WBC Data Center Overview

Program Panelists

Kevin Dalton, Vice President of Engineering
Digital Realty Trust

Buddy Rizer, Director for Economic Development
Loudoun County, Virginia

Steve Schoenefeldt, Vice President Technology Sector
HITT Contracting Inc.

Allen Tucker, Managing Director
Jones Lang LaSalle

Moderator – Ross Rebraca, HITT Contracting Inc.

Presentation 5:30 to 7:00 p.m.
Reception 7:00 to 8:00 p.m.

March 3, 2015
Where it all started | Northern Virginia

- Home of the Internet (developed by DARPA.net)
- Home of the first ISPs (AOL, PSINet, UUNET)
- Greatest presence of multiple fiber providers with extensive networks with global reach and low latency
- Best in class high-tech workforce (well educated and skilled)
- Highly reliable power at low costs ($0.055 - $0.065 / KWH)
- Low overall cost for business operations (Forbes.com and CNBC)
- Minimal business interruptions
  - Moderate weather and limited natural hazards
  - Dual Airports (Reagan National & Washington Dulles)
  - Suburbs offer limited to NO Crime
  - Pro-Business government with a focus on speed to market / incentives
- Exceptional data center demand (56 MW 2014)
Mid-Atlantic / Northern Virginia | Data Center Market Place

**Supply**
- Total MTDC inventory: 5,260,000 s.f. / 498.3 MW
- Total commissioned vacant: 234,000 s.f. / 46.4 MW
- Under construction: 115,000 s.f. / 22.0 MW
- Planned Raised Floor: 550,000 s.f. / 113.0 MW

**Demand**
- 2014 Completed Transactions: 30
- 2014 Critical Power Leased: 56.21 MW
- 1Q15 Tenants in the Market: ~20 MW
- 1Q15 Leasing Activity: 11.65 MW

**Cost**
- < 250 kW: $235-$320 kW (all in)
- > 250 kW: $120-$140 kW (+E)
- PBB: $18 - $32 NNN

### Tier 1 Data Center Markets

<table>
<thead>
<tr>
<th>Markets</th>
<th>2014 MW</th>
<th>Market Share</th>
<th>Rank</th>
<th>Min.</th>
<th>Max.</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Atlanta</td>
<td>11</td>
<td>4.45%</td>
<td>7</td>
<td>125</td>
<td>150</td>
<td>3</td>
</tr>
<tr>
<td>Chicago</td>
<td>10</td>
<td>4.05%</td>
<td>9</td>
<td>125</td>
<td>150</td>
<td>3</td>
</tr>
<tr>
<td>Dallas / Fort Worth</td>
<td>34</td>
<td>13.77%</td>
<td>3</td>
<td>125</td>
<td>150</td>
<td>3</td>
</tr>
<tr>
<td>Houston</td>
<td>8</td>
<td>3.24%</td>
<td>10</td>
<td>140</td>
<td>160</td>
<td>10</td>
</tr>
<tr>
<td>Los Angeles</td>
<td>11</td>
<td>4.45%</td>
<td>7</td>
<td>135</td>
<td>145</td>
<td>9</td>
</tr>
<tr>
<td>Minneapolis / St. Paul</td>
<td>2</td>
<td>0.81%</td>
<td>11</td>
<td>145</td>
<td>190</td>
<td>11</td>
</tr>
<tr>
<td>Northern NJ / NY</td>
<td>15</td>
<td>6.07%</td>
<td>6</td>
<td>105</td>
<td>175</td>
<td>1</td>
</tr>
<tr>
<td><strong>Northern VA</strong></td>
<td><strong>56</strong></td>
<td><strong>22.67%</strong></td>
<td><strong>1</strong></td>
<td><strong>120</strong></td>
<td><strong>140</strong></td>
<td><strong>2</strong></td>
</tr>
<tr>
<td>Phoenix</td>
<td>36</td>
<td>14.57%</td>
<td>2</td>
<td>130</td>
<td>150</td>
<td>8</td>
</tr>
<tr>
<td>Seattle / Portland</td>
<td>30</td>
<td>12.15%</td>
<td>5</td>
<td>125</td>
<td>145</td>
<td>3</td>
</tr>
<tr>
<td>Silicon Valley</td>
<td>34</td>
<td>13.77%</td>
<td>3</td>
<td>125</td>
<td>140</td>
<td>3</td>
</tr>
</tbody>
</table>

**TOTAL:** 247
**Exponential Data Center Growth**

- Loudoun – more than 5.9 million SF with another 3 million approved and/or under construction.
- Demand continues to outpace supply through 2016, growth steady through 2021.
WHAT’S DRIVING DEMAND?

• Virtual Storage
• Digital Medical Records
• Cloud Computing
• Government Consolidation
• Video on Demand
• Electronic Trading and Commerce
• Wireless Applications
LOUDOUN COUNTY DATA CENTERS

Enterprise:
- Single user building
- Facebook, Visa, Amazon, etc.

Collocation:
- Multiple user building
- Leased space
- Independent or shared staff
- Equinix, Latysis, Digital, etc.

1-(800)-LOUDOUN
biz.loudoun.gov
KEY INGREDIENTS FOR LOUDOUN’S SUCCESSFUL DATA CENTER MARKET

- Access to multiple lit and dark fiber networks
- Reliable and affordable power
- Abundant water
- Available green field and re-use options
- Available workforce
- Fast-track process

1-(800)-LOUDOUN

biz.loudoun.gov
DATA CENTER RATE COMPARISON
1,000 kW DATA CENTER

Dominion Virginia Power 5.93
Raleigh 6.67
U.S. Average 8.24
Atlanta 8.53
Northern New Jersey 11.05
San Jose 12.00
New York City 16.04

Dominion Virginia’s typical data center rate is 28% below the U.S. average
Digital Ashburn
Fast-Track Construction

Complete design
- Minimal design / construction changes
- Lessons Learned incorporated into design

Major equipment (generators, UPS, switchgear, CRAHs, mechanical systems)
- Typically Owner-procured
- Equipment manufacturer(s) performance specs – established between Owner and manufacturer
- Established lead times

Owner-vendors – Commonly sole-sourced to maintain symmetry across multiple sites
- Controls
- Security
## Building Construction

<table>
<thead>
<tr>
<th>Traditional flex – core and shell ready</th>
<th>Precast concrete</th>
<th>Tilt-up concrete</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Existing steel frame structure</td>
<td>• Lead time (needs to be early released to avoid schedule impact)</td>
<td>• Typically lowest cost</td>
</tr>
<tr>
<td>• Minimal brick and mortar construction</td>
<td>• Façade aesthetics can be incorporated</td>
<td>• Minimal under slab utilities to prevent impact on critical path</td>
</tr>
<tr>
<td>• Limited on square footage customizable</td>
<td>• Shipping costs</td>
<td>• Minimal façade aesthetics can be incorporated</td>
</tr>
<tr>
<td></td>
<td>• Flexible on square footage / footprint</td>
<td>• Significant laydown area required</td>
</tr>
</tbody>
</table>
The Washington Building Congress is a professional trade association made up of over 1,000 companies and individuals from a variety of disciplines, all with an active interest or involvement in the Washington metropolitan area real estate, design and construction community.

The WBC was established in 1937 as an "umbrella organization" to represent the collective interests of the industry, provide education and networking opportunities, and promote the professional advancement of our members.