Energy Efficiency In BTS sites

Randeep Sekhon

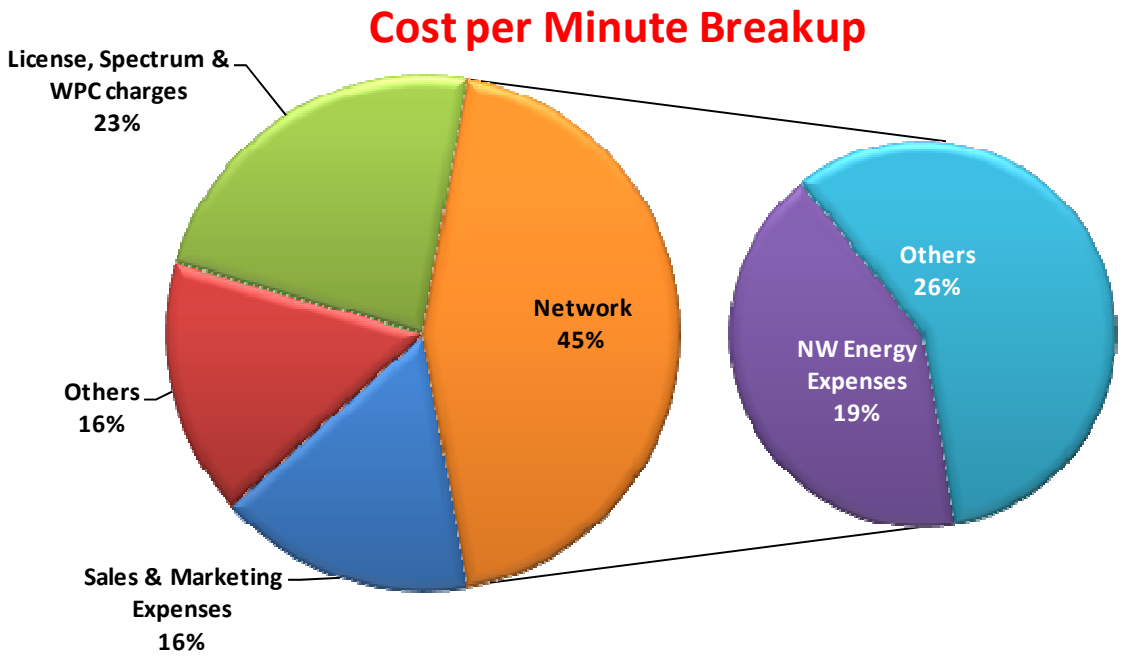
Bharti Airtel Ltd

India

Agenda

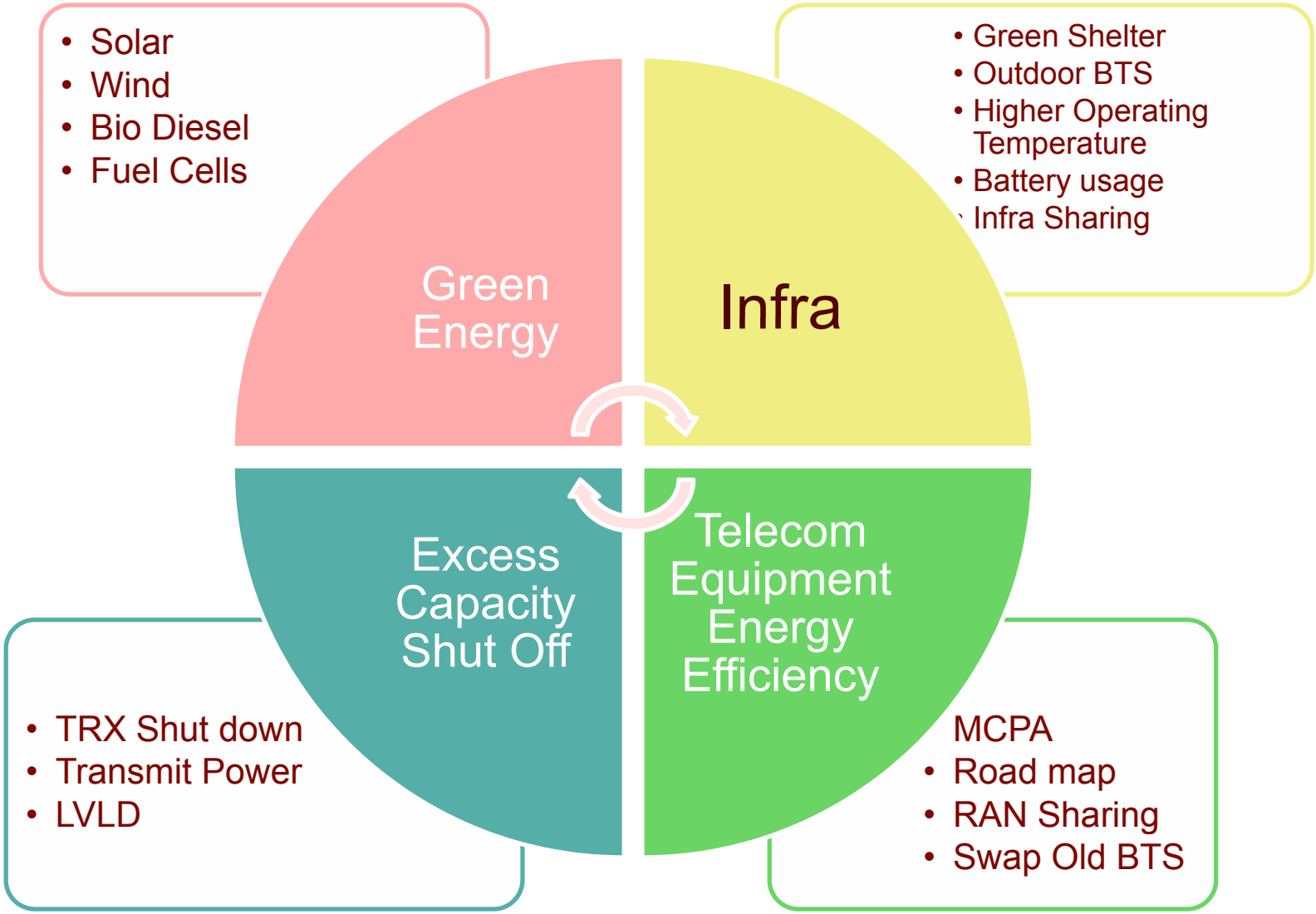
- Why Energy Opex is important to a Telecom Operator ?
- Aspects of Energy efficiency
- Telecom Equipment energy efficiency
- Green Shelter

Typical Indian OpCo Opex Chart

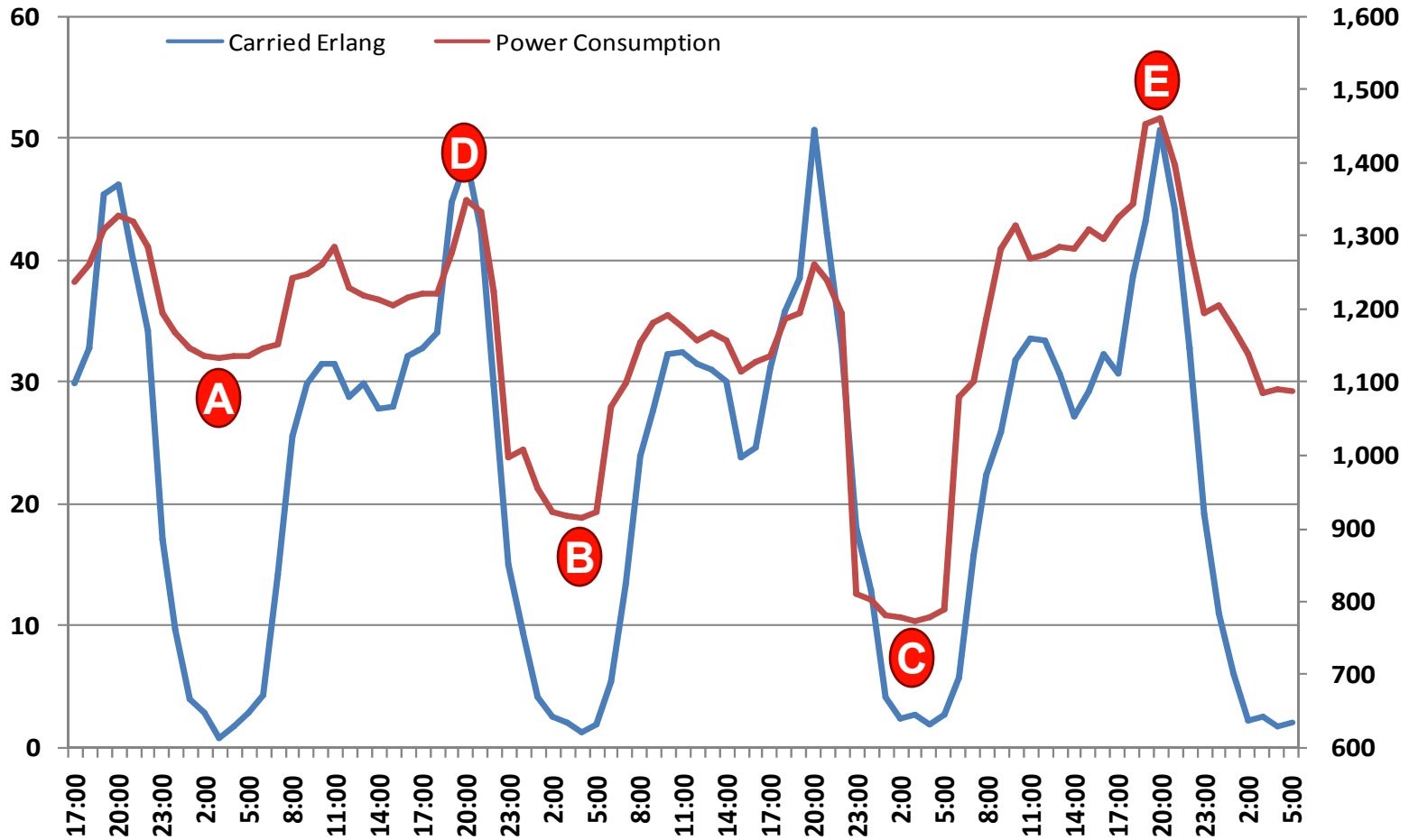


Energy expense comprises of 19% of cost per minute
Annual Energy Bill of Bharti ~ $500 Mn

Energy Efficiency in Telecom Operations



Typical BTS Power Consumption vs Traffic Trend



A – Idle Load per sector

B – Minimum Load with 2TRXs locked/halted

C – Minimum Load when 2TRXs per sector removed physically D – Typical Peak load with power control enabled

E – Typical Peak load with power control feature disabled

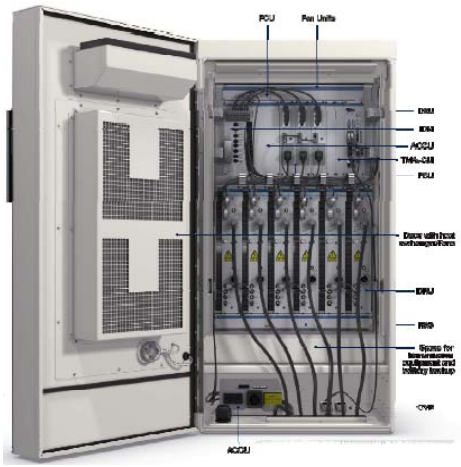
Ericsson BTS Family

PAST



RBS 2204

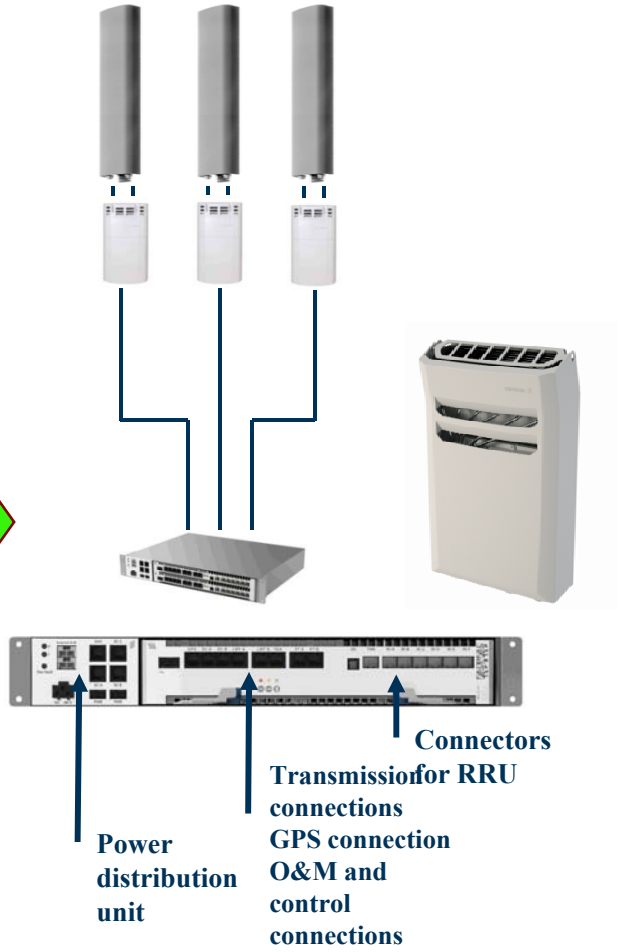
PRESENT





RBS 2964/2111

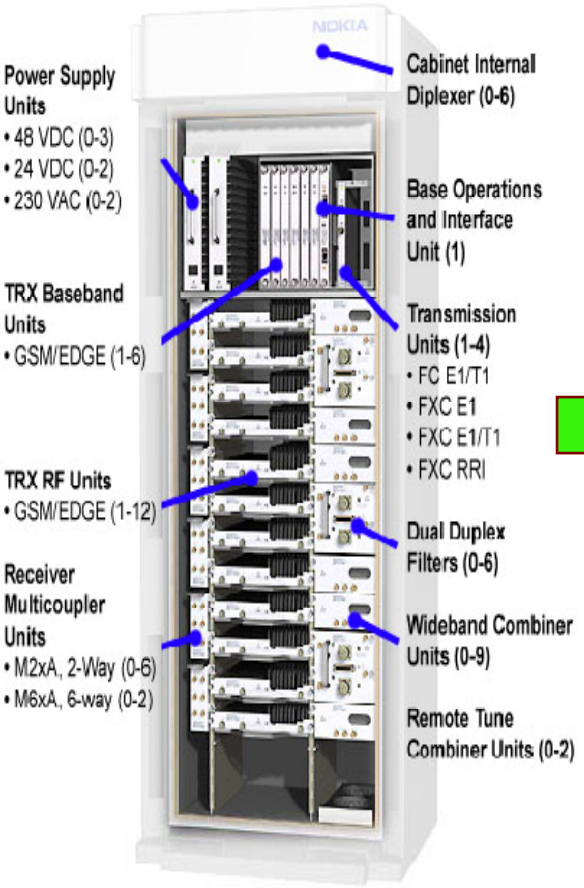
FUTURE



RBS 6000

NSN BTS Family

PAST



Ultra BTS

PRESENT



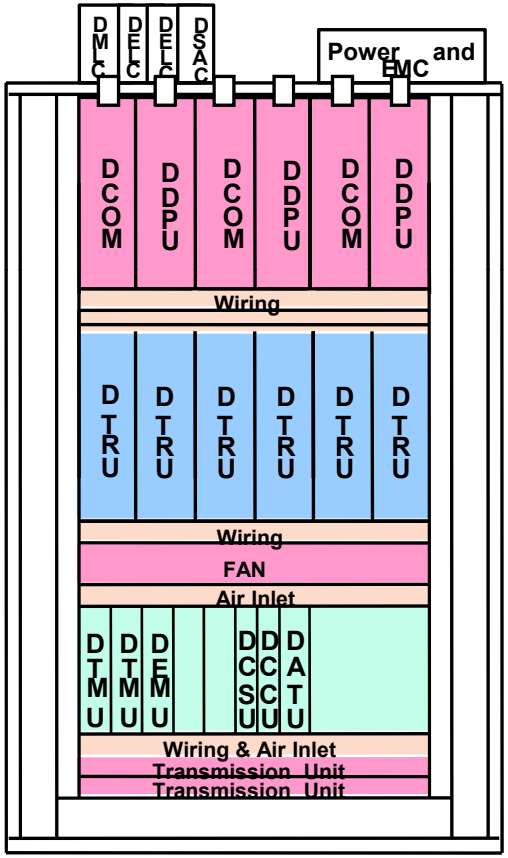
FLEXI BTS

FUTURE



MULTI RADIO FLEXI

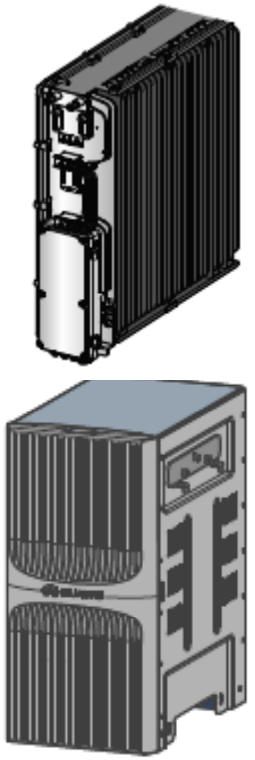
Huawei BTS Family



RBS 3012

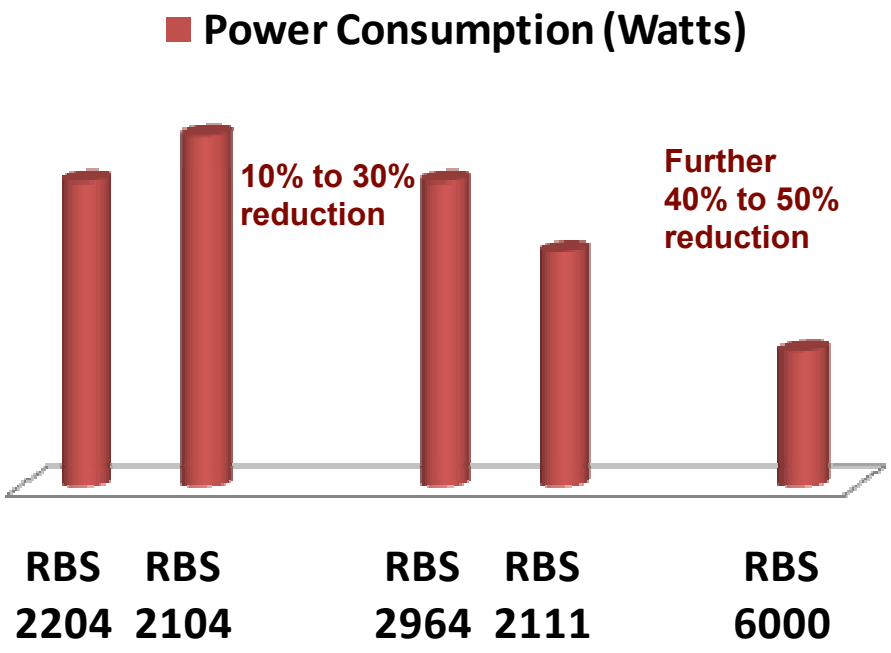


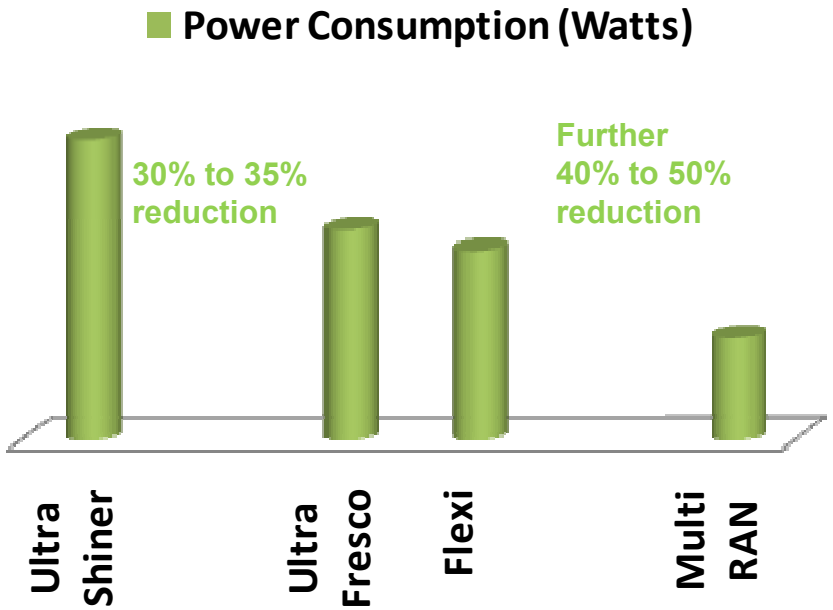
BTS3900 GSM BTS3900A GSM



DBS 3900

Power Consumption trend…





ERICSSON

Nokia Siemens Networks

Up to 50% reduction seen in BTS power consumption using MCPA and Excess capacity shutoff.

Telecom equipment energy efficiency

- Use new energy efficient Base Stations
- Switch off excess capacity when not needed
- Use Optimal power in BCCH
- Use Tower mount BTS in Off grid sites
  - Lower power consumption of Tower Top BTS makes it feasible case for Green Mobile installations
- Use Outdoor BTS
- RAN Sharing
- Increase operating temperature to up to 35deg

Impact on 200 Watt Average Power Reduction

200 Watt reduction per BTS in average power will lead to 4.8 KWH savings per day.

Translated into a Annual saving for a company with 10000 BTS

$4.38Mn



For large operators with 100K BTS

The savings translate into **43Mn USD** annually

Saving is there for all large and small mobile operators for any incremental saving in BTS average Power.

Energy Saving	Watt	200
Units Saved daily	KWH	4.8
Units Saved Annually	KWH	1752
Price Per Unit	$	0.25
Annual Saving	$	**438**