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January 20, 2009 REF: EXE-027-09

Honorable Antonio R. Villaraigosa
Mayor, City of Los Angeles
Room 303, City Hall
Los Angeles, California 90012

Honorable Council Member Tony Cardenas
Council District 6
Chair of the Information Technology and General Service Committee
Room 455, City Hall
Los Angeles, CA 90012

SUBJECT: **FEASIBILITY STUDY COMPLETED BY LA WIFI WORKING GROUP**

Dear Mayor Villaraigosa and Councilmember Cardenas:

The Information Technology Agency (ITA) is pleased to submit the LA WiFi Feasibility Study completed by the LA WiFi Working Group[1] and with assistance from consulting firm Civitium, LLC. The Study was commissioned to explore the needs, interests, and feasibility of developing a wireless network throughout the City by 2009.

This Study finds that the Los Angeles community is supportive of wireless broadband network developments, that the City has an important role to play, and that there are real, tangible opportunities to leverage municipal Wi-Fi to meet internal and community needs.

However, the Study concluded that at the present time, the construction of a citywide Wi-Fi network is not feasible for a variety of technical and financial reasons, which are discussed at length in the LA WiFi Feasibility Report prepared by Civitium (Attachment).

Therefore, going forward, ITA and the LA WiFi Working Group recommend that the City adjust its previous approach of working with a single provider, business plan, and technology to deploy a citywide Wi-Fi network to a more entrepreneurial approach in

[1] LA WiFi Working group consists of representatives from the Information Technology Agency (ITA), Los Angeles Department of Water and Power (LADWP), and the Department of Public Works, Bureau of Street Lighting (PW-BSL), Community Redevelopment Agency (CRA), General Services (GSD), Office of the Chief Legislative Analyst (CLA) and Office of the Mayor.

which the City will assist in facilitating the deployment of both public and private sector wireless hot zones and pilot deployments which can accommodate multiple business plans, technologies, and providers through a newly created Office of Wireless Initiatives within ITA.

WI-FI INITIATIVES IN OTHER U.S CITIES

As a result of recent changes in the municipal Wi-Fi market, in the past twelve plus (12+) months, U.S. cities with large Wi-Fi initiatives have been forced to change their plans, adjust their goals and in some cases abort their large Wi-Fi projects. The status of similar citywide municipal Wi-Fi initiatives in other cities continues to change weekly, however the following conclusions are established after reviewing similar efforts in other U.S. cities:

- No other large city has achieved a citywide deployment through a private-owned business model.
- Mid-sized cities that are able to commit substantial levels of anchor tenancy tend to achieve citywide deployments through a privately-owned business model.
- Smaller cities that are able to accept the financial risk of deploying public-owned networks tend to be more successful in achieving a citywide deployment.
- New market entrants from the private sector continue to change market speculations and conditions, indicating that it will likely be months before this market settles, forcing cities to remain flexible in adapting to variable wireless technologies and markets by deploying wireless hot zones instead of planning citywide deployments.

WI-FI IN CITY OF LOS ANGELES

City of Los Angeles has made significant progress in providing Wi-Fi services to the public and City staff at key locations such as the Los Angeles World Airports, Los Angeles Convention Center, inside all 72 Los Angeles Public Library branches, in the Van Nuys Civic Center, and in approximately 20 square blocks in downtown Los Angeles covering areas known as the Historic Core, Financial District, and Pershing Square. Additionally, collaborative Wi-Fi opportunities are continuously evaluated by ITA and partnering City departments with the goal of leveraging Wi-Fi services to enhance City service delivery, such as parking meter reading and enforcement. The wireless broadband technology is also used for multiple surveillance camera and public safety projects.

KEY STUDY CONCLUSIONS

The following conclusions are based on the consultant's analysis and findings, experience from existing Wi-Fi pilot projects, and finally, lessons learned from other cities' experiences with municipal Wi-Fi initiatives:

1. Based on the current municipal Wi-Fi market conditions, it is unclear if a public/private partnership arrangement where a private entity invests the upfront capital costs to construct a Wi-Fi network, would result in a network being built

across the entire City. It is unlikely that the kinds of community benefit commitments that were common in earlier agreements between cities and wireless Internet service providers, e.g. free citywide Wi-Fi service, would be possible in the current state of the industry and economy.

Civitium cautioned that financial commitments from the City for the purchase of communication services, as an anchor tenant, would almost certainly be required before a private entity would commit to building and operating a citywide Wi-Fi network. Based on the City's current financial situation and Civitium's cost estimates for deploying a citywide network, it is likely that the financial commitments that the City would be expected to make for such services would approach, or possibly even exceed, the cost for the City to build and own a wireless network.

2. Based on the analysis conducted by Civitium, the cost of deploying a citywide Wi-Fi network is estimated to be between $38 and $46 million dollars. The annual cost to operate a citywide network is estimated to be between $11 and $13 million.

3. The needs of various City departments for wireless broadband services to support internal City applications and operations, e.g. remote access to data and work order processing in the field, are large and growing. Many of these wireless needs could be served through a citywide network or targeted wireless zones. There may be a very strong case for the City building a network to support its internal wireless broadband communications needs, however, more detailed cost-benefit analysis should be done to more accurately define costs and benefits from such a deployment(s).

4. It appears that the deployment of a citywide Wi-Fi network is not feasible for Los Angeles at this time due to current uncertainty in municipal Wi-Fi market, and the City's current budget shortfall. However, there are tangible, near-term opportunities to continue to develop wireless broadband services that meet internal and community needs, which are discussed at length in the LA WiFi Feasibility Report.

5. Streamlining the City's permitting process for mounting wireless communications equipment to City assets and centralization of the authority to lease access to City facilities and property for the purpose of developing wireless networks may improve the likelihood of large scale wireless deployments by private entities and generate additional revenues for the City.

RECOMMENDATIONS

While the development of a citywide Wi-Fi network may not be feasible at this time, the feasibility study concluded that there are real, tangible near-term opportunities to

continue to develop wireless broadband services that both meet internal and community needs.

To move the City closer to the goals and opportunities identified in the LA WiFi initiative, ITA recommends that the City adjust its previous approach of working with a single provider, business plan, and technology to deploy a citywide WiFi network towards a entrepreneurial approach in which the City will assist in facilitating the deployment of both public and private sector wireless hot zones and pilots which can accommodate multiple business plans, technologies, and providers through a newly created Office of Wireless Initiatives within ITA.

ITA's Office of Wireless Initiatives (Office) would work with:

1. The private sector to facilitate the development of wireless hot zones and/or pilots within the City of Los Angeles. ITA's Office of Wireless Initiatives will provide a consistent mechanism for the solicitation, review, and facilitation of appropriate wireless initiatives in Los Angeles; and

2. Department of Water & Power (LADWP), Department of Public Works-Bureau of Street Lighting (PW-BSL), Department of Transportation (LADOT), Community Redevelopment Agency (CRA), and other City Departments to assist in coordinating use of City assets and existing infrastructure or resources for the deployment of both public and private sector wireless hot zones and/or pilot projects; and the joint use of any Wi-Fi and/or other high bandwidth wireless (e.g. WiMax) pilots and deployments that they may, or will, be launching; and

3. Community based organizations, community technology centers, and other external stakeholders who may have participated in the development of the LA WiFi Feasibility Report, along with others, to implement new Digital Inclusion programs targeting communities with higher needs regarding citizen access wireless (and wired) broadband services, hardware, technical support, and training; and

4. The City Administrative Officer (CAO) to explore alternative funding sources such as grants that could be used to expand existing City Wi-Fi programs; and

5. The Mayor and City Council on the status of the pending and ongoing initiatives and the development of policy considerations as necessary.

FISCAL IMPACT
ITA proposes the use of internal staff resources to complete the recommended activities and therefore does not anticipate any direct fiscal impact at this time.

Upon your review of the report, I would like to recommend that ITA Office of Wireless Initiative start communicating the findings and recommendations of the LA WiFi

Feasibility Study with internal and external stakeholders and begin exploring opportunities that the alternative models may offer. Please contact me or Mr. Mark Wolf at (213) 978-3311, if you have any questions or require additional information.

Respectfully submitted,

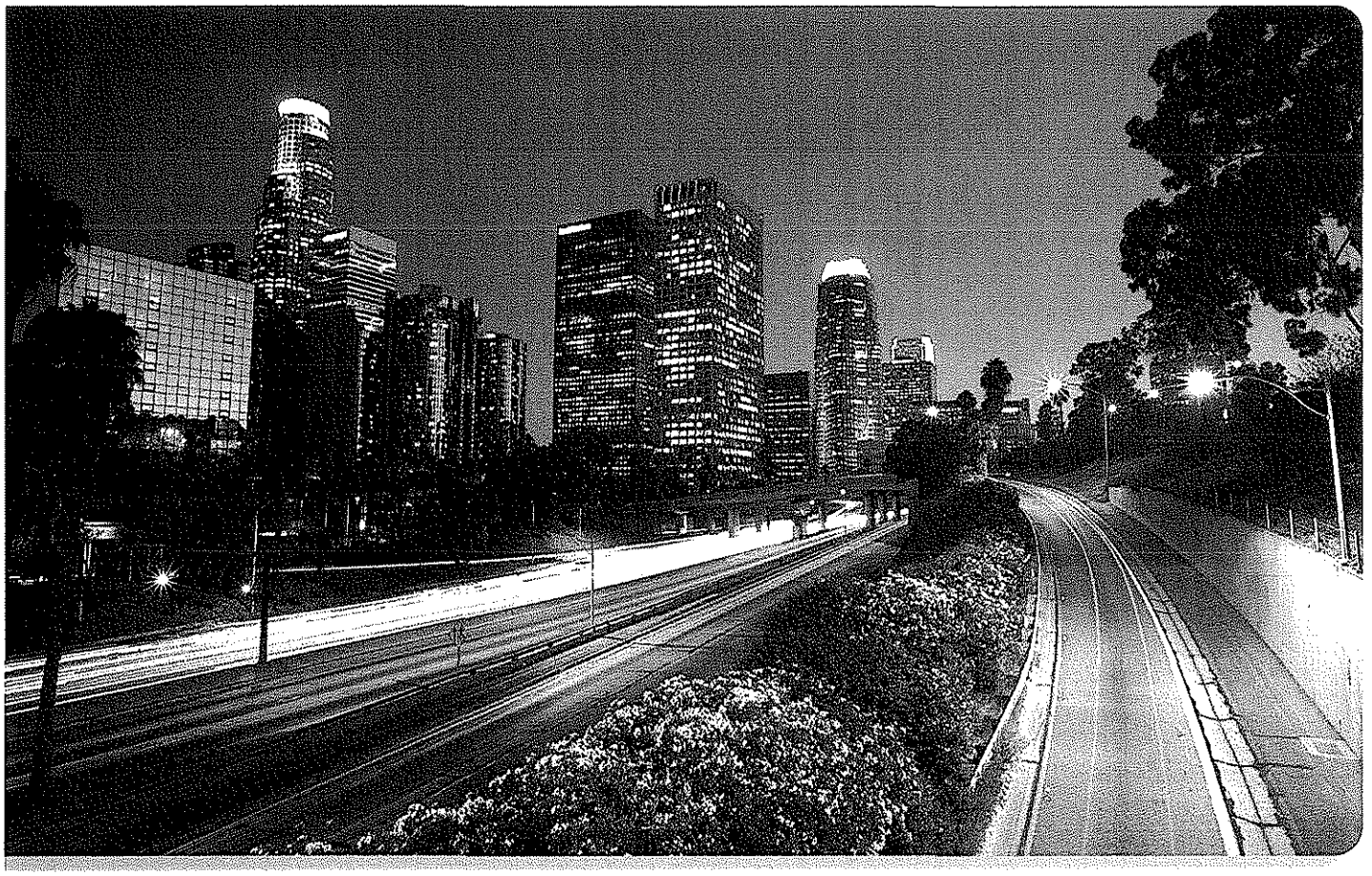
Randi Levin

Randi Levin
General Manager

cc: Robin Kramer, Mayor's Office
Jimmy Blackman, Mayor's Office
Dan Grunfeld, Mayor's Office
Ben Ceja, Mayor's Office
Paul Wang, Mayor's Office
Eduardo Soriano Hewitt, CD 6
Gerry Miller, CLA
David Nahai, LADWP
Cynthia Ruiz , BPW
Ed Ebrahimian, PW- BSL
Tony Royster, GSD
Cecilia Estolano, CRA

Attachment

civitium



LA WiFi

FEASIBILITY REPORT

PREPARED FOR
THE CITY OF LOS ANGELES

EXECUTIVE VERSION

FINAL DRAFT

FEBRUARY 12, 2008

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Project Overview

On February 13, 2007 Los Angeles Mayor Antonio Villaraigosa and Councilman Tony Cardenas, Chair of the City's Information Technology and General Services (ITGS) Council Committee, formally announced the LA WiFi Initiative, to connect Los Angeles to the global economy by providing all residents, schools and businesses with cost-effective, high-speed access to the Internet.

The Information Technology Agency (ITA), the department leading the LA WiFi Initiative on behalf of the City, hired Civitium to conduct a feasibility study for the project. The scope of this study is summarized in the following table.

#	Study Area	Description
1	Broadband Market Analysis	Collect and analyze data to understand the Los Angeles broadband market, including availability, pricing, competition, and user uptake. This included an in-depth review of major broadband providers and services, an analysis of various research reports, structured interviews with major wired and wireless providers, and the development of a strategic framework to estimate consumer adoption of municipal Wi-Fi.
2	Stakeholder Outreach and Analysis	Seek feedback from a wide range of City leaders, departments and community members to gauge their support for a wireless network, the needs it should meet and aspirations it should strive to achieve. This included 17 in-depth interviews with key community leaders, ten focus groups, two town hall meetings, a goals prioritization survey, and solicitation of comments via a City web site. In total, more than 1,000 people took the time to offer their opinions and viewpoints on the feasibility and desirability of a citywide wireless project.

#	Study Area	Description
3	Internal Needs Assessment	To answer practical questions about the current and planned uses of wireless technology in the City, as well as conceptual questions about the vision, prioritization of goals and policy for the initiative. This included four workshops, a needs assessment survey, and briefings and information sessions with City leaders.
4	Regulatory Analysis	Identify and analyze key federal, state, and local authority, regulatory, and other important legal issues that may bear on the City's decisions.
5	Technology Assessment	Consider the strengths and weaknesses of various wireless technologies, describe a conceptual architecture for a citywide Wi-Fi network, and gain insight into the unlicensed radio frequency (RF) environment throughout the City.
6	Asset Inventory	Identify the quantity, quality and suitability of various assets (e.g. optical fiber, street light poles, etc.) that may be leveraged to construct a citywide wireless network. This included a categorization of asset types, workshops with key City agencies and departments, an analysis of geographic information systems (GIS) data, and a review of various policies, procedures and other relevant documents.
7	Business Model Analysis	Collect and analyze data from a variety of sources to determine the most appropriate business model for LA WiFi. This included a review of case study projects, definition of candidate business models, validation of each candidate model against key criteria, and development of preliminary financial estimates.

This report represents Civitium's findings, conclusions and recommendations following completion of the study.

Executive Summary

Introduction

The LA WiFi initiative is one of the largest and most ambitious projects of its kind in the world. Since 2003, hundreds of cities have pursued similar projects, though none have matched the scale and complexity of LA WiFi. The vision and goals outlined when the project was announced were forward-thinking and ambitious, and the City has pursued these goals with a level-headed and inclusive approach – with a perfect balance of enthusiasm tempered by objective, critical thinking.

Municipal Wi-Fi refers to an initiative sponsored by a local government to affect the deployment of Wi-Fi technology across the community. Wi-Fi is a wireless technology brand owned by the Wi-Fi Alliance. It refers to a set of product compatibility standards for Wireless Local Area Networks (WLANs) based on the IEEE 802.11 specifications.

As the municipal Wi-Fi market has evolved, the intersection between politics, business, technology and public policy has produced an intense, worldwide debate over the role local government can and should play to ensure that robust broadband services exist in the communities they serve. Should local government play a passive role and simply facilitate entry by the private sector? Should it act as a catalyst and facilitator to stimulate new private investment? Should it become a provider of commercial services, on a wholesale or retail basis? Should it focus only, or initially, on infrastructure for municipal use? Can the private market be relied solely upon to create robust market conditions and meet community needs?

There are no wrong or right answers to these questions. Despite basic similarities that may exist between Los Angeles and other major cities, the goals of LA WiFi, the makeup of its broadband market, the policy positions of its leaders, the desires and viewpoints of its citizens and businesses, and many other factors demand that these decisions be made within each community. We believe the inclusive approach taken during this study will enable decisions to be made that are unique and appropriate for the Los Angeles community.

A project of this type holds the promise of immeasurable benefit for Los Angeles, but despite this promise, the community benefits of broadband have proven costly to achieve, time consuming to realize, and nearly impossible to measure in other communities. As for major cities in the U.S., only Philadelphia has reached a point of near-completion of its network, and it faces troubling new challenges with its private-sector partner. Technology innovation has also continued at a frantic pace, not only with Wi-Fi, but with WiMAX and other standards that could affect the viability, sustainability and market acceptance of the network originally envisioned by the City.

In addition to these dynamic and interrelated factors, the municipal Wi-Fi marketplace went through a market-correction while this study was being performed, sparked by a pullback of private investment and resulting in increased financial demands being placed on local governments. It seems the only constant with municipal Wi-Fi is change.

As this report will show, there are risks and challenges that must be faced if the City proceeds forward with LA WiFi. We caution that it may not be possible to achieve all of the ambitious goals originally defined without accepting substantially more financial risk than was commonplace in other major city projects.

While the efficiency of local government, health of the local economy, and degree of social equity are themselves very important issues, we are compelled to also stress the longer-term impact of broadband on Los Angeles' ability to compete globally. Just as energy prices, real estate conditions, transportation networks, proximity to trading markets and other major factors have and will affect the ability for Los Angeles to compete in the 21st Century, so too we believe will be the ability for Angelenos to access the Internet's increasingly rich content, media and services over very high-speed connections.

> *"[W]e are entering into a phase where we are going to see the digitization, virtualization, and automation of almost everything. The gains in productivity will be staggering for those countries, companies, and individuals who can absorb the new technological tools."*
>
> *T. Friedman, The World is Flat: A Brief History of the Twenty-first Century*

Regardless of the path the City chooses to take with LA WiFi, we believe it is paramount that the City and the community continue to play an active role in their digital future. The City should consider the LA WiFi project as part of a process rather than an event – a process to ensure that the vast benefits of the Internet are available to all Angelenos.

If the City ultimately achieves its goal to affect the deployment of an advanced citywide wireless broadband network, it will likely be confronting new issues in parallel; fiber to the premise, existing and new barriers to technology adoption (e.g. training, computer hardware, support), continued advances in technology, evolving business models, changes in consumer behaviors, and many more that cannot even be envisioned at this time.

Playing a more active role in community technology may also present new challenges not faced previously by the City with other critical infrastructure projects like water and electricity. The very nature of technology is that it quickly becomes obsolete to make way for new innovations and breakthroughs, which is particularly true in wireless. It is not uncommon for private technology companies to force obsolescence and disruption of their existing investments in order to keep pace with the market, and the City will not be exempt from these forces.

Civitium's goal during this study was to produce the most objective, informed, accurate and up-to-date information and analysis to help facilitate the many important decisions that the City will need to make. To that end, the following sections summarize our findings and recommendations.

Summary of Findings

The tables below summarize the findings from this study for each area of the project's scope:

Broadband Market Analysis Findings		
#	Finding	Summary
1	Broadband **services are widely available**	The vast majority of Los Angeles households (as high as 95%) can provision at least one fixed, residential broadband service; either DSL or cable modem service.[1] In addition to fixed residential services, there are at least three (3) wireless broadband providers that offer near ubiquitous coverage throughout the City.
2	There is **little meaningful competition** among broadband service providers	Despite the wide availability of at least one broadband option, our pricing analysis suggests that little meaningful competition exists between providers. Competition is not sufficient to drive substantial decreases in the price paid for broadband services. Low-cost promotional offers give the appearance of affordable rates and a robust market, but mask the fact that the market is inadequate to promote high adoption levels.

[1] As documented in our detailed analysis, this is partly based on our assumption that the near-universal digital cable television infrastructure in the City is equipped to support Internet service.

Broadband Market Analysis Findings (cont.)		
#	Finding	Summary
3	Existing **providers target premium services**	Our service and pricing analysis suggest that most existing broadband providers focus on higher average revenue per user (ARPU) customers through tying and bundling services together, and through deploying new higher-end services. While these motivations and actions are appropriate for investor-owned organizations and they create benefits for consumers with advanced needs, the end result is a market that may be "over shooting" the needs and ability to pay of many low-income citizens.
4	Low uptake rates indicate **a digital divide**	A significant digital divide exists in the Los Angeles area. The percentage of households with Internet access in the area is 57.7%,[2] which is below the national average of 69%.[3] In addition to the availability and pricing of Internet services, research has demonstrated that the digital divide is closely associated with average household income, educational attainment, and other socio-economic factors.
5	Broadband **price-to-performance ratios in Los Angeles are poor** compared to many international cities	While the price-to-performance ratio of broadband services in Los Angeles may be similar to that of other major U.S. cities, our pricing analysis demonstrates that it is poor when compared to those in many developed nations. For example, Los Angeles residents are paying between 27 and 60 times the price paid for broadband in Japanese cities.

Stakeholder Outreach and Analysis Findings		
#	Finding	Summary
6	**The community supports the development** of a wireless network	The community supports the development of a wireless broadband network. While the intensity of support varied among stakeholder groups, most agreed that a city-sponsored network could add to the quality of life in the City and help achieve a variety of social justice, economic development and civic objectives, including closing the digital divide, strengthening education, improving mobility, enhancing service delivery and fostering civic engagement.

[2] Source: Scarborough Research, April, 2007 Survey of the Los Angeles Designated Market Area (DMA)

[3] Source: Pew Internet & American Life Project, "2007 Home Broadband Adoption."

Stakeholder Outreach and Analysis Findings (cont.)		
#	Finding	Summary
7	**Access to broadband is not enough** to bridge the digital divide	The community feels strongly that providing broadband access is not sufficient to address the digital divide. They see little value and even potential harm in an initiative that does not address other barriers to technology adoption such as computers and support, technology literacy, and culturally-relevant, language appropriate content.
8	The **network must be sustainable**	Stakeholders offered varying thoughts on the appropriate role of the public and private sectors and on the service offerings, pricing and terms that should be available. But they fully understand that a business model must be developed that generates sufficient revenues to enable the network to be paid for, maintained and upgraded.
9	The **City needs to play a strong role**	Stakeholders feel that the City needs to play a strong role in any wireless broadband initiative regardless of the business model selected. They believe the City needs to pull everyone together to craft a clear vision for the project, build support and find a sustainable business model.
10	The **City should set and enforce policies** for level and quality of services provided over the network	Stakeholders feel that pricing and terms need to be carefully crafted to support the ongoing development of the network while also ensuring that no resident or neighborhood receives an inferior level or quality of service. Privacy and security are concerns shared by all stakeholders. The need to protect children from harmful content is a particular concern of educators and parents.

Internal Needs Assessment Findings		
#	Finding	Summary
11	The **City's internal wireless needs are extensive**	The City has a large, diverse and growing need for wireless communications services to support its internal operations. During this study, City departments identified 35 existing and planned wireless applications that could improve the delivery of City services. However, a comprehensive business case has not been developed to estimate the savings, cost avoidance or productivity benefits that a citywide Wi-Fi network could enable.

Regulatory Review and Analysis Findings		
#	Finding	Summary
12	**The City has the authority** to deploy a network	From a regulatory and legal viewpoint, the City has the authority to deploy and operate a citywide Wi-Fi network for municipal and/or commercial use, including the option of providing retail services to the public.

Technology Assessment Findings		
#	Finding	Summary
13	**Municipal Wi-Fi alone cannot meet all identified needs**	It is unlikely that any single technology, including Wi-Fi, will meet all internal and community needs that exist today and in the future.
14	Municipal Wi-Fi **excels at low cost and device ubiquity**, but it is **weak on stability, ubiquitous coverage and mobility**	Municipal Wi-Fi technology has both strengths and weaknesses when compared to existing broadband services. Its strengths are its low cost to deploy and its ubiquity in mobile devices. Its weaknesses are its instability, lack of ubiquitous coverage and mobility. If these strengths and weaknesses are recognized, municipal Wi-Fi can be applied to solve targeted internal and community needs.
15	**Municipal Wi-Fi is not a universal alternative** to existing broadband services	We find that a dense, urban scale municipal Wi-Fi network is unlikely to provide a universally-available, technically viable, low-cost alternative to existing services. Rather than adopt municipal Wi-Fi *instead of* existing services, we find that most consumers will likely use it as a low-cost *complement* for their nomadic Internet access needs.
16	**Other wireless technologies are likely to be deployed** in Los Angeles over the coming years	While municipal Wi-Fi may complement existing and future wireless broadband technologies, the number of consumers who are willing to pay for municipal Wi-Fi, and the amount they are willing to pay, will likely face increased pressure over time as new technologies are deployed.

Technology Assessment Findings (cont.)		
#	Finding	Summary
17	**Ad-hoc Wi-Fi solutions may help to address many challenges** with earlier citywide Wi-Fi deployments	Ad-hoc Wi-Fi solutions from companies like FON[4] and Meraki[5] appear to be gaining consumer acceptance. While these solutions may not be suitable today for all municipal applications, they may help to reduce the cost of access for many consumers. They may also supplement a citywide Wi-Fi network by providing improved indoor coverage.

Asset Inventory Findings		
#	Finding	Summary
18	**The City has the assets needed to deploy** a network	The assets at the City's disposal exceed those of any other major city attempting a similar initiative to-date; both in the quantity and quality of these assets. Being the only top-10 city in the nation to own and operate its electric utility, Los Angeles is better positioned than other major cities that have pursued citywide wireless broadband initiatives. Therefore, from the perspective of asset availability and suitability, the City can pursue virtually any business model options available to it.
19	**The City's fiber assets can be leveraged** to enable a robust network	In addition to its core utility and street lighting assets, the City - through the Department of Transportation, Department of Water and Power and Information Technology Agency has the advantage of owning, or having right to use of, several extensive optical fiber networks, which can be used as a backbone to create a more robust, high-performance wireless network.

[4] See www.fon.com

[5] See www.meraki.com

Business Model Analysis Findings		
#	Finding	Summary
20	A citywide network is **ultimately** required to meet **all internal needs** identified during this study	In order to meet all of the internal needs identified during this study, an integrated, carrier-grade, citywide wireless broadband network will ultimately be required. Municipal Wi-Fi technology can be deployed to meet targeted needs using an incremental deployment strategy (e.g. through the deployment and expansion of hot-spots or hot-zones).
21	**Cost to deploy** citywide is **estimated at $38-46 million**	The capital costs to deploy a citywide Wi-Fi network are estimated to be between $38-46 million. The annual costs to operate and maintain such a network are estimated to be between $11-13 million. These estimates are preliminary. Actual costs may vary based on the buying power of the network owner (public or private), the architecture and vendor solution selected, the actual applicability of City fiber for backhaul, the timing of the procurement and the detailed application requirements of City agencies.
22	**Private-sector investment in a citywide municipal Wi-Fi network is unlikely**	Based on the reaction of incumbent broadband providers, large ISPs and competitive wireless startups to the current municipal Wi-Fi market conditions, it is unlikely that these entities will accept the **full** investment risk to deploy a **citywide** Wi-Fi network. The market is not conducive to enticing these companies to finance and deploy a citywide network, at least not without anchor tenancy commitments that we believe will exceed the volume of Wi-Fi services that the City can reasonably consume. Despite this lack of investor confidence in citywide deployments, there will continue to be viable options to finance targeted Wi-Fi initiatives going forward (e.g. grant-funded projects, public-private pilot expansions, ad-hoc Wi-Fi, etc.)
23	**A paid municipal Wi-Fi alternative** to existing broadband services **is not viable**, and advertisements alone cannot support free access	A business model that positions municipal Wi-Fi as an unbundled, consumer-paid alternative to existing broadband services is unlikely to be viable, whether publicly or privately financed. Prior attempts to provide free access and achieve a return based solely on advertising have not been successful to-date.

Analysis of Findings

This study finds that the Los Angeles community is supportive of a wireless broadband network, that the City has an important role to play, and that there are real, tangible opportunities to leverage municipal Wi-Fi to meet internal and community needs.

From a community viewpoint, we find that a digital divide exists in Los Angeles, but that low-cost or free broadband access will not be enough to bridge this divide. Any effort by the City to bridge the digital divide will have to address other barriers to technology adoption such as computers, support, technology literacy, and culturally-relevant, language appropriate content.

From a technology viewpoint, we find that municipal Wi-Fi alone cannot meet all of the wireless needs identified, but that it has certain strengths (when compared to existing broadband services) that may be exploited to benefit both the City and the community.

From a market viewpoint, we find that municipal Wi-Fi as an unbundled, consumer-paid service is unlikely to provide a universal, viable alternative to existing broadband services. We also find that advertising fees alone are unlikely to generate sufficient revenue to achieve a financial return on such an investment.

From a financial viewpoint, we find that a citywide Wi-Fi network will cost between $38-46 million to build and $11-13 million per year to operate and maintain. We find that the private sector is unlikely to accept this level of financial risk without substantial revenue assurances from the City. We find that the City has many fiscal priorities that will prevent it from accepting this level of financial risk. Finally, we find that the Los Angeles Department of Water and Power (LADWP) may have both a tangible need and adequate means to invest in the deployment of a municipal Wi-Fi network; first in targeted zones and possibly citywide over time.

Conclusions

We conclude that the deployment of a citywide Wi-Fi network is not feasible for Los Angeles at this time, but as outlined below, there are steps the City can take to further its objectives.

The findings from this study and the experiences of similarly-situated cities suggest that achieving the ambitious goals of the LA WiFi initiative will require a long-term, multi-year commitment. At the same time, there are real, immediate needs that exist today - both for City agencies and the community. To balance these short-term needs and long-term goals, we recommend that the City remain committed to a citywide vision, but proceed forward with an incremental investment and deployment strategy.

We recommend the City, when ready, and in partnership with LADWP, adopt a business model for LA WiFi that is initially public-owned and operated. We recommend the City and LADWP leverage their extensive assets to deploy municipal Wi-Fi technology using a phased and targeted deployment strategy. This model should remain flexible to evolve over time, incorporating opportunities to expand the network's coverage area, open it for commercial access, and partner with the private and nonprofit sectors where appropriate.

Recommended Next Steps

The next steps described below are organized into short-term, medium-term and long-term categories, which will aid the City in balancing the need to lay a foundation for future success, while at the same time taking action to produce immediate results.

Plan Element	Impact Horizon	Description
Short-term	0-6 months	Engage in tactical programs to meet immediate needs
Medium-term	6-18 months	Perform planning and program development to justify further investment
Long-term	18+ months	Develop a leadership and governance structure for long-term success

Short-Term Plan: Tactical Program Execution

We recommend the City take the following steps to address immediate needs that were identified during this study:

- **Explore Incumbent Lifeline Services.** The City should engage incumbent broadband providers in discussions to explore whether "lifeline" rates for their existing products can be established and offered based on agreed-upon qualification criteria (e.g. income level, free lunch program participation, etc.) Incumbent providers routinely contribute to community development efforts, and it may be possible to align the City's policy goals with their valid revenue, profit and other business goals.
- **Expand Pilot Programs.** The City and its various agencies have participated in numerous pilot programs over time, some through publicly-owned networks and others in partnership with wireless ISPs. The City should expand these programs to additional neighborhoods based on the needs identified in the community outreach and stakeholder analysis.
- **Launch Ad Hoc Wi-Fi Seed Program.** The City should perform a rapid evaluation of existing ad hoc Wi-Fi solutions (e.g., from companies like FON and Meraki, and in conjunction with non-profit organizations whose mission includes addressing digital inclusion) and execute a program to "seed" these deployments in communities throughout the City.

- **Develop and Release an Industry-wide RFI.** Due to the uncertainty that exists in the municipal Wi-Fi market, we advise the City to solicit input from the private sector on its view of municipal Wi-Fi and how its business incentives and motivations may align with the City's policy goals. The City's RFI should "cast a wider net" than has been commonplace in other municipal Wi-Fi RFIs and RFPs. For example, the RFI should seek input not only from broadband providers, but also from the broader technology ecosystem. This may include content producers, content aggregators and distributors, device manufacturers, traditional media companies such as newspapers and television stations, interactive media companies, internet search companies, advertisers, entertainment companies, Internet telephony providers, e-commerce companies and key industries such as automotive, healthcare, banking and transportation.

Medium-Term Plan – Further Planning and Program Development Efforts

This study identified a wide range of wireless needs across city agencies and the community at large. However, calculating the total investment required to meet these needs, evaluating the benefits that may result from each application, and mapping requirements to a detailed engineering design for the network went beyond the scope of this study.

In addition, many issues related to digital inclusion were explored during the feasibility process, but the creation of a detailed digital inclusion strategy and plan also went beyond the scope of this study.

For these reasons, we recommend that the City engage in the following planning and program development activities. These activities should produce the more detailed requirements, financial estimates, business cases and digital inclusion policies that are required before more substantial investments can be justified.

- **Municipal Wireless Business Case Development.** - The City should engage in an effort to prioritize and evaluate the business cases and returns on investment (ROI) for the top three to five prioritized applications identified in this study across various city agencies. The results of the needs assessment performed during this study may be used as a starting point for developing these business cases.
- **Network Engineering and Finance Study** – The City should commission an engineering and finance study for a citywide Wi-Fi network. This should be performed in partnership with LADWP based on the strength of its assets and its similar internal needs. The study should consider an initial zoned deployment for internal use, with a phased deployment over time to open the network for commercial use.

- **Digital Inclusion Strategy and Plan.** The City should commission the development of a detailed digital inclusion strategy and plan. This should consider the experiences and best practices from case study projects, document the status of the divide in the City, define the key barriers to computer and Internet usage, define practical approaches to addressing these barriers, identify which organizations will be responsible for key function, and outline the costs and benefits for executing the resulting plan.
- **Additional Regulatory and Legal Analysis** – The City should engage in a more detailed effort to understand the legal issues surrounding commercial use of its fiber assets and the "other potentially significant legal issues" identified in the regulatory analysis section of this report. These issues may include level playing field, fair competition, tax and financing, privacy, copyright, support for law enforcement agencies and others.

Long-Term Plan – Establish Leadership and Governance Structures

We recommend the City develop a leadership and governance model that defines three (3) "platforms" or levels of authority and responsibility to ensure the policies and programs that are put in place are sustainable over the long-term, even through new Mayoral administrations and council elections. The platforms include:

- **A Platform for Sustainability.** We recommend the City form a Community ICT (Information and Communications Technology) Executive Committee, Chaired by the General Manager of the Information Technology Agency (ITA), and made up of key City representatives as well as community leaders from education, healthcare, economic development, business, industry, community-based organizations and other relevant stakeholders.

  This committee may be referred to as an advisory board, task force or other designation, but for the purposes of this report, we will refer to it as an Executive Committee. A clear charter for the committee should be developed, which should include serving as an advisor on broadband and technology policy issues and providing guidance on the development and execution of community technology programs.
- **A Platform for Digital Inclusion.** Depending on the outcome of the digital inclusion strategy and planning effort described above, the City should take action to establish a leadership and governance structure to increase computer ownership, Internet penetration rates and computer literacy across the City. The City should seek funding for these efforts through partnerships with community based organizations.

- **A Platform for Innovation.** The City should explore the creation of a worldwide center for municipal broadband research and innovation, in partnership with area universities, businesses and industries. The specific strategy and structure of such a center should be explored in collaboration with these entities, but we propose at this time that the City should maintain substantial input to the research agenda and direction.