

Before the  
FEDERAL COMMUNICATIONS COMMISSION  
Washington, DC 20554

In the Matter of )  
 )  
Wireless Telecommunications Bureau Seeks )  
Comment On The State of Mobile Wireless ) WT Docket No. 11-186  
Competition )  
 )

**COMMENTS OF PCIA—THE WIRELESS INFRASTRUCTURE ASSOCIATION  
AND  
THE DAS FORUM (A MEMBERSHIP SECTION OF PCIA)**

By: \_\_\_\_\_ /s/

Michael T.N. Fitch, Esq.  
President and CEO

Jonathan Campbell  
Director, Government Affairs

D. Zachary Champ  
Government Affairs Counsel

Kara Leibin Azocar  
Policy Analyst

901 N. Washington St., Suite 600  
Alexandria, VA 22314

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## SUMMARY

The wireless infrastructure industry is distinctly competitive and characterized by many deployment options, continued investment in cell sites and the growth of the recently emerged market for distributed antenna systems (“DAS”).

End users rely on wireless services and devices in every facet of their lives, necessitating the need for expanded access to wireless facilities. Consumers utilize wireless services and advanced devices to organize their lives, improve productivity, access public safety services and stay connected when at home, work, or on the road. The expanded use of wireless services, devices and applications are enabled through the rapid and continued deployment of wireless infrastructure.

Competition in the wireless infrastructure industry both facilitates and is facilitated by competition in the rest of the wireless industry. Wireless service and infrastructure providers are investing billions of dollars to expand and improve wireless networks to provide the increased coverage and capacity consumers demand. This growth feeds a highly competitive wireless infrastructure industry, which itself facilitates and improves competition between wireless service providers.

Local governments continue to impose significant burdens on wireless infrastructure deployment. Some jurisdictions utilize a review process for efficient deployments, such as collocations, that requires the same amount of documentation and review as an entirely new wireless facility. These processes not only significantly delay wireless infrastructure deployment, but also add to its cost, reducing the available resources to meet the modern capacity demands of new mobile devices and applications.

## I. INTRODUCTION

PCIA—The Wireless Infrastructure Association (“PCIA”) and The DAS Forum, a membership section of PCIA (“The DAS Forum”) respectfully submit these comments in response to the Federal Communications Commission’s (“FCC” or “Commission”) Public Notice seeking comment on the state of competition in the mobile wireless industry.<sup>1</sup> PCIA and The DAS Forum support the Commission’s continued consideration of the importance of the infrastructure segment of the mobile wireless industry.

PCIA is the trade association representing the wireless telecommunications infrastructure industry. PCIA’s members own and manage more than 125,000 telecommunications towers and antenna structures across the country upon which cell sites can be collocated. PCIA seeks to facilitate the widespread deployment of communications networks across the country, consistent with the mandate of the Telecommunications Act of 1996. The DAS Forum, a membership section of PCIA, is dedicated to the development of distributed antenna systems (“DAS”) as an element of the nation’s wireless infrastructure.

Competition in the wireless infrastructure industry is characterized by many deployment options, a vibrant macro site market and a growing and competitive DAS market. Today’s wireless infrastructure market is not only extremely competitive in and of itself, but it also enables competition among wireless service providers and thereby enhances investment and innovation throughout the entire wireless industry. Despite the importance of wireless infrastructure, there remain barriers to wireless infrastructure deployment that are frustrating the deployment of wireless services and wireless broadband.

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<sup>1</sup> *Wireless Telecommunications Bureau Seeks Comment on the State of Mobile Wireless Competition*, WT Docket No. 11-186, Public Notice, DA 11-1856 at 14 (rel. November 3, 2011) (“Public Notice”).

## II. COMPETITION ABOUNDS IN THE WIRELESS INFRASTRUCTURE INDUSTRY

The wireless infrastructure industry remains highly diversified and competitive, whether measured by the variety of deployment options, the diversity of providers, competition in the macro site industry, or competition in the DAS market.<sup>2</sup>

### A. The Infrastructure Industry Is Characterized by Many Deployment Options

Diversity and competition in the wireless infrastructure industry is exemplified by the growing types of wireless facilities. Traditional communications towers are no longer the sole form of communications infrastructure.<sup>3</sup> Today, wireless infrastructure includes towers,<sup>4</sup> such as lattice towers, guyed towers and monopoles; collocations<sup>5</sup> on towers or buildings, water towers, steeples and the like; and small cell solutions like DAS. DAS is a growing market within the wireless infrastructure industry.<sup>6</sup> DAS complements other infrastructure in a wireless network, as an ancillary solution to towers and traditional wireless infrastructure that provides an additional tool for the industry to respond to the demand for wireless services.

The different solutions – towers, collocations and DAS – provide choice and competition in the wireless infrastructure industry. Towers offer the benefit of supporting wireless coverage

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<sup>2</sup> *The 2011 AGL Tower Market Survey: Survey Says...*, AGL MAGAZINE, July-Aug. 2011, at 56-57.

<sup>3</sup> Jim Fryer, *The Tower Industry Weighed*, AGL MAGAZINE, July-Aug. 2011, at 51.

<sup>4</sup> A “tower” is “any structure built for the sole or primary purpose of supporting FCC-licensed antennas and their associated facilities,” and includes lattice towers, guyed towers and monopoles. *See* Nationwide Programmatic Agreement for the Collocation of Wireless Antennas (2001), available at 47 C.F.R. Part I, Appendix B, at § I.B. (“Collocation Agreement” or “2001 NPA”).

<sup>5</sup> A “collocation” means “the mounting or installation of an antenna on an existing tower, building or structure for the purpose of transmitting and/or receiving radio frequency signals for communications purposes.” Collocation Agreement at § I.A. Traditionally, collocations are considered macro sites. *See* Fifteenth Competition Report at ¶ 309.

<sup>6</sup> *See* Comments of PCIA—The Wireless Infrastructure Association and The DAS Forum, WT Docket No. 10-133, at 5 (July 30, 2010) (“PCIA 2010 Competition Report Comments”).

across a wide geographic area and can accommodate, on average, five or six tenants.<sup>7</sup> Collocations can provide wireless coverage to a broad geographic area.<sup>8</sup> DAS enables wireless deployments in a wide variety of unique scenarios, providing coverage and capacity in areas where large numbers of individuals assemble such as a municipal park or Amphitheatre or areas where a traditional site is infeasible. The choice of which solution to pursue in a given case, tower, collocation or DAS, depends on a number of factors, including topography, RF (“radio frequency”) propagation, interference, local siting conditions, available land or space on an existing facility and environmental consideration.<sup>9</sup> Multiple deployment options create choice, competition and the ability for communities across the nation to affect solutions for wireless infrastructure deployment that are responsive to their unique sensitivities and concerns.

## **B. Macro Site Industry Continues On a Competitive Course**

The tower, or macro site, portion of the industry remains robustly competitive, filled with thousands of different market participants,<sup>10</sup> such as neutral-host providers (i.e., providers of wireless infrastructure unaffiliated with a wireless carrier). Competitors in the macro site market consist of large tower companies that own over 20,000 towers, mid-size tower companies, owners of a single or small number of towers (“mom and pops”) and the wireless carriers themselves who continue to build their own infrastructure and lease space to other service providers.

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<sup>7</sup> See *In re Implementation of Section 6002(b) of the Omnibus Budget Reconciliation Act of 1993*, WT Docket No. 10-133, Fifteenth Report, FCC 11-103, ¶ 309 (rel. June 27, 2011) (“Fifteenth Competition Report”).

<sup>8</sup> See Fifteenth Competition Report at ¶ 309.

<sup>9</sup> PCIA 2010 Competition Report Comments at 5. See also Comments of PCIA – The Wireless Infrastructure Association and The DAS Forum, WC Docket No. 11-59, at 11-12 (filed July 18, 2011) (“PCIA Broadband Acceleration Comments”).

<sup>10</sup> PCIA 2010 Competition Report Comments at 4.

The wireless infrastructure industry is unique because competitive neutral-host providers often own the physical support structure. As noted above, a single tower is capable of accommodating on average five or six tenants. The nature of the wireless infrastructure market creates a system where a neutral-host provider leases space on its towers to multiple different service providers. This means that a single deployment has the capacity to serve many more end users when multiple different service providers lease from a tower owned by a neutral-host provider. As the Commission has found in its previous competition reports, “[w]hen communications towers are owned by independent companies rather than wireless service providers, it may increase efficiency in the industry, ease entry and enhance wireless service competition.”<sup>11</sup>

Infrastructure providers include not only companies that are neutral-host providers, but also the wireless carriers themselves who continue to construct facilities independently. In addition to carriers and publicly-traded neutral-host companies, hundreds of small tower companies utilize their regional expertise to deploy new wireless infrastructure and manage existing towers. According to the latest data available, the distribution of towers by type of owner in the commercial and carrier-owned sector is as follows:<sup>12</sup>

- Wireless Carriers: 97,833 towers
- Publicly-traded tower companies:<sup>13</sup> 51,503 towers
- Mid-tier tower companies: 28,997 towers
- Mom and Pops: 22,543 towers

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<sup>11</sup> Fifteenth Competition Report at ¶ 317.

<sup>12</sup> *The 2011 AGL Tower Market Survey: Survey Says...*, AGL MAGAZINE, Jul.-Aug. 2011, at 56-57.

<sup>13</sup> Currently there are three publicly-traded tower companies in the United States: American Tower Corporation, Crown Castle International and SBA Communications. The next two largest tower companies, Global Tower Partners and TowerCo are privately held.

There is no single “type” of wireless infrastructure owner in the United States and no monopolies of control; therefore, the tower market in the United States is highly diversified and competitive, which provides for high levels of innovation and price competition.

Collocation is another method of deploying macro sites.<sup>14</sup> The collocation of wireless facilities on existing infrastructure, including those owned by neutral-host providers, is the most effective and efficient means of deploying wireless networks.<sup>15</sup> While the costs associated with deployment of infrastructure vary based on a number of factors, PCIA members estimate that an average new build costs approximately \$250,000 - \$300,000. In comparison, PCIA members estimate that an average collocation costs \$25,000 - \$30,000 to deploy, though costs can vary greatly depending upon the type of local zoning regulations and the type of architectural integration necessary. The math is simple—a carrier can deploy approximately ten collocations for the cost of a single new tower. In the last ten years, the number of tenants per towers has increased almost 100% from an average of 1.5 tenants per tower in December 2000 to an average 2.2 tenants per tower in June 2011.<sup>16</sup> Collocations also improve speed to market with fewer regulatory hurdles to clear. Collocation provides a deployment solution in the tower market with a cost advantage to spur competition amongst both new entrants and established wireless carriers alike, reduce capital expenditures and facilitate deployment.

### **C. The DAS Market Continues to Grow in a Competitive Atmosphere**

The DAS market is newer than the traditional tower industry and continues to grow. Providers of DAS solutions include specialty DAS providers, traditional tower companies and

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<sup>14</sup> See Fifteenth Competition Report at ¶ 309.

<sup>15</sup> See *id.* at ¶ 317.

<sup>16</sup> Clayton Funk & Jason Nicolay, *Trends and Forecasts for the Wireless and Tower Industries*, AGL MAGAZINE, July-Aug. 2011, at 42.

carriers, creating a competitive dynamic similar to that of macro site infrastructure industry. An estimated 10,000 DAS networks have been deployed in the United States,<sup>17</sup> and the number of DAS nodes could double by the end of 2012 and reach as high as 150,000 by 2017.<sup>18</sup>

The use of DAS grows as carriers continue to respond to the demand for wireless services. DAS stands in a unique position because DAS solutions can be tailored to meet the needs of the particular network, location, or constraint. DAS networks, which “are designed to cost \$1 per square foot,”<sup>19</sup> also have the advantage of a low cost of deployment. PCIA and The DAS Forum commend the Commission on its efforts to facilitate the build out of wireless facilities using DAS with the 2011 *Pole Attachment Order*, which helped ensure timely and rationally-priced access to utility poles for DAS nodes. The regulatory certainty and the reasonable costs for access that the *Order* provides will spur greater levels of investment and lower consumer costs. With varied providers and rapid deployment of networks, the DAS industry continues to grow and remains highly competitive.

### **III. THE WIRELESS INFRASTRUCTURE INDUSTRY SERVES A CRITICAL ROLE IN THE WIRELESS ECOSYSTEM**

The whole of the wireless industry is highly competitive, and so too is the infrastructure element of the greater wireless ecosystem. Mobile wireless services, from basic voice communication to broadband, depend on access to healthy and abundant wireless infrastructure

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<sup>17</sup> Seth Buechley, *DAS: Venues Take Control of Their Wireless Destiny*, AGL MAGAZINE, July-Aug. 2011 at 14.

<sup>18</sup> Implementation of Section 224 of the Act; A National Broadband Plan for Our Future, Report and Order on Reconsideration, *Pole Attachment Order*, 26 FCC Rcd at 5243 ¶ 6 n.13, *citing* Letter from Brian Regan, Director, Government Relations, PCIA, to Marlene H. Dortch, Secretary, FCC, WC Docket No. 07-245, at I (filed Mar. 18, 2011) (arguing that the misallocation of resources results in inefficiency in the market; conversely, with improved regulatory certainty, “an estimated 2,500 to 5,000 additional wireless attachments may be deployed annually”).

<sup>19</sup> Chris Kissel, *Distributed Antenna Systems Help Meet LTE Infrastructure Demands: “The Days of Spray and Pay Are Over,”* In-Stat White Paper, July 2011, at 6.

networks.<sup>20</sup> As demand for wireless services increases, our nation's wireless infrastructure needs will also grow as well, enabling continued growth in the wireless industry as well.

Mobile internet users are predicted to outnumber wireline users by 2015.<sup>21</sup> With approximately 25% of homes wireless-only after "cutting the cord" on their landline services, and analysts anticipating that global mobile data traffic to increase 26-fold between 2010 and 2015,<sup>22</sup> the growth in use of wireless services necessitates the expansion and augmentation of wireless infrastructure. From December 2000 to June 2011, subscribership of wireless services increased 168% from 109 million wireless subscribers to 293 million.<sup>23</sup> Responsively, cell sites grew during this period 160%, from 104,288 cell sites in December 2000 to 271,081 in June 2011.<sup>24</sup>

New mobile devices, cloud computing applications and advanced virtualization services increase the demand for spectrum. Even if the all spectrum needs are resolved by the FCC allocating and licensing that spectrum in a timely fashion, the accomplishment will fall short because the spectrum will not be able to be used without the build out of wireless infrastructure to support wireless services.<sup>25</sup> For example, new wireless carriers entering a market with limited spectrum resources will likely need larger, more comprehensive DAS coverage and require

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<sup>20</sup> Public Notice at 14.

<sup>21</sup> Hayley Tsukayama, *IDC: Mobile Internet users to outnumber wireline users by 2015*, WASHINGTON POST, available at: [http://www.washingtonpost.com/blogs/post-tech/post/idc-mobile-internet-users-to-outnumber-wireline-users-by-2015/2011/09/12/gIQAkZP7MK\\_blog.html?wprss=post-tech](http://www.washingtonpost.com/blogs/post-tech/post/idc-mobile-internet-users-to-outnumber-wireline-users-by-2015/2011/09/12/gIQAkZP7MK_blog.html?wprss=post-tech) (last accessed December 5, 2011).

<sup>22</sup> Cisco Visual Networking Index: Global Mobile Data Traffic Forecast Update, 2010-2015, February 1, 2011, available at: [http://www.cisco.com/en/US/solutions/collateral/ns341/ns525/ns537/ns705/ns827/white\\_paper\\_c11-520862.html](http://www.cisco.com/en/US/solutions/collateral/ns341/ns525/ns537/ns705/ns827/white_paper_c11-520862.html) (last accessed December 5, 2011).

<sup>23</sup> Funk & Nicolay at 42.

<sup>24</sup> *Id.*

<sup>25</sup> Reply Comments of PCIA – The Wireless Infrastructure Association and The DAS Forum, Notice of Inquiry, WC Docket No. 11-59, at 7 (filed Sept. 30, 2011) ("PCIA Broadband Acceleration Reply Comments").

rapid, predictable time-to-market to compete.<sup>26</sup> Wireless infrastructure will need to be built to respond to the need for infrastructure upon the allocation and licensing of spectrum to meet the needs of wireless service providers and consumers.

With the wireless industry under increasing pressure to meet coverage and capacity challenges, investment in wireless infrastructure grows. This growth is exemplified by projections for the number of new cell sites to be deployed – an estimated 21,400 new cell sites in 2010.<sup>27</sup> This rapid growth is expected to continue, with new cell site additions estimated between 15,600 and 20,200 for 2011.<sup>28</sup> Carriers are investing billions of dollars in network expansion. Capital expenditure by wireless carriers is projected at more than \$25 billion during 2011 to support the race to build out 4G networks.<sup>29</sup> Industry observers predict up to ten times more base stations will be needed to serve future wireless data needs based on 4G technology.<sup>30</sup> The wireless industry continues to invest billions of dollars deploying infrastructure, reflecting strong competition in the wireless industry and evidencing an ecosystem in which competition in wireless services industry fuels competition in the wireless infrastructure market.

#### **IV. BARRIERS TO INFRASTRUCTURE DEPLOYMENT AT THE LOCAL LEVEL INHIBIT WIRELESS SERVICE DEVELOPMENT AND THE GROWTH OF THE WIRELESS INDUSTRY**

Though infrastructure deployment in all of its forms – including new tower sites, collocations on existing structures and DAS – is essential to improving access to wireless

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<sup>26</sup> *Id.* at 21.

<sup>27</sup> See PCIA 2010 Competition Report Comments at 6. See also Jonathan Atkin, David Coleman & Brian Hyun, Tower Site Leasing Update, RBC Capital Markets, April 3, 2011, at 3 (“Wireless Cell Site Addition Estimates”).

<sup>28</sup> Funk & Nicolay at 42.

<sup>29</sup> *Id.* at 46.

<sup>30</sup> LTE: Geodata Requirements Through the Network Lifecycle, COMPUTA MAPS: MAPPING YOUR WORK IN 3D, available at <http://www.computamaps.com/newsletter/1-3/newsletter1-3.html> (last accessed December 5, 2011).

services and stimulating broadband deployment, rights-of-way access and wireless siting challenges act as persistent barriers to infrastructure deployment. As the Commission recognized in the 15th Competition report,

“[s]tate and local zoning rules for erecting wireless towers or attaching equipment to pre-existing structures can affect the deployment of mobile wireless networks. In particular, delays in zoning approvals can lengthen the process of cell site acquisition and deployment, thereby increasing costs for new or existing providers to enter into new markets.”

State and local governments continue to impose significant burdens on wireless infrastructure deployment. For example, some jurisdictions utilize a review process for wireless facilities that are efficient to deploy, economical to construct and environmentally desirable, like collocations or modifications, that requires the same amount of documentation and review as an entirely new tower. DAS deployments face particular delays in many areas due to a lack of familiarity with the nature and benefits of a DAS system as well as the fact that a single system may cross jurisdictional boundaries or utilize multiple rights of way with fragmented government responsibility, necessitating compliance with a patchwork of requirements.

Such regulatory roadblocks are a significant obstacle to deployment and account for an estimated twenty percent of the cost of broadband build out.<sup>31</sup> Indeed, it has been projected that “removing red tape and expediting approval processes could unleash \$11.5 billion in new broadband infrastructure investment over two years.”<sup>32</sup> While the Commission has already taken several significant steps to reduce barriers to wireless infrastructure deployment and investment,

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<sup>31</sup> *FCC Eyes Reducing Barriers to Broadband Buildout*, REUTERS, Feb. 8, 2011, available at <http://www.reuters.com/article/2011/02/09/us-usa-broadband-buildout-idUSTRE7180J820110209>; see also *Prepared Remarks*, Chairman Julius Genachowski, Federal Communications Commission, Broadband Acceleration Conference, Washington, DC (Feb. 9, 2011) (“Genachowski February 9th Remarks”), available at [http://www.fcc.gov/Daily\\_Releases/Daily\\_Business/2011/db0209/DOC-304571A1.pdf](http://www.fcc.gov/Daily_Releases/Daily_Business/2011/db0209/DOC-304571A1.pdf); FED. COMM’NS COMM’N, CONNECTING AMERICA: THE NATIONAL BROADBAND PLAN 113 (2010) (“NATIONAL BROADBAND PLAN”).

<sup>32</sup> Genachowski February 9<sup>th</sup> Remarks at 2.

including the *Shot Clock Ruling*<sup>33</sup> and its *Pole Attachment Order*,<sup>34</sup> PCIA and The DAS Forum agree with the findings of the National Broadband Plan that, “more can and should be done” and government must take “all appropriate steps” to ensure American access to wireless services, including broadband.<sup>35</sup> Ubiquitous mobile broadband requires robust investment in and expansion of wireless infrastructure, which cannot be accomplished without Commission intervention. PCIA and The DAS Forum detailed the extent of these barriers to deployment in response to the Commission’s Broadband Acceleration Notice of Inquiry,<sup>36</sup> and we incorporate our comments and reply comments filed in this proceeding by reference into these comments.<sup>37</sup>

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<sup>33</sup> See *Petition for Declaratory Ruling To Clarify Provisions of Section 332(C)(7)(B) To Ensure Timely Siting Review and To Preempt Under Section 253 State and Local Ordinances That Classify All Wireless Siting Proposals as Requiring a Variance*, Declaratory Ruling, 24 FCC Rcd 13994, 14021 ¶ 71 (2009) (“*Shot Clock Ruling*”), recon. denied, 25 FCC Rcd 11157 (2010), appeal pending sub nom., *City of Arlington and City of San Antonio v. FCC*, Nos. 10-60039 & 10-60805 (5th Cir.).

<sup>34</sup> *Implementation of Section 224 of the Act; A National Broadband Plan for Our Future, Report and Order on Reconsideration*, Pole Attachment Order, 26 FCC Rcd 5240 (April 7, 2011).

<sup>35</sup> THE NATIONAL BROADBAND PLAN at 29,109.

<sup>36</sup> *Acceleration of Broadband Deployment: Expanding the Reach and Reducing the Cost of Broadband Deployment by Improving Policies Regarding Public Rights of Way and Wireless Facilities Siting*, Notice of Inquiry, 26 FCC Rcd 5384 (rel. April 7, 2011).

<sup>37</sup> For other examples of barriers to wireless infrastructure deployment, see comments of CTIA—The Wireless Association, WT Docket 11-59 (filed July 18, 2011); comments of American Tower Corporation, WC Docket No. 11-59 (filed July 18, 2011); comments of AT&T, WC Docket No. 11-59 (filed July 18, 2011); comments of California Wireless Association, WC Docket No. 11-59 (filed July 18, 2011); comments of Verizon and Verizon Wireless, WC Docket No. 11-59 (filed July 18, 2011).

## V. CONCLUSION

The wireless infrastructure industry is competitive in and of itself and, as a key input in the mobile wireless ecosystem, is a prime driver in enabling the competition in the wireless industry as a whole. To facilitate continued infrastructure investment and growth needed to support wireless competition and innovation, the FCC should act to remove the many barriers that are frustrating the Commission's goals of wireless broadband deployment and the continued growth of the wireless industry.

Respectfully submitted,

PCIA—THE WIRELESS INFRASTRUCTURE ASSOCIATION  
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Michael T.N. Fitch, Esq.  
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