Terminology explained

Here to help you fully understand what we do

Essential Terms

ALTERNATING CURRENT (AC)

Electrical current that changes direction many times in a second. In South Africa, the standard is 100 reversals or 50 cycles per second (Cycles per second is also known as Hertz).
Electricity as we know it and receive it from Eskom and municipality is AC. It is the most used means of distributing electrical energy.

AMPERE (AMP)

A unit of electrical current or rate of flow of electrons.

TIP: It is helpful to equate electricity to water in motion. The total energy that water exerts (power of the water) is determined by 2 factors: Pressure and flow.

- Amps are the equivalent to the flowrate of the water.
- Volts are the equivalent to the pressure of the water.
- Watts are the equivalent to the power of the water.

Amps are the number of electrons moving in the electrical circuit. Because movement causes friction, more amps require larger cables to avoid them from overheating.
Amps determine cable size.

ARRAY

Multiple solar cells make up a solar panel, and multiple panels can be wired together to form a solar array.

BATTERY

Batteries store electrical energy.
Mostly this is done through chemical reactions, but lately more and more batteries are coming to the market that store electrical energy by other means.
When I store electrical energy by pumping water up a hill, to later reverse the flow and generate electricity, I am using the top dam as a form of battery or energy store.
Batteries store energy in DC (see below)

DIRECT CURRENT (DC)	In the opposite design to AC, in a DC circuit electron only flow in one direction. We normally see these circuits marked with a + and a -. Batteries operate with DC; Solar Panels operate with DC. So, we generate solar energy in a DC fashion and also store it in a DC battery, which means we have to convert the energy into AC before we can use it in our factories or farms. This is where an inverter come in. (see Below)
ELECTRICAL GRID	The grid is the term we use to describe all the components of the electrical infrastructure that generates electricity, transmit it to my district and then distribute the electricity to my property. South Africa has a one electrical grid. Grid stability depends on balance and harmony to exist in the generation and consumption of energy in the grid.

(RENEWABLE) ENERGY SOLUTION	An energy design and plan that considers the specifics of your:
	• energy consumption pattern and quantum
	• quality of power present
	• storage opportunities present in your environment
	• generation opportunities available to you
	• plans for your company future
	• key goals you have for an energy plan:
	  • Supply stability
	  • Saving money
	  • Obtain additional capacity
	It's a Bespoke / Specific-to-your-needs solution

ENERGY STORAGE	As described under Battery, energy generated generally requires some storages to be readily available when your operations need it. If the grid functions well and there is enough generation capacity, the grid provides this function. When supply is limited and the grid is unstable, clients are forced to provide energy storage to meet their needs.
FREQUENCY	The number of cycles per second in an electrical current, expressed in Hertz (Hz). South Africa's gris is a 50Hz grid.

GREEN HOUSE GAS	The gases in Earth's atmosphere that trap heat. We all know about CO2 as a greenhouse gas, but there are others of course. We tend to focus on CO2 as a major contributor.
GRID-CONNECTED SYSTEM	Any form of electrical generation system that is connected to the grid. In other words, when we integrate other electrical generators into the grid, they are Grid-Connected (or GRID-TIED) systems. We commonly connect the following to the grid: • Solar PV Systems • Wind Generators • Hydroelectrical generators • Diesel generators **NOTE:** When a system is connected to the grid, it needs to generate electricity in perfect synchronization with the grid's cycle at 50 Hertz, otherwise the generator would be working against and not assist the grid energy.
HYBRID SYSTEM	A Hybrid system is a system that could generate electricity independent of a grid (also called Island Mode) or could be connected to a grid and generate electricity that is synchronized to the grid. Hybrid between Island capable and Grid-Tied capable in other words.
INVERTER	A device that converts direct current electricity to alternating current either for stand-alone systems or to supply power to an electricity grid.
PHOTOVOLTAIC (PV)	The scientific term for the process by which solar rays are converted into DC current. Solar Panels are designed to be good at this. **Interesting Fact:** Currently the best Solar PV panels are still only converting around 24% of the sun's energy, reaching the panel, into electricity, the rest of the energy are reflected or converted into heat.
RENEWABLE ENERGY	Energy generated from sources that naturally continually renew themselves, such as sunlight, wind, geothermal heat or tidal movement.

TRANSFORMER	A Transformer changes the characteristics of electricity. It cannot generate energy, but only changes how it flows (AC or DC) or alters the Voltage (Pressure) and Amps (Flow). From as small as taking 230VAC (plug power) and transforming it into 5VDC to charge your phone with, to large enough to transformer high voltage electricity that comes all the way from Gauteng down to a usable 400VAC for your pumps. All these devices responsible for the transformation of electrical form are called transformers.
UNINTERRUPTIBLE POWER SUPPLY (UPS)	A UPS is a device that has some form of energy buffer internally, ready to step into a gap during an interruption in upstream electrical supply. Many UPS's also filter or improve the quality of power for all the downstream devices. Hybrid inverters with batteries connected make very good UPS's.
VOLTAGE	Voltage is a characteristic of electricity that describes the pressure or force in the electrical system. The higher the Voltage, the thicker the insulation around the wire needs to be to contain the electrons and prevent them from sparking to a nearby conductor. Again, equating electricity to water, (Also see AMPS) Voltages is the equivalent to pressure in a water pipe. Remember that I can have extreme pressure in a very thin pipe or in a massive pipe. The larger the pipe the more energy or power potential is locked up in the high pressure. Pressure x Flow = Power (Voltage x Amps = Watts)

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Eskom & Nersa Terms

ACCOUNT	Your ESKOM or municipal monthly bill that describes the electrical energy, capacity, availability, and administration that you use and subscribe to.
CONSOLIDATION	Many times, consumers end up with multiple electrical supply points to service operations. Consolidation is the effort and result undertaken by the client with the guidance of an electrical expert to position the client in such a way that his electrical supply costs less. This may take on the shape of combining many accounts into one. It may mean changing a client to a different, better suiting tariff structure. It may even include privatizing distribution networks on the property or properties. Consolidation generally obtains a higher level of usage efficiency that either reduces costs or unlocks electrical capacity.
ENERGY BANKING	ESKOM and certain municipalities allow clients to generate energy as an SSEG (See below) and export excess electricity to the municipality or ESKOM for later use. Banking implies that the unit is kept for your later use at a small administrative fee. NOTE: Banking of energy is not supported or offered by many municipalities. Many Municipalities offer to buy your excess energy and then expect you to buy all energy you need later.
ENERGY WHEELING	The transportation of energy from a generator to a remotely located end-user using an existing distribution network. Practically this means that you could generate on one property excess energy and through a wheeling agreement consume that excess energy anywhere else in the country - at a charge for the use of the electrical network between the point of supply and point of use. NOTE: Do not assume wheeling is a right, it requires many legal agreements to be in place before wheeling is possible.

IPP	Independent Power Producers. When your business's purpose is to generate energy, more than what you can consume yourself and you plan to sell the energy produce as a business, you are an IPP and have to register as one with NERSA.
LOAD-SHEDDING	Load-shedding is an attempt to balance the available electricity in the grid by forcefully reducing the demand. It is a desperate attempt to keep the national grid stable, at the expense of national productivity and growth. Eskom's scheduled rotation of available electricity capacity between customers to avoid blackouts when demand is greater than supply.
NETT EXPORTER / NETT CONSUMER	When you generate more energy in a year than what you consume in a year, you are deemed a Nett Exporter. When you generate less energy in a year than what you consume in a year, you are deemed a Nett Consumer. Nett Exporters have different legal frameworks than Nett Importers
SSEG	When you start to generate some of the energy you need yourself, you become an SSEG. Small-scale embedded generation (SSEG) refers to power generation facilities, located at residential, commercial or industrial sites, where electricity is generally also consumed. SSEG's need to be registered and approved.