

Radio Club of America
NEWS RELEASE – For Immediate Release
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Antenna Site Requirements Range From 5,000 to 37,000 and More

RED BANK, N.J. — Oct. 4, 2006 — Speaking in Nashville, Tenn., at a Radio Club of America dinner meeting on September 20, three wireless industry executives estimated antenna sites numbering in the thousands would be required for projects they discussed. TerreStar Networks needs 5,000 sites for its initial build out; a proposed nationwide broadband public safety system requires 37,000 sites; and carriers using spectrum awarded in the Advanced Wireless Services auction will need three times the number of existing sites, the speakers explained.

Richard P. Biby, P.E.; CEO and publisher of AGL magazine and Fryer's TowerSource; Bruce McIntyre, president of Tower Innovations; and Keith Kaczmarek, president of Cyren Call Communications, spoke to RCA members and guests at the meeting scheduled in conjunction with PCIA's Wireless Infrastructure Show convention.

Biby explained reasons why the number of antenna sites will multiply, maybe by a factor of three. TowerSource put the number of existing towers used for cellular and PCS at about 175,000. McIntyre gave some details about TerreStar's satellite-and-cellular network. Kaczmarek talked about Cyren Call's vision for a public safety-private partnership to deliver advanced public safety communications in the 700 MHz band.

Richard P. Biby, P.E.

"The number of sites needed to cover any particular area is a function of frequency and power. If you go up in frequency, you need more sites. If you go down in power, you need more sites. The number of sites is proportional to frequency and inversely proportional to power of each site," Biby said.

Biby also said that more power—or a closer antenna site—is needed to cover wireless devices inside buildings.

"You need the RF much closer to where people are, and you do that with a much greater number of smaller sites. As a result of the Advanced Wireless Services spectrum auctions, service providers will need three sites for every site you now have for a traditional cellular/PCS system," Biby said.

Biby added that an antenna site is not always a tower or rooftop. "You have to include distributed antenna systems in how you think of a site," he said.

He said that public-safety antenna site users need *reliability, preemption, hardened sites and equipment*. "I have taken a long, hard look at site security needs. Site hardening, as public-safety people talk about it, is not that much more than what people are doing in cellular and PCS. It includes data and backhaul security and encryption. That's what will be involved, along with procedures for site access and maintenance, to address the needs of the public safety community."

Biby said that some tower companies do not favor providing antenna space to traditional public safety users because they use so much of the tower asset for so little income, compared to cellular and PCS. But he said that the alternative proposals for public safety begin to look more like cellular and PCS, and won't use as much antenna space resource.

Bruce McIntyre for TerreStar

McIntyre spoke on behalf of Doug Sobieski, a senior vice president of TerreStar Networks, who was at first scheduled to speak but who could not attend the meeting. McIntyre is consulting TerreStar on site acquisition.

McIntyre said TerreStar has a license for 10 MHz of S-band mobile satellite frequencies. "The system they are going to build out is going to incorporate the largest, most powerful civilian geostationary satellite ever launched and a terrestrial component that will be like a cellular system in 20 major markets in the United States," he said.

In TerreStar's first phase of construction, the company will deploy about 5,000 sites. "That's good news for everyone in the site business," McIntyre said. "We're looking at getting the first search rings in November and starting site acquisition. Right now we're talking to tower companies about sites and site lists."

The nationwide system is being designed primarily for customers with headquarters in the Washington, DC area. "This system has full preemption, not just priority. If a customer needs it, they get it 100 percent. It is not being designed as commercial or consumer-based system," McIntyre said.

The system is being designed with data first and voice secondary. Because of the high data rates, cell sites will have to be close together. The engineering calls for an edge-of-cell data rate, at 80 percent loading, of 384 kb/s. Closer to the cell, the data rate will approach 1.5 Mb/s. In addition to the IP-based cellular system, TerreStar is building a voice-over-Internet Protocol network to connect it and backhaul all the traffic.

"It is an ambitious project that places pressure on Nokia and other suppliers to procure equipment with the specifications, including handsets with a custom-built chipset to handle terrestrial traffic and switch to the satellite in a way that the user won't realize it happens," McIntyre said.

TerreStar is privately funded; Motient Communications is a 65 percent owner, McIntyre explained. He said the company is raising money through various sources, and has scheduled a November funding of \$500 million, on the way to \$3 billion when the system is fully funded.

"The reason the feds are so interested is it is the kind of system they would like to have, but it would take them 10 or 15 years to build it. Private enterprise said, 'We'll build it in three.' They're real excited about it," McIntyre said.

Keith Kaczmarek, Cyren Call Communications

Kaczmarek told the audience about about Cyren Call's proposal for a public safety broadband trust that would hold the license for 30 MHz of spectrum in the 700 MHz band—if Congress and the FCC can be persuaded to withhold it from an auction now scheduled by law to be conducted no later than 2008.

"Our goal is to put enough coverage in place terrestrially for 99 percent population coverage and 65 percent terrestrial coverage and cover the rest with a satellite overlay. We have talked with a number of satellite companies that could provide the satellite coverage," Kaczmarek said.

He said that the idea for such a network only works with a public-private partnership building a network for both public safety users and mission critical users. "You leverage the commercial user base and user revenues to offset the overall cost of deployment and operations. The reality of public safety is 2.5 million to 3 million first responders. It's too small a user base to build a network as we have proposed [without combining it with commercial use]. You need 37,000 sites to support the depth and breadth of coverage. That's a significant undertaking, and if you only serve 2.5 million users, you can't cost justify it."

The Radio Club of America offers opportunities for members and guests to address audiences at meetings held in conjunction with several conventions each year. It conducts a Technical Symposium and hosts a banquet every year; this year's symposium and banquet are set for November 17 at the New York Athletic Club in New York City.

About the Radio Club of America

The Radio Club of America, the world's oldest radio communications society, was founded in 1909 to promote cooperation among those interested in the advancement and scientific study of radio communications. The Radio Club of America counts among its founding membership the best in the radio communications industry, including Edwin Armstrong, David Sarnoff, Louis Hazeltine, John V. L. Hogan, Paul Godley and Allen B. DuMont. Today, the Radio Club of America is composed of modern pioneers who are advancing the field of RF communications.

The Radio Club of America gives its members the opportunity to network with other industry professionals, to raise money for scholarships and to record radio communications history so that future pioneers may continue to build on the Club's strong foundational cornerstone. For more information, go to www.radioclubofamerica.org.

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