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Remarks of Joanne Hovis, President, CTC Muniwireless Conference Silicon Valley, October 22, 2007

I am fortunate to have received the MuniWireless 2007 State of the Market Report hot off the electronic presses just a few days ago, and I read every word of it with interest. I recommend it as a source of useful data, as well as a number of clear case studies and perspectives from both government officials and a variety of vendors.

The team at MuniWireless.com has asked me to comment on their Report and to give some of my own thoughts about the market. Here's my overall analysis—that the fundamentals of the community broadband market are strong, even though the tone of mass media coverage has swung dramatically; and that the need and potential market for community wireless projects such as those we will be discussing here for the next two days is as strong as ever, while the potential is perhaps greater, because the rose-colored glasses have come off. I think this point is borne out by the data Esme and Mike and their colleagues have offered us in this Report.

So here are a series of thoughts that offer my analysis about this market, all of them my own opinion and, to the extent they prove wrong, not the responsibility of my friends at MuniWireless. I'll start by noting that I am a conservative when it comes to looking at these projects, technologies, and business plans—as a strategic advisor to local governments, I consider it my responsibility to advise caution. At the same time, I'm also something of an idealist about what has been accomplished by local governments in broadband networking and about the potential for these new technologies to serve the public interest through community efforts.

Thought No. 1: The Serious Players are Still in the Game

The State of the Market is solid because the serious buyers are the ones left standing, and that likely includes most of the local government representatives

in this room. In the wake of the ridiculous press coverage of Earthlink's decision and the many mass media obituaries for municipal wireless, the communities still in this market are those that are serious. We are seeing fewer communities exploring community broadband at a wishful-thinking or theoretical level; we are seeing fewer putting out experimental RFPs solely to test the market without doing meaningful analysis or planning in advance; and we are seeing fewer embarking on unrealistic or purely-copycat projects. Many of those that are now building or are in a serious evaluation process are the real deal—certainly, a greater percentage of the explorations this year than last are driven and serious.

Those that are still standing are also largely realistic; they know that enhancing community broadband is neither easy nor free; they know that it will require enormous political will, administrative effort, and staying power—and, of course, resources—much like any other significant government project.

I take the long view about community broadband; in my experience, local governments have been working to bring better communications services to their communities for two decades. We did cable system designs for local governments in the 1980s and 1990s when they were trying to bring cable services (or cable choice) to their jurisdictions. In more recent years, we planned and designed fiber and wireless networks data, video, and voice services—for both institutional and public use. The local effort to expand access to communications is long-term, and Earthlink's withdrawal from this market is not a big event on that longer timeline.

Thought No. 2: The Market for Alternative Broadband Solutions is Greater, not Smaller, than in Previous Years

Community broadband, generally, and community wireless, more specifically, arose because the so-called free market for broadband in the United States has failed to meet the needs of the country. The enormity of those needs is greater in 2007 than it was in 2006, and it was pretty big then.

Broadband in the US continues to be a privately-rationed resource and the broadband dynamic in the US has not shifted in any meaningful way since last year. In that context, community broadband seeks to fill this major, growing void—a market, though not an easy one.

Rural areas in many cases do not even have cellular phone service, and cable modem and DSL may be available only in population centers—in fact, a substantial portion of rural America has no access to broadband.

Urban and suburban areas face dramatic bandwidth scarcity and a patent lack of competition, though some would have you believe that the cable/telco duopoly is the equivalent of a competitive free market.

On the contrary, needs are outstripping supply, as I see, for example, when we do market research in areas that purportedly have DSL; DSL systems are tapped out in areas all over the country and even though carriers report to the FCC that service is “available” in an area, small businesses and residents in those areas frequently complain that they are turned away for lack of capacity. Verizon’s successful (and laudable) fiber-to-the-home initiative impacts a small, highly-privileged slice of America living in a few high-end suburban areas of major metropolitan centers. Neither Verizon nor any other carrier has any intention we know of to build true broadband solutions to the great majority of Americans. Even less ambitious than Verizon are the other telcos such as AT&T, whose much-discussed U-Verse deployments are still rare and, frankly, considered illusory and highly-unlikely as a ubiquitous solution (evidence the current speculation about AT&T buying EchoStar or DirecTV). Even if U-Verse’s famous technical difficulties are solved and it works on a large scale as advertised, AT&T’s century-old copper plant inevitably runs up against the realities of physics—this technology, at best, can barely support the high-bandwidth applications of today, and certainly not the higher-bandwidth requirements of tomorrow. The cable industry offers far greater speeds (at least in the downstream direction), but cable modem service is frequently not available in business areas, and, at the residential level, can be cost-prohibitive.

On the wireless side, the market for mobile services is clearly growing at an extraordinary rate, but wireless broadband is expensive, requires long-term contracts, and, even with 3G technology, is significantly slower than WiFi—with download speeds below 1 Mbps and upload speeds of a fraction of that amount.

That, simply put, is the picture—and community broadband arose to try to fill some of those many gaps—to complement, not compete with, those services.

Let me suggest that the hype and unrealistic optimism of last year’s municipal wireless market resulted from more than just naivete on the part of some

communities—it resulted from the extraordinary hunger of America’s local governments to meet the huge broadband needs in their communities—in urban and suburban areas, to bring choice, access, and affordability; in rural areas, to bring *some kind, any kind* of broadband access, to communities that, in some cases, have limited cell phone coverage and almost no cable modem or DSL. Let’s acknowledge the “me too” dynamics of 2005 and 2006 for what they were—signs of the depth of the need seen by local governments for this utility and their enormous hope that there was an affordable and available mechanism to meet that need. That need has not disappeared in 2007, even if the hope of “cheap and easy” has.

Thought No. 3: Greater Technical Sophistication Makes for Better Design and Better Business Planning

MuniWireless’ State of the Market Report makes the convincing argument that in the past year the technical knowledge in this market has become more sophisticated, and that this sophistication is to the benefit of the entire market. I fully agree that our experiences to date better prepare us for success going forward. Large-scale and city-wide deployments are not just theoretical anymore. Some of the difficulties with deployment, such as pole access and powering costs, have been predictable, but others less so. For example, some of the early business plans assumed that 20 or 25 Wireless Access Points per square mile would suffice. Experience has revealed that a far greater density of WAPs is necessary than was planned for two years ago. The industry standard is currently 40 to 45, but in some deployments, my team is seeing a need for 55 or more WAPs per square mile to meet indoor coverage requirements. Clearly, business plans are more likely to be accurate if they accurately account for these greater quantities of hardware, powering, backhaul, and pole access.

Some of the headaches with coverage and signal quality have also resulted in an important, growing recognition that fiber optics can (and, ideally, should) play an important part in a wireless network. If designed right, fiber backhaul boosts capacity and speed—and fiber is a long-term investment with a useful life of 30 or more years. Some of the most interesting data in the State of the Market Report concerns fiber backhaul—MuniWireless’ survey respondents report that it is the most common form of backhaul in their projects, another indication of the growing technical sophistication of the market. Frankly, there is greater recognition in the market that wireless is not a panacea despite its great

importance for mobility and affordability—and there is more discussion of integration of multiple technologies.

Thought No. 4 Scaling Back of Expectations Means Many More Small Projects

As communities look for creative business and technical models, one phenomenon that is clearly growing is the smaller WiFi project: hot-spot and super-hot-spot deployments are underway everywhere—I have not spoken to a single local government in the past year (and I’ve spoken to a lot of them) who is not operating, deploying, or planning to deploy WiFi in targeted areas. The strategy is quick, affordable, has clear public benefit, allows for incremental expansion, and makes the government less dependant on big providers. This plethora of projects also means sale of a lot of equipment, backhaul capacity, advertising, and outsourced operations. In MuniWireless’ State of the Market Report, Kevin McKenzie of JiWire notes that his data-base includes 200,000 public wireless locations in the US, a growth of 100 percent in the past two years. I’d suggest that this is the tip of the iceberg. This trend is accelerating and will continue to do so.

Another interesting, though less clear trend, is what my team calls the “Resource Pooling Network,” the community-based WiFi mesh in which the local government or non-profit provides affordable mesh equipment and community members mount the equipment on their homes and offices. The coordinating entity is also responsible for the insertion points that provide backhaul, and, in some cases, local businesses and institutions contribute to the frequency of backhaul. This bottom-up approach (as opposed to the City-wide, top-down Earthlink model) has seen significant success in a number of variations, perhaps most famously that of Meraki in San Francisco and elsewhere. Its capability to scale is evident and the data so far suggest that there is a market for this kind of community-based network.

Thought No. 5: It’s Not Over for the Big Cities, Whatever USA Today Says

Anyone reading the mainstream press in August might have assumed that big city muni wireless was dead. Earthlink’s change of plans set off a wave of articles that was as hyperbolic in its language of the “death of muni wireless” as had been the earlier wave of articles that breathlessly reported that municipal WiFi was imminent everywhere. Regardless of the recent negative coverage, virtually every major city in the United States is either evaluating or deploying

some form of community broadband project—most wireless, and a few fiber-based. Just by way of example—evaluations or deployments are proceeding in Boston, Seattle, San Jose, Houston, Portland, Denver, Sacramento, Minneapolis, and of course, Philadelphia. Significant consideration of needs and options is underway in Washington, DC; St. Paul; New York; San Francisco; and Los Angeles.

To the extent that big city efforts are indicators of continued exploration and creativity in this market, it's certainly not over.

Thought No. 6: New Emphasis on Government Applications

Government applications and use drive many of the current evaluations, a clear broadening of focus from two years ago, when public access was in many cases a singular priority. MuniWireless' State of the Market Report documents not only the wide range of internal government functions that are contemplated in projects around the country but also the shift in spending in this market from 70 percent toward products and deployment two years ago, to far less today as services and applications make up a greater proportion of expenditures. And providers and government are clearly contemplating multiple government applications—MuniWireless' survey data reveals that 81 percent of planned and existing projects discussed by respondents include a number of government uses.

In perhaps the most surprising revelation of the State of the Market Report, MuniWireless reports that the most commonly-planned application is public safety, according to respondents to the survey; if this trend is indeed occurring, it suggests a new development with respect to WiFi technology. It will come as no surprise to any government IT person in the room that convincing first responders to use a new network is one of the great challenges of network deployment. First responders are inherently—and appropriately—conservative about communications; they will only use devices and networks they trust. If public safety agencies are willing to engage with WiFi and with municipal wireless solutions, it may mean that many of the contemplated networks are being engineered for reliability and security with respect to backup powering, robust backhaul, and comprehensive coverage—reliability and security are major challenges for WiFi, and are key milestones in the adoption by first responders of any new technology. The potential that public safety is a frequently-considered application also demonstrates that local governments are taking very seriously

muni wireless deployments—no local government changes public safety communications lightly.

By the way, any demonstrated success of public safety WiFi networks is likely to spur new projects—in my experience, local governments and first responders are eager not only for wireless broadband solutions to complement existing narrowband voice networks, but are also eager for alternative, non-monopoly suppliers of communications equipment and solutions.

The State of the Market Report also lists a variety of other government applications that are driving spending in this market, among them building inspection, meter reading, and traffic monitoring. These applications, as they come online, have the potential to demonstrate that WiFi can cost-effectively solve government business problems. Houston's parking meter project, for example, is designed to save the City on the costs of parking enforcement, improve revenue generation from violations, and ideally, increase parking compliance. WiFi's affordability, and the lack of need for licensed spectrum, make it potentially very useful for this kind of application. My conservative outlook leads me to note that WiFi is not a T1 replacement unless engineered for that level of reliability and consistency, which is not a trivial or inexpensive matter, but for non-critical applications, WiFi can be a very cost-effective alternative to the unending costs of leased services or circuits.

There are other potential funding sources in addition to replacing leased circuits that also arise from the increased emphasis on government applications -- an important dynamic for this market. For example, a public safety and government service network can potentially use funds allocated under the Department of Homeland Security's Urban Areas Security Initiative (UASI). The State of the Market Report discusses a public safety WiFi implementation in Providence, RI that was partially funded by DHS.

Thought No. 7: The Market is Strengthened by Clear Emphasis on the "Off-the-Balance-Sheet" Benefits

The new emphasis within this market on government applications as well as public access is important in another way—it expands the discussion of return on investment to include not only revenues relative to costs—but also a range of economic and other benefits to the community-- the criteria *beyond the balance sheet* that make up the business case for any community broadband project. Both

local governments and vendors are more focused than they were in the past on the so-called "soft" factors that motivate a community wireless project. And this change also suggests that we are not ceding to the incumbents their argument that these projects need to pay for themselves through revenues. On the contrary, the true return on investment is not in the form of revenue (no local government I know considers going into broadband to make money). Rather, the true returns are in those factors that are harder to quantify -- factors like enhanced public safety, public health; workforce preparedness and job training, environment protection and sustainability, small business development, distributed work and telecommuting, educational parity, access to e-government services, and, of course, economic development.

These are early days still, and there is limited empirical data regarding how broadband (and, more specifically, community wireless) impact these factors, but it is particularly important to explore these because they are the reason for community wireless--and to the extent they are deliberately integrated into the business plan, they make the ROI analysis more comprehensive and more reflective of the true drivers behind the projects.

A fine illustration of just this approach is contained in the perspective piece by Tony Tull, IT Director of Granbury, TX in the State of the Market Report—a piece that is essential reading. Tony documents the success of his rural city's WiFi network in serving residents, local businesses, public safety, meter readers, and even tourists. He receives three calls a week from new residents of his community who want his service and want to be sure they can get it from their new homes. He signs up new customers every day. Tony suggests a new, better mindset for projects: subscription revenues are not the only return on investment, and government would be hard put to find another capital improvement project that impacts so many taxpayers so profoundly at relatively modest cost.

Let me give another example of an off-the-balance-sheet return on investment. My company's surveys and pilots show consistently across a number of communities that WiFi at the right price reaches people who can't otherwise get or afford broadband. In our data, 60 percent of the subscribers and potential subscribers for an affordable WiFi product (priced at around \$20 per month and offering symmetrical speeds around 1 Mbps) came from dial-up or no Internet access at all. Let me repeat that, because I think that's really important. 60 percent of the market for affordable public WiFi is people who have no

broadband or even no Internet access. This suggests not only digital inclusion benefits to the locality, but also small business stimulation, home business facilitation, efficiency and productivity gains, and countless other benefits—because broadband has come to a previously-unserved population. Public WiFi is not competing with cable modem or DSL for market share—on the contrary, it is expanding the size of the market. Beyond the \$20 revenue per month they put into the network, how can we even begin to quantify the enormous benefit to a community of bringing broadband to those subscribers?

And, No. 8, My Final Thought: Local Government is the Front Line and We Need a Federal Partner

Local communities and governments have long been at the forefront of attempts to expand broadband access and services to the public. In fact, for two decades, many local communities have sought to deploy networks (or encourage the private sector to do the same) that would expand access to broadband communications—in the early days, to cable television services; more recently, to Internet as well as video and voice services. Since the 1980s, many local governments and municipal electric utilities have sought to increase broadband communications availability through ambitious projects including constructing competitive cable television systems, building fiber optics to business areas or development parks to spur economic development, building wireless broadband networks, and deploying fiber optics to all homes and businesses in a community. The recent wave of community wireless networks has been a high-profile continuation of this form of local effort.

All this local work and creativity has occurred in an environment in which the Federal Government has been conspicuously absent. What drives many community broadband initiatives is the need to fill a gap left by an absence of a Federal broadband strategy. The lack of a coordinated US policy is even more troubling in an era when our competitor nations in Europe and, particularly, Asia, have robust and aggressive national policies to build next generation, high-speed networks. By virtually any account, the United States has lost to other nations our competitive advantage in broadband deployment. MuniWireless' State of the Market Report includes a thoughtful and insightful piece by Gary Bolles of Microcast on this topic that well articulates the importance of Federal attention to broadband, and I highly recommend it.

I also suggest that we as a community need to pressure our national representatives to become true partners in broadband planning and deployment. Imagine the potential benefits for this market and our communities of meaningful Federal involvement, both in planning and in funding. Localities will, by necessity and by choice, be part of the solution to our national broadband deficit. But we need a Federal partner, and we need it very, very soon.

As we evaluate the ups and downs of this market, we should not forget that this is not a short-term effort. On the contrary, localities have always been an essential part of ensuring the benefits of infrastructure to communities across the US, including rural, suburban, and urban areas. So let me end by quoting my friend, Jim Baller, who has noted that “a Great Nation requires Great Cities.” In the spirit of Jim’s sentiment, I might add that, it also requires great villages, great towns, great counties, and great parishes. In short, it requires great communities—and great communities increasingly listen, speak, play, and transact business over broadband. America is fortunate to have the community wireless and community fiber markets leading the way in bringing that essential utility to our communities.