

Is Publicly Owned Information Infrastructure A Wise Public Investment for San Francisco?

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San Francisco has launched an initiative to provide wireless access everywhere in the city. A number of Supervisors and residents have raised the possibility of the City following in the footsteps of over 200 other U.S. cities that already own information networks.¹ To date, the City has not addressed that question, or at least no such study has been forthcoming.

Media Alliance invited the Institute for Local Self-Reliance to investigate the economics of a publicly owned information infrastructure. This report contains a preliminary financial analysis. Without complete information from the City, the numbers are not precise. But we think this analysis could serve as the basis for an informed discussion. We urge the City to undertake its own more detailed examination and make it public.

Based on conservative assumptions, a publicly owned wireless network can repay its original investment within five years and generate an average net income of over \$2 million per year for ten years. Projected revenues from this initiative could be used to fund digital inclusion programs throughout the City: free or discounted hardware, technical training and support, as well as resources for developing locally relevant content. The City has acknowledged that these are important elements of its wireless initiative, but has not yet clarified how they will be funded.

BACKGROUND

►September 2004. The San Francisco Board of Supervisors approves a resolution, sponsored by Supervisor Tom Ammiano, urging the City to “Investigate the Costs, Benefits, and Technical Issues Associated with Installing City-owned Broadband Facilities in Conjunction with the City’s Planned Rebuild of its Sewer System.” The Board allocated \$300,000 to carry out this feasibility study.

►January 2005. Mayor Gavin Newsom offers his vision of a free Wi-Fi system in his State of the City address: “We will not stop until every San Franciscan has access to free wireless Internet service.”

►August 2005. The City issues a Request for Information and Comments (RFI/C) on “deployment of a community-wide wireless broadband network.” Its first stated goal was to “ensure universal, affordable wireless broadband access for all San Fran-

PUBLICLY OWNED WIRELESS WOULD:

- Payback its original investment in 4.2 years - almost 25 percent annual return on investment
- Generate at least \$6.1 million in surplus revenues over the first 5 years
- Generate at least \$16.8 million more in surplus revenue over the following 5 years (after the \$10 million debt is retired)

Total benefits over 10 years = \$22.9 million

ciscans, especially low-income and disadvantaged residents.” The RFI/C excludes any technology other than wireless.

►December 16, 2005. The Local Agency Formation Commission (LAFCO) requests a study on the feasibility of a municipally owned network.

►December 22, 2005. The City issues a formal Request for Proposal (RFP) for a network that “shall be designed, deployed, operated, maintained and upgraded at no cost to the City. The Network may be municipally owned, privately owned or a hybrid.” The RFP process ruled out any financial role for the City, even if such network would generate net income in the future. There is no indication that in the RFP selection process, City-owned networks were given any priority.

►Early April 2006. After a six-week review of proposals, San Francisco announces the selection of the joint proposal from EarthLink and Google.

To this date, neither of the studies requested by the Board in September 2004 and by LAFCO in December 2005 has been carried out.

The City of San Francisco is currently negotiating with EarthLink for a citywide wireless network. Under the proposal, EarthLink and Google will jointly finance the capital expenditure for the network. EarthLink will own the network, and will be responsible for the ongoing costs of operations, maintenance and upgrades.

Google will purchase wholesale network capacity from EarthLink, and use this capacity to provide free 300 kbps service (six times faster than dial-up, one-fifth the speed of standard DSL), with advertising, throughout the network.

EarthLink will sell higher speed Internet connections (around 1 Mbps download, similar to home DSL) for around \$20 per month. The company will also sell wholesale access to competitive service providers other than Google.

PUBLICLY OWNED WIRELESS

The Institute for Local Self-Reliance has created a financial model for a publicly owned wireless network. This system is very similar to the current proposal, except that the City would finance and own the network infrastructure.²

The City would contract with a private entity, a non-profit, to operate the network. The non-profit would not provide services directly to customers, except to public sector entities. Instead, it would sell wholesale network access to private sector service providers, who in turn compete to sell services to residents and businesses.

This model has been adopted by Corpus Christi, a large city in southern Texas. It is similar to the one proposed by SF Metro Connect/SeaKay, one of three finalists for San Francisco contract. It is also similar to the models recommended by the Wireless Philadelphia Executive Committee and, most recently, the Boston Wireless Task Force.

Our model assumes that Google plays a similar role (except for financing) as in the current proposal; that is, purchasing wholesale network capacity to provide free, advertising supported Internet access. Google would do business through the non-profit that manages the network, and serve as a substantial anchor tenant. The different relationship, however – Google as a wholesale customer of a publicly owned network rather than a privately owned network – would give the public greater voice in matters of privacy and security.

THE ANALYSIS

Our model anticipates a \$10 million initial capital investment, repaid over five years from operating revenues.³ Upgrade requirements, budgeted at \$9 million over 10 years, would be financed with operating revenues. Operating expenditures include all costs associated with providing services to public entities, and selling wholesale access to service providers.

Revenues include wholesale access fees of \$9 for 1 Mbps symmetrical connections, \$4 per account per month for 300 kbps symmetrical connections (ad-supported, free to user service), and \$120 for business T-1 replacement.

As part of the current proposal, Google is offering free low speed Internet access citywide. Our model estimates that 10 percent of San Francisco residents will use the free service, while 10 percent of households will pay to subscribe to the 1 Mbps service.

Why do we assume that this free Internet access is actually accepted by a relatively small percentage of the city? Indoor coverage from the wireless network will be available only on the exterior rooms of a structure and only on the first or second floors. To get the signal into the interior of the building or to higher floors, customers will have to buy and install a “bridging” device. We assume that when faced with having to invest in such a device, customers will also invest in a higher speed service. We also expect many residents will prefer the higher speed and additional security offered with paid subscriptions even if they can easily connect to the free lower speed wireless network.

Financial Benefits

Our model indicates that with 10 percent of households and businesses as paid subscribers, a publicly owned wireless network will:

- ▶ Have a payback period of 4.2 years, or an annual return on investment of almost 25 percent.
- ▶ Generate at least \$6.1 million in surplus revenue over the first five years.
- ▶ Generate at least \$16.8 million more in surplus revenue over the following five years (after the debt is retired).

WHY OUR ESTIMATES ARE CONSERVATIVE

- ▶ We assume a low monthly wholesale rate of just \$9 per subscriber. This is also the rate projected by the Boston Wireless Task Force. At this rate, retail service will be available for less than \$20 per month, and perhaps as little as \$15 per month.
- ▶ We assume a low subscription rate of 10 percent. Other cities have seen rates of 25 percent or higher (e.g. Chaska, Moorhead). With retail rates under \$20 per month for connections that can be used anywhere in the city, it is likely that one-fifth to one-quarter of households would subscribe.
- ▶ We do not include any revenue from the City or other public entities. While it is very likely that the network will be useful for improving the effectiveness and efficiency of municipal services, we wish to show the financial feasibility of the network without any ongoing public sector support. May private network owners expect millions in annual spending by the city as an anchor tenant. For example, Portland, Oregon expects to pay \$16 million over five years for services over a privately owned network, \$6 million more than MetroFi plans to spend to build the network.

10 percent subscription rate (free connections and paid residential and business connections)

Surplus revenue years 1 through 5	\$6,132,417
Payback period	4.2 years
Surplus revenue years 1 through 10	\$22,936,765

25 percent subscription rate paid residential connections, 10 percent subscription rate free and business connections

Surplus revenue years 1 through 5	\$18,589,917
Payback period	3.1 years
Surplus revenue years 1 through 10	\$53,214,265

- ▶ Value-added services such as Internet telephony, meter reading for utilities, and wireless parking meters are not included. Including these items would increase network revenues.
- ▶ Savings to customers who purchase broadband from existing cable or phone companies are not included, even though competition will certainly drive these prices down, as has occurred in other cities that have established publicly owned information networks.

A SECOND PUBLICLY OWNED ALTERNATIVE

The City is focused on wireless, but wireless is just one way of connecting users to the local, national, and international network of fiber optic cables. The City already owns a significant amount of fiber. Rather than focus exclusively on wireless, the City might want to embrace a more enduring and holistic strategy that deploys wireless strategically while expanding the City’s current fiber infrastructure in stages to every neighborhood, every street, and then every building in the city.

While the fiber network is being expanded, wireless can be deployed strategically, using the fiber network as backhaul.⁴ This model was suggested in David Hollub and Tim Pozar’s response to the City’s RFI/C.⁵ As with the first alternative, the City and County of San Francisco would own the infrastructure, in the same manner as they currently own the road networks and the sewer and water pipe network.

This alternative offers three significant advantages over the wireless-only model. First, it represents a more comprehensive and enduring move toward truly high-capacity connections to every home and business in San Francisco – one Gigabit connections, consistent with the goal of the Corporation for Education Network Initiatives in California (CENIC).⁶

Second, with an extensive fiber backbone in place, it would be relatively easy to deploy wireless strategically in order to expand access to the Internet in under served areas (as was done with the Alice Griffith housing project), or as an amenity for workers and visitors.⁷ Depending on the model most appropriate to the location, targeted wireless projects could be deployed by community members, non-profit organizations, or for-profit companies. The city would not

be tied to a particular wireless technology. Unlicensed or licensed spectrum, 802.11 or 802.16 could be used as is appropriate to the deployment.

Third, although substantially increasing capital requirements, this alternative also would substantially lower the city’s ongoing operation and upgrade expenditures. The City would not be responsible for building or maintaining wireless over 100 percent of the city, but rather the fiber optic infrastructure and whatever strategic wireless deployments it chooses to undertake.

Fiber is more reliable than wireless. It requires less day-to-day maintenance (i.e. fewer truck rolls and labor hours). It is also longer-lived, with an accounting life of 20 years for fiber rather than five years for wireless.

This is the preferable model for a publicly owned broadband network in San Francisco. Unfortunately, the City has not provided enough information for a financial analysis of this model.

CONCLUDING COMMENTS

The City of San Francisco maintains that public ownership was not considered because the city cannot afford it. Yet an \$8 million investment in citywide wireless is just one half of one percent of the Mayor’s proposed five-year \$2 billion capital investment budget and 4 percent of the \$87 million needed to maintain and operate the city’s existing infrastructure. Moreover, although the vast majority of both the capital and maintenance budgets are spent on non-revenue generating projects (e.g. road repair). A citywide wireless system would be an investment that generates substantial income for the city.

Even if in narrow financial terms the City’s investment simply breaks even, public ownership of one of the City’s information networks could be justified on the basis of the intangible but very real benefits created: the benefits of greater competition, funding for digital inclusion, improved access to locally owned information service providers, and real citizen influence on the direction of future information technology.

We invite and welcome the City’s own analysis of the costs and benefits of public ownership of the information network for all San Franciscans.

<i>Assumptions</i>	
Total capital cost ⁸	\$10,000,000
Interest rate	6.25%
Repayment period	5 years
Annual debt service	\$2,390,132
Operating expenses in the first full year of operation ⁹	\$4,838,670
Network upgrades over ten years	\$9,000,000
Total potential subscribers, paid connections	360,000
Total potential subscribers, free (ad-supported) connections	800,000
Monthly wholesale fee, basic paid connections	\$9
Monthly wholesale fee, free (ad-supported) connections	\$4
Monthly wholesale fee, business connections	\$120

The **Institute for Local Self-Reliance** is a nonprofit research and educational organization that provides technical assistance and information on humanly-scaled, sustainable economic systems. Since 1974, ILSR has worked with citizen groups, governments and private businesses in developing policies that extract the maximum value from local resources.

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¹ John M. Eger and Arthur M. Becker, "Telecommunications and Municipal Utilities: Cooperation and Competition in the New Economy," American Public Power Association, September 2000. See also Free Press' Community Broadband map at www.freepress.org. This figure includes fiber to the premises, hybrid fiber-coax, and wireless systems. For example: Loma Linda, CA; Groton, CT; Saint Cloud, FL; Pelham, GA; Cedar Falls, IA; Muscatine, IA; Barbourville, KY; Glasgow, KY; Owensboro, KY; Norwood, MA; Coldwater, MI; Chaska, MN; Moorhead, MN; Windom, MN; Carthage, MO; Kutztown, PA; Columbia, TN; Provo, UT; Spanish Fork, UT; Bristol, VA; Manassas, VA; Chelan County, WA; Grant County, WA; Tacoma, WA.

² The City could, if both parties were amenable, use EarthLink as the general contractor for network construction. Thus EarthLink's planning efforts over the last two months would not go to waste. EarthLink has demonstrated its willingness to partner with a publicly owned network in Corpus Christi, Texas.

³ According to news releases from EarthLink and the City, the proposed private network will cost \$15 million over 10 years. That includes \$6 to \$8 million in initial capital, plus \$7 to \$9 million additionally for maintenance and upgrades over 10 years. In this

analysis, we include in the total initial capital requirement funds to cover operating expenses until the network becomes cash flow positive.

⁴ The proposal from EarthLink uses Motorola Canopy, a WiMAX-like wireless technology, to aggregate signals from Wi-Fi nodes and relay these signals to fiber at several dozen gateways throughout the city.

⁵ See Comments to the County and City of San Francisco's Request For Information and Comment, Tim Pozar and David Hollub, September 30, 2005.

⁶ See CENIC One Gigabit or Bust Initiative

⁷ Wireless hot spots, in which an access point is connected directly to a fiber optic or other wired connection, are easier to deploy and manage than wireless mesh networks, in which access points act as wireless signal repeaters. Both network architectures are easier to manage in targeted deployments than citywide.

⁸ This figure includes \$8 million for the initial build out, plus \$2 million to cover operating revenue and debt service until the network has positive cash flow from subscriber revenue.

⁹ This figure includes network operations and maintenance, pole attachment and electricity fees, funds to promote resident awareness and use of the network, and Internet bandwidth.

