Article	Alternative text amendment proposal	Comment on the ACER draft amendments
Whereas (9)	The significance of power-generating modules…….Non-synchronously connected power-generating units of the ~~same~~ any underlying technology and any primary energy source, where they are collected together to form an economic unit towards the RSO and where they have a single connection point to the RSO, ~~should~~ shall be assessed ~~on their aggregated capacity assessed~~ based on the agreed maximum continuous active power export capacity at the point of connection, irrespective of their aggregated installed capacity.	PPMs shall be assessed based on the (contractually) agreed maximum active power export capacity at their connection point, no matter what technologies and primary energy sources they are using inside the PPM. Hybrid renewables (e.g. wind+PV) and other hybridisation with storage (e.g. wind+BESS, PV+BESS, wind+PV+BESS) should be covered and properly recognised in this Regulation. It is worth mentioning that these types of generation facilities are being developed and getting connected as of today in some Member States, for instance in Spain.
Whereas (25)(**)	Rapidly increasing penetration of dispersed generation and converted-based technologies into European networks has presented new challenges in ensuring overall system security. To the extent that an adequate contribution to the dynamically transforming system depends partly on advanced capabilities, power-generating modules should be able to support the system robustness by fulfilling appropriate grid-forming and rate-of-change-of-frequency withstand requirements. The regulator shall consider if such advanced capabilities are to be provided as in accordance with mandatory requirements, or if some of these shall be provided as ancillary services according to EU directive 2019/944 of 5 June 2019. Those capabilities to be provided as in accordance with mandatory requirements shall be supported by a full, publicly consulted cost-benefit analysis.	Requiring all new PPMs to provide the full scope of "appropriate grid-forming and rate-of-change-of-frequency withstand requirements"" is probably the most costly way to enforce them. The regulator shall make a full CBA and decide in a differentiated manner, what System need are more cost-effectively satisfied through mandatory requirements (must-have & must-deliver) and what others shall be procured as market-based ancillary services.
Art. 2, (16)	'maximum capacity' or 'Pmax' means the maximum continuous active power which a power-generating module can ~~produce~~ export while all units are available, less any demand or losses associated solely with facilitating the operation of that power-generating module as specified in the connection agreement or as agreed between the relevant system operator and the power-generating facility owner, or determined by other appropriate means, where an agreement is not required and which may differ from the aggregated installed capacity of a power-generating module. (16a) Electricity storage integrated to a power-generating module should be considered as part of such module while its capacity should not count towards the power-generating module capacity, unless the connection agreement is modified by the power generator facility owner.	A new (16a) is proposed to take consideration of typical hybrid PPMs (e.g. wind+BESS), where the addition of storage do not modified the original agreed maximum export capacity of the PPM. If the PPM owner intends to use the storage capacity as additional generation to that of the PPM, then a new connection agreement needs to be agreed with the relevant TSO/RSO. Again, it is worth mentioning that these types of generation facilities are being developed and getting connected as of today in some Member States, for instance in Spain.
Art. 2, (17)	'power park module' or 'PPM' means a unit or ensemble of units that can ~~generate~~ export electrical energy by different technologies or if applicable additionally stored electrical energy by different technologies, which is not a synchronous power-	Clarification to ensure that different technologies and storage can be aggregated to a PPM (e.g., but not limited to a combination of WTGs, PV inverters and BESS), in similar ways as the aggregation of gas turbines and steam turbines in a CCGT power plant.

	generating module and which is either non-synchronously connected to the network or connected through power electronics, and that also has a single connection point to a transmission system, distribution system including closed distribution system or HVDC system; and if a coordinated control is integrated to operate as single PPM.	
Art. 2, (67)	'electricity storage module' or 'ESM' means a synchronous power-generating module or a power park module which can inject and consume active power to and from the network for electricity storage, excluding pump-storage power-generating modules. A V2G electric vehicle and associated V2G electric vehicle supply equipment with a bidirectional functionality is regarded as an electricity storage module. Electricity storage integrated in a power-generating module should be considered as part of such module while its capacity should not count towards the power-generating module capacity, unless the connection agreement is modified by the PGFO (Power generator facility owner);	Complementing the proposed language changes for the definitions of Pmax and PPMs in Art. 2, (16) and (17)
NEW Art. 2, (76)	"grid-forming" means…….	There is a need for a common, solid, unarguable definition of what grid-forming is, and the capabilities it encompasses, so that said definition shall be adapted in all Member States. The potential co-existence of different definitions of grid-forming is against the development and certification of standardised mass-market products, thus impacting in costs and technical complexities.
Art. 4a, 2(a)	2. The definition of significant modernisation shall take into account at least the following criteria: (a) an increase above the existing maximum capacity of the power-generating module, whether this increase results from one modernisation or several successive modernisations, of a minimum percentage to be defined in the range 20% or more (within this range, different percentages may be defined for different technologies depending on their constraints);	The minimum percentage value of 5% is too low, and typically would include all minor operational optimisation to improve energy yield. It is hard to imagine that an additional 5%, 10%,… maximum capacity would result in a significant cross-border impact on frequency and voltage stability. Some Member States have already defined this threshold during the national implementation of Regulation (UE) 2016/631. In Spain, for instance, the percentage of power increase has been defined as more than 20%. Therefore, the threshold defined in this amended NC should be closer to this value and not much lower than this.
Art. 4a, 2(b)&(c)	~~(b) a deviation from the reactive power capability of the power-generating module, whether this deviation results from one modernisation or several successive modernisations, of a minimum percentage to be defined in the range X-Y %;~~ ~~(c) a change in frequency stability and active power management capabilities, whether this change results from one modernisation or several successive modernisations, of the power-generating module; and~~	The inclusion of (b) and (c) of the original text will potentially hamper any possibility to improve technical capabilities of existing, old PPMs: • Installing external compensation solutions (e.g. a STATCOM at the PPM substation) to allow/or to enhance participation of a PPM in ancillary services such as voltage control. • Improving active power management capabilities (e.g. enabling active power control by blade-pitching or advance PPC function) to allow participation in ancillary services such as secondary frequency control.

		If doing this means that the existing, old PPMs needs to comply with the new requirements (e.g. being grid-forming capable, RoCoF,…), PPM owners will regrettably discard participating in these markets, and TSOs will loss a significant number of potential ancillary service providers already connected in their grids. In addition, deployment of hybrid power plants will be also impacted since a new PPM forming a hybrid installation with an existing PPM, subsequently changes the capabilities of the existing PPM.
Art. 4a, 2(d)	(b) a change of main generating plant of a power-generating module or electricity storage module ~~apart from maintenance and repair activities and spare parts, whether or not those parts are purchased new at the time of their incorporation in the power generating module~~ in a percentage higher than 70%. For the purposes provided for in this article, the main generating plant will be understood as: a) In the case of synchronous power generation modules, the assembly formed by the prime mover and the alternator. b) In the case of power park modules, the assembly formed by the inverter and the power generating unit, if the latter has a relevant impact on the technical capabilities of the power park module. In wind power park modules, the wind turbine will be considered as the power generating unit, which, for these purposes, will be understood as the assembly formed by the tower, the blades and the nacelle. In PV power park modules, only the inverter will be considered the main generating plant, while the equipment or components of the direct current side will not be considered as part of the main generating plant.	This criterion has been already well defined by some Member States. In Spain, for instance, significant modernisation has been defined as change of the main generating plant in a percentage higher than 70% of the installed capacity, as per Royal Decree RD 647/2020. This same RD provides a clear definition for main generating plant according to the specific technology components of SPMG and PPM (wind and PV). The NC shall take this as relevant reference and procure some degree of harmonisation in Member States.
Art. 13, 10	10. The power generating module shall be equipped with voltage control that can ~~provide~~ contribute to constant terminal voltage when generating power at a selectable setpoint without instability over the entire operating range of the power-generating module. The relevant system operator shall have the right to specify the capability of a power-generating module to supply or absorb reactive power both when importing or exporting active power within P-Q capability chart to be defined by the relevant system operator with boundaries not wider than Article 15, Figure 9. ~~The requirement referred to in this point does not extend to auxiliary supply~~;	It must be clarified that a PPM contributes to maintain the voltage level within its setpoint but is not solely responsible to achieve it. For this, it supplies or absorbs reactive power proportionately to the grid voltage deviation. This reactive power shall always be within the P-Q capability chart which is already defined in Article 15. This must be clarified to avoid misinterpretations that reactive power capability beyond the required in Article 15 can be required. Any additional reactive power capability Article 15 shall be always procured by market-based ancillary services.

Art. 14, 3(c)	(c) The power-generating module shall be capable of operating stably without disconnecting from the network, if none of the phase-to-phase voltages exceeds the voltage-against-time-profile defined in Figure X at the agreed connection point.	In Spain, there are connection points where multiple PGMs/PPMs are connected sharing electrical infrastructure and commonly through long HV/MV connection lines up to the grid interface with the TSO/RSO. Therefore, this requirement is not possible to comply with. There shall be and exception on this kind of connection configurations, where the specific connection point (and verification of compliance point) of the PGMs/PPMs is agreed by the owner and the TSO/RSO (usually the HV side of the PPM main step-up transformer).
Art. 14, 4(c)	(c) in case of change in the network leading to the minimum short-circuit level as defined in the connection agreement the PGM shall be able to ensure robustness to its control system. Minimum short-circuit level shall be clearly specified by the TSO/RSO in the connection agreement.	All connection agreements of PGMs/PPMs shall cleared define said minimum short-circuit level. It is not the case in all Member States.
Art. Y, 5	5. With regard to grid forming capability, the relevant TSO in coordination with the relevant system operator ~~may specify that~~ shall technically justify that ~~type A~~ power park modules shall be capable of providing grid forming capability at the connection point.	It must be acknowledged that despite recent advances, grid-forming technology in large-scale installation is not yet adequately tested, and its requirement and capabilities are not yet properly and fully modelled and demonstrated by the relevant stakeholders. Therefore, at this point a specific process must be designed to define under which circumstances the TSO may require grid forming capabilities. And it shall be considered that grid forming capabilities cannot be provided by all standard PPM, and shall be choose depending on each specific grid node needs. Prior to start considering large-scale applications with grid-forming capable PPMs, the technical requirements/specification shall be exhaustively defined (starting from a much needed common, solid, unarguable definition of grid-forming), and the technology derived from those technical requirements/specifications shall be thoroughly tested via demonstration project and sandboxes. Without this, it cannot be considered as a valid, certified mass-market product available in the next few years. In this respect, Acciona Energia urges ACER to take particularly consideration to the feedback provided by the European associations (WindEurope, SolarPower Europe) and other national associations (e.g. the Spanish AEE) in this matter, as it includes the opinions of the sector and particularly that from OEMs of future grid-forming products. In the meantime, both grid-following and grid-forming shall be equally recognised as valid generation technologies for non-synchronous PGMs.
Art. Y, 8	8. If technically justified by the relevant TSO in accordance to Article Y(5), a power park module shall be capable of providing grid forming capability at the connection point if the primary resource is available as listed below.	To align with the text proposal for Article Y(5). The justification provided in Article Y(5) applies here also. Also, it shall be considered that if the conditions of the PPM change and there is no

	(a) Within the power park module's current and energy limits, the power park module shall be capable of behaving ~~at the terminals of the individual unit(s)~~ as a voltage source behind an internal impedance (Thevenin source), during normal operating conditions (non-disturbed grid conditions) and upon inception of a grid disturbance (including voltage, frequency and voltage phase angle disturbance). The Thevenin source is characterized by its internal voltage amplitude, voltage phase angle, frequency and internal impedance	primary resource, the capabilities of such PPM could significantly change. In addition, the term "individual unit" is not defined in the document. The proposal is based on the fact that grid forming capability can be provided either by the PPM itself or by dedicated storage modules within the PPM.
Art. Y, 8(d)	(d) ~~The power park module shall have the capability to activate or deactivate grid-forming mode.~~	It is unclear if the required activation/deactivation must be performed in real-time, offline, at commissioning, etc. This switching in operating mode may lead to important loss of production and should be limited in number. Also, it could lead to having a dual functionality (grid-following + grid forming) in a same product, and the need to perform a duplicate testing and certification of the PPM and its components. It may have a significant impact in over-costs for OEMs and ultimately to PPM owners. It shall be carefully analysed and defined prior to set it as a technical requirement.
Art. 20, 1	1. Type B power park modules shall fulfil the requirements laid down in Article 13, Article 14, and Article Y(5), (6), (7) and (8), except for Article 13(2)(b) and Article 13(8). Requirement laid down in Article Y(8)(d) shall not apply to power park modules with maximum capacity larger than or equal to 10 MW.	To align with the text proposal for Article Y(5). The justification provided in Article Y(5) applies here also.
Art. 20, 2	Keep Articles 20.2.b and 20.2.c: requirements on fast fault current	Articles 20.2.b and 20.2.c from Regulation (UE) 2016/631 have to be maintained to cover grid following PPMs. It must be acknowledged that despite recent advances, grid-forming requirement and capabilities are not yet properly and fully modelled and demonstrated by the relevant stakeholders. Until then, grid following product will remain in the market and being an important generation technology.
Art. 20, 4	4. With regard to grid forming capability, if technically justified by the relevant TSO in accordance to Article Y(5), type B power park modules shall fulfil the following additional requirements in relation to grid forming capability:	To align with the text proposal for Article Y(5). The justification provided in Article Y(5) applies here also.
Art. 21, 1	1. Type C power park modules shall fulfil the requirements listed in Article 13, Article 14, Article 15, Article Y(5), (6), and (8) and Article 20, except for Article 13(2)(b) Article 13(6) and Article 13(8) and Article 20(2)(a), unless referred to otherwise in point (v) of paragraph 3(d).	To align with the text proposal for Article Y(5). The justification provided in Article Y(5) applies here also.
DELETED Art. 21(2)	2. Type C power park modules shall fulfil the following additional requirements in relation to frequency stability:	Original Article 21.2 from Regulation (UE) 2016/631 has to be maintained to cover grid following PPMs.

	(a) the relevant TSO shall have the right to specify that power park modules be capable of providing synthetic inertia during very fast frequency deviations; (b) the operating principle of control systems installed to provide synthetic inertia and the associated performance parameters shall be specified by the relevant TSO.	It must be acknowledged that despite recent advances, grid-forming requirement and capabilities are not yet properly and fully modelled and demonstrated by the relevant stakeholders. Until then, grid following product will remain in the market and being an important generation technology.
Art. 21, 2(b)	a) with regard to reactive power capability, the relevant system operator may specify supplementary reactive power to be provided if the connection point of a power park module is neither located at the high-voltage terminals of the step-up transformer to the voltage level of the connection point nor at the convertor terminals, if no step-up transformer exists. This supplementary reactive power shall compensate the reactive power demand of the high-voltage line or cable between the high-voltage terminals of the step-up transformer of the power park module or its convertor terminals, if no step-up transformer exists, and the connection point and shall be provided by the responsible owner of that line or cable. This requirement is not applicable in those cases where the national legislation imposes obligations for several power park modules, even when they are from different owners, to use and share the same electrical infrastructure up to the point of connection, and additional supplementary reactive power has not been requested by the relevant Authority when authorizing this shared use.	In Spain for instance, the national legislation since Royal Decree 2818/1998 (later superseded by RD 436/2004 and RD 661/2007) imposes obligation for a PPM owner to share its electrical infrastructure (up to the point of connection) with other owners whose PPM connect to the same point of connection. Hence, forming a shared connection grid. Said shared connection grids have existed for +20 years in Spain, and over these years neither the relevant authorities nor the TSO/RSO, at the time of authorising the connection of PPMs via a shared connection grid, have never impose any requirement for supplementary reactive power. If this requirement is not delimited, for existing PPMs in one of this shared connection grids means a retroactive application of NC requirements and co-financing the grid connection costs of new PPM connected to the same shared connection grids. If apply to new PPMs only, a new PPM would bear over-costs derived from the need to over-compensate electrical infrastructure beyond what is needed for the evacuation of its maximum capacity. In consequence, under these circumstances, it shall be the TSO/RSO responsible for procuring the supplementary reactive power to compensate the reactive power demand of said shared connection grids and their evolution over the time. To this end, the TSO/RSO shall make use of reinforcements via grid planning, use existing compensation equipment of their own or procure reactive power ancillary services (remunerated) by PPMs within said shared connection grid.
Art. 21, 4	4. With regard to grid forming capability, if technically justified by the relevant TSO in accordance to Article Y(5), type C power park modules shall fulfil the following additional requirements in relation to grid forming capability:	To align with the text proposal for Article Y(5). The justification provided in Article Y(5) applies here also.
Art. 22, 1	1. Type D power park modules shall fulfil the requirements listed in Article 13, Article 14, Article 15, Article Y(5), (6) and (8), Article 20, and Article 21, except for Article 13(2)(b), Article 13(6), Article 13(7), Article 13(8), Article 15(3), Article Y(8)(d) and Article 20(2)(a).	To align with the text proposal for Article Y(5). The justification provided in Article Y(5) applies here also.

Article 2, 2	2. With regard to power oscillations damping control, if specified by the relevant TSO**,** type D power park modules shall have a power oscillation damping function which helps to attenuate the power oscillations through the control of the active power, reactive power, or both…..”	Oscillations damping control is not yet a standard control for all type of PPM. It should remain a voluntary requirement or an agreement between the PPM owner and the relevant TSO.