



When days are dark...

Load shedding has become a reality in South Africa and will continue to haunt us for at least another few years. Nick Dall investigates the options to keep things running in your house and business.

Eskom has proven that South Africans from all walks of life can agree on something: forget rugby rivalries and braai-wood preferences – we all despise load shedding. But it's here to stay, so we're going to have to learn to live with it.

How much are you prepared to spend to turn your back on Eskom?

The first step is to rate your hate on a scale of 1 to 10. Here's an example: I hate the tiles in my bathroom, so much so I very nearly paid someone to replace them with something more to my liking. But the more I thought about the money and the noise and the dust, and builders traipsing through my bedroom for weeks on end, the more I realised hate is a relative term and maybe I could live with them. For another six months. Max.

If load shedding is affecting your ability to make a living, you definitely have to take drastic steps. However, if it's just a matter of missing the last 10 minutes of the rugby, perhaps you can handle finishing your beer in the dark and frantically refreshing the SuperSport app on your phone. Or perhaps you can't.

First, some science

I dislike number crunching as much as anyone else, but before you go shopping to solve your power problems you do need a basic understanding of what to look for. When you've decided to spend money on a load-shedding solution, bear two things in mind: **output** (how much you can power) and **capacity** (how long you can power it for). Provided you have enough fuel, a generator has unlimited capacity,

but anything that uses a battery will only work for so long. This period depends on the size of the battery and how much you're trying to power: the bigger the load the bigger the battery (or battery bank) required.

No matter how many batteries or fuel you have, each battery pack, generator and uninterruptible power supply (UPS) has a maximum output. Many devices list output in terms of VA (volt-ampere) or KVA (kilovolt-ampere), but I'd recommend checking the small print to find the output in watts (at 220V). Then look at the labels on your household appliances to see how many watts they use and work out what kind of output you would need. An LED globe is around 10W; and a TV, DStv decoder and laptop between 50W and 100W. Kettles, heaters and hairdryers are a lot more power-hungry.



Reduce before you produce

A piece of advice that has stuck with me is that of Paul Manning (left) and Jason Pourmara of Northface Solar in Cape Town: "There's no point in coming up with plans to provide emergency electricity until you've done everything you can to reduce your consumption," says Paul. "Switch to a gas hob, change all your bulbs to LED, install a solar geyser, get an energy-efficient fridge with inverter technology, and rely on a wood fire for heat in winter."

"These steps will save you money on a day-to-day basis," Jason says, "but they'll also mean that when you decide to implement a load-shedding solution you'll be able to get away with a much smaller, cheaper unit." Not to mention the fact that if everyone took these steps there might be no need for load shedding at all.

Simply installing a solar geyser reduces consumption by 30%, and Eskom insists its shortfall is only 10%. (*Math, we'd say, probably isn't Eskom's strong point. – Eds*)

If you want a long-term solution – to supply problems as well as the inevitable price hikes – you could install photovoltaic (PV) panels on your roof, but these would have to be paired with a fairly expensive battery bank to be of any use during load shedding, especially at night. Northface Solar specialises in the installation of these. For a medium-sized house, a system (with batteries) will set you back at least R200 000. northfacesolar.co.za

If load shedding is your only concern, PV is definitely not the way to go. Here are a few short-term solutions:

GET PHILOSOPHICAL

I've heard about families who see load shedding as an opportunity to refocus their attentions on the important things in life. They take the chance to go on moonlit walks, play board games by candlelight and engage in real human interactions. This is all very well if your kids are fed, your conference call is wrapped up and your perm has set, but I find it hard to believe that these families are *always* able to look on the "bright" side.

PRETEND YOU'RE CAMPING



If you're a camper, you probably cope with load shedding better than the girl next door who prefers five-star. Many temporary solutions can be found in outdoor shops or the camping section of large retailers.



Leisure Quip 80 lumen Headlamp

I recently did a feature on headlamps for our sister publication *go!* and found this to be the best-value lamp on the market by far. It doesn't look like much, but it uses a best-in-the-business Cree LED to provide 80 lumens of light. It's comfortable to wear and won't break the bank.

R120 at large retailers like Makro, Game and Pick n Pay ☎ 011 822 4150

Blue Sea Dual USB Charger Socket

You could invest in a tiny external battery charger for your smartphone, or you could just get this USB adapter for the cigarette lighter in your car. I have one in mine and it works even when the car is off. This particular model has two USB ports: great for preserving domestic bliss. R350 at bushpower.co.za



Cadac Auto Adventure Stove Set

If you don't have a gas hob, just get yourself one of these. It's large enough to boil a kettle or scramble some eggs on – that seven-hour pot roast may have to wait, though. Refills (R30) are easy to come by. R200 at takealot.com



Zartek Worklight

This industrial-looking jobbie may not be romantic but it'll provide 900 lumens (enough light for an entire room) for four hours. If you use the dimmer function it will last a lot longer. It's eminently portable and can charge from the mains or the cigarette lighter of your car. Don't buy one; buy three. R1 000 at leading outdoor stores zartek.co.za >



3 PORTABLE BATTERY PACKS

Take power from the sun, the wind or Eskom, and save it for future use. Small, portable and relatively cheap. Here are two options:

Ecoboxx 160 DC and 160 DC+

This all-in-one kit is a little different to anything else we tested. Firstly, it produces DC power (via 5V USB ports and a 12V cigarette-lighter-style socket) and it comes standard with two small solar panels for charging purposes. It includes two 3W DC light bulbs with 5m cables that could be hung from a curtain rail or branch, depending on where you find yourself. It all runs off a smallish 12Ah battery, but because there's no built-in inverter nothing is "lost in translation". It's not designed for heavy use, but when the battery is fully charged it can run the lights for four nights or a smartphone for three days.

If you opt for the 160 DC+ version you also get an AC charger (good for when there's no sun) and an external 150W inverter, which converts the DC power to regular 220V AC. The size of the inverter (and of the battery) means you cannot run anything massive off it, but you could power a laptop for two hours as long as you're not using anything else. R3 000 (160 DC) and R4 000 (160 DC+) at ecoboxx.co.za



OmniPower Power Trolley 6

This brilliant "little" device (it's about the same size as a case of wine and weighs 39kg) is effectively a portable UPS. It has a built-in fully sealed gel battery (120Ah) and a maximum output of 1 000W. This means you can run a full load for about an hour or a 300W load for about three hours. The device can also be connected to an external battery, which doubles the capacity but halves the portability.

It can be charged from the mains or via a solar panel or wind turbine (you'll have to buy these separately), and can be left in one place permanently or wheeled around depending on your needs. It has two three-prong plug outlets and two USB ports for charging smartphones and tablets. It also has a built-in emergency LED light that switches on automatically in the event of a power failure.

If you decide to get an extra battery, it makes sense to get the same make and capacity as the internal one – an OmniPower 120Ah battery will set you back about R2 800.

We weren't able to test this unit because they're perpetually sold out – put your name on the waiting list now! About R8 000 at sinetech.co.za



UPSes AND BATTERIES

A UPS, or uninterruptible power supply, is specifically designed for load-shedding-type situations. Not all UPSes are created equal, but they do share some similarities: they remain permanently plugged into AC power (or, in some cases, a solar panel) and manage their batteries intelligently. What's more, they kick in automatically as soon as the power cuts, and also provide some form of surge protection when it comes back on. UPSes are great for sensitive appliances that don't draw much power and for LED lights. (If you want to power your fridge or kettle, you may need a generator.)

Discover 100Ah Deep Cycle Battery

Unlike car batteries, which are designed to deliver a huge amount of power for a very short time, deep-cycle batteries are a lot more measured in their approach. Discover batteries aren't cheap, but you get what you pay for. This 100Ah battery could power the Soho UPS for an hour if you're drawing full power, and for a lot longer if you're not. It comes with a two-year warranty.

R2 900 at bushpower.co.za



Soho 800VA and 1 500VA Pure Sine Wave UPSes

Although the 800VA is considerably larger than the Mecer (see page 126), its maximum output is only slightly higher (600W as opposed to 480W). There are a number of reasons it costs so much more. First, it produces a pure sine wave – much better for your electronics than a modified sine wave. And, unlike the Mecer, it doesn't have a built-in battery, so you'll have to choose what kind of output you require and for how long.

At maximum output, a 105Ah battery will last you an hour: either buy two (or three) batteries, or reduce your load so you can get through load shedding on a single battery. If you opt for a single battery, you'd probably store the UPS in the same room as the stuff you're powering. If you go for a bank of three or four batteries, you'd better wire it into your distribution board. If you go this route, consider its big brother, the 1 500VA unit (above), and a larger bank of batteries.

R3 100 (800VA) and R4 700 (1 500VA) at bushpower.co.za

OmniPower OPIC 3030S Inverter/Charger with Auto Changeover

If you're running a business or you simply can't bear the disruption load shedding is wreaking on your home life, you may want to opt for a full-on integrated inverter-charger system that is wired into your distribution board. True UPSes cost an arm and a leg because they *really* clean the power before it gets anywhere near your appliances, but inverter-charger combinations are a bit more affordable.

Sinetech, one of the most trusted names in the UPS business, is bringing out an entry-level 3 000W model that will retail at about R35 000, including a bank of eight 120Ah sealed gel batteries and a battery cabinet. This price doesn't include getting an electrician to install

it (about R2 000 to R4 000, depending on your requirements) but it's still a serious bargain and something to consider.

An output of 3 000W will not power your entire home but would take care of your computers, TVs, lights (preferably LEDs), microwave, kettle (although probably not at the same time as all the other stuff), garage door, alarm system and even a modern, energy-efficient fridge. If you draw all 3 000W, the eight batteries won't quite last you two hours – but if you only draw 1 500W to 2 000W, you should easily be able to make it through load shedding, especially if you have a solar geyser, a wood-burning heater and a gas hob. About R35 000 at sinetech.co.za



Mecer 850VA Offline UPS

No larger than a loaf of bread, this basic UPS is designed to provide 10 to 20 minutes of emergency power to your old-school desktop computer, but it is quite versatile. It provides protection against the power surges that always follow a stint of load shedding, and it's highly recommended if you plan on running a generator during load shedding.

You'll need one UPS for every batch of devices (like your TV, DStv, DVD player or modem, laptop, printer): just plug the UPS into the wall and then run your devices through the UPS.

Although it'll run only for a short time on maximum load (480W), it'll last quite a while if you draw a fraction of the power – I have one hooked up to my modem and it easily gives me two hours of internet connection during load shedding. As long as my laptop is fully charged, my work is not affected.

R610 at comx-computers.co.za



5 GENERATORS



Ryobi RG-6900 Generator

You could do a lot worse than buy this middle-of-the-range model. With an output of 5 500W, it can power all but the most power-hungry appliances (electric stove, geyser) and, unlike some cheaper models, it has automatic voltage regulation.

The four-stroke engine runs on unleaded petrol and the 21-litre fuel tank provides at least eight hours of run time. It also has nifty wheels and handles, so you can move its 80kg bulk around easily, and it starts with a key, not a pull cord.

R8 500 at makro.co.za

Plattelandsays We can't wait for the local launch of the Tesla Powerwall. This is, of course, the revolutionary lithium-ion battery invented by South African-born Elon Musk that can power an entire household. **P**

"If 24-hour rolling blackouts materialise, the folks with generators will be smiling and the rest of our households will be cold, dark and hungry."

A generator has two major advantages: you get far more bang for your buck when it comes to output and, provided you have enough fuel, it can run forever. But there are a number of disadvantages too: it is noisy (even the "silent" ones), dirty (someone has to fill the fuel tank) and expensive to run (have you seen the petrol and diesel prices?). What's more, the electricity it provides isn't nearly as good for your appliances as that provided by a UPS. (If you do go the generator route, make sure you get one with AVR [automatic voltage regulation], which keeps its voltage as close to 220V as possible.) If load shedding continues to be a two-to-four-hour inconvenience, I'd steer clear of a generator. But if 24-hour rolling blackouts materialise, the folks with generators will be smiling and the rest of our households will be cold, dark and hungry.

Warning #1 Never use a generator indoors – carbon monoxide is deadly. Furthermore, make sure your generator – and especially the plugs going in and out of it – is kept out of the rain.

Warning #2 Do not, under any circumstances, plug your generator directly into a wall socket. It will power your household but it is extremely dangerous. Have a certified electrician wire it in.

DISCLAIMER I didn't test all the gadgets myself and I relied on the advice of Jacque Fernihough from BushPower in Centurion and the good people at Sinetech in Johannesburg when researching UPSes and other battery-powered solutions. My father-in-law was also extremely helpful with all the technical stuff; he owns and uses the generator featured above.