

## SONI Grid Code Modification Proposal Form

Email To:  
[gridcode@soni.ltd.uk](mailto:gridcode@soni.ltd.uk)



### Title of Modification Proposal:

SPID (SONI PROPOSAL ID) **03\_2022**

<b>Date:</b>	09/11/2022		
<b>Company Name:</b>	SONI		
<b>Applicant Name:</b>	Grid Code Team		
<b>Email Address:</b>	gridcode@soni.ltd.uk	<b>Tel:</b>	+44 28 90 794336
<b>Grid Code Version:</b>	SONI Grid Code version – February 2023 [Latest Version] <a href="https://www.soni.ltd.uk/media/documents/Feb23_SONI-Grid-Code.pdf">https://www.soni.ltd.uk/media/documents/Feb23_SONI-Grid-Code.pdf</a>		
<b>Grid Code Section(s) Impacted by Modification Proposal:</b>	Definitions CC.S2 <ul style="list-style-type: none"> <li>- Reactive Power Control &amp; Reactive Capability</li> <li>- Ramp rates</li> <li>- Frequency Response</li> </ul> PPM setting schedule		
<b>Modification Proposal Justification:</b>	SONI has worked with industry over a number of years to bring forward an appropriate Grid Code modification for ESPS. With ESPS already on the NI system and more in development, this modification is timely and aimed at bringing clarity as to the Grid Code requirements for such units. As part of the consultation process, SONI updated the modification in consultation with industry and SONI believe the modification now proposed for approval is timely, necessary and reflective of the technical capabilities of ESPS.		

#### Red-line Version of Impacted Grid Code Section(s) - show proposed changes to text:

Deleted text in ~~strike-through red font~~ and new text highlighted in *blue font*

Attached as documents:

SONI\_RedLine\_CC.S2 PartI\_II\_ESPS  
PPM Setting Schedule RedLine\_ESPS

#### Green-line Version of Impacted Grid Code Section(s) - show proposed final text:

Attached as documents:

SONI\_GreenLine\_CC.S2 PartI\_II\_ESPS  
PPM Setting Schedule Greenline\_ESPS

<p><b>Defined Terms (Bold):</b></p>	<p><b>Energy Storage Power Station (ESPS):</b> A collection of one or more <del>storage devices</del> ESU(s) that can automatically act upon a remote signal from the TSO to change its Active Power output. <del>owned and/or operated by the same Generator, as a PPM or as part of a PPM.</del></p> <p><b>Energy Storage Unit (ESU):</b> A Generation Unit(s) using storage devices to generate and consume electricity as, or as part of, a PPM.</p> <p><b>Active Power Control Set-Point Ramp Rate:</b> The rate of increase or decrease of <b>Active Power Output</b> of a <b>PPM</b> in response to an <b>Active Power Dispatch Instruction</b> sent by the <b>TSO</b> via SCADA when the <b>PPM</b> is operating in an <b>Active Power</b> control mode. This ramp rate will be calculated by the <b>Generator</b> each time an <b>Active Power Dispatch Instruction</b> is sent by the <b>TSO</b> via SCADA based on the change in <b>Active Power</b> required and the <del>curtailment</del> time interval set point.</p> <p>The <b>Active Power Dispatch Instruction</b> shall be any <b>MW</b> value in the range 0 <b>MW</b> to <b>Registered Capacity</b> of the <b>PPM</b>. The <del>curtailment</del> time interval set point shall be any value in the range 1 to 30 minutes, as specified by the <b>TSO</b> via SCADA.</p> <p><b>Capacity Limited Ramp Rate:</b> The rate of increase or decrease of <b>Active Power</b> of an <b>ESPS</b> in response to reaching the <b>Capacity Limit</b>.</p> <p><b>Capacity Limit:</b> The point calculated by the <b>PPM</b> control system where there is just enough energy storage or generation capacity, calculated in MWh, for the <b>ESPS</b> to change the <b>Active Power</b> to zero MW at the <b>Capacity Limited Ramp Rate</b>.</p> <p><b>PPM Setting Schedule – Glossary of Terms</b></p> <table border="1"> <tr> <td><b>Available Active Power</b></td><td>The amount of <b>Active Power</b> that the <b>Controllable PPM</b> could produce based on current resource conditions. The <b>Available Active Power</b> shall only differ from the actual <b>Active Power</b> if the <b>Controllable PPM</b> has been curtailed, constrained or is operating in a restrictive <b>Frequency Response</b> mode.</td></tr> <tr> <td><b>Energy Storage Generator</b></td><td>As per <b>Grid Code</b> or <b>Distribution Code</b> as applicable</td></tr> <tr> <td><b>Energy Storage Power Station (or ESPS)</b></td><td>As per <b>Grid Code</b> or <b>Distribution Code</b> as applicable</td></tr> <tr> <td><b>Maximum Export Capacity</b></td><td>As per <b>Grid Code</b> or <b>Distribution Code</b> as applicable</td></tr> <tr> <td><b>Maximum Import Capacity</b></td><td>As per <b>Grid Code</b> or <b>Distribution Code</b> as applicable</td></tr> <tr> <td><b>Operating Range</b></td><td>The <b>Active Power</b> range over which an <b>ESPS</b> can operate, in <b>MW</b>, taking into account <b>MIC</b>, <b>MEC</b>, <b>User’s Plant</b> and <b>Registered Capacity</b>.</td></tr> </table>	<b>Available Active Power</b>	The amount of <b>Active Power</b> that the <b>Controllable PPM</b> could produce based on current resource conditions. The <b>Available Active Power</b> shall only differ from the actual <b>Active Power</b> if the <b>Controllable PPM</b> has been curtailed, constrained or is operating in a restrictive <b>Frequency Response</b> mode.	<b>Energy Storage Generator</b>	As per <b>Grid Code</b> or <b>Distribution Code</b> as applicable	<b>Energy Storage Power Station (or ESPS)</b>	As per <b>Grid Code</b> or <b>Distribution Code</b> as applicable	<b>Maximum Export Capacity</b>	As per <b>Grid Code</b> or <b>Distribution Code</b> as applicable	<b>Maximum Import Capacity</b>	As per <b>Grid Code</b> or <b>Distribution Code</b> as applicable	<b>Operating Range</b>	The <b>Active Power</b> range over which an <b>ESPS</b> can operate, in <b>MW</b> , taking into account <b>MIC</b> , <b>MEC</b> , <b>User’s Plant</b> and <b>Registered Capacity</b> .
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<b>Implication of Not Implementing the Modification:</b>	<p>The NI Grid Code would not take account of the technical capabilities and limitations of ESPS.</p> <p>There could be the possibility of a divergence of requirements for users connecting to the all-island system</p>
<b>Assessment</b>	<p><b>Overview</b></p> <p>The purpose of the modification proposal is to incorporate version 3 of SONI and EirGrid's Battery ESPS Grid Code Implementation Note into the Grid Code and to incorporate SONI Battery ESPS Compliance Test Procedures and SONI Signal List for Battery ESPS into the PPM Setting Schedule.</p> <p><b>Background</b></p> <p>Version 1 of the Battery ESPS Grid Code Implementation Note was first published in June 2019 and there was discussion of battery storage technology at the meeting of the SONI Grid Code Review Panel on October 26th, 2019. Industry feedback was collected and used to develop version 2 published in June 2020, and version 3 published in December 2021.</p> <p>Both the Compliance Test Procedures and the Signal List have been used to aid all new Battery connections for over 3 years. Both documents are published online on the SONI Grid Code web-site.</p> <p>An overview of this proposed modification was presented to the Joint Grid Code Review Panel (JGCRP) in June 2022 and the full modification proposal was presented at the November 2022 JGCRP including red-line and green-line versions of the impacted documents.</p> <p><b>Analysis &amp; Opinion</b></p> <p>The key definition of Energy Storage Power Station (ESPS), which was introduced as part of the Sections under Common Governance of the Grid Code, is amended to ensure that it only applies to Battery Storage Units.</p> <p>By taking an existing definition which is also part of a Controllable PPM when acting as a generator, the impact on the main body of the Grid Code of introducing the requirements of the Battery Implementation Note, is limited.</p> <p>The decision to update the PPM Setting Schedule, which is currently used for RfG generation, was taken even though Battery Storage is currently excluded from RfG. Non-RfG generation are using WFPS Setting Schedule. However, this latter schedule hasn't been updated since 2015 and is no longer used for new connections. It is also understood that storage will be included in a future update of RfG, therefore, this decision ensures the PPM Setting Schedule remains the up to date schedule for new connections. The compliance procedures and signal list for ESPS have been added in their own chapter/appendix to maintain the separation between RFG and non-RfG generation.</p> <p><b>Conclusion</b></p> <p>This proposed modification provides connected users and potential users with the requisite connection requirements under the robust governance of the Grid Code instead of an unregulated Battery Implementation Note, Compliance Procedures and Signal List.</p>

	<p>SONI Ltd., Castlereagh House, 12 Manse Road, Belfast, BT6 9RT</p> <p>Phone: +44 28 90 794336</p> <p>Email: <a href="mailto:gridcode@soni.ltd.uk">gridcode@soni.ltd.uk</a></p>
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