequency restoration process

1 Each TSO of each LFC area shall implement an automatic frequency restoration process ('aFRP') and a manual frequency restoration process ('mFRP').

2 By 2 years after entry into force of this regulation, the TSOs of GB **[**[F67]synchronous area**]** may each submit a proposal to **[**[F68]the regulatory authority**]** requesting not to implement an aFRP. Those proposals shall include a cost-benefit analysis demonstrating that implementation of an aFRP would lead to higher costs than benefits. In case the proposal is approved by the **[**[F69]regulatory authority**]**, the respective TSOs and **[**[F70]the regulatory authority**]** shall re-evaluate such decision at least every 4 years.

[F71]3 . . . . . .

4 The aFRP shall be operated in a closed-loop manner where the FRCE is an input and the setpoint for automatic FRR activation is an output. The setpoint for automatic FRR activation shall be calculated by a single frequency restoration controller operated by a TSO within its LFC area. [F72]...

a be an automatic control device designed to reduce the FRCE to zero;

b have proportional-integral behaviour;

c have a control algorithm which prevents the integral term of a proportional-integral controller from accumulating the control error and overshooting; and

d have functionalities for extraordinary operational modes for the alert and emergency states.

5 The mFRP shall be operated through instructions for manual FRR activation in order to fulfil the control target in accordance with Article 143(1).

6 In addition to the aFRP implementation in the LFC areas, all TSOs of an LFC block which consists of more than one LFC area shall have the right to appoint one TSO of the LFC block in the LFC block operational agreement to:

a calculate and monitor the FRCE of the whole LFC block; and

b take the FRCE of the whole LFC block into account for the calculation of the setpoint value for aFRR activation in accordance with Article 143(3) in addition to the FRCE of its LFC area.

Textual Amendments

F67 Words in Art. 145(2) substituted (E.W.S.) (31.12.2020) by The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533), reg. 1(2), **Sch. 1 para. 95(2)(a)(i)** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

F68 Words in Art. 145(2) substituted (E.W.S.) (31.12.2020) by The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533), reg. 1(2), **Sch. 1 para. 95(2)(a)(ii)** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

F69 Words in Art. 145(2) substituted (E.W.S.) (31.12.2020) by The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533), reg. 1(2), **Sch. 1 para. 95(2)(b)(i)** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

F70 Words in Art. 145(2) substituted (E.W.S.) (31.12.2020) by The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533), reg. 1(2), **Sch. 1 para. 95(2)(b)(ii)** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

F71 Art. 145(3) omitted (E.W.S.) (31.12.2020) by virtue of The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533), reg. 1(2), **Sch. 1 para. 95(3)** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

F72 Words in Art. 145(4) omitted (E.W.S.) (31.12.2020) by virtue of The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533), reg. 1(2), **Sch. 1 para. 95(4)** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

F73 Article 146

Imbalance netting process

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Textual Amendments

F73 Arts. 146-150 omitted (E.W.S.) (31.12.2020) by virtue of The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I.

2019/533), reg. 1(2), **Sch. 1 para. 96** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

F73 Article 147

Cross-border FRR activation process

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Textual Amendments

F73 Arts. 146-150 omitted (E.W.S.) (31.12.2020) by virtue of The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533), reg. 1(2), **Sch. 1 para. 96** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

F73 Article 148

Cross-border RR activation process

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Textual Amendments

F73 Arts. 146-150 omitted (E.W.S.) (31.12.2020) by virtue of The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533), reg. 1(2), **Sch. 1 para. 96** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

F73 Article 149

General requirements for cross-border control processes

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Textual Amendments

F73 Arts. 146-150 omitted (E.W.S.) (31.12.2020) by virtue of The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533), reg. 1(2), **Sch. 1 para. 96** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

F73 Article 150

TSO notification

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Textual Amendments

F73 Arts. 146-150 omitted (E.W.S.) (31.12.2020) by virtue of The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533), reg. 1(2), **Sch. 1 para. 96** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

Article 151

Infrastructure

1 All TSOs shall assess what technical infrastructure is necessary to implement and operate the processes referred to in Article 140 and considered critical pursuant to the security plan referred to in Article 26.

2 All TSOs of **[**[F74]the GB synchronous area**]** shall specify, in the synchronous area operational agreement, minimum requirements for the availability, reliability and redundancy of the technical infrastructure referred to in paragraph 1 including:

a the accuracy, resolution, availability and redundancy of active power flow and virtual tie-line measurements;

b the availability and redundancy of digital control systems;

c the availability and redundancy of communication infrastructure; and

d communication protocols.

3 All TSOs of a LFC block shall set out additional requirements for the availability, reliability and redundancy of the technical infrastructure in the LFC block operational agreement.

4 Each TSO of a LFC area shall:

a ensure a sufficient quality and availability of the FRCE calculation;

b perform real-time quality monitoring of the FRCE calculation;

c take action in case of FRCE miscalculation; and

d where the FRCE is determined by the ACE, perform an *ex-post* quality monitoring of the FRCE calculation by comparing FRCE to reference values at least on an annual basis.

Textual Amendments

F74 Words in Art. 151(2) substituted (E.W.S.) (31.12.2020) by The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533), reg. 1(2), **Sch. 1 para. 97** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

TITLE 4

OPERATION OF LOAD-FREQUENCY CONTROL

Article 152

System states related to system frequency

1 Each TSO shall operate its control area with sufficient upward and downward active power reserve, which may include shared or exchanged reserves, to face imbalances between demand and supply within its control area. Each TSO shall control the FRCE as defined in the Article 143 in order to reach the required frequency quality within **[**F75the GB synchronous area**]** in cooperation with all TSOs in the same synchronous area.

2 Each TSO shall monitor close to real-time generation and exchange schedules, power flows, node injections and withdrawals and other parameters within its control area relevant for anticipating a risk of a frequency deviation and shall take, in coordination with other TSOs of **[**F76the GB synchronous area**]**, measures to limit their negative effects on the balance between generation and demand.

3 All TSOs of **[**F77the GB synchronous area**]** shall specify a real-time data exchange in accordance with Article 42 which shall include:

a the system state of the transmission system in accordance with Article 18; and

b the real-time measurement data of the FRCE of the LFC blocks and LFC areas of the synchronous area.

4 The synchronous area monitor shall determine the system state with regard to the system frequency in accordance with Article 18(1) and (2).

5 The synchronous area monitor shall ensure that all TSOs of **[**F78the GB synchronous area**]** are informed in case the system frequency deviation fulfils one of the criteria for the alert state referred to in Article 18.

6 All TSOs of **[**F79the GB synchronous area**]** shall define in the synchronous area operational agreement common rules for the operation of load-frequency control in the normal state and alert state.

7 All TSOs of the GB **[**F80synchronous area**]** shall specify in the synchronous area operational agreement operational procedures for case of exhausted FCR. In those operational procedures the TSOs of **[**F81the GB synchronous area**]** shall have the right to require changes in the active power production or consumption of power generating modules and demand units.

8 All TSOs of a LFC block shall specify operational procedures for cases of exhausted FRR or RR in the LFC block operational agreement. In those operational procedures the TSOs of a LFC block shall have the right to require changes in the active power production or consumption of power generating modules and demand units.

9 The TSOs of a LFC block shall endeavour to avoid FRCEs which last longer than the time to restore frequency.

10 All TSOs of **[**F82the GB synchronous area**]** shall specify in the synchronous area operational agreement the operational procedures for the alert state due to a violation of system frequency limits. The operational procedures shall aim at reducing the system frequency deviation in order to restore the system state to the normal state and to limit the risk of entering

the emergency state. The operational procedures shall include the right of TSOs to deviate from the obligation set in Article 143(1).

11 If the system state is in the alert state due to insufficient active power reserves in accordance with Article 18, the TSOs of the concerned LFC blocks shall, in close cooperation with the other TSOs of **[**F83the GB synchronous area**]**, act to restore and replace the necessary levels of active power reserves. For that purpose, the TSOs of a LFC block shall have the right to require changes in the active power production or consumption of power generating modules or demand units within its control area to reduce or to remove the violation of the requirements concerning active power reserve.

12 If the 1-minute average of the FRCE of a LFC block is above the Level 2 FRCE range at least during the time necessary to restore frequency and where the TSOs of a LFC block do not expect that FRCE will be sufficiently reduced by undertaking the actions in paragraph 15, TSOs shall have the right to require changes in the active power production or consumption of power generating modules and demand units within their respective areas to reduce the FRCE as specified in paragraph 16.

F84 13 . . . . . .

14 The LFC block monitor shall be responsible for identifying any violation of the limits in **[**F85paragraph 12**]** and:

a shall inform the other TSOs of the LFC block; and

b together with the TSOs of the LFC block shall implement coordinated actions to reduce the FRCE which shall be specified in the LFC block operational agreement.

15 For the cases referred to in paragraphs 11 **[**F86and 12**]** all the TSOs of **[**F87the GB synchronous area**]** shall specify in the synchronous area operational agreement actions to enable the TSOs of a LFC block to actively reduce the frequency deviation with the cross-border activation of reserves. In cases referred to in paragraphs 11 **[**F88and 12**]** the TSOs of **[**F89the GB synchronous area**]** shall endeavour to enable the TSOs of the concerned LFC block to reduce their FRCE.

16 The TSOs of a LFC block shall specify, in the LFC block operational agreement, measures to reduce the FRCE by means of changes in the active power production or consumption of power generating modules and demand units within their area.

Textual Amendments

F75 Words in Art. 152(1) substituted (E.W.S.) (31.12.2020) by The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533), reg. 1(2), **Sch. 1 para. 98(2)** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

F76 Words in Art. 152(2) substituted (E.W.S.) (31.12.2020) by The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533), reg. 1(2), **Sch. 1 para. 98(3)** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

F77 Words in Art. 152(3) substituted (E.W.S.) (31.12.2020) by The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533), reg. 1(2), **Sch. 1 para. 98(4)** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

F78 Words in Art. 152(5) substituted (E.W.S.) (31.12.2020) by The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I.

2019/533), reg. 1(2), **Sch. 1 para. 98(5)** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

F79 Words in Art. 152(6) substituted (E.W.S.) (31.12.2020) by The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533), reg. 1(2), **Sch. 1 para. 98(6)** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

F80 Words in Art. 152(7) substituted (E.W.S.) (31.12.2020) by The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533), reg. 1(2), **Sch. 1 para. 98(7)(a)** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

F81 Words in Art. 152(7) substituted (E.W.S.) (31.12.2020) by The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533), reg. 1(2), **Sch. 1 para. 98(7)(b)** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

F82 Words in Art. 152(10) substituted (E.W.S.) (31.12.2020) by The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533), reg. 1(2), **Sch. 1 para. 98(8)** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

F83 Words in Art. 152(11) substituted (E.W.S.) (31.12.2020) by The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533), reg. 1(2), **Sch. 1 para. 98(9)** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

F84 Art. 152(13) omitted (E.W.S.) (31.12.2020) by virtue of The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533), reg. 1(2), **Sch. 1 para. 98(10)** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

F85 Words in Art. 152(14) substituted (E.W.S.) (31.12.2020) by The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533), reg. 1(2), **Sch. 1 para. 98(11)** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

F86 Words in Art. 152(15) substituted (E.W.S.) (31.12.2020) by The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533), reg. 1(2), **Sch. 1 para. 98(12)(a)(i)** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

F87 Words in Art. 152(15) substituted (E.W.S.) (31.12.2020) by The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533), reg. 1(2), **Sch. 1 para. 98(12)(a)(ii)** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

F88 Words in Art. 152(15) substituted (E.W.S.) (31.12.2020) by The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533), reg. 1(2), **Sch. 1 para. 98(12)(b)(i)** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

F89 Words in Art. 152(15) substituted (E.W.S.) (31.12.2020) by The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533), reg. 1(2), **Sch. 1 para. 98(12)(b)(ii)** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

TITLE 5

FREQUENCY CONTAINMENT RESERVES

Article 153

FCR dimensioning

1 All TSOs of **[**F90the GB synchronous area**]** shall determine, at least annually, the reserve capacity for FCR required for the synchronous area and the initial FCR obligation of each TSO in accordance with paragraph 2.

2 All TSOs of **[**F91the GB synchronous area**]** shall specify dimensioning rules in the synchronous area operational agreement in accordance with the following criteria:

a the reserve capacity for FCR required for the synchronous area shall cover at least the reference incident F92...

[F93b the size of the reference incident shall be either—

i the largest imbalance that may result from an instantaneous change of active power such as that of a single power generating module, single demand facility, or single HVDC interconnector or from a tripping of an AC line; or

ii the maximum instantaneous loss of active power consumption due to the tripping of one or two connection points,

and the reference incident shall be determined separately for positive and negative direction;**]**

F94c . . . . . .

d the shares of the reserve capacity on FCR required for each TSO as initial FCR obligation shall be based on the sum of the net generation and consumption of its control area divided by the sum of net generation and consumption of **[**F95the GB synchronous area**]** over a period of 1 year.

Textual Amendments

F90 Words in Art. 153(1) substituted (E.W.S.) (31.12.2020) by The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533), reg. 1(2), **Sch. 1 para. 99(2)** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

F91 Words in Art. 153(2) substituted (E.W.S.) (31.12.2020) by The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533), reg. 1(2), **Sch. 1 para. 99(3)(a)** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

F92 Words in Art. 153(2)(a) omitted (E.W.S.) (31.12.2020) by virtue of The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533), reg. 1(2), **Sch. 1 para. 99(3)(b)** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

F93 Art. 153(2)(b) substituted (E.W.S.) (31.12.2020) by The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533), reg. 1(2), **Sch. 1 para. 99(3)(c)** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

F94 Art. 153(2)(c) omitted (E.W.S.) (31.12.2020) by virtue of The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I.

2019/533), reg. 1(2), **Sch. 1 para. 99(3)(d)** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

F95 Words in Art. 153(2)(d) substituted (E.W.S.) (31.12.2020) by The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533), reg. 1(2), **Sch. 1 para. 99(3)(e)** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

Article 154

FCR technical minimum requirements

1 Each reserve connecting TSO shall ensure that the FCR fulfils the properties listed for **[**[F96]the GB synchronous area**]** in the Table of Annex V.

2 All TSOs of **[**[F97]the GB synchronous area**]** shall have the right to specify, in the synchronous area operational agreement, common additional properties of the FCR required to ensure operational security in the synchronous area, by means of a set of technical parameters and within the ranges in Article 15(2)(d) of Regulation (EU) 2016/631 and Articles 27 and 28 of Regulation (EU) 2016/1388. Those common additional properties of FCR shall take into account the installed capacity, structure and pattern of consumption and generation of **[**[F98]the GB synchronous area**]**. The TSOs shall apply a transitional period for the introduction of additional properties, defined in consultation with the affected FCR providers.

3 The reserve connecting TSO shall have the right to set out additional requirements for FCR providing groups within the ranges in Article 15(2)(d) of Regulation (EU) 2016/631 and Articles 27 and 28 of Regulation (EU) 2016/1388 in order to ensure operational security. Those additional requirements shall be based on technical reasons such as the geographical distribution of the power generating modules or demand units belonging to an FCR providing group. The FCR provider shall ensure that the monitoring of the FCR activation of the FCR providing units within a reserve providing group is possible.

4 The reserve connecting TSO shall have the right to exclude FCR providing groups from the provision of FCR in order to ensure operational security. This exclusion shall be based on technical reasons such as the geographical distribution of the power generating modules or demand units belonging to an FCR providing group.

5 Each FCR providing unit and each FCR providing group shall have only one reserve connecting TSO.

6 Each FCR providing unit and each FCR providing group shall comply with the properties required for FCR in the Table of Annex V and with any additional properties or requirements specified in accordance with paragraphs 2 and 3 and activate the agreed FCR by means of a proportional governor reacting to frequency deviations or alternatively based on a monotonic piecewise linear power-frequency characteristic in case of relay activated FCR. They shall be capable of activating FCR within the frequency ranges specified in Article 13(1) of Regulation (EU) 2016/631.

[F99]7 . . . . . .

8 Each reserve connecting TSO shall monitor its contribution to the FCP and its FCR activation with respect to its FCR obligation, including FCR providing units and FCR providing groups. Each FCR provider shall make available to the reserve connecting TSO, for each of its FCR providing units and FCR providing groups, at least the following information:

a time-stamped status indicating if FCR is on or off;

b time-stamped active power data needed to verify FCR activation, including time-stamped instantaneous active power;

c droop of the governor for type C and type D power generating modules as defined in Article 5 of Regulation (EU) 2016/631 acting as FCR providing units, or its equivalent parameter for FCR providing groups consisting of type A and/or type B power generating modules as defined in Article 5 of Regulation (EU) 2016/631, and/or demand units with demand response active power control as defined in Article 28 of Regulation (EU) 2016/1388.

9 Each FCR provider shall have the right to aggregate the respective data for more than one FCR providing unit if the maximum power of the aggregated units is below 1,5 MW and a clear verification of activation of FCR is possible.

10 At the request of the reserve connecting TSO, the FCR provider shall make the information listed in paragraph 9 available in real-time, with a time resolution of at least 10 seconds.

11 At the request of the reserve connecting TSO and where necessary for the verification of the activation of FCR, a FCR provider shall make available the data listed in paragraph 9 concerning technical installations that are part of the same FCR providing unit.

Textual Amendments

F96 Words in Art. 154(1) substituted (E.W.S.) (31.12.2020) by The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533), reg. 1(2), **Sch. 1 para. 100(2)** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

F97 Words in Art. 154(2) substituted (E.W.S.) (31.12.2020) by The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533), reg. 1(2), **Sch. 1 para. 100(3)(a)** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

F98 Words in Art. 154(2) substituted (E.W.S.) (31.12.2020) by The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533), reg. 1(2), **Sch. 1 para. 100(3)(b)** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

F99 Art. 154(7) omitted (E.W.S.) (31.12.2020) by virtue of The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533), reg. 1(2), **Sch. 1 para. 100(4)** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

Article 155

FCR prequalification process

1 By 12 months after entry into force of this regulation, each TSO shall develop an FCR prequalification process and shall make publicly available the details of the FCR prequalification process.

2 A potential FCR provider shall demonstrate to the reserve connecting TSO that it complies with the technical and the additional requirements set out in Article 154 by completing successfully the prequalification process of potential FCR providing units or FCR providing groups, described in paragraphs 3 to 6 of this Article.

3 A potential FCR provider shall submit a formal application to the reserve connecting TSO together with the required information of potential FCR providing units or FCR providing groups. Within 8 weeks from receipt of the application, the reserve connecting TSO shall confirm whether the application is complete. Where the reserve connecting TSO considers that the application is incomplete, the potential FCR provider shall submit the additional required information within 4 weeks from receipt of the request for additional information. Where the potential FCR provider does not supply the requested information within that deadline, the application shall be deemed withdrawn.

4 Within 3 months from confirmation that the application is complete, the reserve connecting TSO shall evaluate the information provided and decide whether the potential FCR providing units or FCR providing groups meet the criteria for an FCR prequalification. The reserve connecting TSO shall notify its decision to the potential FCR provider.

5 Where the compliance with certain requirements of this Regulation has already been verified by the reserve connecting TSO, it will be recognised in the prequalification.

6 The qualification of FCR providing units or FCR providing groups shall be re-assessed:

a at least once every 5 years;

b in case the technical or availability requirements or the equipment have changed; and

c in case of modernisation of the equipment related to FCR activation.

Article 156

FCR provision

1 Each TSO shall ensure the availability of at least its FCR obligations agreed between all TSOs of **[**F100the GB synchronous area in accordance with Articles 153 and 163**]**.

2 All TSOs of **[**F101the GB synchronous area**]** shall determine, at least on an annual basis, the size of the K-factor of the synchronous area, taking into account at least the following factors:

a the reserve capacity on FCR divided by the maximum steady-state frequency deviation;

b the auto-control of generation;

c the self-regulation of load, taking into account the contribution in accordance with Articles 27 and 28 of Regulation (EU) 2016/1388;

F102d . . . . . .

e the LFSM and FSM activation in accordance with Articles 13 and 15 of Regulation (EU) 2016/631.

F103 3 . . . . . .

4 An FCR provider shall guarantee the continuous availability of FCR, with the exception of a forced outage of a FCR providing unit, during the period of time in which it is obliged to provide FCR.

5 Each FCR provider shall inform its reserve connecting TSO, as soon as possible, about any changes in the actual availability of its FCR providing unit and/or its FCR providing group, in whole or in part, relevant for the results of prequalification.

6 Each TSO shall ensure, or shall require its FCR providers to ensure that the loss of a FCR providing unit does not endanger the operational security by:

F104a . . . . . .

b excluding the FCR provided by the unit defining the reference incident of the synchronous area from the dimensioning process for **[**F105the GB synchronous area**]**; and

c replacing the FCR which is made unavailable due to a forced outage or the unavailability of an FCR providing unit or FCR providing group as soon as technically possible and in accordance with the conditions that shall be defined by the reserve connecting TSO.

7 An FCR providing unit or FCR providing group with an energy reservoir that does not limit its capability to provide FCR shall activate its FCR for as long as the frequency deviation persists. For the GB **[**F106synchronous area**]**, a FCR providing unit or FCR providing group with an energy reservoir that does not limit its capability to provide FCR shall activate its FCR until it activates its FRR or for the period specified in the synchronous area operational agreement.

8 A FCR providing unit or FCR providing group with an energy reservoir that limits its capability to provide FCR shall activate its FCR for as long as the frequency deviation persists, unless its energy reservoir is exhausted in either the positive or negative direction. For the GB **[**F107synchronous area**]**, a FCR providing unit or FCR providing group with an energy reservoir that limits its capability to provide FCR shall activate its FCR until it activates its FRR or for the period specified in the synchronous area operational agreement.

F108 9 . . . . . .

F108 10 . . . . . .

F108 11 . . . . . .

12 The FCR provider shall specify the limitations of the energy reservoir of its FCR providing units or FCR providing groups in the prequalification process in accordance with Article 155.

[F109 13 A FCR provider using FCR providing units or FCR providing group with an energy reservoir that limits their capability to provide FCR shall ensure the recovery of the energy reservoirs in the positive or negative directions for the GB synchronous area, using the methods specified in the synchronous area operational agreement.**]**

Textual Amendments

F100 Words in Art. 156(1) substituted (E.W.S.) (31.12.2020) by The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533), reg. 1(2), **Sch. 1 para. 101(2)** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

F101 Words in Art. 156(2) substituted (E.W.S.) (31.12.2020) by The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533), reg. 1(2), **Sch. 1 para. 101(3)(a)** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

F102 Art. 156(2)(d) omitted (E.W.S.) (31.12.2020) by virtue of The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533), reg. 1(2), **Sch. 1 para. 101(3)(b)** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

F103 Art. 156(3) omitted (E.W.S.) (31.12.2020) by virtue of The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533), reg. 1(2), **Sch. 1 para. 101(4)** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

F104 Art. 156(6)(a) omitted (E.W.S.) (31.12.2020) by virtue of The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I.

2019/533), reg. 1(2), **Sch. 1 para. 101(5)(a)** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

F105 Words in Art. 156(6)(b) substituted (E.W.S.) (31.12.2020) by The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533), reg. 1(2), **Sch. 1 para. 101(5)(b)** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

F106 Words in Art. 156(7) substituted (E.W.S.) (31.12.2020) by The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533), reg. 1(2), **Sch. 1 para. 101(6)** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

F107 Words in Art. 156(8) substituted (E.W.S.) (31.12.2020) by The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533), reg. 1(2), **Sch. 1 para. 101(6)** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

F108 Art. 156(9)-(11) omitted (E.W.S.) (31.12.2020) by virtue of The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533), reg. 1(2), **Sch. 1 para. 101(7)** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

F109 Art. 156(13) substituted (E.W.S.) (31.12.2020) by The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533), reg. 1(2), **Sch. 1 para. 101(8)** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

TITLE 6

FREQUENCY RESTORATION RESERVES

Article 157

FRR dimensioning

1 All TSOs of a LFC Block shall set out FRR dimensioning rules in the LFC Block operational agreement.

2 The FRR dimensioning rules shall include at least the following:

F110a . . . . . .

F110b . . . . . .

F110c . . . . . .

d the TSOs of a LFC block shall determine the size of the reference incident which shall be the largest imbalance that may result from an instantaneous change of active power of a single power generating module, single demand facility, or single HVDC interconnector or from a tripping of an AC line within the LFC block;

e all TSOs of a LFC block shall determine the positive reserve capacity on FRR, which shall not be less than the positive dimensioning incident of the LFC block;

f all TSOs of a LFC block shall determine the negative reserve capacity on FRR, which shall not be less than the negative dimensioning incident of the LFC block;

g all TSOs of a LFC block shall determine the reserve capacity on FRR of a LFC block, any possible geographical limitations for its distribution within the LFC block and any possible geographical limitations for any exchange of reserves or sharing of reserves with other LFC blocks to comply with the operational security limits;

F111 h . . . . . .

F112 i . . . . . .

j all TSOs of a LFC block may reduce the positive reserve capacity on FRR of the LFC block resulting from the FRR dimensioning process by concluding a FRR sharing agreement with other LFC blocks in accordance with provisions in Title 8. **[**F113The sharing agreement for the GB synchronous area shall require that the positive reserve capacity on FRR and the risk of non-delivery due to sharing shall be assessed continually by the TSOs of the LFC block.**]**

k all TSOs of a LFC block may reduce the negative reserve capacity on FRR of the LFC block, resulting from the FRR dimensioning process by concluding a FRR sharing agreement with other LFC blocks in accordance with the provisions of Title 8. **[**F114The sharing agreement shall require that the negative reserve capacity on FRR and the risk of non-delivery due to sharing shall be assessed continually by the TSOs of the LFC block.**]**

3 All TSOs of a LFC block where the LFC block comprises more than one TSO shall set out, in the LFC block operational agreement, the specific allocation of responsibilities between the TSOs of the LFC areas for the implementation of the obligations established in paragraph 2.

4 All TSOs of a LFC block shall have sufficient reserve capacity on FRR at any time in accordance with the FRR dimensioning rules. The TSOs of a LFC block shall specify in the LFC block operational agreement an escalation procedure for cases of severe risk of insufficient reserve capacity on FRR in the LFC block.

Textual Amendments

F110 Art. 157(2)(a)-(c) omitted (E.W.S.) (31.12.2020) by virtue of The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533), reg. 1(2), **Sch. 1 para. 102(2)(a)** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

F111 Art. 157(2)(h) omitted (E.W.S.) (31.12.2020) by virtue of The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533), reg. 1(2), **Sch. 1 para. 102(2)(a)** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

F112 Art. 157(2)(i) omitted (E.W.S.) (31.12.2020) by virtue of The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533), reg. 1(2), **Sch. 1 para. 102(2)(a)** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

F113 Words in Art. 157(2)(j) substituted (E.W.S.) (31.12.2020) by The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533), reg. 1(2), **Sch. 1 para. 102(2)(b)** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

F114 Words in Art. 157(2)(k) substituted (E.W.S.) (31.12.2020) by The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533), reg. 1(2), **Sch. 1 para. 102(2)(c)** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

Article 158

FRR minimum technical requirements

1 The FRR minimum technical requirements shall be the following:

a each FRR providing unit and each FRR providing group shall be connected to only one reserve connecting TSO;

b a FRR providing unit or FRR providing group shall activate FRR in accordance with the setpoint received from the reserve instructing TSO;

c the reserve instructing TSO shall be the reserve connecting TSO or a TSO designated by the reserve connecting TSO in an FRR exchange agreement pursuant to Article 165(3) F115 ...;

d a FRR providing unit or FRR providing group for automatic FRR shall have an automatic FRR activation delay not exceeding 30 seconds;

e a FRR provider shall ensure that the FRR activation of the FRR providing units within a reserve providing group can be monitored. For that purpose, the FRR provider shall be capable of supplying to the reserve connecting TSO and the reserve instructing TSO real-time measurements of the connection point or another point of interaction agreed with the reserve connecting TSO concerning:

(i) time-stamped scheduled active power output;

(ii) time-stamped instantaneous active power for:

— each FRR providing unit,

— each FRR providing group, and

— each power generating module or demand unit of a FRR providing group with a maximum active power output larger than or equal to 1,5 MW;

f a FRR providing unit or FRR providing group for automatic FRR shall be capable of activating its complete automatic reserve capacity on FRR within the automatic FRR full activation time;

g a FRR providing unit or FRR providing group for manual FRR shall be capable of activating its complete manual reserve capacity on FRR within the manual FRR full activation time;

h a FRR provider shall fulfil the FRR availability requirements; and

i a FRR providing unit or FRR providing group shall fulfil the ramping rate requirements of the LFC block.

2 All TSOs of a LFC block shall specify FRR availability requirements and requirements on the control quality of FRR providing units and FRR providing groups for their LFC block in the LFC block operational agreement pursuant to Article 119.

3 The reserve connecting TSO shall adopt the technical requirements for the connection of FRR providing units and FRR providing groups to ensure the safe and secure delivery of FRR.

4 Each FRR provider shall:

a ensure that its FRR providing units and FRR providing groups fulfil the FRR technical minimum requirements, the FRR availability requirements and the ramping rate requirements in paragraphs 1 to 3; and

b inform its reserve instructing TSO about a reduction of the actual availability of its FRR providing unit or its FRR providing group or a part of its FRR providing group as soon as possible.

5 Each reserve instructing TSO shall ensure the monitoring of the compliance with the FRR minimum technical requirements in paragraph 1, the FRR availability requirements in paragraph 2, the ramping rate requirements in paragraph 1 and the connection requirements in paragraph 3 by its FRR providing units and FRR providing groups.

Textual Amendments

F115 Words in Art. 158(1)(c) omitted (E.W.S.) (31.12.2020) by virtue of The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533), reg. 1(2), **Sch. 1 para. 103** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

Article 159

FRR prequalification process

1 By 12 months after entry into force of this Regulation each TSO shall develop a FRR prequalification process and shall clarify and make publicly available its details.

2 A potential FRR provider shall demonstrate to the reserve connecting TSO or the TSO designated by the reserve connecting TSO in the FRR exchange agreement that it complies with the FRR minimum technical requirements in Article 158(1), the FRR availability requirements in Article 158(2), the ramping rate requirements in Article 158(1) and the connection requirements in Article 158(3) by completing successfully the prequalification process of potential FRR providing units or FRR providing groups, described in paragraphs 3 to 6 of this Article.

3 A potential FRR provider shall submit a formal application to the relevant reserve connecting TSO or the designated TSO together with the required information of potential FRR providing units or FRR providing groups. Within 8 weeks from receipt of the application, the reserve connecting TSO or the designated TSO shall confirm whether the application is complete. Where the reserve connecting TSO or the designated TSO considers that the application is incomplete they shall request additional information and the potential FRR provider shall submit the additional required information within 4 weeks from the receipt of the request. Where the potential FRR provider does not supply the requested information within that deadline, the application shall be deemed to be withdrawn.

4 Within 3 months after the reserve connecting TSO or the designated TSO confirms that the application is complete, the reserve connecting TSO or the designated TSO shall evaluate the information provided and decide whether the potential FRR providing units or FRR providing groups meet the criteria for a FRR prequalification. The reserve connecting TSO or the designated TSO shall notify their decision to the potential FRR provider.

5 The qualification of FRR providing units or FRR providing groups by the reserve connecting TSO or the designated TSO shall be valid for the entire LFC Block.

6 The qualification of FRR providing units or FRR providing groups shall be re-assessed:

a at least once every 5 years; and

b where the technical or availability requirements or the equipment have changed.

7 To ensure operational security, the reserve connecting TSO shall have the right to exclude FRR providing groups from the provision of FRR based on technical arguments such as the geographical distribution of the power generating modules or demand units belonging to a FRR providing group.

TITLE 7

REPLACEMENT RESERVES

Article 160

RR dimensioning

1 All TSOs of an LFC block shall have the right to implement a reserve replacement process.

2 To comply with the FRCE target parameters referred to in Article 128, all TSOs of a LFC block with a RRP, performing a combined dimensioning process of FRR and RR to fulfil the requirements of Article 157(2), shall define RR dimensioning rules in the LFC block operational agreement.

3 The RR dimensioning rules shall comprise at least the following requirements:

[[F116]a there shall be sufficient positive reserve capacity on RR to restore the required amount of positive FCR and positive FRR;**]**

[[F117]b there shall be sufficient negative reserve capacity on RR to restore the required amount of negative FCR and negative FRR;**]**

c there shall be sufficient reserve capacity on RR, where this is taken into account to dimension the reserve capacity on FRR in order to respect the FRCE quality target for the period of time concerned; and

d compliance with the operational security within a LFC block to determine the reserve capacity on RR.

4 All TSOs of an LFC block may reduce the positive reserve capacity on RR of the LFC block, resulting from the RR dimensioning process, by developing a RR sharing agreement for that positive reserve capacity on RR with other LFC blocks in accordance with the provisions of Title 8 of Part IV. The control capability receiving TSO shall limit the reduction of its positive reserve capacity on RR in order to:

a guarantee that it can still meet its FRCE target parameters set out in Article 128;

b ensure that operational security is not endangered; and

c ensure that the reduction of the positive reserve capacity on RR does not exceed the remaining positive reserve capacity on RR of the LFC block.

5 All TSOs of a LFC block may reduce the negative reserve capacity on RR of the LFC block, resulting from the RR dimensioning process, by developing a RR sharing agreement for that negative reserve capacity on RR with other LFC blocks in accordance with the provisions of Title 8 of Part IV. The control capability receiving TSO shall limit the reduction of its negative reserve capacity on RR in order to:

a guarantee that it can still meet its FRCE target parameters set out in Article 128;

b ensure that operational security is not endangered; and

c ensure that the reduction of the negative reserve capacity on RR does not exceed the remaining negative reserve capacity on RR of the LFC block.

6 Where a LFC block is operated by more than one TSO and if the process is necessary for the LFC block, all TSOs of that LFC block shall specify in the LFC block operational agreement the allocation of responsibilities between the TSOs of different LFC areas for the implementation of the dimensioning rules set out in paragraph 3.

7 A TSO shall have sufficient reserve capacity on RR in accordance with the RR dimensioning rules at any time. The TSOs of a LFC block shall specify in the LFC block operational agreement an escalation procedure for cases of severe risk of insufficient reserve capacity on RR in the LFC block.

Textual Amendments

F116 Art. 160(3)(a) substituted (E.W.S.) (31.12.2020) by The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533), reg. 1(2), **Sch. 1 para. 104(2)(a)** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

F117 Art. 160(3)(b) substituted (E.W.S.) (31.12.2020) by The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533), reg. 1(2), **Sch. 1 para. 104(2)(b)** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

Article 161

RR minimum technical requirements

1 RR providing units and RR providing groups shall comply with the following minimum technical requirements:

a connection to only one reserve connecting TSO;

b RR activation according to the setpoint received from the reserve instructing TSO;

c the reserve instructing TSO shall be the reserve connecting TSO or a TSO that shall be designated by the reserve connecting TSO in the RR exchange agreement pursuant to Article 165(3) **F118**...;

d activation of complete reserve capacity on RR within the activation time defined by the instructing TSO;

e de-activation of RR according to the setpoint received from the reserve instructing TSO;

f a RR provider shall ensure that the RR activation of the RR providing units within a reserve providing group can be monitored. For that purpose, the RR provider shall be capable of supplying to the reserve connecting TSO and the reserve instructing TSO real-time measurements of the connection point or another point of interaction agreed with the reserve connecting TSO concerning:

(i) the time-stamped scheduled active power output, for each RR providing unit and group and for each power generating module or demand unit of a RR providing group with a maximum active power output larger than or equal to 1,5 MW;

(ii) the time-stamped instantaneous active power, for each RR providing unit and group, and for each power generating module or demand unit of a RR providing group with a maximum active power output larger than or equal to 1,5 MW;

g fulfilment of the RR availability requirements.

2 All TSOs of a LFC block shall specify RR availability requirements and requirements on the control quality of RR providing units and RR providing groups in the LFC block operational agreement.

3 The reserve connecting TSO shall adopt the technical requirements for the connection of RR providing units and RR providing groups to ensure the safe and secure delivery of RR in the prequalification process description.

4 Each RR provider shall:

a ensure that its RR providing units and RR providing groups fulfil the RR technical minimum requirements and the RR availability requirements referred to in paragraphs 1 to 3; and

b inform its reserve instructing TSO about a reduction of the actual availability or a forced outage of its RR providing unit or its RR providing group or a part of its RR providing group as soon as possible.

5 Each reserve instructing TSO shall ensure compliance with the RR technical requirements, the RR availability requirements and the connection requirements referred to in this Article with regard to its RR providing units and RR providing groups.

Textual Amendments

F118 Words in Art. 161(1)(c) omitted (E.W.S.) (31.12.2020) by virtue of The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533), reg. 1(2), **Sch. 1 para. 105** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

Article 162

RR prequalification process

1 Each TSO of a LFC block which has implemented a RRP shall develop a RR prequalification process within 12 months after entry into force of this Regulation and shall clarify and make publicly available the details thereof.

2 A potential RR provider shall demonstrate to the reserve connecting TSO or the TSO designated by the reserve connecting TSO in the RR exchange agreement that it complies with the RR technical minimum requirements, the RR availability requirements and the connection requirements referred to in Article 161 by completing successfully the prequalification process of potential RR providing units or RR providing groups, described in paragraphs 3 to 6.

3 A potential RR provider shall submit a formal application to the relevant reserve connecting TSO or the designated TSO together with the required information of potential RR providing units or RR providing groups. Within 8 weeks from receipt of the application, the reserve connecting TSO or the designated TSO shall confirm whether the application is complete. Where the reserve connecting TSO or the designated TSO considers that the application is incomplete, the potential RR provider shall submit the additional required information within 4 weeks from the receipt of the request for additional information. Where the potential RR provider does not supply the requested information within that deadline, the application shall be deemed withdrawn.

4 Within 3 months from confirmation of the completeness of the application, the reserve connecting TSO or the designated TSO shall evaluate the information provided and decide whether the potential RR providing units or RR providing groups meet the criteria for a RR prequalification. The reserve connecting TSO or the designated TSO shall notify its decision to the potential RR provider.

5 The qualification of RR providing units or RR providing groups shall be reassessed:

a at least once every 5 years; and

b where the technical or availability requirements or the equipment have changed.

6 To ensure operational security, the reserve connecting TSO shall have the right to reject the provision of RR by RR providing groups, based on technical arguments such as the geographical distribution of the power generating modules or demand units establishing a RR providing group.

TITLE 8

EXCHANGE AND SHARING OF RESERVES

CHAPTER 1

Exchange and sharing of reserves within a synchronous area

Article 163

Exchange of FCR within a synchronous area

1 All TSOs involved in the exchange of FCR within **[**F119the GB synchronous area**]** shall comply with the requirements set out in paragraphs 2 to 9. The exchange of FCR implies a transfer of a FCR obligation from the reserve receiving TSO to the reserve connecting TSO for the corresponding reserve capacity on FCR.

2 All TSOs involved in the exchange of FCR within **[**F120the GB synchronous area**]** shall respect the limits and requirements for the exchange of FCR within the synchronous area specified in the Table of Annex VI.

3 In case of exchange of FCR, the reserve connecting TSO and reserve receiving TSO shall notify it in accordance with Article 150.

4 Any reserve connecting TSO, reserve receiving TSO or affected TSO involved in the exchange of FCR may refuse the exchange of FCR where it would result in power flows that violate the operational security limits when activating the reserve capacity on FCR subject to the exchange of FCR.

5 Each affected TSO shall verify that its reliability margin, established in accordance with Article 22 of Regulation (EU) 2015/1222, is sufficient to accommodate the power flows resulting from the activation of the reserve capacity on FCR subject to the exchange of FCR.

6 All TSOs of a LFC area shall adjust the parameters of their FRCE calculation to account for the exchange of FCR.

7 The reserve connecting TSO shall be responsible for the requirements referred to in Articles 154 and 156 as regards the reserve capacity on FCR subject to the exchange of FCR.

8 The FCR providing unit or group shall be responsible towards its reserve connecting TSO for FCR activation.

9 The concerned TSOs shall ensure that exchange of FCR does not prevent any TSO from fulfilling the reserve requirements in Article 156.

Textual Amendments

F119 Words in Art. 163(1) substituted (E.W.S.) (31.12.2020) by The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533), reg. 1(2), **Sch. 1 para. 106** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

F120 Words in Art. 163(2) substituted (E.W.S.) (31.12.2020) by The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533), reg. 1(2), **Sch. 1 para. 106** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

Article 164

Sharing of FCR within a synchronous area

A TSO shall not share FCR with other TSOs of **[**F121the GB synchronous area**]** to fulfil its FCR obligation and to reduce the total amount of FCR of the synchronous area in accordance with Article 153.

Textual Amendments

F121 Words in Art. 164 substituted (E.W.S.) (31.12.2020) by The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533), reg. 1(2), **Sch. 1 para. 107** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

Article 165

General requirements for the exchange of FRR and RR within a synchronous area

1 All TSOs of **[**F122the GB synchronous area**]** shall define in the synchronous area operational agreement the roles and responsibilities of the reserve connecting TSO, the reserve receiving TSO and the affected TSO for the exchange of FRR and/or RR.

2 Where an exchange of FRR/RR takes place, the reserve connecting TSO and reserve receiving TSO shall notify that exchange pursuant to the notification requirements in Article 150.

3 The reserve connecting and reserve receiving TSOs participating in the exchange of FRR/RR shall specify in a FRR or RR exchange agreement their roles and responsibilities, including:

a the responsibility of the reserve instructing TSO for the reserve capacity on FRR and RR subject to the exchange of FRR/RR;

b the amount of the reserve capacity on FRR and RR subject to the exchange of FRR/RR;

F123c . . . . . .

F123d . . . . . .

e the implementation of the FRR/RR prequalification for the reserve capacity on FRR and RR subject to exchange in accordance with Articles 159 and 162;

f the responsibility to monitor the fulfilment of the FRR/RR technical requirements and FRR/RR availability requirements for the reserve capacity on FRR and RR subject to exchange in accordance with Articles 158(5) and 161(5); and

g procedures to ensure that the exchange of FRR/RR does not lead to power flows which violate the operational security limits.

4 Any reserve connecting TSO, reserve receiving TSO or affected TSO involved in the exchange of FRR or RR may refuse the exchange referred to in paragraph 2 where it would result in power flows that violate the operational security limits when activating the reserve capacity on FRR and RR subject to the exchange of FRR or RR.

5 The concerned TSOs shall ensure that exchange of FRR/RR does not prevent any TSO from complying with the reserve requirements established in the FRR or RR dimensioning rules in Articles 157 and 160.

6 All TSOs of a LFC block shall specify in the LFC block operational agreement the roles and responsibilities of the reserve connecting TSO, the reserve receiving TSO and the affected TSO for the exchange of FRR and/or RR with TSOs of other LFC blocks.

Textual Amendments

F122 Words in Art. 165(1) substituted (E.W.S.) (31.12.2020) by The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533), reg. 1(2), **Sch. 1 para. 108(2)** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

F123 Art. 165(3)(c)(d) omitted (E.W.S.) (31.12.2020) by virtue of The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533), reg. 1(2), **Sch. 1 para. 108(3)** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

Article 166

General requirements for sharing FRR and RR within a synchronous area

1 All TSOs of **[**F124the GB synchronous area**]** shall specify in the synchronous area operational agreement the roles and responsibilities of the control capability providing TSO, the control capability receiving TSO and the affected TSO for sharing FRR/RR.

2 Where FRR/RR sharing takes place, the control capability providing TSO and control capability receiving TSO shall notify that sharing pursuant to the notification requirements in Article 150.

3 The control capability receiving TSO and the control capability providing TSO participating in the sharing of FRR/RR shall specify in a FRR or RR sharing agreement their roles and responsibilities, including:

a the amount of reserve capacity on FRR and RR subject to the sharing of FRR/RR;

F125b . . . . . .

c procedures to ensure that the activation of the reserve capacity on FRR and RR subject to the sharing of FRR/RR does not lead to power flows that violate the operational security limits.

4 Any control capability providing TSO, control capability receiving TSO or affected TSO involved in the sharing of FRR/RR may refuse sharing of FRR/RR where it would result

in power flows that violate the operational security limits when activating the reserve capacity on FRR and RR subject to the sharing of FRR/RR.

5 In case of sharing of FRR/RR, the control capability providing TSO shall make available to the control capability receiving TSO a share of its own reserve capacity on FRR and RR required to comply with its reserve requirements for FRR and/or RR resulting from the FRR/RR dimensioning rules in Articles 157 and 160. **[**[F126]The control capability providing TSO can be the reserve instructing TSO for the reserve capacity on FRR and RR, subject to the sharing of FRR/RR.**]**

6 Each control capability receiving TSO shall be responsible for coping with incidents and imbalances in case the reserve capacity on FRR and RR subject to the sharing of FRR/RR are unavailable due to:

a restrictions to provide frequency restoration or adjust the control program related to operational security; and

b partial or full usage of the reserve capacity on FRR and RR by the control capability providing TSO.

7 All TSOs of a LFC block shall specify in the LFC block operational agreement their roles and responsibilities of the control capability providing TSO, the control capability receiving TSO and the affected TSO for the sharing of FRR and RR with TSOs of other LFC blocks.

Textual Amendments

F124 Words in Art. 166(1) substituted (E.W.S.) (31.12.2020) by The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533), reg. 1(2), **Sch. 1 para. 109(2)** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

F125 Art. 166(3)(b) omitted (E.W.S.) (31.12.2020) by virtue of The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533), reg. 1(2), **Sch. 1 para. 109(3)** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

F126 Words in Art. 166(5) substituted (E.W.S.) (31.12.2020) by The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533), reg. 1(2), **Sch. 1 para. 109(4)** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

[F127]*Article 167*

Exchange of FRR within a synchronous area

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Textual Amendments

F127 Arts. 167-170 omitted (E.W.S.) (31.12.2020) by virtue of The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533), reg. 1(2), **Sch. 1 para. 110** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

F127 Article 168

Sharing of FRR within a synchronous area

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Textual Amendments

F127 Arts. 167-170 omitted (E.W.S.) (31.12.2020) by virtue of The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533), reg. 1(2), **Sch. 1 para. 110** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

F127 Article 169

Exchange of RR within a synchronous area

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Textual Amendments

F127 Arts. 167-170 omitted (E.W.S.) (31.12.2020) by virtue of The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533), reg. 1(2), **Sch. 1 para. 110** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

F127 Article 170

Sharing of RR within a synchronous area

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Textual Amendments

F127 Arts. 167-170 omitted (E.W.S.) (31.12.2020) by virtue of The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533), reg. 1(2), **Sch. 1 para. 110** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

CHAPTER 2

Exchange and sharing of reserves between synchronous areas

Article 171

General requirements

1 Each operator and/or owner of an HVDC interconnector which interconnects synchronous areas shall provide to the connecting TSOs the capability to perform the exchange and sharing of FCR, FRR and RR if this technology is installed.

F128 2 . . . . . .

F128 3 . . . . . .

F128 4 . . . . . .

F128 5 . . . . . .

F128 6 . . . . . .

F128 7 . . . . . .

F128 8 . . . . . .

F128 9 . . . . . .

Textual Amendments

F128 Art. 171(2)-(9) omitted (E.W.S.) (31.12.2020) by virtue of The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533), reg. 1(2), **Sch. 1 para. 111** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

F129 Article 172

Frequency coupling between synchronous areas

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Textual Amendments

F129 Arts. 172-179 omitted (E.W.S.) (31.12.2020) by virtue of The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533), reg. 1(2), **Sch. 1 para. 112** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

F129 Article 173

Exchange of FCR between synchronous areas

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Textual Amendments

F129 Arts. 172-179 omitted (E.W.S.) (31.12.2020) by virtue of The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533), reg. 1(2), **Sch. 1 para. 112** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

F129 Article 174

Sharing of FCR between synchronous areas

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Textual Amendments

F129 Arts. 172-179 omitted (E.W.S.) (31.12.2020) by virtue of The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533), reg. 1(2), **Sch. 1 para. 112** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

F129 Article 175

General requirements for sharing of FRR and RR between synchronous areas

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Textual Amendments

F129 Arts. 172-179 omitted (E.W.S.) (31.12.2020) by virtue of The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533), reg. 1(2), **Sch. 1 para. 112** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

F129 Article 176

Exchange of FRR between synchronous areas

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Textual Amendments

F129 Arts. 172-179 omitted (E.W.S.) (31.12.2020) by virtue of The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533), reg. 1(2), **Sch. 1 para. 112** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

F129 Article 177

Sharing of FRR between synchronous areas

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Textual Amendments

F129 Arts. 172-179 omitted (E.W.S.) (31.12.2020) by virtue of The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533), reg. 1(2), **Sch. 1 para. 112** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

F129 Article 178

Exchange of RR between synchronous areas

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Textual Amendments

F129 Arts. 172-179 omitted (E.W.S.) (31.12.2020) by virtue of The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533), reg. 1(2), **Sch. 1 para. 112** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

F129 Article 179

Sharing of RR between synchronous areas

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Textual Amendments

F129 Arts. 172-179 omitted (E.W.S.) (31.12.2020) by virtue of The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533), reg. 1(2), **Sch. 1 para. 112** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

F130 …

F130 …

F131 Article 180

Cross-border activation process for FRR/RR

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Textual Amendments

F131 Art. 180 omitted (E.W.S.) (31.12.2020) by virtue of The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533), reg. 1(2), **Sch. 1 para. 113** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

Textual Amendments

F130 Ch. number and heading preceding Art. 180 omitted (E.W.S.) (31.12.2020) by virtue of The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533), reg. 1(2), **Sch. 1 para. 113** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

TITLE 9

TIME CONTROL PROCESS

Article 181

Time control process

1 The control target of the electrical time control process shall be to control the average value of the system frequency to the nominal frequency.

2 Where applicable, all TSOs of **[**F132the GB synchronous area**]** shall define in the synchronous area operational agreement the methodology to correct the electrical time deviation, which shall include:

a the time ranges within which TSOs shall endeavour to maintain the electrical time deviation;

b the frequency setpoint adjustments to return electrical time deviation to zero; and

c the actions to increase or decrease the average system frequency by means of active power reserves.

3 The synchronous area monitor shall:

a monitor the electrical time deviation;

b calculate the frequency setpoint adjustments; and

c coordinate the actions of the time control process.

Textual Amendments

F132 Words in Art. 181(2) substituted (E.W.S.) (31.12.2020) by The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533), reg. 1(2), **Sch. 1 para. 114** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

TITLE 10

COOPERATION WITH DSOS

Article 182

Reserve providing groups or units connected to the DSO grid

1 TSOs and DSOs shall cooperate in order to facilitate and enable the delivery of active power reserves by reserve providing groups or reserve providing units located in the distribution systems.

2 For the purposes of the prequalification processes for FCR in Article 155, FRR in Article 159 and RR in Article 162, each TSO shall develop and specify, in an agreement with its reserve connecting DSOs and intermediate DSOs, the terms of the exchange of information required for these prequalification processes for reserve providing units or groups located in the distribution systems and for the delivery of active power reserves. The prequalification processes for FCR in Article 155, FRR in Article 159 and RR in Article 162 shall specify the information to be provided by the potential reserve providing units or groups, which shall include:

a voltage levels and connection points of the reserve providing units or groups;

b the type of active power reserves;

c the maximum reserve capacity provided by the reserve providing units or groups at each connection point; and

d the maximum rate of change of active power for the reserve providing units or groups.

3 The prequalification process shall rely on the agreed timeline and rules concerning information exchanges and the delivery of active power reserves between the TSO, the reserve connecting DSO and the intermediate DSOs. The prequalification process shall have a maximum duration of 3 months from the submission of a complete formal application by the reserve providing unit or group.

4 During the prequalification of a reserve providing unit or group connected to its distribution system, each reserve connecting DSO and each intermediate DSO, in cooperation with the TSO, shall have the right to set limits to or exclude the delivery of active power reserves located in its distribution system, based on technical reasons such as the geographical location of the reserve providing units and reserve providing groups.

5 Each reserve connecting DSO and each intermediate DSO shall have the right, in cooperation with the TSO, to set, before the activation of reserves, temporary limits to the delivery of active power reserves located in its distribution system. The respective TSOs shall agree with their reserve connecting DSOs and intermediate DSOs on the applicable procedures.

TITLE 11

TRANSPARENCY OF INFORMATION

Article 183

General transparency requirements

1 All TSOs shall ensure that the information listed in this Title is published at a time and in a format that does not create an actual or potential competitive advantage or disadvantage to any individual party or category of party and taking due account of sensitive commercial information.

[F133]2 . . . . . .

3 Each TSO shall ensure the availability and the accuracy of the information **[**[F134]published**]** in accordance with Articles 184 to 190.

[F135]4 . . . . . .

Textual Amendments

F133 Art. 183(2) omitted (E.W.S.) (31.12.2020) by virtue of The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533), reg. 1(2), **Sch. 1 para. 115(2)** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

F134 Word in Art. 183(3) substituted (E.W.S.) (31.12.2020) by The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533), reg. 1(2), **Sch. 1 para. 115(3)** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

F135 Art. 183(4) omitted (E.W.S.) (31.12.2020) by virtue of The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533), reg. 1(2), **Sch. 1 para. 115(4)** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

Article 184

Information on operational agreements

1 Each TSO shall share the contents of its synchronous area operational agreement with **[**[F136]the regulatory authority**]** no later than 1 month before its entry into force.

2 **[**[F137]All TSOs in the GB synchronous area shall publish**]** the contents of their synchronous area operational agreement [F138]... no later than 1 week after its entry into force.

3 Each TSO of each LFC block shall share the contents of its LFC block operational agreement with **[**[F139]the regulatory authority**]**.

Textual Amendments

F136 Words in Art. 184(1) substituted (E.W.S.) (31.12.2020) by The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I.

2019/533), reg. 1(2), **Sch. 1 para. 116(2)** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

F137 Words in Art. 184(2) substituted (E.W.S.) (31.12.2020) by The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533), reg. 1(2), **Sch. 1 para. 116(3)(a)** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

F138 Words in Art. 184(2) omitted (E.W.S.) (31.12.2020) by virtue of The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533), reg. 1(2), **Sch. 1 para. 116(3)(b)** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

F139 Words in Art. 184(3) substituted (E.W.S.) (31.12.2020) by The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533), reg. 1(2), **Sch. 1 para. 116(4)** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

Article 185

Information on frequency quality

1 Where the TSOs of **[**F140the GB synchronous area**]** propose to modify the values for the frequency quality defining parameters or the frequency quality target parameter in accordance with Article 127, they shall **[**F141publish**]** the modified values F142... at least 1 month before the entry into force of the synchronous area operational agreement.

2 Where applicable, all TSOs of **[**F143the GB synchronous area**]** shall **[**F144publish**]** the values of the FRCE target parameters for each LFC block and each LFC area F145... at least 1 month before their applicability.

3 All TSOs of **[**F143the GB synchronous area**]** shall **[**F144publish**]** the methodology used to determine the risk of exhaustion of FCR F145... at least 3 months before the application of the synchronous area operational agreement.

4 The synchronous area monitor of **[**F143the GB synchronous area**]** shall **[**F144publish**]** the results of the criteria application process for their synchronous area F145... within 3 months after the last time-stamp of the measurement period and at least four times a year. Those results shall include at least:

a the values of the frequency quality evaluation criteria calculated for the synchronous area and for each LFC block within the synchronous area in accordance with Article 133(3); and

b the measurement resolution, measurement accuracy and calculation method specified in accordance with Article 132;

5 All TSOs of **[**F143the GB synchronous area**]** shall **[**F144publish**]** the ramping period specified in accordance with Article 136 F145... at least 3 months before their applicability.

Textual Amendments

F140 Words in Art. 185(1) substituted (E.W.S.) (31.12.2020) by The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533), reg. 1(2), **Sch. 1 para. 117(2)(a)** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

F141 Word in Art. 185(1) substituted (E.W.S.) (31.12.2020) by The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533), reg. 1(2), **Sch. 1 para. 117(2)(b)** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

F142 Words in Art. 185(1) omitted (E.W.S.) (31.12.2020) by virtue of The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533), reg. 1(2), **Sch. 1 para. 117(2)(c)** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

F143 Words in art. 185(2)-(5) substituted (E.W.S.) (31.12.2020) by The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533), reg. 1(2), **Sch. 1 para. 117(3)(a)** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

F144 Words in art. 185(2)-(5) substituted (E.W.S.) (31.12.2020) by The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533), reg. 1(2), **Sch. 1 para. 117(3)(b)** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

F145 Words in art. 185(2)-(5) omitted (E.W.S.) (31.12.2020) by virtue of The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533), reg. 1(2), **Sch. 1 para. 117(3)(c)** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

Article 186

Information on the load-frequency control structure

1 All TSOs of **[**[F146]the GB**]** synchronous area shall **[**[F147]publish**]** the following information [F148]... at least 3 months before the application of the synchronous area operational agreement:

a information on the process activation structure of the synchronous area, including at least information on the monitoring areas, LFC areas and LFC blocks defined and their respective TSOs; and

b information on the process responsibility structure of the synchronous area, including at least information on the processes developed in accordance with Article 140(1) and (2).

[F149]2 . . . . . .

Textual Amendments

F146 Words in Art. 186(1) substituted (E.W.S.) (31.12.2020) by The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533), reg. 1(2), **Sch. 1 para. 118(2)(a)** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

F147 Word in Art. 186(1) substituted (E.W.S.) (31.12.2020) by The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533), reg. 1(2), **Sch. 1 para. 118(2)(b)** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

F148 Words in Art. 186(1) omitted (E.W.S.) (31.12.2020) by virtue of The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533), reg. 1(2), **Sch. 1 para. 118(2)(c)** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

F149 Art. 186(2) omitted (E.W.S.) (31.12.2020) by virtue of The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533), reg. 1(2), **Sch. 1 para. 118(3)** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

Article 187

Information on FCR

1 All TSOs of **[**F150the GB synchronous area**]** shall **[**F151publish**]** the dimensioning approach for FCR for their synchronous area in accordance with Article 153(2) F152... at least 1 month before its applicability.

2 Where applicable, all TSOs of **[**F150the GB synchronous area**]** shall **[**F151publish**]** the total amount of reserve capacity on FCR and the shares of reserve capacity on FCR required for each TSO specified in accordance with Article 153(1) as the initial FCR obligation F152... at least 1 month before their applicability.

3 All TSOs of **[**F150the GB synchronous area**]** shall **[**F151publish**]** the FCR properties established for their synchronous area in accordance with Article 154(2) and the additional requirements for FCR providing groups in accordance with Article 154(3) F152... at least 3 months before their applicability.

Textual Amendments

F150 Words in art. 187(1)-(3) substituted (E.W.S.) (31.12.2020) by The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533), reg. 1(2), **Sch. 1 para. 119(2)(a)** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

F151 Words in art. 187(1)-(3) substituted (E.W.S.) (31.12.2020) by The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533), reg. 1(2), **Sch. 1 para. 119(2)(b)** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

F152 Words in art. 187(1)-(3) omitted (E.W.S.) (31.12.2020) by virtue of The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533), reg. 1(2), **Sch. 1 para. 119(2)(c)** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

Article 188

Information on FRR

1 All TSOs of each LFC block shall **[**F153publish**]** the FRR availability requirements and requirements for the control quality specified in accordance with Article 158(2) and the technical requirements for the connection specified in accordance with Article 158(3) for their LFC block F154... at least 3 months before their applicability.

2 All TSOs of each LFC block shall **[**F153publish**]** the FRR dimensioning rules specified for their LFC block in accordance with Article 157(1) F154... at least 3 months before the applicability of the LFC block operational agreement.

3 All TSOs of **[**F155the GB synchronous area**]** shall **[**F153publish**]**, by 30 November of each year, an outlook of the reserve capacities on FRR of each LFC block for the next year F154....

4 All TSOs of **[**F155the GB synchronous area**]** shall **[**F153publish**]**, within 30 days after the end of the quarter, the actual reserve capacities on FRR of each LFC block of the past quarter F154....

Textual Amendments

F153 Words in art. 188(1)-(4) substituted (E.W.S.) (31.12.2020) by The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533), reg. 1(2), **Sch. 1 para. 120(2)(a)** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

F154 Words in art. 188(1)-(4) omitted (E.W.S.) (31.12.2020) by virtue of The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533), reg. 1(2), **Sch. 1 para. 120(2)(b)** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

F155 Words in Art. 188(3)(4) substituted (E.W.S.) (31.12.2020) by The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533), reg. 1(2), **Sch. 1 para. 120(3)** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

Article 189

Information on RR

1 All TSOs of each LFC block that operates a reserve replacement process shall **[**F156publish**]** the RR availability requirements specified in accordance with Article 161(2) and the technical requirements for the connection specified in accordance with Article 161(3) for their LFC block available F157... within 3 months before their applicability.

2 All TSOs of **[**F158the GB synchronous area**]** shall **[**F156publish**]**, by 30 November of each year, an outlook of the reserve capacities RR of each LFC block for the following year F157....

3 All TSOs of **[**F158the GB synchronous area**]** shall **[**F156publish**]**, within 30 days after the end of the quarter, the actual reserve capacities RR of each LFC block of the past quarter F157....

Textual Amendments

F156 Words in art. 189(1)-(3) substituted (E.W.S.) (31.12.2020) by The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533), reg. 1(2), **Sch. 1 para. 121(2)(a)** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

F157 Words in art. 189(1)-(3) omitted (E.W.S.) (31.12.2020) by virtue of The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533), reg. 1(2), **Sch. 1 para. 121(2)(b)** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

F158 Words in Art. 189(2)(3) substituted (E.W.S.) (31.12.2020) by The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533), reg. 1(2), **Sch. 1 para. 121(3)** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

Article 190

Information on sharing and exchange

1 All TSOs of **[**F159the GB synchronous area**]** shall **[**F160publish**]** the annual compilations of the agreements for the sharing of FRR and for the sharing of RR for each LFC block within the synchronous area F161... in accordance with Articles 188(3) and 189(2). Those compilations shall include the following information:

a the identity of the LFC blocks where there is an agreement for the sharing of FRR or RR; and

b the share of FRR and RR reduced due to each agreement for the sharing of FRR or RR.

F162 2 . . . . . .

3 Where applicable, all TSOs shall publish the information on the exchange of F163... FRR and RR.

Textual Amendments

F159 Words in Art. 190(1) substituted (E.W.S.) (31.12.2020) by The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533), reg. 1(2), **Sch. 1 para. 122(2)(a)** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

F160 Word in Art. 190(1) substituted (E.W.S.) (31.12.2020) by The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533), reg. 1(2), **Sch. 1 para. 122(2)(b)** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

F161 Words in Art. 190(1) omitted (E.W.S.) (31.12.2020) by virtue of The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533), reg. 1(2), **Sch. 1 para. 122(2)(c)** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

F162 Art. 190(2) omitted (E.W.S.) (31.12.2020) by virtue of The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533), reg. 1(2), **Sch. 1 para. 122(3)** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

F163 Word in Art. 190(3) omitted (E.W.S.) (31.12.2020) by virtue of The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/533), reg. 1(2), **Sch. 1 para. 122(4)** (as amended by S.I. 2020/1016, regs. 1(2), 6(2)); 2020 c. 1, Sch. 5 para. 1(1)

Changes to legislation:
There are currently no known outstanding effects for the Commission Regulation (EU) 2017/1485, PART IV.