

MTNN Green Strategy, Initiatives, Deployment experience, Outcome and Challenges

January 2014



MTN Nigeria Quality Procedure

MTNN is a leading ICT Company in Nigeria.

We lead in the delivery of a bold, new digital world by providing the most extensive network coverage, ICT solutions and value added services, designed to make our customers lives a whole lot better.

At MTNN we emphasize quality in all our operations and services, and we continually improve the effectiveness of our quality management system.

We are also committed to meeting the statutory and regulatory requirements in Nigeria and we communicate the importance of meeting these quality objectives to all our staff.

The management of MTNN is dedicated to ensuring the highest standards of quality.



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Preamble: MTNN Network – Existing and Progression Plans

MTN Nigeria Network Sites key performance requirement is to provide network availability of equal or above 99%. This involves the proper dimensioning of all support and ancillary equipment to meet the requirement of building and maintaining a robust network. Optimised network operation, systems replacement plan and religious adherence to swap-out process especially in a highly competitive market such as Nigeria where utility supply is not reliable nor readily available.

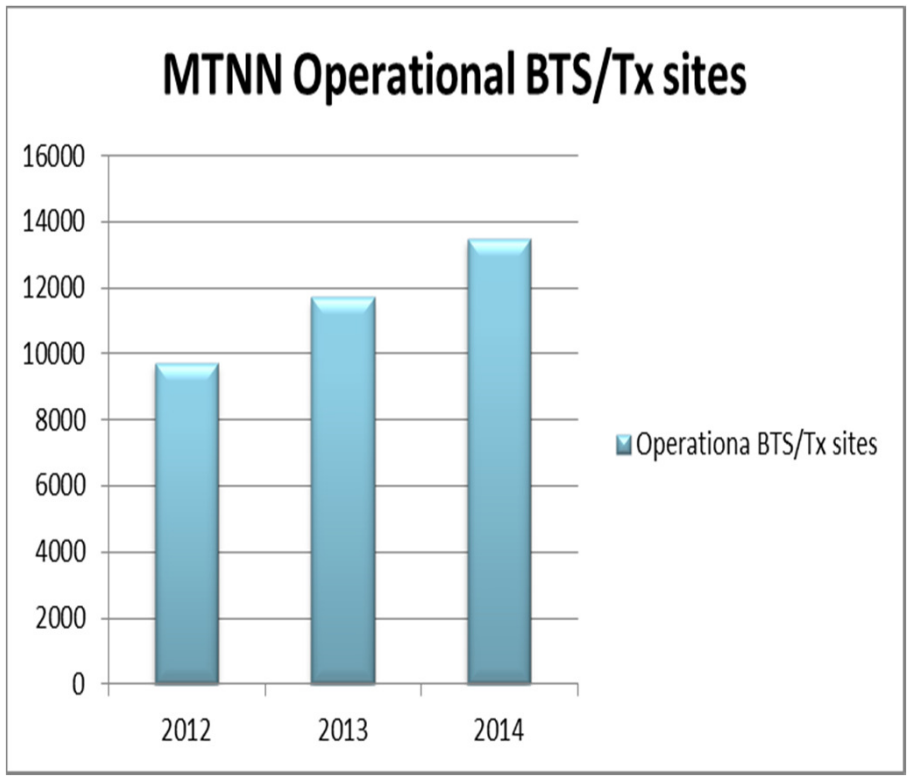
Existing Arrangement - MTNN operates more than 10,000 BTS/Transmission sites for its 2G and 3G coverage across Nigeria with 12 major switch centers and 3 Data Centres.

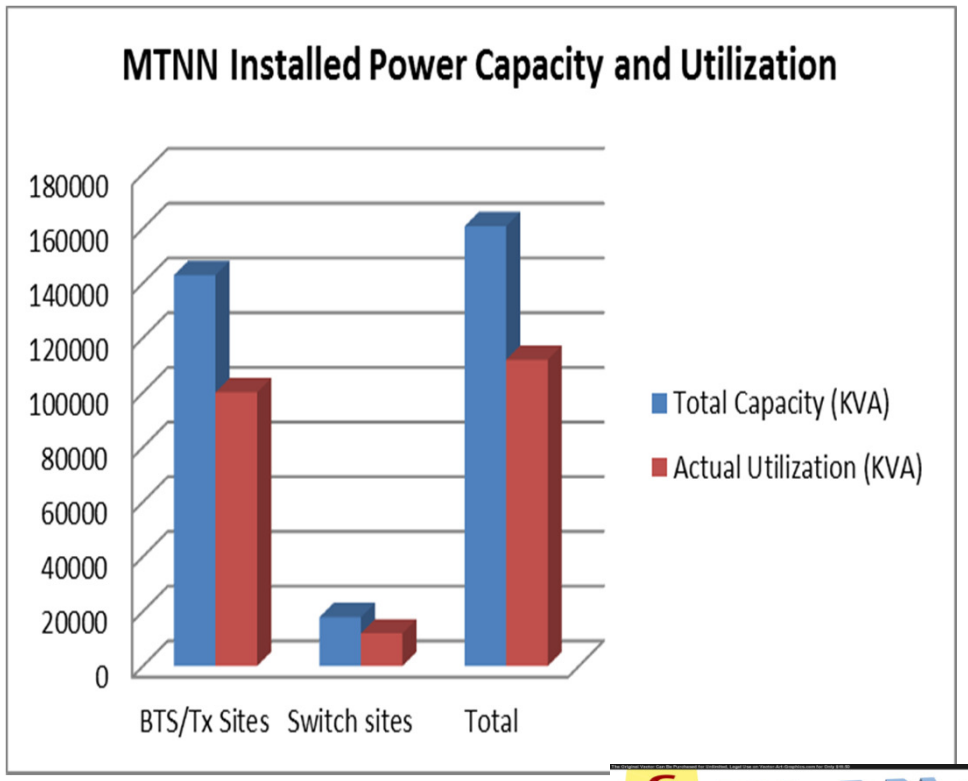
Introduction
National Symbols

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Preamble on MTNN Network – Existing and Progression Plans

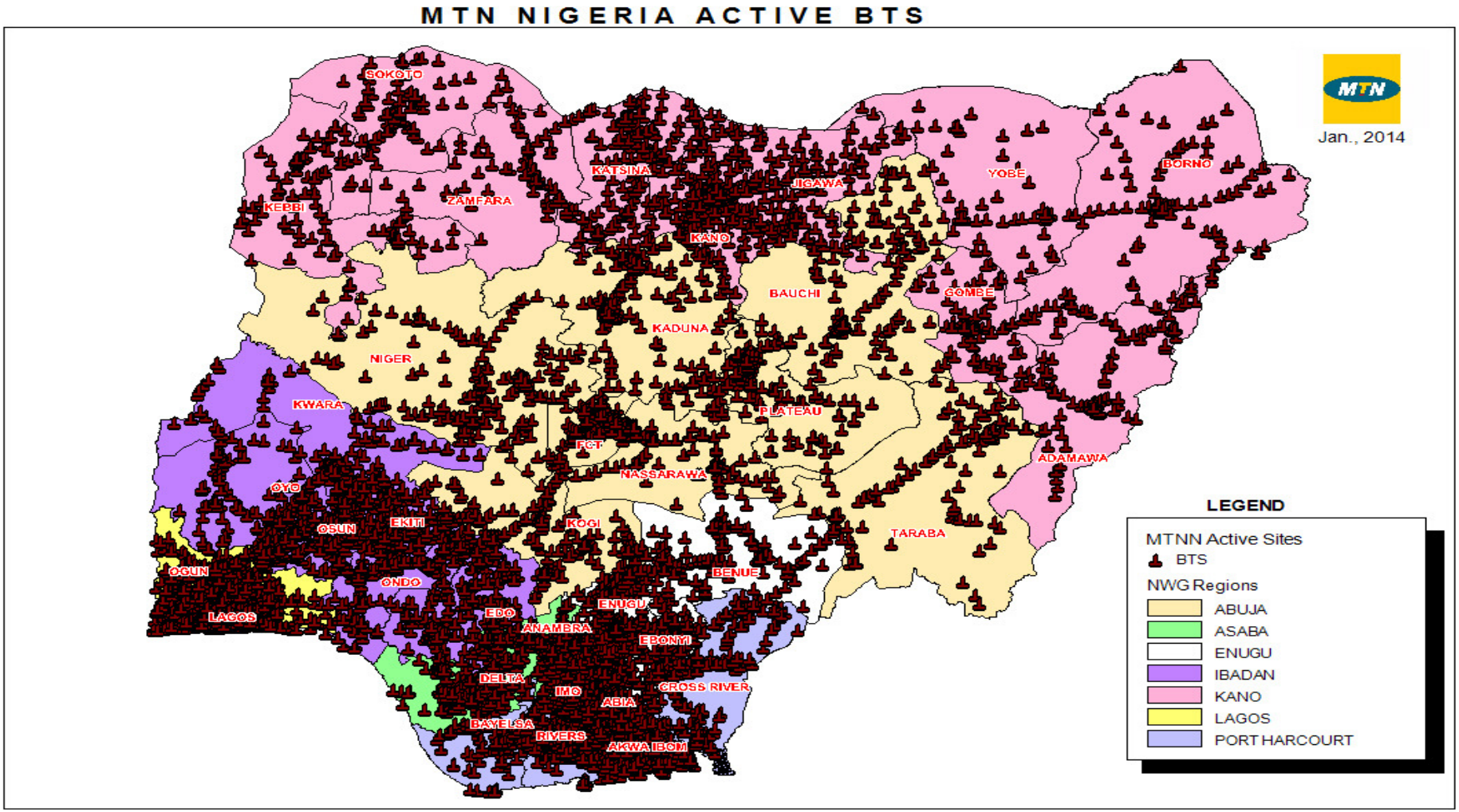
Based on the ongoing roll out plan for 2014, the total number of operational sites would exceed 13,000.





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Preamble on MTNN Network – Existing and Progression Plans



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Robust Energy Configuration of MTNN BTS/switch locations

MTNN operates a N+2 configuration on a BTS/TX site and N+3 formation on a switch/Data Centre.

- ❑ BTS site with conventional Power Systems -2 gens + Utility
- ❑ BTS site with renewable energy -1 gen+battery+Utility.
- ❑ Switch/Data Centre -3 gens + Utility

Essentially this robust power systems foundation is to further reinforce the network availability and reliability and make the entire system-organization formidable.

To provide Energy to its operation, MTNN total installed diesel generator capacity are as follows (as at October, fy13):

- ❑ BTS/Tx & Switch sites: > 400MVA
- ❑ Generation to Support system > 160MVA
- ❑ Utilization > 120MVA



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Energy as a challenge in network operations and expansion

To build a system that can jointly generate a capacity of over 400MVA is a major challenge particularly in the current face of public power issues in Nigeria;

The key challenges includes:

- CAPEX cost of generating the AC power systems.
- Consistently high and increasing opex cost of fueling and maintaining the energy systems.
- Erratic and unreliable utility supply.
- Carbon footprint
- Environmental distortion
- Community unrest/challenges



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Energy as a challenge in network operations and expansion

- Incessant upgrade works on the power systems due to network expansion.
- Security Concerns – Theft
- Constant threat to Revenue
- Utility power accessibility.
- Billing



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Green power Strategy in MTNN.

MTNN interpretation of green energy is clean power and the technology we engage are the ones that satisfies the followings:

- Technologies considered clean - Less carbon footprint.
- Environmentally friendly.
- Less operational cost



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MTNN Green power Initiatives

Our Green energy initiatives splits into 2 major categories –

- ❑ Reduction in air/environmental impact.
- ❑ Eliminate environmental impact.

Reduction of Environmental Impact Initiatives includes but not limited to the followings:

1. Off Peak energy system solution

This involves a pre-sized lower dimensioned plant to cater for less traffic periods in major office complex (from 8 pm till 7 am).

The off peak solution is automated to kick-in within this hour without human intervention.

- ❑ Reduces energy waste at less traffic period



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MTNN Green power Initiatives

- It enhances our financial management and control.
- Extended life cycle of generators

2. LED Illumination systems.

This solution entails replacement of the conventional lighting systems with LED systems, the objective is to achieve an advanced illumination level at a reduced energy demand.

- Enhanced financial management and control.
- Lessened energy demand in major high capacity locations in MTNN.
- Extended useful life of the lighting system – 5 years.
- Reduced energy waste and environmental distortion.



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MTNN Green power Initiatives

3. Fuel (AGO) Decontamination and sterilization solution.

The solution basically takes the fuel through an array of segmented filtration cycles before been utilised by the generator, it is a heavy duty cyclic cleaning device.



- ❑ Preserve the useful life of the generator.
- ❑ Reduce noise and environmental pollution.
- ❑ Reduces generator system breakdown.
- ❑ Financial management and control.
- ❑ Eradiate community hostility due to environmental pollution.
- ❑ Enhance consistent network availability and reliability.



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MTNN Green power Initiatives

4. Incorporation of soft start Comfort cooling system.

- ❑ Manage energy demand during system start-up.

5. Optimization of Utility energy supply.

This entails incorporation of a wide-window voltage tolerance AVR to regulate the supply before utilization.

The objective of this solution is to ensure that supply = utilization.

Gains.

- ❑ Less Opex cost.
- ❑ Less environmental pollution.
- ❑ Less Capex.
- ❑ Asset life span is extended.



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MTNN Green power Initiatives

6. LPS Gas Solution

- ❑ 15% Savings on Operational Expenses.
- ❑ Very low carbon emission.
- ❑ Reduced fuel theft.

7. Power factor Correction Devices for HCC.

- ❑ Reduced utility bills.
- ❑ Reduced operational cost by optimizing diesel generators output.
- ❑ Lower energy losses.
- ❑ Increases the potential available energy within the network





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MTNN Green power Initiatives

Green Energy Solutions that eradicates environmental pollutions in MTNN.

1. Solar energy Solution.

- ❑ 70% Savings on Operational Expenses.
- ❑ Very low carbon emission.
- ❑ Eradicate theft.

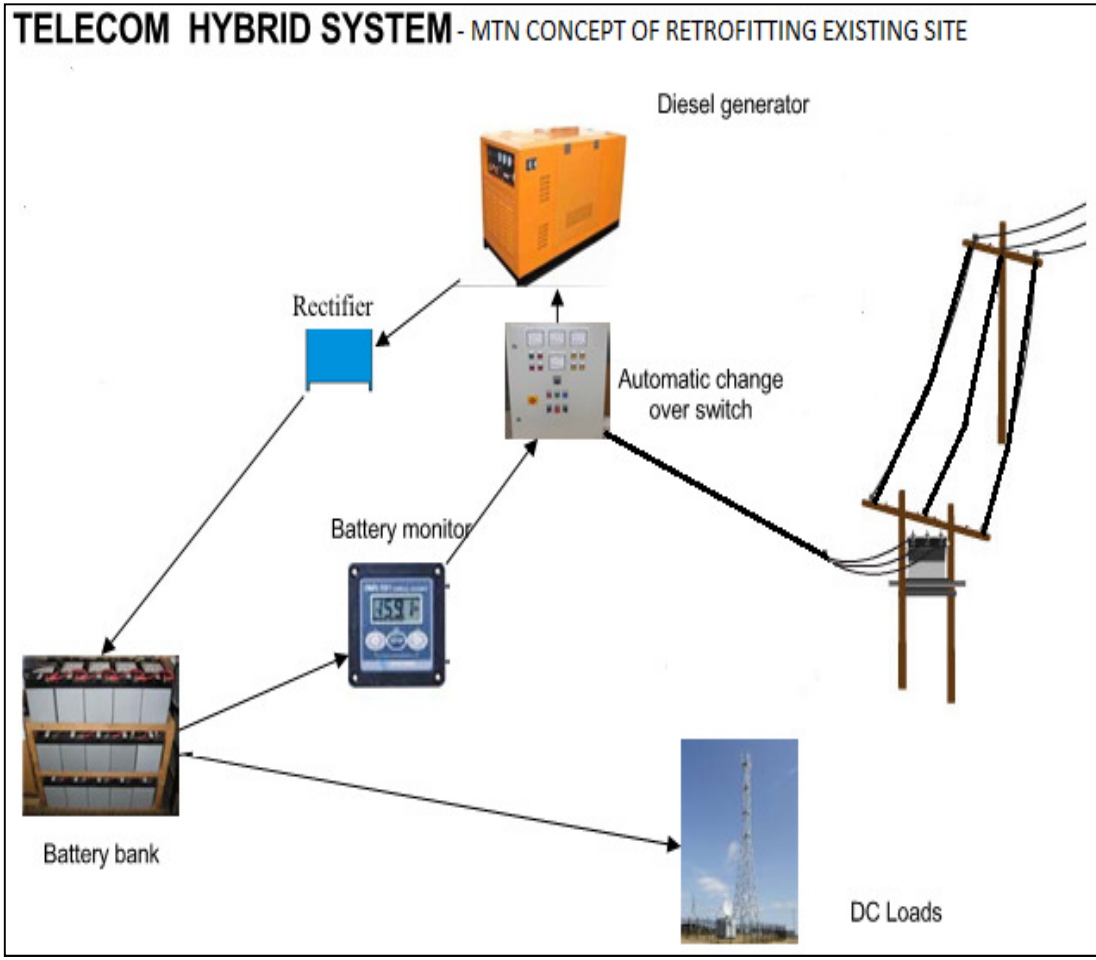
2. AC battery Cycling Solution (Hybrid)

- ❑ Reduction in Carbon emission.
- ❑ > 45% savings on Opex spend.



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MTNN Green power Initiatives

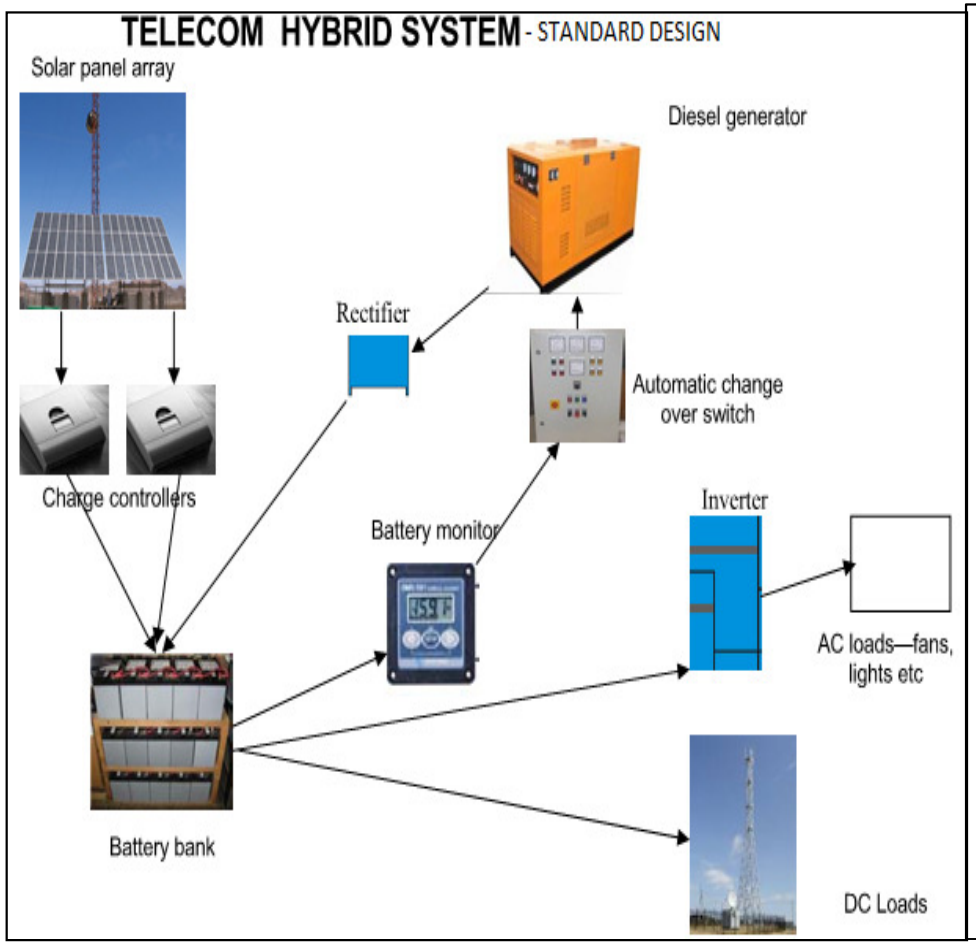


For Conventional BTS sites, MTNN idea of retrofitting hybrid power system into the existing sites is for the purpose of using the battery monitor to control existing ATS. In this scenario public mains may or may not be available, the battery monitor will through the existing ATS starts or shutdown the diesel generator as the case may be based on battery capacity availability/settings. The situation where PHCN is available it is assumed to be the priority hence the saving is basically targeted at diesel consumption and generator maintenance. MTN design for conventional BTS sites presently does not include the use of solar panel but inverters are installed for low AC power usage at site. This solution is used for all new BTS site deployment.



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MTNN Green power Initiatives



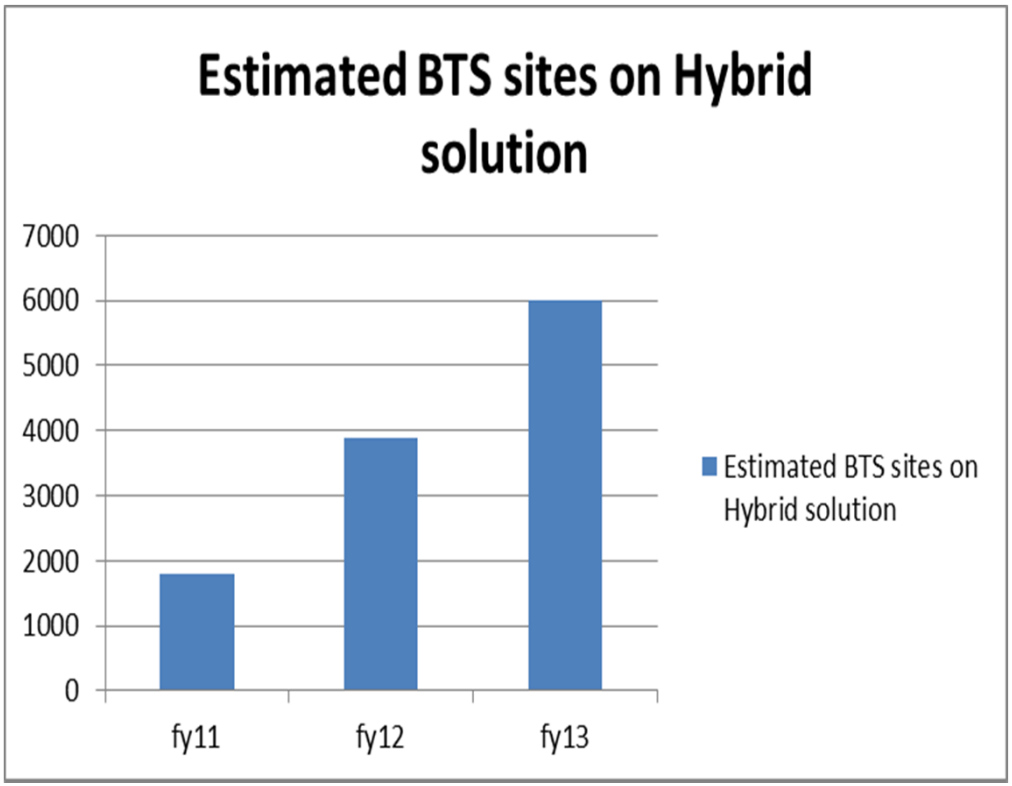
The conventional design of telecom hybrid power system where solar panels are the main source of power has only been implemented at 280 low capacity rural telephoning sites. The solar panel charges the battery which supply the telecom, an inverter is provided to support any AC power load especially cooling and site lightning. The battery monitor provide the info to the automatic change-over switch to either starts or shutdown the diesel generator as may be required. With this arrangement, after the initial investment, there will be limited cost of generator maintenance and fuel consumption. This design is primarily for remote area where public mains supply is not available. More solar power solution could be deployed to convention BTS in future as presently a lot of on site trials are ongoing in MTNN network



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MTNN Progress so far on Hybrid Power Solution deployment

As at October 2013, a total number of over 60% BTS sites were running on hybrid power solution in MTNN network.



In addition to existing sites being retrofitted, all new BTS sites deployed on MTNN network from FY12 till date are rolled out with hybrid power solution.



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Cost Implication & Projected cost savings of the Hybrid power solution on MTNN Network

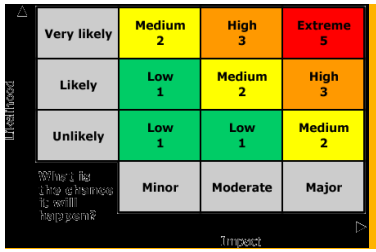
- Conventional power provisioning of N+2 configuration on BTS/Tx site is relatively higher in cost than the green energy hybrid initiative.

- There is about 25% marginal cost increment on energy equipment only for deploying a new BTS site with hybrid power solution as compared to deploying normal BTS without hybrid Power solution.

- Projected cost savings (fuel and maintenance cost) ranges based on the load level/priority of the site which directly affects the backup period of the initiative. This ranges between an average of 20 – 75% operational cost reduction



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Challenges in deployment and operation of hybrid power solution for BTS sites

- Lost of targeted cost savings as result of frequent hybrid batteries theft.
- Deployment of diverse anti-theft solutions.
- Vendor management and technical competence/know-how.
- Accumulated temperature between the battery cabinet which can affect the battery performance and end-of-life period.
- Community reluctance/confrontations.
- Space limitation.





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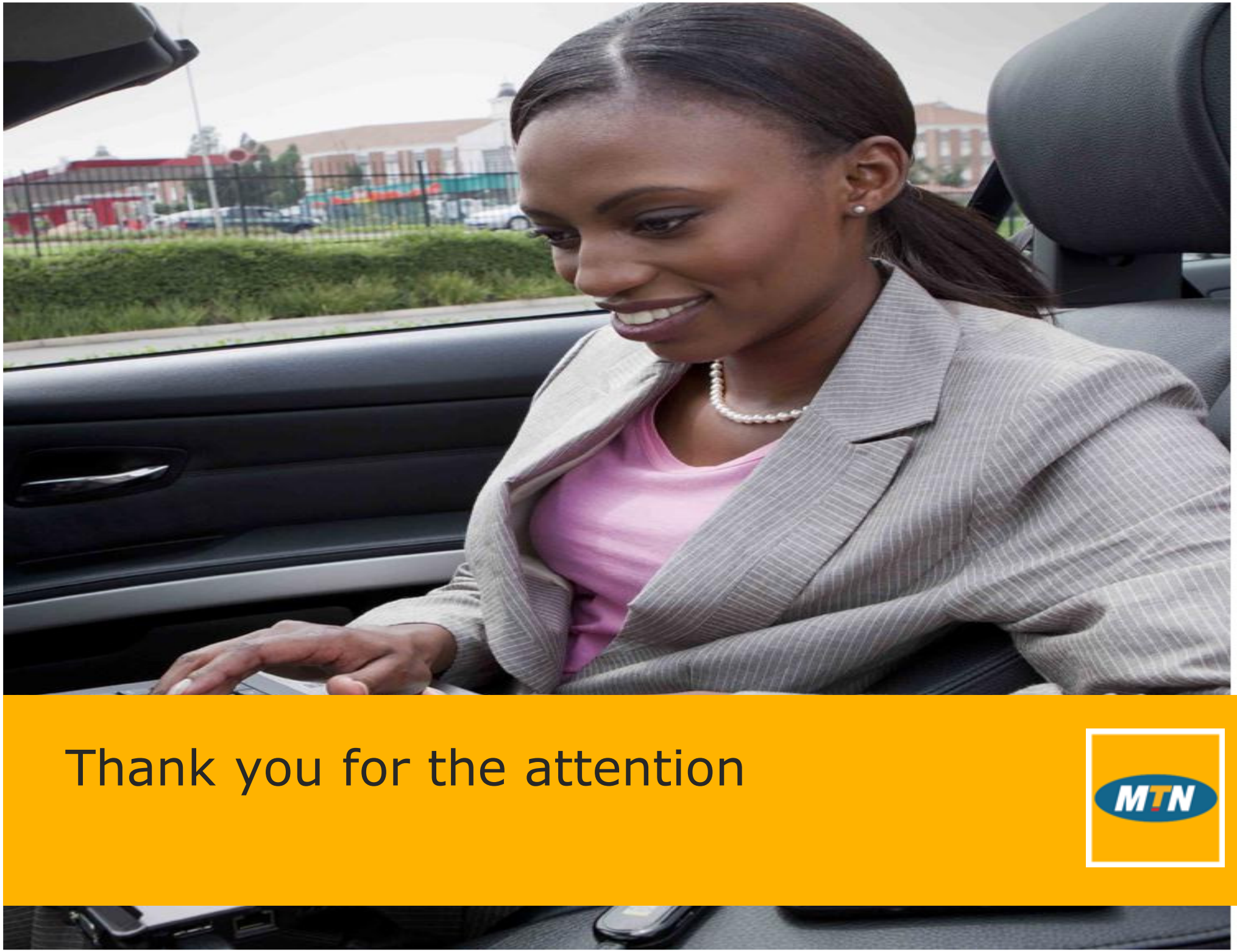


MTNN expectation from different stakeholders

- Government support - In terms of legislation and law enforcement Agency active participation.
- Special import tariff waiver for power systems equipment.
- Concession for environment taxes to encourage green energy solutions.
- Active collaboration and commitment to SLA.
- All stakeholders to be substantial MTNN ambassadors.



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Thank you for the attention