



# Data Centers:

The Carolinas' Newest Cash Crop

## CoreNet Global Carolinas Chapter Annual Mega-Event

August 17, 2011



## Agenda

- Welcome and Thank You's
- Chapter Business
- Panelist Presentations
- Q&A

# Data Centers:

## The Carolinas' Newest Cash Crop



### Platinum

**NAI Southern Real Estate**  
Commercial Real Estate Services, Worldwide

**Balfour Beatty**

**RTDooley**  
a Balfour Beatty company

**LINCOLN HARRIS** | **CSG**  
Corporate Services Group

**CBRE**  
CB RICHARD ELLIS

  
Craig Davis Properties  
Real Estate... We Make the Difference  
**CBi**

**Turner**  
**McGUIRE WOODS**  
*Relationships That Drive Results*  
 **JONES LANG LASALLE**

### Gold

**Allsteel**  
**AMT Direct**  
**Armstrong**  
**Capital Broadcasting**  
**Cassidy Turley**  
**Cushman & Wakefield**  
**Duke Realty**

**Haworth**  
**Herman Miller**  
**InterfaceFLOR**  
**JE Dunn**  
**Knoll**  
**Millicare**  
**MSS**

**Perkins + Will**  
**Steelcase**  
**Spectrum Properties**  
**Storr Office Environments**  
**Studley**  
**Teknion**  
**Trinity**

### Silver

**Alfred Williams**  
**Bonitz**  
**Charlotte Regional Partnership**  
**Charter Square**  
**Childress Klein**  
**Cisco**  
**Colliers International**  
**Cox & Schepp**  
**Crossville Tile**  
**DIRTT**

**Edge Office**  
**Facilicon**  
**Garmon & Company**  
**Gensler**  
**Hilldrup Moving & Storage**  
**Hines**  
**HOK**  
**Holder Construction**  
**IA Interior Architects**

**KDC Real Estate**  
**Development & Investments**  
**KL Gates**  
**Little**  
**LS3P Associates LTD**  
**Marand Builders**  
**McDonald York**  
**Modular Designs**  
**Nelson Strategies**

**Office Environments**  
**OSI**  
**Parker Poe**  
**Rodgers Builders**  
**Tandus**  
**Terracon**  
**UGL Equis**



## Today's Event Sponsors

**Balfour Beatty**



In Kind Sponsor

**Bank of America**







## Thank You Programs Committee!

Programs Committee Chair: William Parker-Ciena

- Jon Goldberg, KL Gates
- Tobin Wolverton, CBI
- Sheila Dawes, Bank of America
- Sarah Holmes, BHDP
- Terry Moore, Little
- Charlis Brock, CBI
- Tracy Barnett, BRG
- Chris Turner, Bank of America
- Allan Lane, Nortel
- Emily Walser, Steelcase
- Susan Fertitta, Office Environments
- Alita Webster, Young Office
- Ashley Brown, Young Office
- Bill Robinson, Cushman & Wakefield
- Michael J. Kriston, McDonald York



Thank You for Supporting.....

Classroom Central



A 501c3 nonprofit providing school supplies to  
teachers for distribution to disadvantaged students.

Currently serving 166 area schools.



## 2011 Remaining Events

- August 25 - Sweat Equity Outing – Classroom Central (Charlotte)
- September 14 – Young Leaders Event (Raleigh)
- September 14 – Networking (Raleigh)
- October 5 – Education Program (Charlotte)
- October 6 – Education Program (Raleigh)
- October 8 – Sweat Equity Outing - Habitat Restore (Charlotte/Raleigh)
- November 6 – 8 – Atlanta Summit
- November 11 – Sweat Equity Outing – Food Bank (Charlotte/Raleigh)
- November 16 – Education Program / Networking / Food Drive (Greenville)
- November 30 – Young Leaders Event (Charlotte)
- December 6 – Education Program / Networking / Toys for Tots (Charlotte)
- December 7 – Education Program / Networking / Toys for Tots (Raleigh)



## 2012 Board of Directors

### Continuing

- Jessica Brown, CBRE
- Tripp Guin, CBRE
- Kevin Jenkins, Turner Construction
- Tony Perez, Bank of America
- Danny Seaton, Teknion
- Koo Stengle, BB&T
- Frank Wiseman, Tandus
- Craig Youst, Red Hat

### Returning

- Steve Bodenheimer, Duke Energy

### Newly Elected

- Suzanne Jacobs, Time Warner Cable
- Chris Lapata, Steelcase

### Senior Advisory Council

- Hunter Fleshood
- Philip Grossberg, CBRE
- Dan Jennings, Areva

Rolling Off: William Parker, Ciena-Thank you for your service!





# Data Centers:

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August 17, 2011



Moderator  
Patrick Donnelly  
AIA, LEED AP, MCR.h  
BHDP Architecture



Panelists  
David Swenson  
Senior Vice President  
Charlotte Regional  
Partnership



# Data Centers:

The Carolinas' Newest Cash Crop



Panelists  
Pete Marin  
President  
T5 Partners, LLC





## Panelists

Kristin Fletcher

Executive Vice President  
Cleveland County Economic  
Development Partnership



Panelists  
Stuart Heishman, P.E.  
Director  
Business Development  
Duke Energy



Panelists  
Greg Haldeman  
Regional Manager  
DRP Construction, Inc.





## Panelists

Chad Martin, LEED AP  
Regional Office Director  
Holder Construction





Panelists  
Tim Garrison  
Senior Vice President  
Carolinas Division  
Balfour Beatty

# Data Centers:

The Carolinas' Newest Cash Crop



David Swenson  
Senior Vice President  
Charlotte Regional Partnership

# Data Centers:

The Carolinas' Newest Cash Crop



Pete Marin  
President  
T5 Partners, LLC





## Data Center Defined



Generator room



Piping to cooling towers



Chiller room



Electrical switch gear



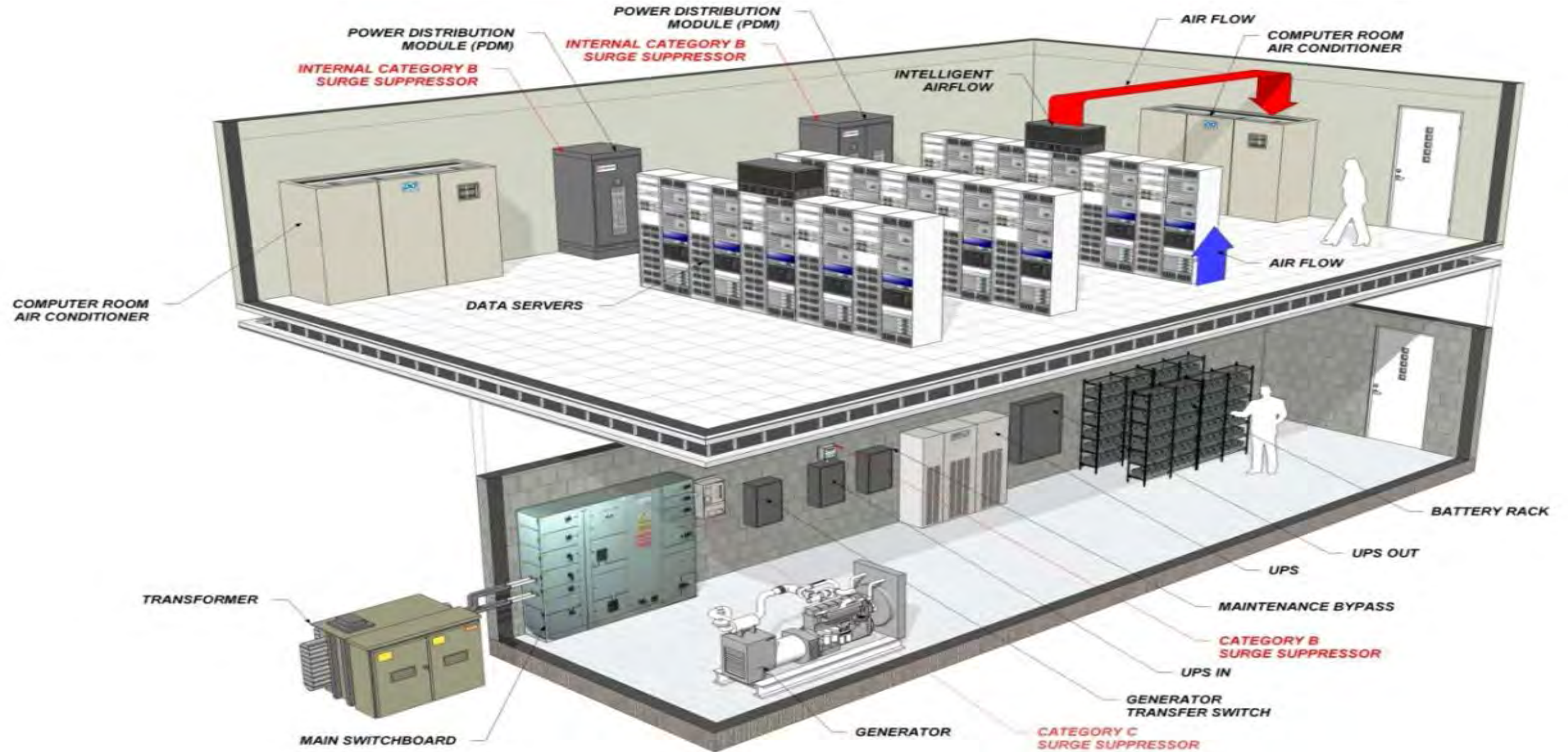


## Data Center Defined

**Houses computer & telecommunications equipment so information can be transferred, manipulated, stored and be readily accessible via different networks.**

- Essential support for the way we live, work and play
- Must operate 24 / 7 / 365
- Redundant power, cooling infrastructure and communications

# Data Center Defined





# Data Center Defined

**Data Centers are expensive because of engineering and specialized equipment**



Exterior of data center



Patch cords to servers



Power utility substation

**Cost to build per square foot:**

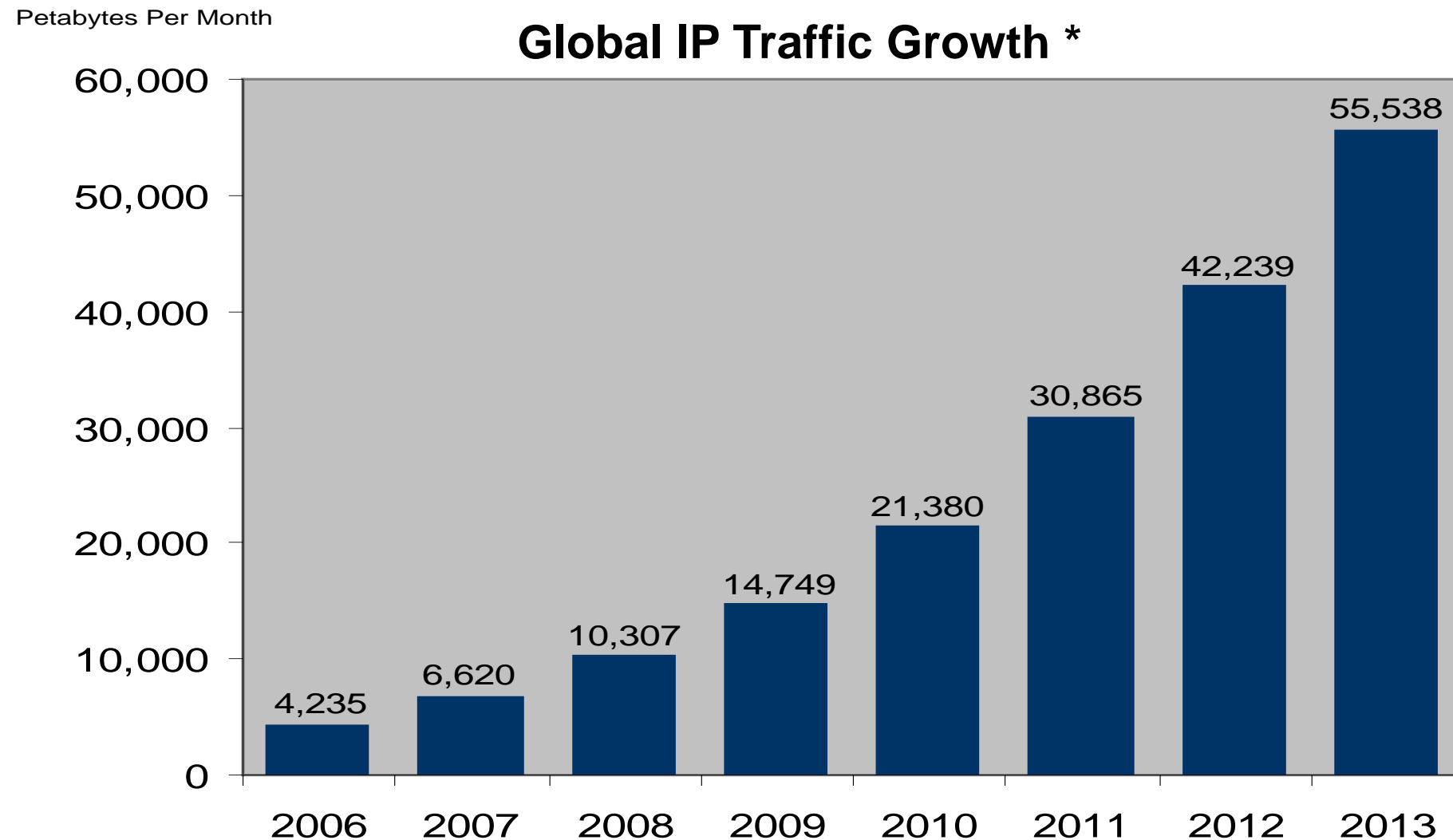
- Data Centers \$600-1250
- Office \$130-300
- Residential \$75-250

# Types of Data Centers

|            | Characteristics   | Players  |
|------------|---|--|
| Enterprise | <ul style="list-style-type: none"><li>• Single-tenant facility</li><li>• Owned or Leased by operator/user</li><li>• Mid-sized to large corporations</li></ul>           | <ul style="list-style-type: none"><li>• <b>American Express</b></li><li>• <b>Microsoft</b></li><li>• <b>T5</b></li></ul>         |
| Wholesale  | <ul style="list-style-type: none"><li>• Multi-tenant facility</li><li>• Economies of Scale</li><li>• Dedicated Suite</li><li>• Significant power requirements</li></ul> | <ul style="list-style-type: none"><li>• <b>Digital Realty Trust</b></li><li>• <b>Dupont Fabros</b></li><li>• <b>T5</b></li></ul> |
| Colocation | <ul style="list-style-type: none"><li>• Multi-tenant facility</li><li>• Shared Data Hall</li><li>• Many end users with small footprints</li></ul>                       | <ul style="list-style-type: none"><li>• <b>Equinix</b></li><li>• <b>Telx</b></li><li>• <b>Internap</b></li></ul>                 |



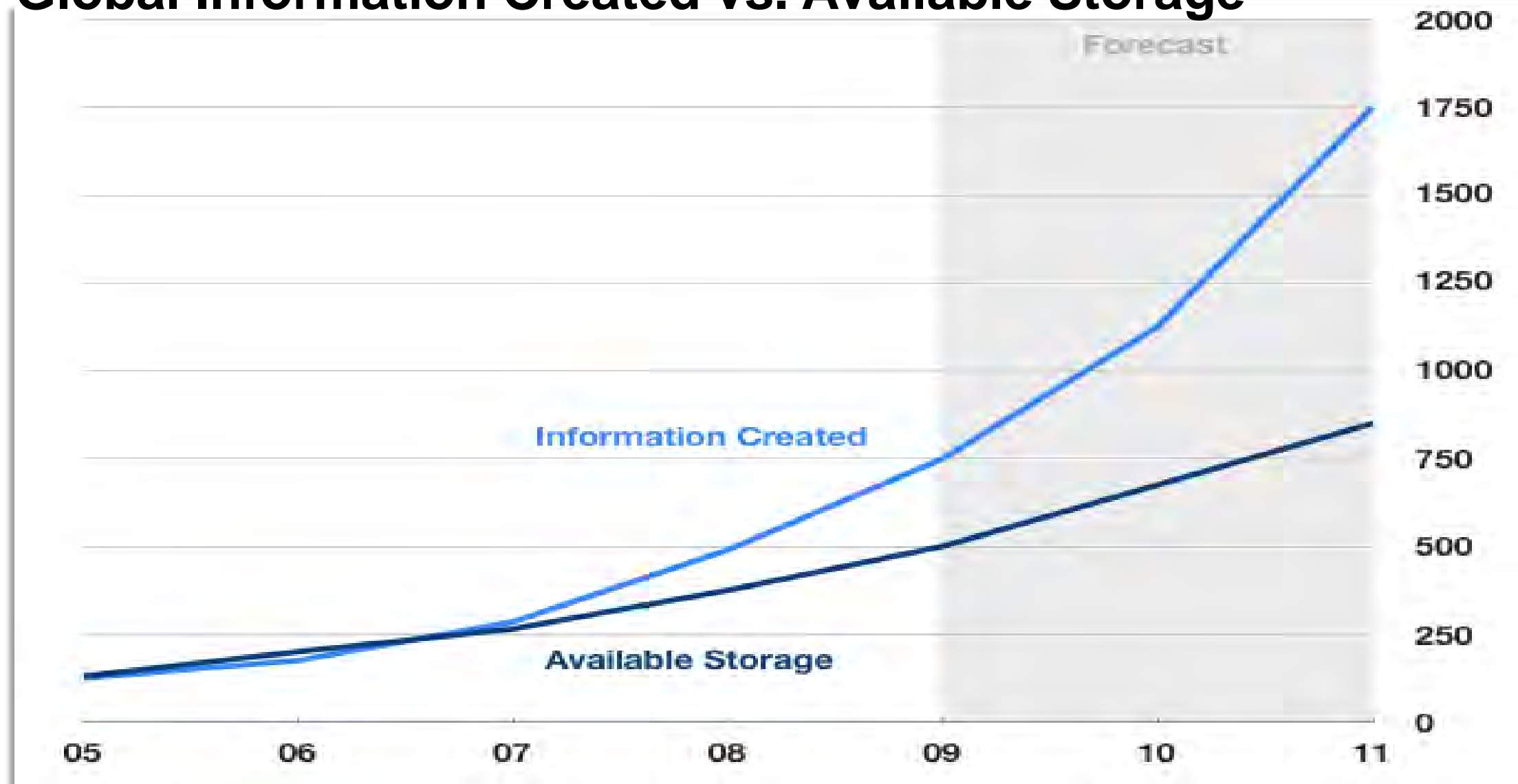
# Demand Drivers – Outpacing Supply



- North America internet traffic to increase at 39% CAGR \*
- 2010 mobile traffic 3x greater than entire global internet of 2000 \*
- Video traffic will exceed 60% of global IP traffic by 2014 \*

# Demand Drivers – Outpacing Supply

## Global Information Created vs. Available Storage \*



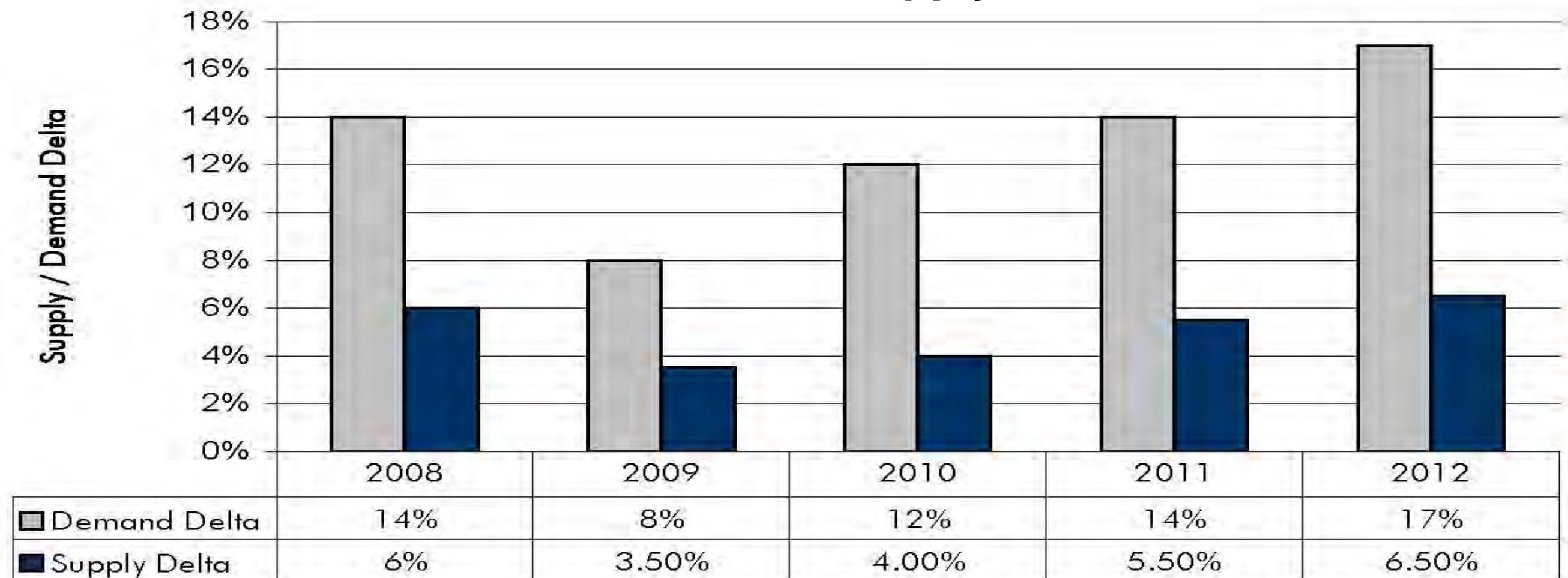
- Amount of global information is set to rise 30 fold in the next decade\*
- Data requirements are growing at an annual rate of 60%\*\*
- Proliferation of picture, voice & video all reside in data centers

\* Source: IDC via CIO.com

\*\* Source: IDC via The Economist

# Demand Drivers – Outpacing Supply

Internet Data Center Supply & Demand – Global \*



- Demand for data center space is outpacing supply by 3 to 1 \*
- By 2012 companies are expected to spend \$42bn on cloud computing \*\*
- More data was created in the last three years than the entire human history \*\*\*

\* Source: Tier1 Research

\*\* Source: IDC

\*\*\* Source: Berkeley School of Management

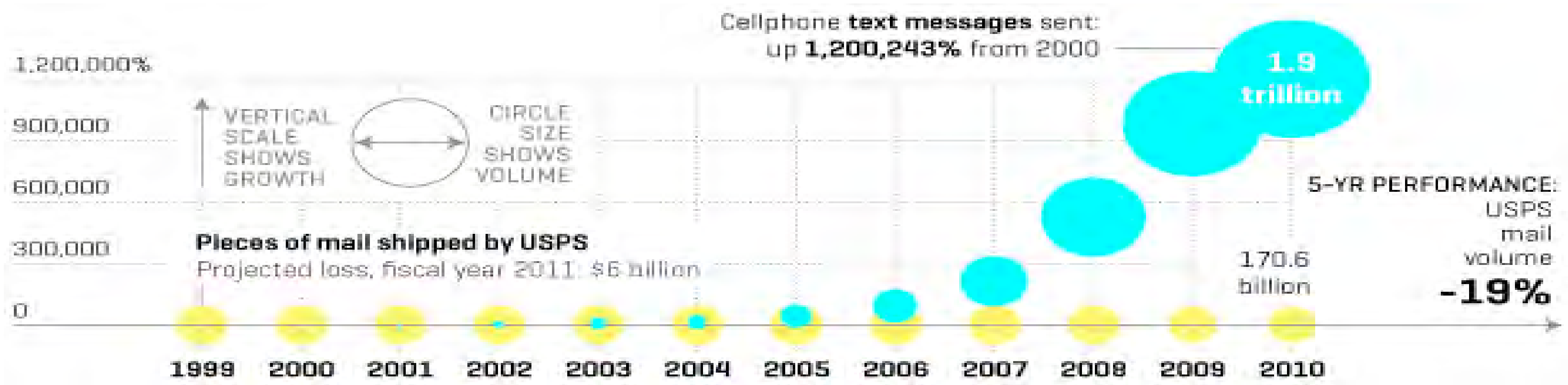




## Demand Drivers – Outpacing Supply

### Texts vs. Mail

The U.S. Postal Service is on track **to lose \$6 billion this year**, as e-mails and texting reduce mail volumes faster than postage fees can rise.

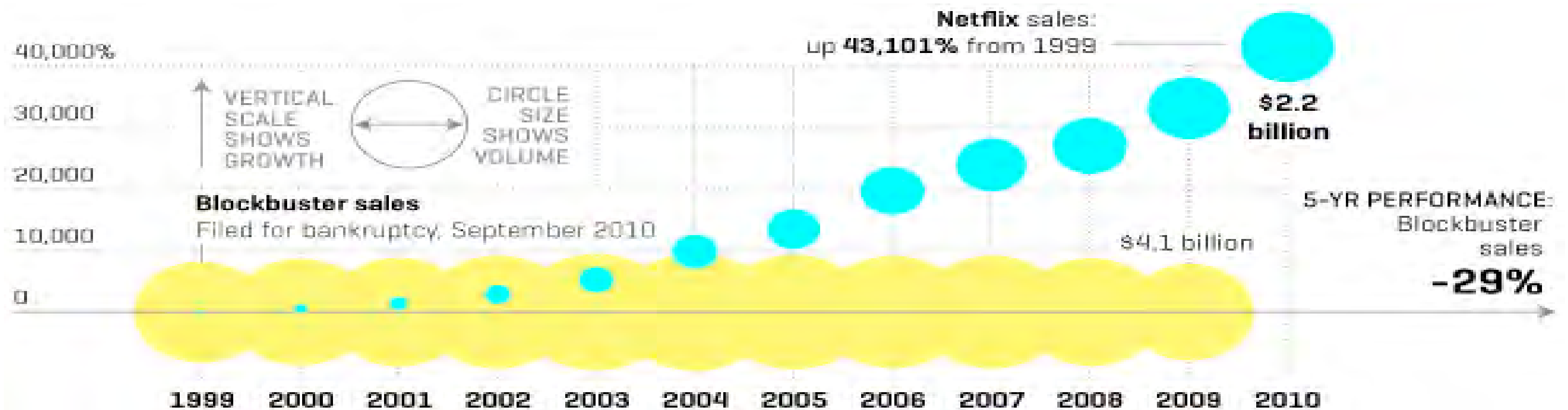




## Demand Drivers – Outpacing Supply

### Netflix vs. Blockbuster

Blockbuster hit 4,000 stores in two decades. Then, in 1997, Reed Hastings got charged a \$40 late fee on Apollo 13 and founded Netflix (NFLX). The rest is history.

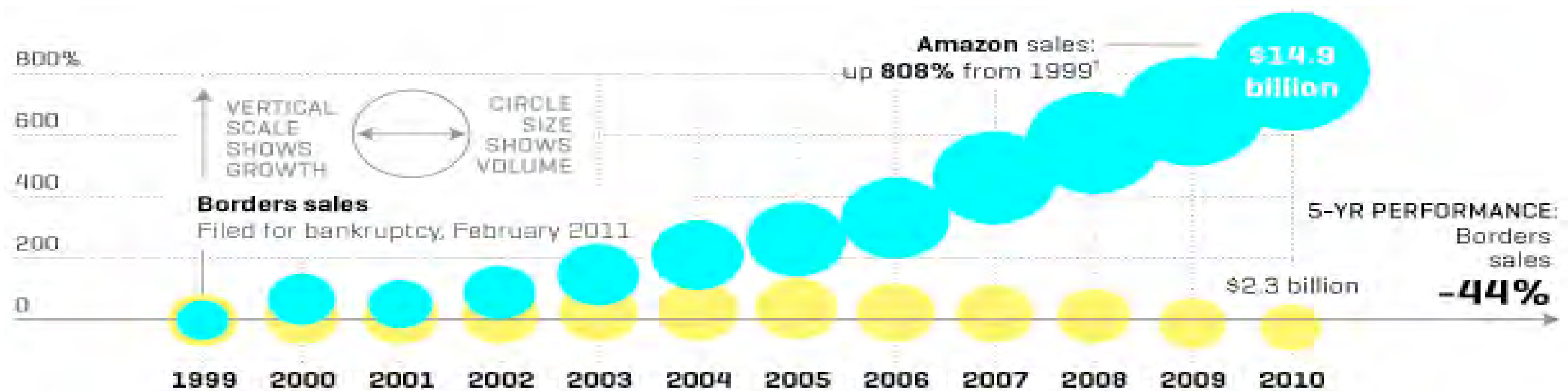




## Demand Drivers – Outpacing Supply

### Amazon vs. Borders

Amazon almost single-handedly bankrupted the No. 2 bookseller in a decade. Barnes & Noble (BKS) is fighting back with its Nook.



Source: FORTUNE, June 23, 2011

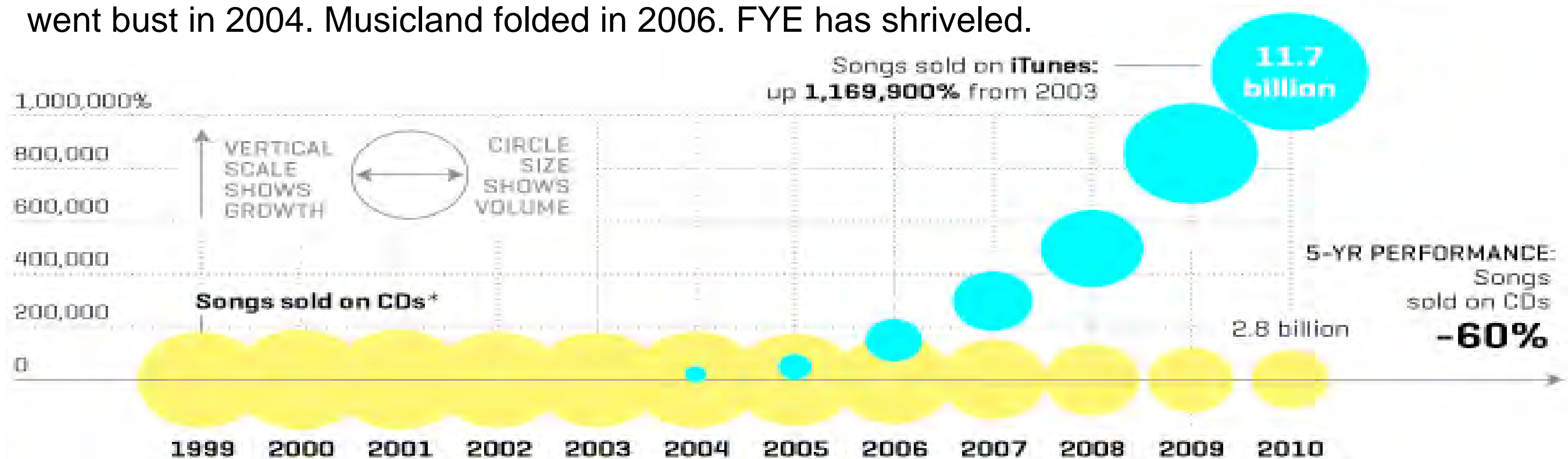




## Demand Drivers – Outpacing Supply

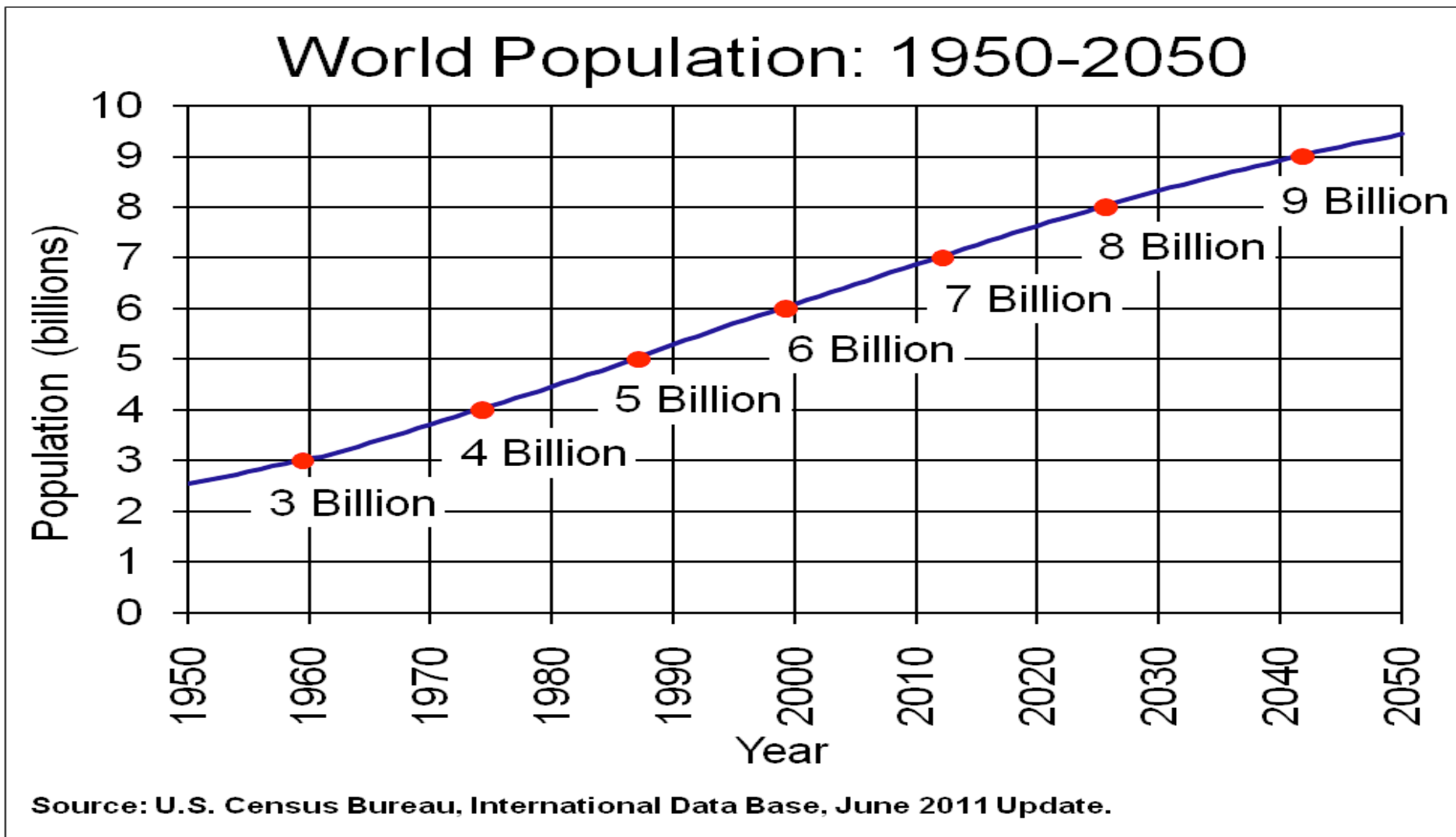
### iTunes vs. CDs

iTunes made its debut in 2003, with devastating effects on music retailers. Tower Records went bust in 2004. Musicland folded in 2006. FYE has shriveled.



Source: FORTUNE, June 23, 2011

## Demand Drivers – Outpacing Supply



The world population increased from 3 billion in 1959 to 6 billion by 1999, a doubling that occurred over 40 years. The Census Bureau's latest projections imply that population growth will continue into the 21st century, although more slowly. The world population is projected to grow from 6 billion in 1999 to 9 billion by 2044, an increase of 50 percent that is expected to require 45 years.

# Data Centers:

## The Carolinas' Newest Cash Crop

# Current T5 Projects





## T5@Kings Mountain



- 147,000 SF Powered Shell, Metro Charlotte
- 280 acre Data Center Park,
- 180 MW Substation, 4.3c/KWH, Transmission Fed
- Two major data centers in the park currently





## T5@Atlanta



- 6.0 CMW Wholesale Data Center (expandable to 7.5 CMW)
- 102,000sf, Tier 3 Reserve Redundant Design, 110-140 W/SF
- 5.9c/KWH dual fed power
- Delivers: NOVEMBER 2011





## T5@Los Angeles



- 12.95 CMW Wholesale Data Center (expandable to 16.65 CMW)
- Onsite Substation
- 7.9c/KWH, 20% below market, 50% below downtown LA, 4 yrs to construct
- Phase 1: MAY 2012





## T5@Dallas



- 18 CMW Wholesale Data Center
- Legacy Business Park, Plano, TX
- 175mph rated shell, purpose built Data Center
- Dual Power Feeds, 7c/KWH
- Phase 1 Delivers: MAY 2012

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Kristin Fletcher  
Executive Vice President  
Cleveland County Economic Development Partnership





## WHY DATA CENTERS?

## WHY CLEVELAND COUNTY?

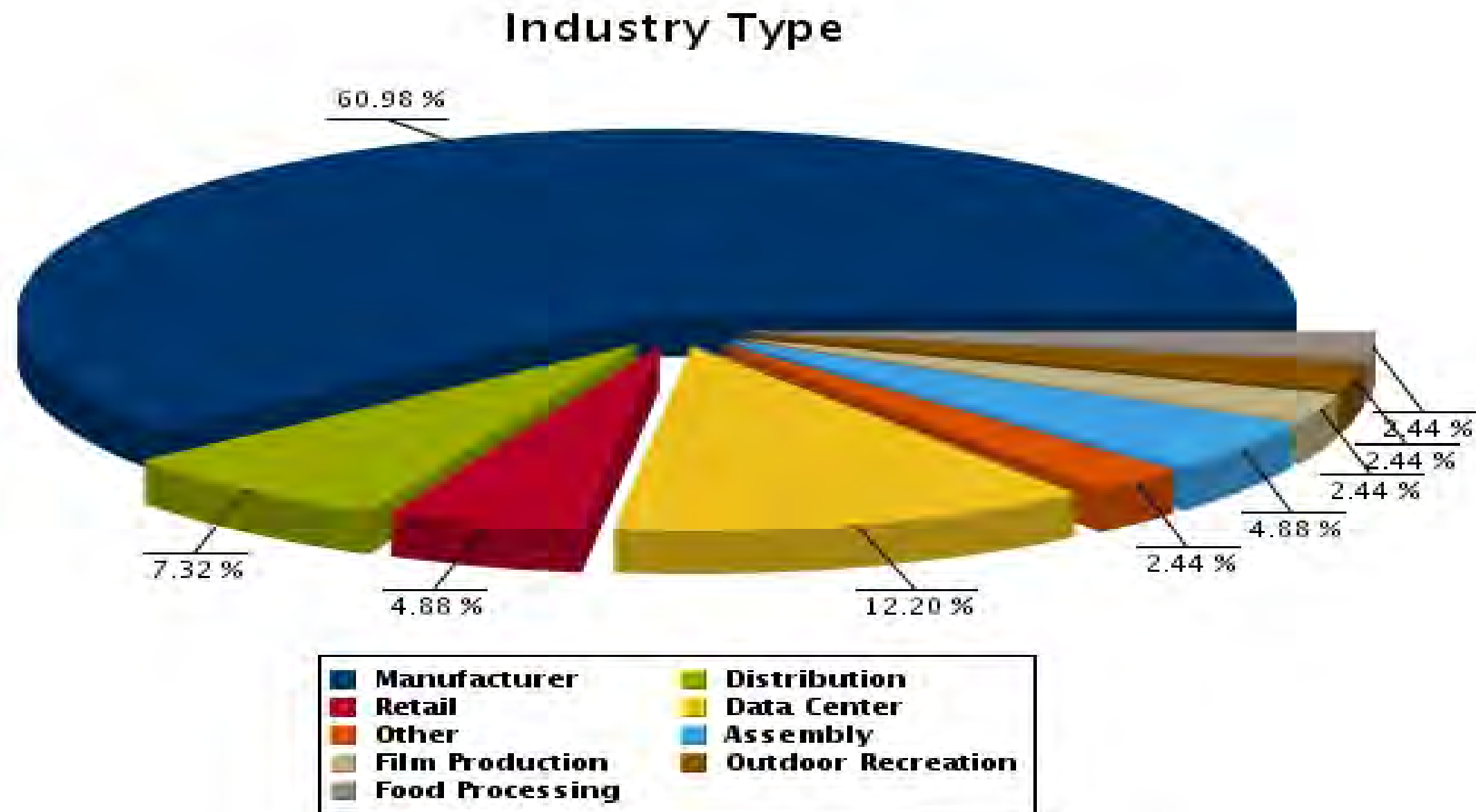
- Location, Location, Location
- Reliable & Affordable Power
- Disaster Avoidance
- Necessary Infrastructure
- Access to Existing IT Network
- Access to Education
- Growing & Talented Workforce
- Training Opportunities & Aggressive Incentives







## Cleveland County's Goal= Diversification



# Data Centers: The Carolinas' Newest Cash Crop



Table 1. Projection of select ICT occupations in the United States<sup>1</sup>

| U.S. Occupation Projections                      | Employment |         | Change  |      | Average Annual Openings | Occupational Employment as of May 2009 <sup>2</sup> |
|--|------------|---------|---------|------|-------------------------|---|
|  | 2008       | 2018    | #       | %    |                         |   |
| Computer Support Specialists                     | 565,700    | 643,700 | 78,000  | 14.0 | 23,460                  | 540,560   |
| Computer Systems Analysts                        | 532,200    | 640,300 | 108,100 | 20.0 | 22,280                  | 512,720   |
| Network and Computer Systems Administrators      | 339,500    | 418,400 | 78,900  | 23.0 | 13,550                  | 338,890   |
| Network Systems and Data Communications Analysts | 292,000    | 447,800 | 155,800 | 53.0 | 20,830                  | 226,080   |
| Computer and Information Systems Managers        | 293,000    | 342,500 | 49,500  | 17.0 | 9,710                   | 287,210   |

## Analysis of Opportunity



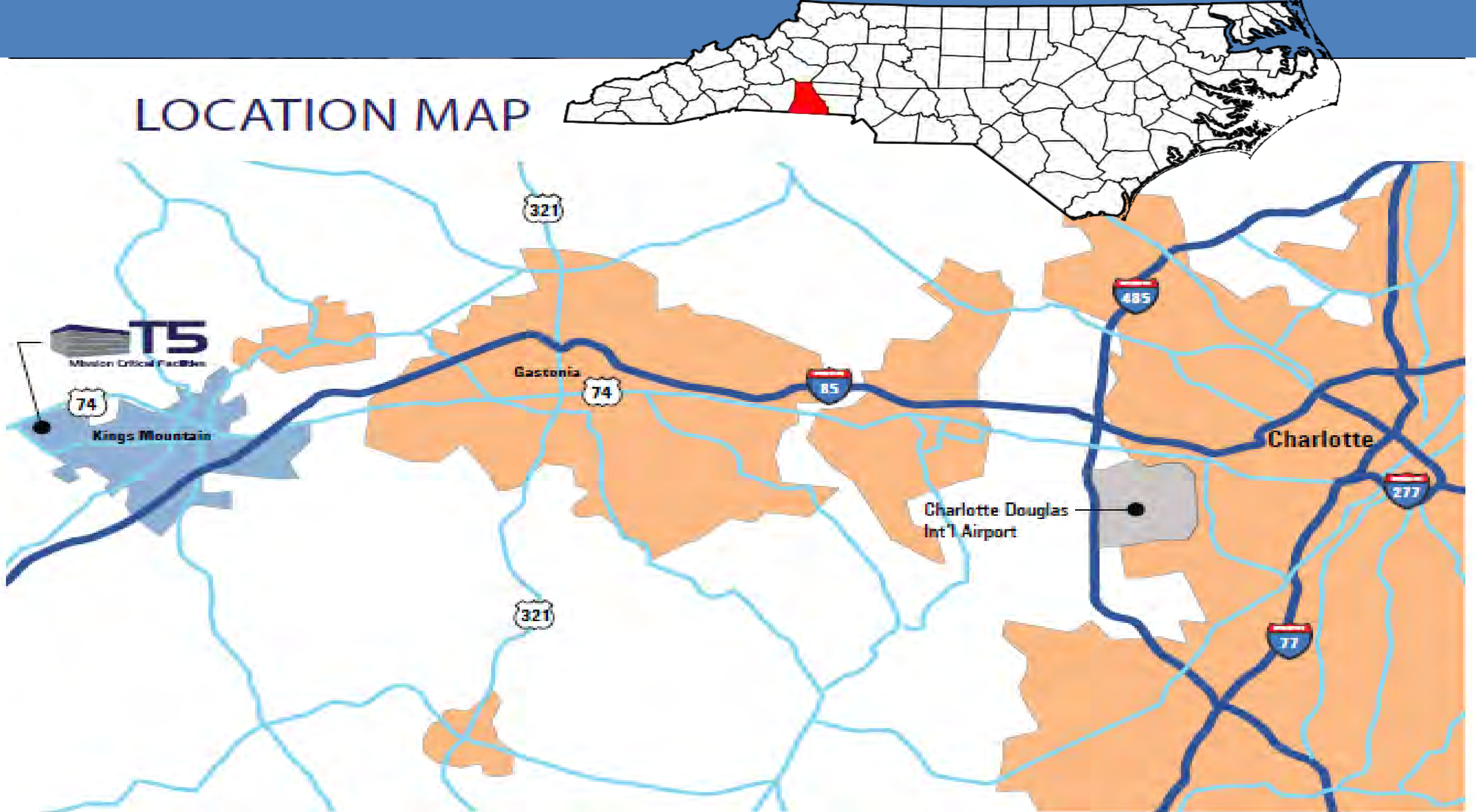
Table 2. Projection of select ICT occupations in the state<sup>3</sup>

| North Carolina Occupation Projections            | Employment |        | Change |      | Average Annual Openings | Occupational Employment as of May 2009 <sup>2</sup> |
|--|------------|--------|--------|------|-------------------------|---|
|  | 2006       | 2016   | #      | %    |                         |   |
| Computer Support Specialists                     | 15,850     | 18,540 | 2,690  | 17.0 | 760                     | 16,770  |
| Computer Systems Analysts                        | 14,900     | 19,280 | 4,380  | 29.4 | 840                     | 17,620  |
| Network and Computer Systems Administrators      | 7,500      | 9,590  | 2,090  | 27.9 | 380                     | 7,990   |
| Network Systems and Data Communications Analysts | 7,140      | 10,740 | 3,600  | 50.0 | 510                     | 6,110   |
| Computer and Information Systems Managers        | 9,290      | 10,800 | 1,510  | 16.3 | 300                     | 11,040  |

<sup>1</sup>Source: U.S. DOL, Bureau of Labor Statistics, October 2010, [bls.gov/ocw/ocw2003](http://bls.gov/ocw/ocw2003)

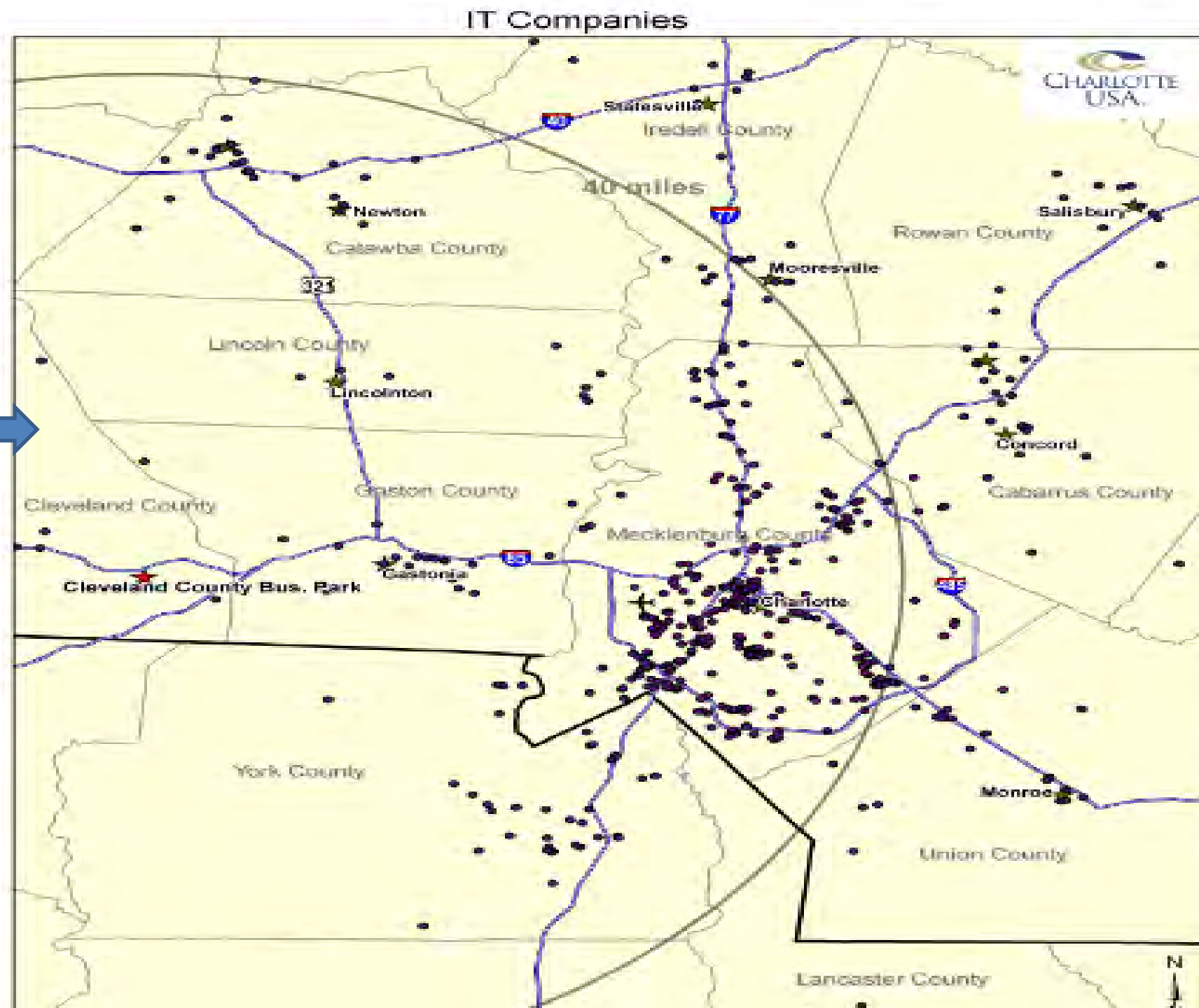
<sup>2</sup>Source: U.S. DOL, Bureau of Labor Statistics, State Occupational Employment and Wage Estimates, May 2009, [state.bls.gov/oes/current/oesncs1](http://state.bls.gov/oes/current/oesncs1)

# LOCATION MAP





# Data Centers: The Carolinas' Newest Cash Crop



## EXTENSIVE IT NETWORK & SKILLED WORKFORCE

\*There are over 650 IT companies located in the Charlotte Region.

\*There are approximately 25,000 IT workers in the Charlotte USA Region. That equates to one out of every four IT workers are located in North Carolina and South Carolina, and are employed in our region.

# Data Centers: The Carolinas' Newest Cash Crop



## TRAINING & EDUCATION

**DIPLOMA**  
DATA CENTER OPERATIONS

| Major Courses                           | Credit Hours |
|---|--------------|
| CIS- 110 Introduction to Computers      | 3            |
| CIS- 120 Hardware/Software Support      | 3            |
| CIS- 220 Adv. Hardware/Software Support | 3            |
| DBA- 110 Database Concepts              | 3            |
| DBA- 115 Database Applications          | 3            |
| NET- 125 Networking Basics (CISCO)      | 3            |
| NET- 126 Routing Basics (CISCO)         | 3            |
| NCIS- 110 Operating System Concepts     | 3            |
| NCIS- 120 Linux/UNIX Single User        | 3            |
| NCIS- 220 Unix/Linux Admin I            | 3            |
| NCIS- 130 Windows Single User           | 3            |





*Building Futures*

**operations**



**data center**



For more information, contact:  
Jonathan Davis  
Computer Information Technology Instructor  
(704) 484-4158  
davisj@clevelandcommunitycollege.edu

www.clevelandcommunitycollege.edu  
(704) 484-4000  
137 S. Post Road • Shelby, NC 28152

**CURRICULUM**

The Data Center Operations curriculum provides students with the knowledge and skill training required for successful employment in a computer data center.

Emphasis is placed on operating systems, advanced hardware and software maintenance and repair, database management, UNIX command-line operations, data center security concepts, securing communications and network routing/switching. Furthermore, it is client/customer focused. Graduates will have the ability to communicate comfortably with people who have limited technical knowledge.

Graduates will qualify for and effectively be able to carry out the daily operations required in computer data center positions.


**FACILITIES**

At Cleveland Community College, instruction in Computer Information Technology is based on practical experience. Students study in tear-down labs using equipment they will encounter in their work. We are one of the most hands-on colleges in the region.

We are committed to teaching open source software, particularly Linux, and are also a Microsoft IT Academy and PearsonVUE Testing Center. A VMware partnership allows us to teach our students about virtualization in a state-of-the-art environment. Cleveland Community College is also pursuing CISCO Academy status, which will allow us to offer even more networking technology.

**CERTIFICATES**  
Certificates can be added to any degree.

| Data Center Technician Certificate (Level 1) |              |  | Data Center Specialist Certificate (Level 2) |              |  |
|--|--------------|--|--|--------------|--|
| Courses                                      | Credit Hours |  | Courses                                      | Credit Hours |  |
| CIS- 110 Introduction to Computers           | 3            |  | CIS- 220 Adv. Hardware/Software Support      | 3            |  |
| CIS- 120 Hardware/Software Support           | 3            |  | NCIS- 220 Unix/Linux Admin I                 | 3            |  |
| NCIS- 110 Operating System Concepts          | 3            |  | NCIS- 220 Windows Admin I                    | 3            |  |
| NCIS- 120 Unix/Linux Single User             | 3            |  | SEC- 150 Secure Communications               | 3            |  |
| NCIS- 130 Windows Single User                | 3            |  | NET- 125 Networking Basics (CISCO)           | 3            |  |
| SEC- 110 Security Concepts                   | 3            |  | NET- 126 Routing Basics (CISCO)              | 3            |  |

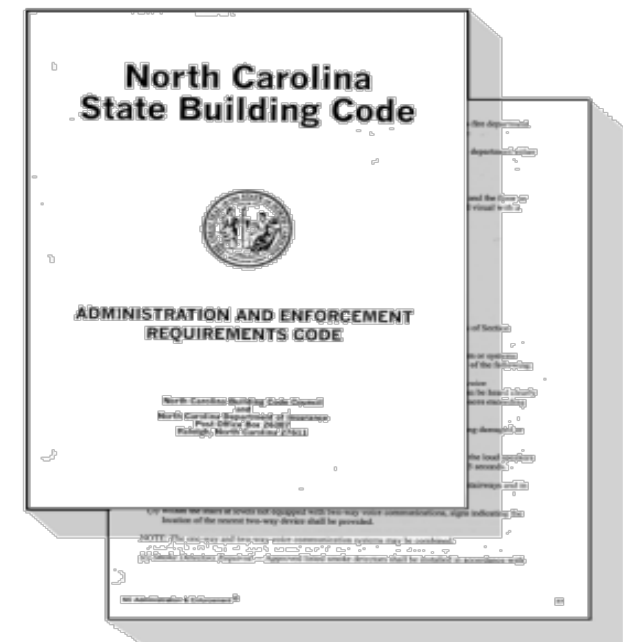




## INCENTIVES

### CLEVELAND COUNTY INCENTIVES

- County property taxes (real and personal) granted back to client over a ten-year period
- Infrastructure improvements
- Reduced water and sewer rates
- Local building and zoning permit fees will be waived for projects
- Waiver of utility connection fees for projects
- Tuition credits for graduate or undergraduate courses provided by Gardner-Webb University
- Guaranteed ten day turnaround on all local permit applications
- Additional incentives provided through Duke Energy
- **Cleveland County is a Tier 1 county, thus eligible for maximum state incentive grants**







## SUCCESSFUL PROJECTS

| COMPANY                       | INVESTMENT   | SQUARE FEET                        | PERMANENT EMPLOYMENT | CONSTRUCTION EMPLOYMENT & DURATION |
|-------------------------------|--|------------------------------------|----------------------|------------------------------------|
| Wipro Technologies            | \$150,000,000<br>(Five Years)                      | 230,000                            | 17                   | 450<br>(8 months)                  |
| Disney                        | \$200,000,000<br>(Five Years)                      | 100,000                            | 48                   | 1,000<br>(14 months)               |
| T5 Powered Shell Building     | <i>(New investment could exceed \$100,000,000)</i> | 150,000<br>(expandable to 480,000) |                      | 250<br>(6 months)                  |
| T5 Park Development & Grading |  |                                    |                      | 50<br>(4 months)                   |
|                               |  |                                    |                      |                                    |
| <b>TOTALS</b>                 | <b>\$450,000,000</b>                               |                                    | <b>65</b>            | <b>1,750</b>                       |





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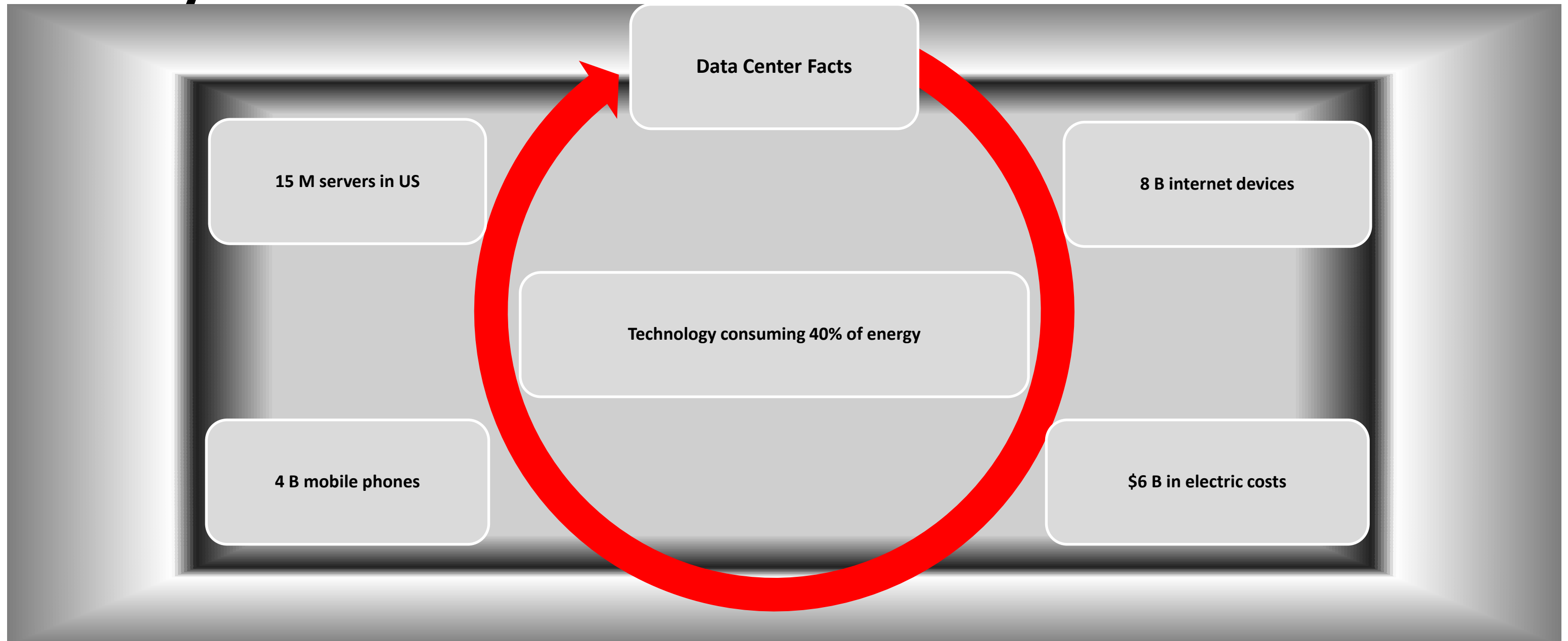
Stuart Heishman, P.E.  
Director, Business Development  
Duke Energy



## “POWER” COMMUNICATION

*Stuart N. Heishman*, P.E.  
Director, Business Development  
Duke Energy

## Did you know....







## WHY NC?

- Power
- Momentum
- Incentives
- Low Risk Natural Disasters
- Risk Management – Post 911
- Business Development “Team” Efforts
- T 5 Partners



## Power Checklist

- ☒ Establish direct communication with Power Company
- ☒ Sign a mutual NDA
- ☒ Regulated versus Non-regulated environment
- ☒ Power rate request
- ☒ Availability of Riders
- ☒ Dual Feed Capability
- ☒ Schedule
- ☒ Reliability
- ☒ Generation Mix
- ☒ "Green" Programs
- ☒ Plans for future power consumption
- ☒ Account Executive Program
- ☒ Utility Real Estate Assets
- ☒ Unique Programs

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Regional Manager  
DRP Construction, Inc.



# Data Centers:

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Senior Vice President, Carolinas Division  
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# Data Centers:

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## Q&A



# Data Centers:

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Thank you for your participation!