

NamPower

Electricity Supply Update

**A Presentation to
the Chamber of Mines**

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Current power supply challenges

- Regional power supply deficit
- Reliance on imports (average 60%, up to 80% during dry seasons)
- Regional transmission congestions (Zambia and RSA)
- Aging power supply infrastructure and associated higher maintainance costs
- Interruptible supply from Eskom as per the new arrangements
- Challenges to accommodate IPPs without GRN guarantees
- High economic growth and step loads (driven by the mining sector)
- Termination of four (4) regional PPA's within the next few months, namely:
 - ✓ ZESA: 150 MW – October 2014
 - ✓ Eskom Supplemental: 200 MW – April 2015
 - ✓ Aggreko: 115 MW – August 2015
 - ✓ Eskom Off Peak: 300 MW – April 2016

❑ 2014 – 2015

- ✓ Electricity supply management challenges
- ✓ Short-term critical supply (STCS) project implemented
- ✓ Power supply situation manageable to a certain extent

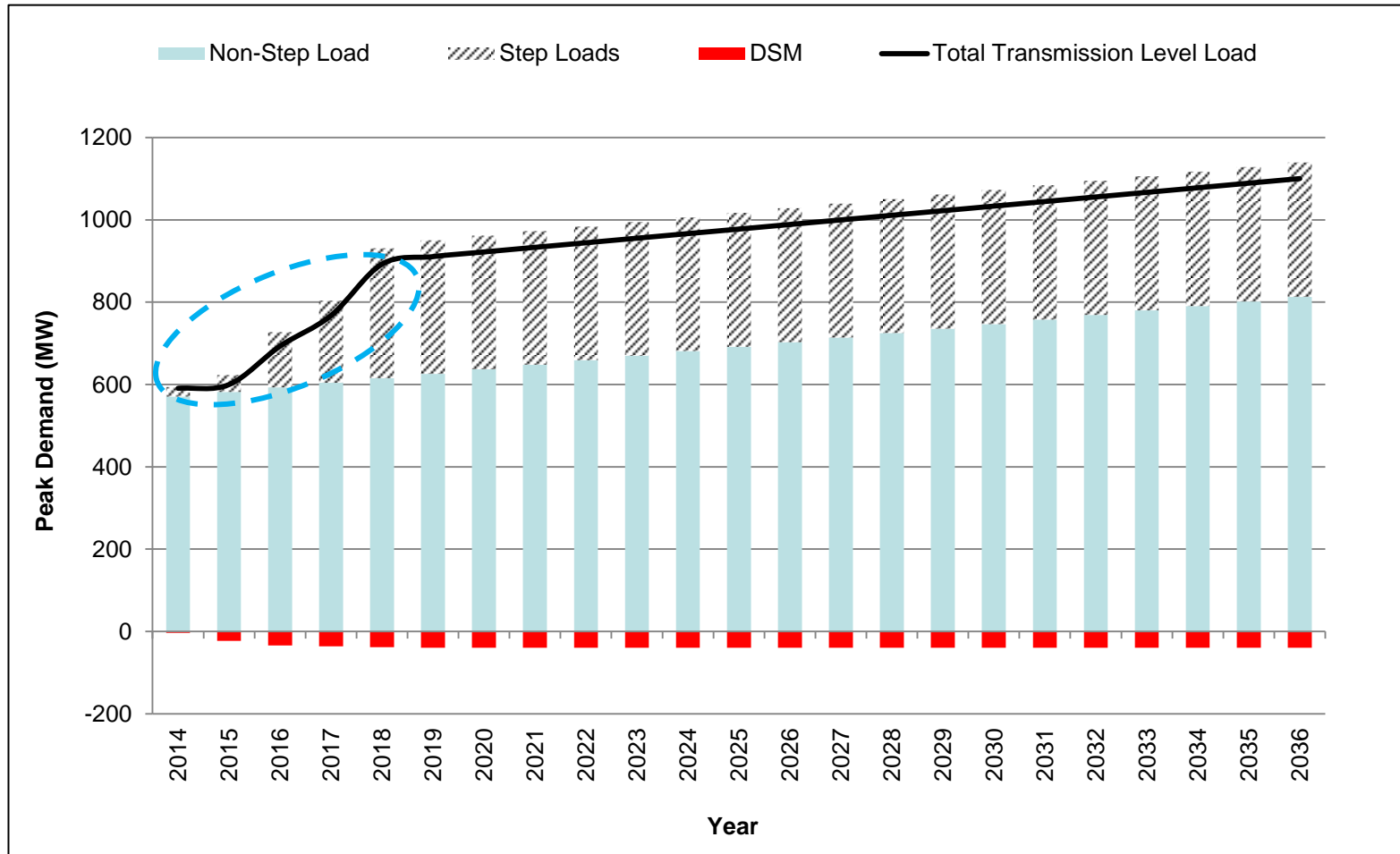
❑ 2016 – 2017

- ✓ Serious power supply deficits will be experienced
- ✓ STCS project expanded to cover the deficit
- ✓ A new 250 MW plant to be commissioned by mid 2016

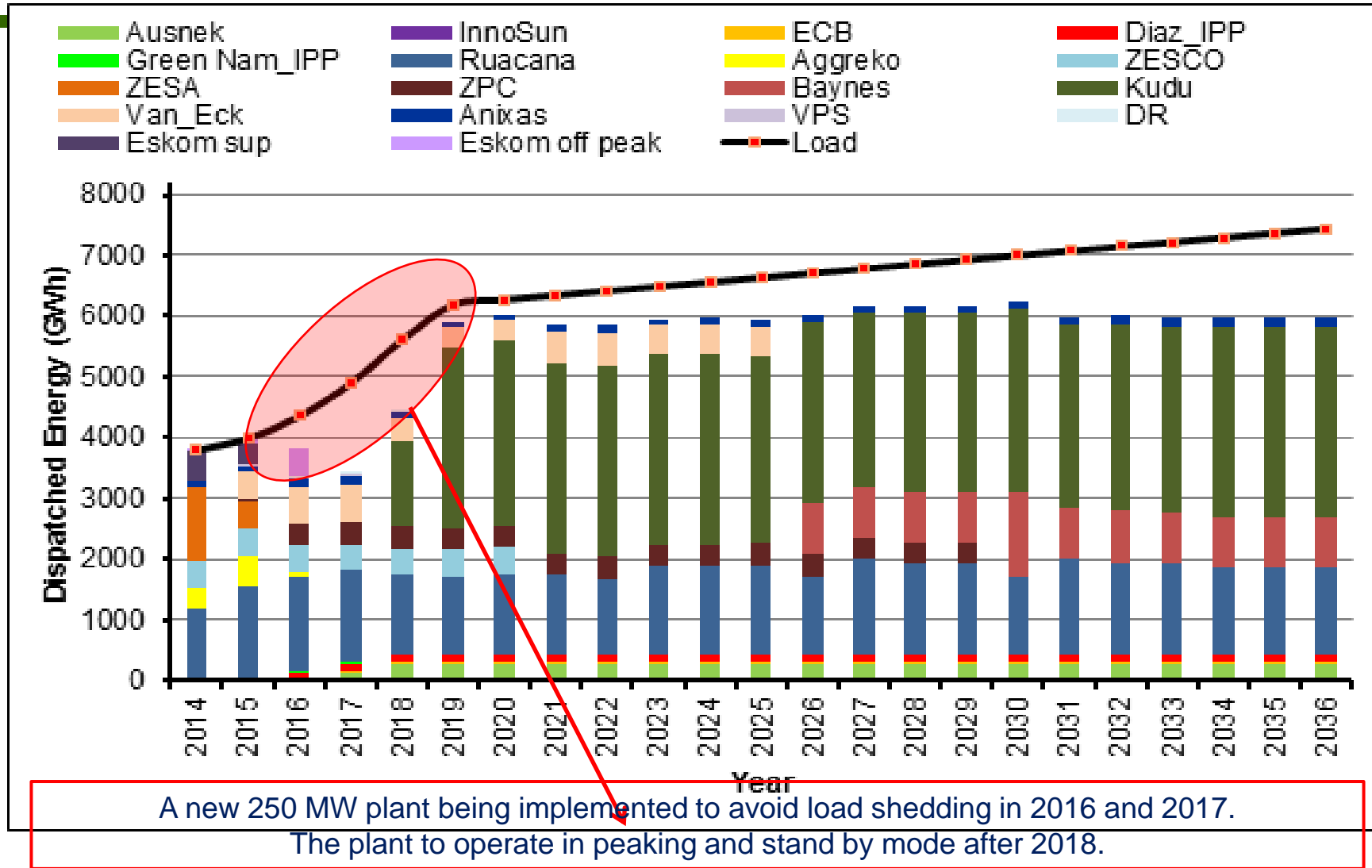
❑ 2018 and beyond

- New base load plant in operation
- Namibia a net exporter of electricity

Hourly demand forecast: 2014-2036



Electricity Supply Forecast



NamPower Capacity Expansion Program



This capital investment program can only succeed with stakeholder assistance and support

Refurbishment program



- Van Eck refurbishment
- Ruacana Runner Replacement

New Power Stations



- The 250 MW power plant
- Kudu Gas Power Station
- Baynes Hydro Power Station

STCS Project



- Renewables
- IPPs
- PPA (Imports)

Transmission



- Transmission Master Plan
- ZIZABONA
- Kudu Transmission

- NamPower generation plants (Van Eck, Ruacana)
- Import arrangements (ZESA, Eskom, ZESCO, EDM and Aggreko)
- PPA negotiations with Independent Power Producers (IPPs)
- Solar IPP tender for procurement of 30MW in progress
- Demand side management (N\$350 million, 110 MW saving potential)
 - ✓ Free distribution of 1,000,000 domestic LED bulbs
 - ✓ Subsidised installation of 20,000 domestic solar water heaters
 - ✓ Demand reduction agreements and agreements with large customers to gain access to their standby generators

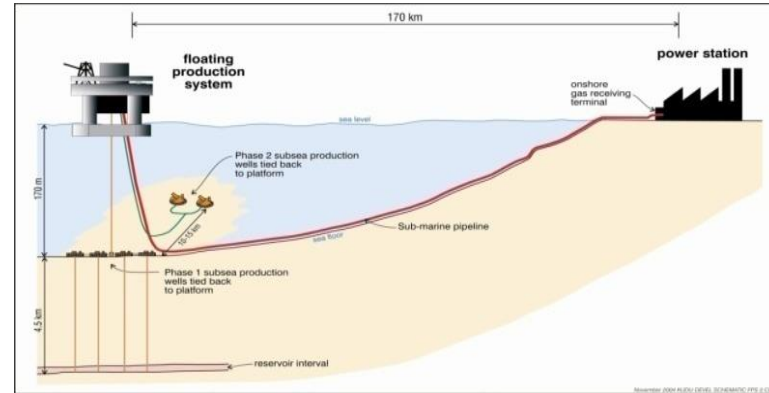
The 250 MW Power Plant

- ✓ Emergency diesels has been one of the NamPower options to ensure security of supply for Namibia
- ✓ Latest analysis found a long term 250 MW plant at Walvis Bay to be more viable and cost effective in comparison with the short term option mainly due to its additional long term benefits (post Kudu)
- ✓ The project must be fast tracked and become operational by mid 2016
- ✓ The plant will be developed through the Special Purpose Vehicle (SPV) in which NamPower will have up to 30 percent equity (PPP Framework)
- ✓ The tenders for the procurement of the strategic equity partner and project developer is currently in the market
- ✓ The plant to operate in base-load mode in 2016 and 2017, and in mid-merit / peaking and standby mode in 2018 and beyond
- ✓ The choice of fuel left to the market for proposal and determination



Kudu Gas to Power Project

- Flag ship project with significant benefits
- FID by mid 2014, FC by December 2014 and commercial operation by 2018
- Milestones achieved since September 2012
 - ✓ Most outstanding issues resolved
 - ✓ PDA signed with upstream parties
 - ✓ Joint Development Agreement (JDA) and PPA Term sheet signed with CEC
 - ✓ PPA and Tx connection negotiations with CEC and Eskom on-going
 - ✓ Evaluation of tenders for procurement of Coordination Bank, EPC, SEP and O&M contractors at advanced stage and to be awarded in June 2014
 - ✓ Document with quantification of GRN guarantees submitted to GRN
 - ✓ Negotiation of GSA with Upstream parties at an advanced stage
 - ✓ Discussions at an advanced stage with Namdeb/Debmarine for the allocation of site and services, and with MME for de-proclamation of the plant site
 - ✓ GRN allocation of N\$1,6 billion for Kudu in the current budget cycle appreciated

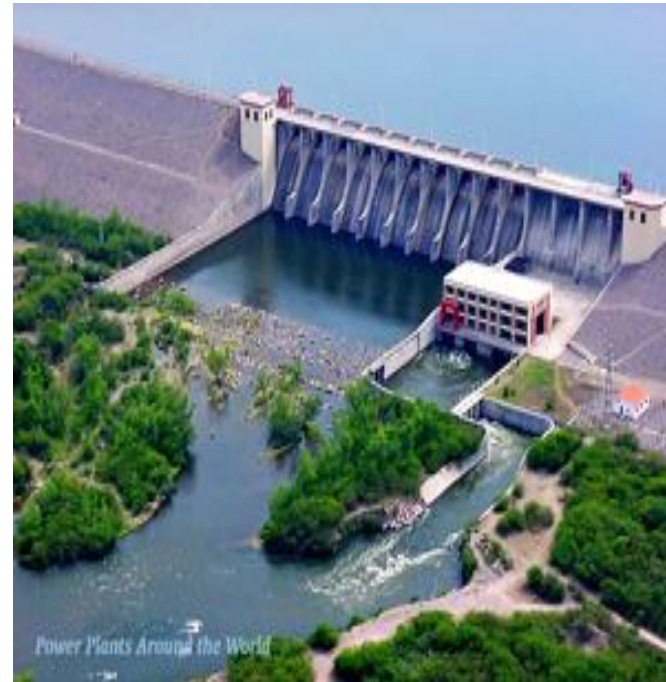


Impact of Kudu on the economy



- ❑ Electricity Supply: Namibia becomes a net exporter of electricity
- ❑ GRN income: Approximately N\$1billion in the form of royalties, taxes and dividends per year
- ❑ Job Creation
 - ✓ Upstream: Not many during construction, but ± 200 permanent jobs during operation
 - ✓ Downstream: ± 1500 jobs during construction and 70 permanent jobs during operation
- ❑ Other Direct and Indirect Project Impact
 - ✓ Housing, roads and other infrastructure expansion and upgrade at Oranjemund
 - ✓ Increased utilization of the Luderitz harbour
- ❑ Impact on Secondary Industry:
 - ✓ Catering
 - ✓ Trade
 - ✓ Transportation/logistic services
 - ✓ Cleaning services
 - ✓ Financial services, etc

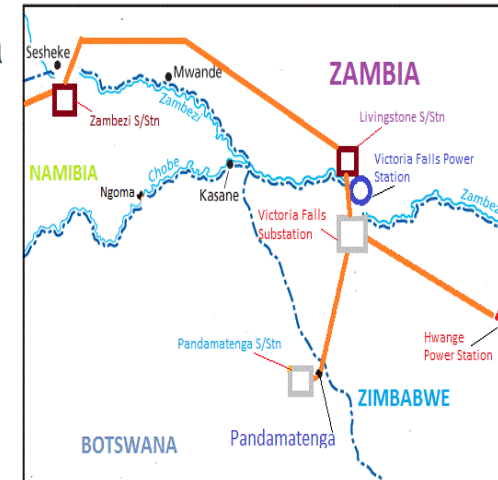
- 600 MW Hydro power project on the Kunene River
- 300 MW for Namibia
- Joint Venture project between the governments of Angola and Namibia
- Techno-economic & EIA studies completed and approved by the PJTC
- Project found to be viable by the PJTC
- Submission soon to be made to the two governments of Angola and Namibia with recommendations for final approval
- Project cost: U\$1,3 billion (include compensation but excludes supporting infrastructure such as transmission, roads, rails, runways and housing)



Key Transmission Projects

□ Zizabona

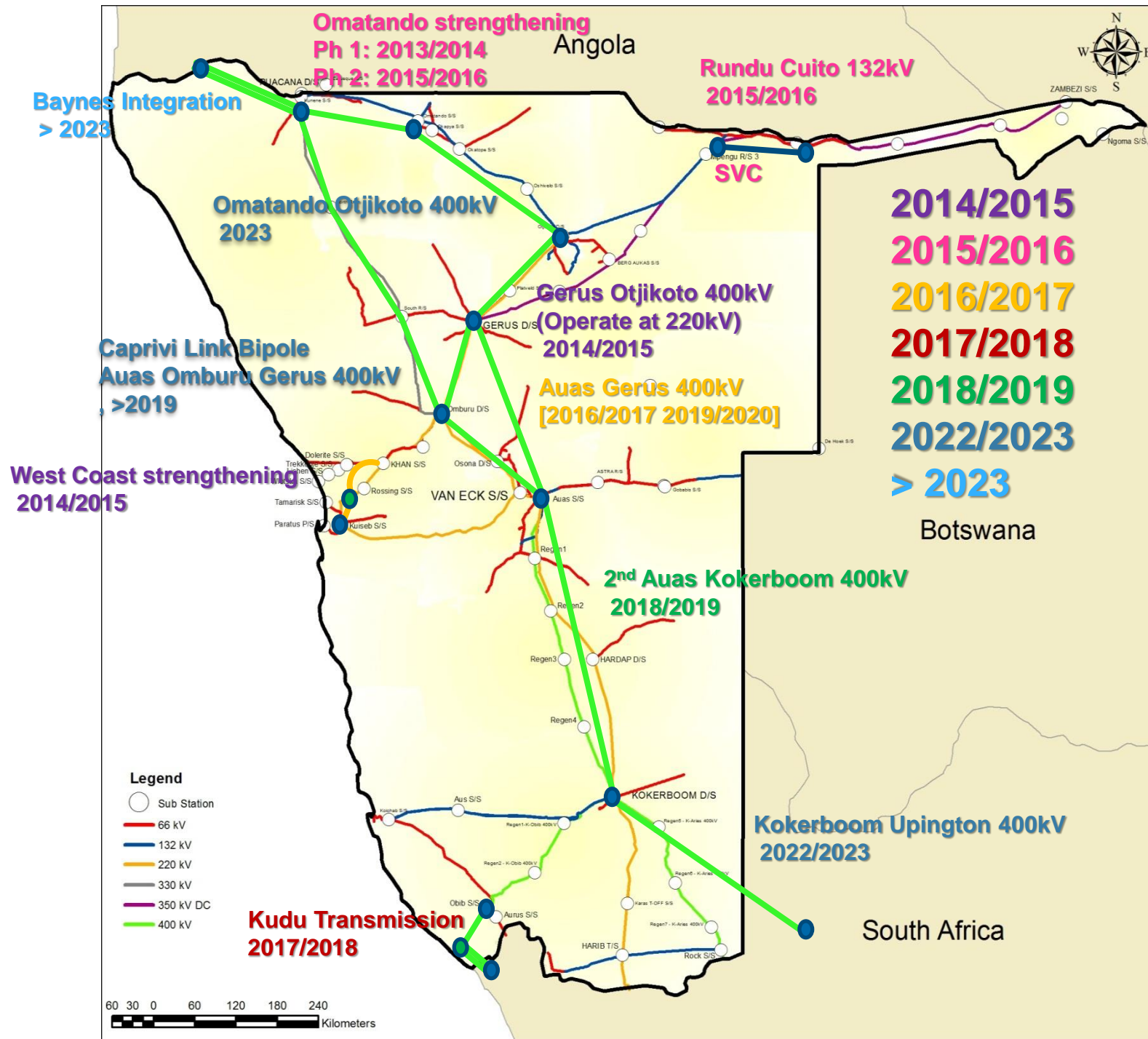
- ✓ Linking Zimbabwe, Zambia, Botswana and Namibia
- ✓ Joint Venture project by the four utility companies
- ✓ SPV registered in Namibia (NP a hosting utility)
- ✓ Shareholders, Wheeling and Power Supply Agreements to be concluded in due course
- ✓ Project cost U\$250 million
- ✓ Expected operational date early 2018



□ Transmission master plan

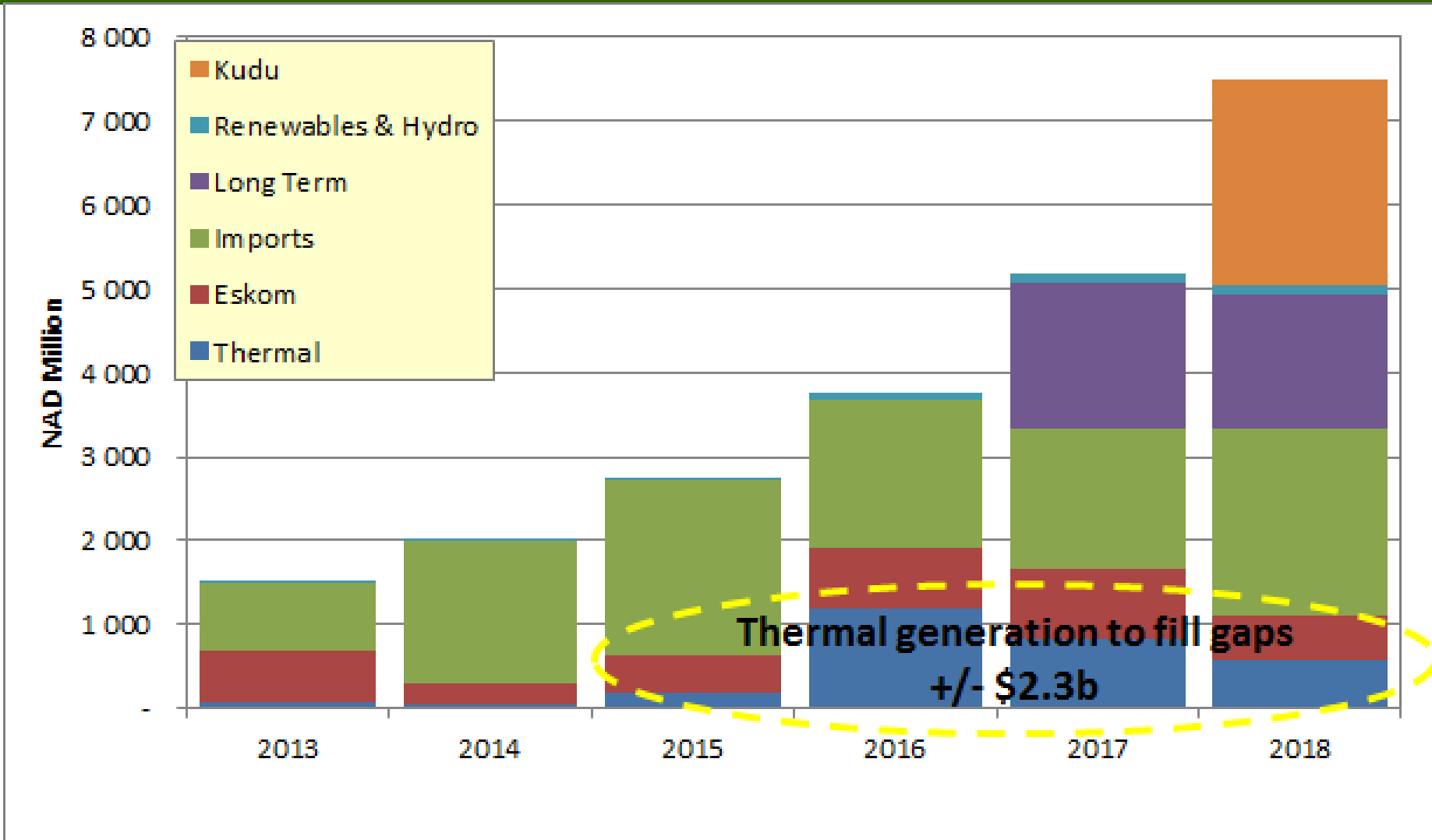
- ✓ High demand growth especially in Northern Namibia
- ✓ Upgrading of transmission backbone to 400kV
- ✓ Estimated initial investment cost of approximately N\$ 7,3 billion





- Electricity pricing in Namibia is the responsibility of the ECB and is set in accordance with GRN Policy which states that tariffs should be:
 - ✓ **Cost reflective**
 - ✓ Reflect the long-run marginal cost of supply
 - ✓ **Based on sound economic principles**
- Only through these principles will NamPower be able to be sustainable, keep lights on through out and ensure that:
 - ✓ The national economy is protected against un-served energy
 - ✓ The new power projects are implemented and commissioned on time
 - ✓ The ESI remain sustainable
- **NB: Having electricity at cost reflective tariffs is far cheaper and better for the economy than blackouts or no electricity at all (darkness)**

NamPower energy supply cost (nominal N\$)

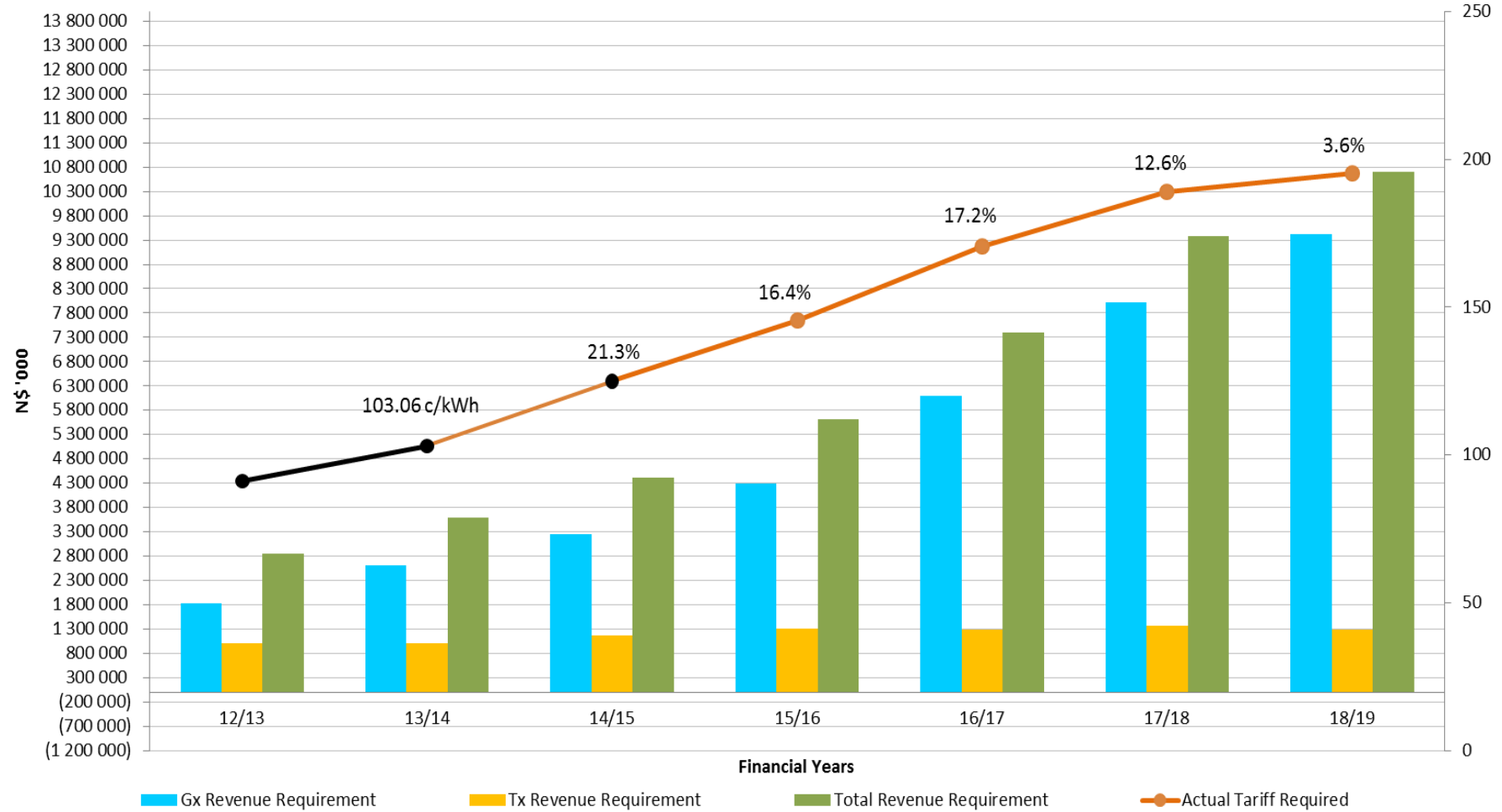


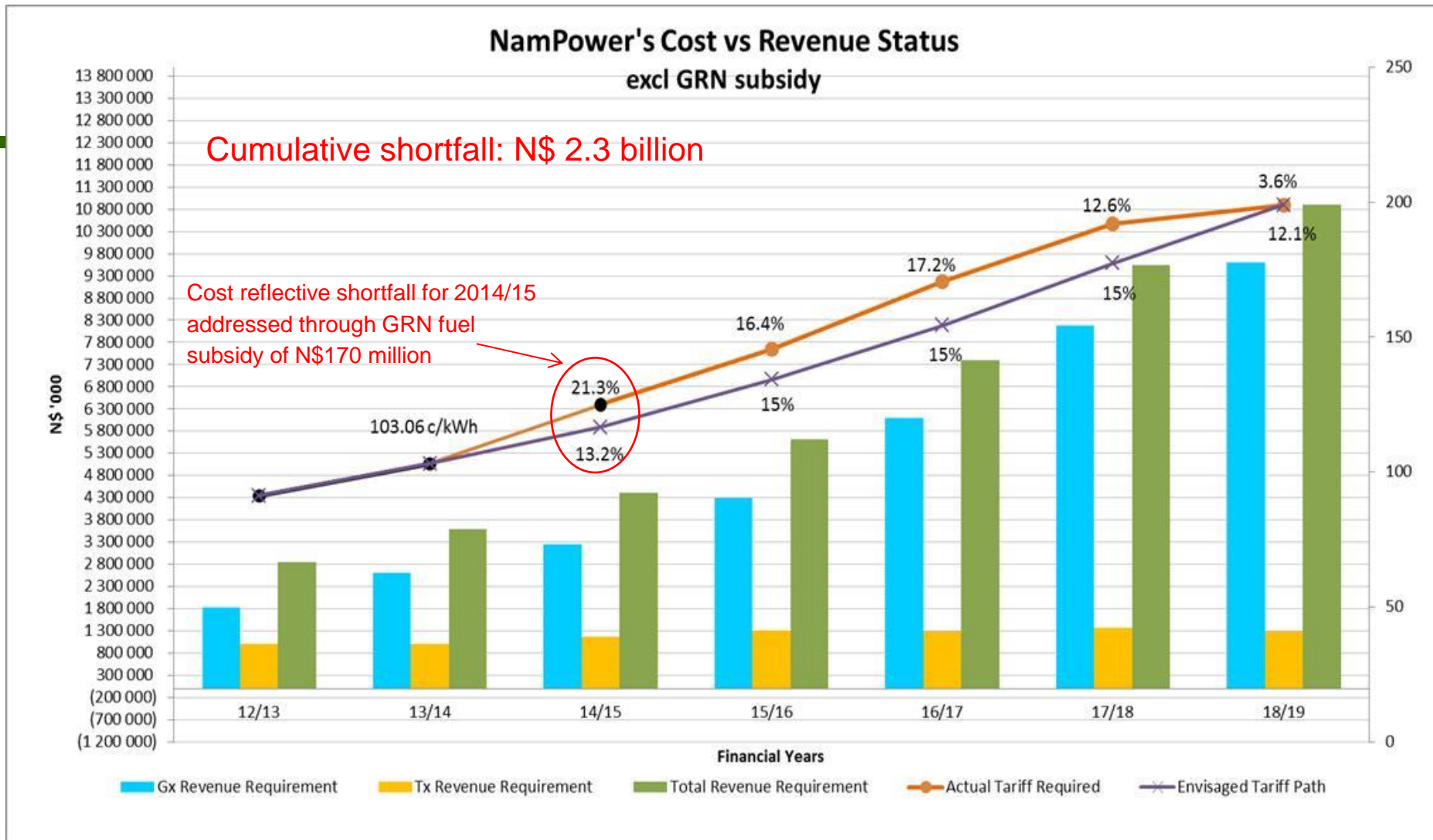
Main Cost drivers



- Investment in new generation and transmission infrastructure (N\$18 billion)
- Reinvestment in aging infrastructure (equipment replacement)
- High cost of import contracts
- Devaluation of local currency against US dollar
- Higher returns by the private sector (IPPs)
- Introduction of renewable energy generation (initially)
- Increased use of coal & diesel (fuel costs increases higher than inflation)
- Interruptible supply from Eskom
- Supplier of last resort

NamPower's Cost vs Revenue Status





It is not clear if GRN will continue with the principle of tariff subsidy to enable electricity price adjustments to follow the lower path over the next 4 years or not.

Conclusion

- Namibia will continue to experience power supply deficits, and keeping the lights on will remain challenging until the commissioning of Kudu in 2018
- In 2014 and 2015 the power supply situation will to a certain extent be manageable. However, serious power supply deficits will be experienced in 2016 and 2017. This deficit will be addressed through the STCS program (including the 250 MW plant)
- During the next 4 to 5 years NamPower will invest N\$18 billion in new power supply projects. During the same period we shall also rely on more costly import contracts to ensure security of supply. Electricity tariffs will therefore continue to raise at a high rate per annum after which they will stabilize with the introduction of Kudu in 2018
- NamPower has so far been successful in keeping the lights on thanks to the support and cooperation from its stakeholders. We assure the mining community that with this continued support NamPower will be able to continue to deliver on its national mandate of powering the nation and beyond
- As usual we therefore request all our customers, especially the mining community, to continue saving at least ten (10) percent on their energy use, particularly during peak periods, i.e from 07h00 to 10h00 and from 18h00 to 21h00

End



Thank you