

Getting to the 'Core' of Metro Broadband Wireless - The new case for the future of Municipal Broadband Wireless in the U.S.

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Delray Beach, Florida

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Introduction

It is quite clear that cities, municipalities, and communities within the United States have desired wireless infrastructures for their citizenry, businesses, tourists and local governments since broadband Wi-Fi (802.11) became tried and true in the marketplace.

Now industry leaders AirSpan, Alvarion, Aperto, Redline, and Solectek are deploying large scale broadband wireless networks utilizing WiMax 3.65GHz licensed, non-exclusive spectrum in the United States. This would allow municipalities and cities to fully exploit the tremendous advantages available through newer broadband wireless technologies in an extremely cost-effective manner.

At some point over the past 5 years or so almost all major MSA's (metropolitan service areas) within the U.S. have issued RFI's or RFP's initiating projects that would attempt to bring wireless infrastructures to their citizenry, local businesses, and government. City and county officials, network providers, and numerous proponents of these necessary components for our communities have worked tirelessly to bring these broadband wireless networks to fruition.

Kudos to Minneapolis and their staunch efforts with USI Wireless to not only come up with a working and scalable wireless network, but aggressively negotiating for substantial funding that would support local digital access, inclusion, literacy, and other community outreach programs.

Also, Brookline, MA and the level of excitement that was generated by local city officials, IT staff, public safety, and the overall commitment from the community to launch their wireless services.

However, these types of success stories are few and far between in the new U.S. broadband wireless arena and many of those RFI's and RFP's have found the circular file.

We only need to look as far as the FCC (Federal Communications Commission) to understand why the United States has fallen behind in broadband wireless deployments (14th in the world). The FCC's lack of vision and direct support of large incumbent network operators and service providers have only tied the hands of local governments, and made it impossible for cash-starved cities and communities to realize the full benefits

of developing and deploying broadband wireless infrastructures for their cities, municipalities, and communities.

Large incumbents in this marketplace have no specific plan or business case and have not invited public participation in their efforts on how to best identify the public need, deliver their services, and collaborate with communities and local governments to present a workable operating and revenue model that will enable cities, municipalities, and communities to define their own path towards *their* broadband future. The United States is an extremely internet savvy base, and they want their say in this matter.

It is a *fact* that there is no room for a middle man in the offering of *core* network access and services as evidenced by Earthlink's and ATT's retreat from the muni-wireless marketplace.

As a result municipalities have run into constant road blocks attributed to the limitations of viable solutions, created by the FCC, and their rule changes in the 2.5GHz EBS spectrum (formerly the [ITFS](#)) and the mediocrity that was the 700MHz auction held in January of 2008. All the FCC did was allow 'duopolies' to be created during these processes representative of Sprint Nextel and Clearwire in the EBS spectrum arena and ATT and Verizon in the 700MHz spectrum arena.

This will all change with the advent of 3.65 GHz WiMax and will allow cities, municipalities, and communities to fully exploit the synergies available between their citizenry, businesses, constituents, and local government and their new high speed 3.65 GHz WiMax broadband wireless network.

The stakes have never been higher for local communities and municipalities exploring the broadband wireless opportunity and they should seize control of their broadband futures right now.

At the same time, the path to viable implementation remains complex, only due to the FCC's biased decision making that benefited large incumbent network operators and service providers. Municipalities, communities, businesses and citizenry are going to have to forge their efforts in order to get what they have wanted for years... a plan for their broadband future.

There is a viable solution to all of this that will benefit municipalities and communities, promote competition in the marketplace, expedite and fund build-out of the 3.65 GHz, 2.5GHz and 700MHz spectrums, without effecting large incumbent network operators and service providers and their ability to maintain their strength in the marketplace.

But before we get to that it is important to lay out the brief history of the rule changes in the 2.5GHz spectrum and the auction of the 700MHz spectrum that will inevitably change the way we live our lives, conduct business, receive our entertainment, interact

and communicate on a social level, and address socio-economic issues that plague local governments on a daily basis.

The 2.5GHz Spectrum – Sprint, Clearwire, Comcast, Time Warner ‘WiMax’

Back in the 1960's and 70's the FCC assigned the 2.5GHz spectrum (2495 – 2690MHz) to non-profits such as colleges, universities, churches and school boards. It was called the Instructional Television Fixed Spectrum ([ITFS](#)). This community asset was to be used to broadcast television signals within their community that would offer educational content and to support on-going distance learning for students and faculty within their coverage area. This coverage area normally blanketed a 35 mile radius.

In 2004, the FCC changed the rules on this under-utilized spectrum to allow for commercial broadband wireless service to be offered. They even had the gumption to change the name to the Educational Broadband Spectrum (EBS). Needless to say, this spectrum real estate went from swamp land to ocean front property immediately. These EBS licensees were then approached by Sprint Nextel and Clearwire with checkbooks in hand, as EBS licensees clamored to check on the status of their current EBS license with the FCC. In most cases, these licenses needed to be renewed and in some cases the licensee was not even aware they had rights to this community asset.

This is representative of how the FCC did not educate the ITFS or the licensees, prior to the rule changes, on the capabilities of the asset which in turn would have led to more due diligence on the part of EBS licensees to assess the capabilities and value of their asset at that point and in the future.

At this time Sprint/Nextel and Clearwire aggressively pursued long term lease arrangements with then current licensees of the EBS spectrum. This licensed spectrum was well suited for Wi-Fi's big brother WiMax, which was gaining strength in the marketplace as the next generation wireless technology.

These non-profits were told by Sprint Nextel and Clearwire that the costs involved in building out development and deployment of their spectrum would be very high so in the eyes of the decision makers, namely Boards of Trustees (who, in most cases, are dis-attached from newer technology), it made sense to adhere to the lucrative offers (in their eyes) from these large companies.

/ side note */*

It will be very interesting to see the amount of criticism these decision makers will receive and to gauge the scrutiny they will be under as their large, incumbent partners roll out their 2.5 WiMax services.

/ end side note */*

If the current licensees would have performed more due diligence on their asset they would have realized that the costs involved in rolling out their spectrum would have been very expensive *at that time*, based on product availability and standards *of that time*.

All they would have had to do is look at the current Wi-Fi (802.11) market to realize that more equipment manufacturers would be entering the WiMax marketplace in the future and that costs would be reduced dramatically, much like Wi-Fi is inexpensive now. On a more simple level, due diligence could have been done by searching ‘wimax’ and researchers would have had all the information they needed to get started on a proper due diligence processes.

However, this did not happen and the lure of the cash was too tempting. This also led to a snowball effect that gathered these EBS licensees in groves throughout our country, all falling prey to questionable business tactics by Sprint Nextel and Clearwire. In fact, these lease deals are also going to be investigated by congress and consumer advocacy groups.

To paraphrase eminent outside Counsel that advised upon and completed many of these lease deals “it is all about who is offering the most money [Sprint/Nextel or Clearwire] and addressing the immediate needs of cash starved non-profits, their faculty, students, or constituents”.

You can hardly blame counsel for pushing these deals through because of the amount of money they would receive for *their* services. As goes the money, so goes the so called “Educational Broadband Spectrum”.

One of the most recently completed deals was in [Milwaukee, WI](#). Clearwire paid \$12.6M upfront and will pay \$165,000 per month, or \$36M over thirty years to three different non-profit licensees of EBS spectrum in that area. Pittance compared to the revenues generated through the offering of WiMax broadband wireless services within that GSA.

As of the date of this document, both the University of Maine and Florida Atlantic University (FAU) have *not* signed off on their Sprint/Nextel or Clearwire offers. While the demographics and topography between these two licensees is night and day, they both represent significant market share in that the University of Maine controls the EBS for the whole state of Maine and FAU controls the license for all of populous Palm Beach and Broward Counties in Florida. FAU’s license will affect 3 million plus population and over 1.4 million households so you can imagine Clearwire’s push to lock that market up.

As these lease deals represent a significant windfall for non-profits, it is dwarfed by the amount of revenues that will be generated through WiMax services within any geographical service area (GSA).

Recently Time Warner, Comcast, Sprint, and Clearwire (Google, BrightHouse, and others involved, also) announced that they have come together to pony up \$3.2 billion dollars to expedite WiMax roll out. This is great for our cable company incumbents as

they needed a wireless strategy as we migrate away from being tied to their wired RG6 (cable).

The big difference here is the blatant attempt of these large, incumbent cable and telco companies to assume that we will look to them to provide ALL of our *core* access services and applications as well as enhanced entertainment, audio, video, communications, and so on.

Cities and communities will welcome large incumbent enhanced entertainment and communications services, which everyone that can afford them will want, but let our communities and cities design, implement, and generate revenue from *our* core network access, community, and municipal based peripheral applications.

The cities, communities, businesses, and citizenry are the asset here. Large telco and cable incumbents are now just a few of many service providers that will be entering the market in 2009. Therefore, cities and communities need to leverage their asset they maintain (their businesses and populous), promote competition, and discourage large incumbents from competing for *core* access and services to pull every dollar possible from our communities and cities. As a society, we will be migrating from wire line (cable, twisted pair) to the airwaves and these airwaves already exist for everyone to benefit from.

The big question in this environment is "*Why these non-profits are not building out there core 2.5GHz network in conjunction with local municipal 3.65GHz WiMax public/private partnerships and establishing core infrastructure and operating/reveune models in their 2.5 before leasing to these companies?*" [Learn more >>](#)

With all of that said, incumbent telco's and cable companies should be concentrating on developing stronger relationships and strategies with large digital media and content distributors (Viacom, Sony, Paramount, MGM, EMI Publishing, etc.) instead of trying to figure out how to monopolize the core access and services market. [Click here to get started >>](#)

As of now, Sprint Nextel and Clearwire have 'negotiated' long term lease deals (15-30 years) and locked up 85%+ of the 2.5GHz EBS... thus the status of WiMax using the 2.5GHz Educational Broadband Spectrum.

The 700MHz Spectrum

There is no doubt that most everyone is aware that "free" TV will be going digital in February of 2009. There are advertisements on television today that say people without cable or satellite will need special converter boxes to view their local programming. Good job FCC, but where is the education and what does this actually mean for the American public?

Well, one thing is that this spectrum will be used for commercial broadband and greatly enhanced entertainment and communications services. Another is the fact that “channel surfing” will become much more channel specific as selective programming, downloads and digital streaming will become common place and directed to set top monitors where our televisions used to reside. Don’t worry, your remote will change but you will not have to get off your couch! This will also lead to households requiring terabytes of local disc storage. (Please visit [H.R. 2738: Family and Consumer Choice Act of 2007](#))

But enough of the wishful thinking and let’s get down to the brass tacks as to how the FCC handled the licensing for this spectrum.

As with the 2.5GHz EBS, the FCC was hoping for a competitive marketplace in the development and deployment of the 700MHz spectrum. It was also the goal of the FCC to receive bids on the 700MHz D Block that would have provided a much needed nationwide public safety network to be implemented during times of a national emergency or terrorist attack. None of this happened.

AT&T and Verizon were the big winners and the D Block did not meet the reserve price of \$1.33 billion so it is still out there. Congress is now involved and will have a say as to how the D Block will be auctioned or assigned.

There is also some [controversy surrounding the D Block auction](#) in that Frontline Communications was ready to work with the [PSST](#) (Public Safety Spectrum Trust) but all of the sudden ended up closing their doors just weeks before the auction was to take place. This left little time for other companies to pull resources and bid.

Then rumors surfaced that this piece of spectrum would be auctioned as commercial broadband thus firing up the interests, once again, of the incumbent winners in the A,B,C, and E blocks of the spectrum.

But the fact still remains that a ‘du-opoly’ came out of the 700MHz commercial side, very similar to what happened with the 2.5 EBS spectrum. So when this spectrum is ready for market, they will be facing the same challenges as 2.5GHz WiMax is facing now, and will look to the operating and revenue models put forth by Comcast and Time Warner as the ‘first-to-market’ marketing arm for Sprint and Clearwire’s licensed, exclusive (expensive) leased spectrum.

Rather than go on about the FCC’s role in the outcome of the 700MHz auction please visit the [testimony of Harold Feld](#) on behalf of the Public Interest Spectrum Coalition as presented to Congress on April 15, 2008. He provides an honest appraisal of what this auction represented. Here is an excerpt:

“The 700 MHz Auction was both the most successful auction in FCC history and perhaps the worst failure in Communications policy in recent memory. The paradox is possible because the FCC, and sadly, not a few members of Congress as well, have reduced the

entire public interest analysis for auctions to four words: “show us the money.” The auction statute gives a lengthy list of public interest goals: increasing competition and avoiding “undue concentration of licenses;” promoting ownership opportunities for small businesses – especially rural, woman owned, and minority owned businesses; and providing to all Americans the economic and social benefits of wireless.

To these we added to the hopes for the 700 MHz auction the creation of a wireless “third pipe” broadband provider to keep with the broadband cable modem service and DSL duopoly that controls over 90% of the residential broadband market. Finally, we expected the D Block public/private partnership with public safety to build the national, interoperable broadband public safety network that the 9/11 Commission and everyone else agrees we need...None of that happened.”

[read more >>](#)

One other important aspect to consider relative to both spectrums is the CPE (customer premise equipment) or other devices that will be *required* and more than likely purchased from “the Big 4” however we are too early into the processes to wager an opinion on how this will present.

Again, large incumbent telco’s and cable companies should be concentrating on developing stronger relationships and strategies with digital media and content distributors (Viacom, Sony, Paramount, MGM, EMI Publishing, etc.) instead of trying to figure out how to monopolize the core access and services market. [Click here to get started >>](#)

The Solution

First and foremost is to delay the decision on the 700MHz D Block until after the presidential election to sometime in the first or second quarter of next year. Congress needs to consider the advantages of assigning these channels to states, counties, or cities much like the FCC assigned the 2.5GHz ITFS to non-profits back in the 60’s and 70’s.

This will also provide the opportunity for political candidates to chime in on this issue before the upcoming general election.

Congress also needs to consider:

[S. 1853: Community Broadband Act of 2007](#)

[H.R. 2738: Family and Consumer Choice Act of 2007](#)

This legislation has a direct bearing, and should be combined, with the addition of language representative of all levels of government *and* the incumbent network operators or service providers.

If the FCC requires purchase of the 700MHz D Block spectrum then states, counties, or municipalities could acquire it through a MHz/PoP (Point of Presence) sales process. For example:

16MHz available, 300M SUBS, \$1.33B reserve price.

FCC - \$1.33B Reserve Price

$\$1.3B / 300,000,000 \text{ SUBS} / 16\text{MHz} = \$.2708 / \text{MHz} / \text{PoP}$

State of Florida = 17,000,000 (SUBS, people) x \$.2708 = \$4,603,600

Delray Beach = 65,000 x \$.2708 = \$17,602

Comparative:

State of New York = 19,300,000 x \$.2708 = \$5,226,440

New York City = 8,200,000 x \$.2708 = \$2,220,560

etc.

How do we pay for it?

This is directly related to the FCC's rule changes to the 2.5GHz ITFS spectrum and the 700 MHz auction with the premise of actually creating competition in the marketplace.

In their efforts to protect large incumbents the FCC seems to forget that there is plenty of spectrum that is available for broadband wireless deployments. 3.65 GHz WiMax is getting a lot of publicity lately. This spectrum requires licensing from the FCC but is non-exclusive. That means that once spectrum use is approved for use by the FCC, in a specific geographical service area (GSA), only that licensed operator can establish a footprint in that GSA. 3.65 GHz WiMax has a legitimate shot at becoming the core spectrum of choice for cities and communities desiring broadband wireless services and applications.

3.65 GHz WiMax can provide for low cost entry into the marketplace and empower municipalities, cities or destination markets with robust core network services and applications that are required to sustain as a community and government. And as we move towards 'e-government' this also would allow for seamless migration to the technologies that will inevitably be necessary to operate and enhance government productivity, leading to direct costs savings, while providing much needed funding for specific community outreach programs and initiatives.

As part of a new bill, language should be submitted outlining specific public/private partnership models that will be required for all cities, counties, municipalities, or pretty much every entity desiring their own large scale broadband wireless network within the United States.

These public/private partnerships will be borne of the cities and communities they represent and in which the network will reside, key stakeholders and private monies within the community or city, along with strategic partnerships with national non-profits like One-Economy Corp. or other Foundation / Philanthropic support.

Allowing any qualifying city, municipality, or community the ability to launch large scale broadband wireless networks, formed as a public/private partnership, to provide *core* network and application access for their citizenry, businesses, local governments, communities or constituents would provide for the following:

Core Services and Applications

- Enhanced public safety, first responder applications
- Municipal departmental applications
- Low cost / free internet core access (3-5mps)
- Digital Access, Inclusion, Literacy programs
- Economic stimulus
- Health and financial services
- Public access television
- Public utilities
- Local business internet marketing services, residential, and community portals (sorry Google, keep your ads)
- Energy Management Services (EMS) / Green Initiatives
- School system access / Educational tools
- Public employee services
- VPN's / VAR's / Resellers
- Employer Outreach / Distance Learning & Training / Job Creation
- Visitor Services / Hospitality Packages
- Private security / video surveillance / DVR access
- Digital connectors programs

Allowing municipalities to provide their citizenry and businesses with the above mentioned *core* internet access and local services; and to maintain consistent revenue streams from core access and services would trigger:

- A much faster rollout of newer 3.65 GHz and 2.5 GHz WiMax deployments and future 700MHz broadband deployments
- The realization that this unique approach represents a fundamental improvement to traditional operating and revenue models in the broadband wireless arena and will facilitate migration to newer technologies
- Provides for a competitive market in the municipal wireless arena by allowing more equipment manufacturers and VAR's to enter the US market (This is what the FCC wanted in the first place, but did not allow it happen.)
- Incumbent network operators and service providers would be able to build from that core infrastructure to provide the enhanced entertainment and

- communications services that they currently offer and/or new equipment and services based on other forms of fixed and mobile digital media, entertainment, and communications
- Overall improvement in nationwide spectrum management
 - City broadband would be able to facilitate and help to fund the deployment and operations of 700MHz commercial broadband *and* the PSST Nationwide 700 MHz D-Block Public Safety Network along with assigned or contracted public broadband services available through D Block spectrum and;
 - Development and deployment of a business model that basically funds itself

If city 3.65 GHz WiMax, 2.5 GHz WiMax, and 700MHz are all expected to compete for *core* internet access and services in the same market, in conjunction with enhanced service offerings, then this will actually lead to a less competitive market, higher costs, and even worse spectrum management.

While core internet access and municipal services in 3.65 GHz WiMax will be an integral part of any municipal broadband marketing plan, it is also these core services that are going to present a unique and feasible solution for sustainable large scale wireless broadband operating and revenue models in 2.5 GHz WiMax and 700MHz spectrum.

As we move forward it is important to address the needs of communities and municipalities from both a technological and socio-economic scale. The last thing that cities or communities need is for large network operators or service providers to blanket these areas with coverage and compete to pull dollars from those cities or communities that are fighting to sustain themselves.

Budget concerns, public safety, re-development, economic stimulus, digital divide and other socio-economic issues all weigh heavily in the day to day operations of local municipal government and the well is drying up. It is for these reasons that the [Community Broadband Act of 2007](#) was authored and is up for approval by federal government officials.

It has been said that cities should be able to offer broadband services much like they offer water, sewer, and garbage pickup. While this may seem like a no-brainer to some people, this bill has met with opposition from incumbent telco's and cable companies for reasons that can only be explained (amicably) as self-serving with the mask of responsibility to stock holders.

It is hard to fathom that these same stockholders would rather see the slow demise of the communities they live in because of nominal increases (and decreases) in stock share values of large telco's and cable companies. In fact, these stockholders will have a direct effect on their investments and sustainability of the companies they are vested in by demanding changes in business and revenue models before the market takes them over.

With all of that said, it is important that the FCC, federal government officials, local government, businesses, citizens *and* the incumbent large network operators and service providers look to improve upon traditional deployment, operations, and revenue models and develop strategies that will benefit all involved.

Delray Beach, FL.

Funding

A total of \$2.5M is being budgeted and will be the fund raising goal for the Delray Beach campaign.

This money will be used to build out the core 3.65 GHz WiMax network, infrastructure, and backhaul and to develop the peripheral applications needed to provide for the core applications listed above.

An investment pool will be setup by the public/private partnership through a local bank. This investment pool will consist of key stakeholders as sponsors within the municipality or community and will represent 40%. A private investment pool will represent another 40% with the final 20% allocated to 'Founders Club' residents and businesses.

As no monies will be required by the city, it is expected that the city will make available any physical and database assets and available portions of the existing fiber network that would facilitate deployment and marketing of the core network, infrastructure, backhaul and peripheral applications.

Founders Club

A total of \$500,000 will be raised through the residency and local businesses 'Founders Club'. An ROI model will be in place as specified by the local bank or financial advisor.

Key Stakeholders / Sponsors

\$1,000,000. This would include Office Depot, Target, Staples, Home Depot, Publix, Winn Dixie. An ROI model will be in place as specified by the local bank or financial advisor.

Private investors

\$1,000,000. An ROI model will be in place as specified by the local bank or financial advisor.

First Beneficiaries

First beneficiaries of this campaign will be qualifying households for Digital Access, Inclusion & Literacy programs while funding CRA initiatives in the West Atlantic region of Delray Beach, in conjunction with Home Depot, GC's and Delray Garden Center.

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