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September 3, 2013 REF: EXE-235-13

Honorable Members of the City Council
City of Los Angeles
Room 395, City Hall
Los Angeles, CA 90012

Attention: Information Technology and General Services Committee

Subject: **CITYWIDE MUNICIPAL WIFI INITIATIVE - COUNCIL FILE NO. 13-0953**

Dear Councilmembers:

On July 30, 2013, Council District 3 introduced a Blumenfield/Price Council Motion (C.F. 13-0953) instructing the Information Technology Agency (ITA) to "report with recommendations on the development of a citywide municipal WiFi initiative." The Information Technology Agency has prepared the following report on the City's status for implementing WiFi throughout the city and options to consider for developing a community broadband strategy.

BACKGROUND

In 2005, the City of Philadelphia was considered the earliest large municipalities to deploy WiFi in their City. At this time, MetroFi and Earthlink expanded to deploy WiFi for free in communities for in-kind advertising and, in some cases a higher speed paid service. By 2006, Verizon had sued the City of Philadelphia on the grounds of displacing competition by offering a free service when carriers had already invested millions in infrastructure in the Philadelphia area. The State of Pennsylvania sided with Verizon and now no carrier can offer free WiFi at speeds that existing carriers are reselling. MetroFi at the same time filed for banckruptcy and Earthlink exited that market place due to poor revenue streams. This chain of events had a substantial impact on subsequent municipal initiatives throughout the country.

By 2007, only two models for free/low-cost internet access were succeeding in the United States. The first model was a fully subsidized and managed government service. In this model, the municipality acquired and maintained all infrastructure for its residents. This occurred in some smaller cities, such as St. Cloud, Florida. Based on the maintenance requirements, geographic limitations, and sheer cost, this model has not been adopted by large municipalities. The second model is an anchor tenant model, as seen in San Antonio, TX, Kansas City, MS, Minneapolis, MN, Corpus Cristi,

TX, and Riverside, CA. The anchor tenant model was designed to leverage the municipality's field-based communications requirements to offset the cost for the WiFi build out and ongoing maintenance and support. As cities inventoried applications (mobile data computers, parking meters, ball field light controls, sprinkler controls, remote video security cameras, traffic controls, and supervisory controls) and in many cases were willing to pay $24.00 - $45.00 per month, the market soon got left behind by the carriers. Verizon and AT&T were the first to deploy alternative 3G services in 2008 and in 2011 4G services (also includes many other vendors such as T-Mobile and Sprint/Nextel) which provided much higher speed data services than WiFi for about the same costs as the anchor tenant model. In addition, for low data bandwidth applications like parking meters, ball field lights and control systems, the carriers were able to offer bulk services to vendors for less than $5 per month. By 2009, the anchor tenant model for WiFi was no longer viable. However there are other assets or services that municipalities have or contract for, which could be of interest to vendors to develop a new model (fiber/circuits, centrex/VoIP services, Cellular/3G/4G services, E-mail/App services, internet services, and others). In short, the anchor tenant model for citywide WiFi was repeatedly determined to be unprofitable and many vendors have since transferred over their existing assets to the municipality and exited the WiFi market place.

THE LA WiFi INITIATIVE

On February 13, 2007, Los Angeles Mayor Antonio Villaraigosa and Councilman Tony Cadenas, Chair of the Information Technology and General Services (ITGS) Council Committee, formally announced the LA WiFi Initiative. On June 28, 2007, the City initiated an effort with Civitium to develop a feasibility report of a citywide wireless broadband deployment effort. It included:

- Assessing departmental assets that could be leveraged to deploy wireless access points onto
- Identified potential applications that departments could utilize a wireless network to help offset upfront and ongoing costs
- Identify the economic development benefits as well as the benefits of providing affordable broadband to low income households
- LA Broadband and Digital Inclusion Plan Briefing Document

The comprehensive report was completed on February 12, 2009. At the time of the completion of the report, it was determined that a citywide WiFi network was not feasible for Los Angeles due to economic reasons. The recommendation was for the Los Angeles Department of Water & Power (LADWP) to build out the network and leverage for meter reading and also provide public benefit. Since 2009, very few WiFi implementations have been considered and, according to our research, the only one implemented has been the City of Santa Clara's public utility, which provided a utility meter reading solution in combination with a public benefit. In meeting with LADWP and the Bureau of Street Lighting, their applications are either moving to lower cost 900 Mhz solutions or 3G/4G solutions (known as Long Term Evolution). These alternatives to WiFi are proving to provide lower cost and better coverage. Additionally, LADWP is

not seeking a fiber to the home (FTTH) strategy since the estimated build out would exceed $2B and the technology for meter reading is not yet mature to replace all electric meters which is typically done every 30 years. Chatanooga, Tennessee's utility did deploy a utility based fiber to the home solution with public benefit in 2011, but only due to economic stimulus subsidy of over $200M. Based on our research, Google provides an excellent fiber to the home solution now with a free component (up to 5Mb) as well as the faster commercial 1Gb paid service for around $75/month. Google has now deployed in Kansas City, KS and surrounding communities and is in the process of deploying in Provo, UT and Austin, TX.

As documented in the City's 2009 feasibility report by Civitium, a build-out of WiFi by the City was estimated at $38-$46M. The amount of density of access points to provide adequate coverage for both personal computers, laptops and mobile devices at that time was estimated at 30 access points per square mile, however from lessons learned, the need for 50-75 devices per square mile is required to provide the same level of coverage of 3G or 4G services by the carriers (estimated build out cost today could reach as high as $90M). Also, wireless mesh was the solution 5-10 years ago and new fiber to the pole is becoming the new standard which supports much higher speeds and improved coverage. Therefore, today's costs are more realistically estimated around $100-$150K per square mile, with 10% for annual ongoing maintenance of the network. The lifecycle of this technology is between 7 and 9 years so a capital replacement program is required to continue with the service.

EFFECTIVENESS OF LOCALIZED WiFi "HOT SPOTS"

In contrast to citywide initiatives, WiFi in localized "hot spots" is continuing to have success (exceptions are related to large, outdoor networks). Many cities, such as San Francisco, New York and Houston, use this approach to provide some level of basic, free service to their communities. Resulting from the 2007 LA WiFi Initiative, WiFi deployments were implemented at the Van Nuys Civic Center, Pershing Square, Broadway Theater District, Bunker Hill/Financial District, Little Tokyo and Los Angeles World Airports (LAX). Over 71 facilities (mostly City Libraries) were funded from an economic stimulus grant (ARRA BTOP) and implemented with some level of WiFi "hot spots". Today, YELP reports over 3,431 commercial establishments offering WiFi hotspots in the City limits of Los Angeles. Non-profits, such as Manchester Community Technologies (45 "hot spots") who heads the Los Angeles Broadband Consortia, Via Pico Community WiFi Network, and Mar Vista joint California Emerging Technology Fund and Housing Authority (Kids Progress, Inc.) project, have expanded WiFi to the communities most in need of free broadband in partnership with private sector companies willing to pay the monthly broadband charges. The Department of Neighborhood Empowerment is looking at their neighborhood groups to implement similar concepts to expand WiFi hotspots across the City. Targeted, localized WiFi "hot spots" have shown success in delivering basic, free service to specific locations and communities. As described, the major exceptions have been large, outdoor networks that continue to be plagued with performance problems. The problems associated are:

- Foliage;
- Window tinting;
- Terrain (hills/valleys),
- Building structures over 2 stories,
- Mounting of assets on street lights (18 feet off the ground),
- Not able to work with weak antennas on mobile devices (tablets and smart phones),
- Requirement for density of 50 or more access points per square mile, and the need for customer premise devices to extend the outdoor signal to indoors (costs for devices that work well exceed $75).

Like every major municipality, Los Angeles is fraught with these WiFi performance obstacles. However, localized WiFi access generally avoids these locations or implements the additional infrastructure needed to operate in these environments.

INTERNET ACCESS & THE LAUSD iPAD INITIATIVE

The Los Angeles Unified School District (LAUSD) is aggressively rolling out mobile devices to every student starting with 60,000 Apple iPADS in 2013 and expanding over the next 3 years with other tablet devices. The success of this program is based on providing affordable broadband to all student households. An estimated 30% of student households are without broadband today. LAUSD is working with Washington D.C. to influence an e-rate program for children on free and reduced lunch that would provide a 4G service for their mobile devices and e-rate discounts. However, the funding at the federal level for this program has not been identified or approved. While the schools would be burdened in picking up that cost, it would be much reduced as compared to commercial rates, but the need for free service for those households is still the primary goal to ease school budget problems.

While carriers have invested millions of dollars in the City of Los Angeles and offer a variety of broadband services, most are not affordable to the income levels in many of our communities. The Digital Divide in Los Angeles is real and the need to provide more affordable and accessible broadband to all parts of Los Angeles is a necessity to improve Economic Development, increase student graduate rates, and provide critical services and employment opportunities for households not available today. Once a broadband strategy or multiple strategies are identified, the need to work with non-profits to provide free computer training and free refurbished devices will be required to provide a Digital Inclusion program required by Angelinos.

City officials have also been frustrated by the level of coverage of both internal and free WiFi inside City facilities. The Information Technology Agency provides some of those services, while commercial entities provide services to others. The Information Technology Agency can replace the commercial services to elected offices and public buildings through technology WiFi standards in place and ensure appropriate levels of security. The limitation is based on available communication budgets in both the ITA and City departments (estimated at $20,000/floor).

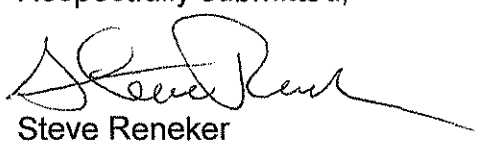
RECOMMENDATIONS

Based on the state of the market place in broadband (including WiFi, Long Term Evolution (LTE) and Fiber to the Home (FTTH)), the Information Technology Agency recommends the Innovation, Technology and General Services Committee to consider the following:

1) Develop a City of Los Angeles Broadband RFP with a list of available assets and services that would entice a vendor to provide a build out of some level of free broadband service to all City of Los Angeles residents while respecting the commercial carrier's basic levels of service and to not significantly influence carrier competition.
2) Get estimates to provide WiFi coverage internally to both City Hall and City Hall East using City standard technology and removing paid services to centrally managed both public and internal WiFi in a secure manner.
3) Limit Neighborhood Empowerment and other City funded WiFi "hot spots" to City owned facilities and parks or communities with median incomes under $45,000.
4) Continue to support LAUSD's mobile device deployment through broadband options that will enable their student base to get free or affordable broadband alternatives.
5) Inventory digital inclusion programs in Los Angeles and determine how the city of Los Angeles can support and expand those offerings to areas where affordable broadband is accessible.

Should you have any questions or require additional information, please contact me at (213) 978-3311.

Respectfully submitted,



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General Manager

cc: Honorable Eric Garcetti, Mayor
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Gerry Miller, Chief Legislative Analyst
Mike Feuer, City Attorney
Grayce Liu, Neighborhood Empowerment
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Information Technology Policy Committee