



Smart Meters

Just "Smart" or Actually Useful ?

Metering Solutions

Kris Szajdzicki
Chairman

ND Metering Solutions



ND Metering Solutions

- Bradford based SME
- 31 Staff
- Electricity Meters for Energy Management





ND Metering Solutions

- 1979 First Production Sub-Meter
- 1983 Portable Power Analysers
- 1986 Miniature 48x96mm Electricity Meter
- 1996 Power Quality Monitoring
- 2007 Internet Metering
- 2008 CC-Link Comms Protocols
- 2010 2nd Generation Internet Meters

Designed & Manufactured in the UK
They Measure Electricity



Standards

ESTA Council Member

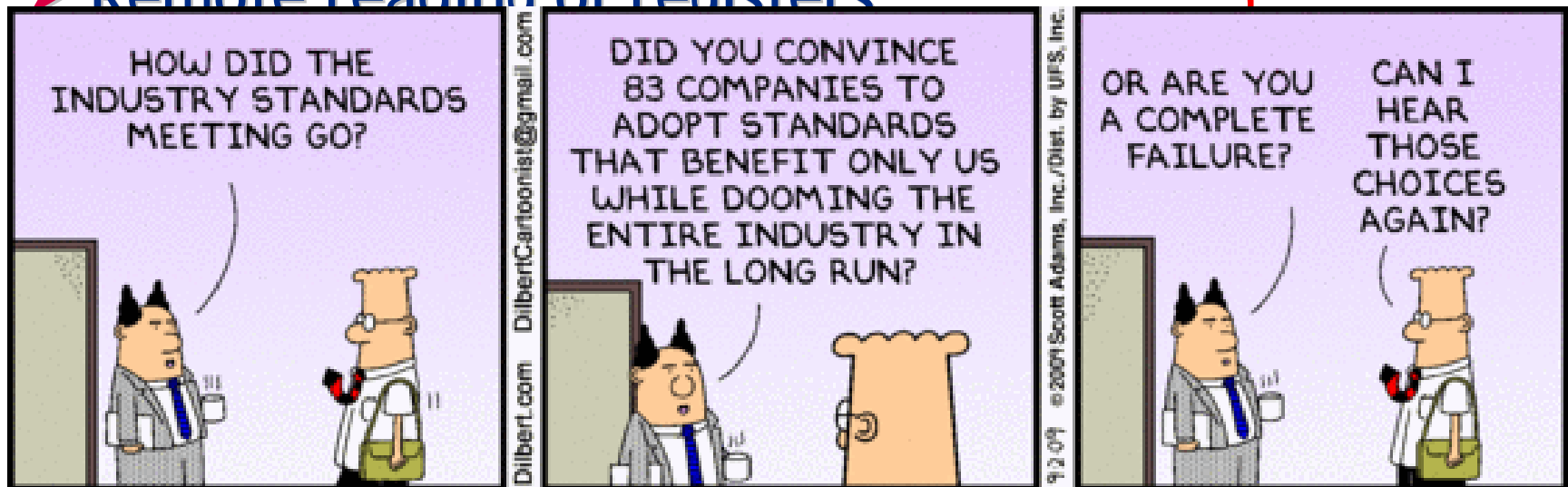
Represents ESTA on:

- IEC TC 66 - Safety
- IEC TC 13 - Metering
- IEC SG1 - Energy Management Strategy, International
- CEN/CLC SFEM - Energy Management Strategy, European
- CEN/CLC/ETSI SMCG

www.esta.org.uk

European Smart Meter (SMCG Report)

➤ Remote reading of registers



➤ Information to in-home equipment

Side

All Optional !



Smart Meter

What is a “Smart Meter”

- Smart Meter[®] is a registered Trade Mark
- Many Definitions
 - Detects Gas Leaks
 - Provides tips to reduce consumption
- Basic Definition
 - Measures & Stores
 - Displays
 - Communicates

1980's Energy
Management

A Useful Meter or Metering System



Smart Meter

Demand Side

Solution to:

- Reduced Consumption & Cost
- Energy Awareness
- Energy Efficiency
- Global Warming
- Fuel Poverty
- Energy End Use Directive

Supply Side

Solution to:

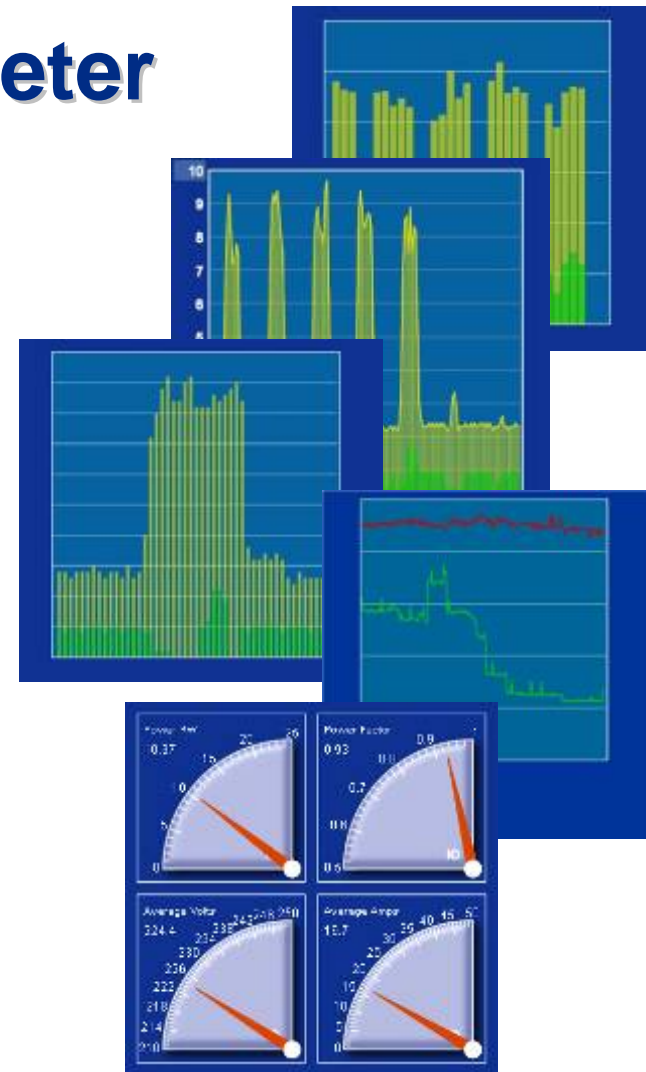
- Improved Profitability
- Meter Reading
- Credit Control
- Tariff Flexibility
- Smart Grid Interface



Smart Meter

Potential Smart Meter

- Measurement Centre
- Integrated a *M&T* Solution
- Demand Profiles
- Timely Information
 - Real-time Access with Real-time Data
- No Software
 - Integral Web Server
- Easy to Understand
- Helpful

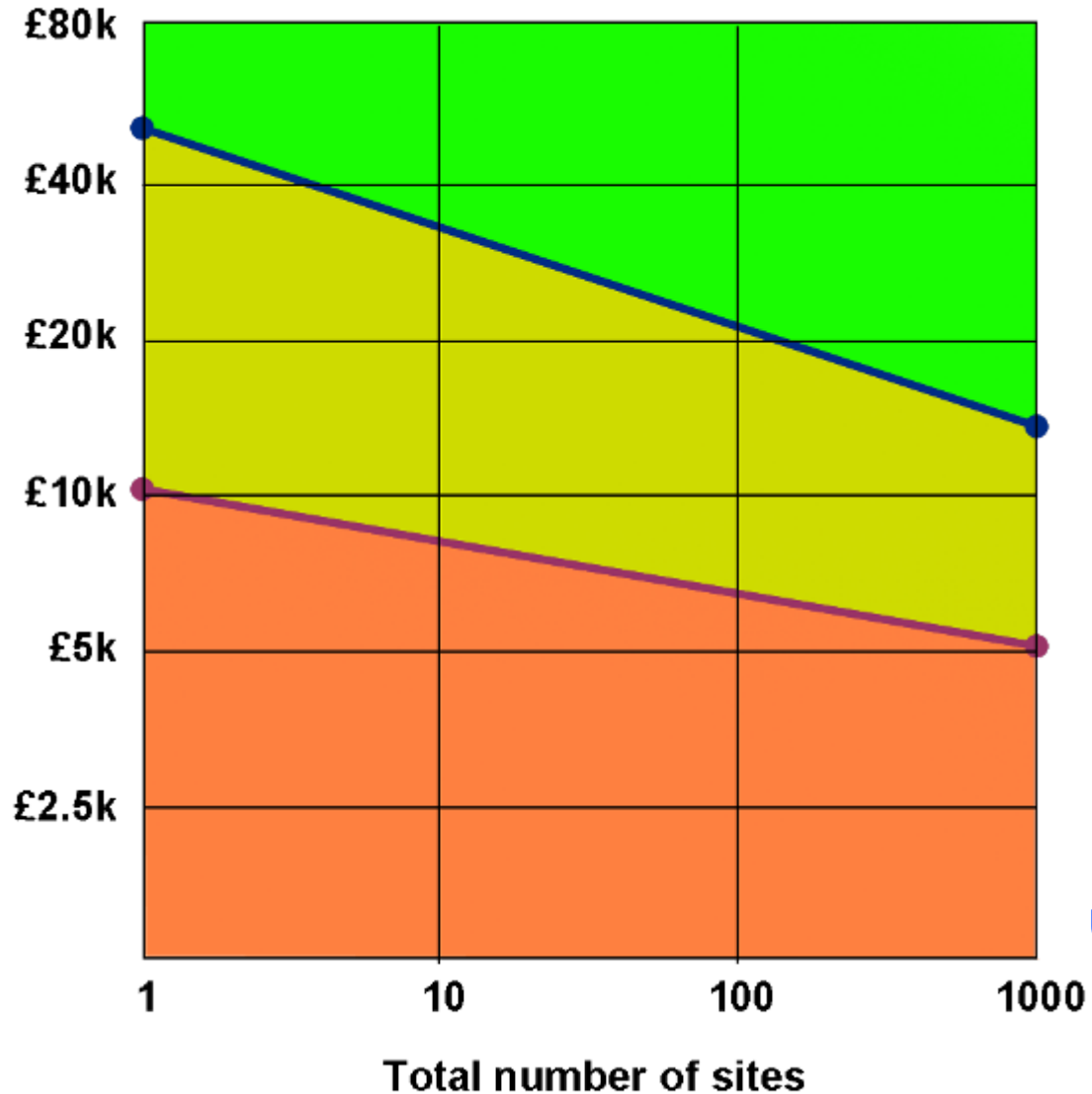




a **M&T** Business Case – 2007

Total utility cost per site

Gas
Electricity
Water



Primary and Secondary Meters

Primary meters

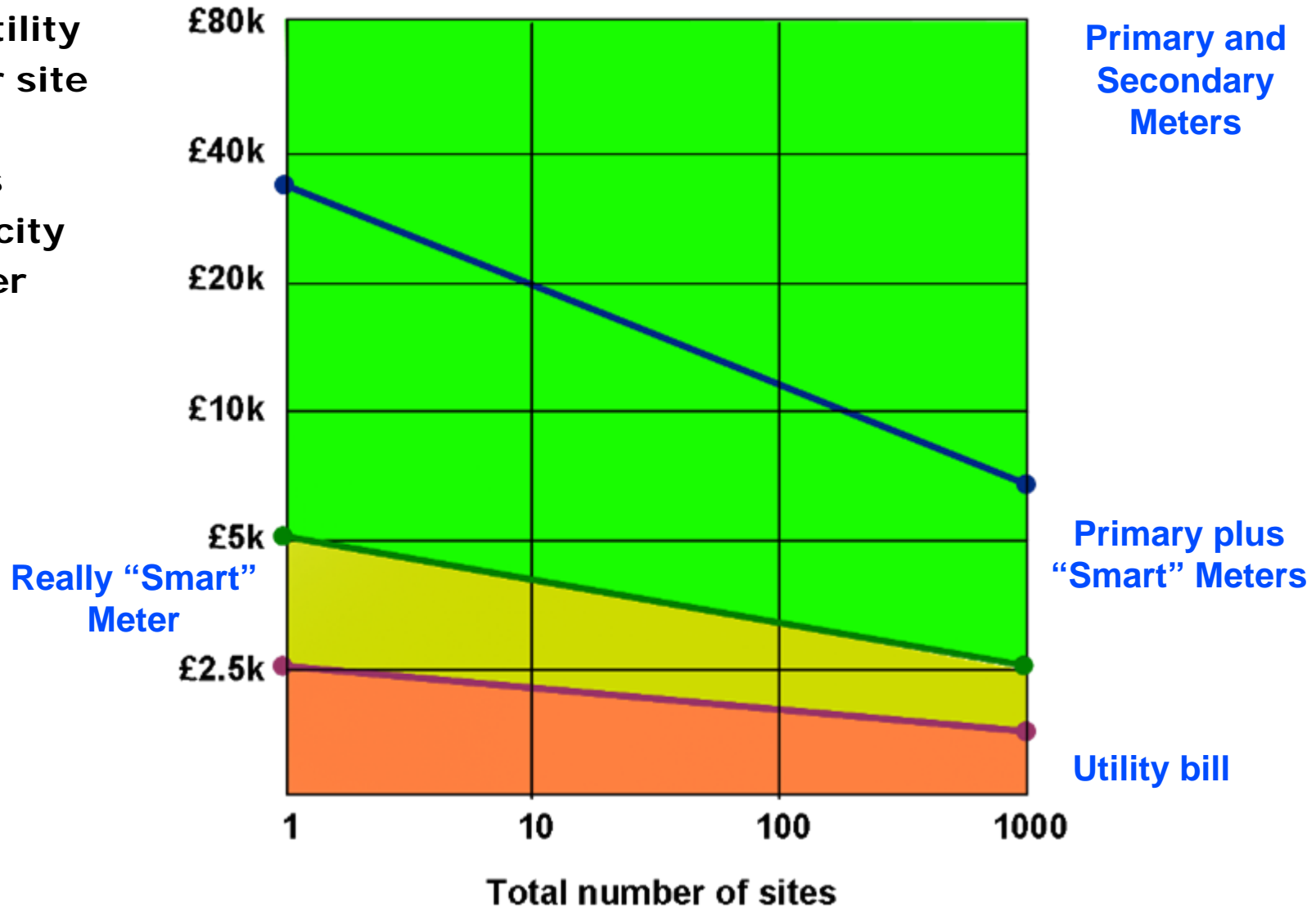
Utility bill



a *M&T* Business Case – 2010

Total utility
cost per site

Gas
Electricity
Water





Really Smart (Intelligent) Metering

- Traditional aM&T Installed Cost from £ 10,000
Meters, Data Loggers, Software & Installation
- Modern aM&T Installed Cost ~ £ 600
Really “Smart” & Intelligent IP Meter

Typical Sites for aM&T now include:

Schools

Health Centers

Libraries

Local Offices





a **M&T** Business Case – 2010



In a Modern a **M&T** system for a small site,
the Meter is the Only Item

3ϕ or $3 \times 1\phi$



aM&T Business Case – 2010

Large

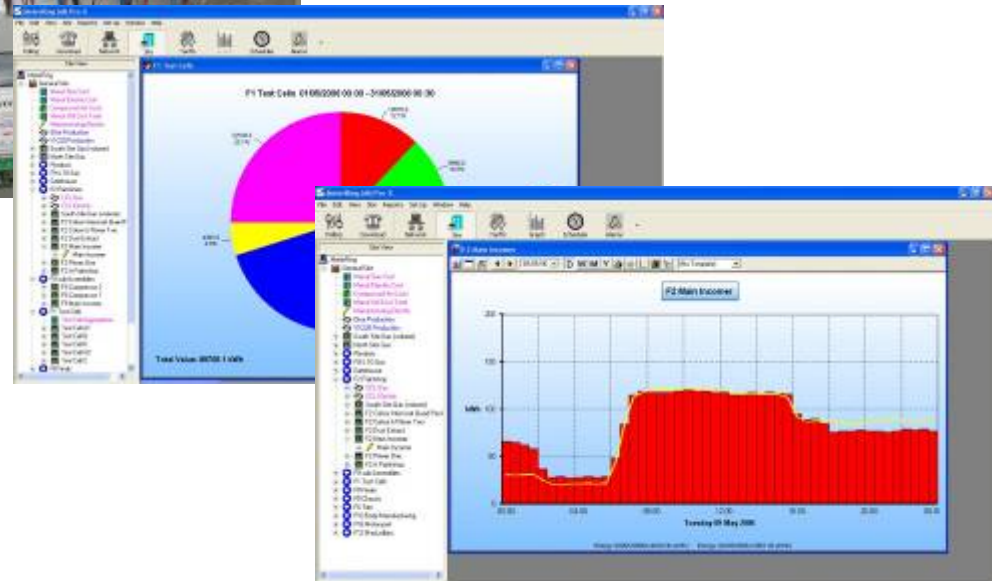
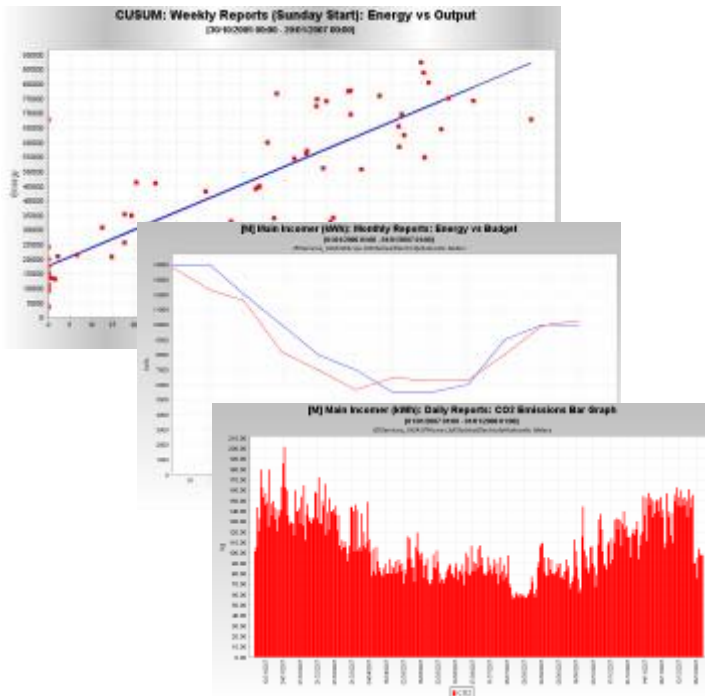
> 20 Meters

Medium

~5 - 20 Meters

Small

1+ Meters



Does it work ?

- Extensive Testing
- Public
- Private
- Schools
- SME
- EN 16001 Trials



?? Useful Meter or Metering System ??

Does it work ?

- Extensive Testing
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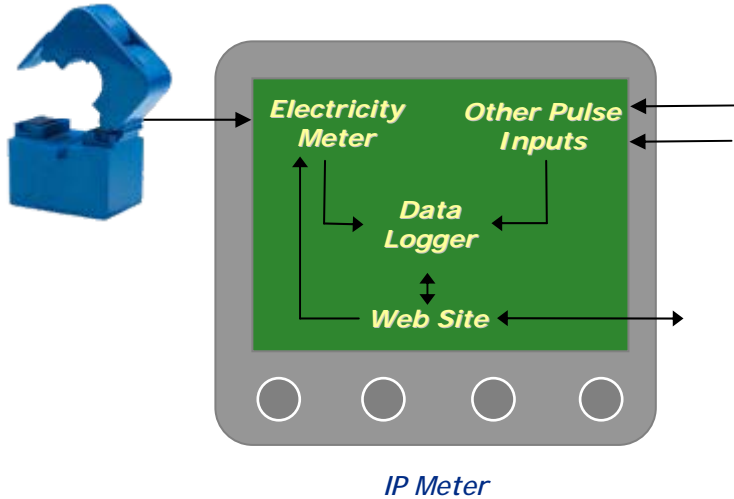


The Yew Tree

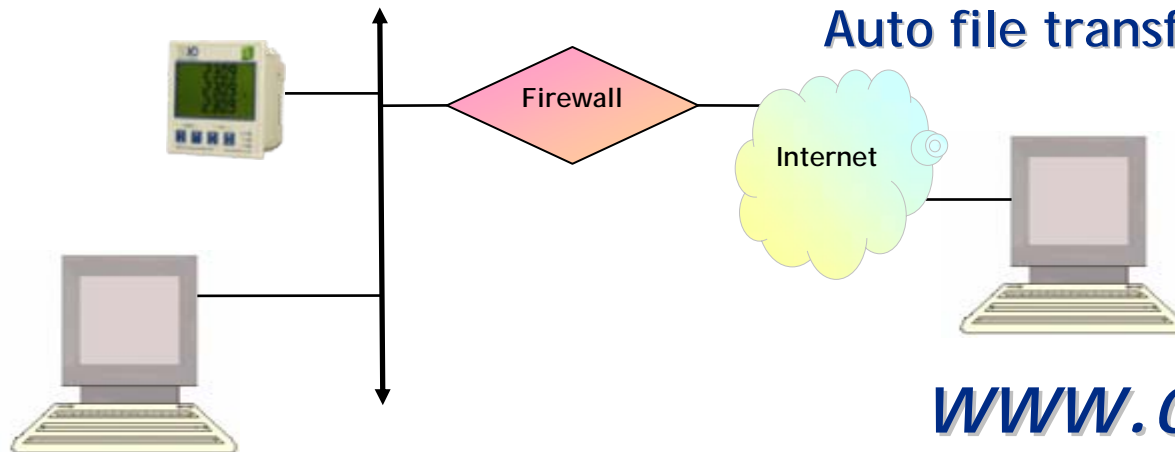
?? Useful Meter or Metering System ??



The Intelligent Meter



- Meter (Retro-fit or Standard)
Split current sensors or CTs
- Optional Gas / Water Inputs
- Integral Web Server
Logger
Software
- Optional Alarms
- Plugs into the Network
- Security
Auto file transfer for Backup



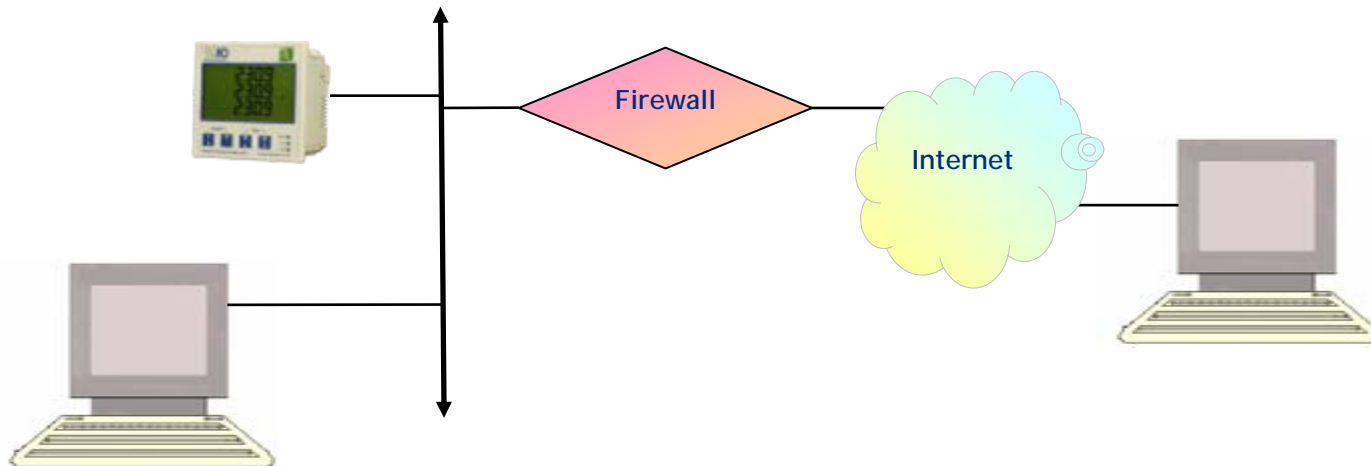
www.cubeip.co.uk



A Small Site



- Information
- Awareness
- Analysis
- Energy & Cost Savings





The Intelligent Meter

The Modern Meter:

- Integrates the *aM&T*
- 3ϕ or $3 \times 1\phi$
- Alarms & Inputs
- Retro-fit or Standard
- Auto Commissioning
- Balanced Voltage
- Communications
TCP/IP, FTP, MODBUS TCP, etc
- Test Modes





The Intelligent Meter

Integrated aM&T

- Historic Comparisons
 - Profiles
 - Real-time information
- Plus
- Gas & Water
 - Alarms



VALUES HISTORY 3 PHASE PER PHASE GRAPH 1 GRAPH 2

History

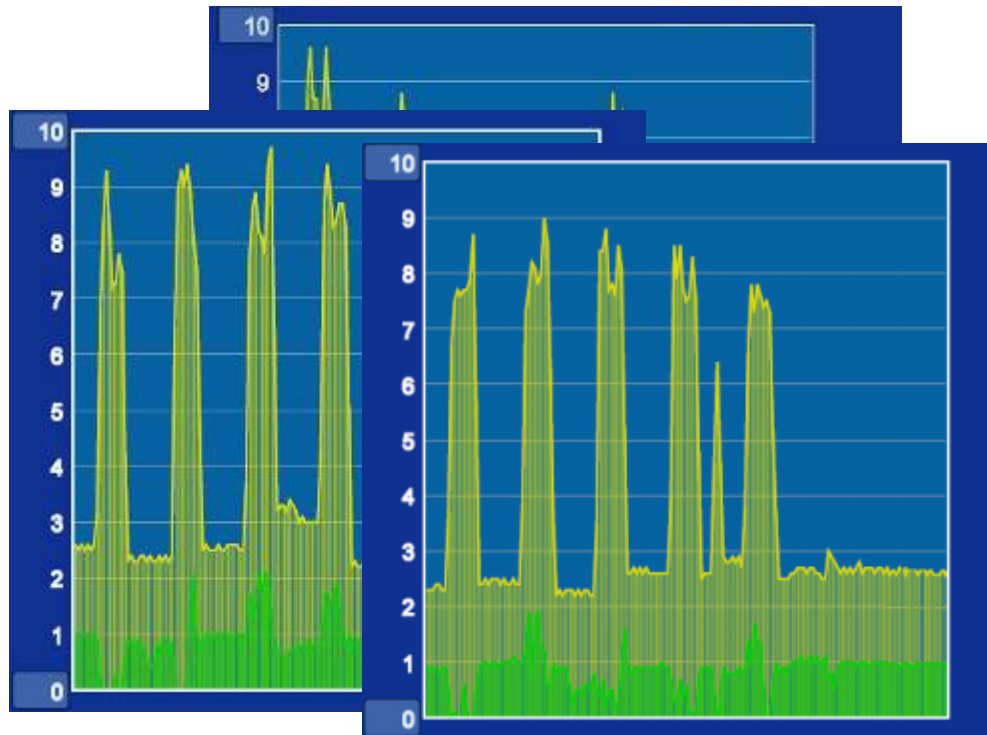
	kW	Cost/hr	kg C/hr
Instantaneous	23.1	1.58	2.70
<hr/>			
	kWh	Cost	kg C
This Month	2171.4	148.96	254.05
January	5015.0	344.03	586.76
February	4983.0	341.83	583.01
March	4972.0	341.08	581.72
	4996.0	342.73	584.53
	4990.0	342.31	583.83
	4998.0	342.86	584.77
	5088.0	349.04	595.30
	4986.0	342.04	583.36
	4965.0	340.60	580.91
	5016.0	344.10	586.87
	4966.0	340.67	581.02



Energy Management needs Information

Historic

Real-Time





Integrated aM&T Solution

Easy to Understand



- Historic Data
- Energy Profiles
- Simple Displays
- Real time Graphs
- Readily available help

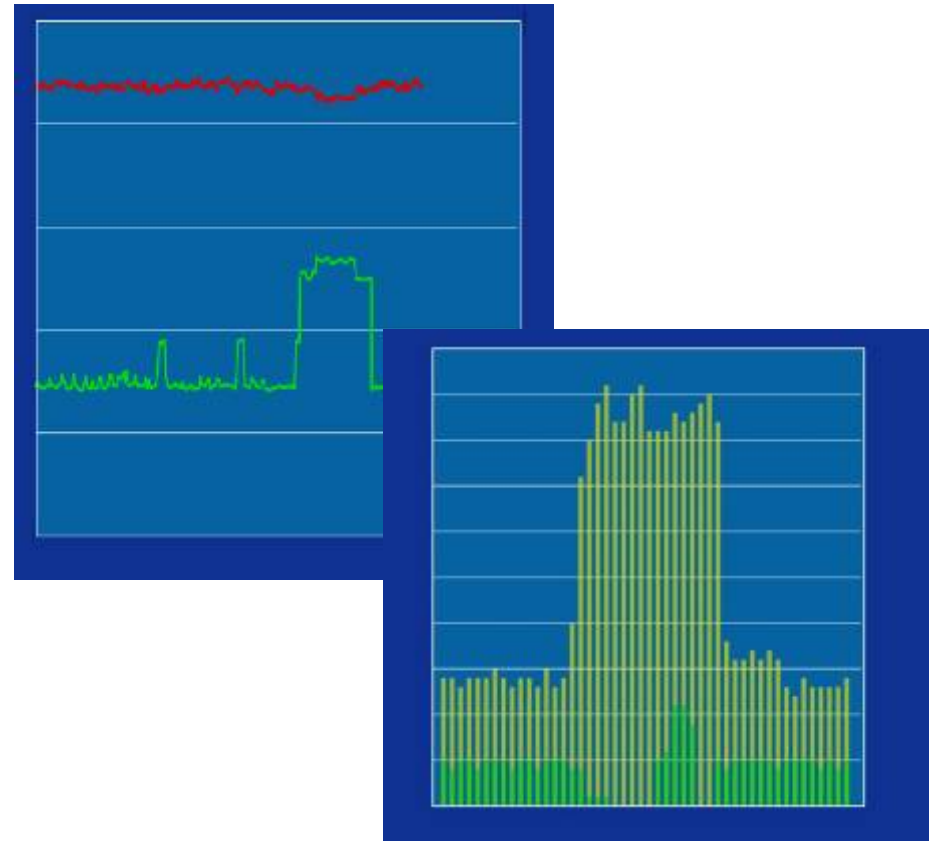
Readings at a glance

All at the click of a Mouse



Smart Meter – The Benefits

- Information
- Awareness
- Analysis
- Estimated Savings:
~ 10%
- Estimated pay-back:
< 3 years



Immediate plus Historic

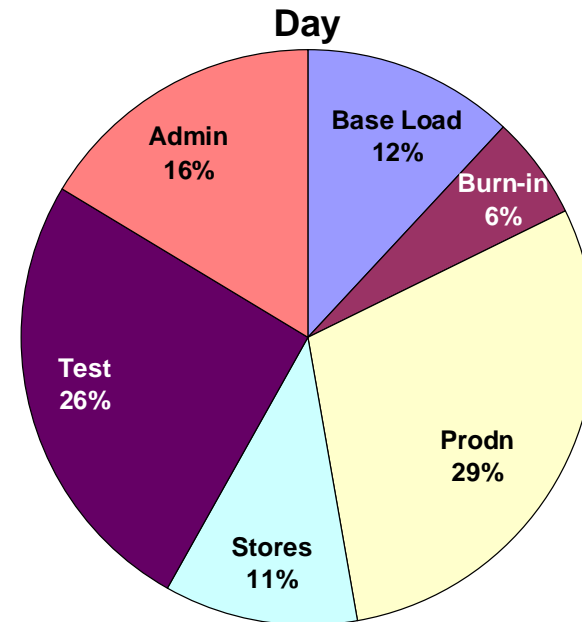
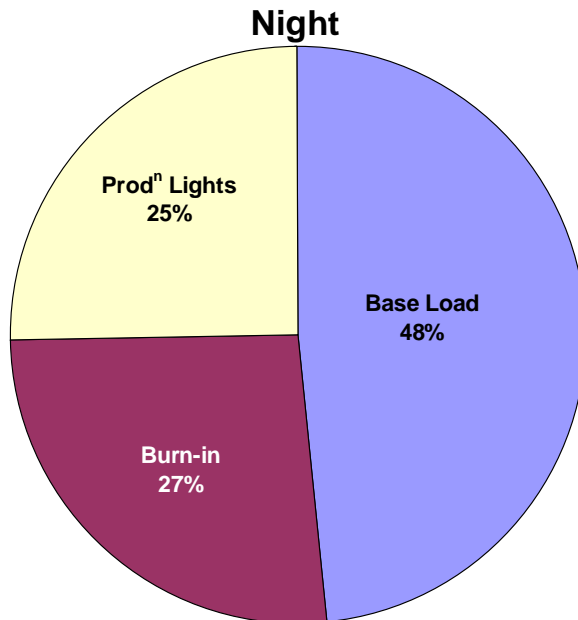
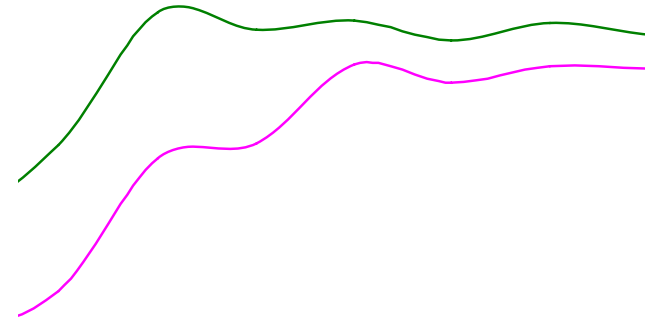


Smart Meter – The Benefits

➤ Information

How much do we use
Where do we use it
When do we use it

➤ Awareness



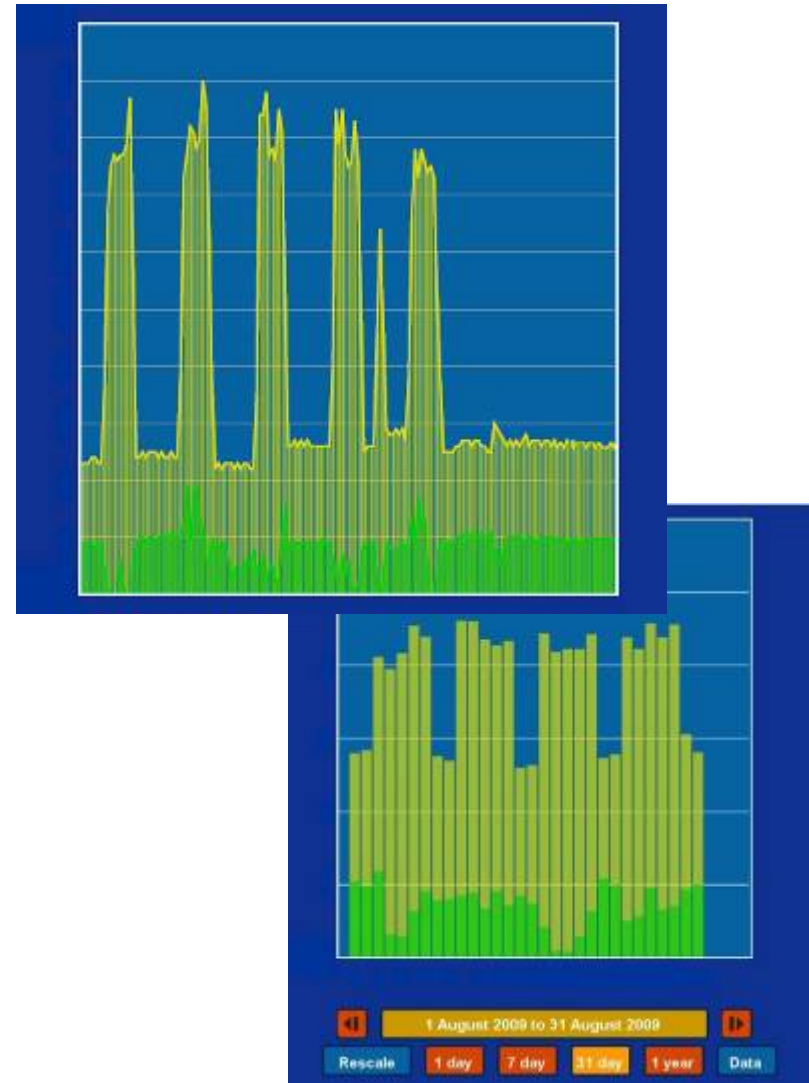
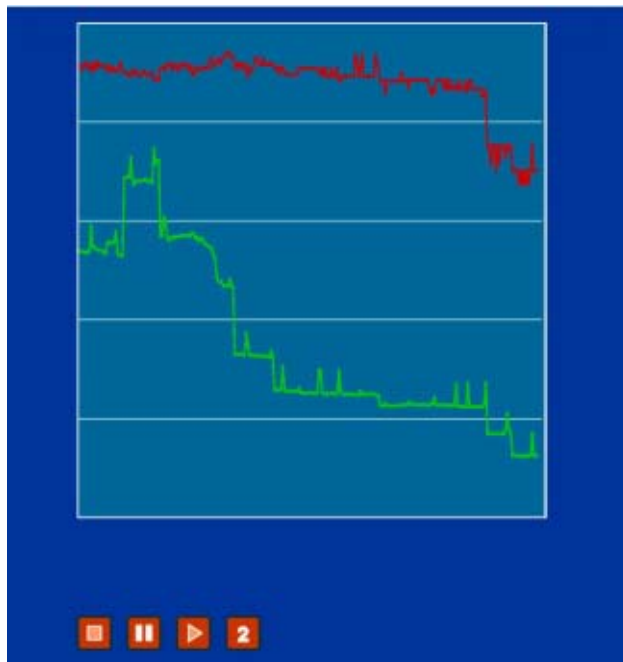


Smart Meter – The Benefits

➤ Information

➤ Analysis

How much do we use
Where do we use it
When do we use it





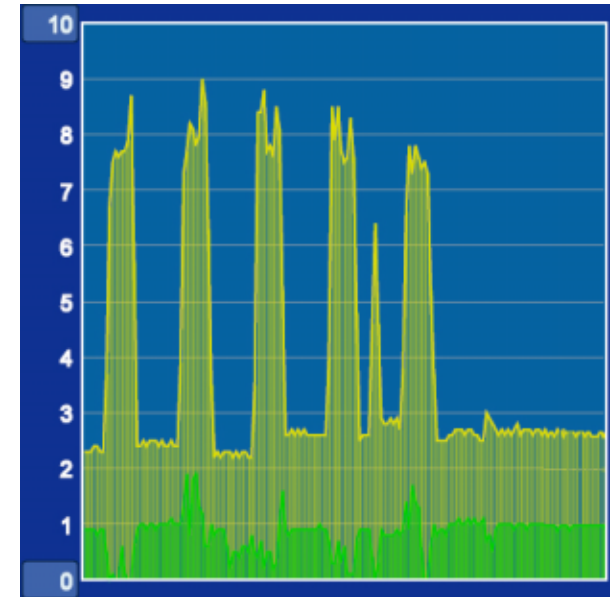
Bradford Royal Infirmary

- Information
- Awareness
- Analysis
- Energy & Cost Savings



Really Smart Meters

- Really Intelligent Solution
It's all within the Meter
- For EPC & Part L — *aM&T & AMR*
5% BER with Alarms
- For DEC's — All the Meter Readings
- For All — Savings



***Thank you
Kris Szajdzicki
ND Metering Solutions***

www.CubelP.co.uk

