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IT AS PUBLIC POLICY: THE CASE OF MUNICIPAL WIRELESS INITIATIVES

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Municipalities across the nation are moving forward with wireless broadband initiatives designed to achieve a variety of social, political, and economic goals. At the same time, these municipalities are wrestling with criticism from private-sector providers that such initiatives do not involve critical public infrastructure and disrupt the market process. This paper performs a multi-faceted examination of the policy, administrative, and political issues involved with municipally-based wireless broadband initiatives. A discussion of the technical, social, political, and economic factors involved with municipal wireless initiatives is used to identify the driving factors, influences, and expected outcomes of these initiatives. Theoretical arguments, existing research, and recent policy approaches are examined in light of legislative action and technological advances.

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INTRODUCTION

The growth of the Internet as a fundamental tool of business has raised a number of important public policy and administrative questions. Broadband Internet access is increasingly viewed as a public good that impacts quality-of-life concerns as well as economic and social needs. As a result, governments have scrambled to ensure that all Americans have easy and affordable access to this critical resource. Rather than taking a *laissez-faire* attitude towards the advanced telecommunications market, many municipal governments have been proactive in establishing the infrastructure necessary to compete in the global economy.

The emergence of wireless technologies as an inexpensive enabler of large-scale communications networks has accelerated initiatives by municipal governments to provide low-cost access to high-speed telecommunications. Enabled by federal deregulation of the electric and telecommunications industries, entry of municipal governments into this utility market has caused concern among both private providers and scholars about the proper role for government and the potential effects of taxpayer-funded competition. Private providers have used both legislative and judicial means to deter such competition, arguing that municipal entry into these markets represents unfair competition and a break from traditional private ownership of telecommunications services. Municipal governments have justified their actions as a response to market failures and socioeconomic needs.

Access to broadband in the U.S. lags behind the levels of access currently found in many other industrialized nations. Recent research by Tapia, Stone, and Maitland (2005) and Lai and Brewer (2006) contrasts U.S. efforts with those of Canada, Europe, and New Zealand, which have all been proactive in ensuring universal broadband access. The results have been near-universal access, high penetration rates, faster transmission speeds and lower prices (Lai and Brewer 2006, 248). U.S. government attempts to promote the spread of broadband have focused on enticements for the private sector, including the deregulation of telecom companies that resulted from the Telecommunications Act of 1996. Since then, municipal governments have been far more proactive than federal and state governments in leveraging the emerging broadband market for economic and social benefit.

A number of factors affect how a municipality becomes involved in these initiatives, including the existence of a municipal electric network and a perceived failure of private sector development. The goals of municipal involvement are most often cited as economic: municipalities see broadband Internet access as the key to remaining competitive in the global economy. For more rural areas, broadband access has been slow to evolve due to higher infrastructure costs, placing these areas at a competitive disadvantage. Wireless technology gives hope to both rural and metropolitan communities by providing a low-cost means of implementing and maintaining broadband Internet access. Such access is critical to attracting businesses, tourists, and consumers to a particular municipality.

The legislative environment continues to evolve, with the majority of action at the state level. Efforts by private-sector providers to limit or block municipal wireless initiatives have been fairly successful, resulting in a number of state restrictions on such activity. Municipalities

that are involved with current wireless initiatives or are considering future ones must pay careful attention to concerns over unfair competition and the inherently governmental nature of these initiatives.

This paper examines the political and legislative environment surrounding wireless initiatives, as well as the potential social and economic benefits to be gained from universal wireless access. A discussion of the options available to municipalities, including the policy rationale, roles, and infrastructure concerns, will also be included. Finally, the paper explores the impact of municipal wireless initiatives on private-sector competition and the impact of ever-changing wireless technology on these initiatives.

BROADBAND TECHNOLOGIES

The term “broadband” refers to a type of high-speed Internet connection, in contrast to traditional telephone networks, which are “narrowband” by virtue of limited bandwidth (Faulhaber and Hogendorn 2000, 306). We use the Federal Communications Commission (FCC) definition of “high-speed telecommunication technology” as our operational definition of broadband. Therefore, a switched telecommunications service network is classified as broadband if the technology permits data transfer rates of 200 kilobytes per second (kbps) in at least one direction. The 200 kbps speed is considered the minimum required to receive the high-quality voice, data, graphics, and video content common in today’s electronic networks (Grubestic and Murray 2004, 140).

Broadband connections can be either wired or wireless. Despite the emergence of wireless broadband as an alternative to traditional wired connections, dominant broadband technologies still use wired connections. The major residential wired technologies in use today are Digital Subscriber Lines (DSL) and cable modems. Business broadband services include extremely high-speed connections such as T1 and T3 lines. A recent FCC Report on high-speed connections lists cable modems as the predominant technology with 56% of all high-speed lines in the United States (2006).

While FCC statistics are useful for showing market distribution, they do not paint a complete picture of the adoption and accessibility of broadband services. Some factors which impact both the accessibility and adoption of broadband connections include household income, population density, service price, and the existence of providers. According to a U.S. Government Accountability Office report, while broadband is available in all but one percent of zip codes, only about 28 percent of households have a broadband connection. Thirty percent of households continue to access the Internet using dial-up connections and 41 percent have no connection at all (Burns 2006).

The major players in the wired broadband market continue to be regional telephone companies and the major cable television companies. The regional telephone companies are classified as either Incumbent Local Exchange Carriers (ILECs) or Competitive Local Exchange Carriers (CLECs), depending on their length of service in a given market. Over the last ten years, ILECs have consolidated from nine to four companies, while CLECs have waned in the

marketplace since the 2000-2001 NASDAQ crash (Ferguson 2002). ILECs have used revenue from DSL and business-level broadband services to compensate for declining revenue in the voice market, while cable firms have used broadband to create new revenue streams (Goth 2005, 8).

It is important not to discount the importance of fiber-optic wired broadband connections. Though rarely implemented as “last-mile” connections (connections to the house, business, or building), fiber-optic cable has long been a staple of large communications infrastructure for government, private business, and the Internet backbone, and it represents the fastest transmission speeds available. Unfortunately, fiber-optic cable also has the highest implementation cost among available options. Given that fiber-optics make up the backbone of any broadband network, lack of fiber-optic infrastructure has been cited as a major barrier to bringing broadband over the last mile, whether the access is wired or wireless (Lai and Brewer 2006, 249).

Wireless broadband technology has emerged over the past five years. Wireless broadband involves the use of radio frequency signals to transmit data, similar to cellular phones. The convergence of wired and wireless devices has helped to spur the development of new methods for wireless transmission, as well as drive the implementation of wireless broadband infrastructure to complement or replace existing telecommunications infrastructure (Lehr, Sirbu, and Gillett 2004, 3). For buildings and areas where wired connections are not feasible, wireless technology represents an inexpensive alternative for broadband access.

The most popular wireless standards are the IEEE 802.11b/802.11g (Wi-Fi) and 802.16 (WiMAX) protocols. Wi-Fi implementations in the United States do not require a frequency license from the FCC, representing a change from the previously regulated use of the radio spectrum (Tapia, Stone, and Maitland 2005, 5). WiMAX, however, is more controlled. The flexibility of Wi-Fi lowers the economic and technical barriers associated with providing such services and has launched a wave of interest in the technology. WiMAX, with its greater range and transmission capabilities, is also quickly being adopted in the United States and around the world.

Wireless broadband has become omnipresent in many metropolitan areas through the existence of “hot spots,” specific locations where people can connect to the Internet via the location’s wireless access point. These networks, which are often provided free of charge, can be integrated with other wireless networks in the region. Wireless “zones” are an aggregation of hot spots, bound together by a common management system rather than geography, whereas a wireless “cloud” attempts to provide continuous and unified coverage over a large geographic area. These are public networks in the sense that access is provided outside the home or office (Fuentes-Bautista and Inagaki 2005, 5). The inexpensive and open nature of Wi-Fi has meant that many public wireless networks have been created by volunteers, so-called technology “geeks” and academics. In this respect, the development of wireless networks has paralleled the development of the personal computer, the Internet, and open-source software: the growth of the technology/industry has been fueled by a grassroots culture interested in free access, experimentation, and bottom-up innovation (Dutton et al 2004, 32).

PAVING THE ROAD: THE TELECOMMUNICATIONS ACT OF 1996

The rise of the Internet and interest in broadband drove the enactment of the Telecommunications Act of 1996 (TA96). This federal law was designed to stimulate competition in the telecom industry and provide the decreased regulation thought necessary to propel U.S. telecommunications into the era of advanced, high-speed services. Widely supported by both Republicans and Democrats, TA96 acted as a quid pro quo between the federal government and the telecommunications industry. In return for deregulation, telecom companies agreed to develop and implement broadband services. The act allowed ILECs to enter into new markets and partnerships previously forbidden and was meant to encourage cable and telecommunications competition in local markets (McGarty and Bhagavan 2002, 21). The expected outcomes of TA96 were rapid deployment of broadband infrastructure and services, enhanced competition, and better consumer choices.

The impact of TA96 has been far-reaching, though the act is not always perceived in a positive way. Since the act contained no specific instructions (timetables or otherwise) for the deployment of broadband services, the FCC has played an important role in the actual implementation of the act (Grubestic and Murray 2004, 141). The ILECs have actively challenged the portions of TA96 that encourage competition while embracing the deregulation allowed by the act (Strover 2003, 96).

One of the core features of TA96 is the concept of unbundling. The act was expected to force “open access” of existing networks—that is, a service provider would be forced to allow other providers to use their network for a reasonable fee. The rationale for this open-access policy is that the sunk costs associated with infrastructure development is one of the main inhibitors to market entry; by providing infrastructure that can be leased, private firms can justify entry into a given market (Beard, Ford, and Koutsky 2005, 29). However, recent decisions by the FCC and the judiciary have seriously limited the unbundling requirements of the act.

TA96 failed to identify which elements of a public telecom network are “necessary” for a competitive marketplace and therefore should be unbundled network elements (UNEs) (Beard, Ford, and Koutsky 2005, 29). As a result, the FCC has been forced to give the unbundling obligations of the act concrete meaning. An FCC ruling in February 2003 was meant to establish guidelines for UNEs, stating that new, high-speed infrastructure investments need not necessarily be “open” while existing assets can continue to be re-sold and leased. Critics have charged that failure to require open access of new infrastructure seriously inhibits the potential for a competitive marketplace (Strover 2003, 96). Recent judicial and FCC rulings have crippled the idea of unbundling by exempting cable and DSL providers from providing open access to their networks.

The body of research on TA96 has focused on the act’s effects on local competition and on the FCC and court actions in regard to implementation. Grubestic and Murray (2004, 160) have labeled TA96 a “moderate success,” noting the increased competition in many metropolitan areas for broadband services but a lack of competition in rural areas. The spatial distribution of

broadband competition and availability has been widely noted (e.g. Strover 2003, 97; Ford 2006, 9; McGarty and Bhagavan 2002, 8).

TA96 represents an example of the tendency in American public policy to use market-based competition as the driving force of innovation and advancement, with the government playing the role of market organizer (Bauer et al 2002, 12). However, TA96 has also raised new policy questions regarding the provision of broadband services by municipalities. Seeing the potential for economic development, educational enhancement, and improved quality of life, many municipalities have begun initiatives designed to enter the telecom marketplace. Federal law broadly permits municipalities to provide utilities on a competitive basis, and TA96 was designed to allow the provision of broadband services by *all* potential competitors. The response of the ILECs has been to lobby the states for prohibitions and/or restrictions on municipal action, fearing unfair competition and a loss of market share.

PUBLIC POLICY SUPPORTING BROADBAND TECHNOLOGY

The importance of broadband communications to public policy and public administration cannot be understated. In a very short time, high-speed Internet access has gone from being a novelty to an essential part of everyday life. As a result, broadband communications capability is critical in today's economy. The ability to obtain and provide real-time information in an inexpensive manner is the fuel of modern innovation. Besides government, fields such as business, education, the military, and health care have come to rely on this method of communication as a basic operational tool (Gillett, Lehr, and Osorio 2004, 537; Ferguson 2002).

In 2004 President Bush put his weight behind the importance of broadband to the nation by ordering federal agencies to better facilitate broadband development via access to public land and to deregulate fiber-optic connections. Bush also called for lower taxes on Internet access (Tapia, Stone, and Maitland 2005, 4). Bush's actions acknowledge what the rest of the world already knows: broadband technology plays a crucial role in enhancing the country's economic productivity and competitiveness. At a time when emerging economic powers like China and India are accelerating investment in technology and infrastructure, the United States has been slow to react.

Many nations around the world have acknowledged the importance of broadband and are undertaking public initiatives to advance the adoption and accessibility of the technology. For example, New Zealand is allowing municipalities to develop broadband networks using public funds, promoting a non-discriminatory, open-access platform for the provision of services (Tapia, Stone, and Maitland 2005, 3). European and Asian governments have actively promoted broadband penetration by forcing national telephone and cable companies to provide open-access to their networks and by providing subsidies to those municipalities developing their own networks (McChesney and Podesta 2006, 14).

By contrast, open-access networks have not materialized in the United States. Litigation and lobbying by incumbent providers have denied the promise of TA96 while at the same time strengthening the position of the existing providers. Americans typically pay more and get less

bandwidth for broadband services than citizens of other industrialized nations (Lai and Brewer 2006, 247). The U.S. currently ranks 16th in the world in broadband penetration, behind such nations as Sweden and South Korea (International Telecommunications Union 2006).

THE RATIONALE FOR MUNICIPAL WIRELESS

To better position their communities in the global economy, municipal governments are taking a proactive approach to solving the problems associated with broadband provision and access. Through the use of local policies, infrastructure investment, and the management of business and residential demographics, municipalities have been able to foster the development and spread of broadband. Municipal involvement in broadband services is considered an extension of traditional governmental roles of economic and educational stewardship (Gillett, Lehr, and Osorio 2004, 539). Figure 1 provides a conceptual model of the driving factors, influences, and expected outcomes of municipal wireless initiatives.

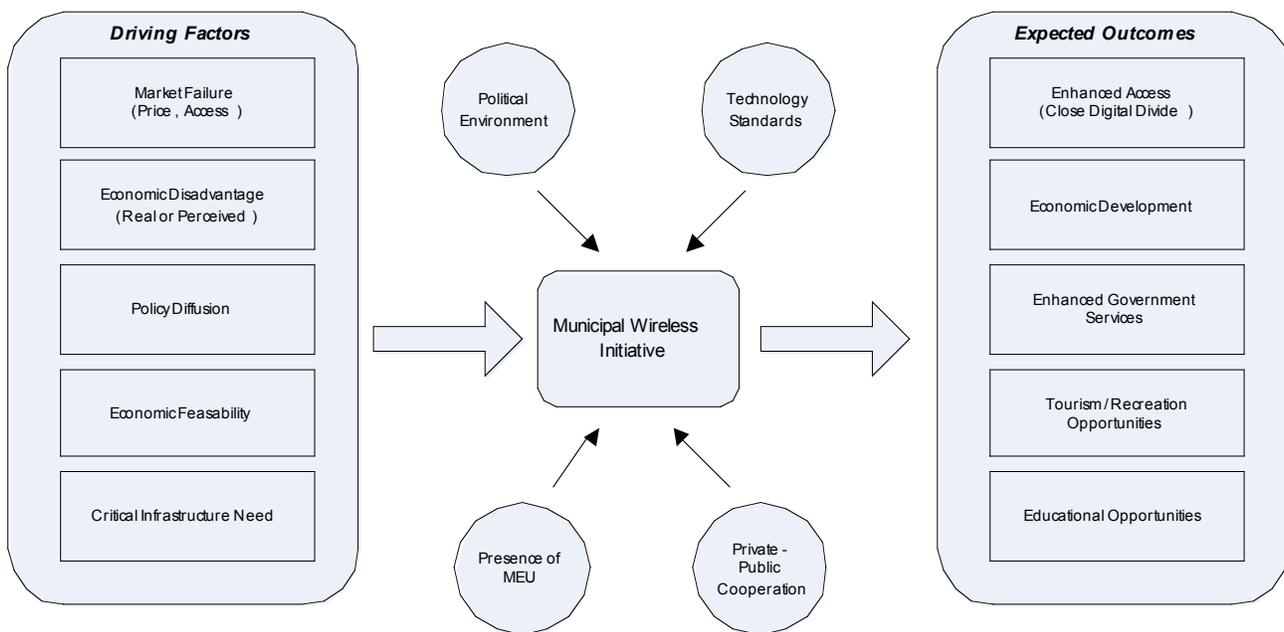


Figure 1. Conceptual Model of the Driving Factors, Influences, and Expected Outcomes involved in Municipal Wireless Initiatives

Proponents of municipal entry into the broadband telecommunications market routinely cite the potential for enhanced economic development as the overriding impetus. The promise of broadband infrastructure and services is in attracting and retaining new businesses. A failure to provide such infrastructure is said to potentially lead to economic decline (Gillett, Lehr, and Osorio 2004, 538; Ford and Koutsky 2005, 217). Dianah Neff, Philadelphia CIO, uses this rationale to justify the Wireless Philadelphia initiative by saying, “Just as with the roads of old, if broadband bypasses you, you become a ghost town” (Yang and Elgin 2005).

Despite the frequent reference to economic development potential, few state and local initiatives have established any means to assess the actual impact of broadband projects (Strover, Chapman, and Waters 2004, 468). Preliminary work by Ford and Koutsky (2005, 226) supports the economic growth argument, albeit with limited data. This suggests that a certain amount of policy diffusion may be at work. As more and more municipalities undertake wireless broadband initiatives, other municipalities may look to their example. Recent work by Stone (2007) suggests that a municipality's propensity to adopt a wireless initiative is at least partially influenced by the number of similar initiatives previously adopted within the same region. Thus trailblazers like Philadelphia may have acted as a signal to other first-tier cities like Boston that such a city-wide wireless network was economically, technically, and politically feasible .

A second rationale for municipal entry is real or perceived failure of the broadband market. Market failure, in this context, may be defined as the failure of private-sector providers to offer universal and affordable broadband services. This is commonly associated with the more rural areas of the country, where the profit motive of private-sector providers makes the lower density and average income levels of such areas unattractive. However, even in more metropolitan areas public-sector infrastructure investment can play a positive role in the provision of services, and there are limits to the strict market approach (Dutton et al 2004, 34). One of the key market failures is the price of private broadband services. U.S. residents face higher prices, slower speeds, and less reliability than people in other industrial nations (Tapia, Stone, and Maitland 2005, 6; McChesney and Podesta 2006, 14).

A reason often cited for high consumer prices is a lack of competition in the broadband market. FCC and Supreme Court rulings limiting open-access make it ever more difficult for competing providers to offer services, especially in anything other than first-tier markets. Municipal involvement in the broadband market can help to stimulate competition and innovation, which ought to have a direct impact on consumer prices. Monopolistic conditions and a lack of affordable access was cited as a driver of the aforementioned Wireless Philadelphia initiative, a public-private partnership which is now providing services to residents at less than \$20 per month (Gardner 2006). The growth of the municipal wireless market has forced providers to cut prices and/or revise their business models and has provided entrepreneurs with new ways to enter the market (Yang and Elgin 2005).

Another rationale for municipal wireless infrastructure is enhanced delivery of public health and safety services. For example, New York City recently announced a program to implement a city-wide mobile wireless network to allow emergency responders to quickly react to catastrophic events. The system will tie together police, fire, and EMS systems, including the integration of maps, video, and environmental monitoring (Government Technology Online [2] 2006). New Orleans, in the aftermath of Hurricane Katrina, contracted with Earthlink to build a city-wide Wi-Fi network. This network is expected to enhance emergency communication capabilities and entice businesses and tourists to return (Reardon 2006).

Proponents of municipal wireless also point to the expected gains in education and tourism when ubiquitous broadband is available. For example, the city of Los Angeles recently opened up its first Wi-Fi access point in a park within one of the lowest-income areas in the city.

A partnership with the private sector has enabled area students to use the access point for educational purposes via vendor-provided laptops (Towns 2006, 28). In 2006 the State of Nebraska announced the implementation of free wireless Internet service at Mahoney State Park, with the expected outcomes being the attraction of more campers, visitors, and conference planners to the park (Government Technology Online [1]).

Educational and research opportunities are often created as a by-product of such initiatives. For example, the implementation of a municipal wireless broadband infrastructure provides opportunities for experimentation with such things as antenna placement and security protocols (Goth 2005, 10). Given the reliance of many school districts on property taxes, the attractiveness of a school district to potential new residents is a critical factor in ensuring the future viability of the district. The aging population and the expected reduction in the overall tax base means that a K-12 system which emphasizes technology and 21st-century skills will have a competitive advantage in attracting families looking to relocate as well as retaining existing taxpayers.

THE IMPORTANCE OF ACCESS: BRIDGING THE DIGITAL DIVIDE

A central argument in favor of municipal involvement in broadband services is the importance of ensuring universal access. For many ILECs and major cable television companies, it simply does not make economic sense to invest in broadband services for rural and low-income areas that yield a low rate of return. Part of this is a function of the structure of broadband networks: in order to serve one customer on a block, infrastructure must be built to serve all the potential customers on the block.

More remote areas often require more investment by providers. Since signal quality degrades with distance, infrastructure investment may require more equipment to strengthen and propagate signals (Faulhaber and Hogendorn 2000, 310). Wireless technologies are an alternative, but the choice of wireless technology impacts economic feasibility. While Wi-Fi is currently the most popular type of municipal wireless technology, the coverage limitation (around 400 feet) means that a Wi-Fi network must include more hardware to propagate and strengthen signals. WiMAX offers promise in areas with uneven terrain and provides a coverage area of several miles and transmission rates that surpass cable modems. While wireless technology offers an alternative to wired initiatives and their sunk costs, incumbents may frown on implementing technology which would lower consumer prices (Tapia, Stone, and Maitland 2005, 5).

While the FCC reports that 98 percent of all American zip codes have at least one broadband provider, this does not mean that the adoption of these services is as widespread. Several factors impact adoption rates in rural areas. Given their low population density and dispersed nature, many rural areas are served by their ILEC via remote switches rather than a full-fledged central office. Given the distance limitation of DSL (approximately 3 miles), this may actually limit the number of residents who have access (Strover 2003, 99). Even dial-up access can be spotty in these areas, as it sometimes requires the use of a toll call (Strover 2003, 97).

Rural areas also suffer from a lack of competition. Research by Grubestic and Murray (2004, 148) has shown that broadband access is spatially distributed: first-tier metropolitan areas have significant levels of broadband infrastructure and more choices for broadband providers, whereas rural areas have little growth in broadband competition. Recent FCC statistics (2006, 4) show that the percentage of low-density areas with at least one broadband subscriber is growing, though it still represents a much smaller percentage than high-density areas. Wireless technology represents a path by which broadband can be brought to underserved areas, thus helping to close the digital divide.

THE ROLE OF MUNICIPAL GOVERNMENTS

The pathway by which municipal governments become involved in the wireless broadband market is varied. Municipalities can facilitate, provide, consume, or partner in the provision of wireless broadband services. Often municipal governments assume more than one role in order to push a wireless broadband project forward.

Different Approaches to the Wireless Market

A useful taxonomy for local and regional broadband initiatives comes from the work of Gillett, Lehr, and Osorio (2004, 541). In their view, local governments can play the role of *Broadband User*, whereby local governments can use demand-side initiatives to spur the spread and availability of broadband services. This is especially important in more rural areas, where the aggregation of fragmented demand can be used to entice private providers to provide broadband services. Local governments can also act as *Rule-Maker* by using legislative action to lower barriers to entry (e.g., rights-of-way, access to public facilities). Local governments assume the role of *Financier* when they provide subsidies and grants to enable access and the role of *Infrastructure Developer* by actually developing broadband infrastructure. This supply-side role is especially important in economically unattractive areas, such as those with low population density.

A smaller taxonomy can be found in the work of Tapia, Stone, and Maitland (2005, 8). These authors argue that municipalities can play one of two basic roles in the wireless broadband market. A municipality can act as a *Broadband Provider*, providing services to the economically disadvantaged and providing the community with a competitive edge, or as a *Broadband Consumer*, in which municipalities become involved in infrastructure development for internal needs (e.g., efficient communication, providing mobile access to employees) or to lower the costs of providing services. The choice of role is driven by the needs of the municipality.

Business Models

The roles played by local governments in these initiatives can vary and thus necessitate a number of different business models. Municipalities can create or work through non-profit entities to spur broadband development, or they can adopt a strict *public utility* business model. The public utility model is perhaps the least frequent due to fears of competition with private providers, but it does occur in areas where ILECs refuse to provide services or access is limited due to cost (Tapia, Stone, and Maitland 2005, 23). The vast majority of broadband networks in the United

States support the *private consortium model*, whereby municipalities grant access to resources to private providers in exchange for low-cost access. By shifting sunk costs to private providers, municipalities are able to reap the benefits of broadband services while avoiding the large capital outlays commonly associated with traditional public works projects.

A *cooperative wholesale* model has also come in vogue for wireless initiatives, representing a more traditional outsourcing project complete with Requests For Proposal (Tapia, Stone, and Maitland 2005, 25). Cooperative wholesale projects can be either publicly funded or developed using a non-profit organization. For example, the City of Philadelphia created a non-profit Wireless Philadelphia unit to develop a citywide wireless network. In contrast, the City of Boston is creating a non-profit organization to build and manage the network, but is choosing to use the organization as a wholesale retailer of access. Rather than providing access itself, the non-profit organization will allow access providers to use the city's network to provide low-cost Internet access to residents. In this model, the city maintains control of the network but cannot use public money to support its creation and maintenance (Weisman 2006).

Public-Private Cooperation

Evidence exists that a cooperative, community-based approach can increase access to broadband technology and address disparities in access that market-based approaches have failed to resolve (Borgida et al 2002, 130). The government-by-proxy approach so common in other areas of service provision has found its way into municipal broadband initiatives, though sometimes with little success. While many municipal broadband projects involve attempts to cooperate with the private sector, these efforts are often derailed by private providers. The response to municipal overtures of cooperation can be a flat refusal to cooperate or a mandate of terms that are unacceptable to the municipality (Goth 2005, 9).

Case study research by Fuentes-Bautista and Inagaki (2005) provides insight into a successful collaboration between private enterprise, local government, and local businesses in Austin, TX. The local government has chosen to restrict itself to providing broadband services only in those areas not currently served, such as economically disadvantaged areas (28). The Austin case shows the benefits possible when incumbent providers work with start-ups and grassroots elements to provide free, wireless open-access. The city-wide network acts as an extension of existing wired networks, and hotspots are concentrated in commercial zones (10).

MUNICIPAL ELECTRIC UTILITIES

One major factor impacting a municipality's decision to enter the broadband market is whether infrastructure exists that would make market entry economically feasible. Over 2,000 municipalities in the United States have a municipal electric utility (MEU) service that may act as that existing infrastructure. As of 2004, 616 MEUs provided some level of communication services to their service area, a 37 percent increase from 2001 (Ford 2006, 1). Part of this increase can be attributed to TA96, which lowered barriers for entry into the market.

The existence of an MEU makes a municipal wireless initiative attractive for many reasons. The high fixed costs associated with building new infrastructure are often avoided when

an MEU is present (Lehr, Sirbu, and Gillett 2004, 22). The typical MEU has an established customer base, existing pole and line infrastructure, access to conduits, trucks and maintenance personnel. As a result, municipalities with MEUs have been at the forefront of the municipal broadband movement (Gillett, Lehr, and Osorio 2004, 551).

LEGISLATIVE IMPACTS

A substantial amount of legislative action designed to inhibit or prohibit municipal broadband initiatives has occurred at the state level. Fearing a loss of market share and complaining of unfair competition, private providers have lobbied state legislatures to secure their market position. State initiatives thus far have either prohibited the launching of future municipal broadband initiatives or enacted procedural rules designed to slow the process. Some states require public hearings or feasibility studies to be conducted, in the hopes of making sure that local political leaders understand the costs of broadband investment and operation. Other procedural mechanisms include mandatory referendums and state-level reviews of project finances (Tapia, Stone, and Maitland 2005, 13).

For example, Pennsylvania enacted legislation in 2005 to give ILECs the “right of first refusal” on municipal broadband initiatives. Municipalities considering such initiatives must request a similar network from the ILEC in their service area; if the private provider refuses or does not complete the network within a specified time frame, the municipality may go forward. This legislation was pushed by the ILECs in response to the Philadelphia initiative, which was granted a special exemption by the statute. In West Virginia, a similar attempt to authorize public-sector broadband initiatives in 2005 was met with stiff lobbying from private providers, resulting in a weaker bill that included the right of first refusal provision (Tapia, Stone, and Maitland 2005, 15).

DISCUSSION

Despite the resistance of the major private providers, municipalities continue with their efforts to provide broadband services. The driving force behind this movement is the advent of high-speed, low-cost wireless communications. The inexpensive nature of the technology, the proliferation of technology standards, and the ability to take advantage of existing infrastructure means that wireless initiatives could become more attractive in places where wired initiatives were once shunned. Wireless has become the centerpiece of all major municipal initiatives, but there are still questions about whether this technology bolsters or diminishes the arguments in favor of municipal initiatives. Research by Lehr, Sirbu, and Gillett (2004, 28) suggests that wireless technology may actually decrease the likelihood that existing markets will fail since lower entry and deployment costs associated with wireless technology may stimulate private markets.

If this is not an inherently governmental function, is there a justifiable role for government in these markets? While municipal wireless initiatives do not support the strict definition of inherently governmental services, government clearly has a justifiable role to play in this market. Broadband represents a basic utility in today’s world. The inability of consumers to access this critical resource will have untold economic, social, and political repercussions on

the nation. Failure to keep pace with the global economy will result in a decline of American influence, potentially resulting in new threats to national security. Government, therefore, is obligated to respond and correct broadband market failures to address this critical socioeconomic need. But rather than relying solely on a government response, the majority of municipal initiatives thus far have centered on private-public partnerships where the public sector (or non-profit) entity retains some element of influence in order to meet established policy goals.

Government Must Act to Correct Market Failures

The broadband market has failed to ensure universal and affordable broadband services. While market conditions show an increasing availability of broadband services across the United States, many residents are locked out of the broadband revolution either by economics or geography. Statistics frequently show the slow rate of broadband adoption in the United States as compared with other industrial nations. We believe that if left to its own devices, the market is unlikely to correct itself in the current deregulated environment.

It is imperative for federal, state, and local governments to enable competition in the wireless broadband market. While pockets of competition exist, many rural and less populated areas are left with little or no options for wireless broadband. Municipal wireless initiatives can act to both stimulate and reform the broadband market in those areas where traditional markets have failed. Municipal initiatives to enhance or provide wireless broadband services must be tailored to the socioeconomic conditions of the particular municipality. Like many government projects, broadband initiatives can provide new business opportunities for private-sector organizations and for aspiring entrepreneurs. Consumer choices must be expanded, and costs must be made affordable.

Government Must Act to Ensure Economic Viability

As the nation's economy has shifted from an emphasis on manufacturing to an emphasis on services, the need for real-time communications capability has risen. More than ever, there is a need for timely and relevant information to be readily accessible. It is challenging to find an economic, political, or social activity that is untouched by information technology. The economy is no longer local, but global. Even remote areas of the country have a defined need for broadband connectivity and its resultant business applications. A municipality's failure to provide broadband capacity will seriously limit its economic viability. Rural areas, perhaps being not economically viable to private broadband providers, still require an on-ramp to the information superhighway in order to compete economically with larger, metropolitan areas.

The federal and state governments can be proactive in this area by fostering the spread of municipal wireless, especially in those areas where markets have failed to enable affordable and widespread access. Local governments should be proactive in fostering public-private partnerships to make use of existing wireless services and resources, as well as earmarking public funds for wireless initiatives. Local governments can also benefit from participation in regional networks, which leverage economies of scale to provide wireless services over a larger geographic area. Recent grant opportunities from the Department of Justice and the Department of Homeland Security have emphasized the importance of regional wireless solutions for

emergency response; undertaking these initiatives can open the door to larger, more universal applications (Watkins 2006).

Government Must Revise Existing Policy Measures

Policymakers at the state and federal levels have thus far been unreceptive to the idea of public broadband initiatives. Intense lobbying by ILECs is likely the root cause of this opposition. If the nation is going to succeed in getting broadband to the masses, proactive policies at the municipal level must be encouraged and adopted by policymakers at the state and federal levels. TA96 was intended to spur the use of advanced telecommunications, but the hollowing of the bill through FCC and judicial rulings has negated this expected outcome. TA96 must be revised to mandate the open-access telecommunications rights so common across the globe. This revised legislation must also enable the spread of municipal wireless networks by removing existing legislative barriers and providing incentives for the creation of new wireless capacity.

Public policy on broadband and IT is continually evolving, and municipal broadband initiatives represent one step in that process. Technology is not the barrier to success. The technology is mature and hardware prices have dropped to a level that makes universal broadband possible. Investments by Sprint Nextel and others show that the private sector is banking on the desire and ability of consumers to access broadband services. However, while the commercial environment is ready for universal access, the political environment is not. The political environment associated with municipal broadband initiatives has been called “treacherous” since private providers wield a powerful influence at the state and federal levels (McGinity 2003, 17). It is this hostile environment that policymakers must successfully navigate in order to bring these initiatives to fruition.

Modern policymakers must respond to these challenges through a combination of policy measures which enable innovation, work to ensure competition and universal access, and assuage the fears of potential opponents. Policymakers must work to ensure that broadband initiatives can be justified for the given locale. Like other large government initiatives, a policy tailored to the given environment will have a greater chance of stakeholder buy-in and long-term success. This is especially important for initiatives which rely on private-public partnerships, where the greatest cost will be incurred by the private sector. For initiatives where government assumes a greater role, the higher costs associated with the initiatives makes the role of the policymaker more difficult. By showing the impact of such initiatives on local businesses, non-profits, and community groups, an argument can be made that such initiatives are in the public interest.

FUTURE POSSIBILITIES FOR RESEARCH

The emergence of municipal wireless networks has created a field littered with research possibilities. The existing body of literature is predominantly qualitative and case study-driven rather than quantitative, as the relative freshness of the field leaves theorists to supply anecdotal and homiletic evidence rather than hard numbers. Though few can deny the importance of municipal wireless initiatives to public policy and public administration, the top-tier public administration and public policy literature has seen very little substantive research on this topic.

A number of questions remain unanswered when it comes to municipal broadband initiatives. Questions of equality of access and the impacts of municipal initiatives on the digital divide are a logical extension of current work, as no current evidence exists that such initiatives lessen these divides (Tapia, Stone, and Maitland 2005, 10). Despite some preliminary findings, more longitudinal and detailed research into the economic impacts of public broadband is needed. In addition, a commonly accepted set of metrics for measuring that economic impact is needed. Such findings and metrics would act as an aid for public policy decision-making.

Research involving an examination of the effects of municipal broadband initiatives on competition, especially in regard to markets dominated by one or two private providers may also prove useful. Does municipal involvement in this market stimulate competition and local investment, or does municipal involvement create a public monopoly? How do incumbent providers react? This situation would be useful to examine for larger metropolitan areas as well as rural areas. Preliminary work by Ford (2006) and others provide a basis for further study.

CONCLUSION

The rapid progression of technology has opened a number of social, political, and economic issues for all levels of government. In this paper we have attempted to discuss the political, policy, and administrative issues which have arisen from the introduction of a new technology and government attempts to reap the benefits of that technology. As municipal involvement in the wireless broadband movement evolves, municipalities will be forced to justify their involvement to an increasing number of legislative, judicial, and market critics. Government involvement in this emerging field holds the promise that technology can work to achieve social, economic, and political goals for all municipalities. Further study is needed to determine if this ideal is translated into reality.

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