

Testimony of Robert Good
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Good afternoon Chairman Walden, Ranking Member Eshoo, and Members of the Subcommittee. Thank you for the invitation to appear before the Subcommittee. My name is Robert Good, and I am the Assistant General Manager, Director of Operations, and Chief Engineer for WGAL-TV in Lancaster, Pennsylvania, which is owned by Hearst Television Inc. I am here today on behalf of our company.

As an engineer, I am conversant with the technical issues associated with over-the-air television broadcasting and the technical implications for local television stations and viewers that would result from the reallocation of existing television broadcast spectrum to other users. My remarks focus on the extent to which broadcasters utilize their current digital spectrum, the technical challenges and expenses for those stations affected by a reallocation, and the impact of reallocation on their viewers and your constituents.

Broadcasters After the Digital Transition

Just 22 months ago, all full-power television stations in the United States returned their analog spectrum to the federal government and transitioned to an all digital television service. As part of the transition and in recognition of the technical advantages digital broadcasting affords stations and viewers, broadcasters agreed to narrow the band of spectrum allocated for broadcast television by some 108 MHz. The government then reallocated a portion of that spectrum for public safety and auctioned some for wireless mobile services. But the digital transition was not

only about reallocating spectrum. The change to digital transmission significantly increased the diversity of over-the-air viewing choices and enhanced the technical quality of local television broadcast service for all Americans. From over-the-air, high-definition signals to the simultaneous broadcast of multiple streams of free, over-the-air television programming, broadcasters across the nation are providing a more diverse and richer viewing experience for their viewers and your constituents.

Broadcasters have always had a unique status among federal spectrum holders. We are required by statute and regulation to use our licenses to serve the needs and interests of our local communities. We take that obligation seriously. At Hearst Television, we are now delivering with our newly assigned digital spectrum a wide variety of new, diverse, and, in our view, vital and essential program services.

For example, at WGAL, in addition to our traditional, highly rated local and national network and syndicated programming, we are now providing additional programming on a new digital multicast channel consisting of a variety of national network, children's, special local news, local public affairs, public safety, weather, emergency, and other informational programming. We are looking, as I speak, at providing additional programming on our digital channels, and we are working with a coalition of stations to broadcast our programming to mobile receiving devices.

Our company owns 29 television stations and provides a wide variety of national and local entertainment, sports, Spanish-language, children's, news, public affairs, public safety, and public service programming on 57 digital channels, in the aggregate, in 26 of 29 markets. The new digital multicast channels are not *marginal* program services. These services are very popular with our viewers and your constituents. Our company will launch another new national

network television service in 9 more markets this summer. We are also developing a national mobile content service to deliver on-demand video viewing.

Other broadcasters throughout the country are doing the same. According to a January 2011 analysis by SNL Kagan, by the end of 2010, the total number of digital channels provided by broadcasters (including HD channels, multicast channels, and mobile digital channels) increased to 2,518 – more than double the number of over-the-air broadcast offerings available before 2008. As of the end of 2010, the percentage of commercial television stations offering multicast channels had increased to 71%, thereby doubling the channel options for viewers with 1,240 additional digital channels, of which 142 were Spanish-language network affiliates. And just last week, a group led by Ambassador Andrew Young and Martin Luther King III announced plans to launch a new television network aimed at African-Americans, which will be distributed through the new multicast channels of local stations.

Beyond multicasting, some 70 stations that are part of the Open Mobile Video Coalition have recently launched a new mobile digital television service. Another group of broadcasters (the Mobile Content Venture) has announced plans to provide mobile DTV to 40% of the U.S. population by the end of this year, and the Mobile500 Alliance, another coalition of broadcasters, likewise is accelerating the roll-out of mobile digital television service nationwide.

Broadcasters across the country continue to experiment with new entertainment, ethnic, foreign language, children's, specialty, sports, public affairs, local news, public safety, and informational programming and mobile television services. Your constituents place great value on those services. As we sit here today, my engineering colleagues within the broadcasting industry are gathered at the National Association of Broadcasters (NAB) Convention in Las Vegas reviewing new equipment and learning about new technologies that will, in coming

months, further enhance the over-the-air viewing experience for our viewers and your constituents.

Broadcast television is a vibrant, robust and ever-expanding service. Today, 99% of the public relies on local television stations (received over-the-air, by cable, telephone wires, and satellite) for diverse program services, including local and national news and public safety information. Indeed, among all media platforms, recent reports by the Pew Research Center Project for Excellence in Journalism confirm that broadcast television is the primary source of journalism for the American people.

It is also important to note that nearly 43 million people (including low income viewers, the elderly, and minority groups) currently rely exclusively on over-the-air television. Consumer interest in *free*, over-the-air television service is growing. Just last week, *Consumer Reports* stated that nearly one and a half percent of former pay-TV subscribers have “cut” the pay-TV cord and that seven percent (approximately nine million additional pay-TV subscribers) are considering it. Consumers have become increasingly aware of, and are relying on, the multiple new program services and the enhanced viewing experience now provided for free over-the-air by their local television stations for free.

The Debate Over Spectrum Reallocation

Continuation of the nation’s universal, over-the-air television broadcast service and expansion of wireless broadband services are not mutually exclusive. Broadcasters do not oppose voluntary incentive auctions and the reallocation of broadcast spectrum, if, in fact, the auction and reallocation of broadcast spectrum is truly “voluntary.”

For an auction process to be truly voluntary, it must be voluntary both for those stations that elect to participate in the auction and for those stations that elect to retain their licenses and

continue delivering to their communities the full panoply of benefits of the digital transition. The public debate continues, moreover, on whether the reallocation of broadcast spectrum is, in fact, necessary for wireless broadband at this time. Point-to-multipoint transmission to the public of the most popular video programming and essential public safety and emergency information by broadcast stations, for instance, is a vastly more efficient utilization of bandwidth than point-to-point transmissions of that content by wireless carriers.

I also note that the technical advances now taking place in transmission and receiver technology will enhance the efficiency of *all* spectrum licensees. I anxiously await news from my engineering colleagues at the NAB Convention this week on the latest technical advances in this respect.

While I am not an expert in the various legal and public policy issues associated with spectrum reallocation, I can offer an engineering perspective on some of the technical issues that accompany the reallocation of existing broadcast spectrum and the impact of reallocation on our viewers and your constituents.

Broadcast Band Repacking

The National Broadband Plan issued by the FCC staff in March 2010 called for reallocation of 120 MHz of spectrum from television broadcasting to other users, including wireless carriers. Some, including the Commission, argue that the most efficient and useful way for this reallocation to occur would be through the creation of a single contiguous, nationwide spectrum block. Thus, if an additional 120 MHz were transferred from broadcast bands, broadcasters would lose 20 channels of current spectrum (each broadcast channel occupies 6 MHz of spectrum).

Some of these channels might be cleared from stations that elect to participate in the incentive auctions. In other cases, however, the FCC, of necessity, would have to require a broadcaster to move its operations to a new channel in order to clear channels on a nationwide basis. This process is referred to by regulators and the industry as “broadcast band repacking” or simply “repacking,” and it could adversely affect more than 600 local television stations and millions of viewers across the country. The precise number would depend on the specific channels and the number of channels targeted for clearance, and on the number of stations that elect to participate in the incentive auction process. As explained below, the impact of repacking on stations and their viewers would be significant.

The Impact of the Repacking Process on Broadcast Stations

The removal of broadcast operations from one channel to another is not a simple or easy process. Each channel assigned to a broadcaster has its own specific block of frequencies, and, in turn, the equipment designed for that channel is designed for the transmission characteristics of that specific 6 MHz. It is not as if a local station, for example, could simply flip a switch or two and suddenly switch from channel 41 to channel 24. Rather, a station would confront a number of technical and financial considerations, all of which would be exacerbated this time around by potential interference to and from unlicensed devices operating in white spaces.

Technical Considerations

Major technical challenges will be encountered with further repacking of broadcast channels. The first results from the unique characteristics of the spectrum bands allocated to over-the-air broadcasting. The spectrum currently utilized for that purpose consists of three separate bands: the low VHF Band - channels 2-6 located between 54-88 MHz; the high VHF

Band - channels 7-13 located between 174-216 MHz; and the UHF Band - channels 14-51 located between 470-698 MHz (except channel 37, which is allocated to a different service).

Each of these bands has different propagation and data transmission characteristics. The UHF band is optimally suited for digital broadcasting. UHF also provides the most flexibility for future uses of broadcast spectrum, especially transmission to mobile devices. On the other hand, stations in the high VHF band will need greater power to replicate their analog service areas with digital over-the-air service, and also face greater challenges in the provision of mobile television services. We experienced virtually all of these at WGAL in connection with our most recent transition from a UHF channel to a VHF channel. And the third spectrum band, the low VHF television band, is less well suited for digital broadcasting. Broadcasters have discovered – notwithstanding the FCC’s earlier projections – that the low VHF band has significant signal reception issues with digital and is subject to objectionable interference from other electronic devices.

CEA/CTIA and the FCC have suggested that reclaimed broadcast spectrum should be 120 MHz contiguous between 572 MHz and 698 MHz, or in other words, 20 channels of the current 37 channels in the UHF band. If that approach were taken, the number of existing UHF broadcast channels would be reduced by more than 50%. The consequences of that proposal for the affected stations and your constituents would be staggering.

A key issue associated with repacking is precisely how closely television channels could be packed together without experiencing or causing interference to each other and to other devices. Spectrum allocation is complex. It requires careful and knowledgeable technical planning and coordination.

Channels must be allocated far enough apart (a) to avoid over-the-air interference with each other and with other devices, and (b) to assure that television viewers continue to have access to a watchable picture. Television channels can be placed only so close together, and the challenge of harmonizing separate channels without causing objectionable interference is not limited to channels within a single market. Channel allocations must be harmonized with stations in adjoining markets, and those have to be further harmonized with stations in markets adjoining those markets, and so on down the line, i.e., the “daisy chain” effect. And even though digital broadcast channels can be spaced closer together than analog channels (which is why broadcasters were able to return 108 MHz of spectrum in the digital transition), at the end of the day, the laws of physics cannot be ignored.

Interference concerns are not limited only to the signal of one station interfering with another. Now that the FCC has opened up broadcast bands for use by so-called “white space” devices, local stations and your constituents must now be prepared to cope with potential interference from literally thousands of new unlicensed devices. Further reductions in channel spacing would inevitably result in increased television interference and a reduction in the use by your constituents of unlicensed devices in white spaces. And if interference results from repacking, our viewers and your constituents would lose access to the broadcast programming they currently enjoy- the full extent of that loss has not yet been determined by the FCC.

And, the above technical concerns do not begin to capture the problems that would result if broadcasters are forced by the FCC to *share* channels, as some have suggested. The technical challenges and costs associated with that proposal would be even more complex, and would impose even greater costs on stations and it would result in a greater loss by your constituents of local television broadcast service.

Capital Costs

In addition to signal interference and challenges to reception, broadcast band repacking will require affected stations to incur substantial new capital expenditures to purchase and install new equipment. While some have suggested equipment replacement costs would be relatively low, a conservative, best case, average estimate of the costs incurred by each broadcast station to replace its equipment is in the neighborhood of \$1 million to \$1.5 million for a UHF-to-UHF channel move. The average station will need to upgrade or replace about 30% to 50% of its broadcast transmission equipment (antenna, transmission line, and other related equipment): all of which was just upgraded to facilitate the digital transition and has yet to be fully amortized. Stations that rely on boosters or translators - as some of my company's stations do - to assure that those who live in rural areas receive a good local broadcast signal would incur significant additional costs. For example, my company's station KOAT-TV in Albuquerque relies on 32 translators and two full power satellite stations to reach the rural areas of New Mexico. Were the station to be required to change channels, many of those translators and satellite stations would likely be affected.

Repacking costs will vary, and for some stations the costs will be substantially higher than for others, particularly for stations that were early digital adopters. The early adopters based their transition on the first-generation digital transmission technology. Some of the more recent equipment, however, provides stations more flexibility to convert to a new channel (particularly a UHF-to-UHF channel switch where the channels are close together), all of which, of course, would mitigate some of the equipment replacement costs. The reality, however, is that each station will confront its own, unique technical and practical challenge and expense from repacking. A shift to another channel could mean signal power level changes or other coverage

alterations that would necessitate the construction of a new broadcast tower or translator stations, removal of an old tower to a new location, or a combination of all of the above. And while all of these challenges will vary from station to station, they could be even greater this time than the last time depending on the specific channel and station involved.

If VHF channels were to be used to replace reallocated UHF channels, the costs for the affected stations would escalate, and the service area of each of those stations would be compromised. Transitioning from a UHF channel to a high VHF channel would require close to 100% replacement of transmission equipment, tower issues, etc., which could push a station's repacking costs in excess of \$4 million. Much of the additional costs result from technical differences between the UHF and high VHF bands. Those transmitters would need to be replaced, rather than retuned; transmission lines may be incompatible and may need to be replaced; power levels would need to be adjusted to a new propagation characteristic; and a network of translator stations may need to be constructed. That is precisely the process we have had to go through at WGAL, and we are still engaged in that process 22 months after the transition and currently plan to construct six new translators to compensate for loss of coverage resulting from the transition.

Stations that would be required to shift to a low VHF band would suffer the most. A digital signal in the low VHF band would require an impractical and unrealistic increase in power to overcome background interference from other devices and maintain the station's service area.

Consumer Impact

There are obvious consumer issues associated with repacking. Broadcasters spent more than \$1.2 billion for consumer education efforts during the digital transition. Estimates are that

the government expended, at least, in excess of \$100 million more. The consumer education campaign was designed to ensure that viewers were adequately prepared for the transition. Even with this all-out consumer education campaign, Congress felt it necessary to delay the transition by an additional four months to ensure that the American people had adequate time to prepare.

A new and additional “broadcast band repacking” transition would have a similar consumer impact. While it is true that any new transition would not carry with it the need for consumers to buy new set-top boxes, some consumers, for certain, would have to purchase new equipment. The recent digital transition forced consumers not only to buy a set-top box or new television set, but many also had to purchase a new home reception antenna. Since most stations were assigned a UHF channel during the transition, some retailers stocked UHF-only reception antennas, and consumers using those antennas would quickly discover that those antennas are not designed to receive VHF signals. Therefore, broadcasters moving from a UHF to a VHF channel, particularly in markets that currently are dominated by UHF channels, would have to develop and deploy a massive, new consumer education campaign on the antenna issue to avoid the loss of viewers, rating points, and advertising dollars.

Moreover, the most recent digital transition was a *staggered* transition, in that broadcasters were able to broadcast *two* signals—digital and analog—simultaneously for a considerable period of time in advance of the cutover date. The ability to broadcast on two channels allowed consumers to locate and acquire antennas, and adapt gradually to the new channels of their local stations. Unfortunately, viewers would not have this luxury during a second “repacking” transition. Without sufficient spectrum that would allow repacked stations to operate on an interim basis on two signals simultaneously, stations will be confronted with a “hard cut” in which they would switch off their old signal on the same day they switch on their

new one. The level of viewer disruption, confusion, and dissatisfaction could well be unprecedented.

Local viewers would need to be given adequate notice of and time to prepare for any cutover. To further complicate the matter, not all stations would be able to institute a “flash cut” on the same date—it would depend on when their old channel allocations are licensed for wireless use. In addition, consumers would need to be informed about the need to rescan their set-top boxes or television sets, and the potential need to purchase a new home antenna to prevent loss of their local stations. Finally, consumers would need to know, depending on the specific channels used for the transition, that they may lose access to mobile digital or other new services. To address consumer complaints and assist viewers, stations would have to invest in a new, additional—and substantial—education campaign, one perhaps more extensive than that of the recent digital transition.

Conclusion

In short, the reallocation of broadcast spectrum and repacking of broadcast channels would have important implications for our viewers and your constituents. And, it would impose significant financial costs on the affected stations and will likely result in a material diminution of existing free, over-the-air television broadcast service. Our company, the NAB, and broadcasters across the nation are prepared, nevertheless, to work cooperatively with the Committee, with other Members, and with the Commission to strike an appropriate balance in achieving the nation’s overall communications policy goals. We, as broadcasters, take our public stewardship commitment seriously, and we look forward to expanding and enhancing the important service we provide to you and your constituents.

Thank you for allowing me to appear before you today. I will be happy to answer any questions you might have.