

2013 Data Center Trends

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Sources: DCD Intelligence and Uptime Institute



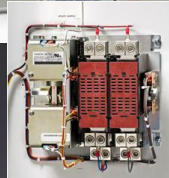
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Thomson Power Systems Overview

Two Main Product Families

Automatic Transfer Switches ATS



Paralleling Switchgear



PGC 4000



Agenda:

- Global Trends
- North America Trends
- The Future: Carbon & Emission challenge



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Datacenters represent a sizeable global industry



Data Center Growth Drivers

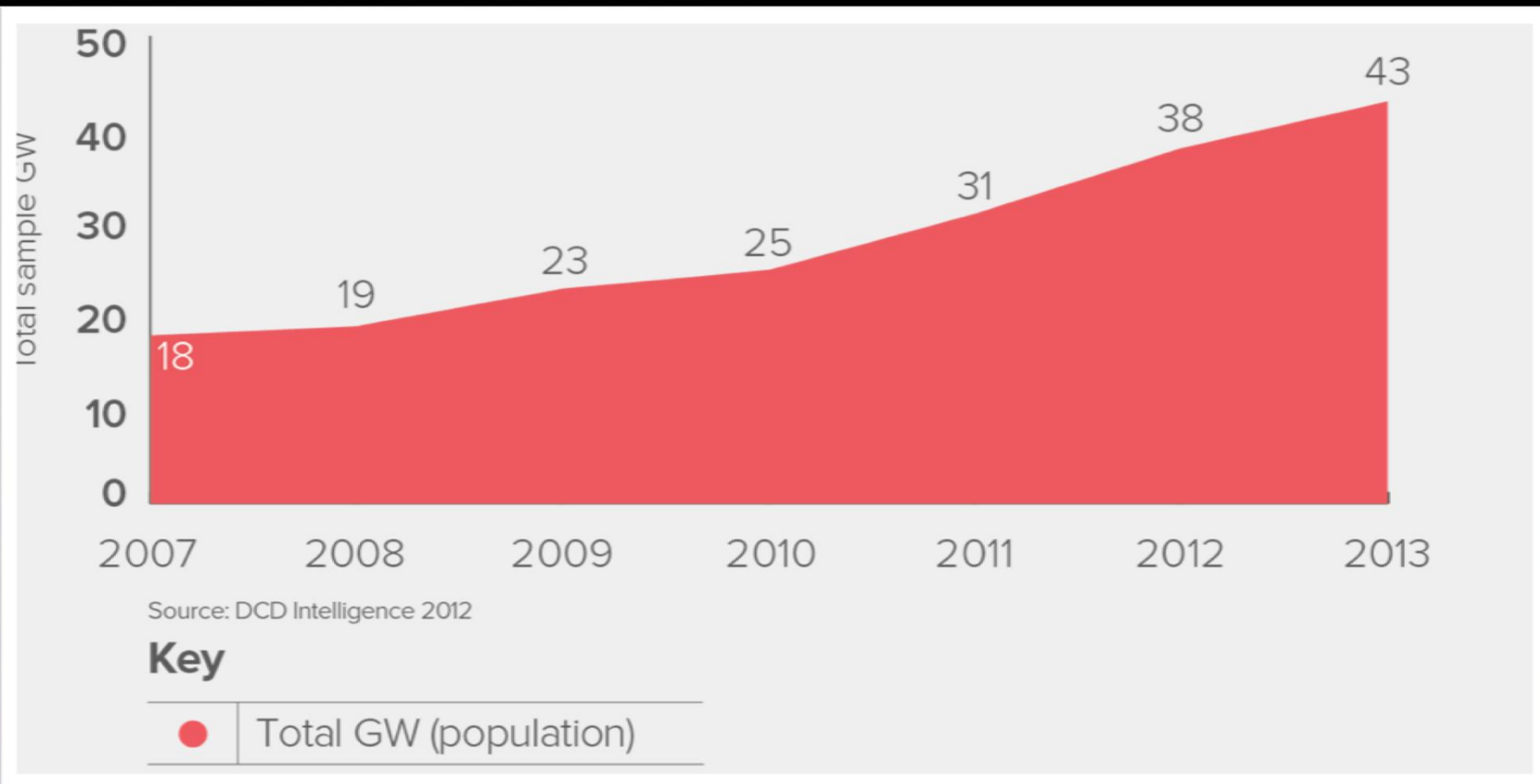
- 750 million laptops/ tablets
- **1 billion smart phones**
- **100 million servers** (2011 UC Berkeley)
- **644 million active websites** (Netcraft 2012)



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Digital Age = Energy Consumption



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If the Data Center Industry was a Country



China 4700 TWh(*)



USA 3750 TWh(*)



United Kingdom 340 TWh(*)



Italy 310 TWh(*)



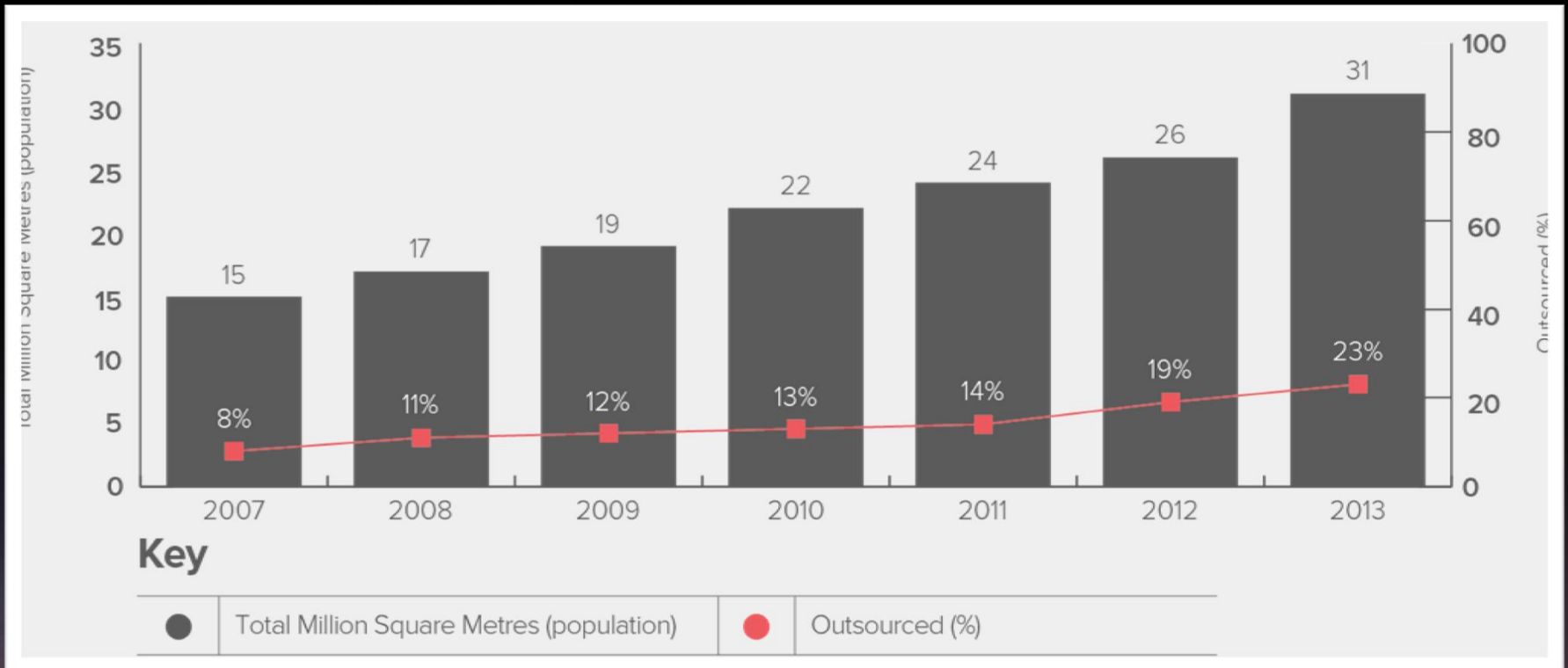
California 290 TWh(*)

**Datacenters
332.9
TWh****



*) National Statistics for Electricity Usage ONLY 2010 & 2011 The World Factbook & IAE data
) Based on Census 2012 population projections of maximum stated capacity including end user reporting of outsourced footprint

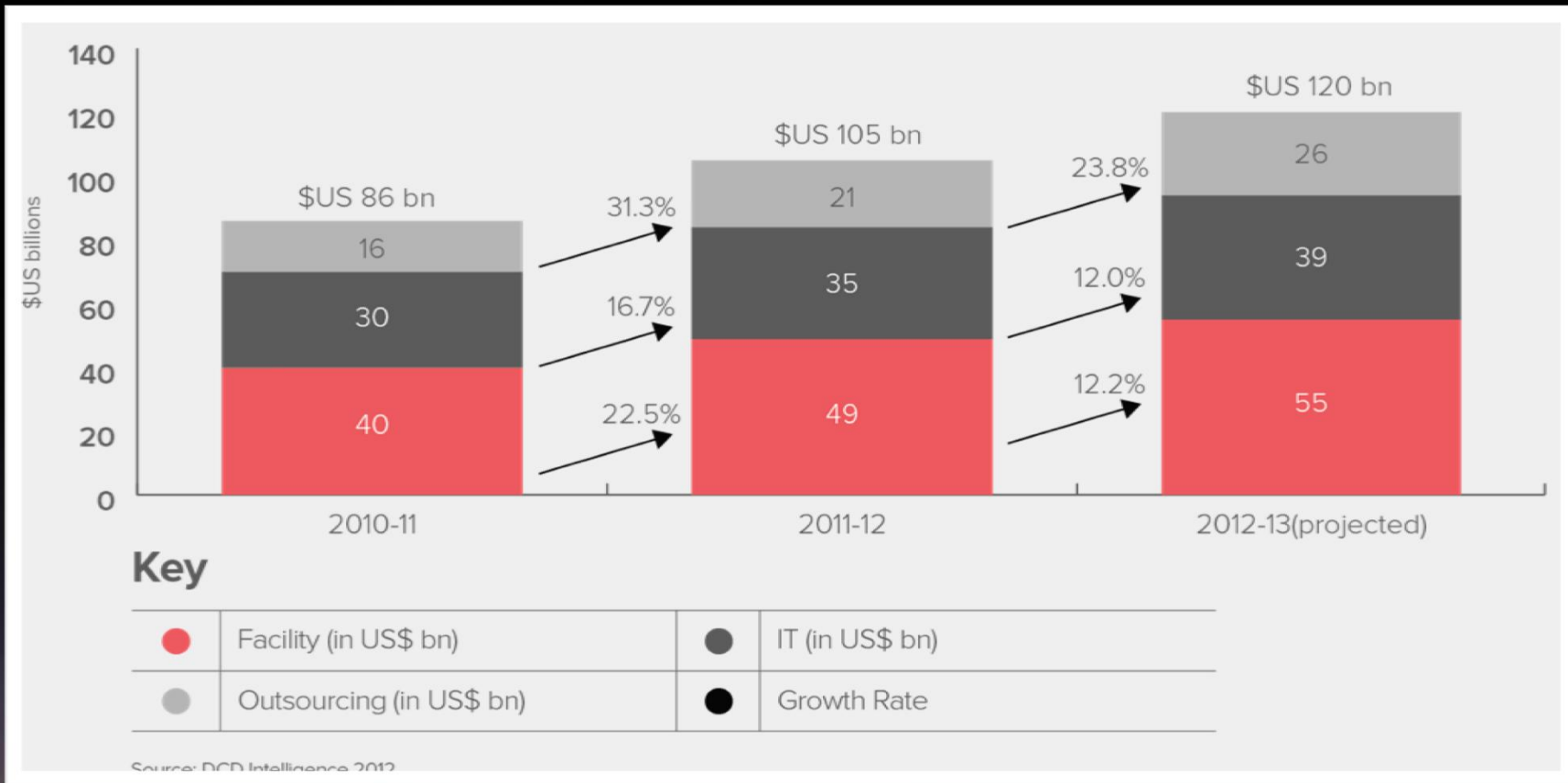
Growth in Space Globally



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Growth in Investment



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No end to growth?

- Datacenters are increasing in number, profile & importance.
- A high proportion of global growth comes from key emerging economies but in established markets there is still growth (& room for more).
- Growth will be limited by resources – power, water, space, skills, materials, money, connectivity – but technologies are being deployed to meet this.



Datacenters across North America



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'Intelligent growth' in national asset portfolio 2011 > 2012

Parameter	2011 Total	2012 Total	% +/- 2011>2012	Unit
White Space	8,250,000	8,680,000	+5.2%	Square metres
Racks	271,000	282,000	+3.7%	Number
Power requirement	9,310,000	9,790,000	+5.2%	MW

- Lower growth in racks as servers get smaller and denser
- Clear evidence of virtualisation in low server growth & of impacts of energy efficiency in restrained power growth.



Investment growth restrained, (but no cliff in sight)

Investment	E.g.	2011/12	2012/13
Facility equipment	Power, cooling, monitoring, DCIM etc	\$ 15.6 bn	\$15.9 bn
IT optimisation services & solutions	Virtualisations, storage, systems upgrades, HP computing etc.	\$ 10.5 bn	\$12.2 bn
Outsourcing services	Hosting, cloud, collocation, managed services, 'aaS' services	\$ 6.1 bn	\$6.8 bn
<i>Total</i>		<i>\$32.2 bn</i>	<i>\$34.9 bn</i>
Vendor/supplier sample	Revenue from datacenters	\$13.9 bn	\$16.2 bn
	% revenue from datacenters	31%	42%



The USA: Low rates but big numbers

- While rates of increase for infrastructure and investment are restrained, the increases are still substantial
- Over next 5 years, USA will account for around 15% of global new space requirement and as much as 20% of power
- A substantial and ageing asset base needs renewing, refitting & replacing. This will continue to provide momentum
- On current paths, China will take 8-9 years to have developed half the infrastructure of the USA and will have caught up by 2028/29 (but ?).



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What does this all mean to our industry:

- The greater data center capacity means greater power (= electricity) demand which means the data centers are on their way to following their own set of utility rules on supply & demand.
- The greater data center capacity means greater demand for Standby Power Generation Capacity which means greater number of generator sets deployment in the data centers.
- As the foot print of the data centers is getting larger, the emission becomes a larger issue which will drive a larger demand for Tier 4i engines.
- The reliability of the standby power systems for the data centers is becoming the focus of the industry (Uptime Institute Tier 3 and Tier 4 certified data centers).



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Thank You



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