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COVER STORY

Local Wireless Networks - A Prerequisite for the Future

by Dianah Neff

For centuries, local governments have been the early adopters of new technology, and it was by investing in these new technologies that they became the great creative engines of commerce, culture, and society. It was railroads in the 19th century and roadways in the 20th century. For the 21st century, it will surely be the Internet and the electronic connectivity that the Internet delivers.

In only the past decade, these new technologies have changed our daily lives from how we communicate, to how and where we work, to how business is done, to how we deliver local services, to how we are educated, and to how we play. We are truly in the beginning of a new age. Just as in past centuries, the communities that will prosper in this new age will be those that embrace and invest in new technologies.

Many businesses and organizations have begun to exploit wireless technology. Already there are wireless hotspots providing Internet access at hotels, coffee houses, bookstores, and public places. At the commercially provided hotspots, users must have an account or pay a daily user fee. Several other hotspots provide free access, including ones provided by localities or business districts.

While wireless access continues to grow, today's patchwork of individual hotspots does not provide uniform coverage across a community. This lack of comprehensive and universal wireless access greatly limits the benefits of this new technology. It is here that a local government can play the traditional role of government in providing the framework and initial investment, if needed, to fully exploit this opportunity.

Communities can capitalize on this potential opportunity by carefully considering the state of technology within their borders, deciding whether and how to intervene and, if justified, leading an effort to create an infrastructure that will provide high-speed, broadband connectivity to all points within the city/county.

Many local governments have begun to deploy wireless networks. Although localities vary dramatically in many respects, the primary drivers for local wireless networks are uniform. Typical project objectives are often based on these three concepts:

- **Economic development.** Communities of all kinds perceive broadband service to be critical to their economic vitality. Sonny Perdue, the governor of Georgia, calls broadband the "new dial tone" and sees it as an economic necessity. Greater connectivity is expected to encourage businesses to relocate; provide a sound telecommunications environment for existing businesses; help local businesses (especially small enterprises) compete regionally, nationally, and globally; and provide a foundation for the young "creative class" to stay after graduation and start up their businesses.
- **Social improvement.** The leading driver underlying social improvement is digital inclusion-the principle of ensuring that residents of all socioeconomic backgrounds can compete in the digital economy, use online information resources for job searches and continuing education, participate in electronic democracy, and partake of integrated health care education and monitoring initiatives.
- **Government efficiency.** Governments are large telecommunications users and benefit from lower-cost telecommunications services, including certain mobile services and wireless T-1 alternatives. Philadelphia estimates that it can save $1 million annually on these two types of reduced service costs. Corpus Christi justified its wireless network ROI on replacement of their manual water meter reading system.

Local wireless projects usually blend two primary uses:

Government use. Because of funding restrictions or security concerns, some localities may deploy wireless networks

for government use only. Most local governments agree to, or at least promise to consider, anchor tenancy in order to entice service providers to deploy networks in their cities or counties. They may extend the use of the network to schools, libraries, or other locally owned agencies with common assets. Water utility meters and parking meters are typical examples of the latter. Some local wireless networks have been deployed for public safety use only, as in Oklahoma City.

Residential and business use. Most local wireless projects being planned today target services to local governments as well as to residents, visitors, and small businesses. Combining local, business, and residential service creates a larger customer base, which makes it advantageous for service providers to come to a community to build and run the networks at no cost to the community.

FOUNDATIONS FOR LOCAL WIRELESS NETWORKS

Local wireless projects tend to start with elected leaders considering and approving an initiative to investigate such a network. Before issuing a request for proposal (RFP) to deploy a network, officials wishing to launch a wireless network often commission a feasibility study or business plan to assess if they should intervene and the likelihood of deploying a sustainable network. A typical feasibility study or business plan includes:

- Statement of goals, objectives, and policies for the network.
- Analysis of the city's expectations for the network, including focus group feedback from key stakeholder groups.
- Overview of current and future broadband technologies.
- Assessment of existing broadband offerings (for example, 3G cellular, DSL, cable Internet).
- Estimates of subscriber demand for residential, business, and government users of the proposed network.
- Inventory of assets suitable for use in a local wireless network.
- Service requirements and reference architecture assumptions.
- Demographic analysis of the community's population.
- Topographic and morphological (land use) analysis of the community's geography.
- Business model assumptions and analysis.
- Regulatory enablers and constraints analysis.

The feasibility study, once approved by the locality, provides the basis for an RFP to be issued to potential vendors and operators. The RFP will make use of the study data to provide information to prospective bidders. Here are examples of what a prospective operator might look for in the data.

- **An understanding of the applications that will be used over the network.** If, for example, there is demand for applications such as wireless VoIP or camera surveillance, a network will require more capacity injection and fewer mesh hops, a type of Wi-Fi radio access device that is self routing and self healing, versus a basic Wi-Fi radio. Most systems being built today use mesh Wi-Fi radios because of their better performance.
- **A description of the municipality's intention to use the network,** including any potential commitments as an anchor tenant on the network. While such commitments may come with strict performance measures, they can substantially reduce risk for the potential operator.
- **A comprehensive inventory of local government assets.** Assets that can be used by the network include access to communications towers, building rooftops, streetlights, utility poles, water towers, and optical fiber infrastructure. If a private utility company owns the poles, exploratory discussions on projected costs and constraints regarding pole use are critical, at a minimum.
- **A study of terrain, topology, architecture, foliage, and other characteristics.** Hills, tall buildings, trees, and weather conditions in a region will affect connectivity. Anaheim, California, for example, has relatively few skyscrapers and hills, while San Francisco poses a far more significant challenge to network planners.

WIRELESS BUSINESS MODELS AND PRIVATE SECTOR PARTNERSHIP OPPORTUNITIES

Once local officials conduct a feasibility study and specify the primary objectives for their local network, it becomes necessary to select a business model that complements these objectives and ensures the network will become sustainable. Every wireless network relies on a relationship with companies in the private sector, if only to purchase hardware for the network.

Managing the network's infrastructure, performing network maintenance, creating e-government applications, marketing the network, managing billing, and providing customer support, however, are tasks difficult for some communities to perform without some external assistance. Therefore, most enter into an ongoing public/private partnership to support their networks, if not to build them as well.

Several key terms must be agreed upon in order to form a public/private partnership that serves mutual interests. Variables to be negotiated may

Look to ICMA
ICMA's New Hot Spot
Communities around the world are researching, analyzing, and, in many cases, implementing wireless services to meet local government needs, to facilitate economic development, and to bridge the digital divide. Recognizing this important trend and the strong interest demonstrated by local government managers, ICMA is embarking on a new local wireless initiative that will feature articles in PM magazine, case studies and executive briefs, partnerships with private sector providers, and special programming at

include:

- Ownership of the network.
- Funding for the network.
- A revenue-sharing agreement between the local government and the provider.
- An agreement for the local government to act as an anchor tenant for the network.
- An agreement to offer a discounted rate for municipal use of the network.
- An agreement to sell wholesale access to other Internet service providers in order to foster a competitive marketplace.
- An agreement under which the local government grants access to certain of its assets, including utility poles and rooftops.
- An agreement to offer subsidized rates for low-income subscribers.
- The length of the agreement.

ICMA's 2007 Annual Conference in Pittsburgh, Pennsylvania, October 7-10.

For more information on ICMA's local wireless initiative, contact Tad McGalliard at 202/962-3563; e-mail, tmcgalliard@icma.org.

An agreement that balances the needs of both parties is necessary for positive long-term partnership and for the network to thrive.

To optimize negotiations, the city or county must be attentive to stakeholder needs. How successful will the network become if it does not meet the needs of the community? Stakeholders include government officials and agencies; residents; large, medium, and small-sized businesses; K-12 schools; colleges and universities; tourists; business travelers; foundations and nonprofits; utilities; and hospitals and health care agencies. Town hall meetings, surveys, focus groups, and other tactics will help network planners identify the most relevant stakeholder issues.

Because each local government is subject to different constraints and local officials require a network that is uniquely tailored to the needs of the community, no formula can automatically determine the correct business model or contract terms for a given locality. Figure 1, however, provides a summary of five business models that could potentially support a local wireless network. Variations on these business models are virtually guaranteed because the local wireless landscape is still in an embryonic stage.

FIVE LOCAL WIRELESS BUSINESS MODELS

Figure 1. Types of Local Wireless Business Models

Business model	Example
Private consortium	Philadelphia, Pennsylvania
Cooperative wholesale	St. Cloud, Florida
Public utility	Toronto, Ontario, Canada
Nonprofit	Boston, Massachusetts
Grassroots public community	San Francisco, California (FON) New York, New York (NYCwireless)

Private consortium. A private telecommunications company (or companies) funds the design, deployment, and operation of a communitywide wireless network and charges fees to subscribers for its use. The private company would typically own the network. In exchange, the city or county may provide access to light poles and other community assets (potentially for a fee) and may agree to act as an anchor tenant. The community may also negotiate with the private company to regulate rates for economically disadvantaged subscribers and require the private company to resell wholesale access to the network to foster competition among service providers.

In this model, the private telecommunications company would bear most of the risk associated with building and operating the network. A guarantee from the city or county to act as an anchor tenant, however, would significantly reduce this risk and, at the same time, provide an opportunity for the community to lower its internal telecommunications expenses and empower its mobile workforce.

Cooperative wholesale. A local government funds the design, deployment, and operation of a communitywide wireless network, but it outsources these tasks to a private company (or companies). The locality may use the network to provide its own telecommunications needs, such as access to the Internet and mobile phone service, which are leased from private sector companies. The locality also has the option of leasing access to the network on a wholesale basis to retail wireless Internet service providers (WISPs). WISPs can, in turn, resell Internet access to the general public and return a fee to the local government.

This model enables the locality to outsource the logistics of managing the network and ensure a competitive marketplace while it still benefits from the financial gains of a competitive network. In this scenario, the locality bears most of the risk and must raise the capital to build, maintain, and upgrade the network. This model is used most frequently when a community lacks the demographics and high profile necessary to entice the private sector to invest the capital to build the network.

Public utility. A public utility company, whether city owned, privately owned, or cooperatively owned, funds the design, deployment, and management of the wireless network and charges fees to subscribers for its use. The utility may outsource the design and deployment of the network but leverage its existing resources for subscriber acquisition, customer care, technical support, marketing, and billing.

Cities and towns that own their own utilities may find this business model a logical path. The utility then bears the financial risk and complexities inherent in managing a wireless network. Some municipal wireless utilities have entered into a partnership with a private sector company to manage the network because of the complexities.

Nonprofit. A nonprofit organization is created to own the wireless network and has the responsibility to fund the network. Funds can be raised through foundation grants; private donations; and, in some cases, loans from a city, county, or financial institution. The nonprofit outsources the design, deployment, and management of the network to private companies. It then charges fees to subscribers or may contract with retail WISPs to provide Internet access to subscribers.

The nonprofit may have a social charter to reduce the digital divide and may engage in related activities such as the coordination of training resources or programs to provide inexpensive or no-cost personal computers to those in need.

Grassroots public community. A coalition of volunteers from the community funds the design, deployment, and operation of a wireless network. It is likely that such a network would provide free access and that the network's buildout may be organic and opportunistic rather than organized and ubiquitous.

The risk to the local government associated with this business model is low, and it has little at stake in it, either financially or politically. This type of initiative may increase the number and create greater awareness of free Wi-Fi hot spots within a community. Without means to generate revenue from the network, however, it is unlikely the grassroots model will provide uniform coverage across the entire community.

WHERE LOCAL NETWORKS HAVE BEEN AND WHERE THEY ARE GOING

The local wireless movement first gained traction in 2002 with those impressed by the power of low-cost, Wi-Fi technology, and the appeal remains the same today:

- Wi-Fi can be set up by just about anyone on a small scale.
- Wi-Fi requires no licensing, unlike most commercial wireless technologies.
- Wi-Fi equipment, at home and at the hot-spot level, is very low cost.
- Wi-Fi client radios are built into new computers or are an inexpensive and simple add-on for existing systems.

Today, the local wireless industry has moved beyond initial grassroots efforts. There is a sense in many projects that Wi-Fi provides a chance for local governments and public interest groups to assert a measure of independence from incumbent operators. Local wireless network projects give localities the chance to specify network policies-such as open access and network neutrality-that have previously been at the sole discretion of national government or left up to the operators themselves. The vision and leadership expressed by early proponents of local wireless networks, like the city of Philadelphia in 2004, have inspired more communities and local groups to claim some control over broadband policy.

Today, more than 140 cities and counties in the United States (compared with 12 municipalities in 2004) are pursuing wireless networks while another 200 are studying the issues or are in the feasibility phase. These entities include some of the largest in the country, such as Chicago, Houston, and Philadelphia, along with many medium- and small-sized cities. The majority of these networks are still under construction.

The year 2007 will be an inflection point, with local governments on target to deploy wireless networks within the next 12 months. Thereafter, the industry is poised to continue its explosive growth. Recent announcements regarding new local wireless projects reflect a trend toward regional projects that encompass more than a single local government.

The proposed networks in Silicon Valley, California; Pierce County, Washington; Suffolk and Nassau Counties on Long Island, New York; and Colorado wireless communities are among the latest examples. It is believed that regional projects such as these will entice traditional telecom providers into this space, which in turn will fuel the industry's expansion.

Local governments will continue to base their decisions to engage in local wireless networks on their goals for economic development, social improvements, and government efficiency.

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COVER STORY

Metro Wi-Fi Networks: What are They and How Can They Benefit Your Community?

by Bert Williams

Walk into virtually any Starbucks and, in addition to lattes and espressos, you'll see people working on laptop computers. A computer networking technology known as Wi-Fi enables users to access the Internet as well as send and receive e-mail globally at more than 100,000 locations called "hot spots." With Wi-Fi, people are no longer shackled to their home or office Internet connections. Internet access is available in many locations throughout their communities.

But hot spots are the Internet equivalent of pay phones-you have to travel to a location where service is available. In the past few years, an emerging technology known by a variety of names, including "metro-scale Wi-Fi," "municipal Wi-Fi," and "mesh networking," has taken the hot-spot concept to the next level, providing community-wide Wi-Fi access and doing for high-speed Internet access what cellular telephones did for voice services. A metro-scale Wi-Fi network can connect all sorts of Wi-Fi devices, including laptops, personal digital assistants (PDAs), and Voice over Internet Protocol (VoIP) phones.

HOW DOES METRO WI-FI WORK?

Mesh technology makes practical the distribution of Wi-Fi throughout a community by eliminating a significant logistical and economic hurdle—the need to connect each Wi-Fi access point to a wired network. Instead of using conventional access points, Wi-Fi mesh networks provide user connections with mesh routers.

Approximately 10 percent to 20 percent of these routers connect to the Internet via a wire. The rest are completely wireless. Information is transmitted from Wi-Fi router to Wi-Fi router, hopping across the wireless network until it reaches a wired connection to the Internet. Each Wi-Fi router in the mesh network is the size of a breadbox and is attached to a lamppost, telephone pole, or other fixture with a power source. Because there are no large towers, no zoning ordinances or variance approvals are required. No specialized skills are needed; installation averages 15 minutes per pole. The equipment is designed and built for environmental extremes.

If the network expands or is altered, there is no need to return to adjust the routers already in place. Expeditious and straightforward construction (combined with the lack of wireline connection to each router) delivers enormous cost savings and short deployment time frames. Tropos Networks has provided the wireless routers used in more than 500 metro-scale Wi-Fi networks around the world, including networks in Philadelphia, Anaheim, Corpus Christi, Oklahoma City, Pittsburgh, Houston, and a number of smaller cities.

METRO WI-FI APPLICATIONS

Local governments and service providers are deploying these networks for a wide variety of applications, including public safety, public access, and economic redevelopment:

- Locally owned and operated networks in Chaska and Moorhead, Minnesota, among others, offer residents broadband (more than one megabit per second [Mbps]) Internet access at dial-up prices ($17 to $20 per month). In a typical city of 10 to 15 square miles with this service, we see that about 20 to 25 percent of households use the service (similar to rates of use of digital subscriber line [DSL] service over telephone lines plus cable broadband penetration), 1,550 are steady daily users, and an average of 2,640 use the service each week. These users generally download, in aggregate, more than 100 gigabytes (one gigabyte equals

An innovative MetroMesh™ router attaches easily to phone poles, traffic lights, and other local government assets.

one billion bytes) per day (that's the equivalent of 1 million typical Web pages, or 25,000 typical MP3 [digital audio] files per day).

- New Orleans, Louisiana, installed a public safety video surveillance network using a metro-scale Wi-Fi mesh network. The innovative combination of Internet-based high-end camera technology, Wi-Fi mesh, motion detection, and other elements reduced the murder rate by 57 percent in six months and auto theft by 25 percent in the covered areas. After Hurricane Katrina, this network was converted to a public access network and remained, for nearly a year, the only source of broadband Internet access in parts of the city.
- First responders in Milpitas, California, shave precious seconds off of response times using a metro-scale Wi-Fi network coupled with an automated vehicle location system.
- In Corpus Christi, Texas, a metro-scale Wi-Fi network is automating utility meter reading to cut costs and improve service. Using the system, the city is now reading 73 water meters per second compared with minutes per meter with the old manual process. This network is also used by municipal field workers, including public safety officers and building inspectors.
- In St. Cloud, Florida, a metro-scale Wi-Fi network, built with public economic development funds, provides low-cost broadband access and thus cuts costs for downtown businesses. This leaves the businesses with more money to invest in the local community, creating more jobs and more growth.
- In Philadelphia, Pennsylvania, more than 30 citizens per day log-on and use the network installed around Love Park in the city's downtown. Many of these users are from low- income families in Philadelphia, and they use the network to do homework and other research. This is only one small example of how metro-scale Wi-Fi networks foster digital inclusion.

METRO WI-FI BUSINESS MODELS

A number of different ownership and operational models, shown in Figure 1, have emerged from early metro-scale Wi-Fi deployments. These ownership models are being used today by localities and across multiple carrier segments to promote broad adoption of metro-scale Wi-Fi for many different users and applications.

Even if the metro-scale Wi-Fi network is privately owned, local government cooperation is usually required to enable the service. This is no different from other forms of broadband: DSL is delivered over wiring installed using rights-of-way often acquired by eminent domain. Cable modem services run over systems installed under local government franchise. Even when built by private service providers, wireless services often require similar city cooperation so that devices can be mounted on city assets such as streetlights.

No matter what the ownership model, most metro-scale Wi-Fi networks are mixed-use networks that provide services simultaneously to multiple sectors (business, government, and consumer). Further analysis shows that these networks leverage up to five "revenue engines" as part of a successful business operation.

Two access revenue engines have shown that they can deliver a breakeven on investment within three to four years. Three other revenue engines enable service providers to increase average revenue per user (ARPU) and shorten the break-even period by enabling new services and applications.

ACCESS AND REVENUE ENGINES

Consumer and small-medium business (SMB) access. Market analysts estimate that by 2008 there will be more than 500 million Wi-Fi- enabled devices worldwide. Both fixed and mobile users are currently taking advantage of metro Wi-Fi availability. At the start of the metro-scale Wi-Fi deployments in the cities of Chaska and Moorhead, Minnesota, 20 to 25 percent of potential customers signed on within 90 days of service introduction.

In addition, more than 70 percent of subscribers in Chaska and Moorhead reported being extremely satisfied with the speed and the reliability of their service, and 69 percent of subscribers recommended the service to others.

Fee-based consumer and SMB metro-scale Wi-Fi access networks are in place today at Moorhead and Chaska, Minnesota. EarthLink, which will own and operate the networks in Philadelphia, Anaheim, New Orleans, and other

Look to ICMA

These IQ Reports can be useful in considering wireless networks:

Broadband Access: Local Government Roles. This report focuses on how local governments can acquire broadband Internet access or improve high-speed access, acting as catalysts to encourage private sector entities to provide improved service; enabling service improvement by sharing government resources with private sector providers; investing in such advanced

cities, offers wireless broadband services with monthly charges ranging from $17 to $25.

Local government and enterprise access. Applications that provide increased productivity and pervasive services work well in this market. Whether improving the productivity of public safety officers, providing increased security through video surveillance cameras, or reducing losses through Wi-Fi-enabled parking and water meters, always-on connectivity helps reduce costs and increase revenues. Some localities are signing on as anchor tenants, thus helping to assure a steady revenue stream as other users and applications come online.

Other communities choose to own the metro-scale Wi-Fi networks, so local access becomes a cost avoidance (in other words, the community provides the service to itself rather than paying access fees to a commercial provider). An excellent example of local access is Corpus Christi, Texas, which uses network access for automated meter reading, public safety, and a number of other operations.

Mobile device-driven applications. Wi-Fi isn't just for laptops anymore. A new wave of mobile devices, such as gaming, mobile TV, Voice over Wi-Fi (VoWiFi), music, photo sharing, and personal communicators offer revenue opportunities. These devices help drive multiple accounts per subscriber, much as cellular accounts have reached 1.9 devices per subscriber.

FIGURE 1. WI-FI OWNERSHIP AND OPERATIONAL MODELS

Model	Example
Privately owned	EarthLink, Inc., and Kite Networks, Inc.
City owned and operated	Chaska, Minnesota
City owned and privately operated	St. Cloud, Florida
Nonprofit owned	Boston, Massachusetts

Advertising and content distribution. Advertising revenues are shifting from traditional printed media to online channels. Online advertising revenues are growing dramatically. Service providers are generating incremental subscriber revenues through revenue-sharing arrangements that monetize the white-space areas on the log-on page, landing page, service provider portal, and so on, in addition to deriving revenue from partnerships with global search firms.

Key to maximizing revenue is the ability to target the advertising based on knowledge about the subscriber-for example, location and behavior. Location-specific cost per click for advertising is 4 to 10 times greater than global or national advertising. Approximately 25 to 30 percent of all search requests are for local information; the combination of mobility and location-specific advertising can drive two to three times more advertising revenue and increase ARPU. Google, for example, will be providing a low-speed, advertising-supported service on the San Francisco metro-scale Wi-Fi network.

Other benefits. St. Cloud, Florida, has chosen to forgo revenue altogether. It offers free Wi-Fi to all residents and visitors. St. Cloud calculated that, on average, residents could keep the money they spent on their Internet connections supplied by private telephone and cable companies headquartered out of the local area and instead spend that money in St. Cloud. The average citizen in St. Cloud was paying more for Internet access to out-of-area companies than that citizen was paying in local taxes to support all local services. The city chose to offer free coverage to all citizens, businesses, and government entities in order to keep the money within the city and broaden service to all citizens.

ECONOMICS OF METRO SCALE WI-FI

Metro-scale Wi-Fi offers compelling economic advantages over other wide-area wireless and broadband solutions. The technology provides higher throughput; enables richer, more compelling data services; and provides a substantial competitive advantage in the wireless data market. Consider the following:

- Capital expenditures are typically 15 to 50 percent of the cost per megabit per second (Mbps) of subscriber capacity when compared with competing mobile technologies. Use of low-cost Wi-Fi technology and limiting backhaul to a few points per square mile contribute to the superior economics. Metro Wi-Fi network infrastructures are being deployed for $100,000 to $150,000 per square mile or geographically expanded at $90,000 to $130,000 per square mile.
- Operating expenses are similarly 15 to 50 percent of the cost of competing technologies. Truck rolls for customer installations are all but eliminated. Metro-scale Wi-Fi mesh technology dramatically reduces backhaul costs. User-device investment(Wi-Fi phones, gaming devices, or music players, for example) is minimized because devices incorporate Wi-Fi technology as standard equipment or a low-cost option. Virtually all maintenance and optimization of the network is

telecommunications infrastructure as fiber optic; and even serving as service retailers, using government-owned infrastructure to provide Internet access and other telecommunications services. Case studies illustrate the roles local governments can play. (2004, IQ Report, hard copy, 20 pages, Item number 43034, $16.95; downloadable e-document Item number E-43211, $14.95).

Wireless 9-1-1. Report describes the different approaches to wireless enhanced 9-1-1 (E 9-1-1) systems, which automatically provide communications and dispatch centers with call data and address information of wireless 9-1-1 calls. Case studies describe different approaches to funding wireless E 9-1-1. Two online supplements provide additional resources. (2004, IQ report, hard copy, Item number 43035, $16.95; downloadable e-document Item number E-43212, $14.95).

More information on these reports can be viewed at ICMA's Bookstore&More at bookstore.icma.org. Secure ordering is available online, or call ICMA's distribution center at 800/745-8780.

handled remotely via smart mesh analysis and control software.

These tested revenue engines have emerged from the early efforts to deploy metro-scale Wi-Fi networks. Whether the network is locally owned or service provider-owned, using multiple revenue engines delivers profitable services to consumer, business, and government users. Choosing the right technology, products, and integration partners can reduce capital expenditure, operating expense, and time to service.

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FEATURE

Ethics

Q. Employees in a high cost part of the country have had difficulty finding affordable housing in the county where they are employed. For this reason, relatively few employees can afford to live there. The issue of affordable housing affects a significant number of county workers, so the county government has supported affordable housing initiatives as one way to encourage more employees to live closer to their places of work.

A developer has offered all individuals involved in the development project, including all government agencies, first choice in a new housing development. This allows the target group the opportunity to purchase homes before they become available to the general public. There is no discount on the price of the lots or the houses.

Several of the department directors have expressed interest in participating. The county manager requires that all department directors agree to follow the ICMA Code of Ethics as a condition of employment. Are there ethical concerns?

A. While the employees who want to take advantage of the offer may not have any official duties with the developer, this deal could create an appearance of favoritism. If the county decides to permit employees to participate in the program, the elected officials should be asked to vote to approve the action and make it clear that the offer is made to all "trade partners."

Ethics advice is a popular service provided to ICMA members. The ICMA Executive Board members who serve on the Committee on Professional Conduct review the inquiries and advice published in PM magazine. ICMA members who have questions about their obligations under the ICMA Code of Ethics are encouraged to call Martha Perego at 202/962-3668 or Elizabeth Kellar at 202/962-3611.

CORRECTION

In the January-February 2007 issue of Public Management (PM) magazine, the article "Ethics: Alive and Well," mentioned an accountability issue in Tucson, Arizona, that involved an elected official's staff. That city councilmember narrowly won his bid for reelection.

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DEPARTMENTS

On Retirement

VANTAGEPOINT PUBLIC EMPLOYEE MEMORIAL SCHOLARSHIP FUND

Every year at this time, a unique scholarship program opens its application process to a group of people for whom we should reserve a special place in our hearts. The fund I am referring to is the Vantagepoint Public Employee Memorial Scholarship Fund.

This program provides educational scholarships to the spouses and children of public employees who lost their lives in the line of duty. Since its inaugural year in 2001, 119 students have received $430,000 in scholarships to help them complete their education.

The scholarship fund was founded by ICMA-RC and is funded through grants from ICMA-RC and its business partners. For the past several years, ICMA-RC has also hosted an event to honor the recipients of these awards. Last year, 13 awardees attended a dinner in Washington, D.C., where both new and former recipients were recognized. A total of $90,000 in scholarships was awarded.

It is such an honor to have the opportunity to meet and speak with these students and begin to understand the sacrifice of their loved ones and the impact of the tragedy on their own lives. Despite their severe loss, the scholarship awardees have continued to pursue their studies. The program helps them to achieve their dreams.

In 2006, Terrance W. Gainer, retired chief of the U.S. Capitol Police, delivered a moving keynote address. Paying tribute to the public servants and their survivors, Gainer said, "These fallen heroes will have proven to have led a good life if their survivors continue their legacy through education." He added, "The Vantagepoint Memorial Scholarship Fund helps the recipients do just that."

Since the program's inception, we have watched with pride as our recipients have pursued their education, on the path to fulfilling dreams of becoming teachers, nurses, accountants, lawyers, and public safety professionals.

Scholarship recipients are eligible if a parent or spouse was killed in the line of duty. The public sector emplo yees have included firefighters, police officers, other public safety employees, and general service employees as well. They worked in big cities and small towns, and resided in all parts of the country.

Scholarship recipients are identified through a variety of sources, including public sector employers, the National Fraternal Order of Police, the National Fallen Firefighters Foundation, and the National Forum for Black Public Administrators. We make an intensive effort to publicize this program so that every worthy eligible recipient has the opportunity to apply.

Applications for the 2007-2008 school year are now being accepted until March 31, 2007. Additional information about the fund, how to apply, and biographical information on past recipients can be found on the program's Web site at www.vantagescholar.org.

We hope that you will spread the word about this program that can provide life-changing assistance to the survivors of our public employees who have paid the ultimate price in their service to the community.

—Joan McCallen
President and CEO
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DEPARTMENTS

Profile

A NEW FACE FOR OLD MOLINE

Lewis (Lew) Steinbrecher is city administrator of Moline, Illinois. (Photo: Greg Boll/QC Magazine)

Drive down 6th Avenue in downtown Moline, and you can't help but notice a whole new streetscape in the heart of Moline. From the new 67,000 square-foot police headquarters to the 443-space parking ramp across the street, the block between 16th and 17th streets has been a hub of construction activity.

Although the plans for new buildings were already under way when City Administrator Lew Steinbrecher joined the city in October 2004, he's enjoyed having a front-row seat on progress. "I can't take credit, but it's been nice to be here during the actual construction phases," he notes. Seeing the buildings come out of the ground is one of the favorite parts of his job, and there's been a lot to watch.

Scheduled to open in mid-November, the new $10.6 million police headquarters is part of Moline's municipal campus plan. Around the corner, the now-closed Carnegie library building could eventually become part of that municipal campus.

"We first have to address the building's condition, and we're working on that. I suspect it might turn into some kind of mixed-use, where it has some library presence, but could also have other municipal uses in the future," notes Steinbrecher. The city also hopes to put more than $1 million into the old police/emergency services building over the next year, to renovate office space vacated by police.

Elsewhere, Moline just completed a new $12.5 million library uptown, and has continued to work on public/private partnerships in the downtown district. One such project is Bass Street Landing, which holds the three-story RiverStation and the Stoney Creek Inn. The city also added streetscape improvements, including a plaza, fountain, and lighting. Now home to the Bass Street Chophouse, the RiverStation could also hold eight or nine high-end apartments, as well as retail and office space.

Both are excellent examples of formerly underperforming properties turned into profitable businesses that benefit the tax base, notes Steinbrecher. "There's great satisfaction in watching our partners in the private sector create new jobs

and realizing that we were a partner in helping that business be a success," he says. And the parking garage, completed in 2005 at a cost of $7 million, is intended to do more than just stow cars.

"The expectation is to help business thrive in the downtown, and we know parking is an issue. Clearly, helping businesses address that need is part of our strategy to be business-friendly," he said. "We're now seeing the private sector respond with new businesses, and the Moline Centre is starting to develop a good reputation, particularly as a restaurant district. We have some really fine dining opportunities now."

As of September, 67 percent of the Midtowne Parking facility's reserved spaces were filled. The first floor is set aside for short-term parking for business customers. "It's performing exactly as we hoped it would," adds Steinbrecher. But he knows parking is always a hot issue in downtown life. "When you try to apply a parking plan to a very diverse district like our downtown, you can't expect not to have a few bumps along the way," he adds.

Progress hasn't come cheaply, however, and the city's "considerable" long-term debt load is a concern. "The service on that debt over time places a constraint on city budgets, and there's not a whole lot of latitude," said Steinbrecher. "I think there clearly was a need for a new library, and a new police headquarters. They improve morale, enhance efficiencies, and [result] in a better level of service to citizens."

When we spoke, Moline was in the thick of its budgeting process, and funding capital improvements to streets, alleys, and sidewalks is one of Steinbrecher's top three priorities for 2006-2007. However, stretching the city's annual $35 million budget to fit a growing list of infrastructure needs—without raising taxes—is clearly a challenge. With the city being a service business that employs 415 people, more and more dollars are going into health insurance and state assessments for the municipal retirement fund.

"Once you start cutting back [on people], you see an impact on services, so we're trying to cut back on operating supplies. [But] there are fewer parts of the budget we can look at now, and the community is stretched to the limit. It's going to get to the point where the rubber band gets stretched too thin," he said, noting that great portions of its costs are outside the city's control.

"Revenues are going up two or three percent a year, but so are costs. When added that we're not putting enough into streets, sidewalks, and alleys—and that asphalt is so high now with the cost of oil—roads are deteriorating faster than we can improve or repair them," he said. What's left is a strategy that concentrates on making the economic pie bigger with more housing and more tax-paying businesses. "We hope we do a good job before the band breaks."

WHAT'S AHEAD FOR MOLINE?

One project that's picked up speed lately is the new Riverfront campus of Western Illinois University. Illinois Governor Rod Blagojevich recently announced plans to allocate $14 million in funding to the project. "That is really the boost this project needed to get off the ground," says Steinbrecher. "The city is proud to be one of the partners in this effort, and clearly, it's [the result] of a real collaboration of organizations and other community leaders, including Deere and Company."

For its part, Moline plans to redevelop the area near the campus into a high-technology "RiverTech" corridor to help retain the skills of young professionals who will graduate from WIU campus—and hopefully, grow the city's tax base as well. "We know that long-term, the riverfront campus will be beneficial to the community and the whole Quad Cities region. It's part of the strategy to transform the Illinois Quad Cities into an information- and technology-based economy. Western Illinois University really opens doors to attract businesses that will retain young professionals, and I think Moline has done a good job with working on quality-of-life issues, from the urban lifestyle to Ben Butterworth parkway."

To the west, Moline is working with a developer on plans for the West Gateway District. Designed as a high-density, mixed-use area within walking distance of the Centre Station bus depot and downtown businesses, the project would better link downtown to the Floreciente neighborhood. One idea on the table is a Mercado, a traditional open-air market. Another developer has purchased four buildings on the west side of 5th Avenue, with intentions of transforming them into the Gateway Lofts.

"Given the land restrictions we have, it's clear that redevelopment is going to be a major part of Moline's recovery," said Steinbrecher. But growing out isn't out of the question, either. The city is actively looking for opportunities south of the Rock River, and is partnering with Milan on a new housing development along Knoxville Road, called the Bluffs at Case Creek.

Other urban living strategies include working with the developer to add 44 residential condos and townhouses to the Bass Street Landing. Spurred on by forgivable façade improvement loans and by the revitalization efforts of Moline Centre Partners, many downtown building owners are fixing their upper stories. The old Moline High School, near downtown, will eventually hold 60 artist lofts. "There's a great urban lifestyle there near downtown," said Steinbrecher. "You begin to put all these individual projects together, and you really kick-start Moline's economic development. We've got pieces out there that are really coming together," he says.

DEVELOPERS WELCOME

Coming to the area with fresh eyes from seven years as the city manager of Kent, Ohio, Steinbrecher says, "I think I see the same things a developer sees—the success of development along the riverfront and the existence of public/private partnerships. For a town the size of Moline, I was very impressed. It told me this town could get things

done. There's such a shared vision here," said Steinbrecher.

His two years here have been a welcome change from his previous position, where he admits to being somewhat frustrated by the lack of a shared focus. "In Moline, I sensed a real commitment to economic development. Kent had the same problems and financial constraints, but they could not agree on the economic development strategy. [In Moline] everybody seems to be onboard. Of course, not everyone agrees all the time, but there's wide consensus with the concept. Moline has a good plan for success," he emphasized.

At age 53, Steinbrecher has 30 years of municipal experience. He served as a city manager in five towns, as an assistant city manager in another, and in economic development before that. "During most of my career, I've worked in older cities with aging infrastructure. I enjoy the challenge that a mature city like Moline offers. We're fortunate that we have a good city council. We work well as a team," he said.

Moline's track record is another strength in its corner. "The private sector responds to that," said Steinbrecher. "We really work well with developers, and that's a philosophy I bring to the job. We're having some conversations now with developers for what we're calling Valley View Village. Moline's reputation as being pro-economic development is helping us nurture that project along."

The 130-acre mixed-use development would add residential, retail, and commercial businesses between 60th and 70th streets, just south of John Deere Road. Though the details are still being worked out, Pedcor Investments proposes to develop 384 townhouse apartments in a two-phase, $22 million project. "It's becoming much harder for developers to make these kinds of projects work because of cost of infrastructure," said Steinbrecher. "Developers need to work with cooperative municipalities, and that's where our track record helps us."

Another priority is to shore up the declining SouthPark Mall into a new "lifestyle center" concept that complements Valley View Village. According to figures from the city, SouthPark was producing at $210 per square foot in March 2005, compared to the mid-30s for NorthPark. When sold, Moline hopes to partner with the mall's new owner to revitalize its second-largest tax-producing entity. "It's extremely important to us not only to attract new development, but to keep what's already there."

—Lisa Lockheart
Staff Writer
QC Magazine
Bettendorf, Iowa

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DEPARTMENTS

Performance Matters

MEASURING PREVENTION PROGRAMS: ARE WE MAKING A DIFFERENCE?

Results, accountability, benchmarks, best practices, effectiveness . . . these are some of the foremost trends and challenges in government today. Whether they constitute the mantra of some people intent on cutting programs to reduce taxes or whether they are flags flown by hopeful public managers seeking new solutions to ongoing human service failures, it is certain that the time has come for a change.

Prevention programs and strategies, as well as other public sector initiatives, have suffered from limited investment in rigorous program evaluation. Some people even perpetuate the notion that prevention cannot be evaluated (for instance, how can you measure what doesn't occur as having been prevented?). In spite of these views, science has advanced. Now more is known about helpful prevention and other human service strategies, but we don't yet know enough to cover all priority-target populations and community settings.

Developing a comprehensive performance and resource management system is a process for policymakers to go through as they review and judge the effectiveness of publicly funded programs. Such a system requires (1) a strategic policy agenda, (2) a professional development system, (3) a portfolio of effective programs, and (4) accountability machinery. At the heart of accountability is the selection and measurement of the right indicators. As such, that is the focus of this article.

WHY ARE INDICATORS USEFUL?

Indicators are the core of the assessment process: how do we know we're making a difference? Indicators have at least five functions and are typically designed to:

- Measure current performance.
- Identify strengths and development opportunities.
- Pinpoint barriers to successful performance.
- Develop more productive behaviors.
- Monitor change and improvement over time.

Indicators inform target audiences about trends and help paint a broad picture of the impact of problems.

SELECTING APPROPRIATE INDICATORS

The first step in selecting appropriate indicators is to determine what you might be trying to prevent or reduce and what you determine will highlight progress or success (or lack thereof).

Indicators can help to illustrate problems, monitor changes, and point toward recommendations for actions. As indicators are selected, strategies should be revisited to make sure that indicators directly reflect goals. Join Together and the Institute for Health Policy at Brandeis university have proposed that five criteria are typical for developing an indicator checklist:

- **Compact and manageable data.** Don't get overwhelmed with the amount of data you need to collect. The data collection process is only one step in managing an indicator program; reporting and disseminating information are equally important. Because it is important to update data regularly, you need to be able to do it efficiently so you can release new data to target audiences in a timely fashion.
- **Accessible data.** The extent of effort required to gather indicator data will help determine which indicators to include. Is the information routinely available and updated? Is the information available at the geographical level desired? Will additional data analysis be required to adjust the data to the level of interest?
- **Interpretable and meaningful data.** Percentages and raw numbers that show the direction of changes over time and

community comparisons are simple, meaningful data types that also make an impact. If possible, avoid complex data analyses that may be difficult to explain and illustrate to your audience.

- **General data in addition to specific data.** Move from the general to the specific: set the stage with the scope and scale of the problem, and then show indicators that illustrate specific harms that the problem is causing in the community.
- **Relevant data.** Make sure the indicators you select are directly related to your strategy to prevent and reduce harms in your community. Do not select indicators just because the data are available.

To be more compelling, indicators can be classified into (1) scope and scale of the problem and (2) harms or consequences of the problem. For example, data on the use of methamphetamines in the community demonstrate the scale and scope of a problem. Data from hospitals about overdoses, deaths, and hospitalization are all examples of the consequences approach.

DATA SOURCES

Entirely new surveys or data collection systems are usually not needed. Already existing data sources often obviate the need for collecting new data. Potential sources include government agencies, universities, community organizations, and United Way. If you want indicators that are not already collected by another source, methods to collect your own may include:

- **Surveys.** Surveys are useful for learning about community attitudes, beliefs, and behaviors. Using a standardized survey, such as the Youth Risk Behavior Surveillance System, allows you to compare your community directly with state and national data. If you want to gather information on an issue not included in a standardized survey, you can design your own. It is best to involve a researcher who specializes in survey design if you choose this approach.
- **Observational data collection.** Observational data collection involves going out into the community and documenting visual data. For example, you could enlist volunteers to record instances of alcohol or cigarette advertising in your neighborhood, in the vicinity of a school, or near another specific location.
- **Mapping.** Mapping can show the concentration in your community of alcohol outlets, cigarette sales locations, drug-dealing arrests, and other indicators. Geographic information system (GIS) software is widely available to help you produce an accurate map that will have a personal impact on community members living in proximity to what is mapped.
- **Focus groups.** Focus groups provide qualitative data for general impressions about community issues or attitudes. Quotations from focus groups may be useful for highlighting findings in your indicator reports.

As you move forward in your data collection efforts, remember to access local data through partners, look at online data sources, and, when necessary, collect your own data.

Here are other tips:

- If this is your first indicator report, you may need to collect data from past years in order to show the current trends.
- Collect and report general community demographics from census data, town offices, or online sources to help frame the overall picture of your community.
- When possible, compare your local indicator data with national or state data to see where your community fits in the larger picture.
- Collect and report data at the geographic level where you can take action.

DEVELOPING AN INDICATOR REPORT

It is important to decide what message you want to communicate in your report. What did the indicator data tell you about the problem in your community? How does this relate to your strategy and activities to reduce the harms? How do you want to communicate the information and steps for action to the broader community? Data on their own will not move people to take action, but putting data into the context of a compelling story can motivate action.

Because the best reports combine indicator data with stories, the following four questions can help organize the information in your report and tell the story in a compelling way:

1. **What specific harms are you reporting?** Set the stage with the scope and scale of the problem, then move to indicators that show specific harms that the problem is causing the community. Be sure to report only on indicators that best tell your story.
2. **How is your target audience affected?** Include interesting information on cost implications and quality of life in your community.
3. **How could the trends be changed?** Suggest practical programs and policies that could reduce these harms, decrease community costs, and improve quality of life for residents.
4. **Does your audience feel a connection to the story?** It is important to connect the numbers to real people. Add a personal story or quotation that will catch the attention of the media and community members.

REPORTING FORMATS

Reporting should be in the format or combination of formats that can best communicate the main points to the target audience:

- **Report cards.** Report cards are easy to understand and appeal to the media. They are also an easy way to report on a large number of issues.
- **Time line.** Showing changes over time helps illustrate progress or lack of progress over time. It shows the history of the problem as well as past and current trends.
- **Comparison.** Community comparisons show where your community stands in relation to other communities in the state or the nation.

IT'S ALL GOOD

If done correctly, data-based analyses can assist and ensure that local governments:

- Reduce substantially or even eliminate spending money on programs for which there is little or no evidence of effectiveness.
- Shift significant public funds into more effective programs.
- Focus close attention on quality control because success strategies require more effort than just picking the right program.
- Keep abreast of the latest research-based findings.

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REFERENCES

"Determining What Works (and What Doesn't) in the Public Sector, ***Public Management (PM)*** magazine, July, 2005. ICMA.

"Implementation Research: A Synthesis of the Literature." University of South Florida. 2005.

"How Do We Know We're Making a Difference?"Join Together. 2005.

"New Approaches to Evaluating Community Initiatives." The Aspen Institute. 1995.

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