



Evaluating Municipal Wireless

Strategy Institute
North American Municipal Wireless Summit
Vancouver • 24 June 2008

Four Layer Municipal Wireless Business Model

Layer 4 - Private Networking
“VLANs”

Layer 3 - City IT Infrastructure
“Anchor Tenant”

Layer 2 - Paid Public Access
“Wireless Internet Utility”

Layer 1 - Subsidized Public Access
“Drinking Fountain”

Four Layer Municipal Wireless Business Model

Layer 4 - Private Networking
“VLANs”

Partners needed first

Layer 3 - City IT Infrastructure
“Anchor Tenant”

Verifiable revenue

Layer 2 - Paid Public Access
“Wireless Internet Utility”

Special cases only

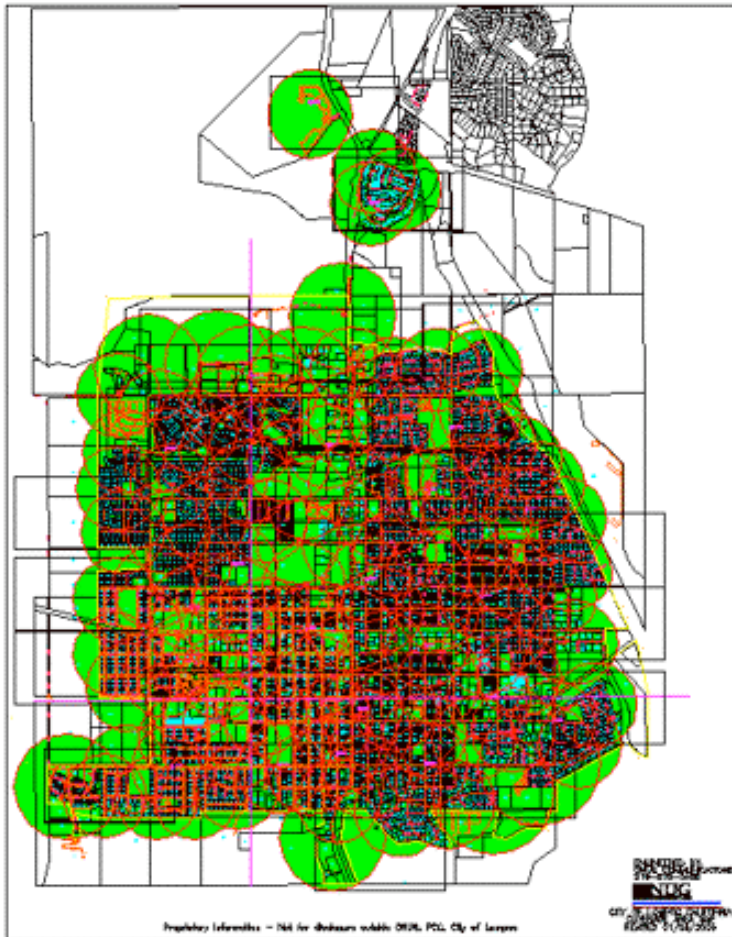
Layer 1 - Subsidized Public Access
“Drinking Fountain”

Provable benefit

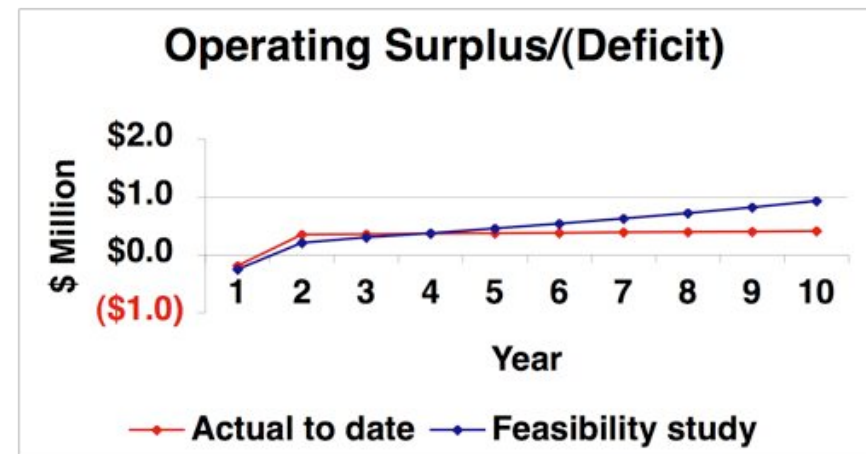


City of Lompoc: wireless Internet utility

Layer 2 - Paid Public Access “Wireless Internet Utility”



Capex more than \$300K/ sq. mi.
Opex ~ \$1 million/year



Operating results miss mark, but policy success achieved:

- Verizon upgrades plant
- Comcast builds HFC network



City of Folsom: economic development focus

Layer 4 - Private Networking “VLANs”



- Four scenarios
 - Standalone business
 - Local consortium
 - ISP partner
 - Membership
- Self supporting with user buy-in
- Partners create growth
 - Limited objectives
 - Specific sectors, such as health care
 - Open to new ventures

City of Folsom & Intel met limited, achievable objectives

Community Wireless Corp. in East Palo Alto

Layer I - Subsidized Public Access “Drinking Fountain”



“Cellular” AP

- Range of AP ~ 1000-1400 ft.
- 12 AP (1/5) for similar coverage
- Cell sites more complex, on roof of schools, churches, etc.

I Have a Dream
(job placement)



St Vincent de Paul
Food Closet



St Francis Assisi
Boys Club



Foundation for College Education

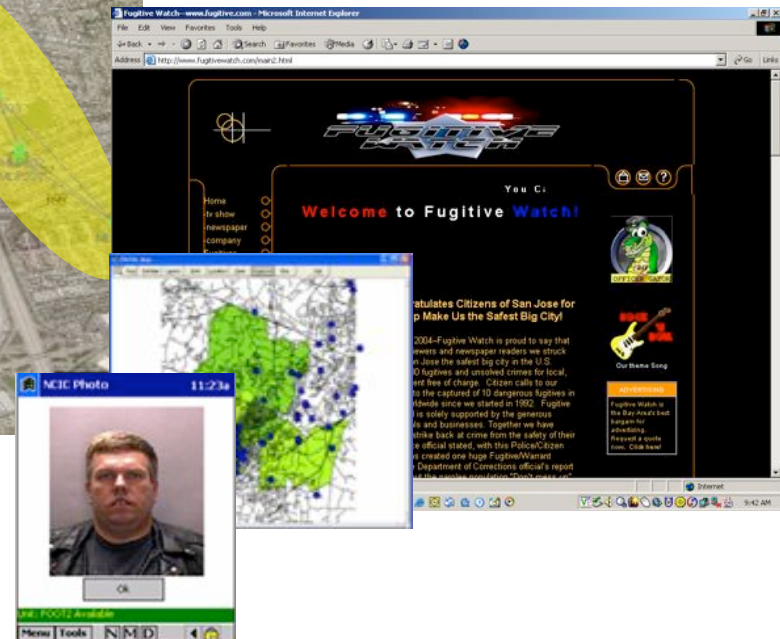


City of Milpitas: better public safety response

Layer 3 - City IT Infrastructure “Anchor Tenant”



- Cal Photo - DMV records, with high resolution photos
- Fugitive Watch
- Criminal Code
- 511 Silicon Valley Traffic info
- Hazmat info
- Weather forecasts



Emergency Response May - October 2004 vs 2006

- 3:52 3:33 3:43 3:37 3:28 4:03
- 2:33 3:03 3:19 3:01 3:23 2:41

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Source: City of Milpitas



Rules for wireless planning success

- ✓ Only use wireless when it offers a unique advantage
- ✓ Clearly define and limit objectives before beginning
- ✓ Avoid mission creep: build a network, don't save the world
- ✓ Learn the hard dollar value of a network and prepare to pay for it
- ✓ Respect the laws of physics and economics
- ✓ Understand the difference between IT and RF
- ✓ Ignore cheerleaders: always be skeptical

If this list looks familiar, it's because it is. There is nothing special or magical about wireless broadband.
Nothing.



Questions?

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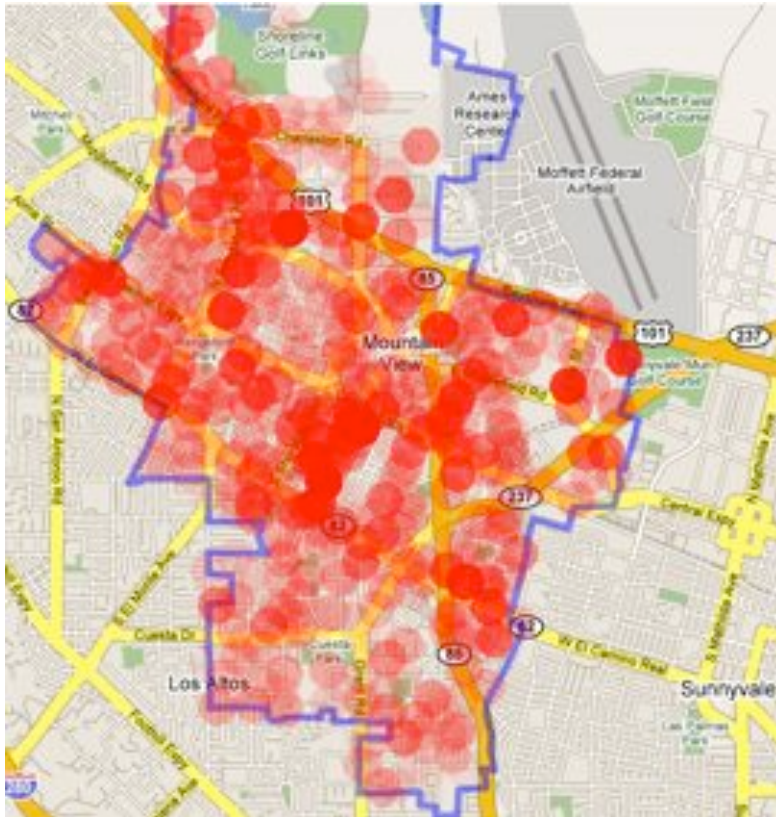
Back-up Slides



Google: free WiFi in Mountain View

Layer I - Subsidized Public Access “Drinking Fountain”

“Heat Map” at Noon



GoogleFi gives 360 addicts Xbox Live on the go

Posted Feb 20th 2007 11:38AM by Paul Miller
Filed under: Gaming, Transportation, Wireless



- Objectives
 - Understand emerging access technologies
 - Capabilities (push to extend capabilities)
 - Needs of Operators, ISPs, Users
 - Deploy network to accelerate natural evolution
 - Test bed for application development
 - Give back to communities



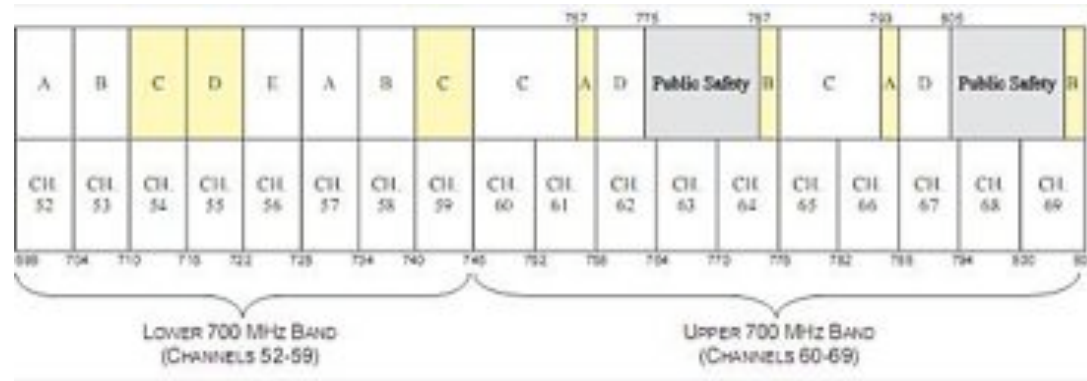
Oakland feasibility study



- Technical survey of city assets and environment
- City department workshops
 - Public safety, public works, other services
- Community organization workshops
 - Business, education, non-profits
- Public focus groups
 - 7 in council districts, 2 at large



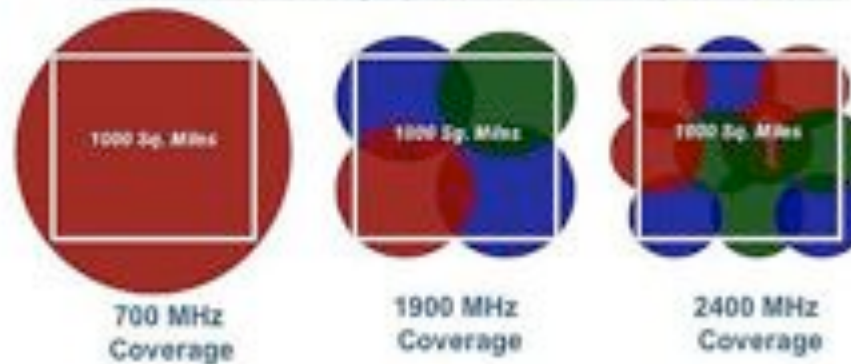
Assess The 700 MHz. Band for Network Applications



700 MHz Offers the Only Affordable Network Solution in Sparsely Populated Areas

	700 MHz Propagation	1900 MHz Propagation	2400 MHz Propagation
Total Network cost @ \$150/cell	\$150,000	\$600,000	\$1,500,000
Network Cost per Customer	\$180	\$725	\$1820
# Mos. to Network Cost Breakeven	9 Months	36 Months	91 Months

Cell Site Coverage per thousand square miles



Assess 4.9 GHz. And 2.4 GHz. For Public Safety Applications

- 4.9 GHz. Band (4940 – 4990 MHz.) established by FCC for Public Safety users.
- Point to Point and Point to Multi-point WiMax (802.16 2004) apps. Up to 54 mps data rates.
- Can be linked with 2.4 GHz. Radio for 802.11 (Wi-Fi) LAN apps. (dual band radios available)
- Licensed band on a shared use basis. Interference potential is reduced.
- Manufacturers have equipment available now.



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Stephen Blum is president of Tellus Venture Associates®, a business development and market analysis consultancy for the digital media and telecommunications industries. He is a 30-year industry veteran and recognized as an expert in developing new wireless and fiber optic broadband systems, and satellite broadcasting platforms and services. His accomplishments include playing key roles in the development and launch of:

- DirecTv and other DBS systems worldwide
- The first satellite radio broadcasting systems
- North America's first municipal WiMax system
- One of the first municipal WiFi systems
- Fiber optic systems for private communities

He is the author of seven books on the Internet and satellite broadcasting and is a frequent contributor to professional journals and industry events.

Located on California's Monterey Peninsula, Tellus Venture Associates serves municipalities, private communities, start-up companies and large corporations in North and South America, Europe, Africa, Asia and the Pacific Rim.

Blum is Vice President *ex officio* of the Society of Satellite Professionals International, a member of the New Zealand Wireless and Broadband Forum, a member of the Rotary Club of Monterey Pacific and a past Vice President of the World Affairs Council of the Monterey Bay Area. He serves on several new venture advisory boards in the Silicon Valley and Monterey Bay Area. He holds an A.B. in History from the University of California, Berkeley, an M.A. in East Asia Studies from the University of Washington, and an M.B.A. from the University of St. Thomas, and has received several major professional honors, including the PRSA Silver Anvil and the Ellen B. Scripps Fellowship. He is a nationally ranked triathlete and a multiple Ironman finisher.

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