

# Small-scale Embedded Generation

## Frequently asked questions

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## Application process

No.	FAQ	Answer
1	How long does an application take to get approval from Eskom?	<p>If all the required information and documentation are supplied timeously and required fees are paid, a quotation can be issued between 30 and 90 days.</p> <p>Click on this link for more information</p> <p><a href="https://www.eskom.co.za/CustomerCare/NewSupply/Pages/GeneratorConnect.aspx">https://www.eskom.co.za/CustomerCare/NewSupply/Pages/GeneratorConnect.aspx</a></p>
2	How long does it take for a connection?	<p>It depends on the scope of work. The connection time line will be indicated on the quotation.</p>
3	Why is it such a difficult and complicated process?	<p>Eskom has to make sure that all the technical, statutory and safety requirements are met.</p> <p>Click on this link for more information</p> <p><a href="https://www.eskom.co.za/CustomerCare/NewSupply/Pages/GeneratorConnect.aspx">https://www.eskom.co.za/CustomerCare/NewSupply/Pages/GeneratorConnect.aspx</a></p>
4	Can you do simultaneous applications for SSEG and a new supply?	<p>Each application will be evaluated based on its merits and will be quoted based on its individual requirements.</p> <p>Click on this link for more information</p> <p><a href="https://www.eskom.co.za/CustomerCare/NewSupply/Pages/GeneratorConnect.aspx">https://www.eskom.co.za/CustomerCare/NewSupply/Pages/GeneratorConnect.aspx</a></p>
5	How can I apply for an SSEG connection? Do we go through the call centre to make applications?	<p>Yes, various options exist. Options available include: the call centre, MyEskom Customer App, SMS, email, your customer executive, CS-Online. For detail go to Eskom's website.</p> <p>Click on this link for more information</p> <p><a href="https://www.eskom.co.za/CustomerCare/NewSupply/Pages/GeneratorConnect.aspx">https://www.eskom.co.za/CustomerCare/NewSupply/Pages/GeneratorConnect.aspx</a></p>

6	How much does it cost to get connected?	Each connection has different technical requirements and therefore different cost implications. Click on this link for more information <a href="https://www.eskom.co.za/CustomerCare/TariffsAndCharges/Pages/Pricing_Related_Information_For_Generators.aspx">https://www.eskom.co.za/CustomerCare/TariffsAndCharges/Pages/Pricing_Related_Information_For_Generators.aspx</a>
7	Do all SSEG installations have to be registered with NERSA, and when should this be done if necessary?	For more information consult NERSA's website ( <a href="http://www.NERSA.org.za">www.NERSA.org.za</a> )
8	What is required for customers who want to be completely off-grid?	Customers wanting to be completely off the grid should apply for termination of their supply as per the conditions of their contract.
9	Can a solar system can be installed without having to go through the whole process?	Yes, but this applies only to stand-alone systems

## Technical rules

No.	FAQ	Answer
1	Why does the supply voltage change if the project is more than 350kW?	This is the maximum capacity allowed for a 500kVA transformer, which is the biggest Eskom LV transformer for new supplies. For generators greater than 350kW, the customer should own the transformer so that they can manage the size of the transformer needed.
2	Why is there a 350kW limit, if 75% of 500kVA is 375kW and not 350kW?	<ul style="list-style-type: none"> <li>▪ The 350kW limit is applied in the application of Standard charges and in compliance to the Simple Connection Criteria as per NRS-0970-2-3</li> <li>▪ Any application on MV or &gt;350kW on LV, will be quoted on actual costing</li> <li>▪ The 350kW limit is as per NRS 097 -2 -3. It was determined that this is the maximum safe capacity allowed for a 500kVA transformer.</li> </ul>
3	Is Eskom still requiring an MV re-closer on sites that have an MV supply or is the Dead Grid Safety Lock (DGSL) sufficient on the LV side of the embedded generator?	For all overhead line networks where there is a bulk supply to the customer at MV, Eskom will require the installation of a re-closer if there is not one installed already.
4	Can an Eskom pre-paid customer meter connect to a Solar PV system and feed back to the network?	No, the customer must be on a TOU tariff with an appropriate meter.
5	Is there a limit to the number of connected SSEGs in terms of line capacity?	Yes, the total generation capacity supplied by all SSEGs on the feeder should be less than 15% of the MV feeder's peak load.
6	Is permission required from Eskom for installation of a generator?	Yes, all generator installations that are grid tied to the Eskom network need permission from Eskom before a grid tie can be made.
7	What happens when there is a grid-tied connection without Eskom approval?	Any grid-tied connection without Eskom permission is deemed unauthorized and Eskom will require the SSEG to be disconnected and a tamper fee maybe issued and lost revenue recovered. Customers are required to apply to Eskom to be grid tied.

8	What are the technical rules for connection of an SSEG to the grid?	<p>The following are broad-based principles:</p> <ul style="list-style-type: none"> <li>• The generator has to be within the required size limits based on the supply point provided by Eskom. The metering should be able to measure the consumed energy and any energy that is exported into the grid</li> <li>• The installation will have to be tested and certified by a competent person who is registered as a professional for these types of installations</li> <li>• The equipment used should be tested against specific national guidelines as contained in the NRS 097 -2 -1 document</li> </ul> <p>The following are the actual standards that are applicable:</p> <ul style="list-style-type: none"> <li>• NRS 097-2-1 GRID INTERCONNECTION OF EMBEDDED GENERATION Part 2: Small-scale embedded generation Section 1: Utility interface</li> <li>• NRS 097-2-3 GRID INTERCONNECTION OF EMBEDDED GENERATION Part 2: Small-scale embedded generation Section 2: Simplified utility connection criteria for low-voltage connected generators <ul style="list-style-type: none"> <li>▪ South African Distribution Code.</li> <li>▪ SANS 10142-1 &amp; SANS 10142-1-2</li> <li>▪ Occupational Health and Safety Act, (Act 85 of 1993) and requirement for a COC</li> <li>▪ Operating Guideline for LV networks with Embedded Generation (Unique ID: 240-81732810) and The Dead-Grid Safety lock specification and minimum safety requirements for LV connected PV Embedded Generators (Unique ID: 240-126260252).</li> </ul> </li> </ul> <p>Information on these standards can be obtained by registering on the NRS website: <a href="https://scot.eskom.co.za">https://scot.eskom.co.za</a> and following these steps:</p> <ol style="list-style-type: none"> <li>1. Click on “Login” in the right-hand corner, and a login field will appear.</li> <li>2. Click on “New user” and fill in your details as completely as possible.</li> <li>3. Click on “Submit”</li> </ol>
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## Agreements with Eskom

No.	FAQ	Answer
1	Does Eskom give credit for energy put into the grid?	If your supply has been legally connected and you are on a generator tariff, then Eskom will give credits based on the offset rate for the energy exported into the grid.
2	Can credits from the generator tariff be used to offset the energy used in other accounts?	<p>Yes. To do this the points of delivery (PODs) / premises have to be consolidated into one account. The rules for allowing consolidation are:</p> <ul style="list-style-type: none"> <li>- Only points of delivery (PODs) that are on the same feeder can be consolidated into one account.</li> <li>- The owner of the account must be the same person or company.</li> <li>- All the PODs must be on a time-of-use tariff.</li> <li>-</li> </ul> <p>For more information refer to:  <a href="https://www.eskom.co.za/CustomerCare/TariffsAndCharges/Pages/Pricing_Related_Information_For_Generators.aspx">https://www.eskom.co.za/CustomerCare/TariffsAndCharges/Pages/Pricing_Related_Information_For_Generators.aspx</a>.</p> <p>For PODs that are not on the same feeder, a wheeling agreement can be used, but the POD has to be connected on medium voltage (MV) or high voltage (HV) because wheeling is not allowed on low-voltage (LV) networks. Eskom is also evaluating limiting the number of PODs linked to an account, due to the increasing administration burden.</p>
3	Can a small-scale embedded generator (SSEG) be installed without an Eskom account?	<p>To be grid-tied, the generator needs to belong to an existing Eskom customer.</p> <ul style="list-style-type: none"> <li>• Whether the generator is intending to export onto the grid, or not, Eskom will still need to ensure that the connection is legal (registration, grid code compliance and adherence to technical standards); that the tariff is a time-of-use (TOU) tariff option and appropriate meters are installed.</li> <li>• If non-adherence to the terms and conditions is evident, corrective action is taken (in the form of remedial action i.e. Eskom will require the SSEG to be disconnected and a tamper fee maybe issued and lost revenue recovered).</li> </ul>

4	Is there a discount / refund on the monthly line fees/ transformer charges if Eskom cannot supply?	<ul style="list-style-type: none"> <li>No, Eskom does not guarantee uninterrupted supply.</li> </ul>
5	By using a SSEG at the workshop, can the energy be "wheeled" or consolidated with a pump load at a different point of supply (POS)?	Yes, but wheeling is only allowed for accounts with an MV supply, – terms and conditions (T&Cs) apply. Refer to question 2.
6	Do authorized grid-tied customers require permission to export their excess generated electricity onto the grid?	Yes, Authorised customers have various export options, but permission is required.
7	Is there special metering for grid-tied generators?	Yes, a bi-directional meter that measures energy on a time-of-use basis is required and is installed by Eskom.
8	What agreements are needed with Eskom for a legal supply?	<p>Eskom will require the customer to have the following:</p> <ul style="list-style-type: none"> <li>The latest Electricity Supply Agreement (ESA)</li> <li>A NERSA registration letter for supplies greater than 100kW</li> <li>A connection and use of system agreement (also called a supplementary agreement to the ESA)</li> <li>An amendment agreement, if needed, for offset or banking of energy.</li> </ul> <p>Click on this link for more information</p> <p><a href="https://www.eskom.co.za/CustomerCare/NewSupply/Pages/GeneratorConnect.aspx">https://www.eskom.co.za/CustomerCare/NewSupply/Pages/GeneratorConnect.aspx</a></p>

## Cost considerations

No.	FAQ	Answer
1	Because SSEG/IPP is savings driven, will Eskom consider a reduction in deposits when tariff conversions and upgrades are required; and does this also apply to accounts that will be consolidated?	Each application will be assessed on its own merit on a case by case basis.
2	If the customer provides a model showing a percentage saving, will Eskom consider the percentage reduction as a deposit?	This information will assist in the assessment of the merit of the application which is done on a case by case basis.
3	Are there incentives in place to encourage SSEGs?	There are no Eskom incentives but there are however benefits by using the grid as a battery. These are supported with tariff options for the surplus energy exported into the grid.
4	Are there other incentives in place to encourage SSEG because it costs a significant amount to connect, aside from the capital cost of equipment?	Eskom is offering no financial incentives.
5	Are there financial savings if you install self-generation?	Each customer will need to assess his/her own return on investment.



## Safety

No.	FAQ	Answer
1	Why is Eskom so worried about people just connecting to the grid - is it not helping Eskom?	Grid connected machines change the power flow on the Eskom network. If the operators do not know the existence of the generators, this poses a safety risk even with a carefully controlled operations process. The safety requirements require that Eskom gives permission for the SSEG to be grid tied.
2	Where should batteries be stored?	Please consult with your supplier.

## Tariffs

No.	FAQ	Answer
1	Does Eskom pay for energy fed back into the grid?	Eskom does not pay for the energy, however customers will receive credit on their bill for the electricity exported onto the grid under the Gen-offset tariff. This is done per time-of-use (TOU) period and is limited to the energy consumed in a month. There is an option for customers with SSEG up to 1MW to roll over the excess energy onto the next month under the banking policy, subject to conditions in the policy. Refer to the presentation on the website for more information.  Refer to this link: <a href="https://www.eskom.co.za/CustomerCare/TariffsAndCharges/Pages/Pricing_Related_Information_For_Generators.aspx">https://www.eskom.co.za/CustomerCare/TariffsAndCharges/Pages/Pricing_Related_Information_For_Generators.aspx</a>
2	Can electricity generated from the generator be used at another site?	There are options for either wheeling of exported energy or consolidation of PODs (points of delivery), subject to all prevailing policy, legal and regulatory requirements being adhered to. Refer to the presentation on the website for more information: <a href="https://www.eskom.co.za/CustomerCare/TariffsAndCharges/Pages/Pricing_Related_Information_For_Generators.aspx">https://www.eskom.co.za/CustomerCare/TariffsAndCharges/Pages/Pricing_Related_Information_For_Generators.aspx</a>

3	Are there additional charges for non-exporting?	<p>There are no additional administration charges for non-exporting customers other than the standard connection charges to be grid tied and conversion to a TOU tariff.</p> <p>Refer to this link:  <a href="https://www.eskom.co.za/CustomerCare/NewSupply/Pages/GeneratorConnect.aspx">https://www.eskom.co.za/CustomerCare/NewSupply/Pages/GeneratorConnect.aspx</a></p>
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## General

No.	FAQ	Answer
1	What is the cost of wheeling?	<p>A generator wheeling on the Eskom network will pay applicable tariff charges (network charges, administration charges, etc.) as stipulated in the schedule of standard charges (or Tariff book) available on the Eskom website.</p> <p>Refer to this link:  <a href="https://www.eskom.co.za/CustomerCare/TariffsAndCharges/Pages/Tariffs_And_Charges.aspx">https://www.eskom.co.za/CustomerCare/TariffsAndCharges/Pages/Tariffs_And_Charges.aspx</a></p>
2	Does Eskom sell solar systems?	Not currently
3	Can a bigger solar system be built, considering the current Eskom NMD/MEC rules, to charge my batteries?	<p>It depends on the network connection.</p> <p>Under the current rules:</p> <ul style="list-style-type: none"> <li>• For MV each application will be assessed individually.</li> <li>• The total generation that can be installed is based on the notified maximum demand (NMD). The total generation is always less than 75% of NMD, with an upper limit of 350kW for LV Eskom supplies.</li> </ul> <p>Note: The application to Eskom must include all grid-tied generation (total generation = solar system inclusive of batteries).</p>
4	Is there a minimum size for 'grid-tied systems?	There is no minimum size

5	Do the technical regulations and application requirements apply to biomass energy or mini hydro on a farm?	<p>Yes. The types of SSEG that Eskom allow applications for are:</p> <ul style="list-style-type: none"> <li>• Wind generation</li> <li>• Photovoltaic generation (PV)</li> <li>• Biomass generation</li> <li>• Biogas generation</li> <li>• Hydro generation</li> <li>• Diesel generation</li> <li>• Battery generation</li> <li>• Fuel cells</li> <li>• Tidal and geo-thermal generation</li> </ul>
6	Will SSEG installations over time reduce the pressure on the grid to avoid loadshedding altogether?	Yes, it will reduce pressure on the grid when volumes of SSEG increase, but in order to stop load shedding there will have to be many combinations of generation solutions.
7	Are there systems that can switch on or off machinery automatically to best utilize PV generation, depending on supply and demand?	The control of machinery is possible. Controls such as programmable logic controller (PLC) controls can achieve this. But you would have to contact suppliers of this type of equipment.
8	What is a generator and how does it work?	A generator is a machine that converts energy to electricity. The source of the energy could come from a variety of fuels or energy sources like diesel, wind, solar irradiance from the sun, stored or moving water systems.
9	What does customer-owned generation mean and how does this relate to non-Eskom owned generation?	There are generators that are owned, operated and maintained by property owners or tenants and which supply some or all of their electrical power requirements. Non-Eskom owned generation refers to all generation that is owned by these property owners or tenants, including those within municipal areas.

10	What is small-scale embedded generation (SSEG)?	<p>This is a category of customer-owned generation that is less than 1MW (1000kW) in electrical power size and is connected to the Eskom network.</p> <p>For more information click on this link</p> <p><a href="https://www.eskom.co.za/sites/eas/Pages/Small-scale-embedded-generation.aspx">https://www.eskom.co.za/sites/eas/Pages/Small-scale-embedded-generation.aspx</a></p>
11	Why would a person install his own power generation?	<p>The reasons are diverse, ranging from financial benefits in terms of paying less to the supply authority, to operational benefits such as avoiding loadshedding and loss of supply from the grid due to planned and unplanned maintenance on the supply authority's grid.</p>
12	Are the rules and regulations the same as Eskom's if the customer is supplied by a municipality?	<p>Municipalities have their own rules for connection and associated costs. Please consult with your municipality if your electricity is supplied by them.</p>
13	What is grid tied?	<p>A grid-tied generator is a generator that is operating in parallel to the Eskom network i.e. it is synchronised to the Eskom network. A grid-tied generator needs the Eskom network to be on, in order to work. Eskom does not allow the connection of any SSEGs that can function in a hybrid mode where it can operate both parallel and non-parallel with the Eskom grid by means of electronic controls.</p>
14	How is a stand-alone generator different from a grid-tied generator?	<p>A stand-alone generator works when the Eskom network is off, or supplies a section of the customer plant not being supplied by Eskom.</p>
15	What is the difference between IPP and SSEG?	<p>An Independent Power Producer (IPP) is a generator greater than 1MW and is handled by Grid Access. An SSEG is a supply less than 1 MW and is handled by Eskom Distribution - Customer Service.</p>

16	Why is no banking allowed for supplies larger than 1 MW?	<p>Due to the risk of excess generation on the networks for generators above 1MW, a blanket approval for banking is not allowed in the Banking of Energy policy. This will need to be approved on a case-by-case basis by the Eskom Customer Service Pricing Committee. If allowed, it will only be limited to infrequent and inadvertent over-generation i.e. not every month or more than 2 consecutive months. The customer should demonstrate that it would generally absorb the generated energy itself or deliver to another load. If any of the above conditions are not met, all energy exported in a billing month will be forfeited.</p> <p>Refer to this link:  <a href="https://www.eskom.co.za/CustomerCare/TariffsAndCharges/Pages/Pricing_Related_Information_For_Generators.aspx">https://www.eskom.co.za/CustomerCare/TariffsAndCharges/Pages/Pricing_Related_Information_For_Generators.aspx</a></p>
17	Are there Eskom monthly charges/costs for own electricity generation supply?	<p>Eskom charges for the use of the system related to exported energy, plus if any wheeling, offset or banking is done, additional administration charges are charged.</p> <p>Refer to this link  <a href="https://www.eskom.co.za/CustomerCare/NewSupply/Pages/GeneratorConnect.aspx">https://www.eskom.co.za/CustomerCare/NewSupply/Pages/GeneratorConnect.aspx</a></p>
18	What is the Offset energy rate per kWh - is it like for like?	<p>Yes, currently the offset rate is the same as the energy consumption rate in kWh. This might change in the future, and the updated rates would be applicable upon NERSA's approval of the new rates.</p>
19	Does the offset accumulation from SSEG include all kWh costs?	<p>No, the credits on the offset agreement are only on the energy (kWh) per TOU and do not reduce the other tariff rates.</p> <p>Refer to this link  <a href="https://www.eskom.co.za/CustomerCare/NewSupply/Pages/GeneratorConnect.aspx">https://www.eskom.co.za/CustomerCare/NewSupply/Pages/GeneratorConnect.aspx</a></p>

20	<p>How can energy use be optimized if usage is between 5am and 10am, and 4pm to 11pm, for example in a dairy?</p>	<div> </div> <p>The current TOU periods are shown above - if you can manage load according to these time periods and cut consumption during the morning and evening peaks you will save. There are various energy efficient technologies that can be installed to reduce or stop energy consumption. The production processes would have to be evaluated to determine energy efficient technology options.</p> <p>Refer to this link  <a href="https://www.eskom.co.za/CustomerCare/NewSupply/Pages/GeneratorConnect.aspx">https://www.eskom.co.za/CustomerCare/NewSupply/Pages/GeneratorConnect.aspx</a></p>
21	<p>Is it possible to "bank" off the Land Rate tariff?</p>	<p>No, banking of energy is <b>only</b> allowed for customers on a Time-Of-Use tariff.</p> <p>Refer to this link  <a href="https://www.eskom.co.za/CustomerCare/NewSupply/Pages/GeneratorConnect.aspx">https://www.eskom.co.za/CustomerCare/NewSupply/Pages/GeneratorConnect.aspx</a></p>
22	<p>How are customers compensated for their excess generated energy?</p>	<p>Customers will receive credit on their bill for the energy exported onto the grid under the Gen-offset tariff. This is done per time-of-use (TOU) period. To be credited, you will be required to have a legal connection and sign an amendment agreement to the supply agreement.</p> <p>Refer to this link  <a href="https://www.eskom.co.za/CustomerCare/TariffsAndCharges/Pages/Pricing_Related_Information_For_Generators.aspx">https://www.eskom.co.za/CustomerCare/TariffsAndCharges/Pages/Pricing_Related_Information_For_Generators.aspx</a></p>

23	How is the excess generated energy determined?	<p>Energy generated by the customer's SSEG and which is not used by the customer, will flow out through the meter into the Eskom grid. Specially programmed bi-directional meters can measure this excess energy flowing out of the customer's premises through the meter.</p> <p>Refer to this link <a href="https://www.eskom.co.za/CustomerCare/NewSupply/Pages/GeneratorConnect.aspx">https://www.eskom.co.za/CustomerCare/NewSupply/Pages/GeneratorConnect.aspx</a></p>
24	What are the tariff concepts of banking, offset and self-consumption?	<p><b>Self-consumption</b> – There is no energy that a customer is exporting into the grid i.e. all the energy that is generated by the SSEG is used by the customer.</p> <p><b>Offset</b> – The customer exports electricity into the grid and a credit is given to the customer. The customer cannot offset more than the net energy that he has used per time-of-use category (peak, standard, off-peak) for that month.</p> <p><b>Banking</b> – This is the surplus exported energy that is carried over to offset the next month's consumption per TOU period. (Applicable for Eskom's Financial year - April to March)</p> <p>All the above options are considered to be grid tied and need to follow the process and adhere to the technical requirements.</p> <p>Refer to this link <a href="https://www.eskom.co.za/CustomerCare/NewSupply/Pages/GeneratorConnect.aspx">https://www.eskom.co.za/CustomerCare/NewSupply/Pages/GeneratorConnect.aspx</a></p>
25	Will Eskom pay for the meter replacement i.e. to a TOU meter if energy is exported?	<p>Only if the customer is already on a TOU tariff.</p>
26	Is it possible to consolidate SSEGs and sell back to Eskom?	<p>Currently Eskom does not consolidate generator points.</p>