EXAMPLES OF CONSUMER BENEFITS FROM "TV WHITE SPACES" LEGISLATION

What all community wireless networks—commercial (WISP), municipal and community nonprofit—have in common is the unlicensed spectrum they use to transmit signals. Opening more low-frequency spectrum – such as the unused TV channels – is therefore the "rocket fuel" needed to facilitate and scale up community wireless networks, as well as home and business WiFi networks.

Unlicensed, or open spectrum, refers to segments of the airwaves that have not been licensed by the government for exclusive use by one company or other entity. Unlicensed frequency bands are therefore shared, with no protection against interference. Very little of the most valuable "beachfront" spectrum – those frequencies that easily penetrate obstacles such as walls, trees and precipitation, as TV signals do – are allocated for unlicensed sharing. Currently, every region in America has great amounts of low-frequency spectrum that is sitting empty and unused. These are the unused TV channels. Although the particular channels vary in each local market, in most parts of the nation a majority of local TV frequencies are not being used – but could be, for affordable and mobile broadband access.

Below are some of the benefits to consumers and the U.S. economy:

1. **Rural Broadband Deployment**

   The highly favorable propagation characteristics of the TV broadcast spectrum (as compared to operation at 1.9 GHz or 2.5 GHz) allow for wireless broadband deployment with greater range of operation (including the ability to pass through buildings, weather, and foliage) at lower power levels. Thus, the TV white spaces could be used to provide better broadband service in less densely populated and bad weather areas, as well as a first broadband service in many rural and other remote areas.

2. **Auxiliary Public Safety Communications**

   In emergencies, the TV white spaces could be used to provide auxiliary services to augment public safety communications on licensed networks. For example, rescue efforts could be enhanced by placing remote video cameras at a disaster site to relay images to a command center; or using portable "helmet cams" to provide real-time, point-of-view command/control information.

3. **Educational and Enterprise Video Conferencing**

   The TV white spaces can be used to give local high schools and middle-schools what major university campuses already have: mobile, high-speed Internet access to every desk, student and teacher equipped with a laptop. It also can be used to increase the reliability and decrease the cost of video conferencing on college and commercial campuses. For example, combined with broadband connectivity, such videoconferencing could help enable distance learning for students in remote locations for whom traditional classroom-based learning is impractical.

4. **Personal Consumer Applications**

   The TV white spaces could be used to provide new consumer applications that take advantage of the improved signal reliability and range of the TV broadcast spectrum. Wireless local area networks using low power and battery operated devices could enable new capabilities that bring safety, convenience, and comfort to consumers in their homes. For example, such devices could provide improved energy efficiency through intelligent home automation and power monitoring or home security with robust low power wireless video feeds.

5. **Mesh Networks**

   The TV white spaces could be used to enable mesh networking, whereby information is relayed locally from node to node. Because mesh networking is "self-configuring," any disruption or failure of a single node will cause a "re-route" as opposed to a network failure, thereby enabling reliable communications. Through use of mesh networks, unserved or underserved communities could readily and cost effectively create their own network extensions as alternative means of Internet connectivity. In addition, because mesh networks are easily deployed, they can offer a means of communications if existing networks fail during catastrophes.

6. **Security Applications**

   The favorable propagation and bandwidth characteristics of the TV broadcast spectrum could enable enhanced video security applications for commercial, residential, and government purposes. Some examples of security applications using the TV white spaces could include perimeter video surveillance; robust wireless secure area monitoring; and childcare monitoring in the home or in childcare facilities.

7. **Municipal Broadband Access**

   A number of municipalities across the nation are already deploying first generation wireless local area networks to provide broadband access as a public service to their citizens – and to make local government services more productive for taxpayers. Use of the TV white spaces for such municipal broadband networks could increase the quality of service and decrease the deployment costs for such networks.

8. **Enhanced Local Coverage and Communications**
   Localities could use the TV white spaces to enable mobile video services. These services could provide information of special interest to the local community; coverage of local sporting events; and new methods for local advertisers to reach customers in a more targeted and valued manner.

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