LOAD SHEDDING SOLUTIONS GUIDE

SA Home Loans

INTRODUCTION

We have been gearing up for marketing campaigns to further lending and switch clients to support their access to funding for solar solutions to beat load-shedding. This guide hopes to demystify the world of solar/load shedding solutions for you and make you high level experts, that are able to share info with your clients and assist them to understand what they need, finance wise, to achieve their goals of beating load shedding.

In addition we have built a vendor panel of suppliers and installers for all our clients solar needs. This vendor panel is made up of companies we as SAHL have had a good look at to make sure that they can deliver a quality product and amazing service. This vendor panel is comprised of recommended vendors, but obviously we cannot guarantee their work or the material quality.

What we are not going to focus on here is the loan itself, what type of further lending or cash out, or quick cash etc – you are all already specialists on that.

Your initial discussion when a client indicates they are looking for solar finance:

1. It would be important to understand if the client already knows what they want, this will save you time, but also give you the ability to build credibility with your client.
2. If they know what they want, that's great, just engage with them on what they are going to be installing and whether the funds they are requesting likely to meet their need.
3. If they are looking for assistance, the following info will assist you, if you spend some time reading and understanding it – you will appear to them a wizard on all things solar.

HERE WE GO

First off, you get load shedding solutions typically made up of batteries and inverters or generators, which can be mobile or fixed. These solutions are designed to purely supply power in the event of load shedding or a power outage. There is no generation of additional power or anything like that. It is not designed to reduce your electricity bill, it is simply backup power.

INVERTERS AND BATTERIES

Let's talk about the batteries first. This is the biggest part of the cost of a load shedding solution. As with any batteries, you get different sizes and types. The size of the battery determines how many appliances, lights or plug points it can give power to and for how long. Battery sizes are given in kilowatt hours or KwH. The KwH of a battery determines what it can power and for how long. Then you get the type of battery, these are typically lead acid, gel, lithium ion, LiFePO4 (Lithium iron phosphate) batteries. A battery has cycles, a cycle is when a battery is discharged and then recharged – that is one cycle. The type of battery determines how many cycles the battery can go through. The type of battery also determines the level to which a battery can be discharged and then recharged. These differences exist purely as a result of the material the battery is manufactured from to retain a charge.

LEAD ACID	LEAST NUMBER OF CYCLES	LOWEST COST
Gel	↓	↓
Lithium ion		
LiFePO4	Most number of cycles	Highest cost (but best value)

SA Home Loans

Now, the inverter. As you know, our houses all run on power delivered to us from the grid. This is AC power or alternating current. (Just accept that, or we have to go into a science lesson😊). The power that batteries store is DC or direct current. The job of the inverter is thus two-fold.

1. The power coming in from the grid (AC) is inverted into DC current to charge the batteries.
2. The power the batteries deliver to the house in the event of a power outage is DC, thus the inverter changes it to AC for use.

Inverters also come in different sizes, this is because we all have different needs. Inverter sizes can range from 500watts all the way up to 20kw. The size of your inverter, like the battery sizes, determines how much power can be delivered.

For example, let's assume that during load shedding you want to run the following:

10 led lights at 5w each	50w
Fridge at 200w	200w
Freezer at 200w	200w
2 TV's at 150w	300w
DSTV decoder 45w	45w
Wifi 30w	30w
5 Outside lights at 12w each	60w
3 ceiling fans at 150w	450w
Total power required	**1335w or 1.4kw**

So, the total power you need to have available consistently is 1.4kw, but there is one more thing to consider - anything that has a motor in it has a peak power requirement. What this means is that, to start up it requires more power than it does to run consistently. So as a result, it is always wise to double the power you require to cater for peak loads. Doubling will always guarantee that your power needs never exceed the capacity of your inverter. In this example, the fridge, freezer and fans all have motors, so your peak load will be quite high.

The total power you require is 2.8kw. You will therefore need a 3kw inverter for your requirements. AND, what batteries would you require to go with that? Well that's easy. You need 1.4kw of power for 2 hours right – assuming the load shedding lasts for 2 hours, so you need 2,8kwh of power.

1,4kw x 2 hours = 2,8kwh of power.

GENERATORS

Generators come in different sizes and generate different levels of power. The principles of the section above apply. The only difference is a generator generates AC power, so no inverter is needed. Typically a generator should be wired into the home by a professional. It involves having a change over switch on the distribution board, which either allows power to be delivered to the house from the grid or from the generator. These change overs can be manual or automatic, obviously the more automated the more expensive. An electrician would need to allocate specific circuits of the house to the load carried by the generator. This should obviously never exceed the capacity of the generator, taking into account peak power.

Generators need re-fuelling, they can be noisy and if manually operated can become cumbersome for load shedding periods late at night or early in the morning.

SUMMARY ON LOAD SHEDDING SOLUTIONS

The above solutions offer power backup in the event of load shedding or a power outage. They are limited to the specifications of the system (examples will be shared later). This basically means they will be able to run a specific number of appliances for a specific period. It is also important to remember that batteries have to recharge before they can be used again. This is important, especially as the stages of load shedding ramp up, and there are multiple periods in a day. Typically, this is where the benefit of the LiFePO4 batteries comes in as they have the ability to charge back up to maximum capacity far faster than lead acid batteries. This is a really important factor to remember.

But…..there are even better solutions that we will talk about now. Remember we said the batteries made up the main cost? Adding solar panels to your inverter and batteries is one of the smaller costs, but can create some significant benefit.

Solutions for load shedding that include power generation and electricity savings

Given the relatively small additional costs for adding solar panels onto your installation and the huge benefit they add, why not consider it?

1. Adding solar panels means that during sunlight hours, you generate your own power.
2. The power you generate can be used to power your home.
3. The power you generate can be used to make sure your batteries are charged for night time.
4. The power you generate and use means you use less power from the grid.
5. Using less power from the grid means you save money.
6. If you generate more power than you can use, you could also feed that power back into the grid (*this is only allowed in certain areas and specific conditions apply).
7. AND it is a renewable power source – good for the environment, so you would be doing your bit for your descendants future😊

Now the technical bit. In the example above, we needed a 3kw inverter for the house. It is important during the solar installation, and when selecting the inverter, that the solar panels (like the generator) become a second source of power to the home (distribution board) and not only limited to the appliances you wish to run during load shedding through your inverter and batteries.

This will also assist in determining how may panels you need to install to generate the power you need. Typically in an average size home, generating up to 5kw of power through the solar panels would be sufficient. This would run most of a typical homes requirements during the day, and any additional power requirements could be catered for from the grid – but this all depends on what the client is looking for. They can generate as much as they want, but it will increase costs.

Next thing to consider with solar panels – how much roof space do you have and is the orientation of the roof suitable to a solar installation?

South Africa is one of the greatest places on the planet for solar power – that's a fact. The closer you live to the west coast of the country, the better your solar production will be. The east coast is not as good as the west coast, but still very good compared to places like Europe. Germany as an example, allows for 5 times less power production than the east coast of South Africa.

Orientation – the best facing roof space is north. East and west can also be used, but are not as effective. A south facing roof is the lowest producing (probably not worth the cost).

Roof space – panels are large but come in different configurations. You can get from 300w – 600w panels (bigger for commercial). The higher the wattage, the bigger the panel, so it is important that the configuration is correct. The solar installer will cover all of that with clients.

Once your solar installation, with inverter and batteries is done, the installer would then be able to configure how the system operates. This is typically in any of the following configurations:

Power usage is solar first	Power usage is solar first
a. If no solar available move to battery i. If no battery move to grid	a. If no solar available move to grid i. If no grid move to battery

The difference between the two configurations above. Number one would typically be for bigger (more expensive) installations where there was a move to have lower reliance on the grid. The second option is a more middle of the road approach that says during daytime, I will use solar, at night I will use the grid, and in the event of load shedding at night I have battery backup.

So, now that you are high level experts, below are the different typical package options that are available in the solar space. Let's see if it makes sense to you in terms of what is being offered, and would you be able to figure what you would need to run your home, given the information shared?

BACK-UP LOAD SHEDDING SOLUTION		
Inverter and Batteries	Price Range	
3kw	R70 000	R100 000
5kw	R80 000	R110 000
8kw	R110 000	R160 000

SOLAR SOLUTION			
Inverter and Batteries	Panels	Price Range	
3kw	5 to 7	R120 000	R130 000
5kw	10 to 12	R140 000	R160 000
8kw	18 to 20	R210 000	R260 000
16kw	34 to 36	R405 000	R450 000

NAME BRANDS IN THE SOLAR SPACE

These are a list of brands that offer good quality products. In most cases your clients would refer to one of these brands. If they mention these names, you can assure it is a quality product.

SOLAR PANELS	INVERTERS		BATTERIES		WATER TANKS
Canadian solar	Deye	Victron	Freedom Won	Victron energy	JoJo
JA Solar	Susynk	Solis	Pylontech	Kodak	Eco tanks
Cinco panel	Growatt	Must	Sunsynk	Giter	
Art Solar	Kodak	Fox ESS	Hubble	Fox ESS	
Seraphim	Mecer	Blue Mountain Energy	Revov		
	Axpert				

SA Home Loans