Verizon Perspectives on Smart Infrastructure

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Verizon Corporate Profile

Annual Revenues > $100B

Employees > 200K

Capital program ~ $17B

Dow 30 and Global Dow Company

Verizon Wireless

- National US network
- ~ 55% of Revenues
- ~ 89M subscribers

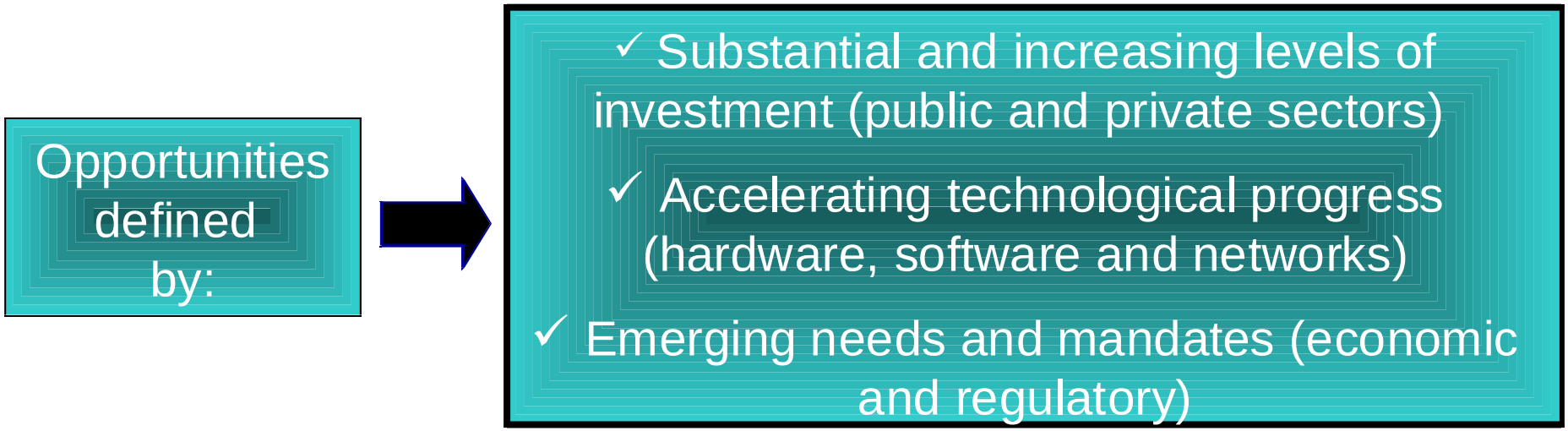
Verizon Wireline

- Global and regional networks
- ~ 45% of Revenues
- ~ 30M customers

Infrastructure-enabling assets and capabilities

Smart Infrastructure

- Hardware, software and network elements
- Efficient resource utilization and management
- Environmental, social and economic impacts
- Detailed planning and architecture decisions
- Safety, security and regulatory considerations



Essential Platforms for Sustainable Ecosystems

Sustainable Ecosystems

- Smart Homes
- Smart Buildings
- Smart Data Centers
- Smart Campuses
- Smart Communities
- Smart Highways
- Smart Grids

Holistic and user-centric perspective

verizon

Smart Building Drivers

- Maintenance, including energy expenses, can account for as much as 80 percent of the cost of a building over its lifetime
- Typical heating, ventilation and air conditioning systems are 50 percent efficient compared to fully integrated systems
- 76% of US electricity is consumed in buildings (commercial and residential)
- Commercial and residential buildings account for 39 percent of US carbon dioxide emissions
- The US building sector consumed 40 quadrillion Btus of energy in 2005 at a cost of more than $300 billion
- 2007 US Energy Independence and Security Act: Title XIII
  - Establishes requirements for adopting energy efficient technologies in the operations of the government

Sources: www.cisco.com (from U.S. Green Building Council, Cisco Systems, The Hartman Co.), Verizon Inc. and Congressional Research Services

Smart Building Concept

Smart Buildings utilize smart infrastructure components to enable efficient control and energy management. Remote monitoring and control of energy consumption optimized by data-driven analytics are a core conceptual component

Issues Being Addressed

- Overall energy consumption and costs
- Building management and security
- Maintenance services and costs
- Carbon emissions

Value Proposition

- 20%+ energy cost reduction
- Enhanced management and security
- Reduce maintenance costs and carbon emissions

Opportunity

- LEED, Green, and Intelligent buildings in North America are expected to grow from $12 billion in 2007 to $42.6 billion by 2015 (Frost & Sullivan)

High-potential users

- US Federal and state governments
- Real Estate Developers and Management Firms
- Others with significant building assets

Smart Building Execution

Today	Point in Time / Episodic	Issue Resolution	Defined and Inflexible	Costs Identification
Future	Real Time / Dynamic	Holistic Management	Scalable and Open Architectures	Profit Enabling

IT & Building Technologies Converge…

…enabling data-driven approach to management

- More complete and granular data sets
- Integrated view of portfolio
- Ability to control buildings via web-based interface
- Fully scalable solutions based on open architecture

…delivering increased operational efficiency

Target 20% - 30% Building Operating Cost Reduction

Data Centers/ Green IT

Green IT takes a holistic view of the environmental footprint across an organization's IT, highlights areas where action may be taken, and implements solutions that reduce environmental impact and improve financial performance

Issues Being Addressed

- Data center energy demand is doubling every 5 years
- $59B global DC electric bill by 2011
- Power and cooling costs approaching 50% of VZ IT Budget

Value Proposition

- Optimize data center assets (20%+ savings)
- Reduce energy consumption
- Minimize environmental impact
- Improved financial performance

Opportunity

- Green IT expected to grow to a $5B market size in pro services by 2013
- Environmental issues are becoming an increasingly important CEO driver

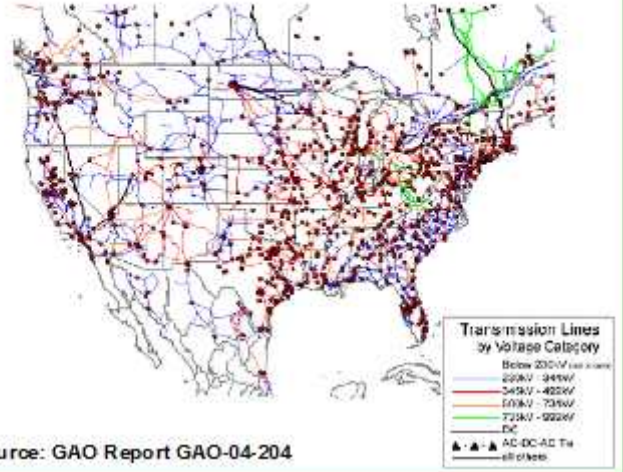
High-potential users

All Data Centers

Smart Grids

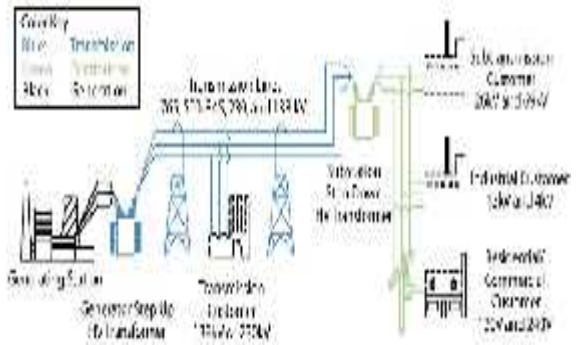
- **Demand for Electricity**
  - 20% increase in demand projected between 2006 and 2015
  - Shortfall in power production capacity
  - Power sector accounts for 24% of global emissions and is first target for carbon tax
  - Most existing infrastructure is over 25 years old
- **US Grid Market Size**
  - 100M meters to be replaced with smart meters
  - 10-yr spending estimated at $100B to $450B
  - Utilities now doing Smart Grid planning
- **2007 US Energy Independence and Security Act: Title XIII**
  - Establishes Smart Grid as US policy

US Electric Transmission Network



Source: GAO Report GAO-04-204

The Electrical Power System



Source: Congressional Research Service, CRS Report for Congress, Smart Grid Provisions inH.R. 6, 110th Congress, Updated December 20, 2007, Order Code RL34288

Smart Grid Execution

Today	Anticipated Cost Value	Testing Technologies	Information Only	Reducing Energy Usage
Future	Demonstrated Cost Metrics	Proving in Systems	Two Way Monitoring & Control	Long Term Sustainability

Data Networking, Smart Devices, Intelligence and Electrical Grid Convergence…

…enables active demand management and better forecasting to reduce the need for rapid infrastructure growth

- End to end solutions for the electric utility industry
- Wireless-enabled and other smart devices monitor and control components
- Network-enabled analytics and intelligence support active management and track results

…delivering sustainable and cost efficient grid infrastructure for the long term

Upgraded Electrical Grid Infrastructure that is highly efficient and sustainable

Summary

- Sustainable ecosystems will be an increasingly critical priority in the 21st century from an environmental, social and economic perspective
- Smart Infrastructure is essential to the deployment of these ecosystems and represents a complex array of challenges and opportunities
- Verizon's investment in its fixed and mobile networks will enable them to be vital platforms for deployment, integration and management of smart infrastructure
- We are committed to working with government, power companies, research centers and commercial partners to optimize the benefits of smart infrastructure development