

**Adventures in Municipal –Wide Wireless
or
“Unwiring”
the
City of Mountain View**

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Background

- Pop. 72,000
- 12 Sq. Miles
- 33,000 Dwellings units
- \$70,000 Median HH Income
- 100,000 Daytime pop.
- Relatively Flat Terrain



Why Deployment in Mountain View?

- Location of Headquarters
- Major concentration of employees in Mountain View
- Create network to test new services & products develop better understanding of how emerging technology works
- Network key to “digital inclusion”

City of Mountain View

The Fundamentals

- Free City-wide wireless service
- Deployment, maintenance and operation by Google
- Tropos Mesh Network
- Outdoor Network – Requires CPE
- 380- 400 Transmitters
- Nonexclusive System
- Coverage 80%-90% of City
- Est. 500 kps – 1 mps
- August 2006 Rollout



Business Terms

- **Term**—five-year term with two optional five-year extensions. City has option to purchase.
- **Usage Fees for Poles** —The base usage fee is \$36 per pole, per year
- **Mountain View Library** - Establish an enhanced Internet access zone ("hot zone")
- **Mobile Library Services Vehicle** —equip the City's new mobile Library services vehicle (with mobile wireless equipment to allow customers to use the Internet.
- **V-LAN/Public Safety Network**—Negotiate with the City to provide a secure City-wide network for future City services that will enhance services for public safety and public services.
- **Support** – Google will provide an online help center and e-mail support. In addition Google will be encouraging users within the community to support one another through online support & discussion groups. They are also looking at additional support alternatives such as community-wide training sessions which they have proposed in their letter to the City

Business Terms (Con't)

- **Agreement with PG&E**—As part of the agreement, the City has agreed to make its best effort to enter into an agreement with PG&E for unmetered services. Google has agreed they will be responsible for all terms and conditions of the agreement between the City and PG&E.
- **Franchise Fees**—Google to pay franchise fees in the event it provides any services that are subject to franchise fees.
- **Future Fees**—Google can charge a fee for enhanced services.
- **Mutual Indemnification**—Google to indemnifies the City, and City indemnifies Google for the gross negligence and willful misconduct of City employees.
- **Limitation of Liability for Contract Disputes**—Google indemnifies the City for (third-party liability claims, such as property damage and personal injury, and claims relating to the PG&E agreement), limited to \$1 million.

Challenges

- Visual Impact
- Radiation
- Confidentiality/Security
- Utilities – Use of Street Light Poles & Power – PG&E
- Public Outreach/Information
- Manage Expectations

Devices



Public Testimony

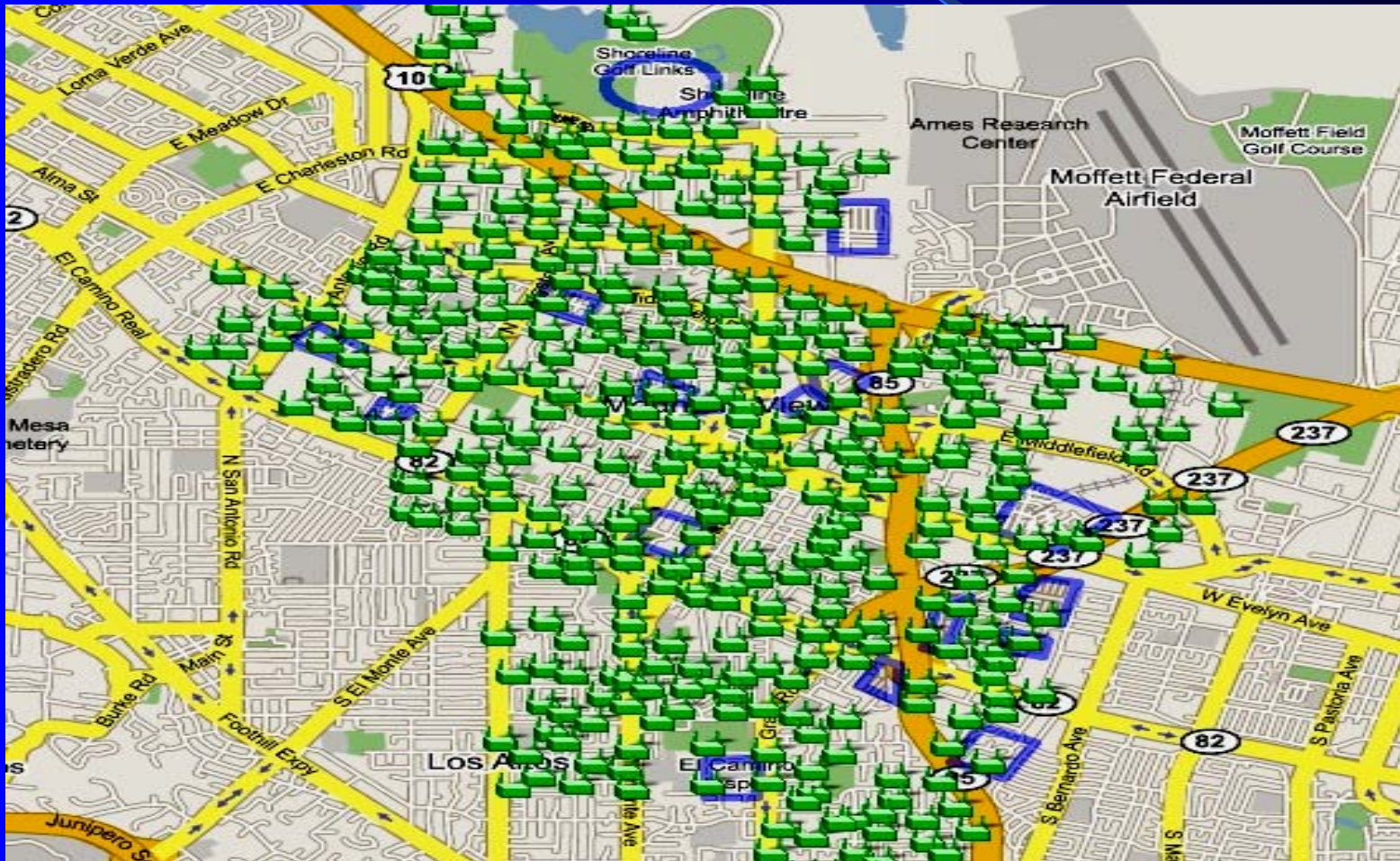
Nov. 2005

- it is critical that Google provide written agreements with the City on penalties and provisions related to security and privacy plus assurance that the benefits of data mining will be shared with the Community
- Google provide reasonable certainty that levels of radiation from the transmitters will not harm humans or animals. She lacks confidence in the FCCs stated levels of safety
- ... assurance that there are robust download rates on the WiFi system
- concerned about the uncertain health effects from constant exposure to electromagnetic radiation
- ... concerned about the quality of service for this wireless network underground rather than through air to help alleviate radiation concerns
- a safer innovative method of wireless installation transmitting it through gas lines

Development/Deployment Timeline

- May 2005 – Initial contact with Google (Lebowski Team)
- October 2005 Google Announces partnership with EarthLink & intent to deploy in San Francisco
- Sept. – Oct. 2005 Mountain View Environmental Review and Building Permits
- November 2005 City Council Approves Business Terms for Streetlight Pole Agreement with Google
- January 2006 – Streetlight Pole Agreement Finalized and executed
- January – March 2006 Deployment of transmitters, gateways and backhauls
- April/May 2006 – Initiated Trusted Testers – Google
- June – July 2006 Google holds Community Meetings and creates Trusted Testers network– Community
- August 2006 - Google WiFi Network operational City-wide

Transmitter Map Locations



An invitation from Google WiFi

It's time to gear up for Mountain View's free wireless network (available later this summer), and Google would like to invite you to a community training event to be held on the evening of June 15th.

Location: 900 Alta Avenue, Mountain View, CA

Time: 6:00 - 7:00pm

Please RSVP by Monday June 12th to mvwifi-support@google.com

Google™
WiFi

Markets addressed with WiFi

- Small Business/Local Government/Public Safety/Education
 - Easy to set up, low cost, no need to pull dedicated line to the building or have IT understanding
 - Libraries, schools, community programs can all log on
 - Mountain View Mobile Library
 - Patrons able to search the Library's web catalog, view their library record, renew library materials, and place requests for library materials and search the Internet
 - Library staff able to check out library materials for patrons; able to issue new library cards to patrons.
 - Police and fire all can be provisioned with separate, parallel networks (VPN)

Mountain View Mobile Library



Markets addressed with WiFi (Con't)

- Residential access
 - Alternative to cable and DSL at very low prices with faster throughput
 - Access that users can take with them outside the home
- Intracity nomads
 - Same account works in cafes/bookstores/schools/libraries citywide
 - Network supports VoIP phones and free services like Skype
- Travelers/Tourism
 - Provides visitors temporary Internet access
 - Local hotel/motel industry

What has happened since Deployment?

- Library Usage in Main Library

- staff sees people sitting around using laptops all over the Library....it has been an easy service for us to offer - little staff time/effort and high satisfaction rate.one outcome has been that the library space, such as meeting rooms, is now more functional because people can use their laptops whereas previously they were limited to those spaces where we had an Ethernet connection.

- Senior Center Unwired

- For the drop-in program we see approximately 50 people a day. We currently offer eight (8) different technology classes with enrollment of approximately 14 per class. An average week for both uses I would place around 350-400 participants. We are closed to the public on weekends.

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- As far as changes, it has definitely allowed many more seniors access to the internet. Our previous facility only had two computers.

- Neighborhood Association have developed online communities

On Line Neighborhood Associations

- I would test out the signal strength inside your house before you cancel your current ISP with a WiFi ...I can't get a strong enough signal from Google WiFi inside my house. The same is true at my office... Works great outside, but throw a wall or two in the way, and the signal degrades quickly...
- I tried the Google WiFi but where I live....there is a large tree between me and the nearest transmitter. I was never able to get a consistent signal even with a high gain WiFi modem recommended by Google. That is just my bad luck though as I know of others who get great results with the same modem.
- I am using a Ruckus modem inside the house. I have been using it since early January. I get good signal and I have found the service to be good 95% of the time. There have been a couple of times when the service was jittery for a half day or so, other than that it has been great. Now, when the leaves come out on the trees, it will be interesting to see how the signal holds up.
- ... I am grateful to Google for providing this service to Mountain View... I was able to get a signal outdoors but not indoors without the modem. About 80% of the time I get a good to fair signal strength. The rest of the time I get poor or no signal...Google WiFi is a good but unreliable service. If you need a reliable service stick with a pay for access provider. I have kept my dial up service as a back up.
- I live... across the Park and I'm getting very good signal with Ruckus. It's three times faster than the modem that my housemate has on her laptop. So far, I haven't had any problem with it. Google has been good so far. Am no longer using my AOL service.

Why WiFi is Good for Community

- Provides Alternative to cable and DSL for citizens
- Schools, libraries, police and fire all benefit
- Digital Inclusion - access for all
- Technology inspires new applications, creates new jobs, attracts businesses
- Local advertising on network opens up opportunities for small businesses
- Local community information, news, events, and communications become more accessible and collaborative

Thoughts on Broadband Deployment

- Wireless still unclear of the appropriate business model
- State/ Local gov't make infrastructure available and need to provide clear guidelines for process & costs
- Need to find ways to incentivize providers particularly if don't have the pop./market
- Other thoughts/discussion

City of Mountain View “Unwired”

