Broadband energy saving strategy

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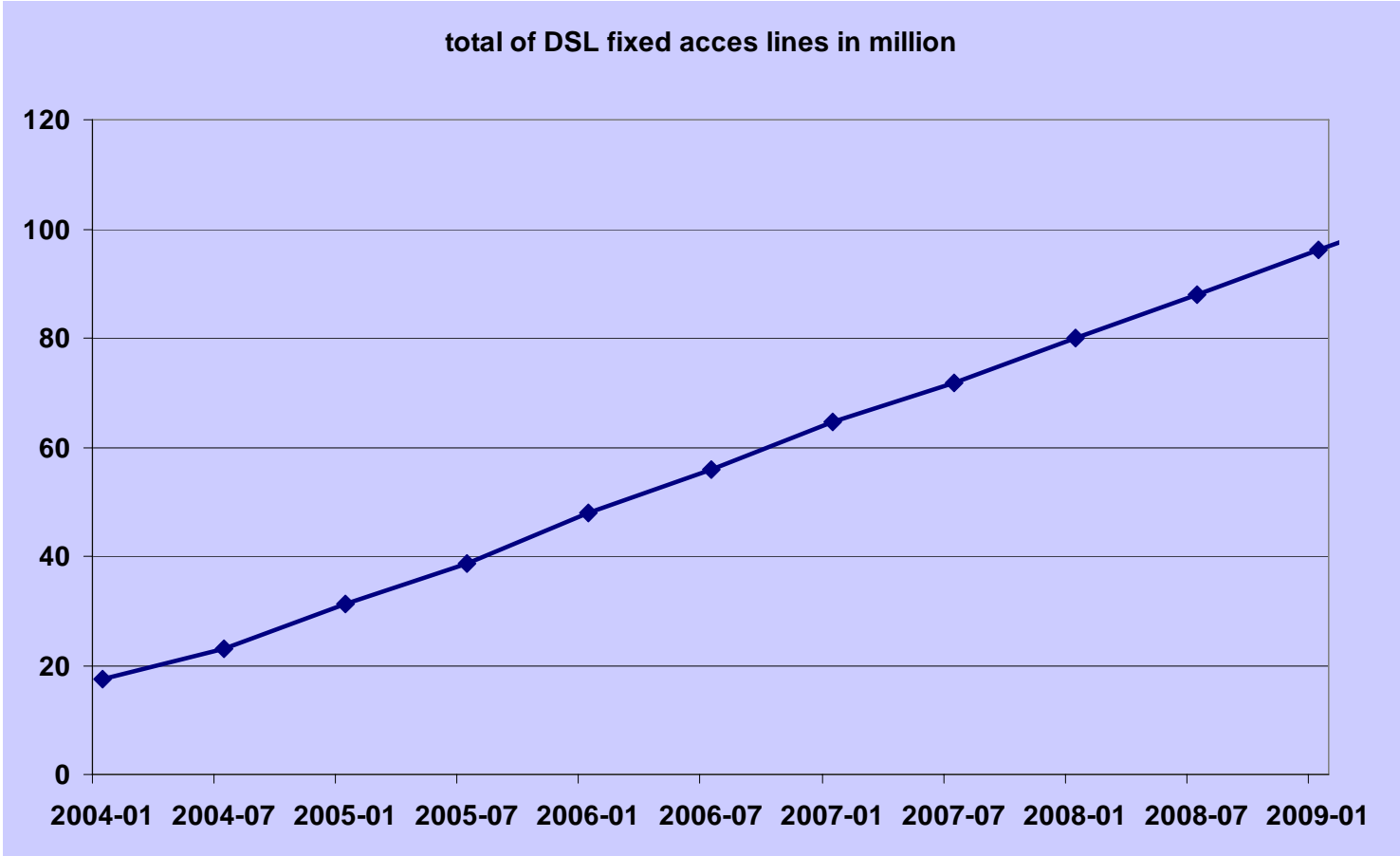
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ITU and Climate Change

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Agenda

- **Broadband Strategy Vs CO2 emission**

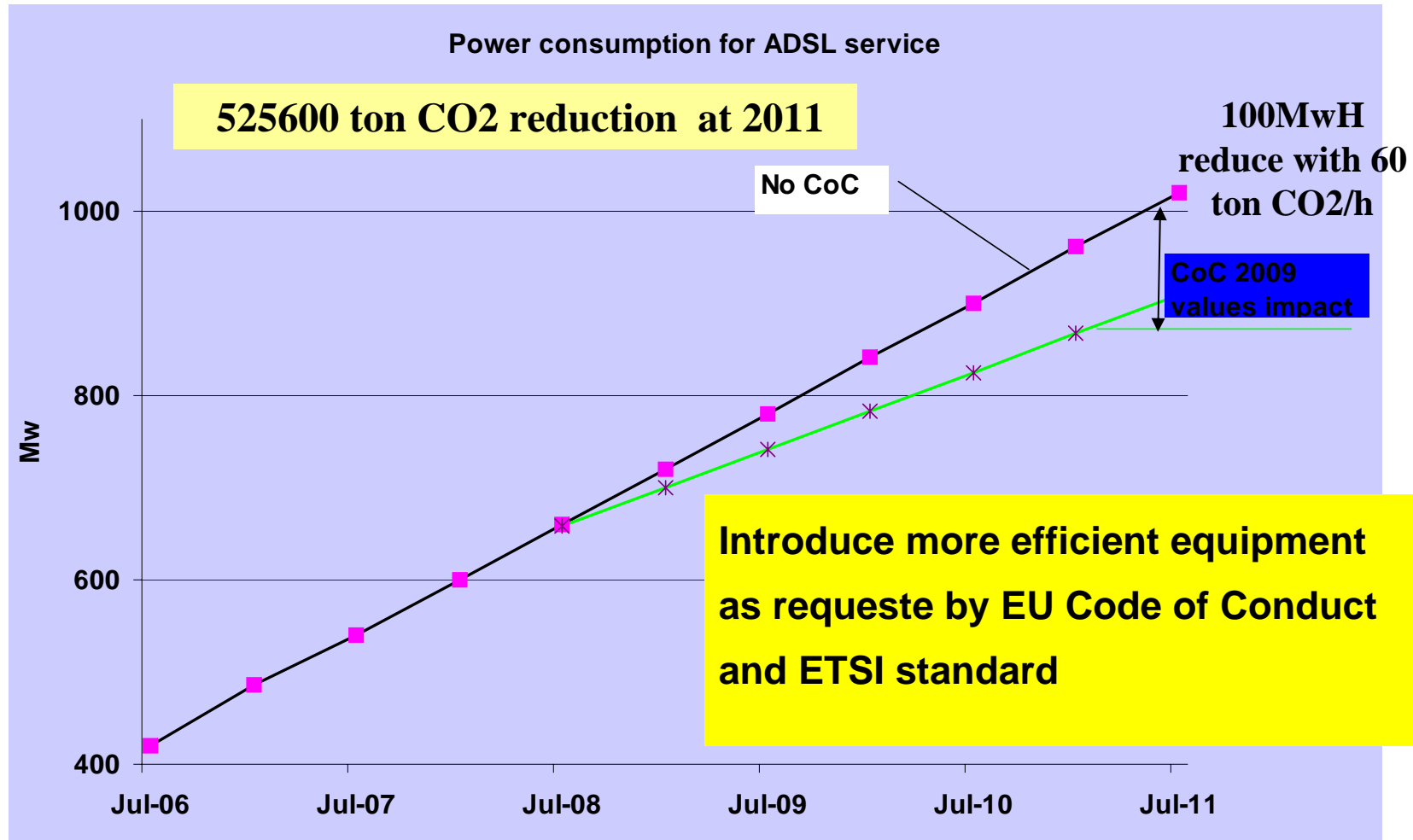- **Broadband Network CO2 Reduction Overview**

- **Huawei Green Case**

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Increasing Usage of DSL in Europe

total of DSL fixed acces lines in million

Data source: COCOM07-36 FINAL, Broadband access in the EU: situation at 1 January 2007

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CO2 Reduction of CoC effect

Power consumption for ADSL service

525600 ton CO2 reduction at 2011

100MwH reduce with 60 ton CO2/h

No CoC

CoC 2009 values impact

Introduce more efficient equipment as requeste by EU Code of Conduct and ETSI standard

Mw
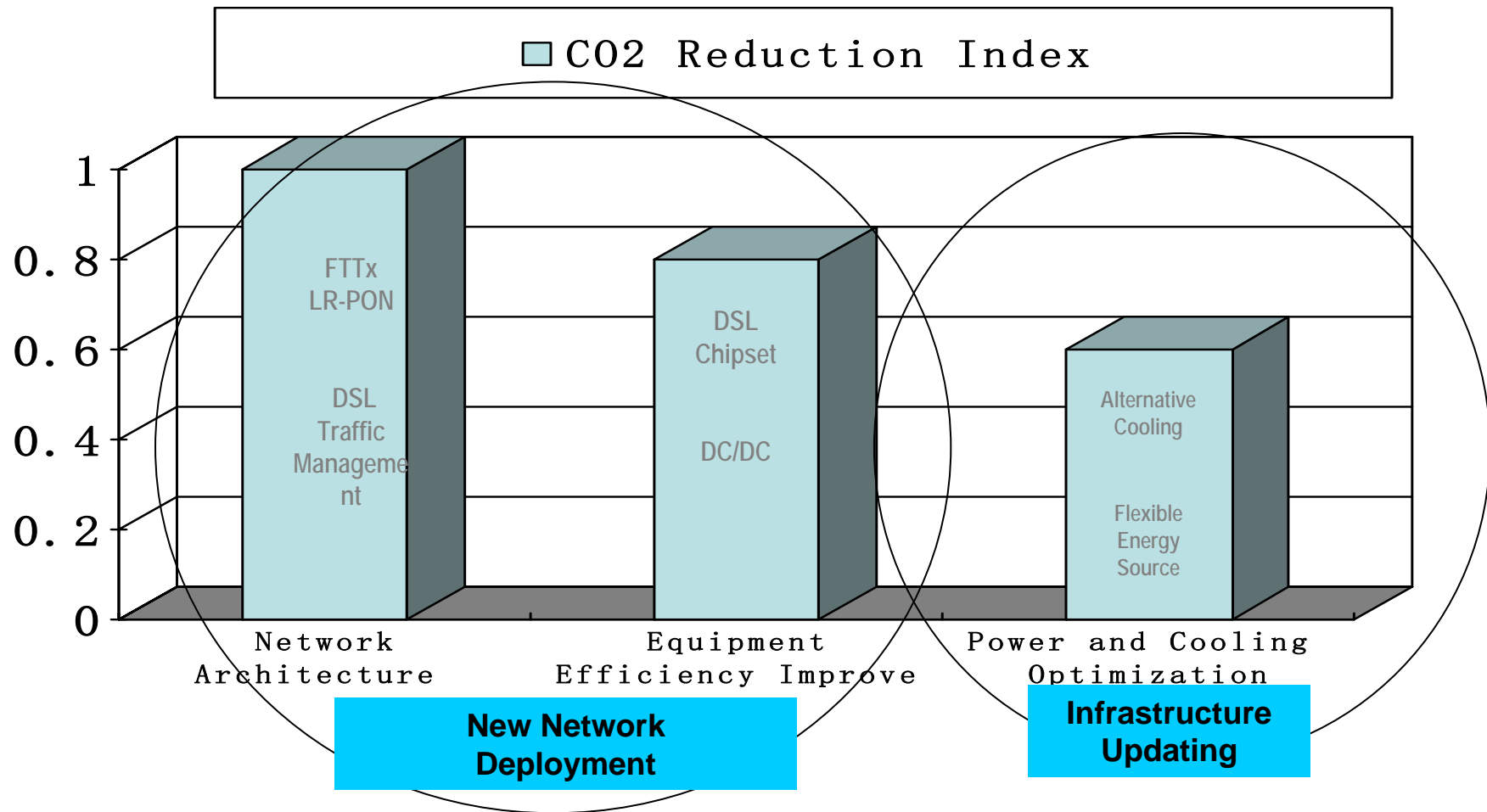
1000

800

600

400

Jul-06   Jul-07   Jul-08   Jul-09   Jul-10   Jul-11

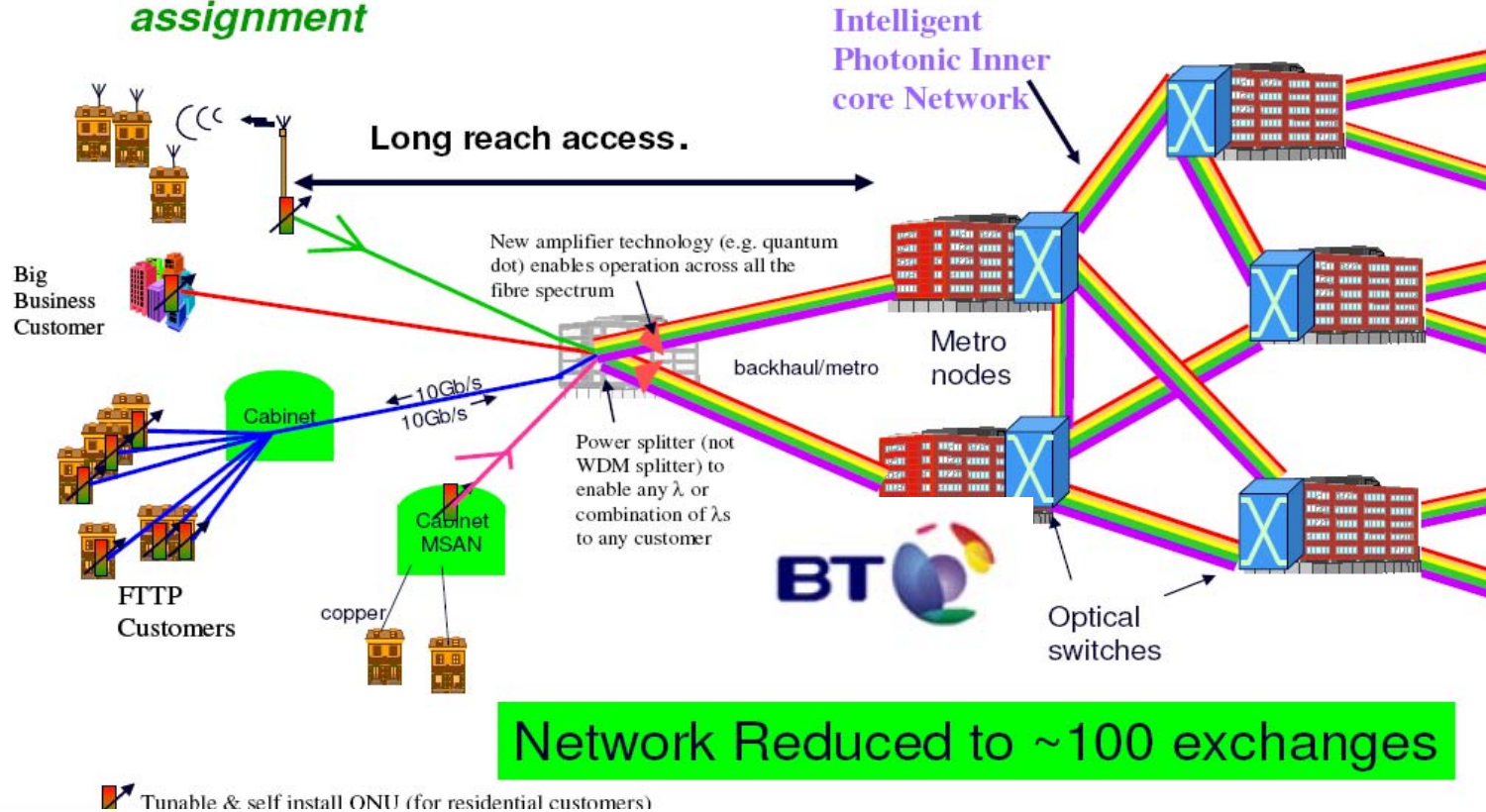**Notes 1: CoC-Code of Conduction Energy Consumption of Broadband Equipment**
Notes 2: Global energy production mix index of 0,6 kg CO2/kWh

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Broadband CO2 Reduction Overview

Network Architecture-Less exchanges, Less CO2

Integrated access and backhaul with photonic core
Longer Term Vision – Hybrid WDM/TDM + Flexible wavelength assignment

Intelligent Photonic Inner core Network

Long reach access.

Big Business Customer

New amplifier technology (e.g. quantum dot) enables operation across all the fibre spectrum

Metro nodes

Cabinet

10Gb/s
10Gb/s

backhaul/metro

Power splitter (not WDM splitter) to enable any λ or combination of λs to any customer

Cabinet MSAN

FTTP Customers

copper

BT

Optical switches

Network Reduced to ~100 exchanges

Tunable & self install ONU (for residential customers)

Source: David Payne – BT, **The All Optical Network, www.theitp.org**

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Network Architecture-DSL traffic management

Power saving for year [MW] using data traffic management and CoC value

Example of DSLAM status L0, L2, L3 day usage
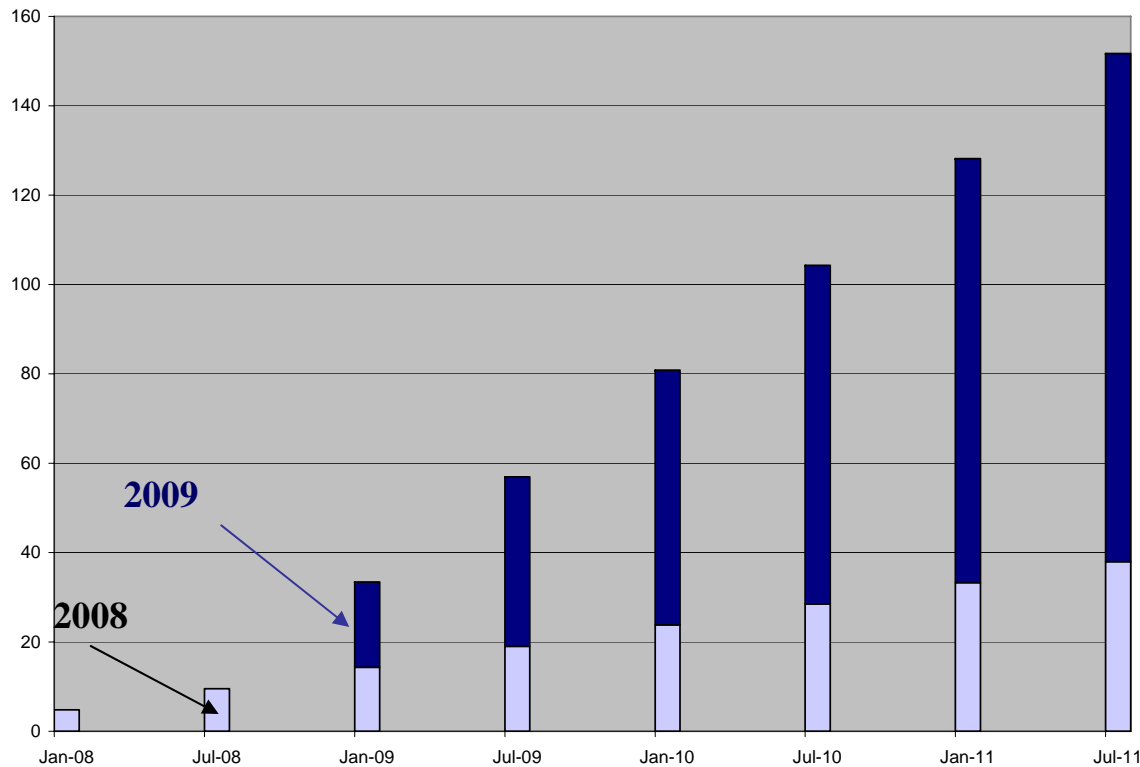
Transfer Mode	% day usage	Target value '09 [W]
L0	15%	1.2
L2	6%	0.8
L3	79%	0.4

Notes1: L0/L2/L3 Application % comes from ETSI TR 102 530
Notes2: ADSL2 L0/L2/L3 comes from CoC V2.1

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Equipment Efficiency-DSL Chipset

| (17A Profile)	Chipset vendor	Chipset Power Consumption (mW/Port)		
		2007	2008	Estimate 2009*
VSDL2+	A	1600	1200	1000
	B	1900	1280	1100

 * : the exact time of realization is determined by the formal release of new chipsets from vendors.
 For low power mode, such as L2 and L3, all chipset vendors can hardly make any commitment for roadmap.
 L2 and L3 mode is still under discussion for clear definition in ITU-T.

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Equipment Efficiency-Power Module

DC Efficiency %
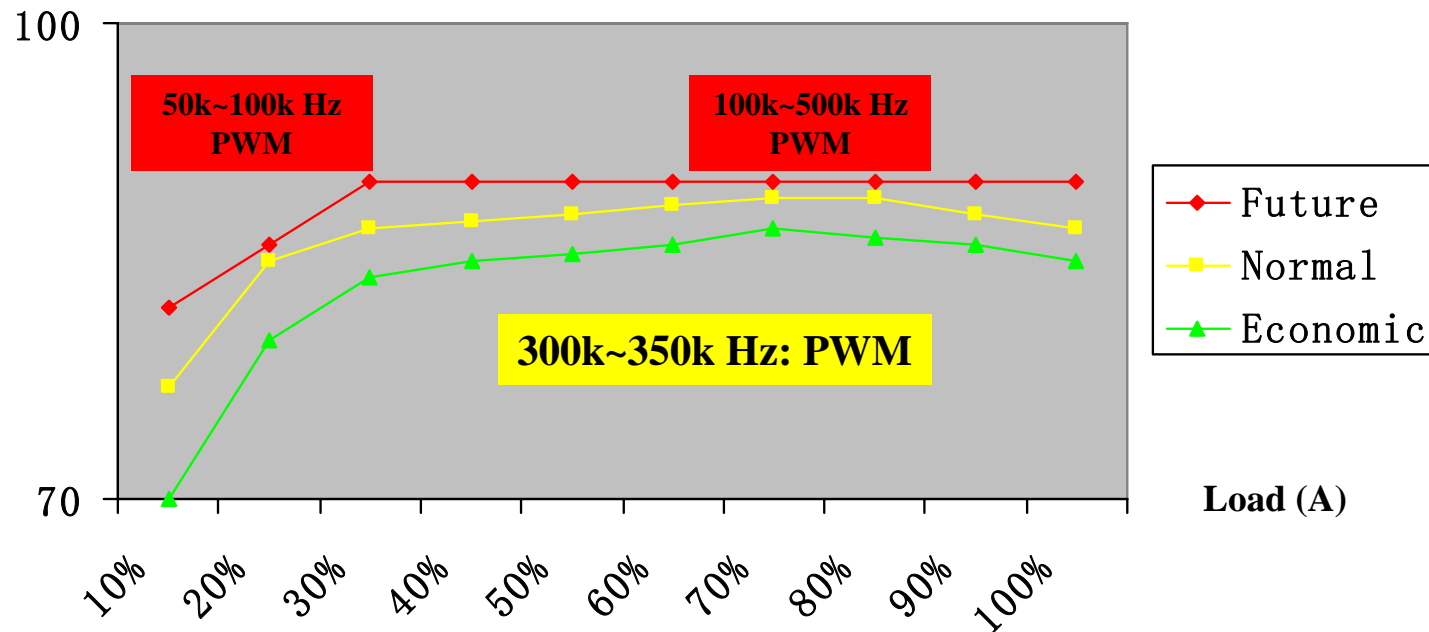
Stable current drive, low loss LCR, Mos fet, super conductor transformer will be deployed according economic technical model in the future.

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Huawei Green Access Network with less CO2

✓**Meet the requirement of CoC**

Low Power

Wide Operating Temperature

Power Saving on Lifecycle

✓Same platform for FTTN/FTTC/FTTC/FTTH
✓Protect investment
✓Easy planning
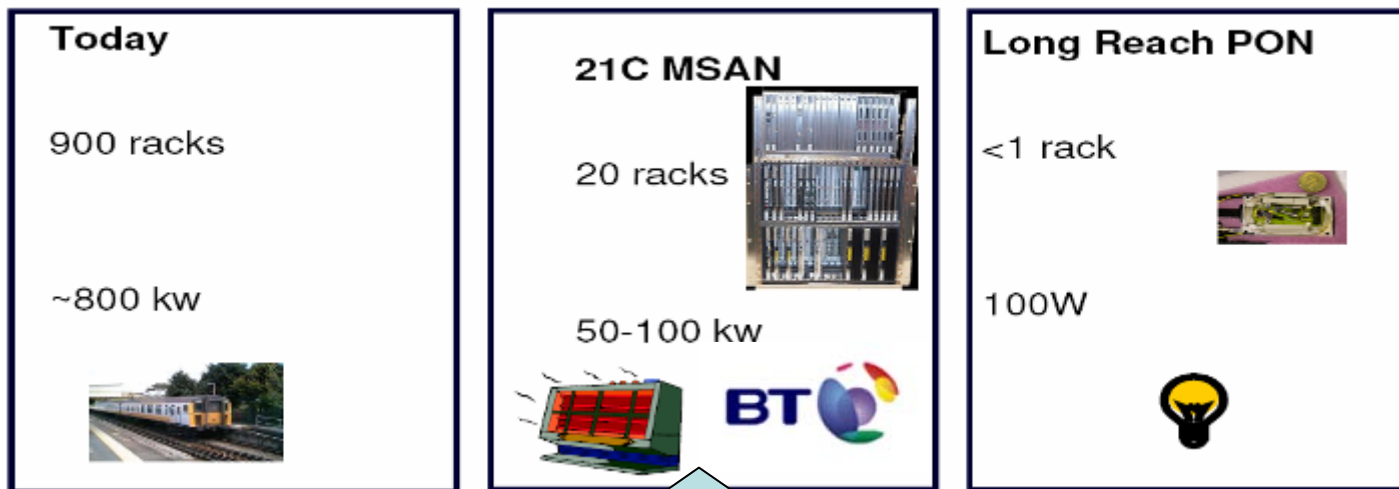✓Easy maintenance

Union Platform

Dynamic Power Control

✓Fan Speed Control
✓Board Power down
✓Broad service power down separately in Combo board
✓L2 mode supported

Access network carbon footprint will be estimated in 2008/2009.

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Huawei Green Case – BT 21C MSAN

Based on Ipswich Exchange serving ~15,000 customers

Today

900 racks

~800 kw

21C MSAN

20 racks

50-100 kw

BT

Long Reach PON

<1 rack

100W

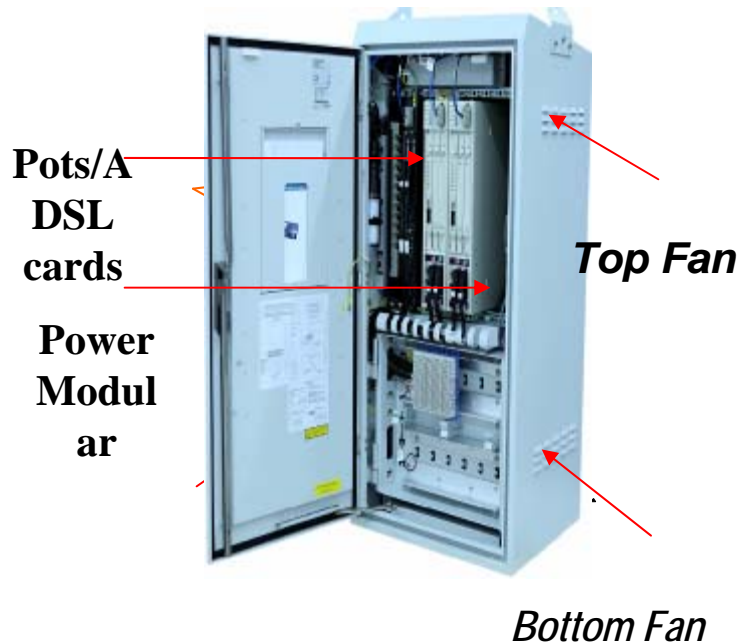**Huawei MSAN Solution:**

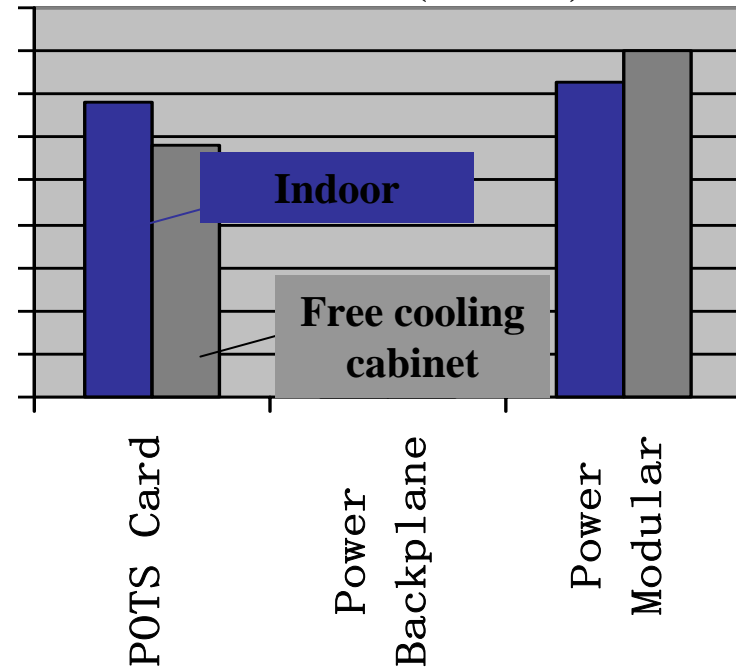✓CoC Compliant Practice at 2007, 2008
✓Will be compliant at CoC 2009

- CO2 reduction from 4204 ton/year **to 500**

- Annual cost for energy from 62 k€to 7 k€

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Huawei Green Case-Free Cooling Cabinet in China

Parts Cumulative Failure Return Rate(2002-05)

Pots/A DSL cards

Power Modular

Top Fan

Bottom Fan

POTS Card

Power Backplane

Power Modular

Indoor

Free cooling cabinet

Failure Return Rate is very similar between free cooling cabinet and Indoor application

Coefficient of performance is two times that heat exchange cabinet at cooling efficiency.
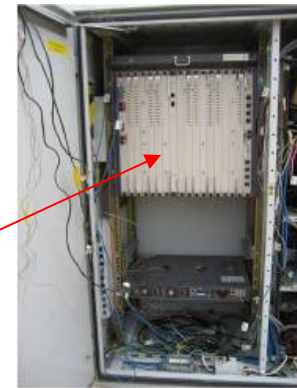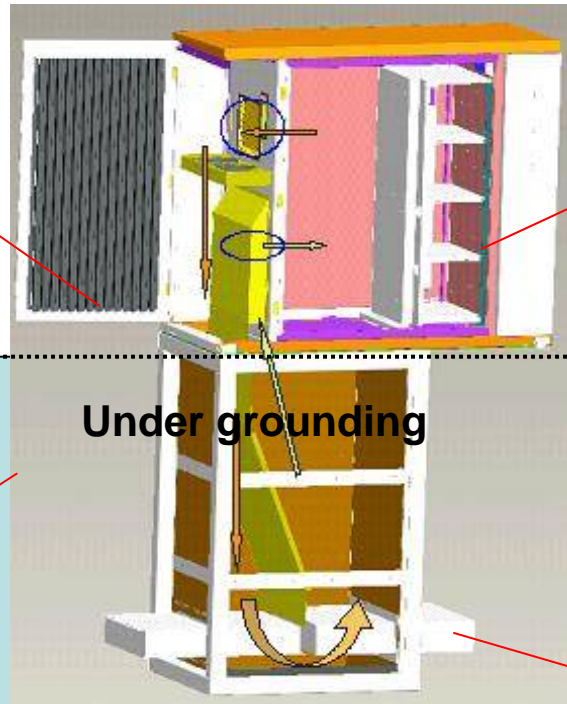
Reduction of 50% of CO_2 and energy cost

Huawei Green Case-TI FTTx Cooling Innovation

Huawei xDSL outdoor Cabinet

Cabinet dimension：
1250mm（W）×550mm（D）×1200mm（H）

Active equipment

Under grounding

Underground Base dimension：
660mm（W）×516mm（D）
×1300mm（H）

Underground heatexchanger

Huawei will have joint trial with Telecom Italia on Free cooling cabinet and Heat Pipe cabinet application.

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Huawei Green Case-Central office cooling Optimization in China

Simulation of real installation demonstrate that increasing the cooling efficiency using:

- better separation of hot and cold air flow

- Free cooling

- **We can reach an average power reduction of 37% for the cooling**
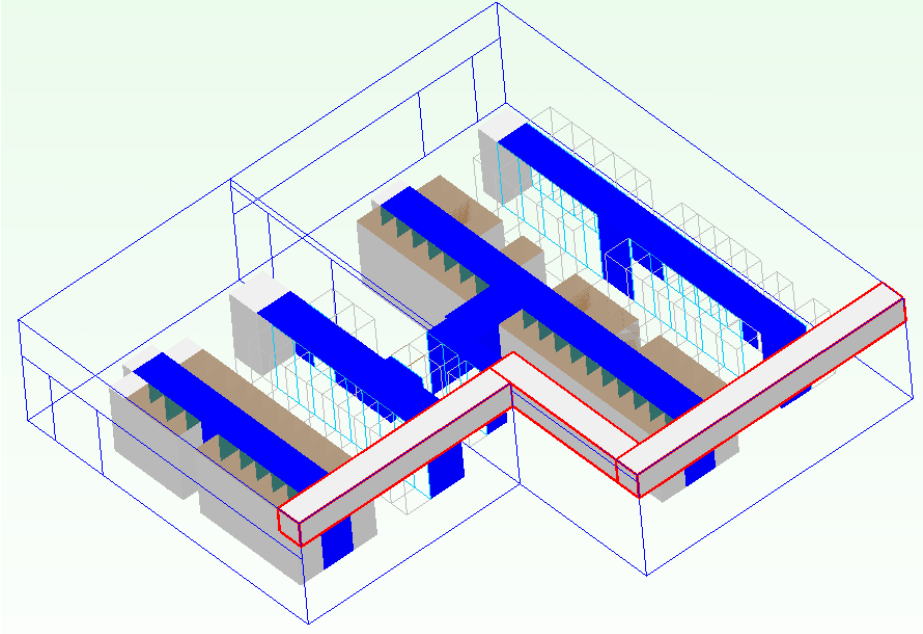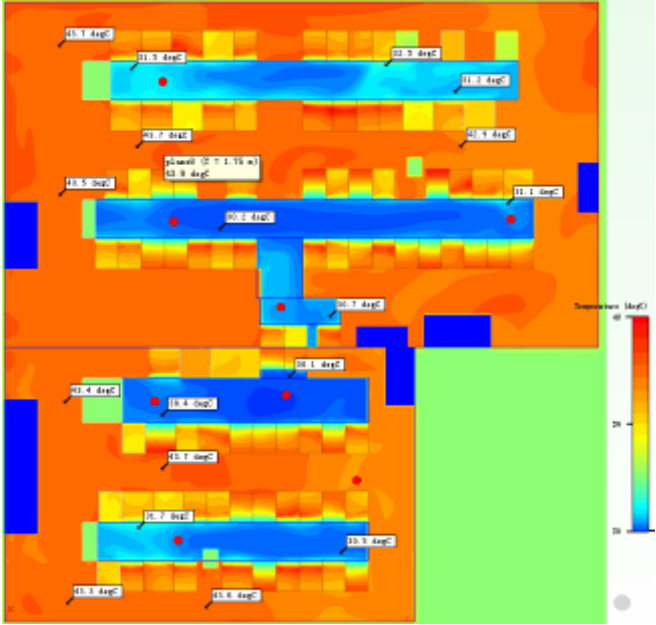
Huawei sustainability activities

- **LCA analisys to minimize the footprint**

- **Equipment in line with Code of Conduct Target**

- **Cooling high efficienty solution**

- **Energy saving analisys on any board composing an equipment**

- **Active on Supporting green standardization**

  - ETSI TC EE activity

    - TR 102 530 Reduction of energy consumption in telecommunications equipment and related infrastructure

    - TS 102 533:Measurement Methods and limits for Energy Consumption in Broadband Telecommunication Networks Equipment

    - Draft TS: Energy efficiency of wireless access network equipment

    - Draft TR: Environmental Impact Assessment of ICT including the Positive Impact by using ICT Services

    - : Thermal management: proposal of new solution and ideas to optimize the cooling on the data center: energy saving reducing the need of cooling.

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Work for a Green development

Polar Bear is thirsty for ice.
What can we do for it?

Save Energy

Reduce OPEX