Growing a greener future with an iESS

iESS

intelligent Energy Storage System

BLUE NOVA energy

Company Profile

- Established July 2015
- National and international service
- >3MWh per month production
- >7500 installations
- 51% acquired by JSE listed Reunert Group
- ISO90001:2015 compliant
- Southern African focus for SESS

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Products & Services

HC (High Capacity/High Current)

MPS (Mobile Power Series)

iESS (intelligent Energy Storage System)

RacPower

CPS (Compact Power Station)

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Introducing BlueNova's iESS

6m Containerised energy storage system, equipped with a battery converter, high voltage battery pack, BMS, EMS (RMaC – our patented algorithm) , HVAC and internal electrical distribution. Fire suppression system and access control are optional extras.
10 year warranty on the product.

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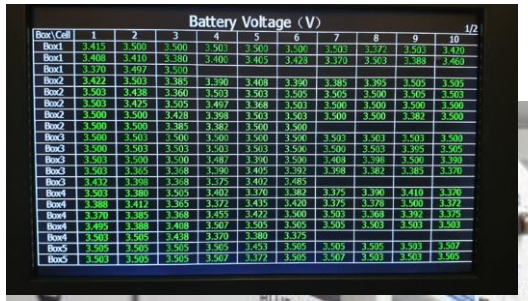
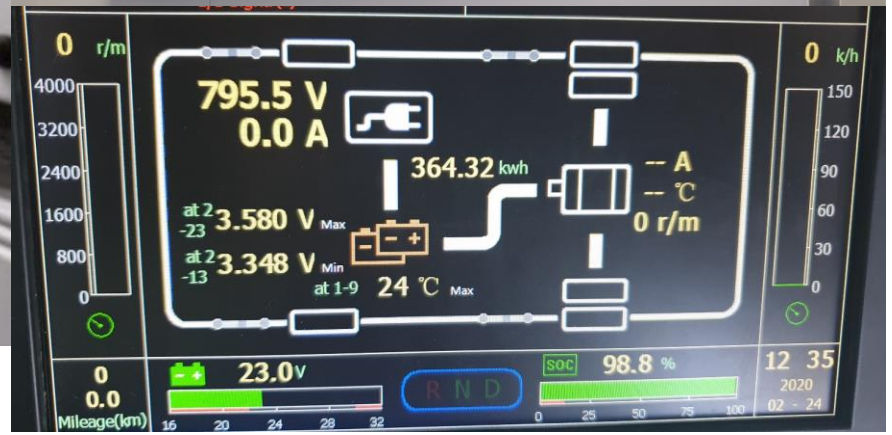
Introducing BlueNova's iESS





This product is scalable to suit the requirements of the client – up to 40 units can be parallel.
Sizing of the battery: 140kWh – 1,2MWh in a 6m container, bigger up to 3 MWh in a 12m container.
Sizing of the inverter: 100 / 250 / 500 kW – all depending on client's requirements.

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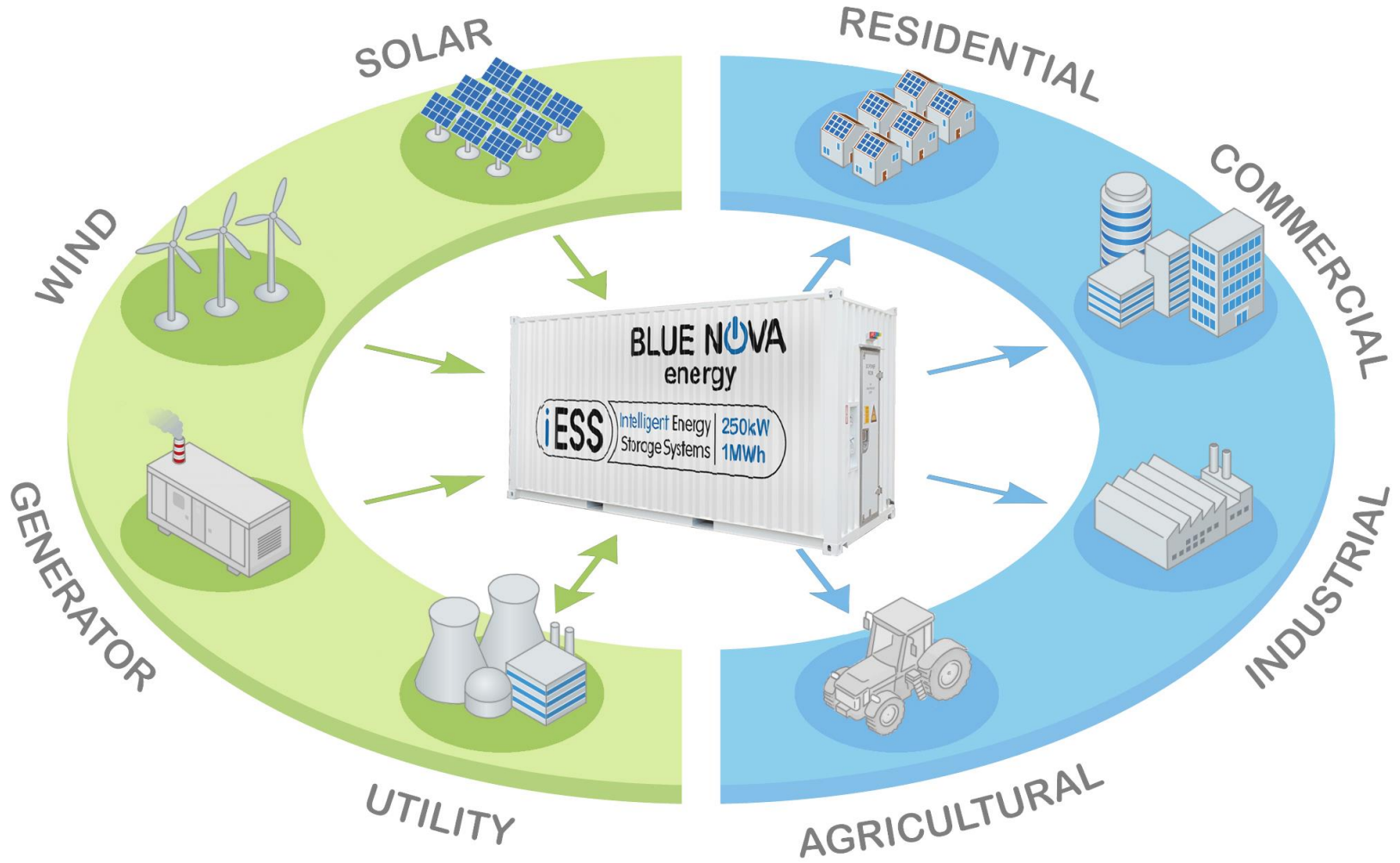
Intelligent Energy Storage System (iESS)



“Expectation is the root of all heartache”

- Shakespeare

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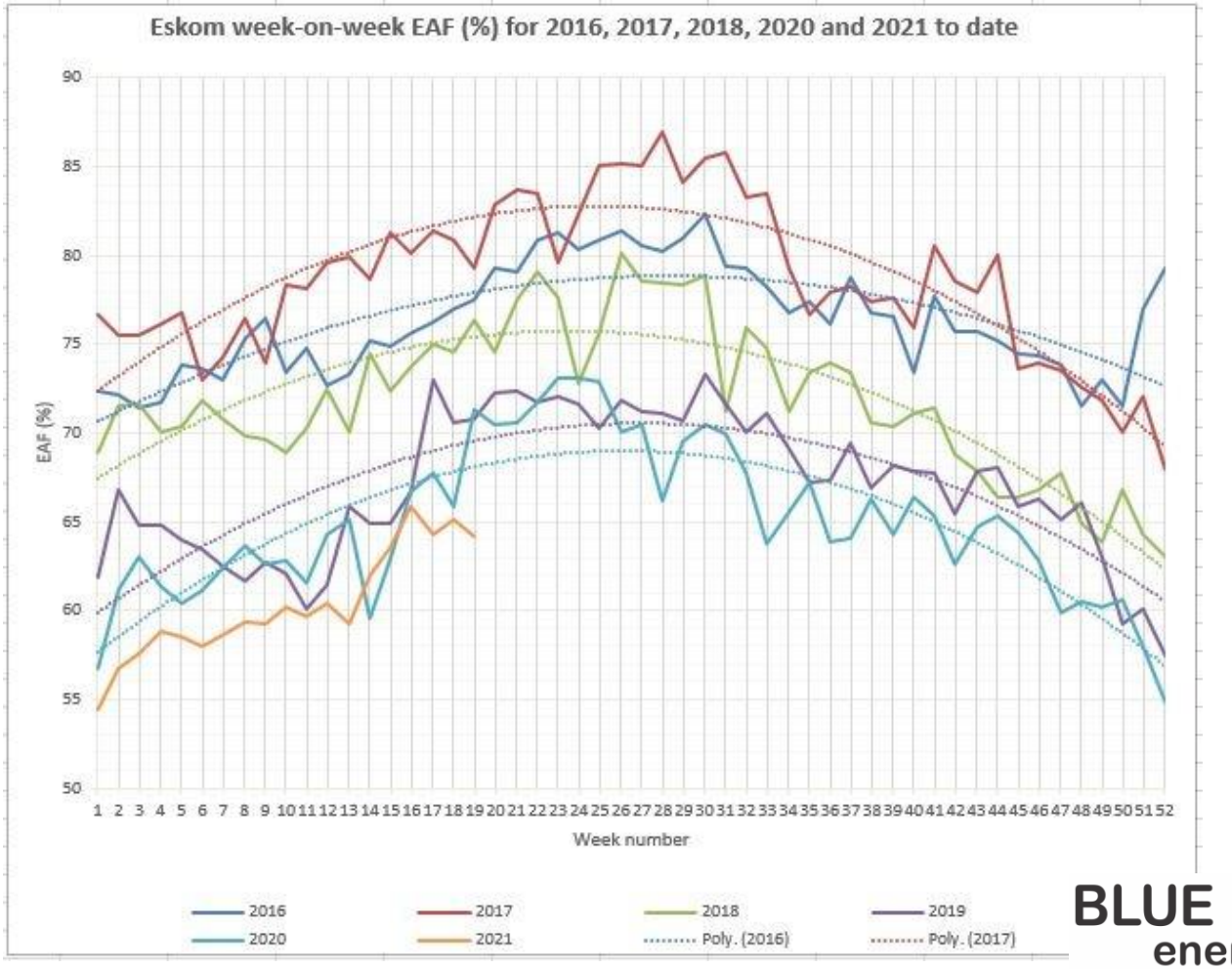
Reality check

Tariff increases

Unreliable supply

Load shedding



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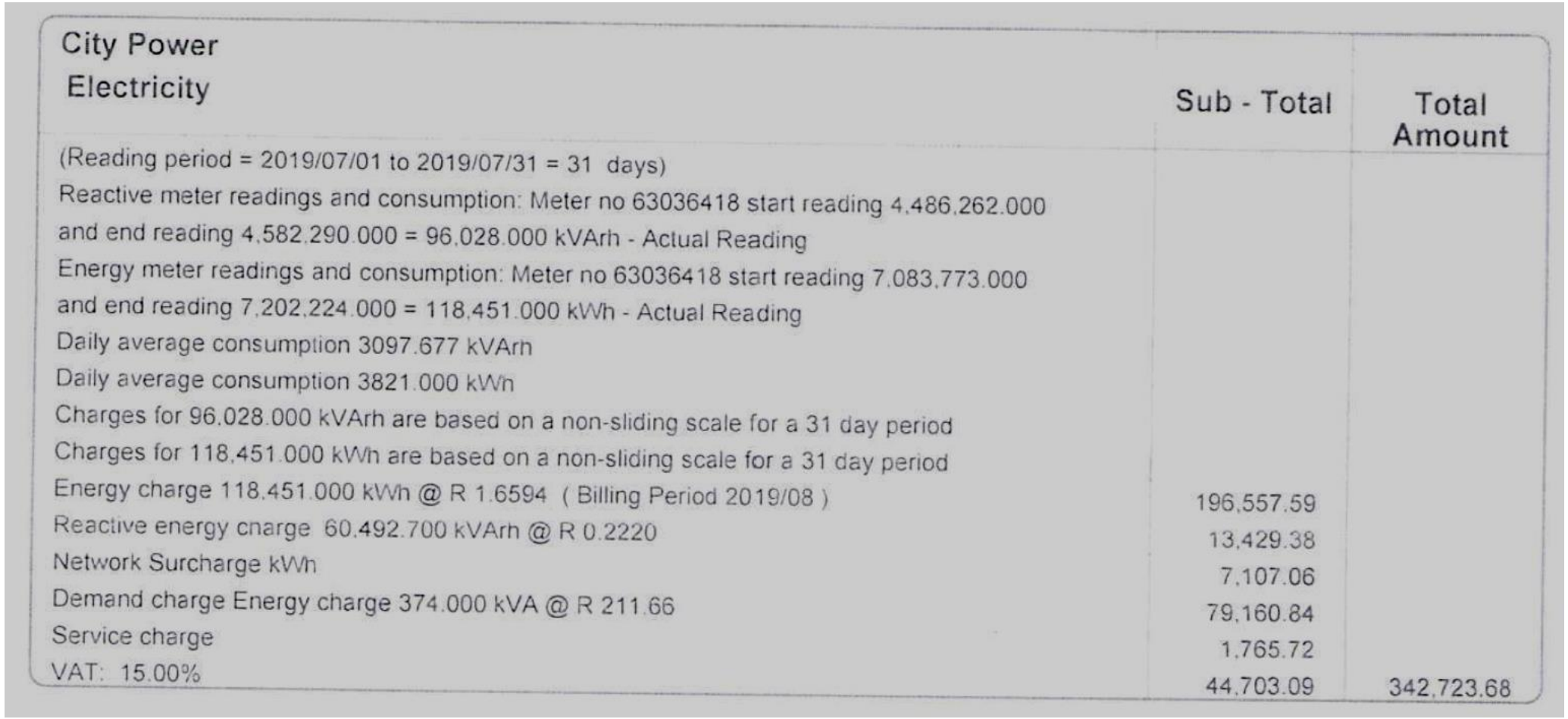
Opportunities within an Electricity Bill's



City Power Electricity	Sub - Total	Total Amount
(Reading period = 2019/07/01 to 2019/07/31 = 31 days)		
Reactive meter readings and consumption: Meter no 63036418 start reading 4,486,262.000		
and end reading 4,582,290.000 = 96,028.000 kVArh - Actual Reading		
Energy meter readings and consumption: Meter no 63036418 start reading 7,083,773.000		
and end reading 7,202,224.000 = 118,451.000 kWh - Actual Reading		
Daily average consumption 3097.677 kVArh		
Daily average consumption 3821.000 kWh		
Charges for 96,028.000 kVArh are based on a non-sliding scale for a 31 day period		
Charges for 118,451.000 kWh are based on a non-sliding scale for a 31 day period		
Energy charge 118,451.000 kWh @ R 1.6594 (Billing Period 2019/08)	196,557.59	
Reactive energy cnarge 60,492.700 kVArh @ R 0.2220	13,429.38	
Network Surcharge kWh	7,107.06	
Demand charge Energy charge 374.000 kVA @ R 211.66	79,160.84	
Service charge	1,765.72	
VAT: 15.00%	44,703.09	342,723.68

- **Energy Charge** – correcting it through **Load Shifting** (57%)
- **Reactive Energy Charge** – correcting it through **Power Factor Correction** (4%)
- **Demand Charge** – correcting it through **Peak Shaving** (23%)

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How do we solve this cost effectively?

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Intelligent Energy Storage System (iESS)

Load Shifting

Discharging the battery during peak tariff times and charging the battery during off-peak tariff times. This assists with reducing demand on the grid and also recuding the client's electricity bills.

Peak Shaving

Proactively managing overall demand to eliminate short-term demand spikes, which can cause high peak demand charges. Through this application overall cost of demand charges are reduced.

Power Factor Correction

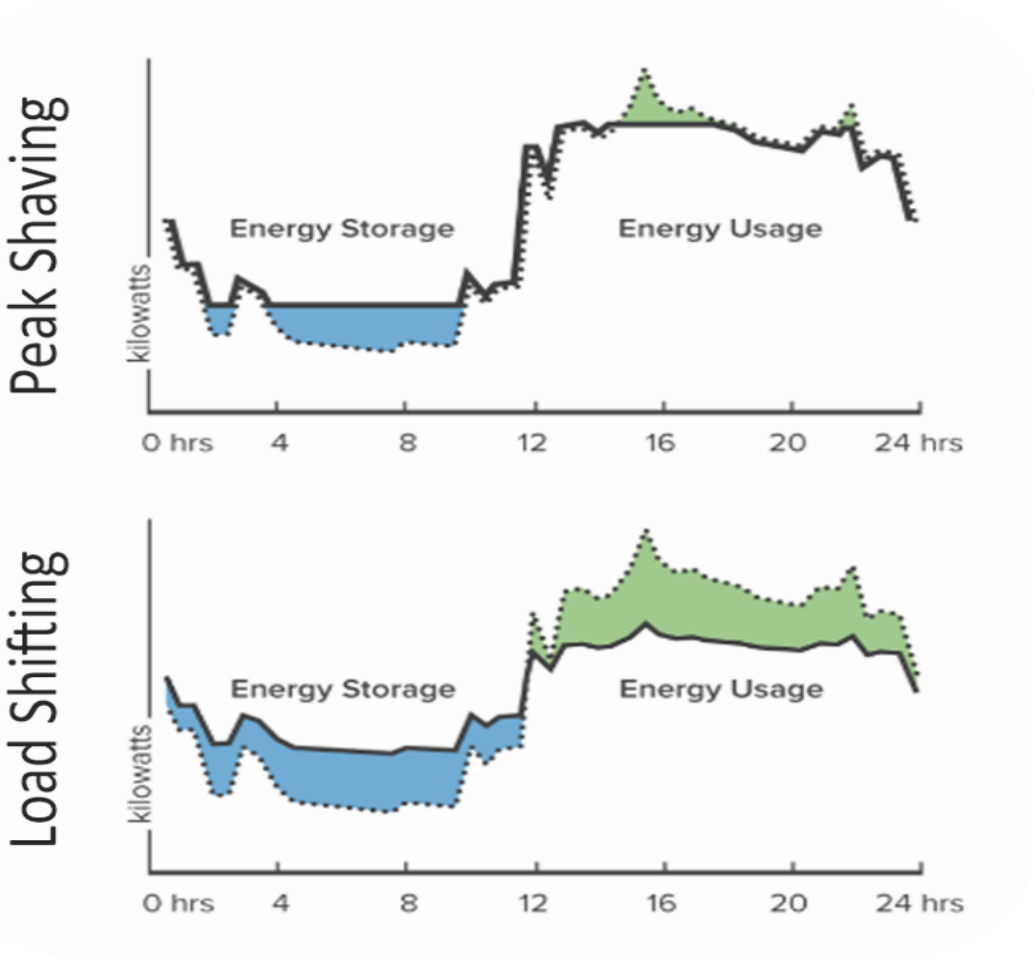
Bringing the network as close as possible to unity through injecting leading/lagging currents – saving on additional charges.

BackUp / Power Resilience

Ensuring an additional power source is available in the event of power failure on the network. Reliable and cost effective.

PV self-consumption optimisation

By slightly oversizing the PV, excess PV can be stored in the battery and be used in peak tariff times.



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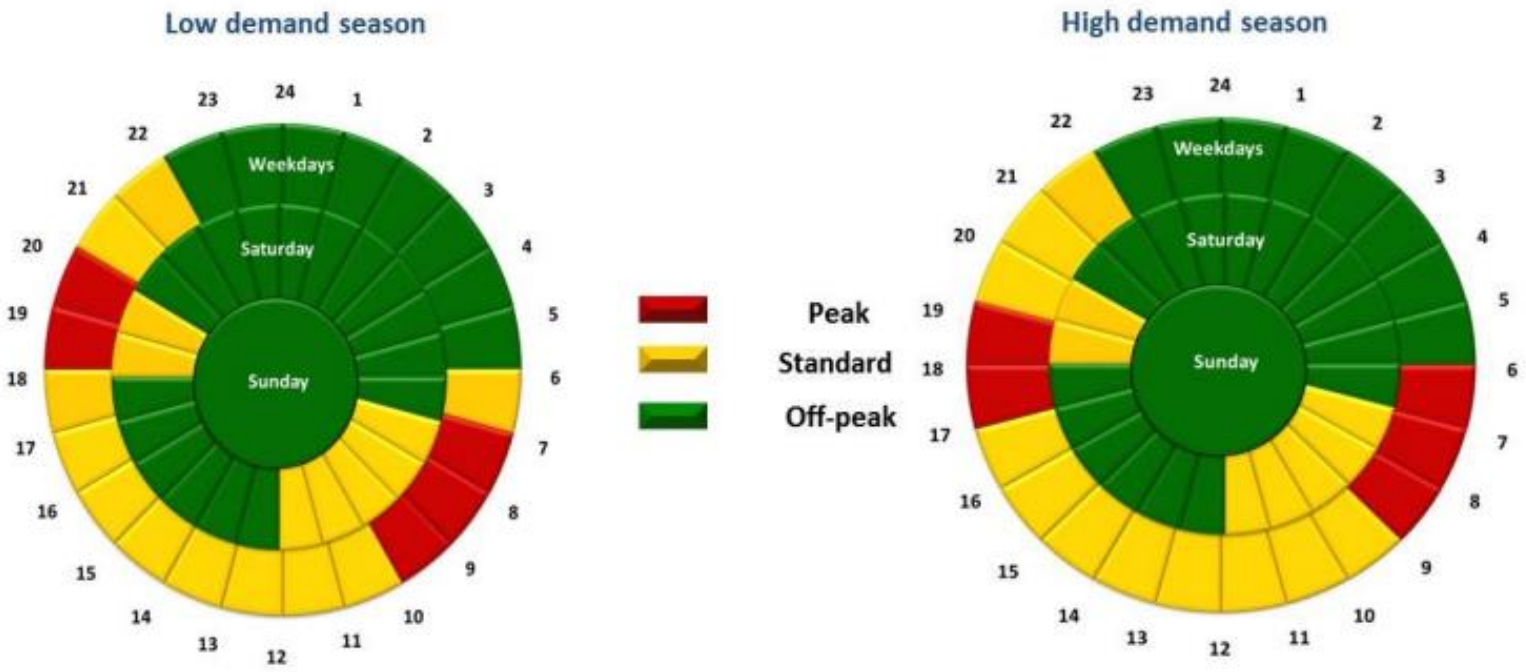
Arbitrage Opportunities: Time of Use



Making use of the Time of Use Eskom Tariff Structure in South Africa – one would be able to discharge the battery during Peak Times and charge the battery during Off-Peak times – making good savings on the Electricity Bill at the end of the month.

Tariff: Time of Use		
Summer	Peak	R3,28
	Standard	R1.01
	Off-peak	R0,56
Winter	Peak	R3,28
	Standard	R1.01
	Off-peak	R0,56

Example – Overstrand Time of Use

Arbitrage Opportunity		
	Summer	Winter
Peak – Off Peak	R2,72	R2,72
Peak - Standard	R2,27	R2,27

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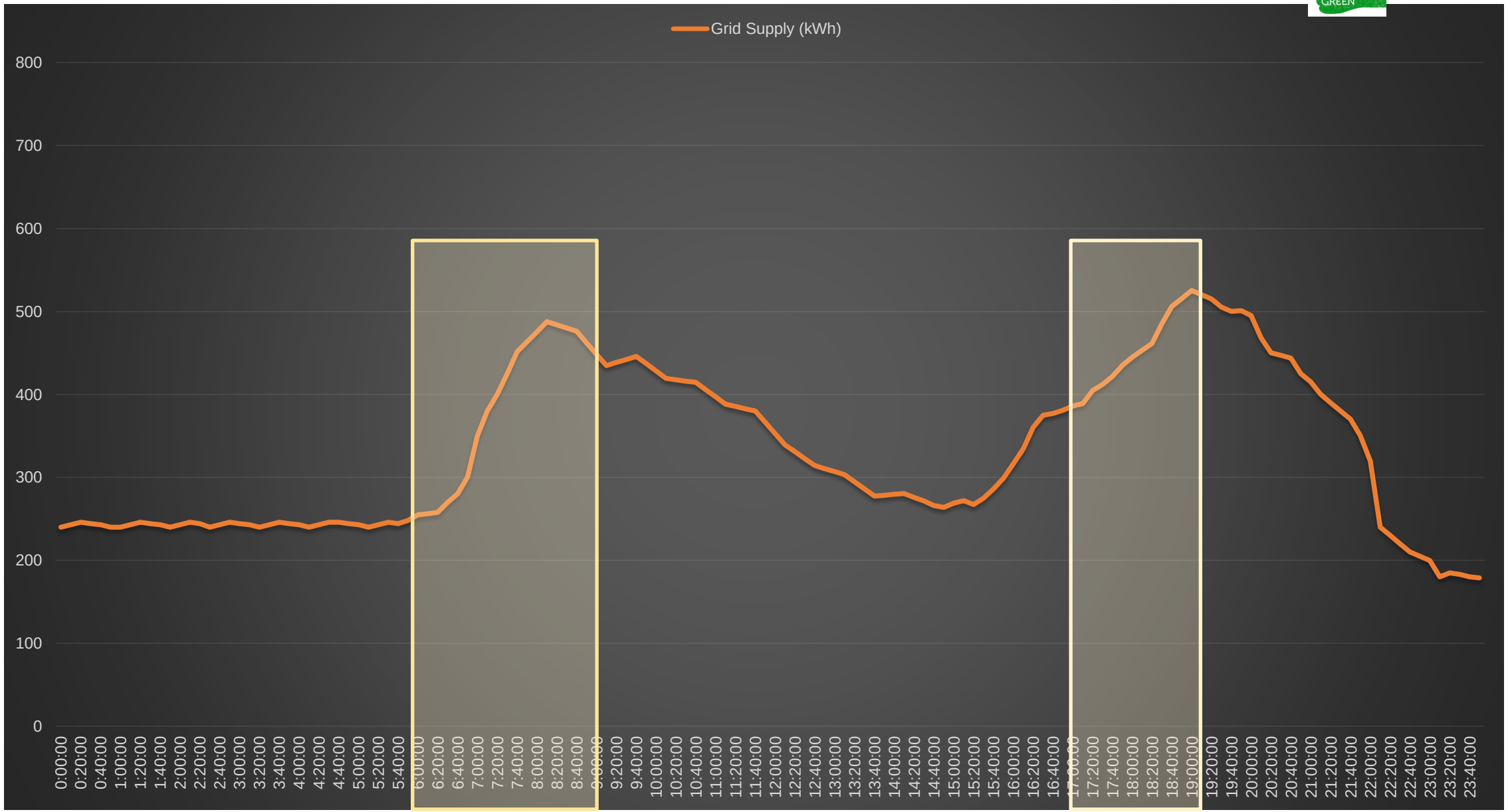
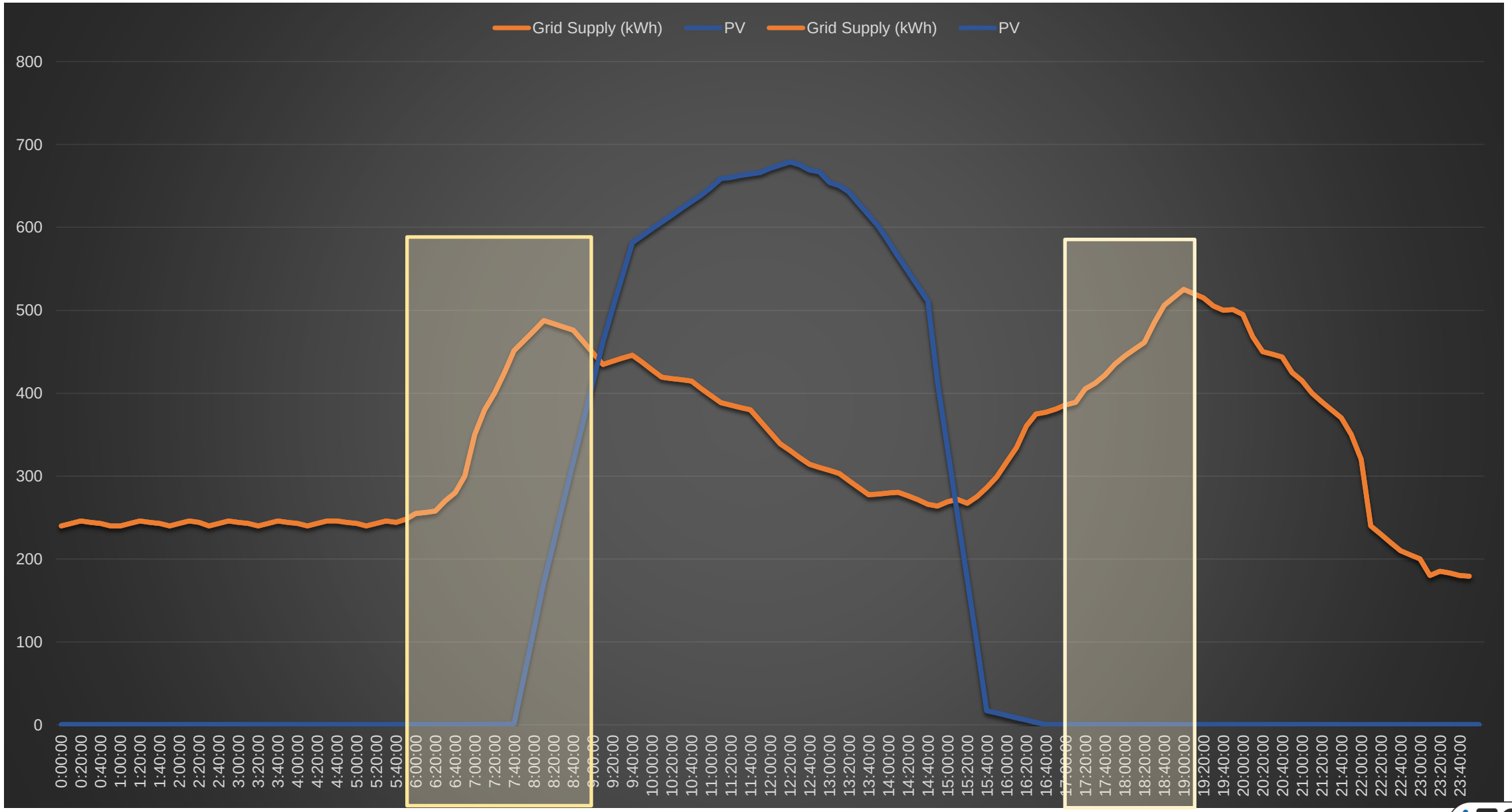
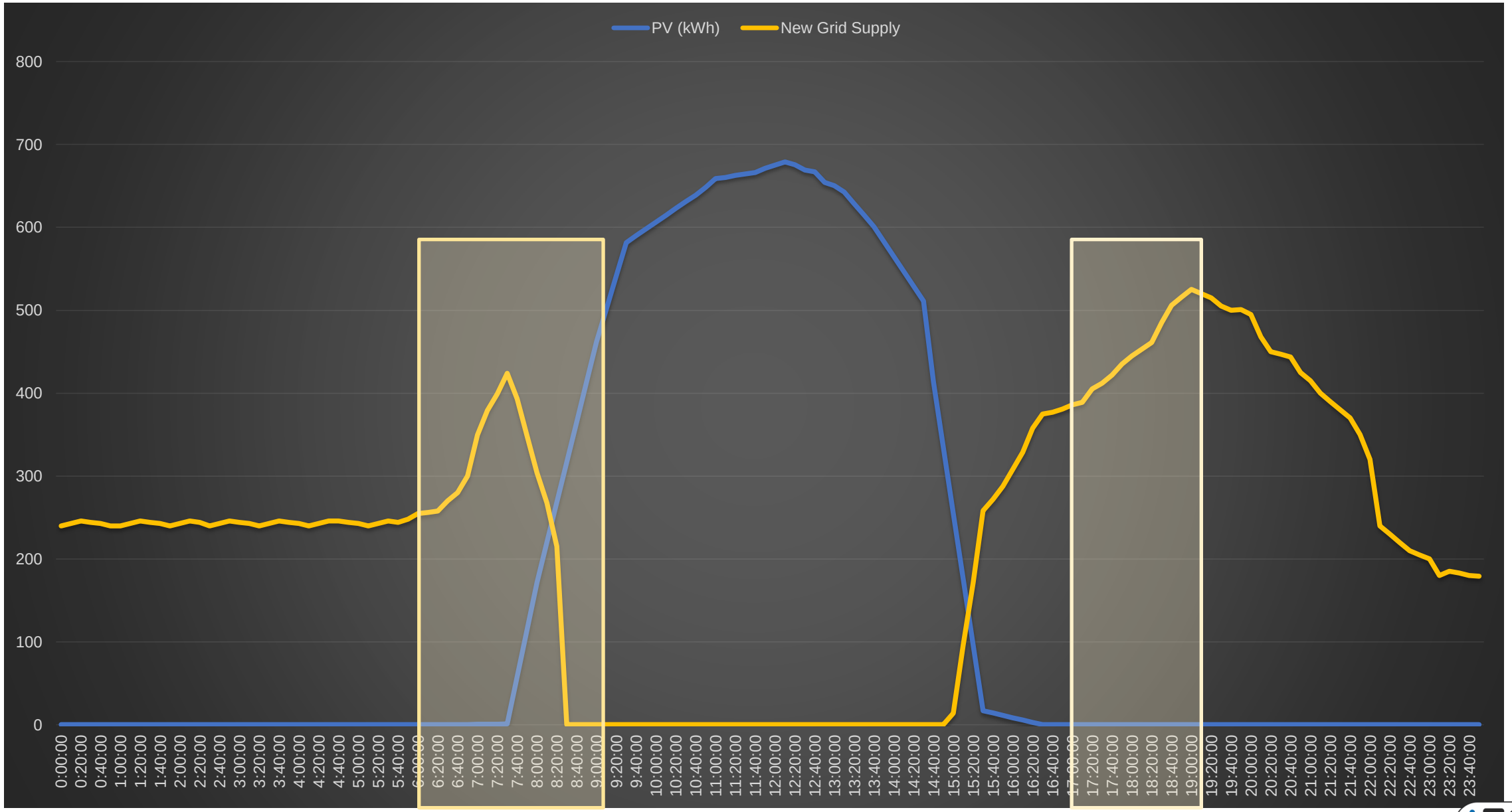
Typical Load Profile



Typical Load Profile



Typical Load Profile



iESS integrated into Network

Commercial / Industrial client

- > R6,50 / kWh

Backup generator

- < R1 / kWh
- 5-7 year breakeven

Solar Power

- Escalations yearly
- High Peak tariff charges

Grid Power

iESS (Energy Storage System)

Arbitrage Opportunity with iESS

- Electricity Price (Grid) during Peak > R3 / kWh

Example (Winter – Johannesburg City Power)

- Peak(R4,11) – Off-Peak(R1,07)
- R3,04 arbitrage opportunity

- 2 Peak periods per day
  - 3 hours in the morning
  - 2 hours in the evening
- Cost of ownership - R1 / kWh

GO GREEN

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TimBila Nature Reserve - Namibia

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Reference Site

Installation: iESS 250kW / 975kWh

Supplying:

Lodge and residential units (250km north of Windhoek)

Application:

- Off-grid
- Integration with
  - Generator (200kVA)
  - Integration PV string inverters (Huawei) (280kWp solar)

Generating power at less than R2/kWh for 15years

BlueNova's 1st export into Africa

iESS

Krugersdorp – South Africa

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Reference Site

Installation: iESS 250kW / 935kWh
Supplying:
Residential estate
Application:

- Off-grid
- Integration with
  - Generator
  - Integration PV string inverters (Huawei)
- Cost reduction (running of generator)
- Reliability of supply

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Intelligent Energy Storage Systems

Affordable | Reliable | Scalable | Efficient | Safe

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+27(0)21 205 2000
iess@bluenova.co.za
www.bluenova.co.za