

| Article<br>SO GL | Question from VGB<br>07/03/2018   | Common conclusion   |
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| 2                | Art. 2 : A DSO is not a SGU according to recital 3. Correct???  | Yes, DSOs are not SGUs. Please note that closed distribution systems are SGUs according to Art 2.1.c-d  |
| 2.1.f            | Art. 2.1.f defines a HVDC installation (HVDC) as a significant grid user (SGU). But compared to a generator or a consumer, a HVDC installation is not subjected to several requirements. What is the intention of this Guideline?   | <p>A HVDC link is a hybrid installation that can also fulfil the function of a grid element, but it is defined as a Significant Grid User (SGU) in this SO guideline.</p> <p>The comments formulated by VGB are valid but not severe enough to require amendment(s) to SOGL. But if the SOGL has to be updated due to other reasons, the submitted items have to be reviewed as proposed below.</p> <p>✎ Art. 15.3 to add HVDC installations in the list for statistics.<br/> In Art. 22.1.c to include the use of the management of reactive power by a HVDC installation, provided technical capability exists (taking into account definition 21 specifying that HVDC installation can supply reactive power).<br/> Art. 22.1.g specifies only requirements for active power, so the comment is not to the point.<br/> In Art. 84.2 to add HVDC installations in the list for outage coordination.<br/> In Art. 85.2 to include a HVDC installation as an input for the ENTSO-E operational planning data environment. This inclusion is already specified in the ENTSO-E methodology.<br/> The comment on Art. 87 is not to the point given the statement that a HVDC installation is a SGU.<br/> In Art. 109 to add the potential reactive power ancillary service by a HVDC installation.<br/> The impact on Art. 111 and Art. 113 was not discussed. The thinking now is that no modification is needed.</p> |
| 3                | Art. 3 : "load-frequency-control" is not defined (see Def. 12; 18; 140)   | The notion "load-frequency control" is given in the EBGL.   |
| 3,71             | Art. 3.71 : 'availability status' means the capability of a power generating module, grid element or demand facility to provide a service for a given time period, regardless of whether or not it is in operation. More explanation needed for the terms "available" and "in operation". | More details regarding the meaning of availability can be found in the following standards:<br>IEEE 762 IEEE Standard Definitions for Use in Reporting Electric Generating Unit ...<br>IEC 61400-26 Availability for wind power stations<br>ISO 3977-9 Part 9: Reliability, availability, maintainability and safety  |
| 7                | Art. 7 : ACER cannot propose amendments. Why??  | According to Art. 7 ACER cannot propose amendments as NRAs can only do this: this was decided so by the EC/Member States.   |
| 8,1              | Art. 8.1 : Is a TSO legally obliged to inform stakeholders by other means than the internet? What is the legal status of an "hidden" internet publication?  | <p>Art. 8.1 allows a TSO to use the internet for providing information to stakeholders. This is a generally accepted practice for all kinds of information flows to stakeholders.</p> <p>Concerning the "hidden publication on the internet" a complaint can be lodged with the NRA in accordance with Article 6(10)</p>  |
| 18.4.b           | Art.18.4.b : Why is the status of blackout applied after three minutes of absence of voltage in the control area?   | No clear explanation has been given. According ENTSO-E, it has to be accepted as defined as such and must be applied not only for TSO but also for the synchronous system.  |

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| 21.1.a and | Art. 21.1.a and 22.1.i allow TSOs to open an interconnector in case of emergency. Shall generators and consumers be compensated?  | Compensation schemes are not in the scope of SO GL, it is defined on national level.  |
| 22.1.c.iv  | Art. 22.1.c.iv allows TSO to block automatic voltage control. Who will compensate the damage when IEC standards are not respected?  | Compensation schemes are not in the scope of SO GL, it is defined on national level.  |
| 22.1.j     | Art. 22.1.j allows to activate a manually controlled load shedding. Is this done according to an existing agreement with the consumer?  | This is not regulated with SO GL, subject to national decision.   |
| 23,4       | Art. 23.4 imposes remedial actions when the system is NOT in normal or alert state. This is a subject for the E&R code instead the GL SO?   | This provision has to be read together with Art.23.3 describing the remedial actions in the normal or alert state. It was suggested to add a reference to the Emergency and Restoration code in Art. 23.4.  |
| 24.1.e     | Art. 24.1.e imposes the TSOs to facilitate cross-border operations. How to interpret this obligation in case of emergency (Art. 21.1.a and 22.1.i)?   | The notion "tools" does include only installations to manage or exchange data electronically. It does not include interconnectors (HVDC or AC). It was suggested to specify this more clearly, e.g. in this article itself.   |
| 25,2       | Art. 25.2 requires to take into account the frequency limits of SGU in normal and alert situations. But nothing is said about submission of those limits (see Art. 28.3). What about the rights of DSOs (≠ SGU)?              | This provision applies also to DSOs for the SGUs connected at distribution grids. It does not apply in general to the DSOs themselves because DSOs are not involved in the cross-border trade. It was proposed to add a specification that also DSOs have to respect the voltage limits for SGUs. Limits for RoCoF of existing PGMs are not subjected to the SOGL but to the E&R code (system defence plan).<br>PS: This article includes also the remedial actions to grant the dynamic stability as specified in Art. 39. Also DSO connected SGUs are involved in this issue. |
| 27,5       | Art. 27.5 (voltage ranges for DSO < 110 kV) : what with DSO at 110 kV or more?  | Art. 27.5 describes actions related to DSO connected at a voltage below 110 kV.<br><br>Voltage ranges for DSO connected at 110 kV or higher are described in Annex 2 of SO GL.  |
| 28,1       | Art. 28.1 imposes to submit the applicable voltage ranges of existing SGU before 14/12/2017. This is supposed at 50 Hz only. Correct?   | It's up to the SGU to provide these capabilities taking into account whether they change in different frequency ranges.   |
| 31,3       | Art. 31.3 imposes max. and min. limits for short-circuit currents. A deviation of the limits is only allowed during switching operations. The min. value has to be respected at all times. Correct?                           | Art 31(3) requests TSO to prevent from deviations on min/max limits. This is applicable in general.   |
| 33         | Art. 33 : To add at the contingency analysis : successive voltage dips due to lightning can provoke the tripping of PGMs (Cfr. black-out in Australia)  | Plenty of other technical dynamic scenarios could be described (eg: effect of ULTC). The Article shall remain general.  |
| 35         | Art. 35 allows a TSO to consider the N-1 criterion as sufficient. This is not allowed for SEVESO plants and nuclear PGMs. Contradiction between Art.40.3 (generation/ consumption) and Art. 40.4 (injections / withdrawals)?? | Art. 35 allows a TSO to consider the N-1 criterion as sufficient. In the scope of definition of their contingency list, TSOs have to respect more stringent criteria as contractually agreed for particular connections such as SEVESO sites or auxiliary services of nuclear PGMs.   |
| 37         | Art. 37 describes a "special protection scheme". What is such scheme?   | According to the definition in an early version of SO GL 'special protection scheme' means the set of coordinated and automatic measures designed to provide for fast reaction to disturbances and to avoid the propagation of disturbances in the transmission system. (the definition was removed during comitology).   |

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| 45.1.k | Art. 45.1.k imposes to determine the cost of remedial actions. How? How do we have to interpret “market based mechanisms”?                                    | Costs of remedial actions have to be provided ex-ante according to Art 78(1). Elements needed for receiving these costs have to be defined at national level.  |
| 52,3   | Art. 52.3 : The min. and max. power to be curtailed is NOT a real-time data.  | The min. and max. power to be curtailed can be considered as a real-time data supposing a manual input of the data.  |
| 54,4   | Art. 54.4 allows tests at any time referring to Art.41.2 of RfG allowing only tests according to a “repeat plan”. We suppose that RfG prevails for ALL PGMs.  | The RfG code prescribes that only tests according to a repeat plan are allowed. On the contrary SOGL opens the possibility for the TSO to request test at anytime ENTSO-E explains that the intention is that such additional tests should take place only after a fault, modification or replacement of equipment. In other cases for regular test over the lifetime, the application of SO GL Art. 54 should be consistent with RfG.           |
| 95     | Art. 95 (outage planning) : the allocation of costs detected at incompatibilities is unclear. Who shall bear those costs?                                     | In application of national rules.  |
| 98.4.a | Art. 98.4.a allows a TSO to force an “unavailable status” into an “available status”. This is not always possible. E.g : refuelling of a nuclear PGM.         | This provision has to take into account the reasons for the request from the SGU to maintain the original planned outage such as legal obligations and technical obligations regarding security / safety of persons and installations, refuelling of nuclear reactors, replacement of components at end-of-life cycle, etc.<br>Detailed rules have to be approved by each NRA, it is not the intention to harmonise this issue at EU level.      |
| 102,1  | Art.102.1 imposes a procedure for forced outages. Why? This is an element of the contingency analysis made by the TSO. What is the intention of this article? | This procedure was requested by stakeholders to address very specific situations, including cases where several units/elements are subject to stop urgently.   |
| 102,3  | Art. 102.3 : “When undertaking the procedure, the TSO shall respect, to the extent possible, the technical limits of the relevant assets.”<br>Meaning???      | Eg taking into account a potential obligation for nuclear PGM to stop.   |
| 109,3  | Art.109.3 : At un-sufficient reactive power, the regulator is not informed. Why? To compare to Art. 105.3 for active power : the regulator is informed.       | At un-sufficient reactive power, the NRA is not informed because this is a local phenomenon without cross-border consequences and consequently out of scope of this guideline.<br><br>Nevertheless Art.109.3.a imposes to inform neighbouring TSOs ; so a kind of XB effect is acknowledged by this SO GL.<br><br>The need to add a requirement for informing NRA/competent authority will be reassessed at the occasion of a revision of SO GL. |
| 110,4  | Art. 110.4 : No definition of a shipping agent. Unknown role.   | A definition of a shipping agent is given in the CACM code.  |
| 114    | Art.114 : the information in the ENTSOE operational planning data environment is of paramount commercial value for traders. How will ENTSOE prevent leakages? | The information in the ENTSO-E operational planning data environment will not be submitted to third parties and will remain strictly limited to TSOs and RSCs.   |

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| 119           | Art.119 : LFC block, LFC area, outage coordination area and monitoring area are new terms. Could those be explained and visualised in a list or a map?   | <p>A map with the definition of LFC blocks and LFC areas is integrated in the document “Supporting Document for the Network Code on Load-Frequency Control and Reserves” at page 42 .</p> <p>This document is published at :<br/> <a href="https://www.entsoe.eu/fileadmin/user_upload/_library/resources/LCFR/130628-NC_LFCR-Supporting_Document-Issue1.pdf">https://www.entsoe.eu/fileadmin/user_upload/_library/resources/LCFR/130628-NC_LFCR-Supporting_Document-Issue1.pdf</a></p>  |
| 119.1.c       | Art. 119.1.c : Ramping restrictions for PGMs : more information and values are needed to analyse the impact of this article.   | <p>This provision has been written to mitigate the impact of the Deterministic Frequency Deviations (DFD) resulting from commercial flows. It was not the intention to impose this requirement to restore a portfolio after a forced outage. The potentially imposed ramping limits have to respect the technical capabilities of the PGMs concerned.</p> <p>In addition, an EURELECTRIC-ENTSO-E report lists the DFD root causes and proposals for potential solutions (<a href="https://docstore.entsoe.eu/news-events/announcements/announcements-archive/Pages/News/the-report-on-deterministic-frequency-deviations-root-causes-and-proposals-for-potential-solutionsa.aspx">https://docstore.entsoe.eu/news-events/announcements/announcements-archive/Pages/News/the-report-on-deterministic-frequency-deviations-root-causes-and-proposals-for-potential-solutionsa.aspx</a>).</p> <p>The report identifying causes of the frequency drop that occurred in the CE synchronous area on 10th January 2019 is also available (<a href="https://docstore.entsoe.eu/Documents/News/2019/190522_SOC_TOP_11.6_Task_Force_Significant_Frequency_Deviations_External_Report.pdf">https://docstore.entsoe.eu/Documents/News/2019/190522_SOC_TOP_11.6_Task Force Significant Frequency Deviations_External Report.pdf</a>).</p> |
| 127.8.b       | Art.127.8.b requires a public consultation for a modification of the frequency quality parameters. What is the role of the ESC?  | <p>Art.127.8.b requires a public consultation for a modification of the frequency quality parameters.</p> <p>Also the SO ESC shall be informed.</p>  |
| 128,1         | Art.128.1 : the terms Level 1 FRCE range and Level 2 FRCE range are not clear.   | <p>The terms Level 1 FRCE range and Level 2 FRCE range are defined in SOGL Annex IV and explained in detail in the document “Supporting Document for the Network Code on Load-Frequency Control and Reserves” (see above).</p>   |
| 133 and 134   | Art. 133 : A TSO has to collect data to define the frequency quality parameters. Who will have access to those parameters.? Will they be published? (Idem 134.4)   | <p>Each TSO has to collect data to define the frequency quality parameters.</p> <p>A report shall be published in September – October 2019.</p>  |
| 135           | Art. 135 allows a TSO to request data from generators and consumers related to imbalances. What is the purpose of this? Imbalance is a notion at portfolio level.  | <p>Art. 135 allows a TSO to request data from generators and consumers related to imbalances.</p> <p>The request of such data is intended to detect imbalances upfront. Also aggregators can have a role to play by modifying the consumption.</p>   |
| 137,4         | Art. 137.4 (ramping rates for generators and demand) : What is the added value if the modifications are within a LFC block / a single synchronous area? This provision can provoke additional unbalances if too restricting. | <p>Art. 137.4 regarding ramping rates for generators and demand will be used where decided so according to Art 137 to limit the commercial flows between two synchronous areas as stated in the first paragraph of this article.</p> <p>As indicated in Article 119.1.c, two kinds of ramping restrictions can be introduced by TSOs to limit the impact of commercial flows changes between control areas -see also answer to question on Art 119.1.c- on the ACE of its control area. Both kinds contribute to limit the speed of change of the equilibrium within the control area: either ramping rates on injections/withdraw also from another synchronous area via HVDC interconnectors, or ramping rates on local generation/demand.</p>   |
| 138           | Art. 138 describes measures in case the frequency quality is not respected. The proposed mitigation is with the existing quality parameters. Correct?  | <p>Art. 138 describes measures in case the frequency quality is not respected. The proposed measures will be based on the existing quality parameters.</p>   |
| 152.8-13 & 16 | Art.152.8-13 & 16 allows a TSO to modify the active power of generators and consumers to grant sufficient reserves (FRR, RR, FRCE). Is this done according market rules or agreements with SGU?                              | <p>The PGMs have to be compensated for such modifications according to national rules.</p>   |

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| 154,3       | Art. 154.3 specifies that a TSO can impose additional requirements for FCR. Are other criteria than geographical ones possible?  | Art. 154.3 specifies that a TSO can impose additional requirements for FCR. Only geographical requirements are currently considered.   |
| 156,9       | Art.156.9 imposes that FCR is continuously available. This does not apply when a PGM does already supply FCR in normal state or alert state. Correct?  | This is a general requirement needing more details only for PGMs with a limited energy reservoir. More details for PGMs with a limited energy reservoir are described in the ENTSO-E document entitled "Supporting Document for the Network Code on Load-Frequency Control and Reserves" at following link : <a href="https://www.entsoe.eu/fileadmin/user_upload/_library/resources/LCFR/130628-NC_LFCR-Supporting_Document-Issue1.pdf">https://www.entsoe.eu/fileadmin/user_upload/_library/resources/LCFR/130628-NC_LFCR-Supporting_Document-Issue1.pdf</a> |
| 156.13.b    | Art. 156.13.b requires the recovery of the energy reservoir for FCR within 2 hours after the end of the alert state. Questions : ≠ emergency state? / = with active markets ? / what without markets? / single event or several events? Details are missing. | "After the end of the alert state" means "at normal state", when markets are operational.  |
| 157.2.a     | Art. 157.2.a describes the dimensioning of FCR based on historical data. This should be based on a "lessons learned" approach. Cfr. Incident 4/11/2006.  | The historical data of each incident used for this simulation are evaluated. Incidents can be classified as out of scope and not taken into account for the final simulation.  |
| 157.2.j & k | Art. 157.2.j & k imposes sufficient FRR during 99% of the time. Meaning that during 86 hours per year, a blackout is realistic. Why not 99,9% instead of 99%?  | It is not likely that the reduction of FRR capacity would cause a LFC block imbalance resulting in a blackout. Supporting document of LFCR part of SO GL provides comprehensive explanations on reserve dimensioning.  |
| 185.1 & 5   | Art.185.1 & 5 impose to notify ENTSOE about modified frequency quality parameters. Is this according Art. 6 (approval process) and Art. 11 (public consultation).  | Art.185.1 & 5 describes the modification of the frequency quality parameters. A modification process shall be executed according to Art. 6 (approval process) and Art. 11 (public consultation).   |