



Municipal Wireless Broadband: Lessons from San Francisco

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San Francisco Context

- **Population about 777,000**
 - **Highly diverse:**
 - 30.8% Asian
 - 14.1% Hispanic
 - 7.8% African American
 - **Median income about \$55k**
- **Area 49 sq. miles**
 - Numerous hills
 - High proportion of multi-unit housing
- **Existing broadband providers**
 - DSL incumbent: AT&T
 - Cable broadband provider: Comcast



San Francisco TechConnect

- **Established mid-2005**
 - “strategy to promote digital inclusion by ensuring *affordable Internet access...*”
- **September 2005: RFI/C:**
 - “Universal, affordable *wireless broadband* internet access is essential to connect all residents of SF...”
- **December 2005: RFP**
- **April 2006: winner announced: EarthLink/Google**
- **Late April 2006: Task Force on Digital Inclusion established**
- **January 2007: Contract Signed**
 - Awaits approval by Board of Supervisors

SF RFP Specifications

- **The network should be built, operated and maintained at no cost to the city**
- **There should be a free (basic) level of service.**
- **Premium services can be fee-based, but should be priced lower than existing service alternatives.**
- **Outdoor coverage shall be provided for a minimum of 95 percent of the city's area.**
- **Indoor coverage shall be provided for ground and second floors of a minimum of 90 percent of all residential and commercial buildings in the city.**
- **Indoor perimeter room coverage above the second floor shall be provided for ground and second floors of a minimum of 90 percent of all residential and commercial buildings**

Five Major Bidders for SF:

- **EarthLink/Google**
 - With Motorola, Tropos
 - Ad-based model for free level
- **MetroFi**
 - Has built and operated other WiFi networks
 - Founded by former CLEC execs
- **NextWLAN**
 - Would use connections to existing DSL for indoor access
- **RedTAP**
 - Wireless co-op model
 - Strong emphasis on community training and access centers
- **SeaKay**
 - Cisco, IBM, nonprofit
 - Had no business plan:
 - would finance from inkind and monetary donations

Selection and Implementation

- **The Google effect?**
 - Oral presentation decisive
 - Difference of only 4 points out of 400 after RFP evaluation between EarthLink/Google and MetroFi
 - Difference of 13 points (out of 500) after oral presentation
- **Bureaucratic procrastination**
 - Google claimed in Sept that there was no contract progress for 5 months
 - contract finally signed in Jan 07 (9 months after selection)
 - City Board of Supervisors must sign off BUT
 - Contract has 180 day clause
- **Selling the Deal?**
 - City wanted show-and-tell in each SF district
 - Digital Inclusion Task Force set up after winner selected

Contract Highlights

- **Network Undertaking:**
 - Earthlink will “design, construct, install, test, operate, maintain, upgrade at its sole cost”
 - Will do upgrades with other comparable cities, except not during last 18 months of contract unless contract renewed
- **Term:**
 - four year term with 3 renewals
 - Renewal conditions must be satisfactory to both sides
- **Network Access:**
 - network access: open access for wholesale to other SPs
 - There will be at least 3 service providers
- **Non-exclusivity:**
 - city may grant rights to other operators
 - City is not obligated to use network for municipal services

Contract cont'd...

- **Service Levels:**
 - **Basic: free 300 kbps or 15% of highest speed, whichever higher**
 - **Premium: 1 mbps symmetric min**
 - **Occasional use: 1 mbps**
 - **will introduce 3 mbps fixed service**
- **Digital Inclusion:**
 - **Digital inclusion product 1 mbps symmetric discounted to increase access**
 - **3200 digital inclusion products at \$12.95 per month**
 - **CPE provided to city at cost or \$100, whichever is lower: City or third party or customer responsible for cost**
- **User Privacy:**
 - **Opt-out model**
 - **Location data to be held no longer than 60 days**

Comparison with Other Bay Area Wireless Initiatives

Wireless Silicon Valley (SAMCAT):

Pop. ~2.4 million; area 1740 sq. miles

- **Provider: Silicon Valley MetroConnect (Cisco, IBM, Azulstar fronted by nonprofit: group that came third in SF)**
 - Only outside access required; may be free or “low cost”
 - Other services “desired”: enhanced outdoor, indoor, government, public service
 - These other services may be fee-based
- **EarthLink refused to bid:**
 - Cited requirement for free layer throughout area
 - QOS: cost of building high quality network
 - Need to update and upgrade network:
 - “We do not believe that user needs five years from now will be the same as they are today”

Other Bay Area Wireless Initiatives...

Cupertino:

- **Population 52,000; 50% Asian**
 - **Median income \$100k; home of Apple**
- **Provider: MetroFi**
 - **Non-exclusive installation and service contract**
 - **Business model: subscription-based; MetroFi as wholesaler**
 - **Coverage 75% of community**

Santa Clara:

- **Population 110,000; area 19.3 sq. miles**
- **Provider: MetroFi**
 - **Business model: subscription proposed; changed to free ad-supported**
 - **Half city covered; full coverage by end of year**

Mountain View:

- **Population 77,000; area 10 sq. miles**
- **Provider: Google (Aug 06)**
 - **Business model: free for customers– ad supported?**
 - **Customers buy own CPE for inside access**
 - **Google pays city for pole access**

Critical Issues from the SF Experience

- **Confusing the Means with the Ends:**
 - *Universal Internet access becomes universal wireless broadband access*
- **Community Access and Demand:**
 - Little known about reasons for low take-up among lower income, disadvantaged
- **Business Models and Sustainability:**
 - EarthLink to SAMCAT: no way
 - Free services, ad-based services, QOS
 - Changing consumer needs
 - Need for impact studies
 - Should city or private sector take the risk?

Critical Issues...

- **Threat to Incumbents?**
 - QOS inferior to incumbent networks?
 - Free level only 300 kbps
 - Capture of local government business
 - Not necessarily in SF, but in some other cities
 - Crowding out vs. stimulation of competition
- **Opportunity for CLECs, independent ISPs**
 - Failure of resale
 - Intermodal competition: elusive third pipe?
 - Testbed for new services and markets
 - Wholesaling allows entrance for smaller providers

Critical Issues...

- **A Stepping Stone to 3G?**
 - Will incumbents respond with mobile broadband?
 - Will availability of broadband on mobile devices wipe out significant part of public WiFi demand?
 - Will municipal wireless eventually help to salvage 3G?
 - Transition to 3G devices and services
 - Hybrid 3G/WiFi devices
- **Will municipal wireless networks become the freenets of this decade?**
 - Stimulating demand, but eventually dying or being absorbed by commercial services



Conclusions: Getting to Urban Universal Access to Broadband

- **Goal should be universal – i.e. available and affordable – access to broadband**
 - **Wireless is part, not all, of the solution**
- **Prioritize coverage:**
 1. **Public spaces, community centers, unserved areas**
 2. **Facilitate access for low income and disadvantaged**
 - Discounts or vouchers for any provider?
 - Training, computer access
 3. **Require that all commercial and residential buildings have broadband available**
- **Use city’s legal and persuasive powers to increase access:**
 - **Cable franchise to require “broadband lifeline”**
 - **Building permits to require all new buildings be wired for broadband, etc.**

Questions?

