

Wireless Broadband Opportunities for Local Governments in the Educational Broadband Service (EBS)

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Introduction

Although the Internet revolution began fifteen years ago, the United States still has no high-speed, nationwide, wireless broadband service that can match cable and DSL. This is about to change, and state and local governments will play a major role.

This is because one wireless broadband technology, *WiMax*, will use the Educational Broadband Service (EBS) frequencies, which are reserved for educational institutions, such as school systems.

These WiMax systems can be both a source of revenue for schools and a way for governments to extend broadband to underserved areas. In total, 120 MHz of spectrum is allocated to EBS.

History of EBS

EBS got its start 45 years ago, in 1963, when the Federal Communications Commission, responding to Congressional pressure, set aside a large amount of spectrum at 2.5 GHz for schools and universities to beam instructional television programming such as lectures, to students. The FCC named the service Instructional Television Fixed Service (ITFS).

ITFS never lived up to Congress' lofty ambitions. Schools didn't want to spend money on transmitters and towers that could be used instead to hire teachers and put up new buildings. By the 1980s, much of the spectrum was still not under license.

Seeing opportunity, commercial interests showed up at the FCC and proposed that it allow ITFS licensees to lease their excess capacity to commercial operators for wireless cable television services. The idea was that schools would transmit instruction during the day but at night the facilities would broadcast entertainment programming to paying subscribers.

The FCC agreed to the proposal. The result was that many more schools and colleges filed for and received ITFS licenses, with one goal being to make money from the lease of excess capacity. However, wireless cable proved to be a commercial failure, and the ITFS spectrum continued to be underutilized.

In 2004, the FCC once again changed policy with respect to the ITFS frequencies. It decided to convert the service from one-way video to two-way broadband and renamed it the Educational Broadband Service. Ownership of the licenses would remain with educators, but they could lease up to 95% of a facility's capacity to commercial operators.

In theory, any number of commercial operators could obtain leases, but in reality, there is but one major operator, Clearwire Corporation, that now holds these leases.

Future of EBS

The future of wireless broadband is far brighter than wireless cable's ever was. Because of this, lease payments to educators can be significantly higher than those from wireless cable. Of course, this would not be hard. Wireless cable leases typically called for rental payments based on the number of subscribers, and so educators got little or nothing from the leases.

The available spectrum is not yet licensed in many geographic areas. Because of a deluge of applications, many of which were based on nothing more than speculation, the FCC in 1995 froze the filing of further applications. As a result, although the available EBS channels are generally licensed in major urban areas, large geographic areas, particularly but not exclusively in rural areas, are still unlicensed.

Continuing FCC Proceeding

In March 2008, the FCC initiated a proceeding to establish the rules for issuing EBS licenses for such areas in the future. Comments and replies were filed in September and October 2008.

Two major questions posed by the FCC's notice are: First, does the Balanced Budget Act of 1994 require that EBS licenses be awarded through auctions as with other licenses for which there may be more than one application? The FCC has previously concluded that auctions are required, but it is reconsidering that view.

Second, should a different licensing scheme be adopted? Current rules give licensees protection within a 35-mile radius of the transmitter. Hence, a map of the United States that showed the areas not yet licensed for EBS (so-called "white spaces") would look as though someone had worked on it with a cookie cutter.

Broadly speaking, the parties filing comments with the FCC fell into two camps. On the one hand, those representing current educational licensees argued that existing service areas should be significantly expanded and licenses for remaining areas should be auctioned. This would have the effect of largely eliminating the white spaces around urban centers.

On the other hand, a coalition of K-12 educational organizations, which the authors represented, argued that future EBS licenses should be awarded to coalitions composed of all interested and eligible educational entities within a service area. By eliminating the possibility of competing applications, this proposal dispenses with auctions entirely.

The FCC now has the matter under advisement. The Commission should either make a decision or issue a further notice of proposed rulemaking in 2009.

Technology

The FCC's technical rules for EBS were written with the WiMax technology in mind. Although WiMax is sometimes called "Wi-Fi on steroids" because it has a longer range, WiMax differs from Wi-Fi in several other ways.

WiMax is designed to operate on licensed frequencies and, hence, can have the attributes of cellular telephony with frequency reuse in non-adjacent cells. And, unlike Wi-Fi, the transmissions within a WiMax cell are controlled by the network.

WiMax is an open, IEEE-endorsed standard that was created with help from Intel. Intel plans to incorporate WiMax in all its processors, so that, as with Wi-Fi, a computer user will be able to access a WiMax network without an add-on card. Unlike most Wi-Fi networks, though, WiMax will be a subscription service. Clearwire now charges roughly \$50 a month for a basic service plan.

WiMax is a flexible service. Its high speed means it competes with cable modems and DSL as a stationary broadband service that can be used in the home or office. It is a mobile service that competes with Wi-Fi hotspots. It can also be used from a moving vehicle. Finally, by using Voice over Internet Protocol (VoIP), WiMax can provide mobile telephone service. Thus, in the future, WiMax will be able to provide high-speed broadband access for such products as desktop computers, laptops, iPhones, Blackberries, and cell phones.

Clearwire's EBS-based network will face competition. Cellular telephone companies plan to upgrade their networks in order to provide better wireless broadband. The cellular companies' offerings could use the WiMax technology or a different technology that is variously called 4G or LTE.

Conclusion

EBS is important to local and state governments for two reasons. First, if leased to commercial providers like Clearwire, it can be a revenue source. Second, whether leased to Clearwire or built by a government, EBS can deliver wireless broadband service to citizens over large geographical areas in competition with wired broadband and in communities where wired broadband is uneconomical.

Communities interested in exploring their EBS options should determine whether they have existing EBS licenses, and, if so, what that spectrum is being used for. Those who do not have existing EBS licenses may wish to consider whether they have educational uses for such spectrum and whether they would wish to apply for a license if applications were being accepted.

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