

NamPower

Electricity Supply Update

**A Presentation to
the Chamber of Mines**

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23 May 2013

- **Mandate and core business**
- **Power supply infrastructure and systems**
- **Power supply mix and load composition**
- **Current key challenges**
- **Corporate project portfolio (generation and transmission)**
- **System outlook (2013 to 2018)**
- **Tariffs**
- **Conclusion**

☐ OUR MANDATE:

- Supply of electricity
- Supplier of last resort

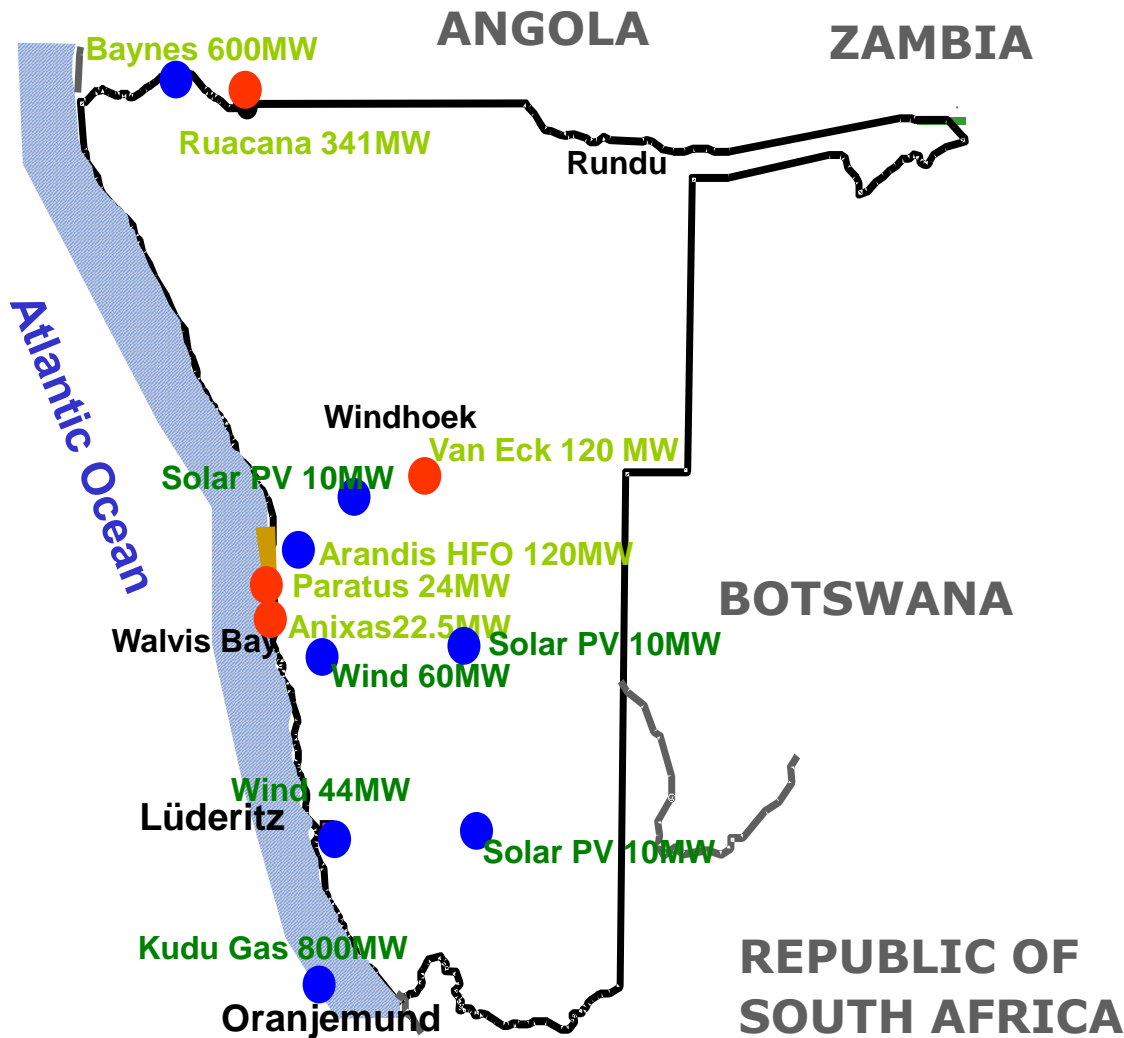
☐ CORE BUSINESS

- Generation
- Transmission and
- Energy trading

☐ MAJOR CUSTOMERS

- Distributors (REDs, Municipalities, villages, farms)
- Mines
- NamWater

Power Stations in Namibia



Ruacana

Hydro

Run-of-the-river

Van Eck

Coal fired

Emergency and Standby

Paratus and Anixas

Diesel & HFO

Emergency and Standby

● Existing Power Stations

● Planned Power Stations

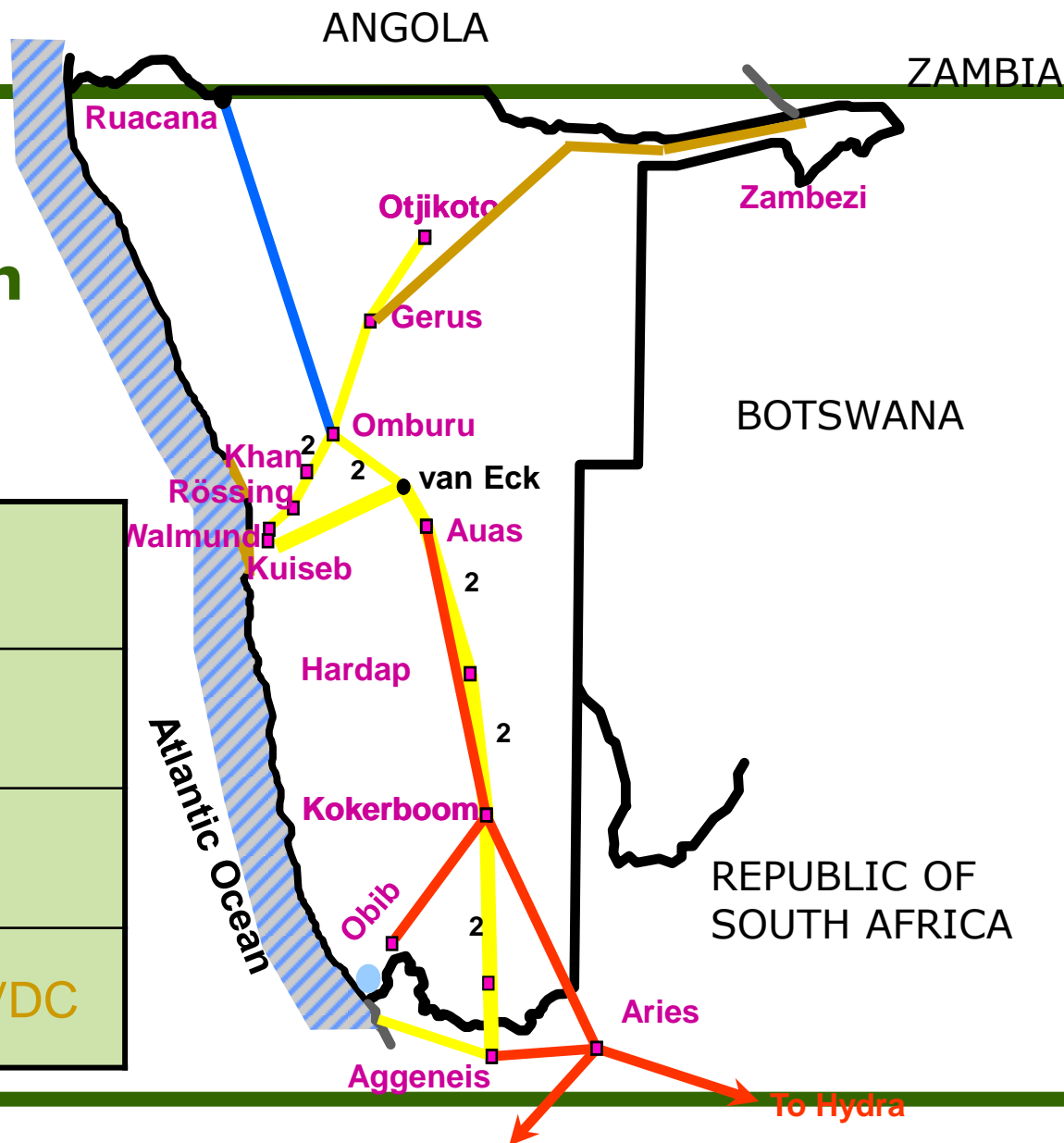
Namibian Transmission Back-bone

Red – 400kV

Blue – 330 kV

Yellow - 220 kV

Brown – 350kV HVDC

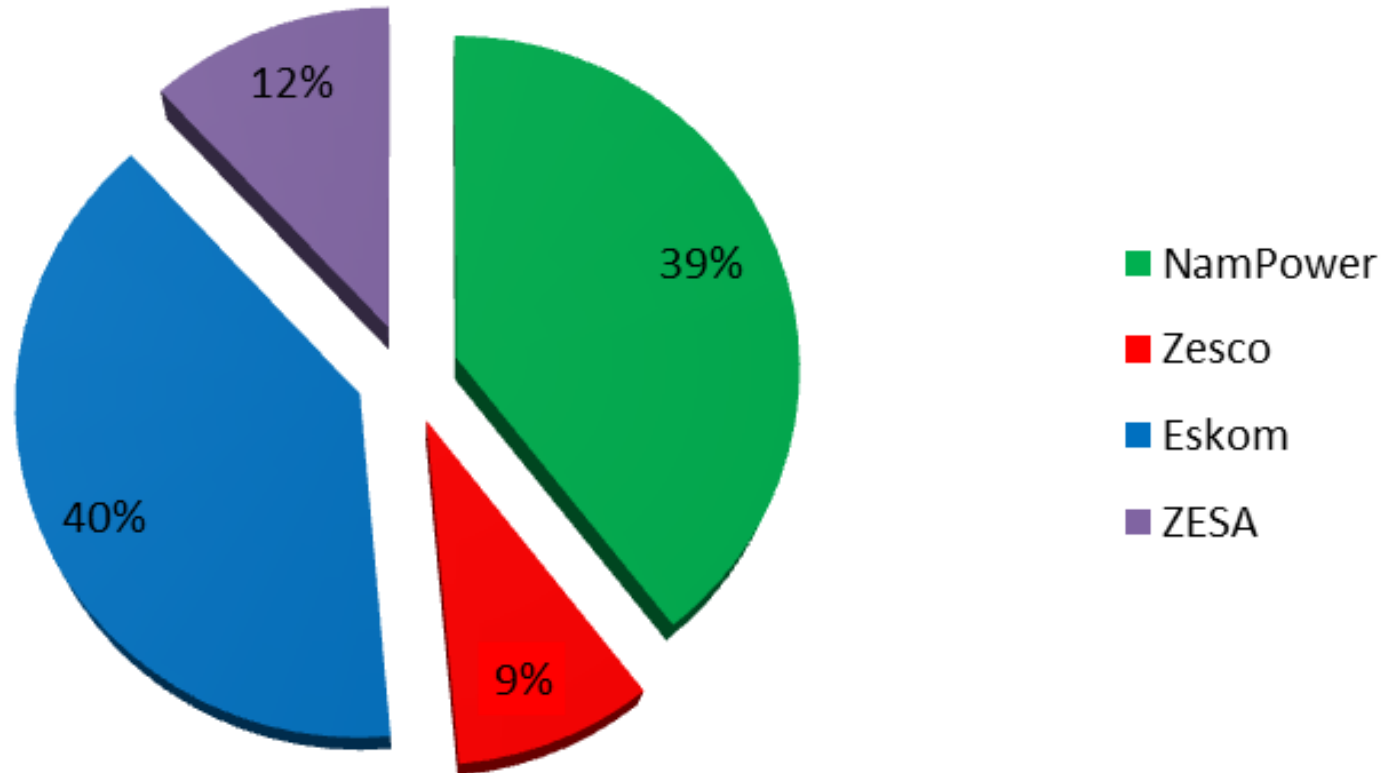


Regional Trading Partners



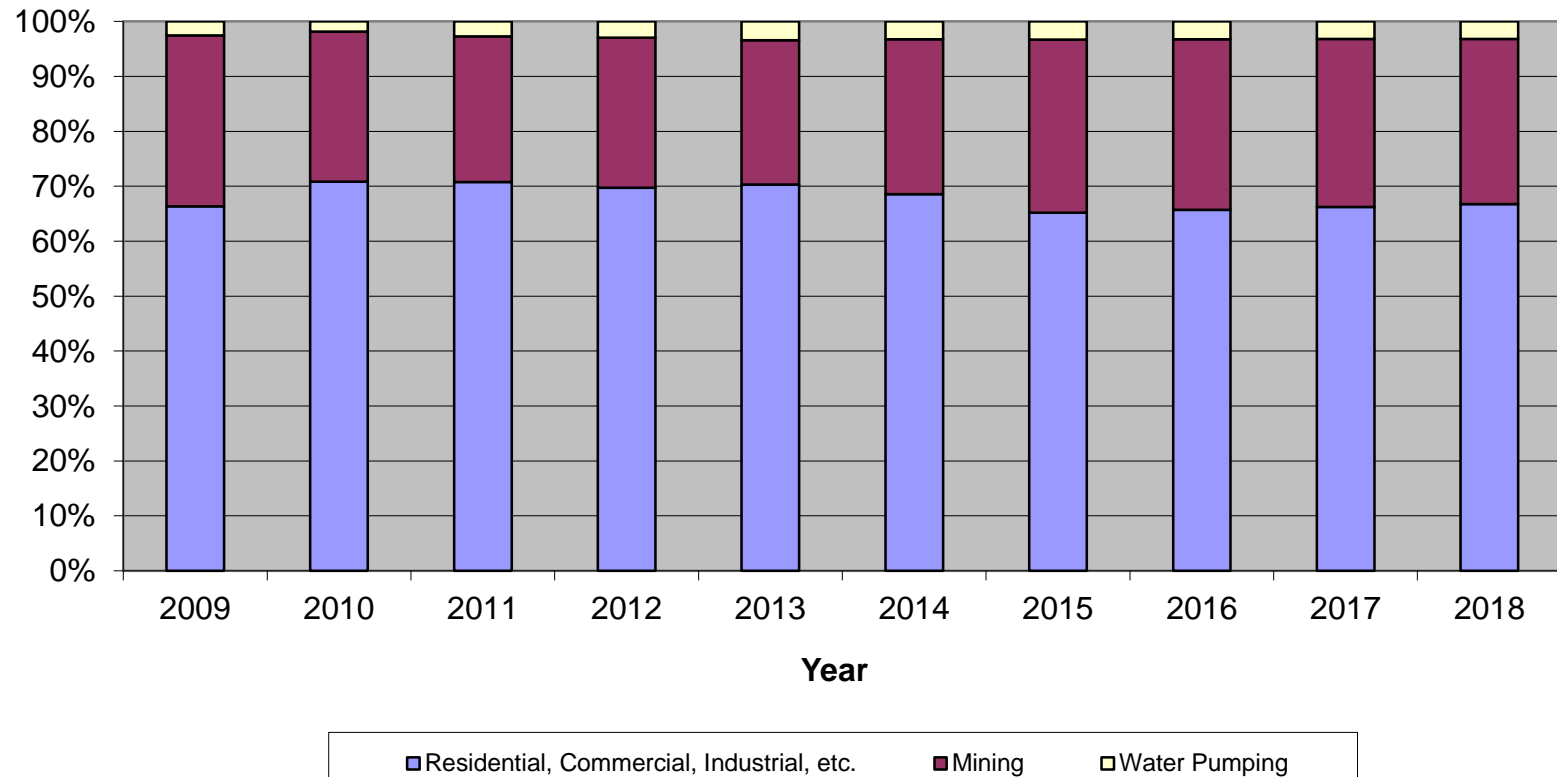
Utility	Agreements	Duration	Capacity
ESKOM	Supplementary Power Supply Agreement	Year on year Extended to 2015	Varies according to requirements
ESKOM	Bilateral PS Agreement	15 yrs (signed 2006)	Varies according to availability
EDM (Mozambique)	Power Supply Agreement	Renewable (non-firm)	40 MW
ZESA (Zimbabwe)	Power Supply Agreement	5 years (commencing 2008) Extended to 2014	150 MW (firm)
ZESCO (Zambia)	Power Purchase Agreement	10 years (signed 2009)	100 MW (50 MW firm)
Aggreko (Mozambique)	Power Purchase Agreement (Profiled firm supply)	2.5 years with option to extend (Effective 01 June 2013)	90MW

Power supply mix 2012



Load Composition

Load Ratios Per Category



Key power supply challenges

- Reliance on imports (average 60%, up to 80% during dry seasons)
- Regional transmission congestions (especially in Zambia & RSA)
- Aging, unreliable and high cost of running Van Eck and Paratus
- Long lead time for commissioning of a base-load power plant
- Insecure Supplementary Agreement with Eskom, and doubts about the ability of Eskom to extend the bilateral Agreement beyond 2016
- Low Kunene water flow – Ruacana cannot operate at full output
- High demand growth (peak demand 534 MW, grows at 3-5 percent p/a)
- Difficult PPA negotiations with IPPs (disagreement on risk apportionment)

❑ 2013 – 2018 period

- Electricity supply management challenges
- Initiated short-term critical supply (STCS) project
- Namibia largely dependant on energy imports (regional PPA's)
- Supply deficiencies in neighbouring states will have a marketed effect

❑ Period beyond 2018

- New base load plant in operation
- Cabinet decision on Kudu as a national priority project
- Namibia a net exporter of electricity
- Small and medium sized projects supplementary

NamPower Project Portfolio



Project	Installed capacity (MW)	Capacity Factor	Earliest Implementation
Short Term Critical Supply (STCS)	Up to 400 MW	Various combinations	2012
Kudu Gas to Power Station (CCGT)	800 to 1000 MW (400MW for Namibia)	Quasi Base Load	2018
Baynes Hydro Power Station	600 MW (300 MW for Namibia)	Mid Merit (base load in wet seasons)	2022

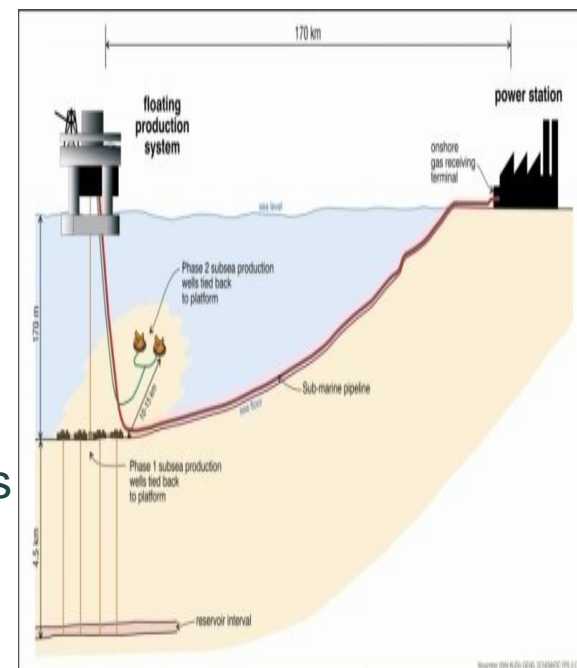
- NamPower generation plants (Van Eck, Ruacana runners replacement)
- Import Arrangements
 - ✓ Extension of ZESA contract to December 2014;
 - ✓ Extension of Eskom Supplemental Agreement to March 2015;
 - ✓ Aggreko 90MW Interim Gas to Power project in Mozambique till 2015;
 - ✓ 100 MW Peaking Power from Zambia (negotiations at advanced stage);
 - ✓ MOUs signed with two Coal IPPs in Botswana;
- Leasing of diesel generators (very expensive, measure of last resort);
- Gaining access to customer's self-generation facilities;
- Non-renewable Independent Power Producers (IPPs): Arandis Diesel;

STCS Initiatives (2)



- Renewable Independent Power Producers (IPPs) Generation
 - ✓ GreeNam Solar – 2 x 10MW;
 - ✓ Solar PV tender – 3 x 10MW;
 - ✓ Diaz Wind – 44MW;
- Demand side management (up to 60MW saving potential)
 - ✓ Domestic efficient lighting (CFL and/or LED);
 - ✓ Domestic solar water heaters (SWH);
 - ✓ Ripple control of geysers within Local Authority areas;
 - ✓ Commercial electricity efficiency with a focus on solar water heating, efficient lighting and energy audits)

- NamPower in full compliance with the Cabinet directive
- 800 - 1000MW CCGT plant at Oranjemund
- With project commissioning Namibia becoming a net exporter of electricity by 2018
- Activities concluded since September 2012
 - ✓ Allocation of resources (budget, staff, consultants)
 - ✓ Most outstanding issues resolved through negotiations with upstream parties
 - ✓ Project Development Agreement (PDA) signed
 - ✓ Ongoing negotiations with regional off-takers for the 400MW balance off-take
 - ✓ EPC Pre-qualification tender closed and evaluation in progress
 - ✓ Document with quantification of GRN guarantees being finalised
 - ✓ Re-confirmation of transmission integration requirements in progress
 - ✓ Process to invite strategic equity partners under preparation



- Joint Venture project between the governments of Angola and Namibia
- Coordinated through the PJTC
- Techno-economic & EIA studies completed and the project found to be viable
- Final approval by the 2 governments by end 2013
- Project cost: USD1,3 billion (include compensation but excludes supporting infrastructure such as transmission, roads, rail, runways and housing).



Key Transmission Projects



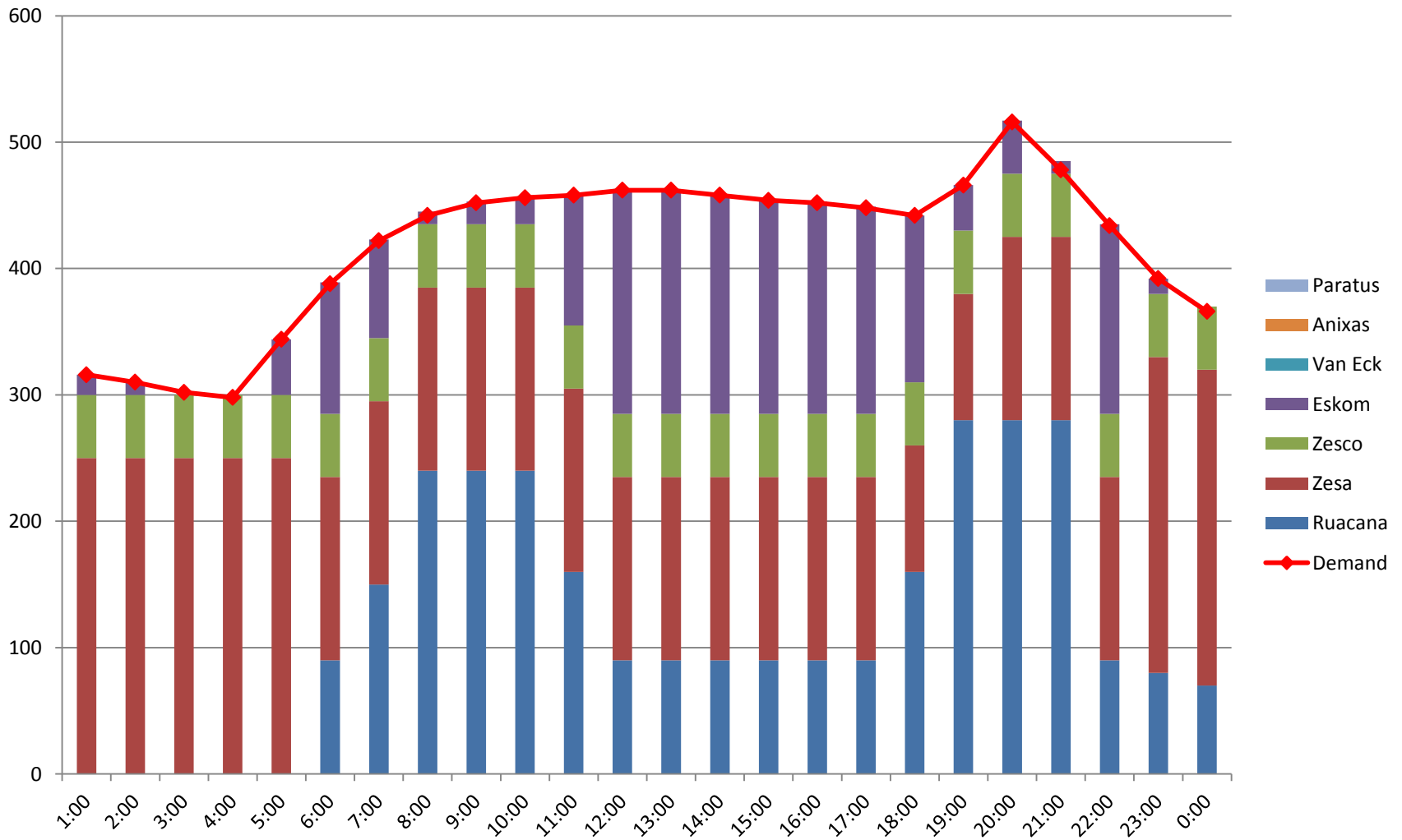
❑ Zizabona

- ✓ Linking Zimbabwe, Zambia, Botswana and Namibia
- ✓ Joint Venture project by the four utility companies,
- ✓ SPV registered in Namibia (NamPower a hosting utility)
- ✓ Staff recruitment process in progress

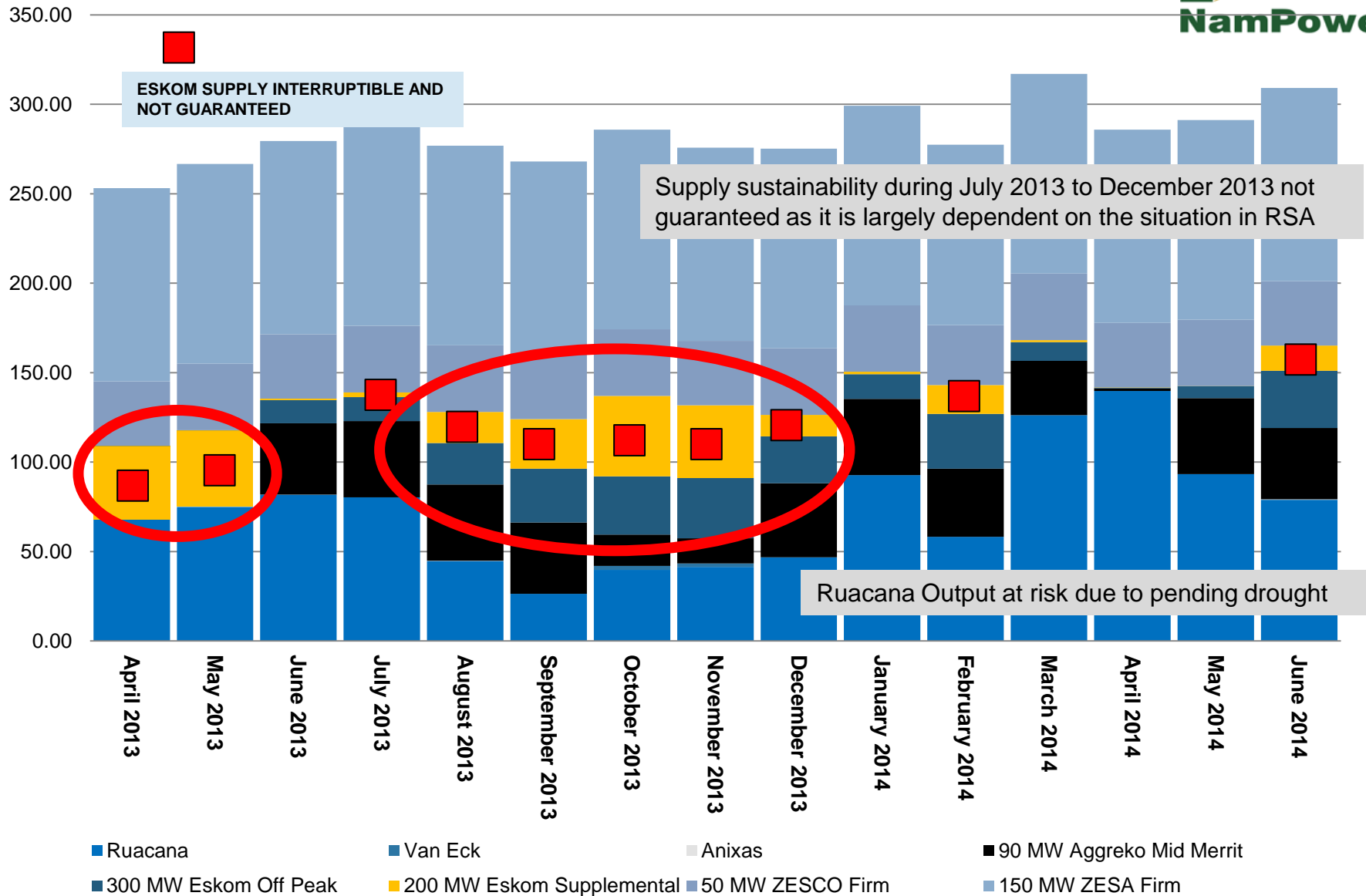
❑ NamPower transmission master plan

- ✓ High demand growth particularly in Northern Namibia
- ✓ Upgrading of transmission backbone to 400kV
- ✓ Estimated initial investment cost of approximately N\$7.5 billion

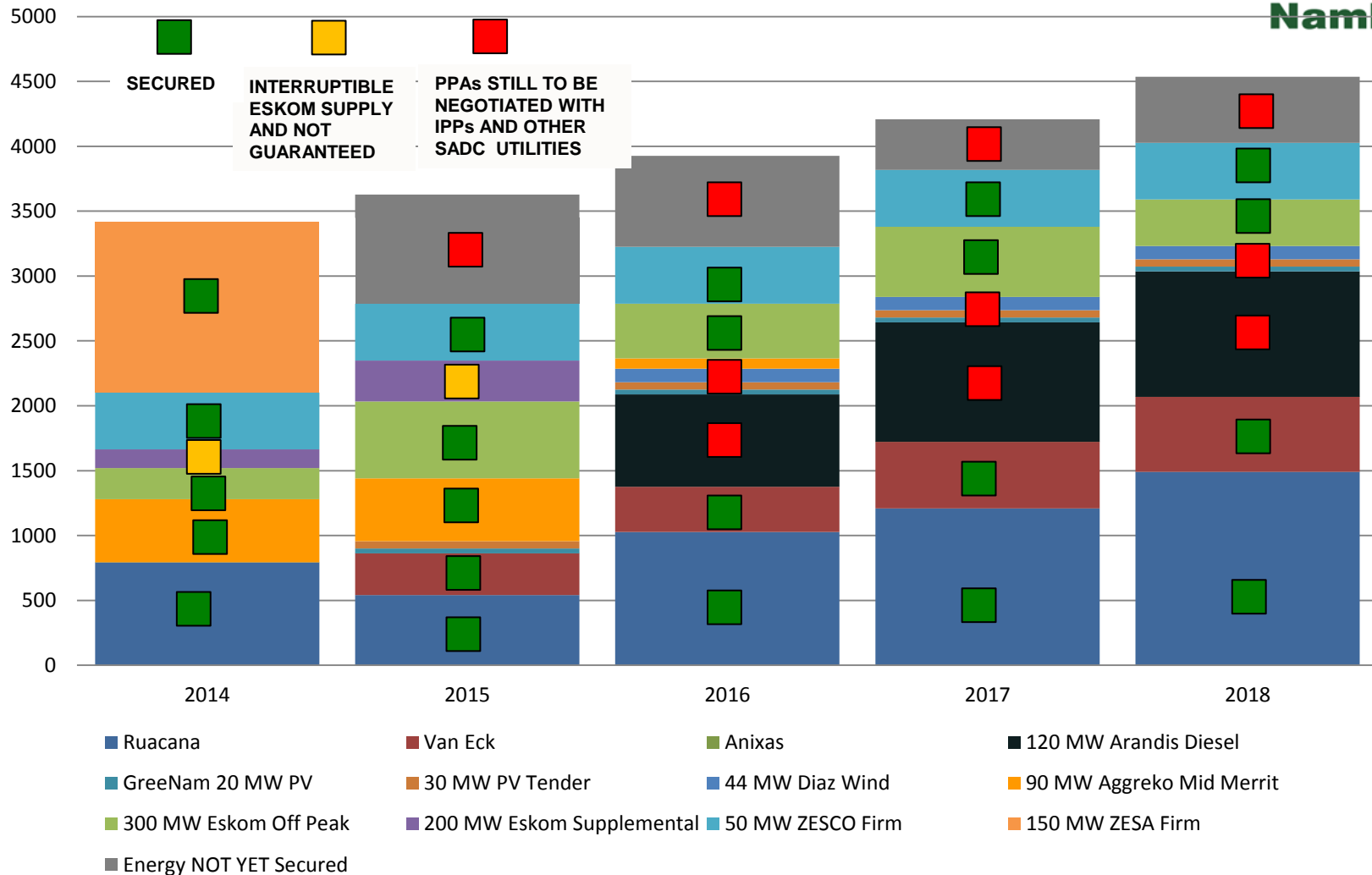
System outlook (in MW): today (23 May 2013)



System Outlook (GWh, monthly): April 2013 to June 2014



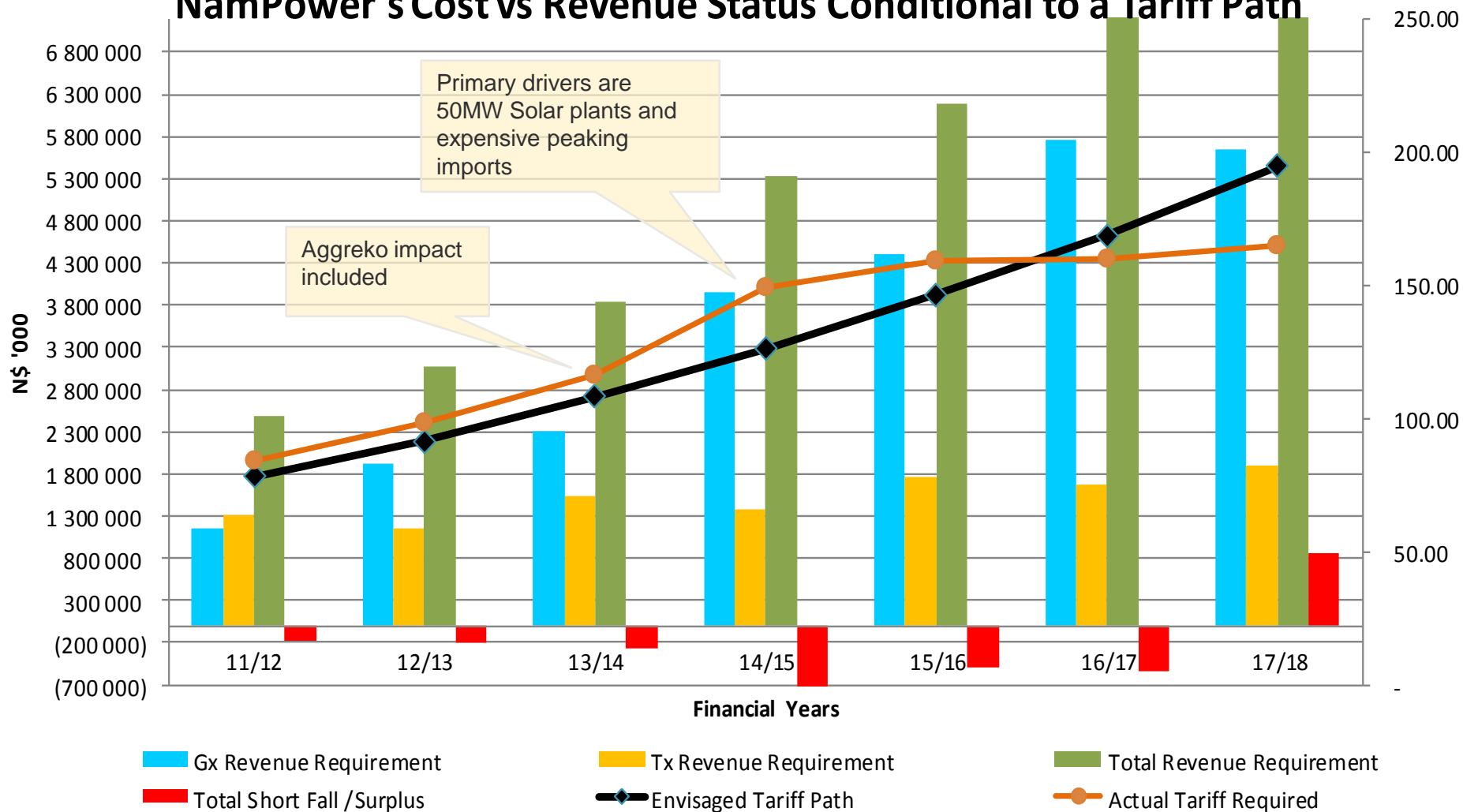
System outlook (in GWh, annually): 2014 to 2018



- Current average bulk supply tariff levels: 91c/kWh (60c/kWh generation and 31c/kWh transmission)
- Pressure on tariffs with upcoming capital investment of up to N\$14 billion over the next 5 to 7 years, and expensive imports and solar IPP plants
- It is estimated that the cost of supply to NamPower in 2017 will be in the region of N\$1.80/kWh, compared to the current levels of N\$0,91/kWh
- Need for a smooth upward pricing path to avoid future price shocks

Proposed tariff path (under discussion with ECB)

NamPower's Cost vs Revenue Status Conditional to a Tariff Path



Conclusion



- The power supply situation will remain critical until the commissioning of a base-load power station in 2018
- However, we have put measures in place through the STCS program and we believe that they will deliver the desired results
- NamPower will not be able to succeed in managing the power supply situation alone: stakeholder assistance and support will be required
- We therefore request all our customers, especially the mining community, to meet us half way by saving at least ten (10) percent on their energy use, particularly during peak periods, commencing this winter. This will translate to the combined saving of approximately 60 MW

Some energy saving tips

HEATER

- Electric heaters that are controlled by thermostats are more energy efficient
- Oil filled heaters are the safest
- Only heat rooms that are occupied

Why pay for heating rooms that are not occupied?

KETTLE

Why pay for boiling a full kettle of water if you only need a cup?

- Only boil the amount of water that you need
- Keep your kettle's element clean of chlorine built-up by boiling vinegar.

GEYSER

- A geyser accounts for up to 40% of your electricity bill
- Ensure that your thermostat is set to no more than 55 Degrees Celsius
- Wrapping your geyser in an insulating blanket can cut power consumption by half



ELECTRIC STOVE

- Use a pressure cooker when preparing food that normally takes a long time to cook
- Consider buying a stove with a convection oven
- The size of the pot should match the size of the stove plate
- Use cooking utensils with flat bottoms and tight covers
- Do not use grill compartment to make toast
- Don't use a stove to light a cigarette.
- Never use the stove or hot plate as heaters

LIGHTBULBS

- Replace conventional bulbs with Compact Fluorescent Light (CFL) bulbs where possible
- CFL bulbs give the same light while using a fifth of the power and last 10 times longer
- Always switch off lights when you leave a room

End



Thank you