City of Oakland
Wireless Broadband Feasibility Study
Volume 2 – Research Companion

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Table of Contents

1. Town Hall Meeting Minutes

One town hall meeting was conducted on September 22, 2008 to gather information about community needs, opinions, ideas and priorities in relation to the Oakland Wireless Broadband Feasibility Study.

Recorder's notes appear in brackets; hash marks (###) indicate inaudible words/terms.

Town Hall Meeting
Hearing Room 1, Oakland City Hall, 1 Frank Ogawa Plaza, Oakland, CA
Monday, September 22, 2008, 5:00 p.m.

Participants:

	Age <40	Male	Female	Age >40	Male	Female	Total
African-American	3	1	3	7	5	2	10
Hispanic				1		1	1
Asian				3	1	2	3
Caucasian	10	10		12	8	4	22
Total	13	11	3	23	14	9	36

Tellus Venture Associates: Steve Blum

COO Staff: Ken Gordon
                      Bob Glaze
                      Ahsan Baig
                      Norm Cheng
                      Julian Ware

Facilitator: Welcome, introductions.

VaShone Huff, Office of the Mayor: The Mayor supports this initiative because it speaks to the quality of life. We recognize the challenge of the digital divide and want to make sure all of the community has the opportunity to benefit from innovations and research and technology. We want community input to make sure that as the City moves forward with strategic plans to ensure the best

opportunities. It also holds promise for improving interoperability for emergencies, fire, police, the community and other stakeholders – to save lives, to work better with constituencies, improve services. We appreciate your input and feedback.

Kitty Kelly Epstein, Office of the Mayor also attended.

Facilitator: Explain how session will be conducted and where input will go.

Blum: Overview of some ways other cities/communities use wireless. Explained "water fountain" model with strategic placement of nodes/towers like water fountains for access by those in the area, as opposed to plumbing each building. Invited further comments via email and/or telephone.

M: A couple of organizations in West Oakland have been trying to start free wireless. Would this absorb that effort and/or compensate those individuals for the work they've done? Also, in a previous session (workshop), I talked about "taxibus" service to improve accessibility by doing away with buses and taxis and combining them into one GPS-dispatched service that would send vans to pick up and deliver people. They wouldn't have to stand and wait for buses at bus stops. "It would be a godsend for a lot of people who have trouble with buses and can't afford taxi fares."

M: The examples of cities with wireless seem to be small cities and edge cities rather than big cities. Also "demonstration" projects don't seem to be the same as implementation (e.g., what happened in Folsom). Is there a sense of the ratio of success to failure of these programs? Are there any circumstances in which private capital (large telecoms or large ISPs) have discussed rolling out WiMax and leasing a portion of the bandwidth to a city? The infrastructure will be getting upgraded over time, and I'm skeptical about our cities' ability to keep up with upgrading infrastructure – the ability to come up with the money. The rate at which technology is progressing forward and our ability to keep up with that in terms of physical upgrades really concerns me. Perhaps tax breaks to the telecom or ISP that makes a portion of the wireless bandwidth available would be more feasible. There have been a lot of disasters in municipal wireless rollouts. I'd suggest that if Oakland goes ahead with this, we lease bandwidth or let the telecoms pay their taxes in bandwidth.

Blum: In terms of paying taxes in bandwidth, that's a tried-and-true model. Cable franchises are an example; they may provide dark fiber – that's one precedent. In terms of the make-versus-buy decision, does the city operate it,

bring in a contractor to install it, lease capacity from an existing system – those are questions we hope the study answers. At this point, nothing is off the table. I don't have exact numbers about successes versus failures, but cities that have used wireless technology for specific infrastructure purposes – e.g., getting video into ambulances, hooking building inspectors up so they can file reports from the field, etc. – probably have had a success rate of 80% or higher. Going in and trying to provide WiFi to everyone, on the other hand, the success rate is probably lower than 20%. We see more success stories from smaller cities because they were first to jump in and take advantage of the low barrier of entry and low cost. There are examples of major city successes; Oklahoma City has lit up with a network much like what I described in Tucson and Milpitas.

Facilitator: Houston is another example of a large city with wireless access

M: Following up on the issue of other cities' successes and failures, my suspicion is that the "failures" are likely political pressures brought to bear by providers, because when cities roll out services, telecoms or ISPs lose revenue streams. How many of the failures do you suppose have been failures of that nature?

Blum: An educated guess: the actual number of cases where the telcos or incumbents "did the system in" is relatively small. The big metro-wide WiFi projects I know ran into two primary problems – economics and physics.

On the economic side, you have to operate the equipment as well as put it up, and that is more expensive than people realize. Equipment vendors will tell you it costs $80,000 to $120,000 per square mile to install a municipal WiFi system. That is the cost to hang the radios on streetlights, but does not include the cost of all the infrastructure needed to make the rest of the system work, the central office, the marketing, the customer equipment. When you add all of those things in, the cost is more like $300,000 per square mile, and the cost of running a system is in the low six-figure range per year per square mile. So it becomes a very expensive proposition to run it. It doesn't work to give the service away and making the money you need on advertising. You can't amass enough advertising. Internet advertisers usually don't look at a very specific geographic location; it's a tough sell.

WiFi initially was designed as an Ethernet substitute and internal cabling. It is great if you don't want to run cables from your living room to your back

bedroom. It wasn't designed to cover a whole city, so the laws of physics brought some of those attempts with WiFi to a shuddering halt. WiMax, on the other hand, is a technology that was designed to be used outdoors, but it is just now coming on the market. The WiMax in Folsom was a demonstration project; you'll start to see more WiMax appear in the next year or so. The economics should also be better with WiMax.

Facilitator: Request that participants table questions so that participants can provide input as to how wireless might be used in Oakland.

F: My name is Jamie, a librarian at the Main Library and an Oakland resident. We have WiFi at three of our libraries, which is pretty abysmal for libraries not to have WiFi. "It's fairly common throughout the country that most libraries have WiFi, so we are a little bit behind the times now." The Main Library does not have it. We get asked for it, easily, five times a week.

In terms of the digital divide, patrons who come in to use equipment at the library don't have computers or printers at home, so providing WiFi in some neighborhoods might not actually provide access.

M: The Port of Oakland has its own WiFi system, and at the airport they've agreed in the last 20 days to make it free. The Port also is installing WiFi at Jack London Square. Several "shopping" areas such as City Center have installed or are installing WiFi. Another is a small coffee shop on Piedmont Avenue; they intended to sell it but when they give out passwords they work longer than intended so hundreds log on and use it as free WiFi. City Hall has it, but the range was intentionally limited so it doesn't work outside of buildings. These are little pockets; small pieces that are part of the puzzle. "The bigger issue is that you've got some people who will be on there 10, 15 hours a day if they have the opportunity. And that's one of the issues that the city's been reluctant to tackle, from what I understand." San Francisco, Seattle, some of the other cities looked at basic service, and those who wanted premium service it would cost more. AT&T has a deal with Starbucks; if you use their card at least once a month, you can get two hours of free WiFi every day at any Starbucks. That has increased WiFi access in Oakland dramatically. Any evening, you can go to the Dimond Library after it closes and you'll find people in the parking lot surfing the net because it's available there. A lot of these hotspots are serving pockets.

The Fire Department wants WiFi to work inside buildings and the Police Department wants it to work outside, and into the hills. From the individual users' point of view, Oakland made a critical mistake with the log-on dial-up

system, because they tried to limit access. It the city decided someone was using it too much, they cut you off and didn't tell you. You just got an error message. That would have to be reconciled. If you install a system, you don't want it to go down for lack of maintenance or a provider goes under. A parallel: The city spent a lot putting fountains in Lake Merritt to provide oxygen in response to federal laws; they're broken and the city can't find the money to replace them.

M: Although I probably can't speak to how this might benefit the City employees or City organizations, as a resident I see an obvious need for WiFi and a benefit to having it. I have a couple of access points in my home on a couple of mesh networks, FON and Meraki. They work in different ways. I actually charge a small fee for that and over the past year made $100. They might even be neighbors who don't have a network set up or someone on the street who wants to use their laptop. I'm not located in a particularly well-traveled area (near Jack London Square, but not a busy street). To get effective coverage over the entire city, that seems to be a great way to actually involve the people as well. With these mesh networks, if you can see anyone else on the network, you can extend the network. "In San Francisco, they claim they've covered pretty much the whole city with a few thousand of these nodes, and they only cost about $50 each." I don't think San Francisco is funding it, but in any event, I think it's a low-cost way to spread the network over the entire city. It's very resilient to failure and involves the people, because some people will have a network they can share with the rest of the city, and others won't just be mooching. It's a good way to get people involved. If I was on a network like that, I'd like to see the city website available, and that it would be able to identify approximately where I'm located in the city and give me some localized information about perhaps public transit in the area, where the closest library or post office is, other local services. I've heard quite a few complaints about the Oakland website; it's not particularly organized. This might be a good way to get more people using our city website and focus some city resources on figuring out how to best make that information available to the community.

M: I'm with the Oakland Unified School District. "Looking at a couple of things that might be beneficial – it would speed up the transfer of information and increase productivity of students, teachers and consultants" who have to bring their laptops, or anyone who works with a laptop and is mobile. It will also allow greater access to websites for teaching. You can do a lot of research on the internet. There could be an incredible amount of cost savings for installation of existing landlines that have to be changed out or new ones

that have to get put in by having this wireless – to avoid the need for new landlines – and also to have a backup for when the landlines go down, which they do, in the school district's old buildings.

M: I'm an artist and professor at the Academy of Art College, we have a lot of problems with the lines there. It's an old building. People get frustrated; it usually happens right in the middle of a communication. In accessing information, it would be better to have more information and less trivia.

F: Will you be bringing specific groups in to discuss these issues? Health care really has some needs for this, and probably all the healthcare providers would come together. Emergency care services. (She's a retiree.)

M: "I have a concern that commercial implementation of WiMax or a 4G system by a major corporation could easily render something that we put up ourselves obsolete." I'm also curious as to whether anyone knows if any of the major telcos are planning such a rollout. Google this year handed out $4 billion to a company to develop lower satellite-based internet that ultimately is supposed to blanket the globe. This is a little speculative, but when a company with a reputation as good as Google's throws $4 billion at a project, I'm a little less skeptical. Is somebody going to take care of the infrastructure for us?

M: I'm Technology Director for the School District in East Palo Alto, also involved in the WiFi project there, and also an Oakland resident. The question about whether someone else will build the infrastructure struck a chord with me, because "the bottom line is even though infrastructures are going to built, infrastructures in poorer communities and where most of the disenfranchised live are probably going to be left out for some time, if not almost forever. It's therefore incumbent on the City and us residents to come up with a solution." What we did in East Palo Alto was through a partnership between a nonprofit and school district. We had a collaboration called the East Palo Alto Digital Village, where we were able to find resources and build a network. The idea about the Meraki network for scale is better and in the long run might be more sustainable. There was a conference on it in March, where someone talked about how much of that is done in Europe. That's very interesting, long term, in terms of sustainability. I think even if Google builds networks, and they're acquiring some of these WiFi networks now actually, and they're very interested in advertising. That doesn't mean disenfranchised communities are going to see that benefit, though.

F: I became an art professor by the skin of my teeth. I'm interested in improving the educational services for kids with dyslexia. I have it to the point that I don't read at all. As a person who has struggled to sustain my life, this is something people should explore. I would like to see some research done, and see how we can improve our education and our lives.

M: In my spare time, I provide small businesses with IT support. Most of them use DSL and every one experiences dropouts of that service. If they had a widely available backup, it would be invaluable to them. They lose money when their service is down, and as we all know, AT&T and others can be frustrating in their response times. I think small businesses probably would be willing to pay, even a premium over the DSL, to have access to something that's just there. If you were looking for some kind of revenue, these people might pay $10 or something to use a city wireless service as a backup.

M: I'm a teacher in Hayward but I live in Oakland. Just thinking about how this service would help me out – my parents live in East Oakland. If there was a WiFi network I wouldn't have to go to Piedmont or somewhere else for wireless. It's my leisure time, but I still have my laptop. I wouldn't have to come to a coffee shop downtown if services were available in more impoverished areas. I could also support some of the businesses and restaurants and coffee shops in those areas, places that might not otherwise have the wireless access. As a teacher, I would probably get a lot more work done if I didn't have to stick inside my house, because I do spend a lot of time on my computer.

F: With the staffing cuts going on citywide, any kind of support would be helpful. Also, relative to a lot of people not having laptops, Jean Quan is looking at the Dimond Branch Library being able to check out laptops, which would help those who don't have the hardware at home. Also we have a lot of demand at the library for computer tutorials. With the staff cuts, we've had to cut back on teaching people how to use computers. There are a lot of people who don't know how to use them. They don't know how to log on. So it would be good to have some sort of support for helping people learn how to deal with it.

M: Several merchants I've talked to have stopped using WiFi or taken out their routers for security reasons. Some of the franchise companies, such as 7-11, are actually requiring their franchisees to use dedicated landlines instead of WiFi. Dell now has a program where they have a sturdy, high-quality laptop

for about $325 each when you buy six or more. That would make it more affordable for libraries.

When Oakland negotiated its last cable franchise, which took several years, there was a deal on the table that as part of the franchise agreement, Comcast would donate up to $17 million worth of support, including a number of nodes/sites at recreation centers, libraries and so forth. Then politics entered, and I think a union issue. The City Council sided with the unions, and Comcast played hardball, and took the deal off the table. So the final deal is not quite as good.

My point is that when you have a dedicated server, you really need a router to get people on there. So if every library, recreation center and school in Oakland was equipped with dedicated service, it would be a much cheaper investment – I don't know how many could be on it at any given point, but that's restricted by the _____. Corporations are now finding that through AT&T Wireless and Verizon, they can get package deals that include wireless as part of their contract. In those cases, several hundred employees have access anywhere they go pretty much. That would reduce some of the need for infrastructure. I raise that in the context of just pointing out that because there are all these different independent entities that need it, you'll end up with a core group on the lower end of the economic scale, generally retirees, students. Not as "desirable" demographically to advertisers. So if there's an advertising revenue function anticipated, as has happened with retail in Oakland, that probably is not going to pan out. So that ought to be part of the discussion.

M: I'm Tom Conrad, CTO at Pandora, an internet radio company [tomconrad@gmail.com]. We spend a lot of time working on wireless implementations. Obviously we buy lots of bandwidth and wired internet too. I would be careful not to underestimate the cost associated with broad-scale wireless access. Even if you work with an existing wireless vendor (Verizon, AT&T, Sprint), the way they internally account for the billions of dollars they spend to acquire their dedicated spectrum – that will be true in WiMax as well, it's starting to look as if WiMax will almost entirely be licensed spectrum – it's just an incredibly expensive service to run. This makes me think that pragmatically, the drinking fountain model, where you "focus first on services that can piggyback on existing wired connections at schools, rec centers, public buildings as a nexus for people to come together that might otherwise have difficulty accessing the Internet. It might be pragmatic and a way to be progressive and get services out to the community

but not have to get so embroiled in what may be something that's just completely upside down economically."

M: I'm thinking about emergency stuff. If there is some way that this network could last longer than our other _____ infrastructures, so there's a way that people could still turn on their laptop and get some city-specific or Bay Area-specific information about what's going on, be it earthquake or fire. And have that tapped into city resources to keep that information out there. Have a "Radio Oakland," so we can all rely on something, for at least a few days. I think "most of these little transmitters, access points, if they're on the street they can be solar-powered and there's really no reason why they couldn't just keep on going indefinitely."

M: The city already has an emergency radio system if you have the receiver capability. I think it's 530 on the dial, way down there. From the quality-of-life point of view, there's information flow. This is one of the challenges of Oakland.net as well the delivery of other city services, many departments, agencies and divisions create thousands of glossy brochures and produce information. But the distribution system does not exist. In the search engine, you can type in keywords like "WiFi" and don't find two-thirds of what's on there because there may be a variation in how it's hyphenated or whatever. Even with the City Council meetings and some of the decisions made and policies established – from plastic bags to the drifting smoke ban to the anti-pigeon-feeding ordinance – dozens of people attempt in frustration to find information on those things on line so it necessitates a trip to City Hall. The city spent money at least twice in the last seven years – six-figure sums – on improving Oakland.net, but it's all in design and not the search engine and such functions that would enable better navigation.

Facilitator: Thank you.

Town Hall Meeting Flip Chart Notes

Service Ideas and Comments
Provide City information - get more people to use the City web site Oakland Unified School District (OUSD) - speed up transfer of information - great for people who are mobile - cost savings for change out of land lines as well as new land lines - land lines go down a lot - Art professor stated that he/school is in an old building and the lines go down a lot - Also concerned that even if the infrastructure is built, lower economic levels will be left out
One person was from East Palo Alto and worked on the Digital Village there - Merike scales better - May be more sustainable - This approach is also used in Europe - Google is acquiring WiFi networks
Education community - Not very much information on service about helping children who suffer from dyslexia - Something to be explored - Research had be done - Perhaps the research can be access via the wireless service to tell/show how to improve lives - DSL tech/customer support is also poor - Could the wireless network be used as a back up even?
WiFi Network in East Oakland - Have to go to Piedmont to get WiFi today - More services needed in impoverished areas - More people will use it if there - As a teacher would get more work done
Citywide Staffing Cuts - Any Dept. of IT support would help - Funds to check out laptops - Computer tutorials for residents
Security Issues - Using dedicated land lines

Service Ideas and Comments
Dell - $325 laptops can be purchased (in bulk) - In an earlier city negotiation (with Comcast), $17M worth of support, nodes, sites were supposed to be available; deal was renegotiated and result was not so good - When have dedicated service, router(s) will be needed - What will be the capacity (e.g,, the core user group may be lower economic areas and retirees) - Corporations today get packaged deals where wireless is included which would reduce the demand on the infrastructure
Be careful not to underestimate costs even if work with large ISP/telecomm provider - Incredibly expensive to run - Utilize recreation centers, schools, etc., as a way to get services out into the community
Emergency - Some way citizens can use the wireless network to get info about what is going on in regards to an emergency - There is 'Radio Oakland' today for this (530am or 580am) - Could possibly be solar-powered
Information is created but distribution system doesn't exist
Some type of city search engine function to help find what people are looking for

2. Focus Group Minutes

Seven focus groups (one per council district) were conducted over nine days in September 2008 to gather information about community needs, opinions, ideas and priorities in relation to the Oakland Wireless Broadband Feasibility Study.

Recorder's notes appear in brackets; hash marks (###) indicate inaudible information.

2.1. Focus Group 1 – District 6

Eastmont Substation, 2651 – 73rd Avenue, Oakland, CA
Wednesday, September 17, 2008, 6:00 p.m.

Tellus Venture Associates: Steve Blum
City of Oakland Project Manager: Tino Granados

Welcome: Desley Brooks, Council Member

Participants:

	Age <40	Male	Female	Age >40	Male	Female	Total
African-American	5	2	3	5	1	4	10
Hispanic	1	1					1
Asian	1		1				1
Caucasian	1	1		1	1		2
Total	8	4	4	6	2	4	14

Tino: Welcome.

Desley: Thank you and welcome. Community input is important. We want this to be a thoughtful process to come up with a plan that will be useful to the people.

Facilitator: Explain role, gathering input and ideas to help the City determine wireless technology needs in relation to City services. Wants ideas – pros, cons, neutral – about wireless technology services and their use in Oakland. Input is confidential. Among possible applications of wireless infrastructure: economic development (by helping businesses communicate with each other and health care providers communicate with hospitals, libraries, convention centers); public safety (law enforcement, fire services, emergency services from oil spills to earthquakes – getting information quickly to people in the

field); health care (ambulance to hospital emergency room, clinics to doctors, etc.); education (community homework assistance, online learning); environmental cleanup; job placement.

Show-of-hands indicates most participants use cell phones regularly and have computers at home, work and school; about two-thirds also do texting; several use smart phones, iPhones, Blackberry devices.

If people were to tell someone from outside – in another state or another country – what Oakland is like, what would they say?

F: Ethnic diversity.

F: Organic foods.

F: Diversity.

F: Having grown up in San Francisco, "I always saw Oakland as representing comfort, peace."

F: San Francisco is so busy and chaotic, a rat race.

F: In Maxwell Park neighborhood, there's a sense of serenity and it's just a really nice place to live. There are problems, and "sometimes at night you hear gunfire in the distance…

F: … But you can hear crickets, too."

F: You have raccoons walking up and down your driveway at night.

F: And possums.

F: I was raised in Oakland, and live in Benicia now. When I lived in Oakland, it was very neighborly. I knew my neighbors. There was "a sense of family and more of a sense of community." In the suburbs, I couldn't tell you who lives on the left of me or the right of me.

F: We had an event, Maxwell Day in the Park. We just had fun.

###:   Great weather. Compared not only to San Francisco but many other places.

F: You're going to get a reprieve, no matter what the temperature is.

F: Oakland has heart. Whether a situation is good or bad, the combination of community and working toward change, trying to improve their situation and common goals. I would say "heart."

F: People in Oakland recognize that there are problems, and the only way to really address them is to come together and try to come up with some type of common goals.

F: Even if it's just the two of us. At least we're having a conversation about that.

Facilitator: You've got to have the heart to stick it out, because it's not always the best situation.

F: "Where else can you find a city where the actual people went and found a mayor themselves?"

Facilitator: Getting into the core of the discussion, how might wireless be useful in Oakland?

M: I pay all my bills online.

F: Save on stamps.

F: Are we just talking about things that we can do online?

Facilitator: No. With wireless. Where would the mobility or the access to wireless be an advantage?

F: In our school system. Bishop O'Dowd (although not a public school) students all carry laptops instead of books. They're going totally wireless, with the curriculum and everything. It's mandatory. It would be fantastic to be able to apply that to the Oakland public schools.

M: And students wouldn't have to carry all those heavy textbooks.

F: With the access, you could get the latest information that you need.

F: And you'd avoid the problem of not having new textbooks. You'd only need one.

F: You'd have access to your curriculum.

F: And there would be uniformity across the board, because everyone would have access to the same information.

F: And that would be really helpful for parents as well. "I would love to be able to go online and see what my son's homework assignments are."

F: Some schools do that.

F: But not consistently.

F: What if you could see inside your child's classroom?

F: My son wouldn't like that at all; I don't think I'd like it either.

M: Another means of communications, post-disaster, would be helpful. No guarantee it would work, but it's at least another way that we might have to get messages in and out of a struck area if the landlines were out.

F: The ability to send and receive emails when you aren't at your desk.

F: There are wireless services on AC Transit. And in some restaurants.

F: I ride public transportation, and I see a lot of students and other people using their computers. I think it's a good idea. They're able to do homework, or work-related stuff.

F: The airport is putting up wireless also, so the surrounding area will be able to use it.

Facilitator: What about City services? Health services?

M: Doctor's appointments.

F: Obtaining county records (birth, marriage, death certificates or other vital records). I'd rather do that online than wait at the records office.

M: Renew your driver's license.

Facilitator: How might you use wireless in terms of recreation centers and youth services?

F: Our database, with so many students, it would be easier to be able to access it from anywhere. The database is so full that sometimes it's so hard to find

stuff, including old documents. It would be great to have a way to set that up that would be easier to access.

F: It's online databases, and we manually enter each individual. If you're out and about, it would be good to be able to access that information or pull a report. To be able to do that "on the go."

M: "We're talking about going to the next level, wireless devices, but an underlying problem is that we have yet to bridge the digital divide." This focus group (all with computers) is not representative in terms of the hardware and hard-wired connections. I am also skeptical about remotely accessing City services when the underlying problems are with the services – remote access won't help at all if I can't find someone on the other end, or they're inept. I think that's the more fundamental problem. We can already access a lot of City services online – but it's like my sidewalk, every day buckling and going down. I've been after them for six months to respond to me online. I keep filing these reports. Doing that with wireless technology won't help, because no one on the other end is responding. "Wireless is just a medium to access the service; if they aren't providing good service, the means of communication doesn't matter."

Facilitator: What hurdles are associated with the hardware issue?

M: They declared that the digital divide was over, and all the programs that were developed to give young people computers stopped several years ago. This was partly when the dot-coms went down. "Our kids need computers at kindergarten and all the way through. We're not making much progress at all on that" – whether it's a laptop, a Blackberry or whatever. "We're just not doing much to get people the equipment they need."

F: I think you're right. Access is not consistent in all the schools.

F: There is a program in West Oakland that provides free computers, and the Port of Oakland is getting ready to give them 600 computers. It's open to any child in Oakland who's in school. That's a free computer with all the software, maintenance or replacement if it breaks down. But people don't know these agencies exist. "We need a central place to go and find out what's happening and what's available." If someone's giving away a million dollars on the corner and you don't know about it, you wouldn't go. If there were more central places to access these things, like a clearinghouse – "the place to go to find out what's happening." You could do a city search for free

computers, and up comes OTX West. If you don't have a computer of your own, you could go to the library.

M: There's also an educational component. It's not so much a problem with young people who may know how to use computers, but "the older you get, the more likely it is that even if you had money to go out and buy one, you wouldn't know what to do with it."

Facilitator: Assigning priorities to potential wireless uses (numbers indicate participants' "votes" for first and/or second priorities).

F: Equip school system, overcome economic hurdles.

F: Address economic and educational issues.

F: Ability to have access and hardware.

F: Post-disaster services and hardware.

F: Educational and hardware.

F: Educational, hardware, to help in the delivery of social services – aid, general assistance, etc.

F: Equip schools, hardware.

M: Educational, hardware.

M: Educational, hardware.

M: Hardware and disaster services.

M: Educational, hardware.

M: Entertainment – YouTube, MySpace. And hardware.

Facilitator: There's an "edutainment" component. A fun way to learn.

M: Distractions.

F: School system. If you had wireless schools – sometimes the internet is down, computers are broken. If students had their own laptops, they could bypass those problems.

M: Disaster, educational.

F: Entertainment.

Priority summary:

	Bill paying
4	Equip all schools
4	Post-disaster
	Universal email
	Public transit
	Medical appointments
	Vital records
	DMV
	Student database
	Digital divide
	Fix city services
	Clearinghouse
10	Economic/educational hurdles to equipment/hardware access
1	Deliver social services
2	Entertainment

F: Is this the idea that it's City-focused? Or is it a step to have enough wireless towers for universal access?

Facilitator: The focus is to support City services but potentially with enough bandwidth to provide other services that the community considers helpful. The City would evaluate whether that makes sense and consider how to make it affordable and how to pay for it. We will present the results of these focus groups in all the districts to the City and make some recommendations.

F: We haven't talked about the business aspect. "This might be a way for businesses to advertise themselves, and in turn help to support it."

Facilitator: So maybe a revenue component.

F: How would security matters be regulated? How about upkeep on laptops, lost equipment? Also the security of the internet; information can leak.

M: That leaks into the educational aspect.

M: All of our information is public record anyway.

F: Anything that isn't considered public record might be problematic. For
                example, business information. My company does a lot of government
                contracts, and security would be very important for us.

F: That's also where an educational component comes in, knowing that you can
                protect yourself with firewalls and certain other things. Just because you
                have a computer, it doesn't mean access to everything. You could limit
                whatever went on the public space.

Facilitator: We did not put security on the list, but it's an issue to note.

M: "There's an illusion of security." All of our personal information is out there,
                and we have no control over it. If you're willing to spend enough money, I
                can get any information on you that I want. Bottom line.

M: There's a free one.

F: Just go to ZABA. $29.99.

F: May I disagree with the hardware thing? If people want it, they'll find a way
                to get it.

F: On the hardware – a lot of people don't have the financial means, including
                me and my siblings who are still in school. "The majority does not have that
                luxury."

F: Equipment has to be accessible and affordable.

Facilitator: Do a lot of students use computers at Kinko's?

F: I think it's more for printing.

F: You get a lot of students using computers at the library, too, with their thumb
                drives or whatever. But they also come with their laptops. But we don't
                really have wireless.

F: Shhh.

F: Well, we don't. It's not in the library. We have a bleed-in from next door.
                We're stealing it; we didn't mean to. It's been there. There is a need. More
                and more, they come in with their laptops. But mostly they come in and

make copies. They already have it on the computer from home, but they can't print.

F: Some of the rec centers I've volunteered at still have to pay for internet service. They can get the computers, but to keep up with the internet, that's where they fall down. If you have wireless, they wouldn't have that bill every month. Everybody could come in and get on the internet, plus anyone surrounding would be able to access from whatever tower is close. So it just spreads it out a little bit more.

F: Who are we targeting with this wireless? Students? Businesses?

Facilitator: We are looking for the community – we're not targeting anyone. It's really for the City and how the City will use it. So it's open. It's not a particular target that we're looking at.

M: I am concerned about a couple of things. This all leads to the letting of a contract to somebody, who in exchange for getting a franchise to make the City wireless will have to provide some level of service. Other cities that came out of the gate early with the business model behind this are struggling; that concerns me a little. The deal was that they would guarantee a certain basic service to give access to everyone – but charge for the things you really want. That's how they would make their money. If we're going to give this franchise to some provider – just like cable and other things – you should be able to get a community benefits package. We'd want some hardware and certain things for kids. I know the economic environment has changed some, but that's really what's at stake. Who's going to get this franchise, and what will the City and the people in the community get in exchange? When you talk about education, they should at least give young people training. There should be resources for that. We're talking about the hardware needs – how are they going to help us deal with that? It's the business deal; we need to be careful to make sure we get a good deal. Somebody's going to do it. It's trying to make them some money, but give us something too, in terms of what the community needs. I'm through. I'm sorry.

F: Don't be sorry, and don't be through.

F: That's just looking towards the future, because you know that's what's going to happen.

F: We need it. That's the point.

F: The deal at the airport was for the provider to get exclusivity, they do it for free, but we are about to add it. That's where they're making their money. They can't do it for free; they have to get money one way or the other. So you have a baseline. But that's true in everything. When you go to the doctor, the more you pay the better the service. That's the American Way. We'll never get over that.

M: It's just understanding the deal.

F: And start out putting out what we want. "We don't want you to tell us what you're going to give us. This is what we want – the bottom line. Whoever can give us this will be the one that we look at."

M: "Jobs. What kind of commitment are they going to make for hiring folks from Oakland as a part of the deal?" We're talking about folks who live in the flatlands and need the jobs. Most of the businesses that come here don't hire Oakland folks. They bring their folks with them.

Facilitator: Thank you.

Focus Group 1 Flip Chart Notes

Priority Votes	Service Ideas
	City bills paid online
xxx	School system Bishop O'Dowd (private school) students have laptops Wireless to support laptops With wireless can do away with textbooks which are outdated Can access the curriculum Wireless allows uniformity (across public and private schools) Parents can check on homework
xxx	Post disaster - Get messages
	Emails - Get right away, wherever you are
	AC Transit (bus system) wireless works well - Can do work-related things or homework while riding the bus
	Oakland Airport is implementing wireless - Surrounding area could benefit too
	Dr. appointments

Priority Votes	Service Ideas
	Get certificates & vital records - no waiting
	Renew DMV
	Database for students (at Youth Uprising) Full access Can access from anywhere (not just 1 location) Do it on the go
xxxxx xxxxx	Hardware People don't have access to hardware If people want the hardware they will get it A lot of people are not financially able Funds are not available Make it accessible
	Remote access to City services - Won't work however if services are bad/poor
	Wireless – Medium to access service Need good service (e.g., signal)
	Digital Divide was announced as "over" and the funds to provide hardware for those who are not able to afford have gone away There is not consistent access to hardware Option: free computers from West Oakland (OTXWest)
	Is there a central place/clearinghouse where people can learn about services like OTXWest If not there should be Some type of "city search" would be good
	At Kinko's most students/ young people use to print; they do not use the computers there - They can go to the Oakland Public Library branches and use the computers for free

Priority Votes	Service Ideas
	Contractor for the City Other cities are struggling with the business models Contractor will charge for the service Community should get together to negotiate benefits out of the contractor/vendor What will the "franchise" (i.e., contractor/vendor) ask for? City should get training, hardware as a part of the deal City should be sure to get a good deal We do need wireless access but it is important to understand the deal Should also hire people from Oakland
x	Hurdle – Economic
xxxxx x	Hurdle – Educational (i.e., knowing how to use the technology)
x	Wireless could be used to help Social Services, particularly in the field
xx	Entertainment/Edutainment
	Business Advertising and associated revenue
	Security Upkeep on laptops – who will pay for and support that? Security of the network With the right tools network can be secure Security on the Internet is an "illusion"
	Recreation Centers - Wireless will help the rec centers keep their Internet bills down

2.2. Focus Group 2 – District 5

Fruitvale/San Antonio Senior Center, 3301 E. 12th Street, Oakland, CA
Thursday, September 18, 2008, 5:00 p.m.

Tellus Venture Associates:　　　Steve Blum
City of Oakland Project Manager:　Tino Granados

Participants:

	Age <40	Male	Female	Age >40	Male	Female	Total
African-American				1		1	1
Latin American	1	1		2		2	3
Asian American							
Caucasian				1		1	1
Total	1	1		4	1	4	5

Facilitator:　　Welcome, introduction.

Show-of-hands indicates most participants use cell phones regularly and have computers at home, work and school, etc.:

Cell phones:　4 of 5

Smart phone, Blackberry:　1 of 5

Texting:　　1 of 5

PC at home:　4 of 5

PC at work/school:　5 of 5

If people were to tell someone from outside – in another state or another country – what Oakland is like, what would they say?

F:　　　　Urban. I'm connected to several educational groups here and elsewhere in the US, and in most places people think they can solve all educational problems, but if you ask if they have experience in an urban environment, they get hot. Here, skill levels are a real issue – we have 9-year-olds capable of middle school and high school work and other 9-year-olds who can't read yet. My daughter's best friend next door is African-American. She's Brazilian. The kids across the street are adopted by a single mom. We have two-mom families, two-dad families in our neighborhood, single parents,

households with no kids. It's an environment in which there isn't a homogenous group of speakers, thinkers, educators, students. This diversity is another urban feature. "There is nothing homogenous about Oakland that could be considered homogenous at all."

F: It's culturally and artistically diverse also.

F: I came from a quiet, white area and moved here just three months ago. This has been a little bit of an adjustment. But I find that "it's like you're being part of something that is going to become great." There really are a lot of people willing to work and make the city better.

M: There's a lot of "responding." Every time something happens, people respond in their own different ways. For example, if there is a drive-by shooting, the people shot or their friends find out who it was and retaliate. It perpetuates the violence.

F: I forgot to say it's also scary.

F: It's a diamond in the rough – I continually see it evolving, and it's a process of two steps forward and one step back sometimes. "But there is a lot of community involvement here in the City of Oakland, a lot of people willing to get involved."

Facilitator: How might wireless technology be useful for City services in Oakland?

F: I work for the Unity Council, and we offer so many services but people don't know about them. Being able to advertise these services to the community at large via the web would be good.

F: We have WiFi in our house in Glenview, right next to the German-American School of the East Bay, which is a Saturday school. We leave it open so they can access it on the weekends and don't have to pay for their own. This school would not have wireless if they didn't have access to ours. So I see by having a citywide program, schools such as these language schools would be affordable for everyone. Even now, tuition is less than $500 a year, and those who can't pay don't have to.

F: Is this going to be paid for by the City? She's providing access, but she's paying for it. How can it be accessible for the general population, the schools, people who don't have computers?

F: Right now, living in Oakland, I'm paying the highest property taxes of just about anywhere in Northern California. I have the highest crime rate, the school district has been taken over by the State. Our bond system in Oakland is leaving my grandchildren not yet born in debt. "I would not be willing to pay unless we pay as we go on this." If we're going to do it, it's not going to be by bonds. We're not going to finance another bond. We're going to pay for it outright – a special assessment of $2 or $15 a household, whatever it is. But we're not going to saddle my grandchildren with debt. Otherwise, I'll just get my neighbors near the school to cough up their wireless money.

F: Regarding tracking devices on buses so riders know where they are or if they're going to be late or something, you don't really need them because you can download 5-1-1, which is a City service. However, there is a user issue. If you're talking about the haves and the have-nots. The majority of the folks – or three-fourths of the population, are the have-nots who aren't up to speed or even have the capacity to even use the services.

F: Going back to the criminal element and ratcheting it up, right now if I'm calling the Oakland Police Department because I just heard gunshots, they're really responsive in our neighborhood and get there within 7 to 12 minutes. But that time for me to translate to an operator, and the operator to ask all the questions, to then relay it to the police officers. If there were a code – say #1 for gunshots – and I had a WiFi connection, they could tell where that is, it would be really helpful. Real-time information. If that WiFi technology is up-to-date, it wouldn't matter whether your cell phone has other services – you can still call 9-1-1. Any device would connect and should do the same thing. That goes back to the haves and have-nots. If they have a throwaway phone from a neighbor who no longer needed it, you'd have the same capability – to be safe.

F: I think there's language capacity issues. I run this senior center, so I deal with the most multi-ethnic, multi-lingual population, mostly immigrants, in the City – all in their 70s, 80s and 90s. From the flatlands – the heartland – below Highway 580.

F: That's how our City is divided – depending on which side of 580 you live on. "WiFi needs to be equitable; below 580 needs it just as badly as above 580."

F: From my general experience, most of the heartland can't afford a cell phone or don't know how to use one. There are language issues also.

F: If they had a button where they could just press #1 if they hear gunshots or #2 if there's a medical emergency, you could train them to do that.

F: It would all depend on the implementation of whatever it is that they have planned.

Facilitator: In a perfect world, how would you address the language component?

F: Information on this focus group would have gone out in multi-lingual format. There would have been interpreters here.

F: My seniors don't even know what WiFi is; a lot of immigrant populations don't know what WiFi is.

F: These focus groups have done a really good job of spreading the word throughout the City, but they don't target those who don't speak English. We have families even in the hill schools whose children do the translation in parent-teacher meetings. There are probably eight different languages in our school, and we don't even have enough minorities to register minorities.

Facilitator: Are there services that wireless could support in the context of the language issue?

F: We run computer classes here at the senior center. All the nonprofits, the churches, places where our populations congregate… offer classes.

F: If you're going to "sell" this to Oakland, one thing that needs to be said is that it needs to be accessible. For example, we use Dimond Library, which has four computers. "Those computers are booked from morning until night, four days in advance, in half-hour increments." "If my time is almost up and I just finally found the information I need for my report, I'm doomed." I don't know how you're going to do WiFi technology and increase the ability to use when the people who are using those library computers don't care if they are wired or wireless. They just want a computer accessible for their use.

F: Maybe we need one of those buy-one-get-one (BOGO) programs. If you wanted to study a particular group as an example, the senior center would be a good one or else a school class.

F: And school doesn't necessarily mean K-12 and the junior colleges. We have language schools, Muslim schools, Christian schools, Jewish schools.

	Saturday schools to learn how to speak Arabic and Mandarin. These should also be included if you want the immigrant populations to be included.
M:	It's hard to even use cell phones here, because the signal strength is so inconsistent. It's not something you can rely on. Also in school, when it's really hot, we can't get WiFi outside if you want to go out and cool off. There's no signal outside.
F:	Do they have WiFi in San Francisco?
Facilitator:	I don't know. Does San Francisco have citywide WiFi? Why is that important to Oakland?
F:	No. they dropped the plan.
F:	"We can actually be more progressive than San Francisco."
F:	In terms of cost, they found out how much it cost.
F:	I don't know what agreements Oakland has with phone providers here, but if we had WiFi citywide, I'd save myself $30 a month, which includes city, county, state and federal taxes or fees. Some of that money goes to support this senior center. If I don't pay those taxes anymore, how would the City get that lost revenue? How much would it be? How would it affect agreements with the phone carriers? If people don't have to pay for Comcast internet, what would happen with the City's contract with Comcast? We allow monopolies here because there's a certain amount of benefit that accrues to the company and they hold certain prices at certain levels. If they lose a good portion of their revenue, how is the contract affected? You don't get something for nothing. My concern is that as we pay for this WiFi, we also will pay for additional services beyond WiFi, because we'll have to make up the difference somehow. Maybe they would just jack up their cable fees to make it up. But if they don't recover the difference somewhere, they won't be willing to serve Oakland because it wouldn't be profitable enough.
M:	How will it be set up so that WiFi is available to all households? How will you keep the signal strong?
F:	If it's in my house, the German school has access, but the signal doesn't go as far as two blocks away.
M:	One time my Mom and I got lost in the mountains. We couldn't get a signal for the cell phone and we were lost all day.

F: They should figure out how everyone can get equally fast service and signal strength.

F: Portland (Oregon) had pods in various locations. People could offer to be "pod houses."

F: Working with the seniors in the community, having that would be huge for those who are isolated and shut in. There's something called the Senior Center Without Walls; they use telephone lines now throughout the county to play bingo, for instance. Up to 30 people might be on the telephone doing bingo. That would be great to have the capacity to do that online. That would be for seniors and the disabled.

F: The ability to access and connect. Free and fast and equal.

F: And having the hardware. We always have to get back to the hardware.

F: Buying the hardware is what kills you.

Facilitator: If it's free to the community, how might the City pay for it? What would you tolerate?

F: A property tax supplement.

F: One time.

F: No, an annual thing. But "I would never, ever, ever approve a bond measure and my neighborhood feels exactly the same."

F: An extra $15 or $20 in sales tax for those who are getting the software. That makes sense. People without the software shouldn't necessarily have to pay for the technology.

F: A luxury tax.

F: Pretty soon the taxes will be 10% here.

F: Absolutely no parcel tax.

Facilitator: If we had wireless technology, what would be your highest priority?

F: Equity for all.

F: Not just free access, but having the tools – the hardware and the software –
                to even endeavor taking advantage of the access.

F: That's what I mean by equity for all. He gets the same thing I get on the
                other side of the freeway. We all get the same.

F: I would want the service providers to be part of the Oakland community.
                Don't hire somebody from Texas to come here. Use local businesses and
                local services. Local everything. Keep the money in the community.

F: Exactly.

F: I would also add the multi-lingual issue.

M: If this technology comes into the schools, what would happen to the systems
                they use now? Some of them have filters to block certain access.

F: That's a great idea.

F: Suppose I'm banking online and someone next door is surfing porn or trying
                to hijack my bank account. How is individual security provided when there
                are multiple users?

F: Security issues will come up a lot, but I work in a credit union. There's
                multi-factor authentication that we do through WiFi all the time. We know
                that it's secure. If it's going to be in the schools, can nine-year-olds pull up
                anything they want?

M: That's the blocking I was talking about. Another issue is physical security –
                how do you safeguard the equipment against vandalism and theft and so on?

Facilitator: Thank you.

Focus Group 2 Flip Chart Notes

Priority Votes	Service Ideas
	Services hard to get to general public - Get to community at large
	Glenview German American school doesn't have wireless Neighbor leaves her Wifi open so they can access Wireless supported by City could make affordable for everyone (in the City)

Priority Votes	Service Ideas
	How is it equitably accessible for general population?
	What about those who don't have a computer?
	How do (all) pay?
	Oakland pays the highest property tax but has highest crime, public schools have been taken over by the State
	Don't want to leave children in debt
	Don't want to use bond/ pay out right – "Pay as we go"
	Otherwise will just get neighbors to do something
	Needs to be accessible
	Computers are booked in advance at Dimond library
	Increase the ability to use the wireless network
	Have a computer accessible
	Create a 'BOGO' ('buy one get one') program for computers
	Use computers in the Senior Centers
	Use computers in school/class
	- Not just academic classes but language and religion such as Muslim, to get the immigrant population involved
	Language capacity
	Multi ethnic diversity above and below 580 (freeway)
	Cell phone is unaffordable in some areas; some don't have cell phones
	In some areas they won't know how to use Internet Need on both sides of the 580
	Get into senior centers and non-profits, where populations converge
	Training
	Interpreters/multilingual support
	70-90 year olds don't know what Wifi is
	Target those who don't speak English (children translate for parents)
	Wireless would be huge for the isolated and disabled community
	- "Senior Center without walls"
	If wireless where to happen right now, may not fully capitalize
	- Need proper programs; may not make a huge difference
	Wireless could be useful for locating busses and organizing "safe rides"
	Internet use won't be different
	Users = haves and have nots
	- Have nots are not up to speed

Priority Votes	Service Ideas
	Criminal Element OPD is responsive in one person's neighborhood (respond in 7 – 12 minutes) If there is a code to type in and real time info to law enforcement, could be faster and save time If were up-to-date, could still use 911 (on any cell phone or device) to communicate to law enforcement
	In some areas of Oakland, can barely get a signal Wireless network should be something people can rely on How will we keep the signal strong throughout Oakland? Strength & speed of bandwidth; what would that look like in terms of cost? And how would the signal be distributed so that pricing is fair to everyone? Must have equally fast service for everyone Oregon has "pods"
	Wireless Internet outside of school building but on school grounds (while outside building) would be good, particularly when it is hot inside the schools during the Summer

	Security
	Will/can system be hacked into
	What is the backup plan if a tower goes down or something happens
	Physical security of "pod" box (pods were used in Portland, OR)
	    More progressive in San Francisco
	    - SF knew costs

	What are the agreements that the City of Oakland has with existing telecommunications companies? If City had wireless, many would not pay for it via telecommunications companies What is impact on the tax revenue as a result of this? What will the telecommunications' company revenues look like in Oakland? We allow monopolies in Oakland; they hold certain price points As we pay for Wifi we may need to make up difference in revenue loss to the telecommunications companies This could result in additional costs to Oakland
	Access & connect "Skype" type applications are free on the Internet Camera/web cam is nice but not needed
	Free & fast
	Having hardware is important

Priority Votes	Service Ideas
	How do we pay for all of this? Reduce Mayor's pay Property tax supplement – NO bond though Sales tax on the technology/hardware
	Absolutely no parcel tax
	" 1 time luxury tax"

	Top Priority
	Equity for all - Access - Hardware & Software - Same both above and below the 580 – all the same - Multi-lingual
	Service providers from Oakland - Local businesses - Keep $$ in the community
	How is it going to be used? - Training – what would it look like?
	How will it be paid for?
	How will this work with the systems, the schools and what citizens already have? - Individual security - Should block school specific and private information

2.3.Focus Group 3 – District 4

Dimond Library, 3565 Fruitvale Ave., Oakland, CA
Monday, September 22, 2008, 7:30 p.m.

Tellus Venture Associates: Steve Blum
City of Oakland Project Manager: Tino Granados

Welcome: Jean Quan, Council Member

Participants:

	Age <40	Male	Female	Age >40	Male	Female	Total
African-American	1	1					1
Hispanic	1	1					1
Asian							
Caucasian	5	3	2	3	2	1	8
Total	7	5	2	3	2	1	10

Facilitator: Welcome.

Jean: It looked for a while as if cities might do great things with wireless, but most of the ventures have not worked out well. This is not a great financial time, but this doesn't mean that we can't do things. Reminiscent of the story of the frog at the bottom of the well. If the sun is shining, the frog thinks the whole world is sunny and if it's cloudy, it thinks the whole world is cloudy. We studied four or five years ago, and I don't think it's changed that much in terms of economics, but maybe as many as 40% identified libraries as their most regular source of Internet access. We'd like our police and firefighters to have access to more information. We also want the city to be more business-friendly (e.g., free WiFi at the airport). If you charge, what message does that send to people about being a business-friendly city? Dimond Library was the first to get WiFi; people love it. I want kids to be able to check out laptops so they have better access.

Facilitator: Introduction, overview, purpose.

                Show-of-hands indicates most participants use cell phones regularly and have computers at home, work and school, etc.:

                Cell phones: 10 of 11

Smart phone, Blackberry:　　7 of 11

PC at home:　11 of 11

Use Internet regularly:11 of 11

If people were to tell someone from outside what it's like to live in Oakland, what would they say? A word or phrase that best describes what it's like for you here.

M:　　　　　Hub of the West.

M:　　　　　City living.

F:　　　　　Diversity.

M:　　　　　Fun.

F:　　　　　Recreation.

[laughter]　　She's with Parks & Rec

M:　　　　　Where I want to be.

F:　　　　　Vibrant.

M:　　　　　Vibrant.

Jean:　　　　There's a Chinese wish, "May you live an interesting life." It's always interesting.

M:　　　　　Cool

M:　　　　　Feisty and green.

Facilitator:　We're looking at many things that aren't readily available in Oakland right now. What would improve the quality of life here? Some things in parts of the Bay Area are like FastTrack bridge passes, the new credit card parking systems made possible by digital technology. What other public services would be helpful?

M:　　　　　Public transportation. BART has the smart card as well.

M:　　　　　A coordinated system so the card works on the bus and BART.

M: That's four years down the road.

M: You don't want to have to carry four or five cards.

Jean: We're thinking of that concept, combining in one card library card, ATM –
           you can get cash or pay for your Starbucks – and for transit, ID. They have
           something like that in Hong Kong.

M: I'd like to be able to punch a number into a cell phone to indicate where I am
           and be able to find out when the next bus is coming.

M: There's a service close to that that exists now, a website called nextbus.com.

M: Picking up on the universal card. I think Japan started by using them in cell
           phones.

M: A sim chip.

M: With twitter, you can get micro announcements. Technology to push out bus
           schedules, etc. Micro-blogging.

M: It's a website.

M: There's also a BART wireless.

M: I want all this stuff to be easy to access. I want it push-button quick.

F: A central resource – one site to find where to link to.

F: Central and cheap. All I have is basic phone service, because I can't afford
           anything else.

M: That's a good point. All of these things seem always to be for people who
           can afford them.

M: "One-button" is probably more understandable than "accessible." Or "user-
           friendly."

F: We're talking about Internet access and making it easy. It would be nice if
           the city offered Internet classes. Here at the library, we constantly give this
           kind of instruction to teach people who don't know how to use a computer or
           the Internet. Tim [also in the focus group] is one of our volunteers.

F: We do, but it's more than the library can keep up with. We need more classes.

M: The library has projectors and with wireless you could run classes like this for a whole roomful of people

Jean: The city has a computer lab.

M: Something to teach a whole class of people.

M: My gauge for how good our wireless service is whether I can make IP phone calls. Cell phones are nice, but they're expensive. A lot of people use IP phones now, and talk free on their computer. The WiFi here breaks up. It's understandable, but I just need that. I call a friend every once in a while just to try it. It's a good measure of your quality. You don't have to get into all kinds of fancy numbers.

Jean: Lincoln Courts, which is about two blocks from here, has a great computer lab in the Adult Ed program, which teaches seniors. Maybe we could share that, get into co-teaching.

M: Webcams throughout the city. And the public could also use them. It's Big Brother on one hand, but for public safety or information on traffic five blocks away – if it's really bad, you could postpone your trip or take another route. Or police or neighborhood groups could see something strange that's going on.

M: You could set up the webcams in certain exciting parts of Oakland and sell subscriptions to live feeds.

F: We'd finally have community TV for real.

M: Along those lines, are the City Council meetings online and streamed live? Do they accept community input? I'd love to be able to ask a question, in real time, without having to down to the meeting. That would be great.

Jean: If you email me, I often monitor messages during meetings.

M: To ask questions in real time, you'd have to have an online version of Open Forum.

Jean: The budget hearings are always televised, and you can call and ask questions.

M: This isn't rocket science. It's not that hard to do. I've got Comcast. The audio is great, but the video sticks instead of streaming.

F: Probably a technology issue.

M: I write streaming software, and whenever I'm streaming video and audio and I start to lose packets, I throw all the video away. People can tolerate looking at a picture for a minute or two but not breaks in audio.

M: We need better feedback from the community policing officers. We have a very active neighborhood group, entirely online. Just yesterday they were responsible for recovering a lost dog.

M: This dog had been lost for 25 days, but with communication back and forth, they found it.

Jean: I just sent a nagging email to the Chief about the community policing officers' communication. People want to know all details about a crime, but when it's under investigation they aren't going to say anything.

M: Some of the community policing folks have expectations to learn details about ongoing investigations, but suppose there's just been a sideshow down the street, and they want to know whether the police are going to show up, or if they can't be there for 20 minutes.

M: Suggestion to wire all the buses for WiFi.

F: Provide computers that people who can't afford to buy one can check out and use. Laptops to sign out with a library card, or from rec centers. Without a computer, what good is WiFi?

M: Provide WiFi access in bus shelters as well as on buses. People spend a lot of time sitting around doing nothing; it would be much more enjoyable and productive for people with WiFi access.

Jean: Buses are much smarter in Japan. They provide all the messaging in different languages, and exact times before you get to certain destinations.

M: With g-mail etc., if you just have access, you can do everything. The more wireless in buildings like this allows people to use it. But the city needs an updated website that people can interact with regarding, for example, city services. Public works is a good example. "Once you connect, you want to

be able to do something" to make the access mean something. Current information, up to date, and an easy way to communicate.

Jean: Not enough parts of the city website are interactive.

M: Yes, a city website that will actually do something once you access it. Paying property taxes on it is the easiest thing to do, but other than that … "it's first-generation web design and it's embedded so deep."

M: Under education, let's put adult ed classes online, for enterprises, for kids K-12. Organize it with applications that enable parents and children to manage their work.

M: Citizens Academy?

M: A study in 1998 trying to get online courses.

Facilitator: What is the most important of all the things brought up? List includes public transportation, smart card (AC Transit works but not BART so coordinate on one card), cell phone to punch in number for arrival of next bus (nextbus.com), Japan's universal card, micro announcement from twitter, push out schedules, BART wireless with real-time access, needs to be easy, one site for information, cheap, always for people who can't afford it, user-friendly, city offer computers/Internet classes, can teach an entire class at once with a projector and laptops, IP phones are much cheaper than cell phones, increase number of adult education classes, webcams throughout city (Big Brother, but also public safety), traffic assessment, how to pay for it, charge subscription fees for webcam service, real-time input to City Council meetings, online version of Open Forum, better feedback from community policing officers, WiFi on buses (transbay buses aren't wired) and bus shelters, different languages displayed, checkout for laptops/PCs, city website more information and more interactive, make user access easier, online adult ed classes. What's most important?

M: An underlying theme in some of these things – basically the value of the net, whether it's input to City Council or interactive city services or feedback from the community police officers. The more people on the network, the more valuable it is.

M: Even more basic that that is easy and inexpensive access of all sorts.

M: Good bandwidth and a strong infrastructure for the network to support more people. It needs to be done in a way that won't create problems with slowdowns.

M: Determine whether it will be citywide or in certain locations (e.g., libraries).

M: Is it public access in public areas or is it widespread access in private homes?

M: For Oakland "it makes a lot more sense to concentrate access in public areas and grow it out into the neighborhoods." One problem with wireless in Oakland is that the income the city can get from the infrastructure is a function of disposable income of the people who are using it, but the cost of putting it in is a strong function of the terrain. "In Oakland, it's the old social law. You've got all of the disposable income concentrated in the worst terrain." It makes more sense from a business standpoint to focus on downtown and community areas provide public access, rather than trying to give us something free where we can all get rid of our DSL.

M: The education aspect is the most important; we need an educated citizenry. Second is the notion of a strong Internet backbone/presence in the city, because you don't know what people are going to connect to it. They'll come up with all kinds of ideas. In terms of deployment, it's an expensive proposition especially for a city such as Oakland with flatlands and hills. If we could find a way to encourage those who do have the disposable income to open up their own lines somehow, perhaps through a tax discount, but also people could host their own access. "We actually already have the infrastructure, it's just locked up."

M: It's just locked up by private ownership.

F: It needs a signal-enhancer to spread it out.

M: With some people, it doesn't even have to be a financial incentive. A lot of people want to see this.

M: On education – "learning how to use the web, whether wireless or wired, it's like learning how to read. It should become part of the curriculum." If you aren't web-literate – it's like those big literacy campaigns – the whole world is moving in this direction. On deployment – something like a mesh. It would be expensive. If you're going to deploy an 802-11, you'd be limited by its range and because of the terrain. You'd probably be better off with WiMax or a bigger signal.

Jean: An issue is whether we can get access to the schools' broadband at night. You can think of that on a neighborhood level. Is there a business that doesn't use its broadband at night? Could they share it? Can the firewalls be built to protect their accounts but still have the broadband access available to others?

M: I'm trying to implement wireless in my school. It sounds like a good idea, but we're using 802-11 and the range isn't that great. If we could get a bigger range –

F: On education – working in the public library, our computers are in use all the time. You can't walk in and get on a computer. You have to make a reservation. The number of people who come in to apply for unemployment benefits or do job search and need help, because they're not sure what they're doing. Sometimes it's just a little nudge but other times they need someone to really sit down and help them. I think education is the top priority.

Facilitator: What's at the next level of importance?

F: Transportation. It's quite encompassing. There's a lot related to transportation needs – information, when waiting for the bus, getting the systems to all work together.

M: People have to wait longer and spend longer on the bus now.

M: The idea of sharing – what if you had the Neighborhood Watch and block captains with connections at access points?

M: That opens up a whole level of risk. Anyone who hops onto your network exposes you. Suppose you create a mesh network, you also have to create a secure way to deploy it so that if you are going to open up your system to the public, you're not going to get hosed or get a bunch of people parked out in front of your house because you're the only one they can glom onto.

M: A lower priority would be the public webcams – but "that speaks to the vibrancy and creativity of Oakland."

Facilitator: Will be developing report over next few months. Further questions or comments, contact by phone or email. Also on the flyer.

  Thank you.

Focus Group 3 Flip Chart Notes

Priority Votes	Service Ideas
	Public Transportation - Smart card - AC Transit works but not BART - She be coordinated – use 1 card not multiple cards
	Cell phone - Be able to punch in a number and tell me when the next bus arrives - There is a mobile site – NextBus.com - Japan has a universal card - Micro announcements from Twitter (e.g., push out schedules, etc.)
	BART Wireless gives real time access
	Want (wireless) service to be easy to use - User-friendly
	1 (web) site to go to, not multiple sites
	(Wireless) service should be affordable - Services always seem available for people that can already afford it
	City should offer computer/Internet classes - Library offers classes, but needs to be beyond the library - Wireless will allow groups of people to work on things together (collaboration)
	- Can teach an entire class at one time (there is a need for a projector)
	Cell phones are expensive; many people can't afford them - IP (Internet) phones are cheaper
	Share more co-teaching
	Increase the number of adult education classes
	Web cams - Place throughout the City - May have a "big brother" feel - Public safety/would allow people (and police) to see what's going on - Traffic info – be able to see (real time?) the traffic flow
	How pay for wireless in Oakland?
	- Set up web cam and charge subscription fee (like "reality TV" in a way; some will be willing to pay)
	Input to City Council meetings in real time - Real time from wherever you are - Online version of open forum
	Better feedback from community policing officers - can't always provide all info if crime is under investigation

Priority Votes	Service Ideas
	Wire all busses for WiFi - AC Transit has it but transbay busses do not - Wire bus shelters too; make it a little hotspot; can display info in different languages
	Laptop sign out - Check out laptops
	City Services - From the other side (City side) services must support WiFi - More information - Interactive - City web site that allows you to DO something - Paying property tax on line is easy, but other things are harder - Make user access easier
	Education - Adult education classes online - Parents/children manage their work - Citizen's Academy (example); put material/info into online courses

	Top Priority
	The more people that are on the network, the more valuable it becomes
	Easy and inexpensive access for all
	Bandwidth & strong infrastructure to support the people/use - Not slow - Strong Internet backbone
	Public access in public areas OR private homes - Start public and grow out into neighborhoods - There is a "social wall" – disposable income is in some of the toughest terrain in Oakland (e.g., Oakland hills)
	Better access in community areas
	New housing developments will have access in mind
	Education - Fundamentally the most important - Learning how to use the Web - Become part of the curriculum - Library computers are in use all the time - Technological

	Deployment Idea - Those with disposable income open own access point for some discount/ rebate - Merike - Mesh network - Deploy in a secure way - Need a bigger range beyond 802.11
	2nd Priority
	Transportation - Getting it all to work together - Something to do
	3rd Priority
	Web cams

2.4. Focus Group 4 – District 1

North Oak Senior Center, 5714 Martin Luther King Jr. Way, Oakland, CA
Tuesday, September 23, 2008, 7:00 p.m.

Tellus Venture Associates: Steve Blum
City of Oakland Project Manager: Tino Granados

Participants:

	Age <40	Male	Female	Age >40	Male	Female	Total
African-American				4	3	1	4
Hispanic							
Asian							
Caucasian				5	2	3	5
Total				9	5	4	9

Facilitator: Welcome, introduction, overview, purpose.

Show-of-hands indicates most participants use cell phones regularly and have computers at home, work and school, etc.:

Cell phones: 6 of 9

Smart phone, Blackberry: 4 of 9

PC at home: 9 of 9

Use Internet regularly: 7 of 9

If people were to tell someone from outside what it's like to live in Oakland, what would they say? A word or phrase that best describes what it's like for you here.

M: Lots of different things come to mind. But "unsafe."

F: Cognitive dissidence.

M: Diversity.

F: Very interesting.

M: Surprising.

M: We've got it all.

F: Organized neighborhoods.

F: Unrealized potential.

Facilitator: What wireless services might improve the quality of life here in Oakland?

F: Automated ticketing for people who blow red lights (as in Fresno). And
                incorporate that technology into things such as street sweepers (it's been
                three months since they were able to sweep in front of my house because
                ticketers don't come by). Would like to see wireless access for police and
                fire departments, with computers on board all the vehicles, and integrated
                into handheld devices for safety purposes. Also can write tickets from them,
                take photographs to associate with incident reports and use as evidence in
                prosecuting crimes. These are separate technologies. WiFi hotspots in the
                library; "if Berkeley can have it, we can too."

F: Shot spotters that help determine where gunshots are coming from so police
                can zero in quicker. Also need cameras, for instance to see who is using
                Lowell Street as dumping ground – they're from out of the area –
                refrigerators, TVs, mattresses. As fast as the litter people pick it up, it's right
                back there.

M: More communication into the community from Park & Rec Department.
                Never see anything; they have events there, but no flyers or announcements.
                I take my two kids out of the area for any recreation. This was the first
                summer we participated in an Oakland rec program. They're 13 and 12 so
                this will be their last time. But we need to be able to find out how to get
                involved. The rec centers and community centers should have WiFi spots. I
                don't see any activity going on in their buildings – just empty buildings.

F: They want these children off the streets but they're not providing anything
                for them to do. There needs to be some communication so people know
                what's available.

M: Emergency communication to link community leaders (i.e., Neighborhood
                Watch, block captains, NCPC {Neighborhood Crime Prevention Council})
                with the fire and police departments during particular events and
                emergencies. Satellite communication is possible; satellite telephones work
                during and after earthquakes.

M: An issue that our neighborhood association is dealing with is blighted properties and abandoned vehicles and reporting these problems to the police. It is problematic to get a real-time assessment or status report of what's happening. We need the ability to simply get on the Internet, log on, pull up the data ourselves by address to see what the real-time status is. It would give a sense of transparency and accountability, that city staff is really dealing with these problems in a timely fashion. Also being able to use GIS technology, similar to the crime reports, to map these out so the public can get a sense of where properties identified as blighted are located and which situations have been resolved. This would enable us to assess which communities may be under-served or over-served with city services, based on resolution of complaints.

Also important area, working as part of the NCPC and having a neighborhood association that covers part of Oakland and part of Berkeley, we're really attuned to border issues. I was shocked to learn that to this date our police department still cannot communicate with the city of Berkeley's police department. There is no technology that they have. And simply trying to get radios that can communicate to each other seems to be a big impediment in the city of Oakland. The need for cross-border communication and response, particularly in a major event, is critical – Internet, email, whatever, we have to do it from a digital perspective.

Would also like to see better data on crime and resolution. We simply get data that shows where a crime has been reported. It's hard to understand how they got resolved (if they ever did), or a sense of how effective the police, district attorneys, the city are in dealing with crime areas.

Problem houses are another area – places that often involve drug dealing, blights, domestic disputes. Having data that shows all these problems in a real-time sense that have been reported for a particular property. Now you have to go to the police, to the building department – somehow linking the Law Corps group to deal with these on a programmatic level and a comprehensive level, and getting that data digitally and electronically and transparent.

I tried to get a copy of the city budget. I can't find it anywhere. How is the city spending our tax dollars. Everyone says we don't have enough money for more police. I've worked in government 18 years and have a public policy degree; I'd like to look at the budget myself to see where there is fat and where there isn't. Just to kind of verify what we're hearing from the politicians.

Important city documents we have to have a little bit more transparency and accessibility so the public can be more engaged and effectively look at these and make their own decisions and their own recommendations to City Council, to the Mayor, to city staff.

F: Integrate automated ticketing with street lights and parking lights. Basically Internet traffic ticketing.

An integrated trouble ticket system that can segregate criminal activity from maintenance and repair issues. Right now, you can't figure out who's on first when something's gone wrong with the city. If there's a pothole, you call one department after another until you eventually are referred to Public Works. A street light is out. There's a sinkhole in the middle of the street. Somebody has dumped shopping carts in an intersection. Blight issues. "The City of Oakland is way behind the 8 ball when it comes to trouble-ticket reporting. It doesn't have a 3-1-1 system, and once you've reported something, you don't know if it's on the system or not." I've submitted things via the city's website dozens of times – they can't ever find a record of it. You should be able to cross-reference blight issues and crime issues.

M: I'm concerned about the young folks. We're losing most of our young people. We've lost a couple of generations within our school system. The right things are not being taught in schools. The teachers are not able to identify with students when they reach junior high and high school. All Oakland schools should be year-round, so we won't have so many children on the streets. We need communication between the schools and the parents.

F: On education – there need to be deeper services for small businesses. One-quarter of adults may be self-employed. If each small business grows one employee… We aren't doing much to support the small business. Technology could be used to create some social business communities. They're very isolated and fragmented.

F: The police department is supposed to give you an incident number for a complaint. You don't always get it. But even if you do, when you call back to follow up, they can't find it. Also there is no communication between shifts. One shift does not know what the other shift does. I've been with NCPC every since they started, and if I can't get an incident report number, what can the average citizen expect?

M: Talking about information from officers – part of the problem is between shifts, but when information is given to a particular officer and that officer

moves to a different department, the information moves with the officer. It doesn't stay with the job. As a result, the citizen who is complaining – the trouble ticket doesn't stay in the area it starts out in. It moves with the person, or disappears. "The trouble-ticket idea is really the way to go."

Facilitator: So this is something that records it, institutionalizes it and then you can follow it.

F: Then the citizens won't have to constantly go back and repeat the same thing over and over and over again.

F: That's symptomatic of the whole problem. Different departments don't talk to each other. And you have to go to three or four different places to find an answer to one thing. You should be able to go to one department and get it. Information should not disappear because someone has been reassigned or is on vacation. Many people just give up. There is no central place. It is so simplistic.

M: Most people give up.

F: Narcotics. That's what the beat officers are doing.

M: What happened with the narcotics officers?

F: We don't have any narcotics officers. We don't have a juvenile bureau. There's so many things we don't have. I think they're just getting around to setting up a fingerprint lab.

F: A fingerprint department could be integrated with the police system very easily.

F: But do they get enough people to fill the positions?

F: Other big issue is training. There's an absolute dearth of skills in basic computer use and software use. The police department has radio-based wireless systems that are supposed to broadcast information to the Panasonic laptops in their cars. More times than not, those PCs are non-functional. And I've seen officers sit there and fumble, sadly, with PCs because they haven't been adequately trained on how to run the software. Of course there are also software design issues – is it usable, is it officer-friendly? Another good example – teachers are given computers and told to teach the kids how to use it – and they go, "Huh?"

M: I have great concerns about businesses and jobs within the city. It's very difficult to do business in Oakland, so corporations don't like to come here. If you don't have jobs, you have crime. The school district and the city and the police department also have to address the truancy issue; the school should have its own police department. But again, if we don't have the businesses in town, we don't have the jobs; if we don't have the jobs, we know what we have now. There should be some committee or something to recruit and retain businesses. There has to be a real connection between business and the city, to make things happen and make the city grow within the neighborhoods and create jobs within the neighborhoods.

F: Need centralized location. If you're a new person and you want to start a business you should be able to go to one place to get information you need, instead of going to the OLMF [Oakland Merchants Leadership. Forum] And the Chamber of Commerce and all these different places. All the statistics and data should be right there, available.

M: A 3-1-1- system was mentioned earlier. Even bigger, a central repository of information to access whether you have a problem or need data.

F: That's basically 3-1-1.

F: Could someone figure out a computer system so the OUSD can balance their budget?

M: Related to the border issues – if you call 9-1-1 in Oakland the dispatch person will say you're in Berkeley so you have to call the Berkeley police. We've been trying to work through the NCPC and Captain Toribio about getting that fixed so that once-and-for-all the database reflects what is truly on the ground.

M: It's double for us; we're on the border of both Emeryville and Berkeley. And if it's happening here, it might be happening in San Leandro and Piedmont.

F: Why can't they just communicate with one another. You're putting in a phone call, and should be able to do it immediately.

M: Another issue: providing GIS tracking systems in all city vehicles, partly for accountability purposes so we know what those vehicles are being used for and where they are.

F: That could also integrate with work orders to improve productivity, efficiency, save fuel and costs.

M: Street repair, landscaping, maintenance of street trees, sidewalks – whether the city is using GIS capabilities to efficiently map out and track what's being maintained and when. If UPS and FedEx can do it, Oakland can do it. Any service.

F: The police department ordered 63 police cars last January and they're going to be delivered in January 2009. This is from Deputy Chief Kozicki. I said, "You need to check with Channel 7 to see if you can get some better service." This is ridiculous. These officers aren't problem-solving officers. We don't have enough cars and they also have a problem with maintenance.

M: It's frustrating with city services that you can't get ownership of a problem by staff and want to elevate it to the next level. Staff people basically refuse to give a supervisor's name and number.

F: An escalation matrix.

M: Looking on an org chart to identify who the relevant person is, then getting an email or a phone number, is hard. It would be helpful to be able to work your way through the bureaucracy (worked for Cal Trans; knows bureaucracies). Need a tool like that to understand who to communicate with.

M: That data is available but it is horribly outdated and is buried so deeply and hard to access. Once you get it, it's five years out of date.

M: People who haven't been on the city payroll for more than five years are still in the directory.

Facilitator: So access to up-to-date-data that is correct.

M: If you know how to use that website, which in and of itself is a puzzle, a challenge.

F: The city has a real gap in organization/coordination. Elsewhere you see Police Departments and Public Works Departments. Names/nomenclature needs to be normalized so it is the same as other jurisdictions. Police Department instead of Police Services Agency; the latter sounds like meter-maids. The fancy names make it sound as if they're worth a few more bucks because there are extra letters. But it's confusing, especially when people new to the area are trying to find their way through the bureaucracy.

M: In terms of police services, all police officers should live in the city they work for. They don't really understand the city unless they live there. All Oakland police officers should live in Oakland. Sometimes they ask us how to find a place within the city because they don't know how to get there.

Facilitator: Which of all of these things do you consider most important?

F: Communication. Providing services that are needed. It's all about communication.

Facilitator: Interagency communication, communication with the city, between city departments.

F: If you call Friday after noon, you can't get anybody. When the Mayor came in, he said his door would always be open. It took me seven months to get an appointment.

M: 30% of issues are police/public safety issues – ticketing, potholes, lighting.

F: "Communication" is perhaps a little broad – needs to be real-time to respond to crises, and static points of communication, or central points of contact or access to information, resources that are available, city services, etc.

M: Emergency communication needs to be stressed. Eventually we'll have the earthquake and have to figure out how we'll communicate with one another during that time. It's important to have that set up beforehand.

F: There's also a technology component to the communication. The call comes in to the police or fire department, a person transcribes it into a computer system, which sends it to a dispatcher. This needs to be integrated better; it has to happen faster and easier. Anybody should be able to key in an incident as it's happening, because sometimes that will be faster than waiting for the dispatcher.

Facilitator: What else is most important?

F: Education and training.

F: Technology and software.

F: We aren't going to get anything without the technology and software.

M: Back into the police… they should live in the city. Those who live in Walnut Creek or Modesto won't get here if there's an emergency.

Facilitator: How about the next level of priority?

F: Having the hardware and cell phones in everybody's cars.

F: Proper allocation of hardware. There are city staff who have smart phones and are barely capable of using them, while our police officers go without.

F: Issues along with education and public safety are issues of economic opportunities for people – jobs for individuals, small business owners, large corporations. We have 4,000 kids out on the streets.

M: Data availability – when we're talking about public safety and communication, if we can't retrieve the data…

F: Available nominally but also easy to get to.

M: And up-to-date.

M: Real-time.

F: Do we have commitment? Is Oakland willing to spend the money? This is expensive. It requires a huge investment in infrastructure, new hardware, software, staffing, maintenance. "And let's face it. 'Oakland' and 'maintenance' don't fit in the same sentence." A California city about one-third Oakland's size put one in about two years ago, $300,000-plus (about 30%) over budget and it was budgeted at about $1.37 million.

F: The money. We're between $30 million and $50 million in debt. How can we afford this?

M: We don't want to do this halfway, with service to Rockridge and Skyline but not the areas that really need it, such as West Oakland. That would not be good.

M: It works better on flatlands.

F: "Either make a commitment that you're going to do it for the whole damned city or forget it." That's the problem. We have piecemeal organization now.

F: Landscaping hasn't been done for the whole city.

M: Relating to the issue of commitment is expertise, not so much about operating it once you get it, but "do we have the expertise to evaluate and identify the appropriate technology and not buy a white elephant right out of

the gate?" We have to identify the technology that's really going to work for our problems.

F: Big expertise, strategic expertise.

F: The issue of the police cars that are on order for a year.

M: It's a systemic thing. You need a whole system set up to do it.

M: And build it in a way that you get the basics, the priorities, but that you can add on bells and whistles over time.

Facilitator: Are there any low priorities?

M: There won't be any low priorities on these issues, because they're coming from us.

F: We have so many problems. "It's important to solve something, so that we have a track record and a belief in ourselves (and the city) that we can solve something."

M: Another thing that isn't on our list – our antiquated OPD telephone system. You call in and hear this horrible data-retrieving noise. Just moving that to more modern equipment would be amazing.

F: I would like one of the performance criteria of that phone system removed. I think the requirement is to answer a 9-1-1 call within three rings or 15 seconds. Oakland puts you on an answering machine rather than a live person. I've been on hold with 9-1-1 for 18 minutes.

M: I usually get a busy signal for 9-1-1.

M: They do have something down right. If you get frustrated beyond belief with 911 and hang up, they'll call back within a half hour.

M: Nope. Can't say the number of times I've called 911 since moving to North Oakland (after 7-8 years in Rockridge when I called once). In three years in North Oakland, probably call both Berkeley and Oakland at least 30-40 times. I now wait for the people to walk into Berkeley so I don't have to deal with the Oakland police system. I'll get an officer from Berkeley just like that [snaps fingers]. In Oakland, I'll get a busy signal or the recording, and perhaps an officer in 20 to 30 minutes when the person is long gone (if they have a sideshow).

Facilitator: You want response and responsiveness.

F: They should take all the voicemails out. When you call a department or a
                 person you get a voicemail and never a return call. Once I called the
                 receptionist and said someone's voice mailbox was full and asked her to take
                 a message. She told me she couldn't do that; it's against the rules. He has to
                 come in and clean out his voice mailbox. That's the stupidest thing I've ever
                 heard.

Facilitator: Thank you.

Focus Group 4 Flip Chart Notes:

Priority Votes	Service Ideas
	Automated ticketing - Integrate with street sweepers
	Police & fire department - Wireless access
	Handheld capability - Police department
	WiFi Hotspots – library
	"Shot-spotters"
	Cameras - (e.g., Lowell Street dumping ground)
	More communication - Parks & Recreation Department - Event flyers
	Community centers
	Help keep kids off streets
	Emergency communication - Police/fire + community organizers (e.g., natural disasters)
	Reporting blight (house and vehicle) - Real time assessment & status - Accountability and transparency

Priority Votes	Service Ideas
	GIS Technology - Assess which communities are under/over served - GIS tracking systems in all city vehicles (similar to GPS) - Integrate with work orders - Accountability for workers - Track maintenance (e.g., street repair, public works)
	Border issues (with neighboring cities) - (e.g., police departments – Oakland, Berkeley, Emeryville) - Border issues in calling 911 - "Ground truth" the database; Oakland/Berkeley/Emeryville - Cross border communications
	Crime data enhanced
	Reporting on resolution of crimes
	Data to show problems linked to properties
	Accessibility of city budget and documents - Transparency and accountability
	Internet traffic ticketing
	Separate criminal activity from public works - Trouble ticketing (e.g., street light out, pot holes, blight, etc.)
	Schools - Year round - Identify w/ junior and senior high school students - Communication between schools and parents
	Deeper services to small business
	Create social business communities
	Police department recording - Incident numbers - Pass info between shifts - Information passing between individual (officer) and department
	Communication between departments
	Need central location of info within and between departments
	Fingerprint department integrated
	Computer systems – OUSD budget
	Increasing speed of service for City good/services
	Organizational charts - Access to data - Update of data (current and correct)

Priority Votes	Service Ideas
	Categorization and normalization of departments
	Must live and work in same city (police department)
	Update to Oakland Police Department (OPD) phone system
	Belief that something is possible and achievable
	Response and responsiveness to all departments (phone systems)

	Top Priority
	Communication (emergency and real time)
	Public safety (emergency response)
	Education
	Training
	Technology and software
	Accessibility across Oakland
	2nd Priority
	Hardware (allocated properly)
	Economic opportunity
	Data availability (accessibility)
	Commitment, dollars and expertise for implementation

2.5. Focus Group 5 – District 2

Clinton Adult Education Center, 655 International Ave., Oakland, CA
Wednesday, September 24, 2008, 6:00 p.m.

Tellus Venture Associates: Steve Blum
City of Oakland Project Manager: Tino Granados

Participants:

	Age <40	Male	Female	Age >40	Male	Female	Total
African-American	2		2	3	2	1	5
Hispanic	4	4					4
Asian	1	1					1
Caucasian	1	1		2	1	1	3
Total	8	6	2	5	3	2	13

Facilitator: Welcome, introduction, overview, purpose.

Show-of-hands indicates most participants use cell phones regularly and have computers at home, work and school, etc.:

Cell phones: 7 of 12

Smart phone, Blackberry: 3 of 12

PC at home: 9 of 12

Use Internet regularly: 6 of 12

If people were to tell someone from outside what it's like to live in Oakland, what would they say? A word or phrase that best describes what it's like for you here.

M: Proximity.

M: Diversity.

F: Frustration, costly.

F: Suburban city.

M: Community (as in sense of community, as opposed to what it's like in Washington, DC).

M: Great climate.

F: Opportunity.

Facilitator: We're looking at many things that aren't readily available in Oakland right now. How could wireless technology improve the quality of life here? What do you think would be helpful?

F: Wireless access in community centers, housing complexes, not necessarily attached to computers but to devices of users' choice.

M: Training, so that people know how to use the devices, how to log on, etc.

M: Access to what? A community network, destination site(s) with information on, for example, the arts or available educational opportunities – information that at one time might have been available via local newspaper or local TV/ radio station (before they became network affiliates). A multipurpose city website, user-friendly and interactive. Something that involves people, lets them register concerns, share ideas, master the English language, learn new skills. Something that "belongs" to Oakland, is supported by Oakland, maybe involves high schools or libraries or young people in creating some of the material. More than pipes, it's the content.

F: Computer labs open to young people, older folks and others, in addition to those in the libraries. Wireless access is only good if you have the equipment. Consider lending programs such as Berkeley's tools program for home improvements, for video cameras, digital cameras, computer equipment. Parents could check out what they need, go to a child's graduation and record it on film and then download it to a computer and transfer it to their own CD.

F: Some sort of mobile healthcare; there used to be something like that here. Not WebMD, but something for communities that don't have easy access to clinics or hospitals. San Francisco has a mobile dental service. Perhaps targeting areas where, for instance, asthma rates are high. Not to replace services of doctors, nurses and other healthcare professionals, but offering more education and bridging to neighborhood clinics/hospitals.

M: Expansion or return to after-school programs and education of kids and training for others who want to learn but can't go to a classroom. An opportunity for exposure to the arts, music, sports and other programs that aren't very available in school anymore.

M: Centers for the elderly will have to expand services as baby boomers age.
          Would be useful to have a way to get them the same kind of information they
          need and enable them to share information – e.g., how to go about getting
          Social Security benefits. If this information is all online, people could access
          it from any center, regardless of where the experts are.

F: An opportunity for seniors, disabled people and others who may be isolated
          to connect with each other. Screen-to-screen conversation and contact (a
          social aspect), reporting emergencies and call for help.

F: We're talking about the city providing wireless access. Has there been a
          conversation about cost to residents? And whether the access extends beyond
          public spaces and into homes? What are the implications of that? Is it
          possible to provide free or low-cost wireless access to homes, similar to
          telephone lifeline service (like a public utility)? "It would be ideal if the city
          provided its own alternative to Comcast" with every household having
          telephone lines, computer lines. "We're at a time where access to the Internet
          is critical not only to our ability to survive but to thrive in the world."

M: Green Line Coalition negotiated with the PUC, AT&T and Verizon.
          California Emerging Technology Fund. Need leadership with the emphasis
          on technology in Oakland. The Bay Area and Oakland are way behind in
          technology because there is no leadership and recognition of the importance
          of employees having access in their homes as well as to computer labs.
          Begin to leverage that. Cisco and Microsoft and others. I would bet that no
          one from Oakland is involved with that and should be in contact with the
          fund. The California Emerging Technology Fund grants require a huge
          application – for access primarily for people of color and low-income
          people.

F: In terms of knowledge and training – for instance, how to use Constant
          Contact and so forth – but there's also knowledge and training of facts. If we
          don't share that level of information, we'll be stuck at how to get on iTunes
          and so forth. "We really need that higher level of training and information-
          sharing." For example, a person could learn about how to get into the
          biotechnology area, where to find training and gain access to that industry.
          An elevated level of knowledge and education and opportunity.

M: It makes sense to be gathering information through these focus groups, but
          some focus group should continue, to stay on top of changes in technology.
          Technology is changing constantly. "How do you make sure that Oakland

F: Public education. Part of it is Internet access in the schools and after-school programs. Another part is being able to get an education online, perhaps through Laney College. Suppose you are 18 years old and a parent. Maybe you can get your high school diploma online if you're 17 and can't go to school but have to get a job and help your family. Just other options. "Thinking of things that we tie to brick-and-mortar and putting those out onto the Web."

M: You can get a GED online, with services that are certified by the State. It's a question of access and knowing that it's there.

M: There should be some method by which only an Oakland resident can access Oakland services via Internet, not people from San Leandro, Hayward and other communities. Proprietary in the sense that it makes it exclusive to Oakland residents, such as the mobile healthcare services.

M: I'm from Chicago and new to the area. I'd like to have access to know what's going on here.

M: There may be sites that are exclusively for locals but others more widely available.

F: I work for a housing organization, and affordable housing seems to be a bit of an issue in Oakland. We've talked about building a database that shows where all the available housing is. When I moved here from New York, I found my apartment on Craigslist; that is accessible to everyone. But thinking of the city joining with housing developers, there has to be another way to get the information out. It can't just be by luck that you open Oakland Magazine and see a lottery is coming up. It needs to be more public, especially as the cost of living in Oakland keeps going up substantially.

M: A perfect segue – in terms of creating a network in Oakland that talks about the latest activities and opportunities.

M: Oakland has a website. Rather than recreating the wheel, why can't they just revamp or improve it? "The information is out there . . . it would be nice if it was all consolidated on a single website focusing on Oakland issues and things that matter to the folks who live here." It comes down to access. Thinking of my own mom, she asks me to help with housing, medical

services – she can't communicate with her Kaiser doctor unless she's on the computer and emailing the doctor. Access to Google maps. "How close are we, really, to get some kind of free access into the homes?" as well as getting computers and training people to use them.

M: If the city does find the money to get the wireless access up, then we're still left with homes without computers. Then who's going to be able to get at that information?" It's probably going to be people who already have the means, but they can now save $50 a month. But the others who could benefit the most are still without the access.

Facilitator: Access across all spectrums of the community, so that folks who don't have access now are enabled and people who already have the ability have greater access.

F: Speaking of economic development, it would be really interesting for Oakland providing this backbone of access to all the homes, and then forming "partnerships with larger companies to reach innovative community-based organizations that are trying to get computers into homes, so it's not all on the city's back."

               And not just about getting computers into homes. Take six teenagers out of the Mandela Gateway complex, for instance. Train them as technicians, perhaps give them a little stipend. So we're providing a service to these smaller communities, on a small level, but it still gets pressed out there. At the same time, we're giving young people in a particular community access to skills. We get some junior technicians who are dealing with some of the issues their neighbors face – technical issues or access issues – and are gaining a solid skill for adulthood. IT isn't the worst career to be in. "I think it's a nice little package."

M: That's a great idea. The city puts its weight behind this momentum and collaborates, forms partnerships, to bring organizations that distributes computers on a small level and have the means to train folks, attracts help from companies such as Microsoft and Apple.

Facilitator: Partnerships with both for-profits and nonprofits.

M: I'm not a big fan of the government; we need the private sector to get involved to get real leadership. Companies such as Cisco might say, "Convince me that the investment I can make in Oakland. This is a model that I can take to other parts of the country." But somebody in government

has to lead the charge also – talk to Microsoft, talk to all these guys who can make money in the city. I don't want to beat a dead horse, but leadership is the most important thing, from both public servants and community organizations.

M: I don't sense there's been much public face put on this wireless effort yet. Leadership is a funny word, depending on how you feel about the Mayor, the governor or the school principal. The leadership we have doesn't exactly inspire confidence. This wireless initiative is never going to be anywhere near the top of anyone's list of priorities at City Hall, with the murder rate, economic problems and educational problems – maybe it's 6, 7, 8, 9, or 30, 40, 50 on the list. That's why it will take a community effort to inspire this kind of leadership. I just stumbled on this wireless initiative when I was at the Dimond Library on Monday. I'm online every day; maybe I wasn't looking in the right place. "It would be nice if under the rubric of leadership, there was some kind of public face put on this movement, with an invitation to the community to get involved." I looked at the Department of Information Technology's part of the city's website and it was hopelessly out of date. That's no one's fault; those things happen.

M: But it is someone's fault.

M: There should be someone on staff, maybe 19 or 20 years old. The young people are very tech-savvy. Look how Obama mastered technology and tapped into that early on, by working with the founder of FaceBook, etc. The leadership in the community needs to push that, but with young techies involved. Like the Geek Squad. They may be living in Mandela Gateway.

Facilitator: What are other priorities?

F: Treat this like a public utility.

M: Whatever equipment you put out there, it will break. What will they do to get it fixed? If you have technicians, young people in the community, learning how to repair these things, and companies donating equipment having an interest in making sure it's maintained, you can create a labor pool.

M: The point is to train people in the community, not bringing folks from outside. Training is one of the high priorities – people who install it and fix it, and training people in the community to use it.

F: Were you talking about public utility in the sense of access? People need access first.

F: When you move into a new apartment, you make three calls – to the City of Oakland to get Internet access turned on, to PG&E for gas and electric, and to AT&T for your telephone. That's what I mean by public utility.

M: The point is that "it's no longer a luxury; it's a necessity, like transportation and running water."

Facilitator: Anything that's a low priority?

M: Some of them may be frosting on the cake and might come later on, but "they're all a piece (of the solution). It's hard to separate the access from the hardware. If you don't have a computer, the access means nothing. If you don't have the training to know how to use it, the hardware means nothing." I wouldn't start with mobile healthcare, but once the system is up, it would be nice if people can find where the mobile healthcare's going to be this week. You build the network first, and these value-added propositions.

M: Access has to include hardware, wireless and training.

F: At the end of the day, access is the means to the end. There should be a menu of stuff, that once the system is in place, people can use it.

M: When the city does do this, let's not spend all this money to hire brand new people to recreate stuff that already exists. See what already exists, what organizations already are doing things like training and handing out free computers. Leverage existing resources.

M: Get input from students at Castlemont, Skyline (high schools)– kids – for a different view. Also junior high schools.

Facilitator: Thank you.

Focus Group 5 Flip Chart Notes

Priority Votes	Service Ideas
	Community Centers/Housing Complexes - Wireless access with device of choice
	Training for communities
	Destination to get info plus offer content
	User-friendly and interactive web site

Priority Votes	Service Ideas
	Computer labs outside of libraries
	Library for rental of electronics, etc.
	Mobile health care/clinic
	Create bridge to existing clinics/hospitals
	Expansion of after school/training programs
	Connect senior centers to share information
	Screen to screen contact - Social connections for seniors and beyond
	Does access extend beyond public places? - Discounted personal access?
	City provided alternative to Comcast
	Technology leadership needed
	Free access in homes and computer labs
	$$ from the California Emerging Technology Fund (CETF)
	High level training and information sharing and access
	Group to track latest changes in technology
	Public education - In schools and online
	Access to information - Currently and future
	Proprietary to Oakland residents? - ID # per resident for certain services?
	Database development - For available housing
	Revamp/Improve existing - City web site - Up-to-date information
	How close is City to implementation?
	Access to public - Including hardware
	City partnership w/ corporations
	Training youth for workforce
	City partnerships w/ non-profit and for profit
	Leadership from private sector
	Effort led by private sector

Priority Votes	Service Ideas
	Ensure information is current
	Youthful tech savvy people engaged
	Maintenance and training within community
	Leveraging existing resources already in community
	Conduct meetings at local junior high and high schools

	Top Priority
	Leadership - Community - Public servants
	"Public face" put on this movement
	Public utility (as in access to service)
	Training
	Access - Hardware/wireless

2.6. Focus Group 6 – District 3

West Oakland Senior Center, 1724 Adeline St., Oakland, CA
Thursday, September 25, 2008, 5:30 p.m.

Tellus Venture Associates:　　　Steve Blum
City of Oakland Project Manager: Tino Granados

Participants:

	Age <40	Male	Female	Age >40	Male	Female	Total
African-American				4	3	1	4
Hispanic							
Asian	1		1	1		1	2
Caucasian	3	1	2	2	1	1	5

Facilitator:　　Welcome, introduction, overview, purpose.

　　　　Show-of-hands indicates most participants use cell phones regularly and have computers at home, work and school, etc.:

　　　　Cell phones:　5 of 5

　　　　Smart phone, Blackberry:　2 of 5

　　　　PC at home:　5 of 5

　　　　Use internet regularly: 4 of 5

(not all participants were present at this point)

　　　　If people were to tell someone from outside what it's like to live in Oakland, what would they say? A word or phrase that best describes what it's like for you here.

F:　　Great place to live if you're prepared to live with diversity and to treat people with respect.

F:　　Diversity and a variety of cultural programs.

M:　　Laid-back urban – can spend time in massive parks. Have more wilderness than most urban areas do.

F: Complex.

F: Exciting – with all of its implications.

M: Challenging.

Facilitator: What would you like to be able to do with wireless technology in Oakland?

###:   Look at cell phone and see when the next bus will arrive.

###:   Have TV access to city services.

###:   Free internet. Sit on porch – not all eligible – at taxpayer expense but ITV.

###:   Anywhere there is a business should have access.

F: Our complex has 14 condos, most with DSL lines. Whenever someone is high-and-dry, we can piggyback on one another. It's very handy. But it would be nicer if it were more robust.

M: All city programs and services and information should be more easily accessible and on the city's website. It's hard to keep up-to-date.

F: It should be accessible regardless of the platform (Windows, Linux, Mac) or the device (desk computer, laptop, Blackberry).

F: Need ubiquitous access to healthcare services. There are cases and situations in which you might want to transmit real-time data, be able to link between providers and homes – in the sense of bridging the digital gap.

###:   Real-time applications in all-encompassing network for all citizens.

###:   Available computer terminals.

###:   Has to be secure, encrypted network to keep personal health records and financial information private. Some information is a matter of public record, but security is important for privacy.

###:   Some people never get to the library or a rec center. We need a tiered solution for low- to high-level users, so people can get basic access at no cost and then move up to the highest level.

F: Wireless would be a good tool to provide information about special events such as Art & Soul, parades. Also to facilitate communication during the

events, management of events, logistics, security, communication among vendors.

M: Has to be transparent; community needs to know where access is available and what information is available. Also, whatever the solution, we need to understand how it works, who owns what, how privacy is ensured, etc.

###:   If we have webcams in the neighborhoods, who gets to look at that footage? We'd need to know what benefits the taxpayers are getting from the wireless service, as well as what benefits the vendor is getting.

M: Police could use wireless technology to triangulate gunshots and make effective use of gunshot sensors.

M: Some people are technology-averse so they would get left out even with universal access. Need some really simple device that people could use, such as a sort of early-warning system, a squawk-box in their homes if they don't have computers. Same message could go out simultaneously on cell phones.

F: Install public-access kiosks in central locations; monitors where people could get information.

###:   Solutions need to be scalable to anticipate what's coming next. We need forward-thinking solutions that builds on what we already have and doesn't waste money and effort recreating work and data that already exist.

F: A lot of people still use Windows 98 and even Windows 95. System would have to work with old technology as well as technology that we don't yet have. "Backwards-compatible."

M: Platform-neutral solutions.

M: HTML has to be totally independent relative to platform or browser.

###:   The city has to help people get hardware. We have to let people know where they can take their old computers for refurbishing and repair; not just to the recycle center. There are tons of old computers available.

F: Software solutions should be open-source.

M: Avoid proprietary solutions (hardware/software) that paint you into a corner with a single vendor.

###:   There should be a support timeline for older versions when software upgrades come out.

M: In terms of fire, safety, police and rescue services, the city could use greater access and linkable real-time mapping.

M: Can police see video from helicopters in their squad cars?

###:   There should be perks, incentives or some advantage for people to switch from DSL to wireless.

###:   Wireless should be free, with very limited bandwidth for basic service.

M: Bandwidth usage is hard to manage.

###:   Provide developers and builders with incentives to install towers in high-rises.

###:   Inclusion of wireless towers should be part of the building code for structures of certain minimum heights/densities.

M: There are creative, aesthetically pleasing ways to install towers; repeaters can be designed to look like trees.

F: Smart little startups should be part of this conversation.

###:   When you start doing upgrades.

###:   Off-the-shelf helps with upgrades.

###:   What are the city services, public services, where wireless might help?

F: Whatever the city provides should be respectful of the community – no popups reminding someone to pay their property taxes or parking tickets.

F: Users should have an opt-in/opt-out feature that pertains to the information they get, respects personal privacy and doesn't open the floodgates to unwanted communications from the city.

M: The city could use wireless for public noticing – on kiosks and in popups on monitors and cell phones. It is difficult to get the word out to people to let them know about public hearings and other things where noticing is required.

M: Another aspect would be similar to basic cable service – you get free access to channels with public information such as KTOP. People could opt-in to receive information electronically; it would be helpful to come up with a non-commercial email solution.

Focus Group 6 Flip Chart Notes

Priority Votes	Service Ideas
	Look at cell to see when next bus will arrive
	T.V. access for seniors to services
	Free Internet to public (hot spots)
	Access where there are businesses
	Network more robust than current network
	City programs and info up-to-date and accurate on city web site
	Accessible to all software and hardware
	Link between health care provide and home
	Real time application
	All encompassing network for all people
	Available computer terminals
	Secure encrypted network
	Appropriate security of health and financial records
	Tiered solution for low to high level users
	Special event applications - Logistics - Perspectives --Management --Security --Vendor
	Need for transparency to public - How it works - Who owns it
	Benefits to taxpayers
	Benefits to vendors
	Link to gunshot sensors
	Combine with emergency notification systems
	Alert via cell phones
	Public access kiosks

Priority Votes	Service Ideas
	Scalable solutions - Forward thinking solutions - No re-creation of data/work - Backward compatible
	Which platform will be used?
	HTML format - Independence relative to platform
	Provide assistance to individuals to buy computers
	Recycle hardware
	Open source software solutions
	Avoid proprietary solutions with software and hardware
	Software solutions upgrades will have timeline to support older software
	Emergency services - Linkable real time --Fire --Rescue --Police
	Advantages for people who move from DSL to wireless
	Service free with limit on bandwidth (may be difficult to manage)
	Incentives for (real estate) developers - If building is over a certain height
	Repeaters and towers - Aesthetically pleasing
	Inclusion of "start up" communities
	Should be opt in and respectful of personal privacy
	Not a flood gate for unwanted City communications
	Use of system for public noticing - Kiosks - Pop up on computers - Pop up on cell phone
	Free access to basic public information - Example: City cable station
	Opt in to receiving information electronically
	New industry of building hardware
	Non-commercial email solution for seniors, etc.
	Spam filtering messages from City

Priority Votes	Service Ideas
	Balance of use of system between public and business
	Who will have oversight and what are criteria?
	Associated costs?
	Who will pay?
	Creates jobs that Oakland needs
	Tie in with schools and education; training for jobs
	Growing labor force
	Get larger community involved
	Senior alert system similar to Amber alert

	Top Priority
	Public access
	Content of system
	2nd Priority
	Information of System - Who is managing - Transparency - Security
	Physical Infrastructure - Location - Aesthetics - Hardware - Software
	Education/Training
	Driven by practicality
	Dependency on outside agencies?
	3rd Priority
	Inclusion of start-ups

2.7. Focus Group 7 – District 7

Eastmont Substation, 2651 – 73rd Avenue, Oakland, CA
Thursday, September 25, 2008, 7:30 p.m.

Tellus Venture Associates: Steve Blum
City of Oakland Project Manager: Tino Granados

Facilitator: Welcome, introduction.

Show-of-hands indicates most participants use cell phones regularly and have computers at home, work and school, etc.:

Cell phones: 2 of 2

Smart phone, Blackberry: 0 of 2

Texting: 1 of 2

PC at home/work: 2 of 2

Regular Internet use: 2 of 2

(Note: Only two participants were in attendance at this time)

If people were to tell someone from outside – in another state or another country – what Oakland is like, what would they say?

F: Diversity; all types of groups and sub-groups to interact with– ethnicity, culture. I love that.

M: Opportunities. Including the opportunity to meet people of different cultures and groups, but also economic opportunities to start your own business. I love it in Oakland. I moved up here from San Diego 25 years ago I wouldn't move back.

M: Oakland is hip. Alternative cultures.

F: Fast, fashionable, culturally diverse.

F: Inspirational. Makes you want to do something positive.

F: Urban culture; graffiti as art.

Facilitator: Any ideas of how you think wireless technology might help Oakland improve city services and/or improve the quality of life here?

M: Recent vandalism in neighborhood; young guys with hoods on and baseball bats came through breaking car windows, whacking off mirrors. One of the Neighborhood Watch guys thought maybe having video cameras would discourage that type of activity. But logistical issues, such as location of cameras, power, etc. might make it infeasible on residential street. Major intersection might be different.

F: Los Angeles has TVs mounted behind the drivers in buses so riders can watch the news. Liked this so could stay up to date.

F: We need more WiFi hotspots. I don't have Internet at home, and like a lot of other kids, I need it for homework. It's hard to get to downtown Oakland, and it's a hassle to get a spot at the library. A lot of people will sit outside the Dimond library in their cars so they can get access to the Wifi hotspot.

M: The Dimond Library has WiFi, but the Eastmont Branch doesn't. All the libraries need it. Schools, churches and public facilities should all have WiFi to help build community and seed participation. WiMax mesh would enable low-income people to participate. Charges aren't prohibitive for everyone, but access would be a luxury in some households. Something between dial-up speed and broadband speed would greatly improve educational opportunity. Some neighborhoods in San Francisco have WiMax mesh that covers certain areas. With a mesh network, the ability to download information would be easier to achieve. As for webcams, am not sure how communities would feel about being under surveillance, but you could use the infrastructure to achieve a number of things. The Oakland Police Department can use microphones to triangulate gunfire; in the same way, you could identify other major disturbances. They can be very tiny microphones; you're not trying to pick up conversation.

M: We've used two-way radios for years, and cell phones are just fancy two-way radios. With WiFi or mesh, it would be extremely valuable – much like VOIP.

M: Not just voice, but also text over the Internet. Community groups and city agencies could use the network to send out alerts about meetings, etc., to groups and subgroups to be messaged.

F: It would be good to be able to talk over the WiFi instead of a telephone, especially in an emergency.

M: Because of the bandwidth, it would be enough for emergency calls.

F: It could be used to improve services the city runs or operates. For instance, I have a daycare center, and if I took the children on field trips to Fairyland or Lake Merritt or somewhere, and we could get information while we're there, or look at pictures on our laptops – the sailboats on the lake or the birds that we see – to use it to enhance the educational experience. With improved services like that, we would be more likely to use city facilities more often and spend our money here. I also sell real estate; I could use a wireless connection to pull up information on a property on my laptop and get particulars of a house immediately – do it from the field without having to go back to the office or make a phone call. So it would make it more efficient. It would make it easier to do business in Oakland.

F: Residents could use Internet to report incidents to the city, or the police. Someone has tampered with my front door twice in the past month; I didn't bother to call the police because it doesn't seem to be the type of issue that would elicit a quick response. But with wireless reporting, police could see whether there are clusters of incidents happening repeatedly in an area, and send a cruiser to that area.

M: It wouldn't have to be wireless. It should be on the police website now.

F: Wireless is a great tool to get information, but you also need to be able to follow up if you have questions that need to be addressed. Many companies give you so much information, but no connection to someone, or a contact number, if all of that information does not help. "Just providing access to information is not always enough." Need a human component.

F: WiFi is available only on the buses that go to San Francisco. But within Oakland, a lot of students ride the buses and a lot of them have laptops (some loaned by schools). They could use WiFi to do homework or research while they're on the bus, or while they're waiting for the bus.

F: If the library in San Francisco is closed, you can sit outside and use WiFi there for your laptop. That would be a good idea here too. Need WiFi in libraries, boys and girls clubs, churches, rec centers, places where students go.

F: If you tend to partner, and companies follow other companies. The buses want our students and adults on their buses. If the bus has WiFi, "I'm more likely to choose that mode of transportation where I can get something done." "If you want me out of my car, provide me with WiFi and I'm more likely to choose you over BART."

M: For medical emergencies, some sort of 9-1-1 device that connects to the mesh network and sends information that someone needs assistance, perhaps an older person or someone with disabilities.

F: Maybe call-boxes in neighborhoods. For example, I was at a party where there was a shooting. Sometimes you panic and don't think. If there had been a call-box right there that took advantage of the wireless technology, it would be helpful.

M: There used to be police call-boxes in a lot of cities. Police officers had keys that they could use to call in.

Facilitator: Which of these items are most important to you? What is the highest priority?

M: More WiFi.

M: Whether it's public or private.

F: Churches, community centers, libraries, boys and girls clubs, public service places, public locations.

F: If the city wants to raise more money, install WiFi in buses first. Also schools, libraries and other public places.

M: WiFi in small business, large businesses, offices could seed more widespread use.

M: Having WiFi would encourage businesses to situate in Oakland. "If we get ours up before Silicon Valley does, those companies will come here."

F: Another priority would be the health and safety issues.

Facilitator: What would be your second priorities?

M: Because of the rapid demise of pay telephones, call-boxes as calling devices for 911 would be important.

F: Residents' ability to report incidents to the police via the Internet.

Facilitator: What about lowest priorities?

F: They are good ideas, but call-boxes, webcams would be subject to vandalism, theft, malfunctioning.

F: In the project where they tried the cameras, they destroyed them.

F: People might also abuse call-boxes, pressing buttons when there is no emergency.

F: Microphones – again, vandalism, theft and breakage.

M: I don't think that would be a problem with microphones. They can be so tiny, the size of a paint chip, and high enough on a lamp post no one would even notice them.

Facilitator: Thank you.

Focus Group 7 Flip Chart Notes

Priority Votes	Service Ideas
	Curb vandalism
	Web cameras can help with neighborhood watch but may be 'big brother-like'
	Logistical issues
	There are TVs in LA buses; this is nice because you can stay updated
	More WiFi for youth who don't have (or can't afford) Internet at home
	No WiFi at the Eastmont library, but they do have it at the Dimond library
	Build WiMax mesh so low income can have access to high speed broadband throughout city
	Cameras can collect photos during crimes
	Build WiFi at schools, churches, boys and girls clubs, community centers, libraries
	Microphones attached to mesh network (can detect gunfire for example)
	Can also text freely over the network
	WiFi phones

Priority Votes	Service Ideas
	Can improve city provided services and activities (e.g., Fairyland) by having real time access to children for example so they can see and hear and learn more about what they've seen through a computer or other device. - Encourage more people to use facilities - Keep $$ in Oakland - Can also help businesses like real estate so they can have real time access to data like MLS
	Wireless reporting of low level crimes - Will show police where cluster of activity is occurring and can perhaps seen a cruiser to check it out - We should do that now on the police web site
	Back up person/human contact - Getting data is great, but may need to talk to a person
	WiFi on all buses (not just the ones that go to San Francisco)
	WiFi at bus stops and shelters - If you want me out of my car, give me something (to do)
	A medical emergency/911 service to access 911 (or similar) via the network
	A callbox in the neighborhood that is directly connected to the network so when you pick it up it connects to 911 or emergency services

	Top Priority
	More WiFi (WiFi mesh) public or private at the community centers, schools, libraries, etc.
	If the city wants to create more revenue, focus on WiFi on buses so people will use them more
	Have (WiFi) available as a public service
	The use of WiFi to support health and public safety
	2nd Priority
	Call box to replace the lack of pay phones
	Wireless reporting to identify cluster of crimes
	3rd Priority
	Cameras – kids might break them
	Call box – false alarms could be a problem
	Microphones might also get broken - Maybe not if they are small enough and hard to detect

3. Minutes from Workshops

A series of six workshops were conducted over three days in July 2008 to gather information about City and community needs in relation to the Oakland Wireless Broadband Feasibility Study.

Recorder's notes appear in brackets; hash marks (###) indicate inaudible words/terms.

3.1. Workshop 1 – Police, Fire, Mayor's Office, City Administrator's Office

Wednesday, July 23, 2008, 9:30 a.m.
Oakland City Hall, Hearing Room 1

Introduction: Stephen Blum, Tellus Venture Associates

Project Mgr: Tino Granados, City of Oakland

Participants (per sign-in sheet):

> OFD: Leroy Griffin, Oakland Fire Department, lgriffin@oaklandnet.com
> OFD: Annette Fountaine, Oakland Fire Department Dispatch,
>   afountaine@oaklandnet.com
> OFD: Dave Brue, Oakland Fire Department, dbrue@oaklandnet.com
> OPD: Daphne Markham, Oakland Police Department, Bureau of Field Operations,
>   dmarkham@oaklandnet.com
> KTOP: Michael Munson, mimunson@oaklandnet.com
> MO: Kitty Kelly Epstein, Mayor's Office, kepstein@oaklandnet.com
> CAO: Anne Campbell Washington, City Administrator's Office,
>   acampbell@oaklandnet.com
> DIT: Andy Chen, achen@oaklandnet.com
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> DIT: Ahsan Baig, abaig@oaklandnet.com
> DIT: Ray Pickett, rpickett@oaklandnet.com
> DIT: Kenneth Gordon, kgordon@oaklandnet.com
> DIT: Terry Allen, tallen@oaklandnet.com

DIT: Clark Henry, chenry@oaklandnet.com
DIT: Brian (Tino) Granados, bgranados@oaklandnet.com

Granados: Welcomes participants.

Blum: Introduces self and gives opening presentation

Facilitator: Described the session's objective as getting application requirements for a wireless initiative in Oakland. The focus is not on different technologies and strategies, because identifying applications comes first. After that, participants will rate or prioritize the requirements. At that point, technologies can be matched to the requirements.

     He invited participants to introduce themselves.

Ahsan: DIT, program manager.

Jane: DIT, telecom supervisor.

Trehinbe: DIT, help desk.

Kenneth: DIT, Division Manager.

Elizabeth: DIT, Manager.

Annette: Fire Dispatch Manager, Oakland Fire Department.

Daphne: Project Coordinator, Oakland Police Department, Bureau of Field Operations.

Damaris: DIT, Division Manager, Customer Services.

Abdullah: DIT, Information Systems Supervisor.

Mike: Operations Manager, KTOP.

Andy: DIT, Network Architect.

Terry: DIT, IT Manager.

Kitty: Office of the Mayor.

Clark: DIT, IT Supervisor.

Leroy: Fire Department, Fire Prevention Bureau, Assistant Fire Marshal.

Tino: DIT, Project Manager for wireless initiative.

David: Communications Officer, Oakland Fire Department.

Facilitator: Noted there is a considerable public safety focus among participants. If categorizing application requirements, public safety would be one. He asked what others might be.

Ahsan: This group is all public safety.

Daphne: IT is well-represented.

Facilitator: Asked for general thoughts about main application requirement for wireless. What is the biggest problem participants would like to solve with wireless technology?

Daphne: Having wireless technology in our vehicles. Mobile, but being able to access Department of Justice (DOJ) information and the internet. Also cameras, i.e., in-car video, live access so people in the organization could see what's going on in real time. The commander would be monitoring the radio, and could use in-car video to see what's happening.

Ahsan: From a police perspective, there are a lot of mobile applications. The challenge is that we have good applications, GIS-based, maps-based. The challenge Daphne mentions is "getting all this information into the hands of the officers in the field, in the cars, motorcycles, foot patrols." Currently are using a commercial network and cellular network, at considerable cost but with insufficient bandwidth. Getting high-speed data is top priority. Second is video in the cars, and getting video out of the cars as well, depending on the situation – such as a car chase or emergency situation. We don't have all of those capabilities now.

Daphne: Underscored the importance of speed and cost-consciousness. It would be good to get out of Sprint and have our own network to bring the cost down.

Facilitator: Wants to list the major requirements, and then drill down in terms of

bandwidth and security requirements as well as operating and reliability requirements, because those are also huge factors. So far, the list includes mobile access to public safety vehicles, and we'll drill down to 95% of the area 80% of the time. The other category is remote video surveillance.

###: An issue with the term "surveillance."

Daphne: We want a new name, too. Safety cameras, for example.

Facilitator: The video has to be of the highest-level resolution. Also voice. It's interesting how 700 MHz, 800 MHz is blending with voice-over IP (VOIP). There's mobile radio, one in the car, handheld, and an MDT. He asked whether anyone has thought of reducing costs by eliminating some of those, and maybe using the MDT.

Ahsan: Said they've had detailed discussions, but the public safety industry itself in general is not there yet. Relying on a nationwide network of 700 MHz, but public safety industry relies on "5 9's" and such. A network for voice communications maintained by a commercial entity is a big "no" in the public safety industry's view. "Our interest from the public safety perspective is serving the people, saving lives. The commercial interest of course is making money." Until the technology matures for VOIP, WiFi, etc., he says we should continue with what we have now. At the same time, though, the key thing we're looking for in wireless right now is other ways to provide location-based services, GPS. For field operations, that's a huge challenge for the deputy chief to provide accountability for the time use of officers in the field. How do you get that information back to the command center from the field?

Facilitator: So we have voice, mobile data, streaming video.

Ahsan: From VOIP or WiFi, it could be a secondary or a backup, but we still need to rely on the primary voice system we have now.

Facilitator: He agrees; he's not assuming it would have been a commercial carrier band.

Daphne: Moving toward P25 compliance, Oakland has invested a lot to achieve interoperability communications with various regional partners. OPD is also moving toward individual laptops for each of the officers. Would we want the vehicles to have the access? Or the officers?

Facilitator: So we're talking about both mobile and roaming data access. In terms of major categories of service, are there any not yet mentioned?

Anne: "If we're going to have WiFi, we have to have the capability of being able to encrypt the data so that it meets HIPAA performance regulations."

Facilitator: So it would be end-to-end security, because some folks don't protect the data on the "in" device when they think it is secure.

Daphne: Agrees with Anne's point. Doesn't know specifically what Homeland Security's level of standards is, but would want to be sure to meet those standards.

Facilitator: Houston just went through that. To get access to state and federal databases, its crime reduction unit had to meet those standards.

Ahsan: Wants to hear from the Fire Department also. By not having citywide wireless infrastructure, what is the Fire Department using now? GIS, maps, streaming video from incident locations?

Annette: No access to any of that now from fire engines.

Ahsan: How about fire prevention and inspection? Is it pretty much a manual process now?

Annette: "Everything (inspection) is done by hand. You have to write it all down on paper. Come back in and enter it into the computer. Firefighters do the same thing with their reports. They write it all down on paper when they get back into the station. But they don't have any kind of access to computers in those vehicles." It would be great to have laptops like OPD.

Facilitator: If you had that capability, how would you apply it?

Annette: It would cut down tremendously on time spent, because after every call, they have to sit down in front of the computer and input into the system.

Facilitator: So you want it in the vehicles but also mobile.

David: One of our issues is coordination with OPD during incidents. Timeliness of our response would be improved if the communications aspect could be coordinated better, and having video.

Facilitator: Those E-team applications pull information together in these databases. It would be great if the folks in the field had access to some of the coordinating information.

David: At least 70% of the time, we need to communicate with OPD.

Facilitator: So access into the field, and maybe some applications that allow collaboration and information-sharing.

Annette: Visual information, like OPD says they want surveillance cameras, live in-car video with remote access. If the Fire Department had remote access, the firefighters wouldn't have to stage for 1½ hours, asking over and over if the scene is secure. They could see for themselves.

Daphne: But keeping DOJ guidelines in mind. She used to work closely with Leroy (chief of prevention), and believes it would be helpful for the Fire Department to have access to buildings' floor plans, photos, fire history, etc.

Ahsan: Great point. A lot of this information could be consolidated and centralized – it's part of the IT vision. Access to centralized maps and floor plans –

Annette: It's in the CAD system, but we have no way to get it out for people to see it.

Daphne: It's currently separate databases. "If we want to get wild here, on our wish list – we want some robots – a big and a small robot." Both the Police Department and the Fire Department could use – if a building's on fire, the robot could check for bodies; also could be used in a terrorist event or a hostage situation. Also, we have a helicopter and boats that need to be connected also. When the helicopter's flying above, the command center can see what the helicopter sees. And coverage is important to both Fire and Police, because of the hills and valleys, dead spots. These cost lives, so we need good coverage.

###:   On the city side, MSSP Care (Multipurpose Senior Services Program) is a State-funded program that provides services to the elderly. RNs go out into the field to see the elderly, help them with their meds. On their laptops, they have info on each of their clients; apparently they're now using a third-party wireless company to provide access to internet-based applications. A muni wireless network would be a perfect opportunity for this program.

Kenneth: A segue from that… there's a huge opportunity here to involve volunteers, perhaps retirees, doing perhaps crime-watch activities, but this would revolve around the community and connectivity at recreational centers and other city facilities where people gather and can network among themselves. A "Citizens' Volunteer Network."

Anne: The Neighborhood Services Division is part of the City Administrator's office, and Neighborhood Services coordinators actually work onsite in the neighborhoods most of the time. They coordinate crime prevention, work with the communities, report problems, work with OPD and other departments. It would be great if they had the ability to use a wireless device to put their issues into a tracking system. I know we're working on that; we're getting ourselves to a 3-1-1 eventually, but it all ties in. Also have an Oaklanders Assistance Center, part of the Mayor's Office, doing similar work, resolving neighbors' problems.

Facilitator: On the emergency management side, is there any need to create an instant hotspot for temporary connectivity there?

Annette: Such as being able to talk on their radios inside cement basements?

Facilitator: Yes, it's like creating a more concentrated radio signal in that area, versus relying on a tower somewhere. You can bring the radio on a truck into that area and boost the signal. Also, short of ubiquitous coverage, we've seen some requirements elsewhere for hotspots because sometimes databases used in vehicles aren't updated as often as they should be. Police and fire chiefs then might go to parking lots to re-synch databases as a short-term solution.

Ahsan: We have roughly 18 hotspots now, which isn't much in a city this size and the needs. Also databases are updated more frequently than in the past.

Daphne: There is a need for redundancy, in case one system goes down. If infrastructure gets broken, as in an earthquake, could we set something up within the zone?

Facilitator: Yes. Is there any need for wireless connectivity to remote patrol stations and fire stations? T-1 capacity is being exceeded, especially when video cameras are added, and the cost of upgrading wiring can be significant.

Daphne: There would be a monthly cost associated with that.

Facilitator: Talking about mobile access, in terms of coverage and performance (bandwidth) requirements), because they will drive the technology solution. Video, GIS maps, uploading video, etc. exceed a 3G card's capacity pretty quickly. Then we'll talk about security and reliability. From coverage standpoint, what do you need? Does it go beyond the city boundaries?

Annette: Not for the Fire Department.

Dave: Most of our problems are in the hill areas.

Daphne: In OPD, in hot pursuit situations, we work with BART to continue through their tracks areas. Isn't there a way – mesh with the closest phone – that when cars are moving together, they can keep communicating with the home base as long as the last car is close enough? I don't know how far – San Francisco, Walnut Creek, Vallejo – but that would be good if it is possible.

Andy: Coverage would go to Fremont, Walnut Creek, Richmond on the BART tracks?

Daphne: I think we have that capacity intermittently now, and we have the agreement with BART. We're also in what's called the Bay Area Super Urban Area Initiative (Homeland Security) that encompasses 10 counties in the Bay Area.

Facilitator: Is it fair to say the primary area would be the city, with extended coverage area encompassing Bay Area counties?

Daphne: And if we had to prioritize among those, it would be the immediate areas – at least in terms of hot pursuit.

Ahsan: Do police go beyond Oakland in hot pursuit?

Daphne: Yes. And we've lost radio communication and cell phones. Concerns include safety, coordination, internal affairs.

Facilitator: What about something like the oil spill? Were there some hazmat challenges involved in coordinating among various departments handling that?

Dave: That's not a primary issue for us, but it would be beneficial in a prolonged operation.

Daphne: Some of OPD's city partners haven't been mentioned, such as Public Works and Code Enforcement.

Ahsan: Also parking enforcement. Actually, we'll be meeting with pretty much everyone.

Daphne: Just wanted to note that it is important to be able to coordinate with them.

Facilitator: Is it mainly street-level coverage you need? Or indoor as well?

\###:   Speaking of coordination, for example in code enforcement, is this to be able to access information?

Daphne: Information, yes, but when the freeway collapsed not long ago, it would have been helpful to see a map of the area on the spot to help determine how to redirect traffic, for instance. Also to have the OPD Deputy Chief and the Director of Public Works determine where to put barricades – all in real time instead of meetings on the sidewalk.

Tino: Same thing with the Emergency Operations Center (EOC); the emergency base needs to be able to connect with all the departments.

Facilitator: EOC probably has some applications like that; the issue is connectivity – getting access to them from the field. So – we're talking mainly above-ground, mobile coverage –

\###:   Not for the Fire Department.

Dave: Another area is subterranean BART stations.

Ahsan: And tunnels.

Facilitator: The same radio frequency being repeated down into the BART stations and tunnels.

Ahsan: We share mutual aid channels for voice communications.

Facilitator: Let's talk about bandwidth requirements. Do you need video going out to the vehicles only? Or both ways?

Daphne: Both ways.

Ahsan: That would be similar for the Fire Department; firefighters might want to send video back to the dispatch center.

Facilitator: So you want symmetrical performance. Do you have any sense of how much bandwidth you need for the cameras?

Ahsan: 1.5 to 2.0 Mbps, but it depends on the application. We are seeing more and more, not only in-car video but safety surveillance cameras. In fact, there's a new requirement for mobile cameras in some areas, such as West Oakland, where the community is actually demanding having mobile cameras – and funding the project.

Terry: Based on resolution requirements, mainly MPEG 4.

Daphne: From the end user's perspective, you have to double or triple it, because we keep reaching our limits. Also, we want to relate the surveillance cameras and everything else to the Technology Monitoring Center we've been talking about.

Ahsan: Fusion.

Daphne: We're supposed to avoid the word "fusion," because Alameda County has an Intelligence Fusion Center, a data fusion center.

Facilitator: So in general, there's about a 2MB requirement for a normal patrol car or fire vehicle, but some situations with video feeds that may need 10MB or 20MB connections to get the high-resolution video. While that could be fixed, it sounds as if it's roaming. So if you have fixed wireless, you could move it into a spot for connection. Now let's get into how you feel about security requirements, understanding that the federal government drives a lot of that. In many cities, the area of security is where the rubber meets the road. Security requirements often lead away from a central infrastructure and toward maybe a parallel infrastructure.

Abdullah: Generally, we'd go by federal standards – basically encryption and separation for all law enforcement communications.

Anne: We also have to meet HIPAA regulation standards in the human services area.

Daphne: Acknowledging the need for separation, we'd also like to communicate with our partners outside of law enforcement in situations where we can share information.

Facilitator: I've learned that "everything wireless is wired." Wireless is really just an extension of the wired network; at some point, it goes into the wired network. Is information shared on the wired network today? Or are the networks separate?

Multiple: Yes. Physically separated?

Terry: No, they're shared a little. There are firewalls and such. One infrastructure –

Facilitator: But segmentation.

Annette: Fire can't see police and police can't see fire.

Facilitator: So that's a key distinction. The requirement is a logical, reliable segmentation.

Kenneth: Is there a federal or DOJ rule that requires physical separation?

Facilitator: That question has come up in other cities too. But wireless is more flexible than folks think. We'll follow up on that, because that drives the way you build your infrastructure. Do you use VPN?

Ahsan: Yes.

Facilitator: Do you now have a standard for remote access that the infrastructure must adhere to?

Ahsan: Yes. We are pretty well secure and compliant with California's law enforcement technology system as far as remote access is concerned.

Facilitator: How about denial of service issues? Being able to disconnect rogue devices? That's more detail, but warrants a closer look. Reliability is another area where the rubber meets the road. Let's define "5 9's" typically – redundancy?

Ahsan: Availability.

Facilitator: Power generators on the towers. So if you have a mesh, it's "5 9's" on your central infrastructure but "3 9's" on the satellite infrastructure? Or is it "5 9's" all over?

Daphne: What's "5 9" mean?

Ahsan: 120 seconds downtime in one year.

Facilitator: To get that level of availability, you need redundant infrastructures, because hardware goes bad and things happen. Generators at towers, the power supply, helps achieve "5 9s." Typically, most run parallel infrastructures; if one system goes down, it trips over automatically to another system within 5 seconds or a backup generator kicks in. Operationally, "5 9's" means you have to have this whole checklist of operational configurations in place.

Daphne: So what do we want?

Facilitator: "5 9's" would be a requirement for the network. You don't have it with 3G – it doesn't come close to providing "5 9's." That's "5 9's" on availability; performance would have to be managed. If you segment the network, you have to segment bandwidth and provide dedicated, reliable bandwidth. If OPD and PWA share radio airwaves, suppose the OPD is guaranteed a certain amount of bandwidth. PWA running applications can't disrupt the police operations. That's tough to achieve. Have you discussed separate, dedicated public safety radio frequencies?

Ahsan: There's a whole process we follow as far as frequency allocations are concerned for public safety.

Facilitator: Does public safety have to run a separate radio frequency?

Ahsan: For example, 4.9 GHz is allocated for public safety, but FCC includes police, fire and public works in public safety.

Daphne: This might be a sensitive subject that Fire Chief and Police Chief should discuss.

[break]

Facilitator: This has been a very good process. Now we'll go back through the

requirements and try to prioritize them, both in terms of functional requirements and issues such as security and reliability.

Daphne: We wanted to make sure a couple of things are on the list. We want to be able to access information while moving at high speeds. Also the Traffic Division is coming out with automated citation devices connected to the Alameda County Courthouse and other entities.

Facilitator: Citation is like a code inspector, going around on foot? Parking citations, etc.?

Ahsan: Yes, issuing citations and synching up with the court system and records management.

Daphne: Also to be able to pull information if you stop someone, so it would have to go both ways. Also make sure motorcycles are included.

Facilitator: Major requirement is mobile data access, including motorcycles, connectivity at high speeds, and uninterrupted connectivity from cell to cell (tower or streetlamp).

Dave: What does "robustness" entail?

Facilitator: "What we learned in the wired world we're experiencing in the wireless world." Bandwidth that starts off being adequate is consumed quickly. You start with 1.2 and applications people develop all kinds of cool applications. So scalability kind of fits under robustness. Network technology and infrastructure that's quickly scalable to keep up with needs is what's important, not buying 200% more bandwidth than you need and may or may not use. We'd like a sense of the relative importance of some of the requirements you've told us about. #1 is the highest priority; #5 the lowest.

###: On mobile wireless access, unanimously in favor of #1 except Andy, who abstained (because he doesn't think DIT should vote).

Facilitator: Remote video surveillance from fixed locations, a very high bandwidth requirement of at least 10MB, is another priority.

Daphne: In the WiFi context?

Facilitator: Not necessarily WiFi, but wireless.

Daphne: Too expensive to lay wire.

Ahsan: Exactly. The whole study's focus is wireless in generic sense – not
                specifically WiFi or WiMAX or mesh, VG, LTD, anything. Three years ago
                when Ken and Ahsan started this project that set the whole vision without a
                specific technology.

Facilitator: Technology to support one requirement might differ from one to support
                another requirement. Funding streams for each might differ also. But the
                same technology that connects video cameras in fixed locations may support
                other applications, such as remote facility connectivity.

Jane: Can more than one requirement have a #1 rating? Something has to be the
                least important.

Facilitator: Right, because otherwise everything is important.

###:   Remote video surveillance from fixed locations, a very high bandwidth
                requirement of at least 10MB.

Ahsan: Location-based services – ABL.

Jane: What about images, GIS, etc.?

Facilitator: Those are among applications that would drive bandwidth requirements. In
                terms of access requirements, there is mobile, fixed location and roaming
                (for access by inspectors and others in the field), BART and tunnel access. In
                mobile, three levels of access were identified – streets, waterway, helicopter.

Daphne: In-car video is not a fixed location.

Facilitator: In-car video would be in mobile data access.

###:   Which is ABL in?

Ahsan: Mobile. Starting at big-picture level, we'd drill down into each requirement
                and applications – video, voice, GIS, location, emergency, text messaging,
                SFS, everything.

Facilitator: With access methods and applications, we can build a matrix to see what

bandwidth and security requirements are drivers.

Kenneth: That will help the users.

Facilitator: What about indoor requirements?

Ahsan: Coverage would mean above, below and inside buildings, including basements and parking garages. That's a high-level requirement.

Andy: All of this should be weighted by the users, not IT perspective.

###:   IT would defer to users.

Daphne: We only have two users here. "So we're super-delegates." Speaking for OPD, she appreciates IT looking out for users. But we rely on IT.

Facilitator: We're doing a cross-section in the workshops to cover users from various areas. Summary of requirements to be weighted: 1) mobile data access, 2) remote fixed access – video surveillance; 4) roaming access and 5) fixed bandwidth – above and below ground, in buildings and basements); 5) waterways and helicopters.

Annette: Buildings, basements and tunnels are more important to Fire Department than OPD "because we go in buildings to fight fires every day and can't talk to each other." That would be a #1 priority for the Fire Department because of firefighter safety. But mobile data access would be #1 for the Police Department.

Dave: Coverage is the Fire Department's issue, above and below ground, but mostly in deadspots.

Facilitator: This might qualify as "emergency scene coverage," which can be addressed in various ways. For instance, a dynamic network would enable getting equipment into an emergency area to extend the signal into that area. That seems more feasible than building a network that covers all the deadspots.

Annette: It has to reach back out. Firefighters have to be able to talk to each other and we also have to communicate with firefighters.

Dave: The problem is, we don't have #4 [in basements and buildings] if we don't have #1 [mobile data access] en route to a scene.

Facilitator: In a different scenario, you can have equipment on a truck that allows repeating a signal into an emergency area in a tunnel, building, basement, parking garage, or acts as a broadcaster from a truck. The truck would receive the signal and rebroadcast the signal into the emergency area. This would create a dynamic network in these areas; then you wouldn't need fixed coverage in those areas. Equipment can extend network coverage into otherwise uncovered areas.

Daphne: So if the APL building was on fire, they could pull up schematics on laptops.

Annette: We want to be able to talk. In a cement basement, "they hit their emergency button; we don't know what's going on. We're not hearing them say, 'Help me, help me' because it's not coming through that cement."

Facilitator: There are different portable radio technologies that can be part of emergency equipment. It would connect back to the ubiquitous network that is outdoors, but pulls the signal back into the building or basement, penetrating through walls.

Annette: Why doesn't that work with deadspots? "They could be standing out here on 14th and Broadway. If it was a deadspot, we wouldn't hear them." We don't hear anything at Skyline or Redwood, and that's a street corner.

Facilitator: You would use this for the emergency.

Dave: For Fire Department, deadspots are small percentage of the area.

Daphne: For robustness of mobile data access, OPD priorities would be high speed, scalability, reliability and no deadspots.

Facilitator: We're talking about ubiquitous outdoor street-level coverage, but in emergency situations that require boosting the signal we could do that also.

Ahsan: These are the things we need to consider from the user requirements perspective. Street-level coverage seems as much a priority for fire as police, plus in the buildings and basements.

Facilitator: This might be more of an extension of the mobile data access, using additional equipment to repeat the signal.

Annette: You could say mobile data access indoors and outdoors.

Facilitator: Originally we were talking about a constant signal in all areas, including basements and tunnels, etc., but that's now looking like an application requirement of the mobile outdoor access.

Annette: Doesn't necessarily have to be an emergency; they might just be asking for OPD.

Facilitator: The difference then is between extending signals by virtue of additional equipment that can be brought in and having equipment in all the areas all of the time.

Annette: Money.

Facilitator: It comes down to money. "You can't have 'all of the above.'" Let's look at high-speed remote access for applications such as video surveillance, building connectivity (e.g., T-1 replacement). These are fixed locations.

Annette: Could that feed back into OES (Office of Emergency Services) if there's a big incident?

Facilitator: Yes – all wireless networks are extensions of the wired network.

Daphne: That's important, but roaming access – the cars moving – is more important.

Facilitator: Mobile is ubiquitous connectivity; roaming is more a hotspot requirement for fire inspectors, code enforcement inspectors and so on, connecting to different cells and different radios – but not a persistent connection as with mobile.

Daphne: Then requirement #2 [remote fixed access] would be priority #2.

Ahsan: It could be video to scenarios Annette described to training. For example, Fire Department is talking about working with OES on a training simulation system, which requires a lot of bandwidth in different locations.

Daphne: It's also the way we're managing lineups at OPD. We have a major remote location at Eastmont in East Oakland, and there are other smaller locations that OPD is wrestling with in terms of connections.

###:   #2 is priority #2.

Facilitator: How about roaming access?

Annette: That's a 5; they're not here.

[laughter].

Facilitator: That's fair. This is from your standpoint.

Ken: They'd have to find the next hotspot.

Annette: And if we're talking about inspectors and non-emergency response personnel, it does not seem it would be a requirement for access all the time.

Dave: The way police officers use them now to send in reports.

Facilitator: With mobile data access, police officers in those situations wouldn't need the network hotspot in the parking lot.

###:   Roaming access is #4 priority.

Daphne: What about waterways and helicopters? I understand that's not expensive.

Facilitator: Relatively, it's not as expensive.

###:   Below and above ground would be #3.

Annette: No. That's important to us.

Daphne: We have two #1 – 1 and 4 are both top priorities.

Facilitator: What we talked about was in emergency scenarios, the extension of the mobile access would work. So that's part of the first requirement on the list. The fixed extension of the coverage in all the areas – in tunnels, buildings, etc., which is more money – is another requirement.

Annette: Wouldn't it be cheaper for the firefighters to carry something on the engine that they could take off and boost the signal? That's what we would do. It would not be fixed. It would be mobile; something they could carry.

Daphne: Except maybe in one or two of the most important locations, where it could be fixed.

Facilitator: Okay, so for the mobile equipment, we'll have an extension of the mobile data network. That's an application requirement.

Annette: Indoors and outdoors.

Facilitator: And emergency teams need to be able to extend the network.

Annette: With a mobile device that they could turn on.

Facilitator: Another question is do we build out the network and add equipment on a permanent basis as part of the infrastructure.

Annette: No.

Daphne: Could it be a blend? Part of the permanent infrastructure in some places.

Facilitator: I think you'll end up getting there. But is it a requirement right now?

Annette: No.

Ahsan: It's a requirement, but it's a huge problem because it also calls for working with the building engineers, contractors, construction companies etc. to extend public safety networks inside the building so police and firefighters don't lose their connections when they go in a building. 800 MHz, 700 MHz is a discussion we're having. It is important, but it's beyond the city's control because other parties are involved.

\#\#\#:   Roaming #3.

Facilitator: We have a lot of good information. From access standpoint, we have a good set of requirements under each requirement. We'll pull in all the security requirements, which are pretty generally across all, as well as availability requirements, to fit into each of these five access methods. We probably can produce a good document for feedback.

Annette: Is DIT going to specify all the things that fall under each requirement, such as ADL and so on?

Facilitator: Yes.

Ahsan: We also need input from people who are not here. So once the
                documentation from this public safety workshop is done, we'll send it to
                people here to make sure we got it right, and then we'll go for more
                feedback for the comprehensive report that covers public works and other
                departments as well as public safety, and also citizen needs. This is what will
                be used to develop the Oakland-specific reference architecture and a
                sustainable business model.

Daphne: For process purposes, will the public safety document come before the
                comprehensive document so our people have a chance to review it?

Ahsan: Yes.

Facilitator: Thank you very much.

Workshop 1 Flip Chart Notes

Application Requirements
1. IT
2. Public Safety
3. Biggest Problem?

Mobile/In-Car Video
1. In Police/Fire/Public Safety
2. Safety Vehicles

GIS/Map-based
1. Have Info
2. Need to get in hands of officers/field
3. $$$ currently going to cellular services
    a. cost conscious
    b. how get $$$ down

Remote Video Surveillance
1. High Level Resolution
2. Video Streaming

Voice

    1. Mobile Radio

Location-based Services
    1. What other ways can we provide?
    2. How get info back to Center

Oakland PD
    1. Moving toward region interoperability
    2. Moving to laptops for officers
    3. Mobile & roaming access

Security
    1. Need ability to encrypt the data (e.g., HIPAA guidelines)
    2. End-to-end
    3. Homeland security standards?

Fire
    1. No access from the engines
    2. Fire Inspection/Firefighters
        a. Reports done by hand
        b. Write in the field and go back to office to input into computer
    3. Vehicle Access
    4. Mobile
    5. Timeliness during incidents
    6. Collaborate & share visual info w/ police
    7. Keep within DOJ (Dept. of Justice) guidelines
    8. Ability to pull up historical/archive visual info (i.e., maps, floorplans, occupants are in databases but no way to get info out)
    9. Robots for police/fire to go into fire/terrorist/hostage situations
    10. Coverage to include airways and waterways

Deadspots are problems
    - require complete coverage

State-funded program in City that provides care to elderly
    - they use 3rd party wireless
    - would be valuable to access

Citizens Volunteer Network
    - connectivity to recreation centers, other
    - ability for citizens to put their issues into a system/network

- Hot Spots would be valuable for emergency management
- Allows ability to boost signal
- 18 Hot Spots in City today
- Mobile back up network if infrastructure 'breaks' in an emergency

Mobile Access Requirements

Coverage
1. Mesh network outside City to support pursuits past city limits
2. Bay Area SuperArea Homeland Security Initiative (Oakland is included)
3. Public Works, Code Enforcement, Parking Enforcement
    a. Informational
    b. Visual real-time
    c. Connect EOC in emergency situations
    d. Coverage needs to be above, below (tunnel) & in buildings

Bandwidth
1. Both ways (police & fire)
2. 1.5/2.0 Mbps video stream up to 20Mbps
3. Mobile cameras in problem areas
4. MPEG 4 resolution
5. Technology monitoring center

Reliability
1. Redundant
2. Availability
    a. Failover infrastructure
3. The "5 9's" – Oakland currently has this

Performance
1. Best effort
2. Dedicated reliable bandwidth
3. 24/7

Radio frequencies are reserved today for Oakland public safety
(Sensitive subject: 4.9Ghz band for Public Safety but others can use)

Security Requirements
1. Encryption
2. HIPAA requirements
3. State/Federal regulatory requirements

> a. Would be nice to share in a way that's 'legal'
4. Some networks are separate (i.e., police only, fire only, etc.)
5. Some networks are shared
6. Must adhere to current VPN standards

Must be able to access information at high speeds (e.g., pursuits)

Traffic Department
1. Automated citation devices
2. Roaming
   > a. Issuing citations
   > b. Synching data with the courts
   > c. Pulling up info

Motorcycles should be included

Quickly scalable

Ideas Parked
1. What are the DOJ Requirements?

Priorities for Requirements for Access

('1' most important, '5' least important):

1. Mobile Data Access (vehicles @ hi speed; uninterrupted; outdoor; no/overcome deadspots; include emergency coverage	1
2. Remote Video Surveillance (wireless fixed/ hi bandwidth; 10 Mbps+; feedback to EOC or other)	2
3. Roaming Access	3
4. Fixed Bandwidth (above/below ground/ inside buildings/basement)	4
5. Waterways/Airways	5

3.2. Workshop 2 – Public Works, Human Services, Community and Economic Development Agency (CEDA), Finance

Wednesday, July 23, 2008, 1:30 p.m.

Oakland City Hall, Hearing Room 1

Introduction: Steve Blum, Tellus Venture Associates

Project Mgr: Tino Granados, City of Oakland

Participants (per sign-in sheet):

CEDA: Darian Avelino, Community and Economic Development Agency
        Transportation Services, ddavelino@oaklandnet.com
CEDA: Deborah Acosta, Community and Economic Development Agency,
        Business Development, dacosta@oaklandnet.com
FMA: Kip Walsh, Facilities Management Administrator, kwalsh@oaklandnet.com
RM: Greg Elliott, Risk Management, gelliott@oaklandnet.com
DHS: Dion Lien, Department of Human Services, dlien@oaklandnet.com
DHS: Lisa Ploss, Department of Human Services, Aging & Adult Services,
        Multipurpose Senior Services Program (MSSP) & Linkages,
        lploss@oaklandnet.com
DHS: Dana Perez, Department of Human Services – Administration,
        dperez@oaklandnet.com
PWA: Nancy Humphrey, Public Works Agency, Environmental Services Division,
        nhumphrey@oaklandnet.com
PWA: Herbert Flores, Public Works Agency, Tree Section, hflores@oaklandnet.com
PWA: David Lonestar, Public Works Agency, Department of Infrastructure &
        Operations (DIO), Sewers, dlonestar@oaklandnet.com
PWA: Frank Foster, Public Works Agency, Design for the Environment (DFE),
        Keep Oakland Clean & Beautiful (KOCB), ffoster@oaklandnet.com
PWA: Jonathan Chang, Public Works Agency, Park & Building Maintenance,
        jchang@oaklandnet.com
DIT (for PWA): John McCabe, (jmccabe@oaklandnet.com
DIT: Ahsan Baig, abaig@oaklandnet.com

Granados: Welcomes participants.

Blum: Introduces self and gives opening presentation

Facilitator: Requests introductions.

Darian: Transportation Engineer.

Herbert: Public Works Agency, Tree Section.

Deborah: Business Development Unit. The wireless project has clear implications for attracting businesses to the city. Well aware of this project and glad to be at workshop.

Lisa: Department of Human Services, Aging & Adult Services. Supervises two care management programs. Nurses, social workers, case managers work in the field with approximately 600 clients with various types of functional impairments and disabilities. All the work is done in the home. There is a lot of paperwork involved. "We've dipped our toes in the water with using wireless applications on laptops, and our care management software is a web-based application as well."

Dion: Department of Human Services.

Dana: Department of Human Services administration, IT.

Frank: Public Works supervisor, responding to facilities.

Dave: Public Works, Department of Infrastructure, Sewer Department.

Jonathan: Public Works, Parks & Building, Construction & Maintenance supervisor. Electrical.

Greg: Risk Management, supervising safety programs.

Nancy: Public Works, Environmental Services Division.

Kip: Finance & Management Agency, Administration.

John: DIT, work with Tino; attending workshop at PWA request because of project management for Public Works as well as Parks, CEDA and innovation projects.

Tino: DIT, Project Manager for the wireless initiative.

Facilitator: Looking at wireless for Oakland, we want to use this opportunity to see from your point of view what some potential applications are that could help. Don't worry about the specific technology or budget considerations now; what we want to know is what you do, how you do it and any ideas – even crazy ones – that a wireless network might help you realize.

Darian: The Transportation Services Division (TSD) is installing solar-powered radar feedback signs (the type that tell drivers their speeds, etc.). Data is uploaded via an SD card into the device's box to trigger whatever the sign is supposed to display. We go to each box to collect the speed and traffic volume information gathered on the SD card and bring it back to the office. The vendor offers a couple of options – wireless WiFi and wireless IP modem. What would be the best way to go?

Facilitator: That would be an application that might benefit by tying into a muni wireless network rather than a dedicated network for that specific purpose.

Darian: Tying in, we would be able to control it from our desks, changing messages and collecting the data without having to go out and retrieve cards from all the boxes.

Facilitator: Where does the data go?

Darian: It comes to the TSD office for analysis.

Facilitator: You probably dock it somewhere and upload it into a system.

Darian: We haven't done it yet. What we do now if we want to know the speed in a particular area we go out with a radar gun.

Facilitator: That's a great example of a possible application – a process that can be made more efficient via a wireless network without having people go to physical locations to gather data, exchange SD cards, etc.

Deborah: No one from CEDA Planning and Building services is here, so on their behalf, inspectors spend a lot of time in the field to check building sites in the course of construction and perform code compliance inspections. Then they come back to the office to do their reports. Also there's no way to connect with them regarding changes in schedule, canceled checks because they're not quite ready for an inspection. There's a lot of disconnect in those periods of time. For them to be able to sit down on the spot and connect to the net and do their work right while in the field would be tremendously more efficient.

Facilitator: When they're in the field, do they have laptops or other device?

Deborah: No. They have to come back to their stationary computer station and write up reports. There's a time lapse between taking physical notes and entering them in their computers, between when they do the inspection and come back to write it up, effectively doubling the time it takes to put a report together – when they could be doing it immediately. There are probably functions such as that all over the city.

Darian: Inspectors are concerned about carting bulky laptops around or trying to hide them. There are also issues of weather (heat, rain, etc.) and potential theft.

Deborah: The good news is that notebooks are really small nowadays. But those are valid concerns.

Facilitator: We're not necessarily trying to solve the problem because technology evolves rapidly. Piggybacking on this, do inspectors take blueprints out into the field with them or use other visuals? That might be another potential wireless application.

Deborah: They probably take blueprints out or go to the site and the contractor will have the blueprints there. But wouldn't it be handy to be able to draw up the documents that were submitted and approved and confirm that they're actually the same plans?

Tino: Building inspector friends might have correction notices and other forms to deliver. Sometimes they substitute for one another, and if they could download these things electronically they would not have to physically go to the file to retrieve the information they needed.

Facilitator: The list of potential application requirements now includes inspections and access to work – work management systems. Also remote reporting and referential data GIS or plans or records.

Deborah: Access to city records, absolutely.

Facilitator: There are situations where everyone shares a computer, and they sit there waiting a turn for two hours. They spend about three hours in the office gathering data before they even go out into the field to do their jobs.

John: Piggybacking on prior comments, there are also inspectors in CEDA's Right-of-Way Division. They inspect sidewalks, streets, utility projects. In Public Works we're doing a project now that will bring 112-182 laptops – say 150 –

with a wireless connection out to the field, for a two-way street. 1) When work is done we can use GIS to capture what's done where – the cost, the location, what asset is involved. That's information coming from the field to the office. 2) There's also information in the office that never gets to the field or if they have information they can take it out but it might be wrong and they have to basically start over.

Facilitator: What are the laptops being issued for?

John: For a work management system for work crews in the field.

John: They're going to cost about $50 per month each for the wireless service. If the city had its own wireless service, right of the bat, 150x$50x12 [$90,000] is the annual amount we'd save by not using Sprint service.

Facilitator: Another issue you'd run into is slow upload speed, particularly if a field inspector is trying to send pictures of a site back to the office.

Frank: We have several vehicles. (Public Works Agency, Design for the Environment (DFE), Keep Oakland Clean & Beautiful (KOCB). We monitor in the office.

Facilitator: So you would have one person out there, and have to dispatch someone else to check to see what's going on.

Herbert: Tree Section shares similar situation. At times, an inspector will go out with an address to take a look at a tree where there might be right-of-way issues. A map would help us identify and measure, determine whether it's on private or city property. "The time to open a laptop and power up is nothing in comparison to having to travel from the field all the way downtown to get that information."

Facilitator: Fuel costs alone would be a big factor.

Facilitator: A colleague who created a technology to monitor the Alaska pipeline, because of the difficulty or impossibility of sending people to identify the location of leaks. This technology uses sensors to detect leaks and a radio frequency that signals the client to send a team to take care of them, often in very remote locations. It really saves money. This is a real application, not pie in the sky.

Dion: Being able to access files from our desktops while in the field would save a lot of driving time.

Deborah: That would be awesome for any of us. When traveling and staying in a hotel and using a computer, if you don't use the keyboard for one minute it will log you out, or the city net will log you out. That ability would be huge.

Facilitator: This sounds like an application that overarches all the departments that would be of value.

Facilitator: Most likely the IT team or security system blocks access to desktop computers from remote locations.

John: Getting back to what Herb said about getting city data into people in the field, I was at Durham (NC) presentation. An inspector was going out looking at sewer laterals, and have a tablet there. She'll show the citizen or the contractor what the city's records have so that all parties are clear about what's going on. It increases trust because of the transparency.

Facilitator: Do city employees have VPN access available today?

Deborah: What is VPN access?

Facilitator: Virtual Private Network.

Facilitator: It's a way of securing access through untrusted network connections back into the city that lets you log on.

Debra: It's horrible to use, cumbersome, logs you out if you don't use the keyboard for one or two minutes. "I've had it log me out in the middle of an email. Poof. It's gone." Some improvements could be made there.

Facilitator: The applications list now includes mobile broadband, location-based tracking, radar feedback, inspections. Are there others? Think about a service you have to deliver or work you have to do where your ### may be distributed, you have to go back and forth, or it's very manual. You may not know how it would be wireless but it might be another application – something that is now difficult that might be easier.

Dana: Some of our satellite offices (Human Services) aren't even on the city's network.

Facilitator: The wireless network can be used to upgrade a T-1 line or provide connectivity to remote offices. Microwave technology, for instance, allows connection over long distances.

Darien: There are some areas where we don't get cell phone connections.

David: Terrain-wise, it's difficult for us. The connections are horrible. Trying to solve some of that is even a police issue. Any improvement on that would be welcome. We have a lot of flat land, but we also have a lot of hills.

Facilitator: Geography is a good point.

Lisa: In terms of disaster preparedness, we do triage our clients because they are homebound and keep records about whether they have someone to help them out. I back up those files and do other things with that client data to make sure I have access to it (e.g., on a jump drive). It would be better if that were wireless and any of us could access it. My home might collapse on me, but someone else would be able to find where those particular clients are and how to reach them or reach their emergency contacts. It would have to be confidential and secure.

Facilitator: Do you have monitors on these folks?

Lisa: Some of them are on oxygen, some of them have personal Emergency Response Systems, some are quite alone in the world with no family member or caregiver to check on them.

Facilitator: Would you want that type of access just in their homes?

Lisa: We would want to be able to somehow know where they were and that we needed to contact them, even if they left their home. When there are disasters, we lose track of where senior citizens are transferred.

Facilitator: It also sounds as some remote auto backup to a central location would be appropriate.

Lisa: I try to make sure a couple of different people know how to access the information if it's necessary, but it's rather piecemeal. I know we aren't doing it the best way.

Tino: I'm hearing similarities to what some of the police and fire department representatives mentioned about CEDA and Public Works being connected with the data, and being connected with the EOC with the ability to exchange data. Also including neighborhood service coordinators.

John: It's not just communication between city agencies, but we do mutual aid.

David: In an emergency, it would be good to have access to our documents and communication on laptops perhaps in the car, especially if power in the office is gone or we can't get to the office. Does this work?

Facilitator: I can see post-emergency applications.

Facilitator: Yesterday we talked about reliability and how the network would be architected. With the wireless mesh, the WiFi, there are a lot of smaller points, so if a pole goes down that radio is down but it affects only that coverage area – not the whole network. That's the nice thing about a WiFi-type technology. WiMAX towers are like cellular towers; if one of those goes down. This is why you'd want to build in some redundancy and overlap for reliability, which is also a public safety requirement. It would be as reliable with WiMAX as the current 800 MHz radio systems. Public Works now runs off of 800 MHz? But the solution we're talking about would be broadband and not ###. But the radio frequencies work; they aren't obstructed by weather.

David: As long as power is there.

Facilitator: The architecture may lean toward a WiMAX large tower with a self-contained generator at the base. If that's a requirement, there are ways to solve the power problem.

Facilitator: As far as post-emergency is concerned, I was at Pac Bell after the Loma Prieta earthquake. Power was the big issue.

               If you interact or partner with other organizations or departments, or citywide, do you see services that might benefit from wireless that may not pertain specifically to your department? For example, business and economic development?

Deborah: I'll be at Workshop 4 tomorrow with the business community. In the meantime, "there's no question about it, in terms of tourism, in terms of

visiting business people wanting to have access whether they're in the hotel or the convention center which is not wireless or even wired at this point…" I don't believe the Oracle Arena is wired either. We have a number of Class B buildings, built long before any of this technology existed. We have rich fiber running up and down the street, but the issue is the last 100 feet – getting into the building and going up. Wiring that is expensive and a lot of building owners – who may have owned the buildings for a gazillion years – can't see why they should put any money into it. They don't get it. There's property turnover in newer developments. "Wireless would be a much simpler solution for many of our business owners, especially those who want to go past the normal DSL lines and start getting into the more robust broadband." The capacity is now there to do that. "So business applications? Absolutely."

Facilitator: So this was more an economic development opportunity, where you would get broadband into some buildings that aren't wired.

Deborah: Absolutely. As Tino knows, I've been working with IT for several years on this concept. The Class B building vacancy rate is high – about 17%, which is huge, and in the current environment probably will increase. One of the reasons is that "they ain't ready for prime time." If you're a business owner, you need access to web-based services and if you're in a Class B building, it's tough. Maybe you'll get a DSL line. We were at 517 17th Street, the One Stop Capital Shop, when I joined the City of Oakland; it took us two years to get a DSL line. We weren't connected with the internet in 1998; we didn't get connected until 2000. And the city was motivated. So imagine how it is for an unmotivated Class B building. We need to make it easier for them to make that investment in the property so they can fill up the buildings.

Facilitator: Would you charge for that?

Deborah: "Oh, I don't see this being a freebie system." That's why you're building a business model for this, so those who need inexpensive access and those on the other side of the digital divide… We also have to get access to computers; it doesn't matter if you have wireless if you don't have the hardware. Those who have it need to pay for it so that those who don't have it can have access too. That's the business model that we're working on.

Facilitator: Are public utilities represented here?

###:   It's not a city thing.

Facilitator: I was thinking of a meter-reading opportunity.

Deborah: PG&E is very interested in going wireless. They don't want to have to pay people to go out and check all the meters; eventually they want to be rid of all of that.

Nancy: A colleague who does a lot of work on energy efficiency said they would especially like GPS applications to pinpoint particular meters and what they service and what equipment they run, to link up with bills and what zone they run in.

Deborah: Taking that a step further leads to the idea of smart buildings. The city owns a lot of buildings all over the place and managing all of these properties requires physical presence. Smart buildings are self-monitoring and when glitches occur, the information shoots up on a computer screen where someone can monitor it. In terms of building management, wireless applications might enable the city to monitor remote buildings for issues about heat, air conditioning and other key elements involved in making the building run efficiently. Wireless could be huge in that context.

Facilitator: In addition to employees working in the field, are there departments that have employees who work in remote locations or out of their homes.

Facilitator: That's where the VPNs come into play.

Dion: Could calls to our desktop phones be transmitted to a cell phone with wireless so we don't have to call in to retrieve messages?

Deborah: You can do it now with call forwarding.

Facilitator: Do you run voice-over IP (VoIP) here?

Deborah: Yes.

Facilitator: Is VoIP across the city?

###:   No.

Tino: It's just downtown and limited throughout the city.

###:   Definitely not satellite.

Facilitator: If you had a wireless link, theoretically you could put them on the network.

Tino: Yes, because there are a few more additions to some buildings, so there is a cost factor to consider.

Facilitator: So if you had wireless microwave links, you could put them on VoIP. The other issue is just a functional issue about communicating how to use that service.

Dion: In terms of telecommuting, a few staff do it now. There was a pilot program at one point. "It's worth looking at, because we have to move into this century" a little bit. I know my staff are much more efficient if they can work a day or two at home. They're happier; they're saving on their gas; they're getting a lot more work done because they don't have all of the interruptions. For where it makes sense, for certain job functions, it would be huge to have the technology to support it. "We have to think about how we can recruit and retain people, too."

Facilitator: Is there a citywide policy about telecommuting?

Tino: No.

###:   Dept. of Homeland Security, they're required to work from home one day a week so they're prepared for a disaster when it happens.

Deborah: That's great to frame it that way. If there's a way with wireless to help the city feel comfortable that people are actually doing their work when they're at home, it would be a key step. Going forward, considering the price of gas alone, telecommuting would enhance employee satisfaction, retention, efficiency. "It's not exactly a secret that the City of Oakland is having some financial issues right now." "We have to look at how we can work more efficiently with a smaller workforce."

Facilitator: All of these things are very doable with security infrastructure in place. My brother is a network engineer for the Pentagon, and they have remote access. Every time I hear we can't do something, I ask him how they do it. But of course they have a very big budget. They secure the desktop, they know which desktop is involved, they have biometrics and a lot of other security so they feel pretty comfortable with that. There are ways to do it; we just

need to figure out whether it's cost-effective.

Dion: Security protocols.

Facilitator: Are there particular applications that need a higher level of security than others in terms of the data that would be shared?

Dion: We work a lot with confidential files, Medi-Cal numbers, Social Security numbers. That's why we went to a web-based application; we didn't want that data housed on laptops. Sometimes staff will pop into Starbuck's and hook in there to do some work instead of coming back into the office, but they have to be aware and make sure nobody's looking over their shoulder.

Facilitator: On ITS [intelligent transportation systems], we have only one application so far – the radar feedback. What about traffic management, traffic signals, signs?

Darien: Transportation Service has two sections, one dealing with traffic signals. One of the engineers told me that "for security reasons, we don't have our signals tied to anything like this." They don't want anything happening like in a movie scene where all the lights are green.

Facilitator: Let him know that there is no prescribed solution; we're just collecting the requirements now. Then we will look at the technology and figure out how to best support the requirements. "Once we have this map of requirements, we're going to see what technology best matches." Maybe traffic signals need a separate network and maybe not.

Darien: The application might be to see what the controller is doing and what they want it to do, regulating and monitoring the timing, what happens when signals do go out and why they go out.

Facilitator: We've probably all been in a situation when accidents occur because a signal has gone out.

Facilitator: There's a movie where the hacker gets into the controls and start switching the lights.

John: DieHard movie.

Facilitator: A programmer I work with was in DC looking for a hotspot, and found a

hotspot when he was driving by the Pentagon, when wireless was just starting to get into that area. He emailed them and said, "Hey, you might want to check your tower; people can get online." They descended on him.

John: We've talked a lot about data but not really video. Lonestar and others might find remote video useful, when they're taping something they want the supervisor back in the office to see.

David: We get a lot of engineering requests to go out and videotape a sewer line. Instead of them – or even the City Attorney – waiting to see it, they can log on and see it live in streaming video.

Facilitator: It helps all the way around, because you can see what the problem is and more efficient about having what you need to go out there and solve the problem.

David: One of the Council members was talking to the Public Works Committee about how mobile cameras would be so much better than stationary cameras, and Dave Ferguson said with the cameras they have, you have to have an operator watching. Aside from the operator issue, it is easier to deploy a camera you could control remotely through a wireless connection. You could focus on a certain number of hotspots for a while and then deploy the cameras somewhere else.

[break]

Facilitator: We have our list of potential wireless applications. The next step is to drill down and prioritize the items, which might be challenging considering the different departments represented. We've talked about challenges of hills and geographic access, especially for Public Works, and also for the Fire Department, and what type of wireless coverage might be appropriate. It might be fixed, available 24/7, or brought in, accessed underground. Are there areas that would benefit most from wireless access, either because of a lot of activity in the area or need for services? If you were to deploy a wireless solution, where would you do it to be of the most use if you can't do the whole city?

Frank: The primary area for Public Works would be the flat areas, East Oakland, central Oakland, West Oakland – generally the lower lying areas.

Greg: I would agree. Up in the hills, a lot of time you can probably jump on

someone else's.

Facilitator: What they call poaching? We've had a couple people say they do that. So you're finding it available enough that it hasn't been a problem?

Greg: If we had to pick from one place or another, it would be more centrally located in the flatlands, at centers and so forth.

David: From the sewer standpoint, hill areas are notorious because everything's in a canyon and remote. Access is tough. There are environmental issues and requirements. Storm lines all flow into creeks at Lake Temescal. "Who wants sewage in Temescal? Nobody." It's a huge problem. Flatlands, of course, have more infrastructure and easier access compared to the hill areas. It's a challenge to find manholes and maintain them. It's going to be a challenge for ### Work Management Program and everything else. We've been dodging at this stuff for the future to have our structures accurately located on an EIS. This is important stuff. Not to diminish the hill areas.

Tino: It sounds similar to what the Fire Department faces.

Facilitator: It also sounds as if part of the challenge is documenting. David mentioned looking for manholes. The first process is canvassing everything and documenting locations, then making a system to be able to access them.

John: Thinking about who services people in Oakland, the Postal Service goes everywhere six days a week. The garbage company goes everywhere once a week. Beyond that, Public Works is everywhere. Yeah, there's more illegal dumping in the flats and there's more infrastructure maintained in the flats and there's more Public Works. Public Works is everywhere, so the need is really the city boundaries.

David: 24/7.

Jonathan: I have a crew of eight painters to dispatch around the whole city every day. How could wireless help us?

Facilitator: How do you communicate with your team now?

Jonathan: Radio – Nextel. If I get a call from a rec center that needs us, I will dispatch by radio.

Facilitator: And is human services work concentrated in any particular region in the city?

Lisa: Mostly in the flatland area. Actually, one of our case management programs linkages covers the whole north county "A" area, so we do some work in Berkeley, Albany, Emeryville, Alameda. The other typical feature is that our clients are pretty low income.

Facilitator: Other than the issues mentioned so far, are there cases where the hills have more of a priority in terms of how people do their jobs?

John: Probably flatlands and commercial areas. Montclair, for instance, has a lot of infrastructure because it has a lot of businesses and residences.

Kip: There are commercial corridors in different places throughout the city.

Herbert: In terms of trees, we would have to consider the whole area. "When we have rainstorms, we have emergencies everywhere. We need to monitor, in real time, what has been made safe and what has not." If you have 25 addresses to deal with, which one is next? Who is going to take care of what? We need a better way to manage that, especially in emergency situations, regardless of whether it's in the flats or the hills.

Facilitator: This last season, for example, some homes were in jeopardy.

Herbert: We need really good tools to communicate with other departments when mudslides occur and know what road closures there are, so when we send crews to respond we can tell them how to get there. And especially in the hills, some of the streets are very narrow. You have large equipment, and you don't want to encounter a road closed and have to drive a mile or so to find that out.

Deborah: At some point, the whole city will have wireless. For now, are you talking about pilot projects to test something out to see what works best? All of the city agencies work in either West Oakland or East Oakland – an exclamation point! In either area, there are public safety issues, sewer issues, tree issues – "you're going to every kind of issues in West and East Oakland to the nth degree." So if you're going to determine areas for pilots, those would be good ones to use. You touch so many departments, just about everything. But you won't hit commercial areas so much. The question on International Boulevard would be whether the business owners could be engaged to

understand how wireless might benefit them. "That's going to be the tricky part." The community workshops will be where you're really going to get that information.

Lisa: We're starting to have safety concerns being out in the communities we work in. Case managers are sometimes uncomfortable about it. I'm not sure what the application might be, but perhaps they could check out at the end of the day, especially if they go home from being in the field. It's not so much having GPS to check their whereabouts and that they're actually doing their jobs – because we know they are doing their jobs.

Facilitator: That fits back into location-based tracking.

Deborah: From a safety point of view, employees are probably more willing to be tracked than they might have been in the past. We should absolutely consider this.

Facilitator: A manager who had put in location-based tracking was calling one of his people and looking at the tracking. He was at the 19th hole. The manager asked where the employee was. The employee said he was working. The manager asked why Jim and Dave were with him? And then he could see the dots dispersing (on the tracking device).

Lisa: Those aren't our issues. We've got really good people. We've got deliverables in place; we know they're getting done and we have ways to measure that. It's more a matter of safety, or there might be a police action going down. That happened when I went out to shadow a case manger.

David: Locating is a positive thing. I've been working somewhere and my boss calls to ask me to do something else while I'm in that area. So he uses it to dispatch in that sense. And again, for the safety issues, we think about that in emergency management all the time. We want to know where our people are. If we send someone to do damage assessment after an earthquake and he's not moving, we want to know what's going on. There are a lot of applications and benefits with tracking other than Big Brother watching.

Facilitator: A lot of this technology works very well outdoors but not as well indoors. As much as cellular technology has progressed over the years, for example, it's still not perfect. Do you have any indoor requirements?

Dion: Case managers spend a lot of time in client homes.

Facilitator: So you'd like to know how they're doing in the home, or if they're okay?

Dion: A lot of them are concerned about entering; they don't necessarily know if they're expected or if a family member might be a threat to them.

Facilitator: Is 3G used broadly here? Or is it 2.5?

John: Some places it's available; some places it's not.

Facilitator: Is that Verizon or AT&T?

Greg: AT&T, Sprint. So far, Sprint has the best coverage.

Facilitator: Is that the Edge?

Greg: Sprint is Edge.

Facilitator: Only indoors?

Deborah: We'll talk about it more tomorrow, but with the older buildings you'll want to be able to pick up the signal indoors and shoot it up this line somehow so the individual businesses in those buildings can have access to it. That's just critical; otherwise it won't really matter.

Facilitator: Now we'd like you to rate the key applications on a 1-5 scale, with 1 being most important. If you had to pick one or two applications that are most important to you, what would that be?

Facilitator: The requirements you talked about fit into four categories: 1) mobile broadband; 2) fixed broadband (city); 3) roaming; 4) fixed broadband (non-city). There are different possible infrastructure investments. They could be separate networks. But we want to determine what your highest and lowest priorities are.

Facilitator: Mobile broadband requirements include monitoring seniors, EOC data and communications sharing, the neighborhood service coordinators, reliability in emergency scenarios and remote access to traffic controllers.

                Fixed broadband requirements include fixed location radar feedback, remote facility, smart buildings, VoIP, a flexible work program that allows people to

telecommute and remote video.

Roaming application requirements include inspections, 150 laptops in Public Works and synergies with work crews tapping into the city's network, asset management, remote desktop access, dead zone coverage, Class B buildings and video streaming.

Facilitator: I listed city and non-city separately, because some requirements involve city employee access, but in terms of economic development opportunities there would be connectivity into office buildings. These could be two separate investments and infrastructures.

Lisa: What's the difference between mobile and roaming?

Facilitator: Mobile is more like cellular – typically a big tower with the signal going everywhere. It's point-to-point line of sight, a high-speed connection that is a nice replacement for wired lines. If you want to connect to a remote facility, you can put a tower on the roof and once you have line-of-sight to that facility, the microwave link can shoot out there to provide connectivity. That's good for economic development's goal of providing connectivity to buildings and remote offices. It could be good for traffic management – anywhere there's a fixed location and we can create a connection to it.

Roaming is typically hot zones or hotspots. That's where you want to cover a particular area and mount some radios there to provide WiFi coverage in that area – short of trying to provide equipment an uninterrupted WiFi signal across the whole city all the time. It's called roaming because workers can go to a hotspot and get connected, but they won't be connected all the time as they would be with mobile.

Facilitator: If it's easier, we can focus on the application that is most important to your department and then we'll track that back to the technology.

Deborah: The ubiquitous access, upload and download, wherever you are – "from a safety point of view, from an efficiency point of view – that has got to be the priority." Ultimately, limiting coverage to hotspots isn't that helpful, because you have to find where the local hotspot is and move into that area. We want is knowing that anywhere in the city, we can get into that network and have access.

Tino: I've heard the same thing from a couple of other people.

Deborah: This doesn't counter anything. All the rest can be done. "I think of mobile, ubiquitous access as the mothership, and everything else can be added on if the budget is there."

Dana: If you have the mobile broadband supplying WiFi everywhere, why can't you do these other things that are the fixed broadband?

Facilitator: We've talked about dead zones. Ubiquitous coverage might still have some dead zones, so for emergency purposes another solution might be needed. We aren't saying anything here is unimportant; we are just looking for what is most important.

Facilitator: The technologies work differently. You have to have the right radio spectrum for ubiquitous coverage. 3G or 2.5G is somewhat ubiquitous, but it has bandwidth limitations. With the fixed, you want a really high-speed connection going into a building, because there may be 100 people in that building connecting to it, as opposed to one device.

Tino: Thinking back to how coverage is shown in Steve's Milpitas slide, the Mayor has identified three areas in Oakland that are really hot, where they might need 10MB for video downloading and so on.

John: From my perspective, with the urban initiatives, economic development and the digital divide, public works goes everywhere. So ubiquitous has got to happen; a city-sponsored wireless service has to compete with national and international carriers. Even the price point wouldn't be compelling once it had the service coverage. What we're going to be doing this year in Public Works is having this office application out in the field and having data from the field going back to the office in real time. "It's happening throughout the whole city. It's not happening just in one corridor or three hotspots."

Facilitator: So mobile broadband, which ranked as number 1, would support the location-based tracking, senior monitoring, data and communications sharing, neighborhood service coordinators, reliability in emergency scenarios and remote access to the traffic controllers. Looking at those applications, do you still agree that mobile broadband would be the top priority?

Facilitator: It also would support some things such as work management.

Deborah: That's what I wondered.

Facilitator: Not the building, but it would support that work management and other things.

Deborah: So this would provide access to data that you'd otherwise have to go back and forth between the office and the field. You can download and also upload. That seems pretty important to me.

Facilitator: So still number 1. In terms of the fixed broadband, that would support applications such as radar feedback, remote facilities –

Darian: I thought the radar feedback was in the mobile broadband.

Facilitator: Actually, it could be. It depends on the technology. So that seems to be the overarching.

Facilitator: It depends on bandwidth requirements. Video cameras, for example, may not be effective on the mobile. Is it a heavy bandwidth requirement for the radar feedback?

Darian: In terms of changing what's on the signs, it's not large. If we were downloading all the information that's been captured in the last month or two, it may be quite large. But on the other hand, we wouldn't necessarily download all of them at the same time.

Facilitator: And you wouldn't have to do it during peak timeframes. You might do it at night.

Darian: It's usually not critical to know at any particular moment how many cars are going by.

Facilitator: In terms of that type of application, along with the remote facility, smart buildings, VoIP and flexible work programs (telecommuting), would that rate #1 also? How important is that?

Dana: Just to unify our city, that's very important.

Facilitator: But if you had to choose between the two?

Darian: Is the flexible work situation just inside Oakland? If we lived in Vallejo or

San Jose, would it still work?

Facilitator: Technically, it should be inside Oakland.

Facilitator: That's a remote access requirement, not necessarily using this network. You could use Comcast. But it's a tall city and some security infrastructure the city has to decide to provide. But remote access is not limited to the wireless network. I think we're going to end up with fixed broadband being second by default, because some of the applications on that list (such as laptop applications) might be lower-bandwidth requirements that the mobile technology could cover. An exception would be things in economic development, such as the Class B buildings. That may be a whole separate investment.

Deborah: We'd have to make a case to the building owners that they have to participate in this. It's going to benefit their ability to lease out their buildings. I think all of these things are important; the question is how much money we'll have to implement. If it's a case of budgeting, fixed locations would be part of a phased plan.

Facilitator: The toughest thing with initiatives like this is identifying true cost savings. Are any of these applications going to go to the bottom line.

Deborah: Number 1. You can work with fewer employees more efficiently. You don't have all the travel time going back and forth. You don't have the transportation costs. "Absolutely, there's going to be a bottom-line savings."

Facilitator: So when the budget director comes and asks for headcount that will be given up on next year's budget…

Deborah: It doesn't have to be 'give up' because at this point it means not hiring three new people.

Facilitator: So more like cost avoidance.

John: It's about efficiency and productivity. It's not cash savings. It's one person not riding back and forth from the yard or from the office to do work in the field. "There's certainly a good ROI on it, but it's not in terms of cash." "The cash savings would be like in my example, the $50 per month.

Facilitator: And that's just you.

Tino: The building inspectors could save enough time to maybe do six inspections a day instead of three.

Deborah: "There is actually revenue generation as well as just plain old better customer service."

Tino: And saving on gas.

Facilitator: Fuel is a big issue that probably will affect everybody for some time.

John: From the perspective of equipment maintenance, it's not just about the gas. It's the wear and tear on the vehicle, oil changes and so on.

Darian: Are we looking at tapping into the broadband just for city employees? People working in Oakland? Living in Oakland?

Facilitator: We're going to have community workshops to see how the community might be interested in using the network. That would add more efficiency into the network.

Darien: If it's for anyone who lives in Oakland or works in Oakland, what's happened to SF Gate, are we paying for that? How are we getting any benefit from it? We're helping businesses find customers. Is the city going to pay for that?

Facilitator: At this time we can't say for certain, but that's part of the business model we'll be looking at. If they have access to a wireless network for internet, there are things that could be blocked. We want to see what that business model might look like. Maybe people at large would pay for access.

Facilitator: In other communities, we're learning that these networks can be catalysts for new ecosystems. If a small business becomes more productive, they'll be able to hire more people. If you make some building space smart and usable, you may be able to attract new businesses from other cities into Oakland. There's a lot of value you could provide other than just directly charging for access.

David: Most of the staff on the maintenance side in Public Works are equipped with digital cameras. I've got eight crews out there documenting, especially in the sewers. How we do our business is being challenged by outside sources that

are looking to sue us. How do we know, for instance, that a flow rate is 25 gallons per minute? If this overflows and causes property damage. We're going to want a system that enables us to download maybe two or three photographs documenting work as it's being done in the field. How is that going to work with the bandwidth of a mobile wireless network.

And as John said, we'll be upgrading to TV units that have remote video capability as well.

Facilitator: For scenarios such as that, a lot of folks create hotspots or hot zones. There are about 18 in Oakland now. Your workers would drive to one of those to upload or download data, resynch and so forth. In the case of a 3G network or something less that isn't fast enough to resynch your database, you could drive to a hot zone – which is not as far as going back downtown. You'd still achieve some cost savings.

Facilitator: In terms of process, we're finding a generation gap in applications we develop, because so many 25- to 30-year-olds grew up with the technology. We call it technology. For the 25- to 30-year-olds, it's their process. So as we look to a wireless solution, we want one that embraces employees who are accustomed to using these tools much more comfortably than some of us might be.

Thank you for your time. If we missed anything or you want to add anything, please let us know.

Workshop 2 Flip Chart Notes

Priority: 1
Mobile Broadband - Mobile WiMax Application 802.16E Requirements
1. AVL – Location-based Tracking
2. Senior Monitoring and tracking
3. EOC – Data/Communication Sharing
4. Neighborhood Service Coordinators
5. Reliability
    a. Emergency Scenarios
6. Remote Access to Controllers

Priority: 2
Fixed Broadband Application Requirements

1. Radar Feedback
2. Remote Facility Broadband
3. Smart Buildings
    a. Class "B"
    b. Economic Development
    c. Digital Divide
4. VoIP – Remote Facilities
    d. Access Messages
5. Flexible Work Program
6. Remote Video

Priority: 3
Roaming Application Requirements
1. Inspections
    a. Work Management
    b. Reference (GIS)
    c. Remote Reporting
2. Public Works – 150 laptops
    a. Work Crews
    b. Work Management
3. Asset Management
4. Remote Desktop Access
5. "Dead Zones" – Coverage in low coverage areas
6. Class "B" Buildings
    a. Large Vacancy
7. Video Streaming

Core Access Requirements
1. Mobile Broadband (ubiquitous)
2. Fixed Location (City)
3. Roaming Access (Hot Zones)
4. Fixed Location (Non-City)

Geographic Access Requirements
1. City Boundaries
2. Flatlands
3. Hill Areas
4. Remote Areas
5. Pilot Areas
6. In Home Access (City)

Benefits
1. Cost Avoidance
2. Service Inprovement
3. Economic Development
4. Cost Savings

Vehicle Expenses

3.3. Workshop 3 – Library, Museum, Parks & Rec, City Clerk, City Attorney

Thursday, July 24, 2008, 9:30 a.m.
Oakland City Hall, Hearing Room 2

Introduction: Stephen Blum, Tellus Venture Associates

Project Mgr: Tino Granados, City of Oakland

Participants (per sign-in sheet):

>   Linda Crittenden, Finance – Revenue Audit, lcrittenden@oaklandnet.com
>   Cynthia Chimonyo, Office of Emergency Services (OES), Fire Department,
>   cchimonyo@oaklandnet.com
>   Bill McMorris, Oakland Museum, wmcmorris@oaklandnet.com
>   Dennis Flannery, Jr., Parks & Recreation Department, Ira Jenkins Recreation
>   Center, dflannery@oaklandnet.com
>   Ahsan Baig, Department of Information Technology (DIT), abaig@oaklandnet.com

Granados: Welcomes participants.

Blum: Introduces self and gives opening presentation

Facilitator: Introduces self

Facilitator: Introduces self.

Linda: Revenue – Audit in the Finance area. Our people go out in the field so we would like connectivity with them.

Cynthia: Office of Emergency Services, Fire Department.

Bill: Oakland Museum. I'm project coordinator for our two-phase renovation and
                   expansion. We have a lot of interest in being to interpret content for
                   beginners on mobile devices. We're introducing electronic media to our
                   galleries. We're interested in both wireless and hard-wired in our challenging
                   building. It's a beautiful building, but a tough building to work around
                   sometimes. We also have to attend to security and operations.

Dennis: Oakland Parks & Recreation Department. I'm Director of one of our centers
                   and was asked to attend this workshop to see where we fit in.

Ahsan: DIT, work with City council to get this project going. Working with Bob
                   Glaze, the CIO.

Tino: DIT, Project Manager for the wireless initiative.

Facilitator: Following Steve's great overview and examples of wireless deployments in
                   other cities, we want to find out what applications, concerns, issues, needs
                   you have that you feel could benefit from a wireless network.

Cynthia: Sometimes we do field audits because it's necessary to see the sites. I work
                   on one industry at a time. We had 132 listed as gas stations, but there turned
                   out to be 126. Some were still recorded in the county one way but when you
                   physically go there it may be a parking lot of something else now. We are
                   looking for under-reporting or non-reporting entities, which requires us to
                   physically go out in the field. It would be helpful to know exactly where they
                   are. To do some of these, I had to go on Google and MapQuest to find the
                   way to get there. Also, sometimes when I'm out there, I want to take a note
                   or figure out how to get to the next place I want to go. It would be nice to
                   have a mobile device so I could access directions from where I am to where I
                   want to go. It's a matter of physically knowing where I am. Having access to
                   records in the office isn't that critical for me, because I'm really just
                   determining if an entity is there and active or not. Also, some entities are gas
                   stations only, but some also have a mini mart and/or a service bay. All of
                   those are in different revenue streams. "If there's money out there, I'm going
                   to find it."

Facilitator: So it's really locations and making sure they are where they're listed.
                   Anyone else?

Cynthia: We use GIS mapping. Most of what we're looking at is emergency planning
                   and emergency response. We can identify alternative shelter sites, or where

people can shelter in place. Being able to access and coordinate with Chevron and other employers about their evacuation plans,

Bill: Visitorship has been really enthusiastic about the idea of supplementing their museum experience with mobile devices. It's really easy for the museum to change; sometimes it's as easy as leaving a voicemail. We're looking at adding electronic media, which is a real imposition on our concrete architecture. We want alternatives to having conduit running everywhere. It's difficult transmitting data in a concrete building. One thing that comes to mind operationally is our building's big perimeter. It covers several acres with a lot of faraway places that need security cameras and such with the possibility of wireless streaming video.

Facilitator: Do you currently have any wireless?

Bill: We have a very small wireless network in our restaurant and one of our theatres. We don't use it for either security or operations.

Facilitator: How about Parks & Rec? Any current things or ideas you have?

Dennis: Not for wireless. We're on the system already. I know that every recreation center would like a secured line so we wouldn't have to dial into VPN to connect to the system. For example, when I do timesheets, I have to leave my center and come downtown because I don't have a secure line.

Facilitator: What does Parks & Rec cover?

Dennis: Swimming pools, recreation centers, parks. Each recreation center that has a program, there's activity on the computer, the database, collecting the fees. We use the system to do that. I don't know how wireless would be an advantage for Parks & Rec.

Darian: Inspectors are concerned about carting bulky laptops around or trying to hide them. There are also issues of weather (heat, rain, etc.) and potential theft.

Facilitator: Do you see a possibility of the networking engaging the community?

Dennis: If we got computers in the centers and people could come and learn how to use them, that would be a benefit.

Facilitator: How about from a facilities standpoint and maintenance?

Dennis: Public Works takes care of the parks. If there's a problem in my center, I will call. So there would be a benefit for them.

Linda: Do you call on a landline?

Dennis: Landline.

Facilitator: That might be an opportunity for connecting directly with Public Works. Do any of you currently have wireless communication systems in your department(s)?

Linda: Not in our department; we don't use that frequently. The department that's adjacent can go out and do more non-compliance work. I believe they have a mobile device, but I'm not sure exactly what it is – handheld wireless or like a Nextel or a walkie-talkie as opposed to cell phones. I can't speak to what they have, but I know they have mobile devices they take with them so they can stay in touch with the field.

Cynthia: The actual building where we coordinate (the EOC) the emergency operations we have a satellite on the roof. We have to maintain communications.

Facilitator: What about flexible work options in your departments?

Cynthia: Use Sat phones because must stay connected.

Bill: At the museum, it would be really helpful for education staff and interpretive staff to be able to visualize tours. We do a lot of tours, etc., and if we had the capability we would really expand by connecting back to the collections database, and that would clearly help the facility programs.

Facilitator: Anything else?

Tino: Which department is it that's next door to yours, Linda?

Linda: Citywide rules and non-compliance. I forgot the exact title, but they really look for non-compliance. When I go out, I know there are 132 locations I am looking for. I know exactly where they are. On the other hand, they go out looking for something that they don't know is there. They'll go to a building that maybe had 30 businesses the last time they checked, and now they see

35. They're looking for the unknown. I'm specifically looking for the 132 locations to see if the listed entities are still there.

Tino: We'll get there information and then follow-up.

Facilitator: Sometimes we do things certain ways because that's how we've always done them and it may be hard to imagine another way. Even if it doesn't come to mind today, if you think of something later let Tino know.

               We have documented some of the applications you've mentioned. What we'd like to do is go through this list and try to prioritize. It's kind of hard because different departments have different needs, but try to choose if we could do only one or two things on the list. What would be the most important?

Linda: Do we have to be concerned whether the data we're looking at or the applications we're concerned with have to go over a secured line versus … The building across the street has public records, so I can go to Alameda County Records and get the public information. But the name and addresses of the businesses that are in there that do or do not have, business accounts, information that I should not be disclosing to the public. I have a concern about confidential information, especially when we do audits.

Facilitator: There are some areas also in human resources that definitely call for higher levels of security. So let's go through these applications and try to identify what you consider most important as #1 and #5 for what is least important to you. Revenue has field assessment, navigation – those might be location-based services. Emergency management services has mapping and navigational services, which is also tied to location-based. Museum operations has data communications (in a challenging building), video surveillance for security purposes, and enhanced visitor services. Parks & Rec applications would be improved voice communications, perhaps providing access to the community.

Facilitator: It may be helpful to drill down even more.

Facilitator: And also taking a broader look outside your department, across the city and into the needs of partner agencies and departments you work with, do you have any ideas along those lines?

Facilitator: Linda, how much revenue goes uncollected because you're not identifying

businesses you should be?

Linda: It's hard to quantify because you don't know until you get in there. I actually look for accounts that are currently under-reporting based on other data we have about them. There's revenue out there, but I can't quantify it. But there is an opportunity to improve revenue collection.

Facilitator: The group that actually goes out and identifies the unknowns might be one to tap into to help in cost-justification for wireless.

Linda: They weren't able to send a representative today, so I'm trying to put on their hat. They also do collections, and need to take documents with them to court. I remember one time being out in the field that I didn't have one document with me. I called to have someone fax it to me, but it would have been better if I could have pulled it up and looked at it on my own mobile device or gone to a printer and connected. I do see possibilities, but in terms of priority, mine would be lower than applications for emergency services. One could say, though, that if I don't bring the revenue in, they don't have the resources to send out ambulances.

Facilitator: Steve's example of Tucson's connectivity between the ambulance and the emergency room ties in here.

Cynthia: And someone mentioned video surveillance. We're looking at major emergency disasters, manmade or natural.

Facilitator: Coordinating information was the big thing we discussed in one of yesterday's workshops (with Fire and Police Departments). As part of emergency management systems, EOC database, data coming in connected to GIS, but the issue was getting it out to the field to first responders as well as in the EOC.

Facilitator: Was OES involved in the oil spill? I understand that one of the challenges was one of coordination.

Cynthia: Yes, with the various jurisdictions involved. We could use wireless to address that – with the Coast Guard, San Francisco's emergency services.

Linda: Another piece that went along with that was in the news concerned people who wanted to volunteer to help with cleaning up the shoreline and nobody was in charge of it. They didn't want to send 50 people to the foot of Ashby

when they were really needed down at University or in Oakland someplace. So that was something that came out as an after-effect. There were lots of volunteers but no one to coordinate how and where to use them.

Facilitator: That's a very good point. That ties into Ken Gordon's concept of a Community Volunteer Network. Did you know Chief (Debra) Pryor in Berkeley? She told me that many volunteers came down and had to be sent away because the coordination was so challenging.

Ahsan: Cynthia, do you manage the COR program or is that the Fire Department?

Cynthia: We manage it.

Ahsan: So your entire database ties into… ?

Cynthia: We also work with COR, which is with the neighborhoods, and also with all the systems(?) in Oakland.

Ahsan: So from the EOC perspective, you are the focal point for the entire operations of emergencies, how do you see not only information that is being collected and decisions being made, do you see any connection with other information?

Cynthia: Absolutely.

Ahsan: So what different applications of data types you see – video, mapping?

Cynthia: Mapping and video would be important as well, all of it secure. Getting connected to the database, getting it out into the field. In Montclair we organized the services, identifying the skills of volunteers, getting information to the first responders.

Tino: Back to the earthquake and the Oakland fires, there was a lot of coordination between departments. Parks & Rec had mobile stations in recreation places with WiFi connections that were helpful in staging. And for video, KTOP had mobile video devices might also be connected with EOC.

Facilitator: To piggyback off of that having that type of access might be helpful for key business partners (e.g., utilities) and reaching their field crews. If they could tap into that network, everybody could more effectively work together. So it sounds like Emergency Services might be the #1 priority?

Blum: I have a question about the museum and Parks & Rec. One of the things you could do was just provide free internet access to people in hotspots. They could bring in their laptops or whatever and log on to the internet. What would your level of enthusiasm be about that? Does it sound like a cool thing? Or something that would create more problems than it solves?

Bill: For the museum, it's a cool thing. We do that to a limited degree in the restaurant now and would like to expand it for our theatres. The clear direction in museum programming is to expand the community aspect of it, which includes making the galleries less about viewing things on the walls and more about interactive experiences and social experiences.

Dennis: Speaking for my center, I don't see many people bringing in laptops in East Oakland. Or into a park in that area. Maybe having some computers set up so people could use them would be good.

Facilitator: Are you working with Bruce Buckelow and OTXWest?

Dennis: I've been told that my center is among those that will get a computer station, but I don't know much about it.

Facilitator: One of the challenges in putting computers in rec centers and community centers is staffing. They aren't staffed to manage computers; they're staffed to manage recreational programs. We're also finding an ecosystem between getting information off bulletin boards and into databases and computers and making it available. Applications, access and access points are all part of this ecosystem. In Houston, we developed a common online events calendar. The community centers had no computers even for their employees. Some of the drivers were applications – getting events listed, making forms available, letting people register for different programs. There also seems to be an ecosystem evolving between WiFi and virtual tours of museums and zoos – getting some of that content online and providing some interactive experiences. Phones (e.g., iPhones) are now turning into little computers; in the next couple of years that probably will be the principal mode of access to the internet.

Bill: "We're interested in not only bringing the world into the museum spaces but bringing the museum out into the world." Repurposing the galleries off of the web site.

Facilitator: Libraries have done a good job of changing that thought process.

Facilitator: There's some fantastic museum internet sites, beyond just showing the galleries but engaging the community.

Bill: We have community programs, educational programs on-site that people can experience once they leave. All sorts of applications for letting people revisit the museum once they get home. "Obviously we're all about the visitor," so visitor information is really important to us. It's not exhibit-specific. I want to qualify that by saying that in terms of our relationship with the city, we take care of a certain amount of that privately. What is very important for the museum to take full advantage of the capabilities this has for engaging the visitors and the involvement with the community as well as the public works applications.

Facilitator: So your focus would be engaging the community.

Bill: Non-exhibit specific community interaction is most important.

Facilitator: And Parks & Rec, if you could do one of these things today, which would you consider the most important?

Dennis: Each center is different, but the biggest thing probably would be to create secure lines at each center that connects to downtown so that as a director I don't have to leave my center to do things that I could do there, such as the timesheets. Sometimes we have to leave to bring in money and so forth, of course, but to have to leave two or three times a week to come downtown to do paperwork takes away from other things I could be doing at the center.

Facilitator: So we have emergency services, customer information services (for the museum) and secure lines (for Parks & Rec). These would be the priorities.

Facilitator: The difference here seems to be that the first two are more or less citywide wireless access whereas the second two are more location-based wireless access.

Bill: We do have a remote location, our collections facility, a couple of miles away from the museum. Currently we have real problems because staff working out there have difficulty accessing museum collections database, so we could make great use of global wireless capability. Being out there working, if you lost a critical piece of paper, you can't just reliably connect

back to the museum database.

Facilitator: In the Revenue Department, how many workers would need that type of access?

Linda: Maybe 10 of our staff of 15, who are actually doing the field work. Some do collection and cashiering that never go out and do field work.

Facilitator: That would be $50 a month if you wanted air cards or something like that. Do they currently have laptops?

Linda: I don't believe so. I believe they have mobile devices. I'm not sure what they connect with. It's just one-to-one communication. When I'm out there, I want to know where I am, how I get to another location, and if I need to retrieve data. I might be able to retrieve it via email, or get a message out. I really don't know what their process is, but potentially, when they're out there they could be capturing data on a device and have that data uploaded on a secured line so they don't have to write it down once and then come in and transfer the information to the computer to trigger invoices or whatever.

Ahsan: On video surveillance, maybe we need to clarify whether it is in building, considering that you don't have a wired infrastructure in some of the places. Getting the video out from those locations does require, look for different frequencies and considering building type, architecture and material, has its own characteristics. Also with Parks & Rec, outreach and events. We had a big event and ended up actually borrowing a couple of laptops. It would have been nice to have laptops and connectivity for whatever they're doing out in the field, organizing, managing.

Dennis: We did the U.S. Youth Games, so we had visiting cities participating in games. It would have been nice to have a camera showing the field, so Mom or Dad in New Jersey could see their kid on the field.

Facilitator: That's a great example. It's like marketing in a way, and it also engages the community.

Tino: If we had one per District, that would be seven Parks & Rec centers.

Linda: A couple of years ago the city was looking at a 3-1-1 line. I think Motorola was going to come in and put in this communication system. A concern at that point was trying to design it so that if there was a pothole at

International and 35th and five different people reported it, it would be clear that it was just one place so they didn't send five trucks out. Or that crews would be dispatched with the wrong equipment. At that time, "the city had sort of a cultural bias toward silos; no one wanted to give up their call center to go to a central [facility]." Because the city's entrenched in little silos, there was less of an effort to centralize this with one group of people who coordinated. Then it became a cost issue. But there appeared to be some value in centralizing and filtering in one place.

Ahsan: Four years ago we started looking into a citywide 3-1-1 system. The term used was a CRM – Citizen Relationship Management system – basically placing non-emergency calls. Of course everything depends on the budget, but what DIT is doing now is working with the Oakland Assistance Center in the Mayor's office to deploy a system. We are consolidating all this information in a CRM system to provide a portal for Oakland citizens to call the non-emergency number or report potholes, lamps that are out, graffiti, abandoned cars – all sorts of problems. The tracking will be clear and people will see what the city is doing. The 3-1-1 piece is more expensive, the CTI and the whole integration with the telephone system. Depending on the Council's approval and the Mayor's sponsorship, that will come later, but at least right now we're starting with the software for this CRM system, working with the Oakland Assistance Center. Hopefully we will have this in place early next year. In addition, we're streamlining all the different systems in terms of services such as Oakland Public Works. Public Works is deploying the Work Order Management System that eventually will tie in with the CRM system, so that when a request comes in and a truck goes out, the person talking to the resident would know what is happening and what other things are being done. As a result, what the city is doing will be more visible to the citizens.

Facilitator: We were talking about each department having their different requirements and security issues, but if all can tap into an overarching wireless network, will improve efficiency and cost savings.

            If there are no additional questions, I'd like to thank you for your time and participation today. We will compile all of this information, and Tellus Venture will be working with the city and the IT Department to create a draft and continue the process.

Workshop 3 Flip Chart Notes

Wireless Applications
1. Revenue Dept – (Limited Mobile Reporting)
    a. Field Assessments (16 people)
    b. Navigation Services
    c. Tax Revenue Increase
    d. Email
2. Emergency Management (some mobile)
    a. Mapping & Navigation Services
    b. EOC – Coordination & Field Reporting
3. Museum Operation
    a. Data Communications
    b. Video Surveillance within building
    c. Customer Information Services – no exhibit community
    d. Remote location access interaction
4. Parks & Recreation
    a. Data/Voice Communications (secure)
    b. Computer Access Centers
    c. Community Volunteer Network
    d. Community Events
    e. Smart Parks & Rec

Security is a requirement.

*CRM – Citizen Relationship Management System (Estimated availability: Early 2009)

3.4. Workshop 4 – Oakland Business Community

Thursday, July 24, 2008, 1:30 p.m.
Oakland City Hall, Hearing Room 3

Project Mgr: Tino Granados, City of Oakland

Introduction: Stephen Blum, Tellus Venture Associates

Participants (per sign-in sheet):

Eric Presworsky, Chief Technology Officer (CTO), Zhone Technologies,
        epresworsky@zhone.com
Steven Glapa, VP, Marketing, Zhone Technologies, sglapa@zhone.com

Jordy Ford, VP, Marketing & Business Development, Clear Channel Outdoor, jordyford@clearchannel.com

Elie Khoury, General Manager, Oakland Convention Center (Interstate Hotels & Resorts), elie.khoury@ihrco.com

David Harmen, IT Director, Oakland Marriott (Interstate Hotels & Resorts), david.harmon@ihrco.com

Deborah Acosta, Community and Economic Development Agency (CEDA), Business Development, City of Oakland, dacosta@oaklandnet.com

Ben Weber, Community and Economic Development Agency (CEDA), City of Oakland, bweber@oaklandnet.com

Steve Lowe, VP, Economic Development West Oakland Commerce Association (WOCA), steve@urbanspace.biz

Aziz Khatri, Co-Chair, Oakland Merchants Leadership Forum (OMLF)/Keller Williams Realty, aziz@kw.com

Scott Peterson, Policy Director, Oakland Metropolitan Chamber of Commerce (OMCC), speterson@oaklandchamber.com

Randall Whitney, President and Director, Pacific Thomas Capital (PTC), randall@pacificthomas.com

Ahsan Baig, Department of Information Technology (DIT), City of Oakland, abaig@oaklandnet.com

Granados: Welcomes participants.

Blum: Introduces self and gives opening presentation

Blum: Are there any questions?

Aziz: Do you have any mission-objective-goal? Or are you starting from zero?

Blum: Right now it's a blank piece of paper. We're going to come up with reference architecture, a business model or models to support that architecture. This is what it would be; this is what it would cost; this is how you could pay for it; it would save this much money; you would have to get money from here; there's an opportunity to partner there. So we'd come up with both the technology and the economics to support it. Then the city would make the choice as to whether they want to pursue it as a project.

Ahsan: The city has been working on the concept of this project for the past three years, looking at other agencies and cities around the country, evaluating the significance and effectiveness of this concept, especially looking for the business community, education and the underserved. So the vision is there,

the direction is there – those things are all documented. We will send you those documents. What we don't want to do – which some other cities have done – is to implement a solution and then talk to the stakeholders. San Francisco is an example. We are instead starting from the requirements, determining the needs of the different stakeholders – police officers, firefighters, CEDA inspectors, business people, students. From Steve's perspective, this is a fresh start – identifying the needs, putting it together and then we will share the report with you and then present to the Mayor and the Council.

Aziz: Is one of the ideas that maybe we want to have citywide wireless for everybody? All citizens? Or the city government?

Blum: This is coming from me as the lead consultant – one of the things we're going to do is adhere to the laws of physics and the laws of economics. "The idea of free WiFi everywhere for everybody doesn't work according to the laws of physics and nobody's found an economic model for doing it yet." What is possible is providing a wireless system covering the entire city for very specific purposes and having revenue streams attached. Or for providing free, open internet service in targeted locations if there's the ability to fund it.

                  A lot of the ideas floated over the last five years were very good ones, but many of them just didn't fly. One advantage Oakland has is that it can look at things that worked and things that didn't work.

Lowe: It sure opens up a lot of possibilities. One of the things we've been doing on the Economic Development Task Force that the Mayor authorized almost two years ago is looking at West Oakland…

Facilitator: You're getting into the workshop content. We want to start capturing your thoughts before we get too far.

Blum: You're segueing right into what we want to do.

Lowe: What I wanted to say is that "we need a small community as a prototype and prove that whatever the dreams of the community are, that they can be multiplied throughout the rest of the city where it's needed." We know that police and fire services and some of the transportation needs could be facilitated by putting the WiFi in West Oakland, and if that would work in East Oakland too. I don't know if it's going to work in Montclair, because

they're got their own reality up there.

And I would have to know the proposed cost of installation and maintenance. How do you determine that? Let's say West Oakland is a place where you'll have broadband everywhere. There have been other attempts to do this. We want to integrate with those and make sure it's an up for everyone – but how much would it cost and where would the money come from to pay for it? And how soon can we get started?

Blum: Figuring out the cost is not dead simple, but it's not complicated and we have five years of experience with various projects around the country to draw from. We have a good idea what it costs to install and operate wireless systems, so once we have an idea of different technical options that would address the needs are, we can look at the cost of those options.

Lowe: There are about 60,000 people in Lompoc and 60,000 in West Oakland. What's the cost of the Lompoc system?

Blum: About 40,000 people there, but for the cost structure of a muni WiFi system like Lompoc's – it's a six-square-mile community. The cost to build it was on the order of $300,000 to $400,000 per square mile. It's an open range; we know it cost at least $300,000, but the contractor had to absorb some additional costs because of performance issues. The operating expense is probably about in the range of $100,000 to $200,000 per square mile per year.

Facilitator: We need to qualify that. It is a particular service with a particular technology. And we know that the technology is evolving. There are other ways to solve problems. You also can distribute the costs as opposed to absorbing all the costs trying to provide end-to-end service. You could provide a WiMAX connection and let someone else buy the receiver, much like people buy satellite dishes. Then they could basically take on the cost of receiving it. We don't want to get into the solutions here, but depending on what we learn through this process, there are different approaches we can take. I just learned about a new technology approach today. In Philadelphia, trying to put a square peg in a round hole, building a technology infrastructure and then getting people to use it wasn't a good deal. The police department said they needed wireless but the solution didn't fit into what they needed to do. The business community said the same thing. That's where EarthLink and some other folks ran into trouble. So I think "the City of Oakland is really taking a good approach." I'm living through that right now as the project

manager for the City of Houston. We just put up a network for 60,000 people. We're trying different technologies and different models. We're doing some pilots; you had a good idea about doing pilots.

Let me tell you what we'd like to do today. We'd like to have an open discussion, so that was very good. We want to record. We want to focus on application requirements – how you think we could use a wireless technology. We need to keep in mind that the user base is changing.

Blum: Before we continue, let's go around the room and have everyone introduce themselves.

Jordy: Jordy Ford. I'm from the Northern California Region of Clear Channel Outdoor, a media – billboard and radio – company. We're located right down the street in the ASK building.

Glapa: Steven Glapa. I'm the marketing guy for Zhone Technologies, right across from the Coliseum. We provide gear to telephone companies, including municipal WiFi.

Eric: I'm Eric Presworsky on the technology side for Zhone.

Randall: Randall Whitney of Pacific Thomas.

Ahsan: Ahsan Baig, City of Oakland, Department of IT.

Scott: Scott Peterson, with the Oakland Metropolitan Chamber of Commerce.

Ben: Ben Weber.

Lowe: Steve Lowe, wearing three different hats to shuffle here. Vice President of the West Oakland Commerce Association, helping to coordinate the Mayor's Economic Development Task Force, and I'm on the Project Area Committee, which I asked where the money might be coming from. I'm also involved in a couple of other small groups in West Oakland that are interested in bridging the digital divide.

Harman: Dave Harman, systems manager at the Oakland Marriott/City Center and two other hotels in San Francisco.

Elie: Elie Khoury. I work for the Marriott/Convention Center.

Deborah: Deborah Acosta with the City Business Development Unit.

Aziz: I'm Aziz Khatri, a realtor in Oakland and work with the Oakland Merchants Leadership Forum.

Tino: Tino Granados, City of Oakland, Project Manager for this project.

Facilitator: That was a good introduction. We want your input and ideas. If you had wireless connectivity in the city, how would you use it? We've heard a number of ideas, from digital inclusion to providing broadband to buildings that don't currently have a wired infrastructure to creating amenity services around the downtown areas and in hotspots. We know the way folks are using WiFi and broadband is changing. Everyone who has a cell phone probably within the next year will have some device that they constantly want to be connected on. I was happy to see that they have WiFi downtown here.

                 So we'd like to go around and get your thoughts. I'd like to hear different thoughts about how you would like to see WiFi used in Oakland.

Lowe: I have a lot of ideas, but I think they're all going to be predicated on how we link to police and fire.

Facilitator: There are separate workshops – we've had a public safety workshop. We're seeing that the city has public safety and operational requirements. A number of people in the field need connectivity, both from a public safety informational standpoint and from a work order management standpoint, to make the city more effective and efficient by saving gas and so on.

                 Some wireless networks have extensive capacity. In Houston, we've been able to segment the network to make some of the excess capacity available to the public. We just launched free WiFi in a three-square-mile area in Houston. There was an ROI; it was a technology investment that the city justified. There is some revenue generation from pay stations that funded the infrastructure, and there were opportunities to add other departments on to take care of the maintenance.

                 In other workshops here, we are capturing requirements of public safety, community and public works requirements.

Deborah: I attended another workshop with city staff. I wanted to emphasize that this
            particular workshop is for us to understand some of the business applications
            that are critical. There will be community workshops as well – West
            Oakland, East Oakland, the hills, other areas – to understand what those
            needs are.

            Today I'm hoping we can really focus on what business applications on a
            WiFi system in Oakland should look like. One of my big goals is our Class B
            building space. We have a tremendous vacancy rate in that office space, and
            part of it is that "the [Class B] buildings were built many years ago and
            really aren't up to snuff in terms of their technology." It's very difficult to
            bring that last 100 feet of fiber – not the last mile – into the building and then
            up the spine of the building. So I would see a "robust wireless technology
            application as being able to solve some of that lack of appropriate
            connectivity for some of our Class B buildings." DSL is even a problem.
            We'd really like to get the equivalent of much higher broadband there.

Facilitator: There are two different types of wireless technology we're looking at.
            Microwave (WiMAX) is one and the omni-directional everyone knows
            (WiFi). A lot of businesses have been very successful with replacing wired
            lines. The idea of providing high-speed broadband connections to remote
            facilities using a microwave, with a radio up on a building that's connected
            to a wired line and shoot a wireless connection out five miles.

            Here, we're just using the term "wireless" because we aren't yet focusing on
            any one particular technology.

Randall: "A great undertaking." I'm glad to see it happening finally. The approach is
            good, getting groups together and figuring out organically what the needs
            are. A lot of people talk about real estate; there's tremendous fiber
            connectivity underground running through Oakland (railroads) and that fiber
            enhances the technology's ability to broadcast. One of the main things that I
            think will be a great driver would be a system that is attractive to the trade
            and logistics groups, mostly truckers and groups moving cargo, by providing
            applications that serve their needs. That economic driver would kind of build
            upon itself it. Whatever else expands from that connects with what Steve
            mentioned. The fact that it's over there by the Port might be able to service
            West Oakland at the same time and provide a community benefit. As for the
            Class B buildings, that makes total sense to get access there to make them
            more attractive to businesses here in Oakland.

Tino: Spinning off on that, in 1998 through 2003 new telecoms came in pulling dark fiber (optics), so there's a huge supply of underground and aerial fiber optics. But that's probably been four companies – the big ones. We know that Oakland has the fiber and the technology. But for wireless, there are lot of different needs and a lot of different things out there, and it's changing dramatically. Those needs can be incorporated with the wired network.

Facilitator: "Everything wireless is wired." At some point, you have to go back to a wired line.

Lowe: I was thinking exactly that. The Port has a tremendous amount of days that truckers need to know which harbor they're going to and so forth. That might be one of the ways of making the system sustainable, to have the Port pay for it. Then the overage would seep out into West Oakland.

Another thing we're thinking about that depends on transportation is having people use dial-a-ride with shuttles instead of the buses going up and down streets empty half the time. The shuttles can run at almost full capacity if they're on computer dispatch. People just walking along the street with their cell phones could call to ask for a shuttle and off they'd go. We could expand on the idea of the Emery Go Round (Emeryville) and "really make Oakland a place where people who don't have cars won't need cars to go shopping and all that. It would all be done by shuttle." I think that's coming. Right now I have to drive all the way over to Trader Joe's in my car. I could get on a shuttle and do the same thing with several other people, we wouldn't have to pay the high cost of fuel, which we're also running out of. That's something else that could be a West Oakland initiative that would fit well with the URI program that the city is working on now. The Urban Revitalization Initiative.

Elie: The lodging industry sells lodging and meeting rooms. Wireless in our buildings is great marketing. It's another great story to tell. My clients would appreciate being able to travel and work outside the building.

Scott: Your guests now have internet access? Is it wireless? Do they pay for it?

Elie: Wall plugs. They pay for it now, but the business model is that in the future, by the time we roll it out, I think the whole lodging community will be providing it free. "The time is near that we will give that away, just like the pillows."

Scott: So you wouldn't necessarily seek citywide hotspots or some city-provided service competing with you or being a loss-generator for your operations?

Elie: We understand it's in the future for the lodging industry that we will be giving it away and we're ready for it. We're just working out the contracts and the costs, initially to put the infrastructure in the building. It's just a matter of what brand. Within the next year or so, I think we'll be doing it.

Scott: For tourism that will be another amenity.

Facilitator: The signal doesn't always propagate that well into the hotel rooms…

Elie: But I think our bandwidth, the speed and the service we'll provide is going to be much higher than ###.

Facilitator: Tagging onto that, some companies on the other side of the Bay are developing some interesting ad models. The idea is that everything would be free. One company (Anchor Free) has developed a pretty interesting ad model running a free service and maintain sessions much like a lot of the internet-based video services now do, with a 20-second commercial every 30 minutes. They can do that with an internet solution, so if you have an iPhone or laptop, they run that, providing 40% of revenue back to the operator. With that model, they can also localize ads, so the local pizza shop within walking distance can run an ad, as opposed to paying for citywide advertising.

Scott: So it can promote local ###.

Facilitator: And then folks are talking about the coupons/QPods. You start seeing ecosystems developing around the area merchants, driving up sales. So "applications start to develop once you put that infrastructure in."

Randall: On the physical structures, the signal doesn't propagate well through the walls in the hotel?

Facilitator: That depends on the technology.

Randall: Is technology available that allows groups, like a hotel or office building owner, to be able to pick up the signal and repeat it in an enhanced way?

Facilitator: You can buy some of that technology at Best Buy.

Randall: Have you seen that work, if they enhance or strengthen a signal to pay back to a financial model?

Facilitator: If they want to become a hotspot?

Randall: If they wanted to pick up on a signal that's already generated and floating in the air, and they want to enhance it inside their hotel or building. So they'd pay an extra fee, like a premium surcharge, to push it higher.

Facilitator: There is a model for that.

Randall: They'd get charged for that, but otherwise it would be free.

Facilitator: We call that a hotspot model. If the pizza parlor wanted to pull the signal in from the street and rebroadcast it inside the shop, they could pay a fee. You could give them a box or they could buy a box, but there is network management software available that lets you control either an individual user or a hotspot that's connected to the network. If they decide to become a hotspot, you could tell them they now have to buy ad services. The ad revenue has to be able to pay for maintenance and support of that portion of the network, not necessarily the whole investment.

Facilitator: My company develops mobile and internet applications. We just secured the re-do for the San Jose Convention Center & Visitors Bureau. We try to get clients to rethink how they connect with their community. So tying in to organizations and their situations, they're unique because of the visitors' bureau. In San Jose, it's only one organization and the only one in the country like it. But tying into the hotels and other area businesses, which the Oakland Convention Center could explore, could present some pretty lucrative opportunities. "The wireless network is one way you can connect with your partners in the community to piggyback on each other and make financial opportunities for all." I'd encourage everyone to do some free thinking not about the technology but about how you work today and identify processes and relationships that a wireless network could enhance. An overarching wireless network could enhance your business model, your organization, the digital divide. Some great things are starting to pop up in the tourism industry.

Glapa: One of the things Zhone has seen in other cities is tapping into an incumbent telephone company or an alternative carrier providing wired broadband services. This is not necessarily the city building a network for their own

exclusive use but tapping into a metro WiFi facility. "They may be doing triple play today but can do a little bit of quadruple play by offering subscribers in their own town WiFi access with the same password they use at home."

Facilitator: They're doing that – AT&T WiFi in Starbuck's and so forth, and Comcast is now providing free WiFi to apartment buildings and office buildings they serve.

Glapa: The little guys are doing this too. There are some examples in LA, kind of ethnic CLECs (competitive local exchange carriers) are serving the Latin American community, in fact a lot of illegal immigrants.

Facilitator: I've seen that too.

Glapa: "These little CLECs are sometimes hard to find, so I don't know if we've got examples of them here in Oakland."

Facilitator: What's interesting is that VoIP and Skype and other phones are changing the model. It's being blurred. Traditional TV and phone services…

Glapa: A lot of these location-based service models plug nicely into organizations that are already thinking about ###.

Deborah: We have a very robust one in West Oakland.

Randall: San Francisco is a model that got kicked off moving with EarthLink and doing big things. The ### with the hills involved a lot of cost. It's an interesting case study, but one thing to take away from that is that corporate sponsorship should be looked at. "A corporate sponsorship model would give companies the ability to broadcast that they sponsor this deal; just like Oracle stadium, finding a way to get revenue out of that." Of course the sponsor would have to be selected in an open-bid process that doesn't give privilege to anyone.

                They got attacked a lot in San Francisco. I think it was Bob Gammon who might have been the attacker, talking about how it was unfair and created more of a digital divide. You'd have to figure out how it doesn't create preferential treatment for anybody and basically gets the revenue out of it on the corporate side.

Facilitator: T-Mobile @ Home is a cellular phone. For a flat rate, unlimited phone calls anywhere within a WiFi signal in the U.S. and Canada. "T-Mobile figured out that 40% of the calls their customers are making are within a WiFi hot zone." It's a phone that roams, so if you walk out to your car, away from the hotspot, you won't lose your phone call. It's IP persistent; it switches over to a cellular tower and you do not lose a beat." It's pretty cool. I've used the technology and it works great. It's something to think about when you think about how you'd like to see wireless technology implemented in Oakland, how these products and services are changing. The whole idea of a phone is changing. If you have a broadband connection, there are very competitive services out there that will give you a high-quality phone call. The idea of extending that WiFi coverage away from the home becomes very interesting

> if you partner with a company like T-Mobile. Other companies are about to do that as well.

Tino: Also think about the cable companies – Time Warner, Comcast, Cox, all the big ones – are partnering up with companies with IP-based WiMAX to extend the network internally and externally in buildings and connect with each other. It doesn't matter whether it's voice, video or data. You can move from the house to the car and still be watching the same TV program.

Deborah: The technology changes completely every 18 months, so "it's really critical as we're going forward with this to make sure that our technology is in fact flexible and you don't get stuck" like we did with that Ricochet technology that was on our poles…

Facilitator: They're still out there on poles all across the country.

Deborah: Up until a couple of years ago, they were still charging the city electricity for running a system that didn't work anymore. Let's "make sure we're not stuck with something that's going to be clearly outmoded quickly."

Unfortunately a lot of people who said they would be here today didn't come. Part of it is they really don't understand what the applications are and how it can affect them. "China, Europe are going to continue to kick our butts on this stuff." So part of what we're doing here really needs to be an education process, figuring out what those applications are.

Facilitator: Good point. Google is working on the GPhone, or an Android. Google has been very successful in moving the FCC, which had been limiting the bandwidth of the radio spectrum that non-carriers could operate in. They've been successful in getting other major players in the industry to agree to an open handset policy, so you can buy a phone and use it on any network service. Now they've developed the Android, which is basically an iPhone-like product, and software, operating system. And they've given it away to all the phone manufacturers. So the industry players are saying we will see low-cost devices coming out by Christmas. This is really good news. Even those services where people month-to-month or buy minutes-as-you-go, the people could buy a low-end device but it's really a computer. When you combine that type of application with a wireless network… maybe T-Mobile would like to partner with Oakland and improve their market base. Probably not ubiquitous coverage, but hotspots and coverage zones around the city. It presents some really interesting opportunities to explore as we move

forward.

Facilitator: Another opportunity is to "look at how your end client would like to be served; how it might benefit them and help them do their job. Not just a convenience or an asset to the community." That's a way to lift your business up, attract attention, be a preferred vendor or service. "We're transitioning from an era in which companies pushed their products down and people would have to live with it to a 'puller economy,' with customers saying, 'You give it to me the way I want it and the way I want to pay for it.'"

An example from the San Jose Convention Center involves the results of an extensive study of meeting planners I conducted. The meeting planner is the convention center's client; the big shows make a lot of money for the center as well as the city. I was shocked to learn that meeting planners of some of the big companies (Wells Fargo, McKesson) did not feel their multiple needs were being met over the internet. They want to plug into a suite of services, finding restaurants, other things going on at the same time that might affect participants' ability to get around.

Facilitator: This is very good. Other ideas on applications?

Scott: What about video surveillance for security? One of the constraints with that currently is access. Is there a way to do that?

Facilitator: The answer is yes. There was a lot of discussion in the public safety workshop about that. Two aspects are involved. There's the video surveillance the police department may put in different hotspots outside, and also video surveillance inside stores. The idea of a network that could be integrated in some way, such that when an officer responds to a call at a store, he could get into the camera on a secure network and see that.

Scott: I'm even thinking in terms of individual business owners who want the remote surveillance opportunity but maybe doesn't want to go through the whole deal of a special contract. Could that be built onto a system that would broadcast wirelessly? I'm just dreaming here. But like OMLF, all the different neighborhood merchant groups could maybe have a neighborhood camera system and key into it through the web and be able to see what's going on out in the street. A lot of these are small business owner-proprietors. If they have a great public safety community going on through their commercial area, could they back that up with watching what's happening in various parts of the neighborhood. That's a lot different than

picking up the phone and telling a neighboring business to go look outside. A merchant maybe can't leave a register to go outside, but could look at it on his screen.

Facilitator: I think I heard two things. One is a network system you could access and see at least what the cameras in your area are seeing. Second is if the city provided some network service in which you could buy or sponsor a camera in your area, the city would connect it to the network. So now the police have a visual –

Scott: And you also make that visual available to the people in the community, so that you're not relying solely on the police. You're taking it down to the ground level, not assuming that the police are either going to see it in their cars or at a dispatch center. You'd be able to access it through the web.

Randall: We're spending about $50,000 on cameras, DVR, remote software that lets you dial in and look at those cameras. To offset those costs.

Scott: That's exactly what I'm thinking about.

Randall: To have the ability to store and track data would probably be a cost to the merchant using the service.

Ahsan: We are working with different communities. We are working with WOCA [West Oakland Commerce Association]. The community was forcing us to do something there because of the crime situation, and the businesses were really getting affected. We are going to pilot. In addition, we have to consider that whenever we try integrating with a public safety system, the Department of Justice comes into the picture. The same work also would be done at the community level, so not only public safety personnel are watching the video. The idea is to engage the community in neighborhood watch sort of activities. We are also trying to consolidate community cameras, and get GIS available in the community and the city in addition to the public safety cameras.

Randall: Is the ACLU going crazy on this?

Ahsan: We're working with our attorneys and trying to control that.

Facilitator: We saw how the ACLU reacted to Google Street View.

Deborah: I hadn't thought about that. As a longtime proponent of community policing, it's awesome. You could get on your computer and as a community member be able to view from any one of several cameras so you have a proactive – oh, my gosh! – it's amazing. We have two new downtown Community Benefit Districts (formerly called Business Improvement Districts) as well as several throughout the city. "I could just see a collaborative with any one of those to implement this as being a tremendous public safety initiative." "It translates to an economic development initiative, because it's ultimately going to lower their costs."

Facilitator: Thought has to be put into how you monitor it (to avoid creating any false sense of security). In the past, we've run into situations when someone who is getting mugged and sees a camera is recording it, they're waiting for help, but when there are 50 or 200 cameras across the city, someone may not be watching all the time.

Deborah: Absolutely, but if the whole community is watching, it's more likely that somebody is watching it at some point.

Facilitator: It's a great opportunity and it's very doable. But on the other side you get into privacy issues. You have to balance the two.

Deborah: They're private spaces if they're in stores. But I'm starting to get a feel that being safe in a public or commercial space is not a bad tradeoff, especially for those of us who live in Oakland. With Google Earth, I could zoom right into my backyard if I want.

Aziz: They are blurring people more now than in the past.

Facilitator: And they're doing it at daybreak when it's very shadowy.

Glapa: It's not real time, either.

Facilitator: But video would be real time.

Deborah: Do not be afraid. Go forward.

[break]

Facilitator: Let's go around to give you the opportunity to comment on an idea maybe you haven't presented or something you'd like to add to one of the ideas

already on our list. Then we'll go into the process of prioritizing them.

Jordy: We're a media company, primarily an advertising company. A free WiFi network has infinite and great public amenity possibilities – security, access to the services, everything. That's a great thing to pursue, but "with all the cities we've seen that have tried to start a WiFi network and failed, it's the business model behind it that has failed." That's why there is not a free WiFi network in San Francisco; it's a "combination of bureaucracy, red tape and the business model failed." When they penciled it out and got further and further.

From my perspective, look at outdoor advertising as a business model and take the simple example of a bus shelter. That business model started in Lyon, a little town in France over 20 years ago, when they needed bus shelters for their public transit system. Bus shelters cost between $5,000 and $15,000 to build. J.C. Decaux, who started this business, basically said he would fund and maintain shelters throughout Lyon if the city gave him the right to advertising in the shelter.

That's just "a simple idea of real estate (e.g., billboards and bus shelters) and how do you fund a public amenity without going to the public and asking for more money." WiFi is a great business opportunity, but by itself it's very hard to be supported by advertising revenue. From a Clear Channel perspective, we have real estate assets in Oakland (and throughout the country and throughout the world) that generate revenue for us. As an example, we built bus shelters in Oakland and operate the advertising on them. With Oakland and other cities, we're looking at how we can enhance our existing pieces of real estate. A very easy example would be taking a shelter with an Apple iPod ad on it at a cost of so much per month, and telling Apple the next time they come to buy an ad program, we'd tell them the bus shelters they're advertising in are now WiFi-enabled, with broadband access and they daisy-chain with all the other shelters and provide WiFi access within this area that surrounds your ad faces. We'd tell them it's an enhancement to their ad program. In addition to a static poster presence, they also could have an ad presence in that WiFi zone for a rate increase of 20% or 30%. So it's a product enhancement that adds value for the client, and in turn enables us to provide the public with a free amenity. To us, "that amenity is capturing ad exposure and eyeballs for our client." It's much easier to accept advertising when you're getting something of value from that particular marketer. So if someone sees that Apple gave them free internet access for 30 minutes, they will look at the ad – a 10-second spot

here or a banner ad on the top or whatever. It's an idea of enhancing real estate in Oakland for us and pulling together an ad model that isn't new but an enhancement of our traditional model.

Facilitator: Is Clear Channel Outdoor doing that in San Francisco?

Jordy: We're still working with the City of San Francisco. We signed a 20-year contract to replace all the bus shelters.

###:   Doing Sykes instead of WiFi.

Jordy: And community bike-share as well. It's basically an automated bike rack where you can take out a bike, ride it around and put it into another bike rack. That's another public amenity we're trying to put out there. Again, though, "you have to have a business model behind it."

###:   You just get charged if you don't bring it back.

Jordy: Probably a lot of companies have come up with cool and snazzy business models, but Clear Channel Outdoor already has a business out there on the streets where you need WiFi access, and is willing to make capital investments and support the project if the city can be a true partner for us and let us make these types of conversions to existing products and make mobile marketing part of our core product so we can support it over time.

Facilitator: That's pretty interesting. If the city had zones all over the city, would you be interested in only some of the zones?

Jordy: No, we would take all the zones. We would want to start in areas where a) there's the greatest need for WiFi but in turn b) we'd need areas with the highest need for additional advertising exposure. So it might be a combination of downtown Oakland and West Oakland at the same time. That way, we could meet the greatest need in West Oakland but we don't require advertisers to ###.

Aziz: As a follow-up to the ad-based service, does anyone know about the NetZero model?

Facilitator: Long story short, that didn't work long for them. They now have to charge, and I'm not sure if they have it in certain regions. The evolution of the internet itself changed that model for them.

Facilitator: One big driver was dial-up.

Eric: They were actually getting money from the ###. All we did was terminate calls; we got paid by Verizon. We did ads too, but that paid a lot of ###.

Glapa: That resonates a lot with what we're seeing in other cities. "Like a shopping mall investment model, no one store is really going to pay for it. You have to have a couple of good anchor tenants," typically the police force and surveillance is huge. A combination of things you need to make of these municipal wireless investments ###.

Eric: I spent a few years studying how people use the internet; what the applications are. It's shocking, if you just take 5, 10 years ago, how much bandwidth people actually use today. "The amount of video actually going over the internet right now is more video than the entire size of the internet in the year 2000." "They say by 2012, it's going to hit to where we are today." That's standard-definition, not HD. Imagine when YouTube becomes HD, how much bandwidth that's going to take.

"We don't know what the next killer application is, but we know one thing – it's going to require a lot of bandwidth." "When you do the planning and look at the applications, don't just assume for today. We don't know what's going to happen in the next 15 years or 10 years or five years. "When you put the investment in, try to think ahead – regardless of what the applications are going to be."

Facilitator: Watch your kids for about an hour and you can figure out the future. "My son won't talk to me more than five minutes, but I've figured out how to text him. We communicate all day long."

Glapa: You've probably seen the Cisco traffic studies. The compound annual growth rate for consumer Internet traffic is north of 20% a year.

Ahsan: It is interesting to hear from Clear Channel Outdoor. There are a lot of opportunities from the targeted advertising perspective also, just looking at the demographics of different locations. There's some software you can get that you can use when you call someone who isn't there, it lets you bypass the long greeting and go straight into voicemail. The business needs to drive the technology; we are the tekkies but you tell us what the business needs are and we will work on the solutions.

Facilitator: The application they were pushing with that software was called 'the breakup' – how to break up a relationship with someone without having to talk to them. Slide right into the voicemail box and say, 'I don't want to date you anymore. Bye.'

Facilitator: It's interesting to me that hotels give you newspapers. The information is already old, because you have the internet. You think about where all of that ad revenue is going to go, when everyone's walking around in the next couple of years with something like an iPhone and news is instant. The old system of producing newspapers – it has no value to me. I don't even pick it up anymore.

Scott: I'm sorry there aren't more business people here. In trying to represent business people's views (Chamber of Commerce), the important thing is distinguishing the user groups in terms of how it gets paid for and who subsidizes whom. If it's a city service that has synergies between departments (such a public safety and public works), the taxpayers will help pay for it regardless. To have additional access for residents and businesses requires establishing charges appropriate to their level of use. "This is especially sensitive right now in Oakland, where there is not exactly the most confidence in the way public money is spent for public services." It's really important to keep in mind; don't saddle one user group with the high cost when they're already paying for it in a different way.

On the other hand, there could be benefits out there for a business. There are a lot of places – cafes, the library, hotels, neighbors – to tap into wireless. "Is it really something that's going to be value-added with a muni system? I'm just not sure."

Ben: One of the things I work on is developing the retail sector in Oakland. We have a citywide retail strategy now, and to feed back on earlier comments, educating the smaller retailers about the potential of this sort of network could really be a benefit. I particularly see the ability for getting local advertising (pizza shop example); I see a lot of cooler businesses that understand the dynamics of the way information is exchanged now. To have a network that would allow that in underserved areas, West Oakland and so forth.

Lowe: I'm still hooked on the idea of increasing mobility, with shuttles being dispatched in response to dial-a-ride requests. I lived next to the guy who put

dial-a-ride into San Mateo County, where it was really successful until they priced it so high it failed. That was a political decision that backfired. If we could really get around to having cell phones with the GPS capacity to call for a shuttle, be there within two or three minutes and off you go to your destination, stopping on the way to pick up this-or-that person. "It's sort of like a combination between a taxi and a bus" that doesn't cost as much as a taxi and minimally more than a bus. "That could really change the way that people get around all over the place. It would be great for Oakland to be the innovator there." we'd get some money out of MTC to do that and maybe get permanent funding. West Oakland's the perfect place for it to start, because it really is the core of the whole Bay Area.

Facilitator: There's a Super Shuttle on the East Coast that runs that model mainly as an airport shuttle but they also go into different downtown locations. You go onto a website, put in your address and it gives you the time of pickup. You get into a van, and it's much cheaper than the other options.

Lowe: And the cost could go on your telephone bill.

Facilitator: That's a great idea.

Lowe: Yeah. Nobody messes with Ma Bell and lives to tell about it.

Facilitator: Jack London Square had a rendering of BART in the future, with that type of service.

Ben: That's CyberTrain. It runs on a fixed track.

Facilitator: But I thought the technology was similar. So at least people are exposed to the concept.

David: I came mostly to observe. It's been great. I'm learning a lot. How do you implement something like this without stepping on someone else's toes that has maybe some type of business already set up, and then you wind up in some legal battle? For instance, I came up with an idea that the Marriott should be able to display airline arrival and departure information in the hotel as an amenity for our guests. It turns out there's already a company doing that. If it were the City of Oakland doing something like that, it might be some kind of problem with that business.

Ahsan: Many people are thinking about solving the same business problems. Like

providing the tracking information of departure and arrivals. If you drive from here to Oakland, it's going to take 20 minutes based on whatever. Or if you're going to take BART from here to San Francisco, it's going to take so much. So it's really what value you can add on top of it; that becomes really a selling point that also makes it sustainable. "Sustainability is the key thing." Ricochet, for example, wasn't.

David: I'm from Chicago. What is Ricochet?

Facilitator: An early proprietary broadband. It was great. I used it. Great engineering team. Not so great marketing team. I never heard of it. A buddy told me about it, and I'm using it thinking, 'Why is this a secret?'

Glapa: I worked closely with a guy who was the CTO there. The technology didn't scale and they didn't have enough money. Those were its Achilles heels. More power to Sprint.

Elie: Two comments. How great would it be to see Oakland, the city next door to the big city that really is ahead of the big city. So did it right. The shot's been fired. "The positive image if we can do this is huge"

             My second comment is that I think everybody would buy into a program like that, especially if it's basic for everybody, an upgrade hotspot. "They would buy into better, faster, higher – the feasibility of doing something like that would sustain the program." "The sustainability of the program has to be outside the administration. When administrations change, usually programs die." "Whatever we do, from a business owner perspective, is the city can kick it off and administer it, but needs to pull away from it or they will kill it."

             As Jordy said, "it needs a great, strong business model behind it to make it continue to grow and not just stay for a few years" like Ricochet and then go away.

Scott: As bluntly as possible, let the private sector run it, please. Also on the real estate side, let's figure out whether there is a business proposition in terms of putting them on rooftops rather than light poles. It creates control issues and costs and may be contrary to the idea of bus shelters (which I like), but it would change the equation in various ways to put them on buildings rather than a public or quasi-public pole or shelter.

Facilitator: Would the property owner own the equipment?

Scott: Either own the equipment or lease the rooftop/building space.

Jordy: I think the idea of a municipal WiFi is a good one, but we should be thinking about community WiFi, because the most successful thing that will happen is when a community takes ownership and pride in something and wants to help build and support it over the long term. But you do need someone in the very beginning with a sound business model that's going to come in and make that big initial investment, make sure the program gets off the ground and sustains it for a long period of time, to help build that awareness, build that momentum where the community will be able to contribute for the long term.

With our discussions with the City of Oakland, I think we have something that may work. So I'm very excited and I think the City of Oakland is very excited about it. We're looking to solidify that program and want to get started, because we do have a business model behind it. We have worked out the numbers, and we know those numbers are going to work for us over a long period of time as an investment in the City of Oakland.

Facilitator: Interesting.

Deborah: Who are you talking to in the city about this, Jordy? I think there are some of us who should be included in this conversation.

Jordy: Right now it's pretty broad-based. I don't think anything formal has been submitted. We've just been having general discussions. We're trying to iron out those details, and I'm sure everyone is going to be pulled into the loop. We don't want to make promises that we can't keep; we want to make a proposal that we can move forward with.

Deborah: We should all be working closely together as we're moving forward in this, because you obviously thinking to be a huge player. You have the vision. I'm glad you're here today. Make sure I get your contact information.

Facilitator: That has been a recurring theme. If the city could provide a connection, we will buy the devices, a low-cost investment, and connect to that and provide wireless access in our community or in our venue that we're looking to offer service in.

Facilitator: When Clear Channel Outdoors has advertisers come in, what's the concept of bringing in local advertisers as opposed to Apple, for instance?

Jordy: We sell to all the national advertisers and locally as well. To get something really started off on the right foot, you would have to have some big blue-chip advertising support. I wouldn't look at a business model that focuses primarily at local ad sales to begin with; I'm looking at national ad sales.

Facilitator: I totally agree, but when you're talking about the community.

Jordy: Community in terms of having the community have free access without all these strings attached. Offering the masses a basic, reasonable level of connectivity, where someone can surf the net at a reasonable speed but not the amount of broadband they'd need to exchange files all day and sucking up all the broadband. In turn, we would leverage our existing advertising assets (radio or billboard) and providing a value added of WiFi advertising to our client. That's where the long-term funding strategy is.

Deborah: We're talking about building the business case for developing this system, whatever the technology focus is. "We also have to build the business case for the businesses. What's the return on investment for them just being interested in this?" The education process is critical, because as the person in the city who is focused on international trade, I know what's happening in Europe and in Asia. And they are completely there. "Walking around in Shanghai or Delhi, seeing everybody on their phones using them as computers, and we're not there yet because we don't have the robust broadband to do it." We need to educate our businesses about how important these broadband applications are for their businesses, and how important it is for them to see how their business is connected not just locally but to the world. I can't overstate that. If we don't know that, we're in trouble.

Aziz: I can imagine when the building inspectors or auditors visit a business, they have a tablet PC or something for inputting information. Done. You have the email in your pocket. Your license or whatever is done right then and there. The client doesn't have to go to any office, the inspector doesn't have to go. That's something that's very valuable.

Facilitator: Pulling up drawings and so forth.

Aziz: And look at everything right there.

Deborah: Oh, totally. Upload, download so that they don't even have to come into the office except rarely. They're doing their work there and can literally print out and get to the client right then, and pull out documents that otherwise you had to go into the office because they didn't come to the client with the right documents.

Facilitator: "Expediting the permitting process could be a huge economic development opportunity."

Lowe: Instant loan approval.

Deborah: Employees are even thinking that GPS identification of their whereabouts is a good thing from a safety point of view.

Facilitator: These applications are interesting, because you can actually go back in time to see where you were at 10 a.m. and 11 a.m. It's scary.

Tino: It's exciting and interesting to hear so many different ways applications can be used in wireless, from building inspections to case management to neighborhood coordinators to audit. To speed up, increase efficiency, spend more time in the field. A building inspector might do six sites a day, but without going back to the office, he might do eight or 10. "Using wireless connections makes it more efficient not only for the building inspectors, for the business and residents who are getting the inspection. So there are positives on both sides. It brings in more revenue per inspector, too."

It's also good for us to look at what's been done elsewhere, to see what works and what doesn't. And internally and externally, a lot of needs are similar. I see libraries, businesses with hotspots being a piece of the pie, and this could overlay all of it. We can help each other. "The more partners we have the more successful it's going to be."

Elie: What's the timeline?

Tino: We're hoping to finalize this project within three months. Council is on recess and there's the politics going on in the city right now, but we're going to do the best we can. I'm working with Council during the recess to have community focus groups in September, so we keep it moving. The more input we get from businesses, the more you help seed the project, the better the timeframe will work and the better the process will work.

Facilitator: This has been great. I've done this in other cities, and I really appreciate all the very good input. We'll be using this to present management with a findings document but also to use as requirements for developing a proposal for a citywide or even pilot wireless infrastructure. Thank you.

Workshop 4 Flip Chart Notes

Wireless Application Requirement	Notes
Class B Building Office Space	Tech is not up-to-date
Leverage existing fiber infrastructure in Oakland	
Create a system/access for trade & logistics groups	
Wireless for the Port	Port can pay and 'overage' benefit West Oakland
Use Dial-a-ride with shuttles; charge appears on your cell bill	Computer dispatch; individuals can call using their cell phone: similar to Emeryville-go-round; tie into URI initiative (Urban Revitaization)
Oppty for Marriott/convention center	Future for lodging industry is to give wireless for free at some point; next year or so; great for tourism
Meeting facility requires better wireless access	Indoor
Offering local subscribers "wifi"/wireless access	Smaller, local organizations can become there own "clecs"
Location-based service models	
Corporate sponsorship models should be considered	Find ways that don't create preferential treatment
Explore new wireless services (i.e., voice, video, advertising)	
"Flexible" technology	Don't want to get stuck with something that is outdated
Awareness and education process for businesses and community	Understand what the applications can be & how they can benefit them/the City, the community
Merchant-based video surveillance	Individual business owner who wants video surveillance and could "tap into" this capability; fixed or pay-as-you-go; City provides camera; offset costs for DVR and other support

Outdoor Advertising as a business model	$5k-$15k to build bus shelters; advertising pays for this
	Clear Channel has bus shelters and billboards in Oakland; Wifi enable bus shelters; business model is important; start in areas where there is a high need for Wifi, but also great need for advertising coverage;
Think ahead; not just for today	
Distinguish the users groups	
Is it really a value-add; need to make it sustainable; strong business model is key	
Will the wireless network step on the toes of another business, organization, other	
Improve image of Oakland	
Community Wifi vs. Municipal Wifi	
Build business cases for Oakland businesses	
Building inspectors can pull up drawings and complete reporting in the field	
Location-based tracking of employees	

3.5. Workshop 5 – Oakland Non-Profit Community

Friday, July 25, 2008, 9:30 a.m.
Oakland City Hall, Hearing Room 3

Project Mgr: Tino Granados, City of Oakland

Introduction: Stephen Blum, Tellus Venture Associates

Participants (per sign-in sheet):

> Bruce Buckelew, Executive Director, Oakland Technology Exchange West (OTX West)
> Ernie Ting, Oakland resident (e/sta – Ernest S. Ting & Associates), erniet@esta-consulting.com
> Tracy Rosenberg, Media Alliance, tracy@mediaalliance.org
> Eloise Lee, Program Director, Media Alliance, eloise@mediaalliance.org
> Randolph Belle, Special Assistant to the CEO, Urban Strategies Council,

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Stephen Spike, Director of Information Technology (IT) and Research, Urban
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Kyle Lee, East Bay Asian Local Development Corporation (EBALDC),
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Shanina (Nina) Shumate, Women of Color Resource Center (WCRC),
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Janet Austin, Film Office, Office of the City Administrator, City of Oakland,
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Shahram Aghamir, Civil Engineer, Plancheck & Engineering Services Division,
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Ahsan Baig, Department of Information Technology, City of Oakland,
abaig@oaklandnet.com

Granados: Welcomes participants.

Blum: Introduces self and gives opening presentation

Bruce: What's the timeframe?

Facilitator: About three months.

Randolph: What were some of the challenges you had with cities closer to Oakland, like
Philadelphia? We've been watching that one; they've gone up and down.

Facilitator: I was the CIO in Philadelphia and was involved in that. One of the things we
learned is we started off putting in technology and then looking for what we
could do with it. Even though we've always made technology investments
by looking at government, public safety, public works and operational
requirements, because it was a new technology we wanted to get something
for free. So EarthLink came in and said they'd build the network without
really understanding local government requirements, at a community level or
even at a public safety or operational level. They had it very difficult because
they didn't know how many assets were there to put their equipment on, and
just ran into a lot of issues after they'd already been in there. At a certain

point, it just became too expensive, and EarthLink changed their direction because a new CEO came in with a different idea of where he wanted the company to go.

Randolph: Inclusion needs work. While we're interested in bridging the divide, it's not so people can get on MySpace.

Facilitator: It's a learning experience. I'm working as the wireless project manager in Houston now, and we just went out to a community of 60,000 people called Gulfton. It's kind of an immigrant town. We're finding that we've had more success using wired wireless broadband to create more computer access locations. Getting computers into the Boys & Girls Club, the 57 community centers across Houston – none of them have computers. We just launched a new 30-computer station and usage is unbelievable. "The combination of volunteer involvement and getting computers into the community seems to be the winning proposition." Initially we thought we needed to be a catalyst bringing broadband into the community, but as we spoke with nonprofits, we learned they either didn't have any computer equipment or it was outdated. Now we're looking at putting a whole package together, including bringing in some support.

Blum: I've had similar experiences. Initially, it sounds great to put in wireless broadband and solve a lot of problems, but in a sense that was putting the cart before the horse. First you need computers, all that technology, the training, the staffing and the support and all of that before you can hook it up to something. The second piece is broadband or internet access. That's not the same as the question of whether it's done with wireless technology. Speaking as someone with many years in various wireless realms, wireless is a tough and expensive way to do things in some respects. If something can go on a wire, a fiber optic link, over time it's usually cheaper, more reliable and higher capacity. You can do a lot of things with wireless and it has a lot of advantages: you can deploy it more quickly, in more places, have the ability to serve a lot of people all at once. But unless you're taking advantage of one of those advantages to make something better, the case for wireless starts to degrade. Those are all things you look at before you decide to build a wireless system.

Tracy: I wasn't as involved in Philly as you were, but was it a nonprofit holding organization signed up 1,000-plus people for fairly low-cost access that EarthLink was then unable to deliver. The network's now transferred over to some investment capital folks who were going to run it outdoors only,

oriented toward universities, businesses and hospitals but not toward individuals. Is that correct?

Facilitator: That's half correct. EarthLink actually built out two networks, WiMAX and WiFi. They had some limitations on the WiFi. WiMAX is a higher-speed technology that is attractive to businesses that are paying for wired line connectivity into their buildings. They're looking at that business model, and also looking at where WiFi is available, they'll allow no-cost connections. That's the current business model as I understand it. But it's not going to be a paid service; there aren't going to be any guarantees; they're not looking to profit from it. But the excess revenue from the WiMAX network will be available to fund it.

Tracy: I'm sure it's still morphing to some degree. About wireless versus wired, probably some of the people in the room here have concerns about ways in which "the lack of internet access is really taking a toll on folks who are struggling." While wired has issues in terms of robust service delivery, it seems that as a long-term trend we're going to be less connected to wires and mobile devices will become more and more ubiquitous. Venture capital is heading toward making wireless more robust. It looks like it's going that way. But "in the long term, we have to look ahead to the fact that probably wireless is where it's going to be at down the line."

Blum: Wireless is a huge opportunity. And you're absolutely right. Wireless is going to grow incredibly. But you have to pull back and think of your own data usage. What you're doing on a wired-line network, "the amount of traffic that comes in and out of the average household has leapt from a little eight years ago to a lot four years ago to just mega – giga – loads now." And the prospect for another four to six years out is even higher.

                Wireless is going to continue to grow and it may even get a bit bigger in terms of its piece of the pie. But the tremendous load that we're generating as a society is going to be carried, for the most part, on wires.

                Wireless gives you a lot of capability. It's a great add-on. Any wireless network is wired.

Facilitator: Wireless is wired.

Tracy: I got that.

Facilitator: We've found that fiber is a key component, and getting fiber into access points (whether a WiMAX or WiFi tower) is the key to providing the scalability we need. It's a combination of behind-the-scenes things – the infrastructure of building a high-capacity network includes the wired infrastructure as well as wireless infrastructure. You have to begin with the fiber.

Tracy: Will this study include those components in terms of the fiber backhaul and how it relates to a variety of things you mentioned?

Facilitator: Yes. And certainly the capacity requirements from the public standpoint far exceed what would be from city personnel.

Tracy: Regarding community centers and places where there are potential solutions for inclusion, they need more computer equipment. No one is debating that. But we need to look at ways in which needs for equipment and access can hook into the larger infrastructure. I'm concerned a bit about what I hear about a leaving out of a larger network, off the map or out of the picture. Are you saying that? It seems we would want those neighborhood centers to be part of a larger city structure to help people access city services and provide them with sources of support.

Facilitator: You mean like in libraries and community centers?

Tracy: Yes. We all agree that can be buttressed.

Blum: We're not leaving anything out in that respect. On the other hand, this is a wireless study – specifically looking at wireless technology. There will be applications for uses or needs that we look at and say it would be better to do it in a wired environment. There's the equipment, the type of access and the wireless access. While we have to pay close attention to those first two elements because they drive what you will do with wireless, but we are not trying to solve those first two elements. We have to keep the focus of this study on the third element, the wireless.

Rudolph: In some ways, that's the wrong question. The question is broadband internet access. The implementation method follows that.

Blum: That's right.

Rudolph: What we're interested in here is broadband internet access, so the

interconnectivity of wired, existing infrastructure and wireless is real important in this. The objective is never to get a wireless network; it's to provide broadband internet access. We mix it up every time we do these objectives.

The examples that you used are very much focused on business and government service. What's important to a lot of people here is not a Folsom or Milpitas experience. It may ride on that economically to some degree, but our interest is in providing access to people who don't have it.

Blum: That's probably a better introduction than I could give to what we're about to do. That's exactly what we want to hear. We can segue into the process here. We want to hear from you.

Facilitator: I'm really interested in the end users and how they do their jobs; I look at the technology as an enabler. I'm pretty technology-agnostic. I just want to help people do their jobs. We don't want people to get online to do MySpace, but we have been studying Internet behavior and sites like MySpace is not a destination but rather a communications tool. "Young people don't email anymore. They get on their social network, where they IM and chat and twitter." We are looking at solutions that accommodate our entire population, so we want to think differently about what it was for us versus what it is for people coming in behind us.

Let's have everyone introduce themselves and say a little bit about your issues. If you happen to have a particular interest, mention it. That would be helpful to us.

John: My name is John Magyari. I'm a consultant. My wife was invited today and unable to make it so I came for her. She works for HealthNet.

Bruce: My name is Bruce Buckelew. I'm the Founder and Director of the Oakland Technology Exchange West. My interest and experience are in two areas. When you talk about no computers in public areas, there's a lot going on in Oakland to build very nice, high-end Community Technology Centers (CTCs) in all the rec centers. We have also refurbished and provided about 30,000 computers in the Oakland community; 50-50 into public access spaces and the others free computers in people's homes. My interest is to make it easy, cheap and cost-efficient to get free signals into the home and high-speed internet access into church basements, rec centers, boys & girls clubs, YMCAs – we already do rec centers, boys & girls clubs and YMCAs.

If there is a big pipe that is wireless, finding an economical way to hook to it, and then hooking that into existing wired infrastructure is really important to me, including places like rec centers that already have internal wiring.

Ralf: I'm Ralf Muehlen. I'm with the Internet Archive. We are a not-for-profit library. We are connected to the internet, obviously, listing about $1,000 per day. We've been operating outdoor wireless internet for books for 10 years, providing residential internet access in the United States, housing facilities in San Francisco. Our interest is on seeing a third pipe, not just the phone company and the cable company.

Kyle: My name is Kyle Lee. I'm with EBALDC, East Bay Asian Local Development Corporation. Lynette, my boss, asked me to come.

Lily: My name is Lily Ho. I'm with HealthNet and was invited to learn more about wireless for the community throughout the Bay Area for nonprofits, because most of the communities don't have access yet and want wireless for tutoring students and services for the elderly.

Shareene: My name is Shareene Lindquist, and I am here on behalf of BRIDGE Housing, which builds low-income affordable housing. I'm partly here as network administrator but also as someone who's close to the housing industry. My other interest is mobile health care and thinking about ways of using technology to bring better health care access to communities that don't have it.

Eloise: My name is Eloise Lee. I'm the Program Director at Media Alliance. I focus on community projects aimed at closing the digital divide. With the stress on technology and access, a concern is how we provide for support and programs that focus on technology training and computer literacy to help users engage meaningfully with the technology and ensure that young people, for example, aren't just checking MySpace. Also, how can we link up with existing infrastructure among nonprofits in the community? How can technology harness that, as opposed to working in parallel to it? How will we provide those programs that build value?

Randolph: Randolph Belle, with Urban Strategies Council. We have been interested in the community benefits that would be attached to whatever vendor is selected for the wireless technology piece. We have not only the digital divide but also an educational gap to address; it's not just a matter of providing internet access but using the technology to help kids participate in

the technology revolution – they can't read and write. This project provides an opportunity to implement curriculum-based programs and engage students.

Ernie: My name's Ernie Ting. I'm representing myself today, but I've been involved in a lot of initiatives over the past 20 years promoting broadband and wireless use. I spent 10 years heading up the telecom policy with the State Public Utilities Commission. One interest concerns the balance of training and education applications get developed along with the infrastructure. A bigger issue is how competitive alternatives get pushed out there.

Shahram: My name is Shahram Aghamir. I'm an Oakland resident. My interest is in quantitatively broader access as well as improving the quality of the access.

Ahsan: Ahsan Baig, with DIT, City of Oakland. We started this project about three years ago, looking at city and citizen needs and government services. We've been talking to other cities, "learning from others' experiences, the pros and cons, successes and failures. Our approach has been to start with the stakeholders rather than proposing a solution first, by obtaining approval from the City Council and sponsorship from the Mayor's office to bring in Tellus Venture Associates to implement this process. As for timing, different issues involving governance, taking the right steps, getting approvals and securing funding all come into play. Our goal is to do it right from the beginning and ensure that we build something that that addresses stakeholder needs and is based on a sound business plan and sustainable system.

Janet: I'm Janet, with the City of Oakland's Film Office, which is interested in improving access to the community so we can provide our services and they know about those services.

Steve: My name is Steve Spike, Director of IT and Research for Urban Strategies Council, which largely focuses on communities. One of our big focuses is a mapping system, which promotes the democratization of data and information. We run a lot of training for people in the use of mapping systems and online tools. Through our research we do some fairly detailed surveys of about 1,000 households every three years, so we have some pretty solid data. Our concern centers on the community benefits and links to organizations that are doing good work already, making sure the project listens to the community, avoiding the cart-before-the-horse approach and ending up with a solution that makes sense for the City of Oakland.

Nina: My name is Shanina (or Nina). One of the programs the Women of Color Resource Center runs is TEMPO (Technological Empowerment Media Project for Oakland), which is designed to ensure access to producing professional radio documentaries for low-income women. One story was about sexually exploited minors and another reflected on hip-hop; we just facilitated the process for women to develop their own pieces. In that process, struggles with technology became evident. "There were women in there that didn't want to touch the mouse, literally." We need to be sure that what we're developing and talking about here is really being applied in the future. "We have to learn to sustain what has been built infrastructure-wise, that people are educated and have the training and the services to do the work." "A great infrastructure will go to waste if no one knows how to run it." We don't want to be in a position of going back and saying, 'We forgot this-or-that piece.' We want to make sure that the steps we take build a community and that the community has access to the services they need. It may be emailing a family member in the Philippines. "That piece of making sure, yes, we have the fiber and the wires, but if we don't have the programs to actually run it, the computers will just be sitting there."

Kevin: I'm Kevin Hart with Kaiser Permanente, heading up the infrastructure for Kaiser's hospitals and facilities nationwide. KP is in the process of deploying wireless technology across the organization. The new Oakland Kaiser hospital coming presents an opportunity to "help leverage and see how we can build some synergy and potentially help underserved communities." "I'm here to learn and to listen as well as to take back to my leadership opportunities where Kaiser as a nonprofit can have a big impact on communities."

Tracy: I'm Tracy Rosenberg with Media Alliance, which is interested in the ways in which municipalities and not-for-profit groups and the federal government and everybody else who's trying to figure this puzzle out… There's no 100% right answer and no system anywhere that anyone could say, 'Aha, that's it. Eureka! That works.' The closest 'Eureka!' would be fibering every inch of the city for a robust third pipe. I wish I had a way to give you the millions of dollar that that would take. The realistic concern is how we take the resources and assets that we have to get the maximum out of them. When you're dealing with limited resources, it's really important to point those resources not just where they'll be most effective but also in the direction of where they're most needed. One of the things that Oakland, Philadelphia, East Palo Alto and a couple of other places have in common is a troubling

economic digital divide that's really impacting real people, generations going back and going forward. If you're going to talk about economic development at all, you have to prioritize doing something about that. I'm hoping that goal isn't like #4 and #5 and starts creeping up toward #3 and #2 and #1, because it's not just an ethical thing, it's crucial for Oakland's future and it needs to advise everything that we're thinking about and trying to do, given the fact that we have limited resources and we can't do what would be ideal.

Oakland's assets include some quantity of fiber already under the streets that you need to take into account and use. In time, the federal government will come around to understanding that broadband will be a utility like telephone service and electricity and will have to go to every single household in a robust fashion. It will take time and God only knows where the money's going to come from, but part of what we can do now is think about how to tap into that when the federal money starts to come around. But it will, because it will have to.

There are technology groups working in Oakland, have equipment and provide access to people. They're under-funded, don't have enough support. Can the city, in its broadband policy, strengthen them and put them together, because they're doing a lot of good work that needs to be done. That's something a musicality should do; it should strengthen community work.

Bruce: We ought to have a Digital Inclusion Summit, right?

Tracy: Ahsan made a really good point about studying and stakeholders and accessing data, because while "we can all talk anecdotally about needs, it's really important to have data." I'm hoping this study will connect with the data that's out there about who must benefit from this as well as the health and safety aspects. Where is the economic development really to be found?

Tino: Tino Granados with the City of Oakland. We have a lot of lessons learned out there. Partnership and connectivity with as many people as we can will help this project. I've learned that if you reach out to people, they will talk and tell you about their jobs but connections with their jobs and their partnerships.

Facilitator: What are some ideas that maybe you've seen implemented somewhere else, pie in the sky. Don't focus on the technology solution but on what would help you as wireless applications – reaching out to your community, remote

locations you work with, clients you serve.

Kevin: One of the things Kaiser Permanente is doing is providing more broadband access to members. It gives more people access to medical care and medical information without physically traveling to an office or a hospital. That access is absolutely exploding. So in underserved communities, if the City of Oakland provides this wireless network, we can begin to provide access to health care to those who are underserved or not served using that technology as an enabler.

Facilitator: What's a scenario of Kaiser providing broadband access?

Kevin: Kaiser's providing access to the physicians and member information on KP.org, where members can communicate with their providers. In some underserved communities, we're looking at bringing access directly to members. All they need is an internet access. "In the technology, health care is going to the point where eventually delivering health care at home is where it's going. Wireless is going to be a big part of that." It's many years away.

              With KP.org, visits to medical centers and hospitals are actually going down because people can now communicate through that broadband access, and more people are being served. It saves them a lot of time to take care of other things. "That's where the cities working with nonprofits like Kaiser and other healthcare systems can begin to provide that access."

Facilitator: When you look at that ecosystem, one of the participants from Oakland's Human Services Department talked about even using broadband to monitor elderly and those with chronic illnesses.

Kevin: Absolutely. Kaiser is also looking at how we can use the technology to serve more patients, serve more communities and do more preventive care. "We are in our infancy in wireless at Kaiser, so we're learning every day and we want to learn with the City of Oakland, as a partner with the City of Oakland." "To have that access is a great opportunity for healthcare."

Steve: As a user, Kaiser Permanente's system is fantastic. I've also been part of a TeleHealth project with video access. "The county-city relationship is a big thing that needs to get more into this project," because all the main health systems are run out of the county. Try to establish some relationship with the Alameda County Health Department. Highland Hospital may consider online

access to services, whether video or web-based. Linking that county system is important, because there are a lot of people outside of Kaiser who need healthcare services.

Kevin: And there's an opportunity to leverage what Kaiser has learned to serve these people.

Facilitator: Yes. "Why reinvent the wheel?" You can use a benchmark.

Bruce: An amazing application you hear about on the radio, the assumption that everybody has internet access – the people I see every week don't. The percentage is growing. We provide anybody who needs one a high-speed internet capable computer. It could also be with WiFi capability. "You can poach in upper middle-class neighborhoods pretty easily. It's harder to poach in West Oakland." So the third pipe thing. We also found a $10/month DSL and help people sign up for it. It's only through coercion that AT&T even offers that. We help people get lifeline accounts so they can run $10/month DSL. We need to ride on the kind of applications you're talking about in terms of public awareness needs, so people don't think what we're trying to do is provide porn shops. The disparity between low-income communities and everybody else that assumes everybody connects with the internet. We really need to capitalize on what we have that works, and not continue to say, 'Oh, woe is us. We don't have computers.' Refurbished computers are a better answer than buying a bunch of new stuff.

Kevin: We've probably already given you a bunch.

Bruce: You're not. We'll talk about that later. They have to be refurbished or they become junk.

"We need to hook to the community housing projects better."

BRIDGE is right next to us, and I haven't been able to get a response from them about getting computers in all those units. Same with EBALDC. We don't have a connection that's working to get high function. Our claim is that we have better computers than Best Buy now, because we can still do XP Pro.

Ernie: On the third pipe issue – as this project moves forward, for a variety of reasons, including the rapid change in technology as well as the diversity of needs, this is too big an objective. "Think about the people further down the

road, later." When inventorying the assets to figure out the possibilities for the infrastructure you build, record that and make the information available to others, but keep those things open. One of the tensions in building community networks is the provider that comes in and ties up those assets and shuts out newcomers. In the bigger scheme, we want to break up these bottlenecks. Don't make it exclusive; a business model has to be viable, but if another provider comes up with a better application and needs that point of access, we want to be able to do that. As arrangements are made, advocate for openness.

Ralf: Sometimes we have a mental model of a human sitting in front of a web browser; devices must also be accommodated. Not all voice phones have a browser so it fails in WiFi networks. My weather station doesn't have a human attached. And as cell phones and medical devices get better and remote sensoring and remote metering becomes more and more important, keep that requirement mind as you plan out the technology, you will create a much more sustainable network.

Nina: Back in the '80s when I was a little girl, we didn't have adequate resources in school. When I got into junior high school, there was a teachers' strike because there weren't adequate resources. "Make sure this process doesn't leave behind the youth who are coming behind us." I am not a tech person; I assume when I sit in front of my computer, it works. "Just making sure that this process doesn't lose focus; not only that we're providing for the 'now,' but for the future."

Facilitator: "Florida is the only state that allows online high school graduation." That's the power of what's happening. They have an infrastructure for that. It's a benchmark we can look at; this is where networks like wireless can provide access. "Embrace youth because many are very comfortable with technology."

Shareene: While I've not worked in youth development here, I did work in after-school education in New York. It was important not only for the kids to have computer access but also help them develop computer skills and maybe even start their own web-based companies. We worked with local businesses to do that. So you should also consider the programming piece, which means alignment with community organizations that teach not only basic skills but bring it up to the next level. It's a good idea to find ways to have businesses work with organizations so that skills (as well as the technology) are actually passed on to the kids.

Nina: People take some of the basic skills for granted. Some of the kids I work with can't alphabetize. They have to be equipped with the knowledge base they need in the future.

Eloise: Content must be multilingual and culturally relevant also; make sure it's accessible by the broader community. In talking about infrastructure, make sure to bring in folks who can't come to meetings like this and who work directly with the communities, in schools and libraries. If they can come, they need more than two weeks' notice "if you really want to engage the community." "A lot of those in nonprofits and doing overtime work for halftime pay." It's more than getting the fiber backhaul. What inspires me in the work I do are people who are doing it for themselves. They need it now. They can't wait a year or two.

Facilitator: Good point. As Steve mentioned, there will be District focus groups and town halls. People in this group are encouraged to reach out to those organizations. Also we haven't talked yet about people with disabilities and the elderly populations.

Bruce: A couple of comments about the "education on the front and the support on the back end." The California Emerging Technology Fund, a funding organization that gave OTX West a grant called Digital Inclusion Oakland, has a model that starts with 1) computer and internet access, 2) education that is free and available and 3) technical support that's free and available. "A computer that doesn't work is a bigger problem to a low-income person than not having a computer at all." Now it's an albatross. To take to Circuit City where they charge $125 to look at it is absolutely prohibitive. The computers that OTX West gives away include free education and free tech support. Any Oakland-based organization that needs high-functioning computers can get them from us. We charge organizations a very low fee for these (free for households). OTX West has a big partnership with the city to do 22 Community Technology Centers in all the rec centers. "It's access, education, support and adoption." Adoption often is engaging people in applications like health care, job search and other things that people just starting don't know how to do.

In OTX West's experience, the cultural awareness piece is absolutely critical. African-Americans in Oakland know how to use computers by and large; Latinos in Oakland do not. ("That's the mouse. That's the keyboard. And the questions are things like 'What channel am I on now?' when they're on the

internet, because they're trying to relate it to a television.") We have to almost run two completely different classes for these different groups.

Some groups are missing here. The big one is Oakland Adult School Career Technical Education. They are the cheapest and best provider platform of low-income education. OTX West partners with them frequently. Another one is the Oakland Unified School District; they're getting a 300Mb pipe that essentially not going to be used after 3 p.m.

Blum: OUSD and others in the educational community will be in the next workshop.

Bruce: A big initiative – basic skills, reading and math after-school programs using web-based software. It works. The dropout rate in Oakland is horrible. Basic skills of kids when they get to the sixth grade is miserable. There is no strategy to deal with it. Everything in the Oakland schools is done on a timeline; if a student misses a lesson there's no way to catch up. "It's a drop-out strategy." It's got to be after school and it's got to be essentially free.

Randolph: A general access to resources is also lacking. As you inventory facilities, you have to have access like the community centers, boys & girls clubs and so on. Also look at the populations, because there are populations and organizations serving them – such as the reentry community, emancipated foster youth. It's not just about access to computers but access to resources. There are a lot of community resources they're not taking advantage of and a lot of programs within facilities that are trying to address that. We need a way to deliver that information to these populations. A lot of what Urban Strategies Council does is multilingual tool development.

Tracy: It may be outside the scope of a wireless network to a degree, statistics and common sense indicate that in the long run broadband in the home is an important component in terms of getting economic development benefits, enabling people to self-educate and increasing their access to information. Community centers and libraries are wonderful, but for a working adult with kids to wait an hour at the library for 30 minutes on the computer is not going to happen. There are also large populations of senior citizens and disabled people who won't have access unless it's in the home. "Broadband in the home is really a more powerful tool than broadband at the community centers."

Content creation, programming and training is really important for people to

be able to genuinely connect (beyond MySpace) to create benefits for themselves and self-educate. Without training, you can only get the first level of benefits; it's really the second level of benefits we're talking about – digital inclusion, why this is a municipal priority and a human rights priority.

There's the $10/month DSL, which is running out at the end of the year. Right now we have a duopoly (AT&T and Comcast). Monopolies and duopolies don't lead to low costs. "Opening the marketplace to other competitors in the third pipe is going to become a crucial social service need." For practical reasons, an Oakland municipal wireless network might be primarily public-safety oriented. Realistically, that may be all that can be done at this time, although I hope not. Either way, "look to leverage some benefits from that provider that can go to buttressing community technology efforts." If 'the network' won't be able to provide that, "it's important to pull some resources from the network to meet those needs, at least in the short term."

Start building a fiber backhaul. Try to get out ahead in terms of getting some of that infrastructure in place. Start putting in the ubiquitous, robust connections that every city will require. Maybe you can leverage this project to get a little resources to do some of it.

Nina: Are community colleges invited to the education workshop?

Blum: Yes.

Randolph: It would be great to see programming along with wireless access. If you're in a hotel and get on the wireless, the hotel's screen pops up. It would be great to have a multilingual portal that helps direct users to resources.

Bruce: One Economy is working on such a thing, an Oakland beehive. They're working with EBALDC and also with Alliance Creek. They have this gigantic California Emerging Technology Fund grant. I don't know if I'm crazy about the beehive, because even low-income people use the internet like everyone else does once they get through that little hurdle. It's the hurdle where we need education and curriculum, including getting kids to help their parents, because the kids all know it.

Randolph: Talking about the nonprofits involved in housing people, there's also the Housing Authority.

Steve: With groups like OTX West and others, there's a huge amount going on in the city. No one ever seems to understand the importance of what's going on. If we could get a community-wide system together that has an online index or directory that individuals and nonprofits and community centers can use to find educational services or computers or host training. That might be a really smart byproduct of this process without much more effort; start documenting who they are, where they are, what they're doing, what services they offer. "People need to know where these things are, and at the moment, they don't know where to find that stuff."

Bruce: OTX West has a nascent project working on that, Digital Inclusion Oakland (digitalinclusionoakland.org). When Media Alliance (Tracy) did the Digital Inclusion Summit, OTX West is trying to gather as much of that information, make maps and popups that say what's available. Something that's simple to access.

OTX West is different from the people it represents. We serve formerly incarcerated people who come back to Oakland through America Works. If they're successful on a job for 90 days, they qualify for a free computer. Quite often, someone has to sign up four times before they come. "We double- and triple-book classes to get people to come – this is to get a free computer." We'll double- and triple-book and get five people to show up for a class where we enrolled 25 people to get a free computer. We understand that, because life makes it tough to get there. It's hard to overestimate the amount of work it takes to say these resources are out there and you've got to take advantage of them. This information really has to be in the air.

The Mayor signed a letter saying we're going to end the digital divide in Oakland in the next four years. Nobody knows about it. There's no campaign. "For this to have any effect, it has to be one of the Mayor's top three priorities – for economic development reasons, for equity reasons and for education reasons. Everybody's got to be on board."

Shareene: It is important to not only inventory all these services, but sometimes to take services to the low-income people in the community, perhaps in housing complexes. It's relatively easy to put a Computer Technology Center in downtown Oakland but forget about the folks from West Oakland who don't have cars.

Nina: This brings to mind the bookmobiles of years ago that went out into community areas at a certain time every week.

Shareen: There's no reason you couldn't do that with computer access.

Tino: There is a mobile vehicle for internet through the Computer College. I learned that when I went to Habitat for Humanity.

Kevin: Kaiser Permanente is developing mobile medical centers to take to underserved communities in Hawaii to be rolled out in the next six to 12 months. We drive it in and drop it off. It has internet connected through a satellite. The health records are there, etc. That's possible, and it's out there to be used – that mobile capability.

Bruce: But that's not as scalable as really enabling the 29 rec centers that are in Oakland already, the six or seven YMCAs, the three boys & girls clubs. They are deployed in the community, but often people don't know it's there. "Use an ad function like 'Free Skype to Mexico.'"

Facilitator: That's a great incentive.

Bruce: Or free video.

Tino: This is good. The more brainstorming, the more you find out. Maintenance and the ability to keep it going in the future, how to finance it, are there phases. There are a lot of questions for both businesses and also nonprofits. The phone and cable companies are pushing both internet and wireless, sometimes in package deals – but then they walk away. The biggest need right now is for wireless technicians because the phone and cable companies cannot provide that service. They don't have the resources; hence the boom in the Geek Squad, etc. Low-income and middle-income people can't afford to bring the Geek Squad to come in. My wireless internet goes down every other day; at home that would be very expensive to fix. It's not going to be a one-fix-all situation, but at least we can come up with ideas and have the ability to think about those ideas.

Shareen: Part of this is about bringing necessary services to the people of Oakland, and part of what's implicit in that is remembering that in 2050 Oakland will still be here and young people will still need services, although maybe a different set of services. This is about broadband and wireless access to Oakland, but also planning to be able to support this in 25 years. Part of this project could be to bring young folks in, encouraging an interest in technology and encouraging them to become the support technicians in their

communities. It's not reasonable to expect EarthLink and AT&T and Comcast to support this, and they're not going to do it anyway.

Nina: When I was growing up, there were training programs that helped me be interested in the career that I pursued. Train a child in a way where he or she should go. I didn't have the best education, but there were teachers and community centers in my life that showed me I had options for career goals. It was indirect, but it got me thinking about college even though I was in a bad environment. Kids these days don't value college; they don't value education. It could be that they aren't exposed or no one told them they could be a wireless technician. It could be as simple as having a kid shadow a technician for 10 hours a week to see what wires go where. That 10 hours a week did wonders for me. It's a way to keep youth from dropping out of school, to get them interested in a career track, learn the basics of reading, writing and computer skills. "That's probably not in your lane, but just maybe in the after-effects of this project could be something that when I leave this earth, the people I trained can sit at this table and feel the effects as if I were sitting at the table."

John: When I've signed up for internet in the past, AT&T directed me to a portal with ads wrapped around. I'm computer-literate and some things are still hard to find, but if there's a way to have a wrapper for newcomers so they know about localized programs and classes to take advantage of, and at least be exposed to them rather than being thrown into the black hole of the internet.

Steve: Those wrappers can be an important element, but you have to be careful how you implement that.

John: Right, but at least initially throw it out there for the newcomer to have an option to know how to get started. It's a good way to expose people to new things that they should be exposed to, as opposed to just randomly finding things on the internet. When they're experienced enough, they can remove the wrapper and not have to use it.

Bruce: "It's really important that we have a way to figure out what we already have in Oakland that's working." We have a long history of career academies, of small schools. College track is at most schools. Project Sword takes people through college. As advocates, we need to know how to advise youth to take advantage of what's there. There is a computer academy at Oakland Tech that's great. There's an engineering academy and a media academy. Youth

Radio – they're teaching those skills.

Nina: I understand; what I'm talking about is youth who have given up on education. They don't want to sit in a classroom or look at a teacher, don't like the teacher embarrassing them in the classroom.

Bruce: OTX West does a lot of work with formerly incarcerated youth who are exactly in that situation.

Nina: A lot of youth need education that is out in the field. Maybe make community college a possibility for them. I started at a two-year college, and I never thought I'd make it to my master's degree. I was one of those who didn't want to go to school; you couldn't make me go to school. If I knew I could get my GED in fourth grade, I would have. I know OUSD is doing the best they can with what they have, but the youth is just falling by the wayside – not all of them, but those who have given up on the traditional way of learning. It may be earning a high school diploma online.

Facilitator: This has been great. One thing I've learned is that we should not lose sight of the true asset you have. The community consists of consumers, and they're often an untapped market for industry. The internet is becoming a medium for providing services – with Vonage there's a whole neutrality issue, where AT&T and other ISPs would like to block the competition. Vonage provides a lower-cost alternative for the community, and if Vonage were to invest in building the infrastructure, it opens up new markets for Vonage. And Vonage is just one example of some of the new ISPs coming onto the scene that would like to sell services – services that would actually lower the current expenses that our community has. As we think outside of the box, it's not just the EarthLinks that you may want to deal with. Others are trying to get advertiser services or others to sell their services and could be interested partners.

Facilitator: We're gathering data from all of these workshops and will conduct focus groups. Then Tellus Venture will submit findings to the city's IT people, who will determine what information needs to be gathered to distribute to interested parties. This is one of the best of all the sessions, so thank you so much for your input and your time. Thank you.

Workshop 5 Flip Chart Notes

Wireless Application Requirement	Notes
Broadband access community-based public access computer centers	OTX West - City provide wireless backhaul that community's can connect to using standard CPE (consumer premise equipment).
Broadband access city-owned public access computer centers (i.e., Libraries, Recreation Centers, Health and Human Service, etc.)	What is the support requirement? What is the equipment requirement?
Provide Awareness and Training Programs	
Equipment and support public/private partnerships.	
Affordable and usable software and services.	
Leverage new hospital - Kaiser Permanente initiative	
Maximize existing resources - i.e., infrastructure and funding	
Develop community roadmap that community providers can plan by.	
Enable, empower, and assist existing community providers that are currently providing access services.	
KP - providing broadband t o enable home access to essential health care content - KP.org (e.g., WebMD). Telemedicine(?)	Create a health care ecosystem. Remotely monitor patients with chronic illnesses. Expand network to link county system to ensure a more universal service.
Focus on end user needs - design business model and infrastructure to be as open as possible.	Avoid monopolies on assets and usage.
Design technology and content to be compatible with most common devices and interfaces.	
Align with outcome based programs (i.e., small business development, life skills, education, job training, etc.)	Ensure that infrastructure and computers are aligned.
Must be multilingual - make sure it's accessible by the broader community.	
Establish an affordable technical support ecosystem.	Can enable local small business opportunity.
Empower/enable community broadband networks.	Provide community backhaul services.

Engage the broader community	Provide better notification. Provide ongoing collaboration opportunities.
Free (affordable) equipment and tech support is required for true universal enablement.	OTX West model is great example. Communities and cultures have varying support needs.
Basic Skills reading and Math	Core programs to address core problems - i.e., literacy, drop out rate, health care, etc.
Provide access to resources - empower non-profits to create applications and content specific to their target audiences.	i.e., multilingual tool development.
Broadband in the home is essential	Community access locations are a good resource but home access is essential for true digital inclusion.

3.6. Workshop 6 – Oakland Education and Government Agencies

Friday, July 25, 2008, 1:30 p.m.
Oakland City Hall, Hearing Room 3

Project Mgr: Tino Granados, City of Oakland

Introduction: Stephen Blum, Tellus Venture Associates

Participants (per sign-in sheet):

>   Fred De Palm, Director of Information Technology (IT) and Chief Information Officer (CIO), Port of Oakland, fdepalm@portoakland.com
>   Paul Hay, Director of Enterprise Network Services, Oakland Unified School District (OUSD), paul.hay@ousd.k12.ca.us
>   Bruce McCurry, Senior Director of IT, Mills College, brucemc@mills.com
>   Bruce Buckelew, Executive Director, Oakland Computer Exchange West (OTX West)
>   Laura Takeshita, Program Director, KTOP-TV, City of Oakland, ltakeshita@oaklandnet.com
>   Chuck Rae, Chief Technology Officer (CTO) and Manager of Telecommunication Revenue Program, Bay Area Rapid Transit (BART), crae@bart.gov
>   Tobin Broadhurst, Deputy Director of Technology Department, County of Alameda,

tobin.broadhurst@acgov.org

Geoff Nordin, Network Manager, Alameda County IT Department, geoff.nordin@acgov.org

Gilbert Mingming, Metropolitan Transportation Commission (MTC), gmingm@mtc.ca.gov

Jonathan (Jon) Olkowski, Senior Network Coordinator, Peralta Community College District, jono@peralta.edu

Ahsan Baig, Department of Information Technology (DIT), City of Oakland, abaig@oaklandnet.com

Granados: Welcomes participants.

Blum: Introduces self and gives opening presentation

Facilitator: I've been a director at a government level for about six years total and in the private sector. For the past four years, I've been an independent consultant – found my niche. I like to solve problems rather than dealing with lawyers and administrators. In the wireless field, I've seen the devils in the details. I've worked in Corpus Christi from the ground up. I'm currently lead project manager in the City of Houston, working on a number of projects there, including parking pay stations (about 1,500 connected to WiFi), making excess capacity available for public consumption (Houston WiFi). Pretty cool; 500 people logged on over a weekend; we haven't even announced it yet. Also have some pretty big infrastructure projects in Houston, providing microwave links around the city for the water facilities and high-capacity links that provide video surveillance via about 800 cameras for Homeland Security. Also a video surveillance initiative with about 30 cameras (4.9 microwave shots) – it was supposed to be a small 10-camera pilot. You have to think about your wired network when all that video is coming back in. We're trying to figure out how to pull these initiatives together to build a common infrastructure. Even from a regional standpoint, there had been a lot of focus on carrying fiber; especially in the public safety area, folks are now thinking about sharing both fiber links and microwave and not overbuilding it. Takes a lot of coordination.

The approach in Oakland is great, getting people talking about it at an early stage, because you can overbuild, and to talk about it from a requirements standpoint. Because this group is different from the others we've had, let's go around the table. Introduce yourself and your role; give a little

background on what you're working on and what your goals are; share any opportunities or ideas you'd like to put on the table.

Fred: Fred De Palm, heading up the IT Division at the Port of Oakland; I'm the Chief Information Officer. It will be two years with the Port in October 2008. Have several wireless initiatives under way, currently in the contracting process of going with free WiFi at the Oakland Airport, a service that should be available by the beginning of 2009. We're in the design phase of grant round 7 with Homeland Security funding for a wireless mesh network in the maritime/seaport, primarily security surveillance cameras. Overall, there is interest in lighting up Jack London Square with wireless capabilities. My goal is to get aviation and maritime following the same standards, complying with a common architecture and figuring out which services we can add and how we can leverage the wireless infrastructure we're building out. Public safety and emergency response are other key concerns, including interagency communication operations. The Manager of Maritime Security is spearheading a lot of those discussions with local public safety agencies.

Question: "What's the value proposition? Why am I here and what can I do to contribute? What am I going to get out of it?" I think there's an assumption that all the groundwork has been set and I'm coming in cold.

Facilitator: The groundwork has not been set.

Blum: This is the groundwork.

Facilitator: The infrastructure costs can be substantial. I've learning that the central infrastructure is often fiber and microwave backhaul, with local WiFi networks the end-points. Everyone has a different end-point need, whether a 900 MHz network (where Houston is reading water meters, what the Port of Oakland is doing at the airport or the ports). There are opportunities for synergy, at least in terms of sharing that core backhaul infrastructure with city operations as well as the community. Probably also some community interests as that capacity builds if you can segment it. Public safety, Homeland Security and application folks get heartburn talking about sharing, but we've actually moved some folks where they've learned about segmentation, securing and VPN etc.

What is the size of the area you're trying to provide with wireless connectivity?

Fred: Expansive; (don't quote me) 1,200 acres at the airport and a bit more than that at the seaport, plus Jack London Square and other things – 19 miles of waterfront that the Port is responsible for.

Bruce M: Bruce McCurry, Senior Director of IT for Mills College, where I've worked for about 12 years. Our wireless is pretty mature (since 1999). Mills started out with consumer-level products and now run an all-Cisco shop. Looking to add internal management features. Film runners, wireless VoIP, cameras, residence halls, classrooms, open areas.

Facilitator: Any off-campus services?

Bruce M: No; pretty closed campus.

Facilitator: What do you want to get out of this workshop?

Bruce M: Just came to see what it's about and how Mills can participate.

Laura: Laura Takeshita, with KTOP, the City of Oakland's government channel. I'm here information-gathering.

Facilitator: You're a content provider?

Laura: Yes; at this point I don't know if the wireless initiative is going to affect KTOP.

Chuck: Chuck Rae, Bay Area Rapid Transit, managing the Telecommunication Revenue Program, which generates revenue outside the farebox. BART has 140 miles of right-of-ways. Program has two parts: 1) dark fiber that we license individually to end users as well as CLECs (competitive local exchange carriers). I don't think there's a CLEC in the area that doesn't have fiber in our right-of-way. 2) wireless program that we license above-ground sites to cellular companies and another for underground, where they participate in a mutual-host system – all five carriers.

                Also have a wireless piece starting up. Built the beta test from Embarcadero to Civic Center stations in San Francisco, using a line of leaky coax cable. We were able to transmit high-speed video, train data to a moving train. Extended it to Hayward on a 3½-mile test track, and were able to transmit in-car video, from cameras in the cars back to central.

Facilitator: What radio technology are you using?

Chuck: WiFi 2.4.

Facilitator: Cell towers along the tracks?

Chuck: Underground we use Andrew's RADIAX cable. Normally coax contains the images; RADIAX cable has slots in it at intervals and it leaks the energy in them. We use it for cellular as well as WiFi.

We're negotiating right now to extend that system-wide, so we have a seamless linear hotspot above and below ground. "A rider can get on BART, open the laptop and have end-to-end connectivity."

Facilitator: I'll have to look that up; we've been trying to solve some tunnel problems.

Chuck: We solved them years ago.

Facilitator: You're just running a different radio protocol.

Chuck: Not really different; it's how you manage it. It's all fiber-based. If we want high speeds, fiber is the only way to get it; anything else is a waste of time. If we have the right-of-way, we have the fiber. We're now connecting a lot of the agencies; I'm going to talk to Oakland soon about connecting to that. I just came from the City of San Francisco, where we're connecting fiber to the airport. CalTrans has four fibers in our system and bring their traffic counts back to Grand Avenue, where there's a big display of all the traffic patterns of the region.

I'm here trying to find out who to contact, because "Oakland needs to be part of this."

Facilitator: Most definitely. You're the key to it all.

Chuck: "The City of San Francisco just approached us to extend our WiFi up above ground, because they just can't seem to make it work."

Tino: I'm Tino Granados. We're here to brainstorm and communicate. A lot of us are doing different things. We hired Tellus Venture to help us gather information; I've been with the City years, and in this process I've met

people who have amazed me. Didn't know what they did. We have a pilot project at the library. We have a Parks & Rec initiative going on. We've done funding for EOC, our public safety initiative with in-car video. There are connections that we need to think about that maybe we can share and work together as a team.

Tobin: Tobin Broadhurst, Deputy Director of Technology Department, County of Alameda IT Department. From a wireless standpoint, a pretty mature shop, six or seven years ago; creating standards, security and guidelines. As far as public wireless, no current outstanding initiatives, but we provide some public wireless at certain county facilities (Board of Supervisors meetings, conference centers, etc.). Most of our wireless is with law enforcement operations. Cars out in the field can connect back to the county. The application CRIMS, which allows police officers, sheriff deputies to key in data such as license plate if they pull a driver over, and get information back. That's been quite successful.

          Most of our initiatives are client-driven. Probation Department, Tax Collector, etc. like to provide "wireless kiosks in various locations" so the community can use them.

Facilitator: How are you providing your mobile broadband?

Tobin: An Edge connection.

Facilitator: Some things that came up in previous workshops involved information-sharing among major agencies. Being able to get all of that data being gathered in EOC back out to the field when they need it, including multi-agency coordination. Also talk about going from 2.5G to 4G, backhauling into fiber, looking at WiMAX and maybe sharing that. Some free WiMAX running across 4.9. There may be some opportunities of where this group might go with road-mapping or more discussions.

Paul: Paul Hay, Director of Enterprise Network Services for Oakland Unified School District. We're wiring all the schools, and by the end of September they will have a complete wireless overlay for all internal structures. One high school has a complete wireless overlay. None of it is public per se. Right now, except for six schools, our connection to the schools is over multiple T-1s, which is why we are always concerned about bandwidth and bandwidth usage. We have an 18-month project about ready to start that will put on-demand circuits to every school. We're scaling at 10Mb, 50Mb,

100Mb now but it can be scaled up. We're also increasing bandwidth out to the internet. Our current wiring spec is complete wireless overlay for all the internal structures; we don't see that happening across all the schools for a few years.

Facilitator: Houston was looking at using e-rays to get fiber going out to the libraries, but the timeline is so long. As an experiment, we're using some 5-A WiMAX, pre-WiMAX going out providing 20Mb connections. It's hard to get people used to cutting off that wired line, but they're happy with the bandwidth.

Jon: I'm Jon Olkowski, Peralta Community College District, Senior Network Coordinator. We're more or less in our infancy as far as wireless goes. We did do a site survey of four colleges in our district to provide 100% coverage. "They had a little sticker shock when they saw that" so now they're in a pre-implementation phase of putting wireless in student common areas – cafeterias, open areas, some classrooms. That's open to the public, so if you can go onto a campus, you probably can get wireless.

Going forward, there are plans to expand it, but security is a major concern. We need additional internal security policy development to keep the risks in check. We're basically here to do some information-gathering.

Facilitator: Even if it comes to a point where you're not sharing infrastructure, just sharing information is valuable in keeping this dialogue going after you leave today. Everyone's dealing with issues of security, scalability and bandwidth.

Geoff: Geoff Nordin, Network Manger, Alameda County IT Department. As far as our initiatives, Tobin covered that. I'm here to get and share information.

Bruce B: My name is Bruce Buckelew, Founder and Director of the Oakland Technology Exchange West. We refurbish computers that we get from Fred at the Port and others and provide them free to families. We put in new Community Technology Centers (CTCs) thanks to the Port, with higher-end computers and local WiFi hotspots. I'm here because OTX West wants to expand access to a third party so we're not locked into cable prices. We try to provide education services, in-house and after-school programs. We begin to address the horrible issue of reading and math skills.

Gilbert: Gilbert Mingming, Metropolitan Transportation Commission, involved in

software development and IT projects. MTC is now in the process of doing a digital transportation plan, planning how transportation may evolve 30 years from now. We are also the Bay Area Toll Authority (which increases ordered by the commissions). We're not building in wireless right now, but we have a major initiative upgrading our network infrastructure at the Bay Bridge and converting from landlines to wireless. MTC is a small organization (200 people) but plays a key role in coordinating major transportation agencies in nine Bay Area counties. Our interest is getting transit and transportation information out to the public.

Chuck: About a year ago I put a fiber circuit between MTC's building (near Lake Merritt BART station) for the development of MTC's highway monitoring system. To this day, though, I never knew anyone was actually concerned about what Gilbert spoke about. "We have a regional fiber network. Let's connect everybody together."

You know how hard it is to get anyone to understand the big picture in government. They're usually focused just on what they're doing, get their paycheck and go home. But there's a lot of synergies between MTC and BART. We tied Silicon Valley back to downtown. We're in the process now of working with the City of San Francisco. It's like being the Lone Ranger out there, trying to get all these people to –

CalTrans is an interesting organization, like a big elephant. They had fiber on our right-of-way that we had provided to them as part of the right-of-way use agreement. It sat dormant for 10 years, when CalTrans came to me and asked where it was and wanted to know how to connect it up. They're very dysfunctional.

Facilitator: The fiber is sometimes an afterthought. Sometimes you find fiber strands, dark fiber that's not connected to anything but just running point to point and not coming back to anything.

It sounds as if there's a lot of synergy. Based on what I've heard, there seems to be some opportunity to put together a coordination team around some infrastructure. Fiber is the key to it all for any of these applications, whether you're trying to get bandwidth to a campus or some connectivity to AP sites or base/pay stations out to some tower where you're broadcasting broadband. So fiber is the key and coordination of that fiber would be a key, certainly for everyone. "There's power in numbers; coming together and putting together a recommendation paper certainly is better heard by the

executive teams" for funding and different things. And there's some opportunity for cost-sharing.

I've found that getting that base infrastructure was the most difficult thing.

Chuck: I don't think that's as difficult as keeping it out of the political arena, and keeping it down at the working level. Any time you elevate it up to the politicians, it becomes a power struggle. That's even true within BART.

Gilbert: From a transportation perspective, you'd be amazed at how technically savvy some of these commissioners are. From a funding perspective, that's a different story.

Chuck: Getting down to brass tacks – I've been doing this for 39 years – one of the challenges is to make it happen regardless of the politics.

Facilitator: You're referring to a method more than a whole strategy. You saying you need to provided connectivity somewhere, and if you have a relationship you can provide an affordable fiber connection and solve the problem that your executive team wants you to solve.

Fred: I agree that making this political, this will go nowhere. Being on the side of the ones slowing things down, I'd like to make everyone aware that one of the ways to prevent that from happening – an idea from John Payne, the CIO at SFO – we pulled together a Bay Area Transportation CIO Roundtable. The first one was in April. Robin was there; she'll be at the next one in support of Oakland's proposal. The CIOs from SamTrans, A/C Transit, CalTrain, Muni, San Francisco – John Payne of San Francisco International Airport – myself, and Robin, will be meeting in two weeks at the Port. These are the kinds of things we're wrestling with, because we have an opportunity as heads of the IT organizations within these transportation agencies, to start to do exactly and have these kinds of discussions.

             What is it that we can do in that role that is mutually beneficial to each of the agencies and to the community at large, so we can start sharing, leveraging or even driving services technologies and standards to address some of these issues, such as emergency response, public safety, access to computers and so forth.

             I've made a note to myself to raise that as part of our agenda, to discuss how we can create that connection, because "that's a body of people who are very

motivated, interested to make these things happen."

Facilitator: Good idea.

Jon: I run into the same political environment Chuck does. The key on the projects I've dealt with is that packaging/communications/standardization of messages is very important and always pertinent. "So that you're sending the same message every time." For instance, Peralta has a building renovation project coming up. I called the network coordinator at the college. The very first thing she said was 'Why didn't anybody tell me?' 'The date on the documents is today. It didn't exist.' People go into the situation "assuming you're already trying to muscle in on their territory and give them a hard time."

Paul: The robust infrastructure we're trying to build, especially from an EOC standpoint, makes a lot of sense. Since OUSD has 196/96 school locations throughout the city, a lot of which are emergency Red Cross shelters, being able to offer internet access would be a real benefit. "Getting things connected is a huge public interest." That's part of OUSD's philosophy and understanding; "it's not only serving the students but in an emergency we're going to have to serve the public." Immediate response as well as longer-term, getting those families connected.

Facilitator: That's a good point. Everyone would have a stake in that one. After Katrina, they had to invent all of those types of services, when someone could have plugged it in and turned it on.

Facilitator: A critical point is that so many people commute long distances who live in Oakland and can be disconnected from their families. This happened after the earthquake.

Tino: Emergency situations – this park, that park, this library. We had different stations and we didn't have the connections. We had to run people back down to City Hall, drop off paper, run back. Trying to connect with the county, the state, FEMA. Everybody had different radio frequencies. So if we're all on the same page when projects come up, those are the things that we're trying to think out of the box.

Ahsan: My name is Ahsan Baig. I'm Division Manager, Department of IT. Working on this project for the last two years, so looking at the need and market and talking to stakeholders. Concerned about public safety and public

transportation. We got the direction from my boss and the Mayor at the time and the current Mayor to continue working on this path and looking at what similar projects some other cities have done. Instead of looking for a solution and then the needs, we are identifying stakeholder needs and requirements first. We put out an RFP and through a competitive bidding process hired Tellus Venture to work with the stakeholders to identify their needs (these workshops, focus groups and town hall meetings) and put together a business model and reference architecture. After this, we will put out another RFP (3 to 6 months) to take the next step. We want to work with CalTrans, MTC and others to find ways to maybe leverage some of what others have done, coordinate information-sharing (particularly for public safety purposes), and connect the infrastructure together.

Facilitator: Meeting with one another regularly sounds like a good opportunity. We have already learned today about some good fiber infrastructure and technology for distributing it in the tunnels that we didn't know about.

Bruce B: OTX West is interested in providing internet access to those who don't have it. I would like to find out whether there is any interest or will to share physical sites. If there is a WiMAX-type cloud that could spread out to WiFi to piggyback on? Could we tap into excess capacity (e.g., OUSD's 300 Mb pipe) that isn't used at certain times of day? We'd like to explore the possibilities of site and/or bandwidth sharing to provide wider coverage to the city.

Fred: The question makes sense. It comes down to who-what-when-where. The Port and its Executive Director are "very, very, very committed to Oakland and pro-Oakland. He never leaves out an opportunity to address our commitment to the City of Oakland. The Port has acres and acres of property that spans the length of Oakland; he would love nothing more than to use that to light up the city" if it is possible and you can come up with a plan. "We're aligned; we're on board. It's just how – to find that reference architecture" and build it out and make agreements around it. Can we get OUSD's excess bandwidth? If we need towers, where could we put them?

Bruce B: You've got the cranes.

Fred: … from the airport all the way up to the northern part of the seaport. "We're open to those kinds of discussions" to understand the potential, limitations and restrictions are. "To me, the selling point is as long as it's going to benefit the communities within the City of Oakland – that's the value prop

for us" to get involved with this. We're going to do our DHS (Department of Homeland Security) stuff regardless, but the opportunity to benefit the community at large is of interest to us.

Paul: OUSD has barely started communications with higher-speed wireless, so we will have excess after hours. We've had problems with rogues that have basically shut down our network where the students or administration can't use it. Quite often community groups use OUSD facilities (e.g., auditoriums) after hours; we have started the discussion of making our wireless available to them but have not yet included legal. "I foresee that as we have wireless spread out across our campuses…"

Facilitator: Could each school could be an AP (access point) that extends out using repeaters to take the signal and make it available for students to access at home or some after-school location? Would that be doable and in the parameters of the E-Rate and funding, etc.?

Paul: 8% of OUSD's network funding comes from E-Rate, which does put some restrictions on how we use it.

Facilitator: Some of our assumptions in interpreting it are not inconsistent with the E-Rate; more things are allowed than some folks think. Many schools have Brady Learning software that's not extended to the home because of digital inequities, so extending the network with that kind of architecture could start leveling the playing field.

Bruce M: There are liability issues to consider; in a college, we're contacted constantly by the recording industry about illegal sharing and being held responsible for it. We'd have to figure out a way to protect ourselves.

Facilitator: There are ways to control it. You can segment it; get someone else to become an operator using some bandwidth or a segment of your network, extending it and they take on the liability, because any user getting access to that is their user. Sometimes we just talk about leveraging available bandwidth and infrastructure that may be dormant – like in OUSD after 3 p.m.

Facilitator: Most of the people who know Mills College is up there are middle- to upper-income individuals but the college is surrounded by low-income communities. So there may be a marketing opportunity for Mills by providing some kind of access to the community.

Facilitator: Very, very good discussion. I've heard about potential for infrastructure sharing; leveraging existing infrastructure and technology; opportunity for information-sharing and standards – we're all trying to solve the same problems. The reference architecture may be a good thing to do as well. Also heard there may be some opportunity for joint ventures or support of some community efforts. Or even purchasing ISP services; coming together and having more purchasing power and lowering the cost per mit of ISP services for some other partner.

                We'll put this information together and get it back to you to think about and provide more feedback. Think about any recommendations you have for next steps, maybe putting some groups together to explore opportunities, maybe breaking some of these topics out. Maybe a discussion focusing on the fiber, and another on the architecture and so on.

Fred: I don't want to downplay the importance of political issues. The Port just awarded the special systems support contract at the airport. The incumbent was not selected and has taken the political route to apply pressure. That's part of the game. We need to be aware of that, because the politics can be disruptive, cost a lot of time and delay, and if it's not managed can end up in …

Facilitator: It can derail you, yes.

Fred: So we need to keep that front and center. Managing that type of situation through the forum I'm part of is probably contribution that group can provide. A group like this can do the blocking, tackling and roadblock-clearing, because those people aren't only on technical and business side but have political savvy as well.

Facilitator: This could provide some support for decision-making and some of the challenges some of the vendors may have.

Tino: As we go through our process, "the more partnerships we get, the more power we have." With more agencies connecting together with a positive approach, the politics won't matter so much – if there's more connectivity with pretty good players that we have in this room" and more could be added. We have the economic development, the digital divide…

                There's a lot of positive spins we can put on this project. The way this project is going – research-based and planning-based – that also will help

politically. The more we work together, the more partnerships we get, the stronger we are. Having the CIOs and other key management all on the same page, and get the Mayor and Council members doing the same thing, with the community tied to it, will help as well.

Facilitator: Could this RFP be a purchasing vehicle for non-city agencies? Because sometimes the RFP process for government agencies is a major barrier. Not only does it take time to get through the process, but if they can find the political support, the people who don't win can push it back and make it start all over.

Blum: You have a group RFP process in Texas; I don't think there's anything similar here. There's kind of a statewide purchasing thing.

Tobin: Some bodies have a joint powers agreement. That's unique to each city.

Facilitator: Lots of opportunity.

Facilitator: I've captured some of the points made by each organization and some of their concerns.

Jon: Another consideration is content. Is the ultimate goal just having people be able to go anywhere in Oakland and get on the internet? Or providing internet services? Having an authentication or identity model could go a long way toward convincing an organization to share bandwidth/facilities. Explaining the accounting method.

Gilbert: When you go to a library, you show your library card. It's in the area of security where you'll get a little pushback.

Jon: And will there be content control?

Facilitator: There's been a general thought that this service would be for controlled-content access designed to improve the quality of life. Those who want entertainment-type services can buy them. That was one school of thought.

                As it evolves, and you're the infrastructure providers, the constraints you want to put in become part of the puzzle. I've seen it come to a point where the security people want to turn off every single port. There are services you have to allow. There's a balance. What I'm hearing from a community standpoint, folks are willing to work within those constraints.

Fred: Policy requirements and then a design issue. You have to be clear about all
                of that.

Facilitator: But balanced. There are good services that run on other ports.

Facilitator: With KTOP being a content provider, Laura, do you have anything to add?

Laura: From the emergency standpoint, KTOP is in the matrix. We've been asked to
                figure out how a damaged site checks, damage assessments sent back in real
                time. Extremely valuable, "especially if it covers the entire county. How cool
                is that?"

                In terms of commercial use, it could be great for tourism. The City of
                Oakland has a Shop Oakland site that gives information about shopping and
                businesses.

Tino: Was at a conference and there was an emergency; it took three or four days
                to get the content back up. They realized they needed something more in real
                time, so they got into WiFi and microwave.

Laura: Talking about using school locations as shelters, that also could be the source
                of emergency information.

Facilitator: Video seems to be evolving the same way as voice (VoIP). My kids watch
                nothing but YouTube.

Fred: What's next?

Facilitator: We'll pull this information together as a draft for your feedback before it's
                finalized. This information will become part of the requirements that go into
                an RFP to solicit an integrator and equipment provider to build an
                infrastructure, maybe in phases. As a derivative of this session, there also
                may be an opportunity to build other discussion groups for further planning
                and development.

Blum: In terms of where it goes from here, part of it is very specific to the
                feasibility study including continuing this process with community focus
                groups and town hall meetings. Then we'll review the information and put
                together the reference architecture, business case and final report. Tellus
                Venture will be working through Tino and Ahsan and their team in that

process. We all want your feedback as we go through that.

The feasibility study aside, is there a way we ought to be working together going forward? That's a question to maybe toss back onto the table here. The feasibility study is fairly short-term; this is something more ongoing.

Fred: What's the timeline on the process you just described?

Blum: Three months.

Ahsan: You were talking about the political pressures. We've been working on this project a long time; there are a lot of outside entities, business owners, Council members involved. We have taken this approach intentionally, because we want to do something right for Oakland. We are going to get further input from community partners, business partners, public organizations and others. The result will hopefully be a business model that we all agree on and a reference architecture. We want to leave the specific architecture up to the network provider(s) who will be coming in after the next phase. But this process now is to document and include all the critical needs we are hearing from different stakeholders. So three months to get the feasibility study done; then, depending on the sponsorship from the Council and the Mayor's office and the budgetary situation, we will put out the RFP in the next few months.

Chuck: Did I understand you to say the City of Oakland is going to fund it?

Ahsan: That's the discussion we're going to have as far as the business model is concerned. The intent is to develop a business model where we pretty much don't have to invest much. There are some models in the country (e.g., anchor tenants).

Tobin: Much of what we're discussing is plumbing. It's important to talk to business partners such as service agencies, law enforcement, healthcare services – these are the people who would have the greatest amount of input on what occurs when you have wireless. Where are the communities that need wireless kiosks or wireless services or help desk services? This isn't the group to determine that.

Facilitator: We've had six sessions this week; five were with end users. Then there will be community focus groups.

Blum: This is the only workshop with a lot of IT guys in it. In other sessions we had IT people and a lot of them were just there to hear from the customer.

Fred: Talking about stakeholders – the Port of Oakland is a stakeholder. As a stakeholder, what do I require? I need to understand the breadth and scope of the program, the definition, what the history is, what's being asked of me. Let's align to that and we'll be a very strong stakeholder and partner. Right now I'm missing some of that. As far as next steps, as the information is collected, rather than an email distribution, my preference is for us to reassemble and review it so we can go back to make sure we're aligned. More importantly, what's the value proposition? I need to be able to communicate that to my bosses. 'This is why we're doing this. Here are the benefits and the outcome. Here's what we can expect to contribute in capital or resources, people or technology or whatever.' That's what's missing for me. Attending a workshop, not understanding what's going to come next and how it fits into a bigger picture.

Facilitator: That definition is available and can be compiled and provided to you – the background and the process. In terms of the value proposition, after you have the understanding of the background and the process, the goal is for you to define that. To direct us on where you think the value proposition is for your organization.

Fred: Sure. But again, I want to make sure that we're in full agreement with what we're doing and we're aligned and that we understand what the outcome is. A lot of us are not part of the city government, but there's a strong City of Oakland push here, so we have to present that value proposition to them as well. Emergency operations, response and so forth is a common connection and thread, but let's make sure we all understand that we're going to get value-benefit out of this and we see what the end game is – and more importantly, what it's going to take to get there. "If I understand that, I'll make it happen. But I'm not seeing that right now."

Ahsan: My apologies. We may not have done a good job of explaining the background. We'll be glad to get you the documents we have, Council reports, vision documents.

Fred: We want to get alignment on this, so we're strong partners and not weak partners. Let's make it happen. Let's do what it takes to make it happen. Give me the information so we can make it happen.

Tino: One thing that has come out is the need for project-sharing and information-sharing. A good way to continue that might be with subcommittees composed of major stakeholders.

Bruce B: This morning's nonprofit group was all need and no plumbing. This is all plumbing.

Paul: "To be able to get that funded, to serve that need, we have to go back to our boards or whatever, eventually, to say that this is why it fits in – in our case, with Oakland public schools and our mission." Our mission is not public health, but if that public health is serving students of Oakland public schools, then it is about public health. If it's serving the families and making children more prepared for learning, then it is about Oakland public schools. "Part of the issue may be articulating that in such a way our respective boards and whatever understand how it really does apply to them."

Tino: We have to tie whatever we're going to do back to the biggest issues the City of Oakland faces.

Facilitator: This is very good. Friday afternoon and everyone's still going strong. I've been trying to wrap this up for 15 minutes. I've never had that problem on a Friday afternoon.

Workshop 6 Flip Chart Notes

Wireless Application Requirement	Notes
Port of Oakland	Initiative: Free Wifi at OAK/avail. 2009; Homeland Security funding for maritime/ seaport wireless; Jack London Square (JLS) wireless possibly; goal - figure out services to add/leverage; interagency comm. for emergencies, etc.; maritime spearheading with local public agencies; what's the value proposition; estimate 1200 acres to cover at OAK, and larger for maritime (does not include JLS)
Mills College	pretty mature deployment; closed campus
KTOP	City of Oakland govt channel; content provider

BART	140 miles right away; dark fiber licensed to end-users and CLECs; pretty much all CLECs has a relationship; license above ground sites to cellular companies; all 5 carriers transmit; beta test Embarcadero to City Center for wireless transmitting in-car video; using Wifi 2.4; using radiax for cellular system and Wifi; looking to take system-wide; solved tunnel problem using fiber; their's is all fiber-based; working with City agencies; City of SF approached to extend Wifi above ground
County of Alameda	mature shop; help create standards and securities w/ other county agencies; some public wireless in specific county facilities such as convention centers; most wireless in public safety; allow police and sheriff's access to dbase to investigate individuals they have pulled over for example; wireless currently supplied via EDGE; wireless kiosks for tax collection possible;
OUSD	wireless overlay for 12 (high) schools by Sept.; connections are multiple T-1s except for 6 schools; 18 month project for Optimed (?) to each school; 96+ schools in the City
Peralta Colleges	Infancy; site surveys were conducted; phased approach; wireless in student common/open areas such as cafeterias, some classrooms; plans to expand but concerns about security; need addl. internal security policy development; here to do info gathering
OTXWest	Build comm. tech centers thru relationship w/ City of Oakland; expanding "3rd pipe" so communities are not locked into ATT/cable solutions only; interested in access for education

MTC	30 year regional planning - how transportation will involve 30 years from now; Bay Area toll authority; not building in wireless now, but moving from land line to wireless at Bay Bridge; 200 people in the organization; interested from an EOC perspective - for informing public and coordination
Challenge : understanding the big picture	
Synergy between MTC and BART to tie together	CalTrans should be part of this workshop
Opportunity for coordination team around infrastructure	
Keep out of the political arena	Some public commissioners are technically savvy; want to emphasize importance of political issues - can be disruptive, cost time and delay

3.7. Workshop Follow-up

Following the conclusion of the workshops, participants submitted additional information and comments.

Per Chuck Rae, Manager, Telecommunications Revenue, BART

BART executed an agreement with WiFi Rail (18 December 2008) for a system wide WiFi internet access network (trains will be hot spots). Construction is underway to extend the working Beta test section through the Trans Bay Tube, downtown Oakland underground wye and the rest of BART. BART expects to complete the entire system within two years. Concurrently the wireless carriers have commenced extending the existing network throughout BART's underground; with expected completion within two years. BART is working on adding the San Francisco Muni to the underground wireless network, and on a fiber connection between BART and the City of Oakland. BART is also negotiating with the East Bay Regional Communications System Authority (EBRCSA) to allow the use of BART radio sites for their system.

4. Additional Public Comment

Over the course of the study, many members of the public offered additional comment, which is included below. Minor editing has been done for purposes of style and consistency, but the content is unchanged.

I think wireless is very important.

I am an IT professional by trade and have worked part-time with several Oakland small-businesses assisting them with their networking and computer needs. I'm also on the board of two Oakland small-businesses and a non-profit neighborhood group. I also have an interest as a consumer - I participate at home in two wireless network projects - Fon and Meraki - use EDGE/GPRS wireless data services on my phone and with my laptop. At home I use Sonic.net as my ISP who operate a WiFi based mesh network in Santa Rosa and a Meraki based network throughout the Bay Area so I'm fairly familiar with some of the current offerings. I have often wished that wireless broadband was available as an option in Oakland and would love to give some feedback on any plans for offering in the future.

To determine the best course of action in deployment of metropolitan wireless access in Oakland, the following questions must be addressed. There are many, many technically and business savvy people in our community who can assist the committee in addressing these questions, to whit:

What services would be enabled?
What is value of those services?
Which technologies match the desired services?
What is their cost of deployment
What is their cost of maintenance
What is the expected income source?
What is the expected revenue stream?
What are the legal implications for the city?
What has the experience been for similar cities?
Who are the existing vendors for the target technology?
Who are the existing integrators for the target technology?

The barriers to metropolitan WiFi have been shown to be almost entirely economic. Technically, there have been many pilot projects and several metropolitan deployments demonstrating the technical feasibility of the technology. Yet so many projects have failed to achieve wide usage or profitability due to economic factors. In a city as challenged as Oakland, it is especially important to analyze the economic factors at play with a wireless deployment so as to adequately plan for a successful system, one that is technically sound, and one that enhances the economy of the city rather than harming it.

I would suggest that the focus group use this or a similar list of points for discussion purposes, and try to avoid hyperbolae or side-discussions of a non-economic or technical nature. To that end, a professional moderator would be of great value.

I am heartened to hear that we are discussing this possibility for Oakland, but a little concerned that we not repeat the past, as perhaps exemplified by the Cable Oakland fiasco of the 80s.

_____

I have been using AT&T Yahoo! (SBC global) for a couple of years now. It is ostensibly ADSL.

However, after much checking and complaining, and several trouble calls with technicians coming out, it was determined that my neighborhood (8th Ave. & E 23rd St) is served by "an exhausted router," which partly explains why our speeds in this neighborhood are some of the worst for AT&T in the state. Apparently even though I am not that far from a central router, the wiring path is so indirect as to be problematic, and intermittent interruption of service is inevitable.

Although reportedly my speeds are download 1536 kbps and upload 384 kbps, I rarely get these speeds. More like 1200 kbps & 320 kbps. You can compare national averages [online].

It seems reasonable to expect at least average service in such a metropolitan area. Perhaps Oakland could impose minimum standards and require such companies as AT&T to upgrade exhausted central office routers, re-route service where this would dramatically improve performance, and even be required to install some percent of photo-optic cable to reduce internet traffic jams.

Just a thought.

_____

I love technology - wireless everywhere would be wonderful. However, given other cities' problems with wireless, Oakland's current resource problems, and frankly track record – please don't do it.

If we have resources available for such a venture - use them to focus on basics - potholes, picking up trash, educating our youngsters.

I know technology is more fun, but until basics are under control, do not take on another function - which is almost sure to be expensive and executed poorly.

I hope that you do implement wireless in Oakland. They did it in Concord for a while. MetroFi was the ISP. I am not sure why they stopped but it worked great. It was wonderful that it was free and even on an older laptop I could access the web.

I hope to see before I come to City Hall some description of what is being considered and actually possible, at what cost to whom. There have been too many failures with great visions of free wireless for many other cities.

AS one who has spent many years helping people with very little money get to be able to use computers, I would raise one key element for the consideration of the focus groups and planners:

How are we going to help seniors, poor families, disabled people and the too many gang-prevalent ghetto areas of poor Asian, Latino, and African American to know about, and be able to use the Internet and Web?

There are lots of recently discarded desktop machines available free of charge from companies getting rid of last year's models. But how do we provide the software and hardware to make these machines capable of handling WiFi?

I am still exploring a number of possibilities, but I have no easy answers yet and I hope someone will be able to come up with some.

If we are just helping yuppie techies to add to their iPod, Blackberry and cell phone with camera access already, count me out. Advertisers are able to handle all of them. But how do we help the unemployed isolated, discouraged job hunters, etc. to get some skills and

equipment to make them more part of a productive and employed community, working their way up the ladder from the bottom?

I am intrigued that the City has decided to open discussions with regard to internet access throughout the City of Oakland. I am glad that you are considering such innovation and I strongly advocate the installation of free WIFI throughout Oakland.

I strongly suggest the installation of free-WIFI access at all Oakland public libraries. I am aware that the Oakland libraries have computer labs; but, Oakland residents need WIFI access at the libraries in order to use personal laptop computers. Oakland needs such internet access the libraries to keep up with other libraries in the Bay Area. All public libraries in San Francisco, San Mateo, and Santa Clara counties offer free WiFi access. I utilize the internet access at these libraries on a regular basis and only wish the Oakland libraries would follow suit.

In addition to providing WiFi at the libraries, I urge the Mayor and City Council to consider transforming Oakland into a free Internet access city. Cities in the Silicon Valley have partnered with each other to create a joint venture called "Wireless Silicon Valley", This multi-city/bi-county effort will soon provide free WiFi to thousands of residents from San Mateo and Santa Clara counties.

Oakland City government needs to take action so that Oakland residents can cross the technological divide and take advantage of the Internet. Oakland needs to invite technology companies to create such opportunities here in Oakland. We cannot be left behind as the rest of the Bay Area takes giant leaps forward technologically, economically, and educationally.

Presentation to City of Oakland Wireless Broadband Town Hall Meeting, September 22, 2008, on behalf of CTC ad hoc working group.

Background
Advanced wireless broadband technology can provide Oakland users with broadband speed without the actual requirement of any wires or bulky network structures. Potential applications include competitive business and residential service for both local telecommunications and Internet service, low cost public safety and municipal service, and free broadband for low-income community development programs.

As an example, with the steady raise of companies turning to support employees by telecommuting for the purposes of tele-work or tele-learning, it would be wise for the City of Oakland to support the concept, realize the efficiency of these beneficial services.

Companies in the City of Oakland would save money and realize gains in work hours and business productivity. Employees save commute time and expense, and there would be a realization of public safety with cars off the road. Individuals would realize savings in gas. The environment would get less pollution.

Recommended Course of Action
The City of Oakland implement a wireless broadband network in conjunction with the efforts of the Port of Oakland to provide services throughout the city. This will allow the city two advantages:

1. To promote public safety by allowing mobile access to data to support emergency police and fire services.
2. To offer businesses and residents Internet access to improve quality of life and reduce costs.

There is a current RFP to put computers (supplied by OTXWest) into the Oakland recreation centers. A wireless network would allow the ability for these centers to become community service computer centers in addition to the computers in the libraries.

Many Oakland libraries have a limited number of Internet connections and a wireless network would expand that by serving more citizens.

Potentially offer Oakland residents wireless (e.g., WiFi) phones that operate within the City for an affordable fee.

Potential Costs
There are many technologies and configurations possible. In addition, the costs for hardware have decreased significantly. Below is a configuration that could be workable in the City of Oakland. If the project partners for the Port of Oakland, the cost can be significantly reduced, and possibly absorbed.
1.) ISP POP is needed - 50 Mbps burstable up to 100 Mbps - There will be recurring dollars for this but yet unknown.
2.) ISP connectivity to tower (downtown rooftop preferred - ISP fiber connection will likely exist) – There will be a recurring rooftop lease but cost unknown.
3.) Alvarion Breeze max Base station (AP) - 5.8 GHz 80216d line of sight (802.16e -NLOS is preferred but license is likely unavailable) - $50K hardware 15k installation.

4.) Alvarion gateways - mounted on community service buildings, etc. - WiFi Hot zone 600 - 1200 feet each. $1800 each.

5.) End user equipment - WiFi compatible devices - Pepwave bridges ($400) and modems ($100 - $200) are good for connecting computer centers.

6.) Captive portal software $200.

7.) A server to run the network management software (possibly a backup server) $2000.00.

Why this configuration?

Houston's downtown network is serving 1,500 unique users per day using a similar configuration. The recommendation is to implement a 360 Alvarion base station so that the $1,800 hot zones can be implemented throughout the city. Estimated actual implementation time: 1 month implementation.

Estimated total spending: $150k-$200k max

Cost Savings

Fire stations, municipal buildings and schools can connect to the wireless network reducing the cost of leased T-1 lines.

Residents and businesses can access network. Mobile city services. Create "digital inclusion" programs to train, equip and support those without access with computers and applications.

5. Research Documents

5.1. Town Hall Meeting Agenda

Step	Script	Moderator Notes
1. Convene meeting 5 minutes	Welcome. My name is _____. I will be the moderator today. Thank you all for coming, and as soon as we're all settled, we're going to begin the meeting. Our goal this evening is to discuss how wireless technology might be used to improve City services and the quality of life here in Oakland. It's part of a study aimed at assessing wireless broadband technology for the City that we're conducting, on behalf of the Oakland Mayor's office, the City Council and the Department of Information Technology	*We will greet people as they arrive for the meeting and thank them for attending. Introduce yourself.* *As time is a factor, encourage people to get seated.*
2. Introductions 5 minutes	Again, many thanks to all of you for taking the time to come to this town hall meeting. I'd like to take a moment to introduce our distinguished guests and some key members of the City's team. [Introduce VIPs and presenters]	*Introduce VIPs, any team members who might take part.*
3. Welcome 5 minutes	[TBD City representative welcomes participants, hands back to moderator]	

4. Overview of process and general objectives 2 minutes	We want to be sure we fully understand community needs and concerns, and that we also gather your input and ideas about how we can make this initiative a major success. We'll be spending an hour or so discussing wireless broadband technology, and how it relates to city services and community needs. I'm sure you have many questions, and we'll certainly try to answer any you have, but what we're really here to do this evening is listen to what you have to say. We're going to begin by discussing what the Oakland wireless broadband initiative is all about, and show you some examples of how some cities are using wireless broadband successfully. Then we want to hear from you.	*We will explain the process for the discussion, and what to expect over the course of the meeting.*
5. Presentation: municipal wireless applications 10 minutes	[TVA representative]	*Four slides showing examples of municipal wireless deployments will be shown, to provide participants with a common frame of reference for the discussion. The focus will be on public safety, economic development, health and education.*
6. Public comment 50 minutes	Now, we'd like to hear from you. Any thoughts you have on how city services might be improved through wireless broadband or how Internet access can be improved here in Oakland are most welcome. We want to hear from you what you think our priorities and objectives should be as we evaluate this technology. We'd like to ask you all to please be respectful of everyone's views, and to give everyone an opportunity, and the time, to be heard. Please step up to the microphone, and let us know what you think…	*Moderator should gauge the audience and make sure that no one participant monopolizes the discussion. Moderator should assess whether comments are on topic and. if not, should try to gently steer the discussion back on course.* *Questions should be referred to the appropriate member of the panel.* *If a participant goes on too long, moderator should gently suggest moving on to the next speaker. Moderator should give participants great leeway in their comments, but should not relinquish control of the process.*

7. Close	Thank you very much for being here this evening. You've been very helpful and very	*Finish on time, and by thanking the group.*
3 minutes	generous with your time and ideas. Over the next few months, we'll be developing a report for the City. If you have any questions, you can call us at 764-2425, or email us at: OaklandWireless@tellusventure.com.	*Wrap up any housekeeping details.* *Display the contact information on the screen.*
	Again, thank you very much.	

5.2. Focus Group Discussion Guide

Step	Script	Facilitator Notes
1. Welcome participants		*We will greet people as they arrive for the meeting and thank them for attending. Introduce yourself and invite them to enjoy refreshments.* *As time is an important factor, encourage people to get seated quickly.*
2. Introduce yourself and reiterate the purpose	Many thanks to all of you for taking the time to come to this session. I'd like to take a moment to reiterate why we're here – and see if there are any questions about it. My name is _____. I've been asked by the City of Oakland to gather input and ideas from citizens and organizations across the city. The purpose is to help us in planning for the City's future wireless technology needs, particularly in regard to City services. We want to be sure we fully understand community needs and concerns, and that we also gather your input and ideas about how we can make this initiative a major success.	*We will start the session by introducing ourselves to the group, thank them for their time and participation, and clarify the purpose of the focus group.*

3. Outline the group process and agenda	Here's the process: we'll spend an hour or so discussing a series of questions about wireless technology, and how it relates to the services that the City of Oakland provides. I'm sure you have many questions, but I do want to stress that today's purpose is very much to gather input and ideas from you, rather than responding to questions. To the extent that you do have questions that need to be answered, we'll record those and build them into the communication plans and materials that are being prepared. And of course I'll be open to input and ideas not covered by our questions; to the extent they're relevant to the overall purpose. If you have ideas and information that seem relevant but that I don't ask about, please let me know…	*We will explain the process for the discussion. Assure their anonymity, and encourage them to be candid about their concerns, perceptions, and ideas.*
4. Assure confidentiality	Rest assured that no names will be used in our notes or report. We encourage you to be open and direct. By all means be critical if that's appropriate in some areas, but we also encourage you to provide ideas for improvement. **Any questions or concerns before we get started?**	*We will provide reassurance that the discussion will be confidential – no participant names will be included in reports, and no comments will be presented in a way that could enable the contributor to be identified.*

5. Introduction to overview	I know wireless technology means different things to different people, and I like to begin with a brief overview of the kinds of things we're thinking about, so we can have some things in common to talk about. Some of this stuff might be familiar to you, some of it might not. Don't worry about that. What we really want to talk about are the services themselves, and not the technology behind it all. What we're going to explore is what other services may or may not be helpful here in Oakland. We're not necessarily planning to do these specific things, we just want to take a quick look at the types of things that are possible.	*Four slides showing examples of municipal wireless deployments will be shown, to provide participants with a common frame of reference for the discussion.*
6. Economic development slide	Cities have used wireless technology to promote economic development, by offering organizations a way of communicating with each other. For example, doctors and nurses can communicate with hospitals. Cities have also offered free Internet access to residents and visitors at City facilities, like libraries and community centers.	
7. Public safety slide	Other cities have used it to improve public safety, by giving better information to police officers and firefighters in the field, and by getting them on scene faster.	
8. Health care slide	Another example is linking emergency room doctors directly to ambulances via video, so they can get the right treatment started right away.	

9. Educational slide	In other places, it's been used to give Internet access to community groups that provide after school tutoring, job assistance and other important services. There are a lot of other ideas out there. We don't know yet which ones might or might not be right for Oakland. That's why we're here today. We want to know about your expectations and what you think about different kinds of services.	
10. First icebreaker	Just to get started, by a show of hands, how many here use a cell phone? Use a smart phone, like a Blackberry or iPhone or another brand? Have a computer at home? Use the Internet regularly?	*Ask participants to raise their hands, and don't stop for discussion.*

| 11. Second icebreaker | Let's start with a broad view of Oakland and what it's like to live here. I want you all to think about a word or phrase that best describes what it's like for you here. It might be good, bad, or neutral, basically the sort of response you'd give to a friend or family member who asks, "What's it like to live in Oakland?"

We'll just go around the table and give everyone a chance to say a brief comment. Later there'll be plenty of opportunity to get into more detail. | *We will move on to a broad question that is easy for everyone to answer comfortably. Engage the entire group by going around the table inviting a brief comment from everyone. This is a non-threatening way of encouraging everyone to say something early in the session.*

Many people feel uncomfortable being the first to talk, so an easy approach is to start with the person closest to you, implying you'll move in sequence. This gives people a sense of structure for this first exercise and they'll clearly know when they are expected to offer comment. Or pick someone who is clearly ready and eager to speak up. Encourage people to keep it brief.

When everyone has made a contribution, |

| 12. Core discussion question | We're looking at many different things that are not readily available in Oakland right now. We're going to discuss how these general types of services – and others – would improve the quality of life here in Oakland.

There are services in the Bay Area today such as free wireless Internet, FasTrak bridge passes, and the new credit card parking that are made possible by digital technology. What other public services do you think would be helpful? For example, video cameras in neighborhoods? | *The objective for this question is to develop a list of services.*

Use a white board to build the list, and draw the participants out.

The discussion will very likely uncover issues of great interest and concern. As well as noting these, we will have to decide on the spot which to explore further with follow-up questions

Follow-ups are very important for uncovering greater meaning behind some responses. Use phrases such as:

- "Tell me a bit more about that issue…"
- "Is there anything more we should know about… "
- "I need an idea of what you mean by… "

Watch the clock and keep the discussion focused. We will allow some |

14. Categorize	We have a good list of services and ideas here. How about we try to put some of them into groups?	*Without giving short shrift to anyone's contributions, look for ways to organize responses into larger categories, such as public safety, health, education, Internet access, etc.*
		If it's a relatively short list, then this step is not necessary
15. Prioritize	Of all these things, what do you think is the most important? What's important after that? Is there anything here that you think is a low priority?	*Foster a discussion about priorities, but don't ask participants to vote, or come to a group consensus. What we're looking for is as many thoughts about priorities as possible.*
		However, if a group consensus begins to develop, identify it and discuss it with the participants, to get everyone's feelings about it.

16. Close	Thank you very much for participating today. You've been very helpful and very generous with your time. Over the next few months, we'll be developing a report for the City. If you have any questions, you can call us at 764-2425, or email us at: OaklandWireless@tellusventure.com. Again, thank you very much.	*Finish on time, and by thanking the group.* *Write the contact information on the board.*
17. Follow up questions	What are your biggest concerns about Internet access in Oakland? What kind of information do you need? Can you suggest ways to improve Internet access in Oakland? Are there City services you'd like to access electronically? Maybe signing up for programs? Getting information? Paying taxes? Applying for permits? Have you ever used text messaging? Have you ever used one of the public computers in the Oakland libraries?	*If time allows and the topic hasn't been addressed, please explore some or all of these issues.* *[Note: may be specific to council district]*

5.3. City Personnel Workshop Agenda

Steve Blum will provide a brief introduction and examples of municipal wireless applications, and then hand off to the facilitator for the following:

Agenda Items

I.	Introduction, goals and expectations (approx. 10 minutes)	*Facilitator:* Welcome. I will be your facilitator today. Our goal today is to discuss [*pubic safety/public works/city services*] here in Oakland, and ways that wireless technology might be used to support and enhance your department's operations. We are conducting this research on behalf of the City of Oakland's Department of Information Technology, as part of a study aimed at assessing wireless broadband technology for the City. I will begin by briefly introducing myself and I'd like to go around the room and allow a few minutes for you to do the same.

• *Introductions*

Facilitator: Our specific objectives will be to gain information about your key issues, discuss their importance within the City of Oakland, and finally discuss alternatives where wireless broadband solutions might support and/or improve the outcome.

Facilitator: In order to accomplish our goal today we will need to mutually agree on the rules of conduct for this meeting. We want to:

- Encourage all inputs – no idea is a bad idea
- Allow equal time to all contributors, but be conscious of the time when speaking
- Thoughtful listening and discussion
- Respect for time limits

Are there any other rules that any one cares to add?

I.	Progress report or introduction(s) (approx. 20 minutes)	*Facilitator:* We realize that this group represents many different agencies and many different responsibilities within those agencies. This should supply us with a wide range of issues to review. As we go along, I encourage you to identify areas that we should include. Let's begin with [*example*]. Let's have someone from [*example*] give a brief status update.
		• *All participants will have an opportunity to speak and offer input.*
I.	Discussion of core issue(s) or tasks (approx. 30 minutes)	*Facilitator:* Thank you for those updates. Based on what we just heard, I would like to ask you a few questions.

1. What are your core functions?
2. How can wireless technology support those functions? Would mobile access be useful? Would it be useful to be able to quickly set up temporary networks, data links or access?
3. What are the interoperability needs between agencies?
4. What are the measurements of success?

• *Questions may be adjusted or adapted based on responses from participants, and based on the issues and needs they express.*

I.	Break (10 minutes)	
I.	Idea development (approx. 40 minutes)	*Facilitator:* Let's begin with a brainstorming exercise focused on the core functions we just identified. I'd like to go around the room and have each person select a core function. If there's something that I am missing, please let me know and we will include it. Once you've selected a core function, let's discuss potential wireless solutions. No answer is a bad answer, and don't worry if you don't know whether a solution exists.
I.	Clarification, consolidation and structure (approx. 10 minutes)	*Facilitator:* It seems that we've compiled a good list of ideas here. Let's go through the list and eliminate what is similar and then organize by importance. We will establish importance based on the measurements of success.

I.   Q&A and close   *Facilitator:* Do you have any questions?
(as time permits)

        Facilitator: Our next step is to incorporate our information into the feasibility study that the City of Oakland is conducting. If you'd like to request a copy of the final study, please leave your contact information with us. Thank you very much for your help today.

5.4. Community Workshop Agenda

Steve Blum will provide a brief introduction and examples of municipal wireless applications, and then hand off to the facilitator for the following:

Agenda Items

I. Introduction, goals and expectations (approx. 10 minutes)

Facilitator: Welcome. I will be your facilitator today. Our goal is to discuss [*business/education/public agencies/non-profit organizations*] here in Oakland, and ways that wireless technology might be used to support and enhance your [*companies/organizations*]. We are conducting this research on behalf of the City of Oakland's Department of Information Technology, as part of a study aimed at assessing wireless broadband technology for the City. I will begin by briefly introducing myself and I'd like to go around the room and allow a few minutes for you to do the same.

• *Introductions*

Facilitator: Our specific objectives will be to gain information about your key issues, discuss their importance within the City of Oakland, and finally discuss alternatives where wireless broadband solutions might support and/or improve the outcome.

Facilitator: In order to accomplish our goal today we will need to mutually agree on the rules of conduct for this meeting. We want to:

- Encourage all inputs – no idea is a bad idea
- Allow equal time to all contributors, but be conscious of the time when speaking
- Thoughtful listening and discussion
- Respect for time limits

Are there any other rules that any one cares to add?

I.	Progress report or introduction (s) (approx. 20 minutes)	*Facilitator:* We realize that this group represents many different organizations and many different responsibilities. This should supply us with a wide range of issues to review. Let's begin with [*example*]. I encourage you to identify other areas that we should include. Let's have someone who works with [*example*] give a brief update.

• *All participants will have an opportunity to speak and offer input.*

I.	Discussion of core issue(s) or tasks (approx. 30 minutes)	*Facilitator:* Thank you for those updates. Based on what we just heard, I would like to ask you a few questions.

1. Forgetting about technology and broadband for the moment, overall what are the most important issues you face as a [*businessperson/educator/service provider*] here in the City of Oakland?
2. Again, forgetting about wireless technology for the moment, are there specific City services that could be better accessed electronically?
3. What are the most important information and communication technologies and services that you use in your organization? How do you incorporate those into your day-to-day work? Do any of those help you address your key issues?
4. Are there any information and communication technologies or services that you wish you could use? Could that help you offer new [*products/services/etc.*]? What's the main barrier preventing you from making use of that?

• *Questions may be adjusted or adapted based on responses from participants, and based on the issues and needs they express.*

I.	Break (10 min)	

I.	Idea development (approx. 40 minutes)	*Facilitator:* Let's begin with a brainstorming exercise focused on the opportunities and priorities we just discussed. I'd like to go around the room and have each person select an item that we've identified. If there' something that I am missing, please let me know and we will include it. Once you've selected an item, let's discuss potential wireless solutions. No answer is a bad answer, and don't worry if you don't know whether a solution exists.
I.	Clarification, consolidation and structure (approx. 10 minutes)	*Facilitator:* It seems that we've compiled a good list of ideas here. Let's go through the list and eliminate what is similar and then organize by importance. We're not going to eliminate anything from the list; we're just trying to get an idea of how you see the priorities.
I.	Q&A and close (as time permits)	*Facilitator:* Do you have any questions? Our next steps are to compile our information and incorporate it into the feasibility study that the City of Oakland is conducting. If you'd like to request a copy of the final study, please leave your contact information with us. Thank you very much for your help today.

Creating and implementing fundable business plans for community broadband projects is a speciality of Tellus Venture Associates.

Since 1996, our clients have built, funded, launched and managed wireless, fiber optic and satellite networks that serve consumers and communities around the world. Our experience includes:

- Financial and technical feasibility studies
- Primary market research to determine demand and community support
- Business case assessment
- Business model and funding development
- Public/private partnerships
- Reference designs
- RFP development and support

Stephen Blum, the president of Tellus Venture Associates, has led many successful projects and served in several senior executive positions on a consulting basis, including...

- Principal consultant for a successful $5 million grant application for a regional broadband consortium.
- Chief operating officer of a wireless ISP.
- Due diligence lead for an NGO delegation to Angola
- Team leader for an NGO project in the Philippines.
- Principal negotiator for a cable system sale to a top tier MSO.
- Managing consultant for a public/private WiMAX network deployment.
- Principal consultant for comprehensive feasibility studies for municipal wireless broadband systems.
- Management advisor for satellite broadcasting systems in North and South America, Asia, the Pacific Rim, Africa, the Middle East, and Europe, including most recently Italy, Cambodia and New Zealand.

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