

**EMA Response to Feedback from Industry Participants on Consultation Paper
“Review of Policy on Generation with less than 1MW in Installed Capacity”**

No	Company	Feedback on Consultation Paper	EMA's Response
1	SP PowerGrid	<p>We note EMA's proposed policy change that the current simplified credit treatment for residential PV consumers would be extended to non-residential consumers with generation capacity of less than 1MW. Under this proposed change, we trust that EMA's intent is to apply the existing principle of 'regulated tariff less grid charges' for computation of credit payments to this group of consumers, comprising both contestable and non-contestable consumers. This means that the Grid charges will not be included in the computation of credit payments.</p> <p>Our reading on para 2.3 of EMA's consultation paper is that the aforesaid principle is not clearly stated. For greater clarity, we would request EMA to make clear that any compensation to be offered by the Retailers/SP Services to the contestable consumers concerned should exclude the Grid charges.</p>	<p>We note SPPG's comment and will clarify that the credit payment would exclude the grid charges.</p>
2	Cygnus Power	<p>It is clear that while the paper refers to 'any generation plant (including solar PV generation) ...' (item 2.1), the subject matter concerns solar generated energy. This strong emphasis on solar is understandable since it appears that there are not many alternatives and that use of solar power is been encouraged as a government policy.</p> <p>However it would also be important not to neglect or not to mention other technologies such as biomass combustion, biogas and wind, all of which have some presence in Singapore and without direct government grants or fundings. These technologies, like solar, are evolving, improving their source to energy conversion. These technologies are scalable and exportable to the region.</p>	<p>The simplified credit treatment will be extended to non-contestable consumers with any type of generation plant that has an installed capacity of less than 1MW.</p>

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3	Cygnus Power	<p>In the case of non-contestable consumers, as mentioned in 2.2, SP services should not just base on regulated tariff less grid charges. The grid charges should not be applied to non-contestable consumers so as to give a form of recognition to the efforts of individuals or small organizations that are trying to be green. The grid charges that would have been payable should be taken up by the Generation Licensees as their corporate social responsibility. The total amount of grid charges of non-contestable consumers is tiny compared to the generating capacities of the gencos. Even the energy lost in the waste steam stream of gencos would be much higher than the grid tariffs of non-contestable consumers</p> <p>Even the removal of grid tariffs may not be sufficient to encourage the development and investment in renewable or clean technologies as the cost of compliance must include much hardware and software, adding up to a further financial hurdle to overcome.</p> <p>The growing demand to install solar PV systems on large scale also depends on grants for solar installations. Without such grants, such investments would likely decrease.</p> <p>It would also be equitable that similar grants be made available for other alternative energy systems such as wind. The development and advancement of solar energy systems should not lead to lesser encouragement and acknowledgment of other energy generating alternatives.</p> <p>In conclusion, the proposal is just a small step towards developing energy alternatives. Such an evolutionary pace must be accelerated to all forms of energy production.</p>	<p>If consumers were to be paid for the energy they export at the regulated tariff without excluding grid charges, it would mean that these consumers would be paid for a service (i.e. grid service) they do not provide. This is not equitable.</p> <p>The Government does have various support schemes to promote renewable energy. For example, the Solar Capability Scheme (SCS) is available for the private sector to offset capital cost in installing solar technologies in new energy-efficient buildings. The Clean Energy Research Programme and Clean Energy Research and Test-bedding grants are available for research and test-bedding respectively.</p>
4	Seraya	<p>For the following paragraphs, export of electricity to the grid refers to export from generation facilities with installed capacity of less than 1 MW which are not registered with EMC.</p> <p>For MSSL customers, the electricity exported to the grid results in a reduction in the quantities of electricity deemed to be consumed by the consumers supplied by MSSL (both contestable and non-contestable, see section 4.8.2 of the Metering Code) as a whole. Therefore, there is a reduction in the quantity of electricity that has to be paid for by MSSL and so MSSL is able to pay its consumers who export electricity to the grid out of these savings. For contestable consumers, if they are with MSSL, the reduction in the amount paid by MSSL can be used to reduce their electricity bills to compensate for the electricity exported to the grid. The rate of "regulated tariff less grid charges" paid to residential consumers may actually be higher than MSSL's buying cost.</p>	<p>MSSL is revenue neutral and hence, any difference between the amount settled with EMC and that billed to consumers is tracked as over/under-recovery and subsequently returned to/ recovered from consumers at the next period. As such, MSSL does not get any savings due to the amount of electricity exported to the grid.</p> <p>SPS' IT system for non-contestable consumers billing has been modified recently and can support the extension of the simplified "credit treatment" to all non-contestable consumers (i.e. both residential</p>

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		<p>However, the use of “regulated tariff less grid charges” is administratively simple compared to alternatives and can be condoned provided the quantities receiving compensation are not large.</p> <p>For non-market participant consumers with generation facilities with installed capacity of less than 1 MW, there currently is “net load” treatment provided that the generation facilities are not registered with EMC (see section 6.1 of the Market Support Services Code). However, currently, for export of electricity to the grid, non-market participant consumers are not paid and there is no offset of consumption during periods when there is no export of electricity to the grid. The savings obtained by MSSL due to export of electricity to the grid by such consumers supplied by MSSL can be used to compensate such consumers for the electricity exported to the grid, at an appropriate rate.</p> <p>However, for retail customers, presently for electricity that is exported to the grid, they would not be paid but MSSL would have a reduction in the quantity of electricity that it has to pay for. The retailers, unlike MSSL, do not get any savings. If the retailers are to compensate customers for the electricity the customers export to the grid, it will be out of pocket unless the system is changed such that the benefits of such export of electricity accrue to the retailers rather than MSSL.</p> <p>A possibility would be for retailers to be compensated by MSSL for the export of electricity by the retailers' customers at the same rate at which MSSL would compensate contestable consumers supplied by MSSL for export of electricity to the grid. The retailers can then compensate such customers such as through a pass-through of the compensation received from MSSL or at a rate mutually agreed between retailers and their customers.</p>	<p>and non-residential consumers). As such, for non-contestable consumers with generation capacity of less than 1MW, the simplified credit treatment will be extended to them and they will be paid by SP Services at the rate of “regulated tariff less grid charges” for the amount of electricity exported to the grid.</p> <p>However, for contestable consumers, significant modifications would have to be made to the market rules as well as EMC's, and SPS' IT systems thereby incurring substantial costs in order to enable retailers and SPS to pay their consumers who export electricity to the grid. In light of the constraints around the settlement of payments to contestable consumers and the substantial costs involved, the extension of the simplified “credit treatment” to contestable consumers will be deferred while EMA continues exploring the options and cost involved to resolve these settlement issues.</p>
5	Seraya	<p>A possible rate of compensation that can be considered (especially if the quantities to be compensated become significant) would be the Market Energy Price of a particular identified node (such as a particular existing Market Network Node's Market Energy Price adjusted to remove the impact of transmission constraints) which can be identified for the purpose. Using USEP (even adjusting for HEUC) would tend to be too high because of losses. On average, USEP+HEUC is higher than the Market Energy Prices at Market Network Nodes. It could be hard to defend the use of “regulated tariff less grid charges” if the wholesale electricity market were to enter a period of low pool prices (less than “regulated tariff less grid charges”) and the quantities of export to the grid to be compensated are significant. One could argue that during periods of high pool prices, the exporters of electricity to the grid would be under-compensated but that might be dismissed.</p>	<p>The regulated tariff is revised quarterly to reflect the actual cost of electricity. Although it may be more accurate to compensate electricity export at the Market Energy Price or vesting price, using “regulated tariff less grid charges’ is reasonable at this point in time as the quantities to be compensated are currently small and unlikely to cause distortions to the market. However, the rate of compensation could be reviewed when the quantities to be compensated become significant.</p>

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6	Seraya	Given the statement "There is a growing demand by non-residential consumers to install solar PV systems and request for the simplified "credit treatment" to get paid for solar PV power exported to the grid without having to register with the electricity market.", it would appear that at least one of the reasons for the proposed changes is to encourage solar PV. If the encouragement of solar PV is the intention, then there should be consideration of restricting the scheme to only solar PV and perhaps other identified green sources of electricity. If the proposed changes apply to all generation facilities with installed capacity below 1 MW regardless of type of generation, they could conceivably attract "dirty" forms of generation which would offset the environmental benefits of incentivising green forms of generation such as solar PV.	The intent of the proposed changes is to provide more flexibility to consumers with generation facilities of less than 1MW but not to favour any specific technology. The Government does have various support schemes to promote renewable energy.
7	Seraya	All that said, PowerSeraya as a responsible stakeholder, in principle supports environmental initiatives provided that considerations of competition and power system reliability are sufficiently addressed. Given the expectation that adoption of the export of electricity from generation facilities with installed capacity below 1 MW would be on a small scale, PowerSeraya is supportive of EMA's proposed changes provided the above points raised are adequately addressed.	We note PowerSeraya's support of the proposed changes.
8	Phoenix Solar	<u>Definition of Capacity</u> The document does not specify clearly enough what "1MW" means. Considering the case of a PV system, it could mean 1MWp, which is the peak rated capacity of the PV modules. This differs from the MWac capacity commonly used in the power sector. Typically, the MWac refers to the rated inverter capacity. The rated inverter capacity is often lower than the rated module capacity for crystalline silicon modules, but often higher for thin film modules. It might be useful to refer to 1MWp or 1MWac, whichever is the lower figure. But either way, as explained in 2. and 3. below, we feel that the proposed 1MW cap is too conservative.	The simplified credit treatment will be extended to non-contestable consumers with any type of generation plant that has an installed capacity of less than 1MW. In the case of a solar PV system, its capacity shall be less than 1MWp. The capacity cap of 1MW is proposed on the consideration that generators with installed capacity of less than 1MW do not pose any technical or commercial threat to the system if they fail to operate.
9	Phoenix Solar	<u>Comparing capacity factors or duty cycles and potential to distort the grid</u> A 1MW fuel driven generator can have a duty cycle or capacity factor of anything up to 100%, ie generate up to 8'760MWh per year. A PV plant in Singapore more typically generates 1'300kWh/kWp, which means a 1MWp PV plant will generate 1'300MWh/year, or approx 15% capacity factor. The two are therefore not very comparable in terms of energy yield per unit of	The cap on the installed capacity is proposed on the basis that plants of less than 1MW would not pose any technical or commercial threat to the system if they fail to operate.

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		<p>capacity. Therefore if EMA is prepared to accept any sort of generator (as per footnote 2 in the document), it must consider that feed-in of up to 8'760MWh/year from a generator would not cause any technical or commercial threat (as per paragraph 3.2). In that case, it is more consistent to simply place a cap on the total MWh (say 10MWh) that any one generator can feed in to the grid under this scheme. This cap can be raised in future, depending on market developments and results from this first concession.</p> <p><u>Critical mass for commercial funding</u> An additional reason for supporting an energy cap of 10MWh instead of a rated capacity cap of 1MW is to encourage a viable commercial market.</p> <ul style="list-style-type: none"> i. Consider that on most commercial or industrial buildings, the available roof area restricts the total PV plant capacity to a size that will almost never export any electricity to the grid. Total PV energy production will be consumed on site. This renders the 1MW concession completely moot. ii. The new concession opens the interesting possibility of installing PV systems on large warehouse roofs. Such non-airconditioned buildings use much less energy than offices or factories, especially on weekends and public holidays. They might well end up exporting electricity to the grid. Similarly with systems designed for common areas on HDB estates. <p>But 1MW (approx SGD5m) is too small a system to justify the due diligence of a bank or other establishment preparing to finance a PV power plant. However, a 5-10MW PV system would justify the resources of the financing sector, which have a critical role to play in the commercialisation of PV generating capacity. Therefore we look forward to EMA considering a 10MWh/year energy cap (regardless of generator type), instead of a 1MW capacity cap.</p>	