Chapter VII
Public Wireless Internet

Dale Nesbary
Adrian College, USA

INTRODUCTION

There exists a growing controversy over whether the government should be in the business of providing wireless broadband Internet. Public sector entities, particularly counties and cities, are developing the physical and intellectual infrastructure designed to provide wireless broadband Internet to their residents. Opponents of government entry into the wireless broadband market argue that existing private broadband vendors are fully capable of providing wireless Internet in an efficient manner. Supporters argue that government is uniquely capable of building and supporting, at least initially, wireless broadband at a lower cost and in a more pluralistic and efficient manner than private vendors have done thus far.

Moreover, government wireless broadband provision stands to change the landscape of broadband Internet generally. If publicly-provided wireless does attain the objective of providing service in a more pluralistic and efficient manner, many more residents and businesses will benefit. From our perspective, this is an issue worth exploring.

Providing new venues for economic growth is critical for the future of state economies and that of the United States. in general. The decline of American manufacturing has caused economic disruption throughout large portions of the United States, particularly in the Midwest. This region is seeking to ensure that they are competitive for years to come. One such solution is the public provision of wireless Internet. Oakland County, Michigan recently revealed a plan to offer free and low cost wireless Internet access to all of its residents by 2007. Many communities in Michigan and around the country are taking similar action.

This chapter will examine several dimensions of the public provision of wireless Internet, including:

- Issues driving the development of wireless technologies
- Public wireless provision in the United States.
- A case study—Michigan
- Implementation issues and future directions

BACKGROUND

Wireless network access technologies have existed for nearly 100 years, although wireless Internet technologies have been in use from a practical perspective for about 15 years. Since Guglielmo Marconi patented the first wireless communications device over 100 years ago, transmission of voice and data has undergone tremendous changes (Leeper, 2002). The technology has moved from basic telegraph to the vast array of technologies that we know today as the Internet. Wireless networking has been defined as technology that allows two or more computers to communicate using standard protocol, but without the use of network cabling (Keynetwork, 2006). Any technology that achieves this, including Internet, e-mail, and FTP, may be defined as a wireless network. Moreover, any Internet application, including the web, FTP, e-mail, messaging, and chat may be defined as part of a wireless network.

The Internet is a gateway into vast amounts of knowledge and relationships. It provides users with the ability to conduct almost every aspect of their life through its use, and has helped engender economic growth (Horn, 2005). These obvious advantages explain why the Internet has grown so quickly.

The primary technology behind wireless connections for computers has been in use for cell phones for quite sometime, but not until recently have we begun to see the development of long range wireless access for computer use (Harrington, 2000). Wireless Internet access has begun to make the home computer versatile for more uses then just being stationary at one location. Everyday objects including phones, kitchen appliances and motor vehicles are becoming equipped with wireless capacity, including Bluetooth and IEEE 802.11 connections (Anderberg, 2002). Autos equipped with Bluetooth technology have the capacity to use navigation screens to display Internet access for receiving electronic mail and other messaging systems.

Constructing a wireless wide area network is not a simple task because of the nature of wireless signals. These signals must travel around and through trees, homes, and other natural and man-made barriers. Water acts as the key interrupter for wireless frequencies and all plant life contains water within their structures (Barthold, 2002). Designing wireless access points that can reach for hundreds of square miles require many different signal distributor stations that must be placed within certain boundaries to provide adequate signal strength for consumers.

Wireless Internet service is a relatively new technology, having been used commercially during the past decade. The first instance in which wireless Internet was provided by a governmental entity was Zamora, Spain, in 2003 (Intel, 2006), while Grand Haven, Michigan, was the first governmental entity in the United States to provide such services in 2004 (Azulstar, 2006). The two primary implementations of wireless Internet are WiFi, the existing standard, and WiMax, an emerging standard (Thomas, 2004). WiFi is a short range system, reaching up to 300 feet indoors and one quarter mile out of doors. WiFi typically requires a series of wireless routers throughout a building or one wireless router in a small retail establishment or residence. WiFi operates from 1Mbps to 55 Mbps. WiFi quality of service (QoS) has been questioned; however, it has proven to be reliable over time (Sapronov & Kumar, 2005).

WiMax comes in various flavors, however the primary advantages are speeds of up to 75 Mbps and a range of up to 30 miles from a central tower (Thomas, 2004).

The desire to provide public wireless Internet is in part a function to bridge the social, economic, educational, and political barriers limiting access to digital technology. Reports regarding this "digital divide" show that both income and ethnicity play a major role in determining the difference in access among groups (Guillen & Sanchez, 2005). Higher income families access the Internet at a higher frequency than those lacking resources. Students in schools in which the minority student count comprises 50 percent or more of the population are much less likely to have Internet access than in predominately white districts (Dávila, 2003). The possibility of creating free wireless Internet access on a national scale may help eliminate these problems. Increasing Internet access would allow all schools to have