Before the
Federal Communications Commission
Washington, D.C. 20554

In the Matter of	)	
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	)	
Media Bureau Seeks Comment on Over-the-Air Broadcast Television Viewers	)	MB Docket No. 04-210
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COMMENTS OF THE ASSOCIATION OF PUBLIC TELEVISION STATIONS

Lonna M. Thompson
Vice President and General Counsel
Andrew D. Cotlar
Assistant General Counsel
Association of Public Television Stations
666 Eleventh Street, NW, Suite 1100
Washington, D.C. 20001
www.apts.org
Telephone: 202-654-4200
Fax: 202-654-4236

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EXECUTIVE SUMMARY

APTS believes that answers to the questions the Media Bureau has asked are indeed critical to ensuring a successful and consumer-friendly transition to digital-only broadcasting. In these Comments, APTS provides the Bureau with information on the interest of public television stations in returning their analog channels early, provided that three policy reforms are made. They include:

- Full carriage of public television digital signals on cable and satellite;
- A means to ensure the availability of inexpensive converter boxes for households that rely exclusively on over-the-air reception; and
- The creation of a Public Television Trust Fund to support the production and distribution of a new generation of digital educational content to drive market acceptance of DTV.

APTS documents four separate consumer constituencies that would be affected by a cessation of analog television broadcast service. The four constituencies include:

- Consumers who, for whatever reason, rely exclusively on over-the-air reception (approximately 22% of all TV households);
- Consumers who subscribe to a digital multichannel television service but who possess additional television sets that are not connected to such a service;
- Consumers who subscribe to analog cable service only; and
- Consumers who receive digitized versions of analog local stations via satellite.

Further, APTS argues that because the cost of television sets with integrated ATSC tuners is still quite high and has not received wide consumer acceptance, the issue of over-the-air reliance cannot be resolved solely by relying on projected price decreases.

APTS contends that a coordinated means is necessary to ensure that universal service for all affected constituencies is achieved. To ensure continued service for the four groups that rely on over-the-air reception, APTS urges the following policy changes.

- ***Support for the Purchase of Set-Top Converter Boxes***. To address households that rely exclusively on over-the-air reception, either for their primary television set or for additional sets, APTS supports a limited one-year subsidy to encourage consumers to purchase inexpensive digital-to-analog converter boxes. Alternatively, wireless providers who want access to television spectrum may wish to

encourage an early return of spectrum by helping to subsidize such equipment themselves in targeted markets.

- ***Full Cable Carriage***. To preserve service for cable households once analog service ceases, the Commission should require both full carriage of the entire over-the-air digital bitstream on the digital tier and a down-converted option for analog cable subscribers.

- ***Satellite Carriage.*** To preserve service for satellite households once analog service ceases, the Commission should require full carriage of digital signals either directly on the satellite or through other means.

In addition, APTS believes that three more policy changes may be necessary to ensure an acceptable cessation of analog service.

- ***"Fade to Black."*** First, the Commission may want to consider an analog "fade to black" approach. Under this policy, there would be a gradual cessation of analog service, whereby (a) analog service would be shut off on a rolling geographic or market basis, coupled with (b) a decrease in analog power levels over time as digital broadcasters increase to full power.

- ***Consumer Campaign.*** Second, the Commission may need to coordinate a consumer awareness program of adequate and continuing publicity through a wide range of media concerning the schedule for the cessation of analog broadcast service and options for continuing to receive broadcast television.

- ***United States Freeview.*** Third, if the Commission does enact new rules or policies to encourage the transition to DTV and to protect over-the-air viewership, it should be careful not to impede the development of any new cooperative marketing efforts to package free digital over-the-air services in a way parallel to the Freeview service that was introduced in the United Kingdom.

Lastly, APTS provides the Media Bureau with additional information in a series of appendices to this Comment that the Bureau may find useful. Appendix A contains a detailed market-by-market analysis of over-the-air reliance. Appendix B contains the testimony of APTS President and CEO John Lawson before the Senate Commerce Committee regarding the steps necessary to complete the digital transition. Appendix C sets forth a narrative discussion of the European experience with digital switch-over with special emphasis on the recent successful conversion in Berlin and the extraordinary success of Great Britain's Freeview service.

TABLE OF CONTENTS

Before the
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In the Matter of	)	
	)	
	)	
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	)	
	)	
	)	
	)	

COMMENTS OF THE ASSOCIATION OF PUBLIC TELEVISION STATIONS

The Association of Public Television Stations ("APTS")[1] hereby submits comments in the above-captioned proceeding.[2] In these Comments, APTS supports three critical policy changes. First it supports full carriage of public television digital signals on cable and satellite. Second it supports a targeted means to ensure the availability of inexpensive converter boxes for households that rely exclusively on over-the-air reception. Third, it supports the creation of a Trust Fund to help fund the production and distribution of a new generation of digital educational content to drive market acceptance of DTV.

In addition, APTS believes that three more policy changes may be necessary to ensure an acceptable cessation of analog service. First, the Commission may want to

[1] APTS is a nonprofit organization whose members comprise the licensees of nearly all of the nation's 356 CPB-qualified noncommercial educational television stations. APTS represents public television stations in legislative and policy matters before the Commission, Congress, and the Executive Branch and engages in planning and research activities on behalf of its members.

[2] Media Bureau Seeks Comment on Over-the-Air Broadcast Television Viewers, Public Notice, DA 04-1497 (May 27, 2004).

consider an analog "fade to black" approach. Under this policy, there would be a gradual cessation of analog service, whereby (a) analog service would be shut off on a rolling geographic or market basis, coupled with (b) a decrease in analog power levels over time as digital broadcasters increase to full power. Second, the Commission may need to coordinate a program of adequate and continuing publicity through a wide range of media concerning the schedule for the cessation of analog broadcast service and options for continuing to receive broadcast television. Third, if the Commission does enact new rules or policies to encourage the transition to DTV and to protect over-the-air viewership, it should be careful not to impede the development of any new cooperative marketing efforts to package free digital over-the-air services in a way parallel to the Freeview service that was introduced in the United Kingdom.

I. The APTS Digital-Only Initiative

The American media landscape is undergoing a fundamental transformation as the television broadcast service transitions to a wholly digital infrastructure. Public television stations have embraced this transition as a means to revitalize and expand the distribution of noncommercial educational broadcast services. They know that they hold spectrum in trust, and that the government will reclaim the analog spectrum at some point. Yet despite this great promise, and the best efforts of the FCC, Congress and the broadcasting industry, it is likely that few communities will have successfully crossed the bridge to digital-only broadcasting (DOB) by the projected date of 2006. A more protracted digital broadcast transition is highly probable.

However, it has quickly become apparent that the costs of a protracted transition could be severely detrimental to the financial health of public television stations. There are therefore major advantages for public television stations to consider voluntarily ending analog transmissions in the near future. First, it is projected that analog cessation would save public television $36 million dollars a year in electricity costs for analog transmission, along with additional savings attributable to stations not having to maintain or replace analog equipment. Second, early return of analog spectrum would allow public television stations to focus all of their energy and resources on the future, rather than on an aging analog distribution system. Third, it could help public television in securing post-transition digital carriage on cable and satellite systems. Finally, it is possible that public television stations may retain a portion of the proceeds from the subsequent government auction of analog TV spectrum to invest in educational digital content and services.

Given this background, we surveyed our members in February of 2004 concerning their understanding of the conditions under which they could voluntarily return their analog spectrum before the projected end of the DTV transition. Assuming the status quo, 86 percent of our member stations do not believe conditions would be in place to cease analog transmissions by 2009, the hard date proposed by the Media Bureau plan.[3]

Anticipating this bleak DTV transition scenario, we also asked our members: What *would* it take to change that scenario? We asked the question again, this time proposing three reforms to take place:

[3] Written Statement of W. Kenneth Ferree, Chief Media Bureau Federal Communications Commission, Advancing the DTV Transition: An Examination of the FCC Media Bureau Proposal, before the Subcommittee on Telecommunications and the Internet, U.S. House of Representatives, (June 2, 2004).

- *First* – ensuring full post-transition cable and satellite carriage of digital broadcast signals, including multicasting;

- *Second* – ensuring the availability of low-cost, digital-to-analog set-top converter boxes for serving households that rely upon free, over-the-air television; and,

- *Third* – creation by Congress of a new funding stream, such as a digital content trust fund, for the production and distribution of a new generation of digital educational content to drive market acceptance of DTV.

The results were astonishing: *81 percent* of stations indicated that with implementation of these important reforms, the conditions would exist for *voluntary* surrender of analog by the end of *2007*, a year earlier than the Media Bureau would require under its current plan.

On June 9 and 21, 2004, APTS President John Lawson presented our recommendations for a digital-only migration in testimony to the Senate Commerce Committee and House Telecommunications Subcommittee respectively. His testimony included details regarding the conditions under which public television stations would be willing to return the 21 percent of spectrum currently allotted to them in exchange for full post-transition cable and satellite carriage, a means to preserve universal service for over-the-air reception through inexpensive set-top boxes, and a new digital content trust fund to provide a critical supplement for current CPB appropriations. John Lawson's June 9th testimony is set forth at Appendix B to this Comment.

II. Over-the-Air Reliance Remains Significantly High in Many Markets

Public Television in the United States operates under a federal universal service mission to provide a free, noncommercial educational television service to all Americans.[4] This is not only a statutory mission but also a policy and political expectation that provides the condition for continued federal funding. Without additional safeguards, this mission may be compromised if the free, over-the-air analog service is replaced with a free digital over-the-air service that requires either a substantially prohibitive investment in reception technology or a prohibitively expensive subscription to a digital pay service for some Americans. Thus, if analog over-the-air service were to be shut down and replaced with the digital counterpart, some mechanism, or combination of mechanisms, must be in place, as a matter of political expediency and fundamental fairness, to ensure continuity of service for the following constituencies:

- Consumers who, for whatever reason, rely exclusively on over-the-air reception (approximately 22% of all households);
- Consumers who subscribe to a digital multichannel television service but who possess additional television sets that are not connected to such a service;
- Consumers who subscribe to analog cable service only; and
- Consumers who receive digitized versions of analog local stations via satellite.

In response to the Media Bureau's request, APTS provides below detailed information on these constituencies.

[4] 47 U.S.C. §§ 396(a)(5), (a)(7), (a)(9).

A. Exclusive Reliance on Over-the-Air Reception

It is frequently reported, based on 2003 data, that on average, between 12-15 percent of U.S. television households— or over 12 million television households—rely exclusively on over-the-air reception of television signals.[5] However, the figure, which is derived by subtracting all MVPD subscribers from the total of TV households, may be significantly higher depending on the methodology used to count such households. APTS believes that a more accurate figure of exclusive over-the-air reliance approaches 22 percent of all TV households.

In this regard, the Commission counts as MVPD subscribers all households that subscribe to a range of alternative "competing technologies." For instance, the FCC includes within the MVPD category the following: 200,000 subscribers to the multichannel multipoint distribution service (MMDS); 1,200,000 subscribers to satellite master antenna television services (SMATV); 502,191 subscribers to the Home Satellite Dish service (HSD); 60,000 subscribers to Open Video Systems (OVS); and 1,400,000 subscribers to Broadband Service Providers (BSP).[6]

While inclusion of some of these services within the ambit of MVPD households may be justified, it cannot be assumed that all such subscribers do not rely on over-the-air reception of their local broadcast television stations. For instance, MMDS, also known as

[5] The FCC's latest Annual Video Competition Report states that 85.25% of all TV households, or 94,150,000 households, subscribe to a multichannel video programming distributor; by implication 14.75% do not. Annual Assessment of the Status of Competition in the Market for the Delivery of Video Programming, Tenth Annual Report, FCC 04-5, Table B-1 (Rel. Jan. 28, 2004). This average figure has not substantially declined over the past year. See Annual Assessment of the Status of Competition in the Market for the Delivery of Video Programming, Ninth Annual Report, FCC 02-338, Table B-1 (Dec. 31, 2002) (figures as of June, 2002). However, dividing the total number of MVPD households (94,150,000) by the total number of TV Households (106,641,910) yields 88.29 percent with an implied 11.31 percent (or 12,491,910 TV Households) counting toward over-the-air reliance.

[6] Annual Assessment of the Status of Competition in the Market for the Delivery of Video Programming, Tenth Annual Report, FCC 04-5, p. 118 (sources to Table B-1) (Rel. Jan. 28, 2004).

"wireless cable," provides limited data and video services to certain areas but does not typically provide local broadcast channels of the sort that is ordinarily available to the public.[7] In addition, SMATV, or "private cable systems," package proprietary non-broadcast programming with local broadcast stations received over-the-air via an analog master antenna for urban and suburban apartment buildings.[8] The OVS service, a multichannel service provided by local telephone companies, is double-counted both within the category of broadband service provider (BSP's), a broad category of municipal, independent and CLEC cable overbuilders, and as its own category.[9]Making adjustments to the MVPD figure to accommodate services that do not subtract from over-the-air reliance would increase the latter figure by 1,460,000 subscribers.[10]

Moreover, 46 percent of households that subscribe to satellite-delivered video services do not subscribe to a local broadcast package, preferring to receive only distant network feeds and national programming.[11] These households rely on over-the-air reception for local stations and should be subtracted from the MVPD total for the purpose of calculating over-the-air reliance. Thus, an additional 9,908,860 households rely on over-the-air reception, thereby increasing over-the-air reliance to 23,860,770 TV

[7] Id., at ¶ 85.

[8] Id., at ¶ 89.

[9] Id., at Table B-1, note (iv).

[10] This figure is derived by subtracting the MMDS, SMATV and OVS subscription rates.

[11] Annual Assessment of the Status of Competition in the Market for the Delivery of Video Programming, FCC 04-5 (rel. January 28, 2004), n. 297.

households, or 22 percent of the 108,410,160 television households as of January 2004.[12] This finding is consistent with research conducted by Knowledge Networks and commissioned by the Corporation for Public Broadcasting that found that about 20% of the 1481 U.S. households it surveyed were "broadcast-only."[13]

This statistic, however, is an average. Over-the-air reliance is not uniform throughout the nation, because in some geographic areas, reliance on over-the-air reception may be greater than in other areas. Over-the-air reliance in fact ranges from a startling 40 percent in the Harlingen, Texas DMA to 5.8 percent in the West Palm Beach, Florida DMA. Even among the largest DMAs, over-the-air reception approaches 30 percent in the Salt Lake City, Minneapolis, and Dallas DMAs. In Houston and Milwaukee, reliance is over 25 percent. In Los Angeles, reliance is approximately 20 percent. In other large cities, reliance is much smaller, with New York, Atlanta, Philadelphia and San Diego approaching 10 percent. For detailed information on the percentage of television households that rely on over-the-air reception in each DMA, see Appendix A.

Among those households that rely exclusively on over-the-air reception, we know the following, based on Nielsen data provided to PBS.

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[12] For the calculation of total TV households, see www.ncta.com. In addition, the FCC admits that for purposes of calculating the total number of households that subscribe to a multichannel video programming distributor (MVPD), it double-counts television households that subscribe to both cable and satellite service. Annual Assessment of the Status of Competition in the Market for the Delivery of Video Programming, Tenth Annual Report, FCC 04-5, Table B-1, note (ii) (Rel. Jan. 28, 2004). In many instances, a household will subscribe to a reduced-cost high-speed data service packaged with cable video for Internet access while also subscribing to a satellite-delivered service for television programming. Although it is uncertain how many households fall within this category, anecdotal evidence indicates that this figure is not insignificant. Excluding such households from the MVPD count will therefore increase the figure for over-the-air reliance even further.

[13] Knowledge Networks, "The Broadcast Household Story."

- Over-the-air households are more likely to have lower incomes and less likely to be in the highest income category:

HH Income	National Average	OTA	Difference
Less then $40K	**44%**	**62%**	**18%**
$40K to $60K	18%	18%	0%
$60K +	38%	20%	18%
$75K +	27%	13%	14%

- African-American households (defined by Nielsen) are more likely to rely on over-the-air reception than not (18% OTA vs 12% general population).

- Households headed by women with children are slightly more likely to rely on OTA.

- Older Americans (55+) are slightly less likely to rely on OTA.[14]

- There was no significant difference in the following categories:
  - Head of households with college attainment (4+ years of college)
  - Location of the households in a metro, suburban, small town or rural county.

This information was generally confirmed by a study, commissioned by the Corporation for Public Broadcasting and conducted by Knowledge Networks, where it was also found that "broadcast-only" households were more likely than not to be frequent public television viewers.[15]

[14] This was confirmed in a recent telephone survey of 1024 individuals conducted by Magid Media Futures. In this survey, of those individuals aged 25 and older without any multichannel television service, only 30% were 55 years or older (the percentage was lower (18%) in an on-line survey that slightly favored younger adults). By way of contrast, 25% fell within the 35-44 age group, and 26% fell within the 25-34 age group. Ages 45-54 represented 18% of respondents; ages 35-44 represented 25%; and ages 25-34 represented 26%. The following were the percentages in the on-line survey: ages 55+, 18%; ages 45-54, 21%; ages 35-44, 25%; ages 25-34, 25%; and ages 21-24, 11%. Age and Income of Non-Multichannel Households, Frank N. Magid Associates, Inc (January, 2004).

[15] Knowledge Networks, "The Broadcast Household Story."

B. Reliance on Over-the-Air Reception for Additional Television Sets

In addition to households that do not subscribe to a MVPD of any kind, numerous television households that do subscribe to a MVPD possess additional televisions that are not connected to either cable or satellite. In this regard, the National Association of Broadcasters has estimated that there are 34.5 million such sets.[16] These sets are used in bedrooms, guest rooms, dens, patios, playrooms, children's rooms, kitchens, dining rooms, workshops and bathrooms. These TVs generally measure 20 inches and under, with many between 9 and 13 inches diagonally. The vast majority of these rooms are not equipped with cable TV connectors or DBS satellite signal access. Instead, these sets rely on combinations of a shared central (rooftop or attic) antenna or simple indoor antennas for broadcast reception.[17] Cessation of service to these television sets could be politically problematic from a consumer point of view, although from a legal point of view, the Communications Act does not account for additional, unconnected television sets. In fact, by statute, the cessation of analog over-the-air service may continue even if additional television sets in a household are not connected to a multichannel television service.[18]

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[16] Comment of the National Association of Broadcasters, *In the Matter of Annual Assessment of the Status of Competition in the Market for the Delivery of Video Programming*, CS Docket 01-129 (Aug. 3, 2001). See also Review of the Commission's Rules and Policies Affecting the Conversion to Digital Television, Second Report and Order and Second Memorandum Opinion and Order, FCC 02-230, 17 FCC Rcd 15978, ¶ 33 (Aug. 9 2002).

[17] Richard Doherty, Viewers Rely on Secondary and Portable TVs: Enhanced Digital Broadcasting Ready to Win Back Largest Wireless TV Audiences, The Envisioneering Group (2004).

[18] 47 U.S.C. § 309(j)(14)(B)(iii).

C. Analog Cable Subscribers

The cessation of analog over-the-air television service also has the potential to affect analog cable subscribers. Cable systems typically retransmit the programming of local television stations from an off-air broadcast signal collected at the cable system's headend, although in some circumstances where it is not possible to deliver a good quality signal over the air to the headend, a broadcaster may employ fiber, microwave or other means. In fact, as the Media Security and Reliability Council found, 76 percent of cable operators receive local broadcast signals over-the-air at the headend via an antenna.[19]

If the over-the-air analog broadcast service were to cease, cable systems would have to either down-convert a digital signal for analog customers or encourage analog customers to upgrade to a digital subscription at additional cost. While the recently-proposed Media Bureau plan allows broadcasters to elect to have their post-transition digital signal carried either on the digital tier or down-converted to analog,[20] this proposal has not been acted on by the Commission. In the absence of such a policy, 50 million analog cable subscribers (nearly 70% of all cable subscribers) would lose local service when analog over-the-air service ceases.[21] However, this option does not account for the many rural cable systems that rely on over-the-air feeds from analog translators which

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[19] Media Security and Reliability Council, Communications Infrastructure Security, Access, and Restoration Working Group, Final Report, p. 33 (Feb. 25, 2004).

[20] Written Statement of W. Kenneth Ferree, Chief Media Bureau Federal Communications Commission, Advancing the DTV Transition: An Examination of the FCC Media Bureau Proposal, before the Subcommittee on Telecommunications and the Internet, U.S. House of Representatives, (June 2, 2004).

[21] According to the National Cable Telecommunications Association, 22.9 cable households subscribe to digital cable out of a universe of 73,782,520 cable households. Thus, the balance of 50.1 million households would be analog only. See National Cable and Telecommunications Association 2004 Mid-Year Industry Overview, pp. 7, 25 (2004), available at: http://www.ncta.com/pdf_files/Overview.pdf.

have yet to be authorized to convert to digital. For those rural systems that rely on analog translator service, cessation of analog broadcast transmissions would mean complete cessation of local service to analog cable subscribers.

D. Satellite Subscribers

Lastly, the cessation of analog over-the-air television service will also affect satellite television subscribers as well. As discussed above, 46 percent of households that subscribe to satellite-delivered video services do not subscribe to a local broadcast package, preferring to receive over satellite only distant network feeds and national programming.[22] The remainder that receive local stations via satellite pursuant to the Satellite Home Viewer Improvement Act of 1999 (SHVIA), receive a digitized version of an over-the-air analog signal delivered to a satellite company's local receive site (or via other means if a good quality signal cannot be delivered via off-air reception). There is currently no provision under the Commission's rules implementing SHVIA for mandatory carriage of digital broadcast signals when analog service ceases. Consequentially, without additional policy reform, if analog service in a market ceased, millions of satellite subscribers would likely lose access to those local signals.

[22] Annual Assessment of the Status of Competition in the Market for the Delivery of Video Programming, FCC 04-5 (rel. January 28, 2004), n. 297.

III. Because the Cost of Television Sets with Integrated ATSC Tuners is Still Quite High and Does not Meet with Wide Consumer Acceptance, the Issue of Over-the-Air Reliance Cannot be Resolved Solely Through This Technology

Despite two Commission mandates requiring the inclusion of ATSC tuners in television sets over a phased-in schedule,[23] such sets are still quite expensive with little evidence prices will fall to a level for widespread consumer adoption in the near future. In addition there is much consumer confusion regarding the range of digital television products and little demonstrated interest in purchase. Moreover, the gradual roll-out of television sets with integrated ATSC tuners will not adequately address the early obsolescence of the established base of millions of analog television sets that have an estimated lifespan of 7-10 years.[24]

At present, there are or will soon be available at retail 115 models of integrated television sets with ATSC tuners. Retail costs are still as high as $799 for two Samsung models measuring at 26" and 27" and $1,000 for two Zenith models at 30" and 32". The

[23] The Commission has mandated the inclusion of ATSC tuners in sets (and other reception devices) equipped with analog tuners under a phased-in schedule: (1) 50% of TVs 36" and larger must include tuners by July 1, 2004, and 100% of them by July 1, 2005. (2) 50% of TVs 25" to 35" must have tuners by July 1, 2005, 100% of them by July 1, 2006. (3) 100% of TVs 13"-24" must include tuners by July 1, 2007. (4) 100% of TV interface devices such as VCRs and DVD players/recorders must include DTV tuners by July 1, 2007. Review of the Commission's Rules and Policies Affecting the Conversion to Digital Television, Second Report and Order and Second Memorandum Opinion and Order, FCC 02-230, 17 FCC Rcd 15978, ¶ 40 (Aug. 9 2002), *aff'd* Consumer Electronics Association v. FCC, 347 F.3d 291 (D.C. Cir. 2003). In addition, the FCC has mandated that any set manufactured in accordance with the recently approved one-way plug and play protocol should include over-the-air ATSC tuners. Implementation of Section 304 of the Telecommunications Act of 1996; Commercial Availability of Navigation Devices; Compatibility Between Cable Systems and Consumer Electronics Equipment, Second Report and Order and Second Further Notice of Proposed Rulemaking, FCC 03-225, ¶ 34 (Rel. Oct. 9, 2003).

[24] "According to major consumer electronics manufacturers and a[n] extended warranty provider, the expected lifespan of a television is approximately seven to ten years." http://www.brandsmartusa.com/dtv/index_2.htm.

more expensive integrated sets, however, can reach $20,000 for a 61" Sony plasma television and $21,000 for 82" Mitsubishi rear projection television. Many televisions with an integrated ATSC tuner, however, still lie within the $1,500-$4,000 range.[25] Although it is anticipated that the cost of such sets will drop, the extent of this price decrease is still the subject of sometimes conflicting speculation.[26]

Partly due to the cost, as well as other factors, consumer acceptance of DTV tuner technology has been slight. Since 1998, only 1.2 million DTV products with integrated off-air tuners have been sold from factories to dealers.[27] Within American homes, between 8-9 percent have DTV equipment while only one percent have the ability to receive over-the-air DTV signals.[28]

As the above indicates, prices will have to fall quite dramatically to gain greater consumer acceptance. In a recent survey of 1017 adults conducted by Pulse and the

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[25] See Consumer Electronics Association, HDTV Guide, pp. 24 et. seq. (Spring 2004), available at: http://www.ce.org/publications/books_references/dtv_guide/HDTV_Guide_Spring_04.pdf. See also Mark Schubin, Mark's Monday Memo (May 3, 2004), available at: http://www.digitaltelevision.com/mondaymemo/mlist/.

[26] For instance, in estimating the effect of its tuner order on the cost of analog sets, the FCC concluded that in 2002, the additional cost would be $200 per television but that the additional cost would drop to between $50-70 towards 2006. Review of the Commission's Rules and Policies Affecting the Conversion to Digital Television, Second Report and Order and Second Memorandum Opinion and Order, FCC 02-230, 17 FCC Rcd 15978, ¶ 39 (Aug. 9 2002), *aff'd* Consumer Electronics Association v. FCC, 347 F.3d 291 (D.C. Cir. 2003). However, the Commission recognized that there widely differing estimates. Motorola had suggested that the additional cost would be $50 per set by 2006. Thompson estimated that the additional cost per set would be $75 by 2007-2008, and a study by ADL estimated that the additional cost would be $16 by 2006. Id. at ¶ 42. Recent technological developments announced by Intel may indicate further decreases in prices for such sets. John Markoff, "New Intel Chip for Digital TV Could Remake the Market," New York Times (Dec. 16, 2003).

[27] CEA Reports More than 1.2 Million Over-the-Air DTV Tuners Sold to Date, Press Release (February 23, 2004), available at: www.ce.org/press_room/press_release_detail.asp?id=10417. Recently, it has been reported that only 1.7 million households have either integrated sets or set-top boxes capable of receiving and decoding digital broadcast signals. Eric A. Taub, "High-Maintenance TV," New York Times (June 24, 2004), available at: www.nytimes.com/2004/06/24/technology/circuits/24hdtv.html.

[28] Lennard G. Kruger, Digital Television: An Overview, Congressional Research Service, Order Code RL31260, p. 11 (April 23, 2004).

Cable and Telecommunications Association for Marketing (CTAM), only 10% said they would very likely purchase a DTV television set within the next three years if the price were approximately $1800, while more significantly, 45% were very likely to purchase if the product dropped to $300.[29]

In light of these facts, it seems unlikely that the problem of maintaining over-the-air reception would be easily solved solely by relying on the distribution of television sets with integrated tuners.

IV. A Coordinated Means Is Needed to Ensure Universal Service for All Affected Constituencies

To ensure continued service for the four groups that rely on over-the-air reception, APTS urges the following policy changes.

- ***Support for the Purchase of Set-Top Converter Boxes***. To address households that rely exclusively on over-the-air reception, either for their primary television set or for additional sets, APTS supports a limited one-year subsidy to encourage consumers to purchase inexpensive digital-to-analog converter boxes. Alternatively, wireless providers who want access to television spectrum may wish to encourage an early return of spectrum by helping to subsidize such equipment themselves in targeted markets.

- ***Full Cable Carriage***. To preserve service for cable households once analog service ceases, the Commission should require both full carriage of the entire over-the-air digital bitstream on the digital tier and a down-converted option for analog cable subscribers.

- ***Satellite Carriage.*** To preserve service for satellite households once analog service ceases, the Commission should require full carriage of digital signals either directly on the satellite or through other means.

[29] "HDTV—At What Price," Pulse/ Cable & Telecommunications Association for Marketing, pp. 6-7.

In addition, three more policy changes may be necessary to ensure an acceptable cessation of analog service.

- ***"Fade to Black."*** First, the Commission may want to consider an analog "fade to black" approach. Under this policy, there would be a gradual cessation of analog service, whereby (a) analog service would be shut off on a rolling geographic or market basis, coupled with (b) a decrease in analog power levels over time as digital broadcasters increase to full power.

- ***Consumer Campaign.*** Second, the Commission may need to coordinate a consumer awareness program of adequate and continuing publicity through a wide range of media concerning the schedule for the cessation of analog broadcast service and options for continuing to receive broadcast television.

- ***United States Freeview.*** Third, if the Commission does enact new rules or policies to encourage the transition to DTV and to protect over-the-air viewership, it should be careful not to impede the development of any new cooperative marketing efforts to package free digital over-the-air services in a way parallel to the Freeview service that was introduced in the United Kingdom.

A. Subsidies or Tax Credits for the Purchase of Over-the-Air Set-Top Boxes

One effective means to ensure universal service would be to create subsidies or "refundable" tax incentives[30] for the purchase of at least one over-the-air DTV conversion box in each qualified household. This model was successfully followed in Berlin, where the regional government offered a 25% subsidy for the purchase of over-the-air set-top boxes that could convert digital signals to analog. Limited subsidies for

[30] See, e.g. J.H. Snider and Michael Calabrese, "Speeding the DTV Transition: A Consumer Tax Credit Can Unplug Analog TV, Reduce the Deficit and Redeploy Low-Frequency Spectrum for Wireless Broadband," New America Foundation Spectrum Policy Program, Spectrum Series Issue Brief #15 (May 2004), available at: http://www.newamerica.net/index.cfm?pg=event&EveID=370.

the purchase of digital reception equipment are also being offered in Italy, Belgium and Switzerland. See Appendix C to this Comment: The European Experience.

At present in the United States, set-top converter boxes cost anywhere from $300 to $400 as the following table illustrates.

Present Retail Prices for Stand-Alone ATSC Tuners (from Retail Websites)

Manufacturer	Retail Outlet	Cost
Motorola	Circuit City[31]	$299.99-319.99
Samsung	Circuit City	$319.99
LG Electronics (includes DVD player)	Circuit City	$449.99
Panasonic	Walmart[32]	$398.00
RCA	Walmart	$388.00
Samsung	Target[33]	$349.99

Assuming a conservative estimate of $400 per unit, and a 50% subsidy targeted at the 30,261,220 households that, according to the 2000 Census, earn less than $25,000 per year in income,[34] the one-time cost of a subsidy in the United States at present prices would be $6,052,244,000. Under a more conservative 25% subsidy, the one-time cost would drop to $3,026,122,000.

The above costs assume the purchase of one set-top box per qualified household. If the subsidy program were to extend to the purchase of multiple set-top boxes in each qualified household, in order to accommodate additional sets that rely on over-the-air reception, the aggregate cost would be higher.

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[31] www.circuitcity.com.

[32] www.walmart.com.

[33] www.target.com.

[34] Income Distribution in 1999 of Households and Families: 2000, http://factfinder.census.gov.

However, with mass production in a market the size of the United States, the cost of set-top boxes could drop considerably. In conversations with equipment manufacturers, APTS has learned that with mass production, the cost could possibly drop to approximately $100 per unit with further price decreases to $50 per unit in subsequent years. Therefore assuming a conservative estimate of $75 per unit, the one-time cost of a 50% subsidy would drop to $ 1.14 billion and **a 25% subsidy could cost $567.4 million**.

The following chart compares the total one-time program costs of a subsidy program using both current and projected equipment prices.

The Cost to Subsidize One Converter Box for Each Household with Income <$25,000 Per Year

	$400 per unit (high end)	$75 per unit (low end)
50% subsidy	$6,052,244,000 program cost	$1,134,795,750 program cost
25% subsidy	$3,026,122,000 program cost	**$567,397,875 program cost**

If subsidies were directed to the 50,016,654 households earning less than $40,000 per year,[35] the cost of a one-time subsidy would increase to the following.

The Cost to Subsidize One Converter Box for Each Household with Income < $40,000 Per Year

	$400 per unit (high end)	$75 per unit (low end)
50% subsidy	$10,003,330,800 program cost	$1,875,624,525 program cost
25% subsidy	$5,001,665,400 program cost	**$937,812,262 program cost**

An alternative means to ensure universal access that has been raised by other parties would be to create subsidies or tax credits for qualified individuals to purchase a

[35] Id.

continuing subscription to either digital cable or satellite services. However, the cost of this continuing subsidy (either through direct payment or tax credits) would be not only prohibitively high but also recurring. For instance, the following chart sets forth the continuing cost of such a program by using as a baseline an average digital cable subscription rate of $55 per month (or $660 per year).[36] The least expensive option would cost **nearly $5 billion each year**.

The Yearly Recurring Cost to Subsidize Digital Cable or Satellite Subscriptions

	HH < $25,000 per year income	HH < $40,000 per year income
50% subsidy	$9,986,202,600	$15,505,495,820
25% subsidy	$4,993,101,300	$8,252,747,910

By way of contrast, a hybrid proposal has been raised by the New America Foundation. It has proposed the creation of a one-time, technology-neutral, "refundable" flat tax credit of $75 for consumers to apply toward the purchase of a single set-top box, integrated receiver or subscription to either cable or satellite service.[37] All households would be eligible for a single tax credit—to be included in the tax refund if they pay no taxes— for a single tax year at a total program cost of $4.7 billion.[38]

However, the mechanism of a tax credit creates a subsidy, not at the point of purchase, but a year later at tax time, assuming, perhaps unrealistically, a forward-

[36] This figure was derived from the cost of basic digital cable subscription on a typical Cox system in Fairfax County, VA. By way of comparison, the average cost for basic analog cable subscription was $36.47 in 2002. "Issues Related to Competition and Subscriber Rates in the Cable Television Industry," United States General Accounting Office, GAO-04-8, p. 20 (October 2003).

[37] J.H. Snider and Michael Calabrese, "Speeding the DTV Transition: A Consumer Tax Credit Can Unplug Analog TV, Reduce the Deficit and Redeploy Low-Frequency Spectrum for Wireless Broadband," New America Foundation Spectrum Policy Program, Spectrum Series Issue Brief #15, pp. 6-7 (May 2004), available at: http://www.newamerica.net/index.cfm?pg=event&EveID=370.

[38] Id.

looking perspective on the part of consumers. In addition, by allowing consumers to use the one-time credit for cable or satellite subscriptions, it does not cover the recurring cost associated with such subscription services.[39]

Therefore, APTS believes that the most cost-effective means of preserving universal service to households that rely on over-the-air reception would be to create a targeted and limited subsidy—at the point of purchase— that supports 25% of the projected $75 purchase price for a set-top converter box for qualified households earning less than $25,000 per year. As indicated above, this would require **a total one-time program cost of $567.4 million**. Alternatively, a more generous 50% subsidy would cost $1.14 billion.

One possible means to structure and manage this program would be as follows. Congress could create a limited, one-year trust fund to help subsidize the purchase of digital converter equipment. Equipment manufacturers (or retailers) would issue mail-in rebate coupons at the point of sale for qualified equipment designed to bring digital over-the-air broadcast signals into the home. These coupons would be of the sort that consumers are quite familiar with when they purchase any electronic equipment or software package from their local retailer. After filling out the coupon indicating the consumer's home address (to ensure that only one coupon gets redeemed per household), a consumer would simply mail the coupon in to the manufacturer for a refund of a specified amount. The manufacturer (or retailer) would then aggregate the coupons and, on a regular basis, submit a claim to the administrator of the trust fund for

[39] In addition, New America assumes that only 50% of households already subscribing to cable or satellite would seek to convert a secondary set. Id. at p. 7. It is therefore unclear to what extent this artificially reduces the cost of the subsidy program, or whether this reflects that nearly 50% of satellite households receive their local signals via satellite pursuant to SHVIA.

reimbursement. In turn, the trust fund administrator would reimburse the manufacturers (or retailers) on a regular and timely basis for the claims made until the fund is depleted.

This plan would have a number of advantages. First, it would be for a limited period of time, but it may be extended if the need demonstrably exceeds the demand. Second, it would place the incentive to purchase qualified equipment directly at the point of purchase, rather than delaying it to tax-time. Third, it would possess a simple mechanism for ensuring that only one converter per household would be subsidized. Fourth, it would be consumer friendly: consumers would be faced with a familiar process for redeeming their rebate coupons, and manufacturers (not consumers) would be tasked with submitting claims to the trust fund administrator. Lastly, it would be relatively simple to administer, because claims would be required to be aggregated on a yearly, semi-yearly or other regular basis.

Alternatively, rather than a single nation-wide plan, a market-by-market approach might work well if coordinated with the interests of wireless providers who would like to have access to television spectrum early in some markets. In this regard, wireless service providers or others who want access to UHF and VHF spectrum might find it advantageous to market test new applications in specific markets before rolling them out nationwide. These companies may seek to work with broadcast stations in those markets to speed the process by helping to underwrite set-top boxes in a particular market if they knew they would gain access to the spectrum sooner.

B. Digital Carriage on Cable

To preserve service for cable households once analog service ceases, the Commission should require both full carriage of the entire over-the-air digital bitstream

on the digital tier and a down-converted option for analog cable subscribers. As the Commission is aware, its Media Bureau has proposed a policy that allows broadcasters to choose either full digital carriage or down-converted analog carriage,[40] under the assumption that many cable systems, when faced with a request for digital carriage, would continue to provide service to analog customers anyway.

However, because of the historical treatment public television stations have received by cable companies, as demonstrated in the frequent carriage drops and channel repositioning documented in the voluminous Turner litigation records, APTS is concerned that this assumption may be overly optimistic. APTS therefore believes that both full carriage in digital and a down-converted option in analog will be necessary to preserve universal service when analog broadcast service ceases.

In addition, APTS remains concerned that broadcast television stations are not guaranteed full and complete carriage of their digital signals on cable, even if they are a digital-only station. As the Commission is aware, its current rule states that digital carriage of a digital-only broadcast station is limited to the broadcaster's "primary video" stream if it is transmitting multiple programming streams simultaneously (i.e. multicasting).[41] APTS has repeatedly demonstrated that this is an incorrect and unnecessarily narrow reading of the governing carriage statute. Moreover, without change to this FCC rule, digital-only broadcast stations face the likelihood that even if

[40] Written Statement of W. Kenneth Ferree, Chief Media Bureau Federal Communications Commission, Advancing the DTV Transition: An Examination of the FCC Media Bureau Proposal, before the Subcommittee on Telecommunications and the Internet, U.S. House of Representatives, (June 2, 2004).

[41] Carriage of Digital Television Broadcast Signals; Amendments to Part 76 of the Commission's Rules; Implementation of the Satellite Home Viewer Improvement Act of 1999; Local Broadcast Signal Carriage Issues; Application of Network Non-Duplication Syndicated Exclusivity and Sports Blackout Rules to Satellite Retransmission of Broadcast Signals, First Report and Order and Further Notice of Proposed Rulemaking, 16 FCC Rcd 2598, ¶ 57 (rel. January 23, 2001).

their digital signals are carried on cable, substantial portions of the programming in which they invest their resources will still be unavailable to the public which they serve. APTS urges the Commission to reverse its ruling and to require full carriage of the digital signal of digital-only broadcast stations.

C. Digital Carriage on Satellite

To ensure the continuation of service to satellite consumers when analog broadcast service ceases, satellite companies such as DIRECTV and EchoStar should be required to carry all free, over-the-air digital signals where local television stations are being carried pursuant to the Satellite Home Viewer Improvement Act of 1999 (SHVIA). Carriage should include, but not be limited to, both high-definition programming and the value-added multicast digital programming.

Digital carriage is clearly consistent with the plain language of SHVIA's carry-one / carry-all construct.[42] While some satellite carriers have claimed that they lack the capacity to rebroadcast the digital signals of each local station in each of the 210 local markets,[43] DIRECTV itself has recently claimed that it will increase the amount of high definition television programming available to the public.[44] Moreover, recent technical submissions to the FCC and Congress have demonstrated that there are technologically

[42] See Letter to Chairman Powell from the Association of Public Television Stations, Docket Nos. 98-120 and 00-96, p. 2 (May 10, 2004).

[43] See, e.g., Ex Parte Notice from Echostar, CS Docket No 98-120 (January 31, 2003); Ex Parte Notice from DIRECTV, CS Docket Nos. 98-120, 00-96 (February 25, 2003).

[44] See *General Motors Corp, Hughes Electronics Corp and News Corp Ltd Seek Approval to Transfer Control of FCC Authorizations and Licenses Held by Hughes Electronics Corp to the News Corp Ltd*, Public Notice, DA 03-1725 (May 16, 2003), p. 3. See also http://www.directv.com/DTVAPP/imagine/HDTV.jsp, and Communications Daily, Satellite (June 5, 2003) (DIRECTV to add Discovery HD Theater, ESPN HD, HDNet and HDNet Movies).

feasible means to deliver terrestrial digital signals via satellite.[45] For instance, the National Association of Broadcasters has demonstrated that satellite firms have available to them a wide range of potential new techniques for expanding their capacity,[46] including:

- Spectrum sharing between DIRECTV and Echostar either directly or through a third-party intermediary;[47]
- Use of Ka-band as well as Ku-band spectrum;[48]
- Higher-order modulation and coding;
- Closer spacing of Ku-band satellites;
- Satellite dishes pointed at multiple orbital slots;
- Use of a second dish to obtain all local stations; and
- Improved signals compression techniques.

Nevertheless, if mandated digital carriage on satellite systems pursuant to SHVIA's carry-one-carry-all provision is not feasible immediately for legal or political reasons, the Commission may consider a phased-in approach to digital carriage as it did

[45] See Reply Comments of the National Association of Broadcasters, Federal Communications Commission, MB Docket No. 03-172 (Sept. 26, 2003); and Letter from Dianne Smith, Capitol Broadcasting Company to Marlene Dortch, Federal Communications Commission, CS Docket 98-120 and MB Docket 03-15 (January 22, 2004). See also Written Testimony of Robert G. Lee, President and General Manager of WDBJ-TV, on behalf of the National Association of Broadcasters, Subcommittee on Courts, the Internet, and Intellectual Property, Committee on the Judiciary, United States House of Representatives, pp. 20-22 (February 24, 2004).

[46] Written Testimony of Robert G. Lee, President and General Manager of WDBJ-TV, on behalf of the National Association of Broadcasters, Subcommittee on Courts, the Internet, and Intellectual Property, Committee on the Judiciary, United States House of Representatives, p. 21 (February 24, 2004).

[47] See, e.g., Letter from Dianne Smith, Capitol Broadcasting Company to Marlene Dortch, Federal Communications Commission, CS Docket 98-120 and MB Docket 03-15 (January 22, 2004).

[48] "[U]sing technology now available, or that will be available during calendar 2004, both EchoStar and DIRECTV could each deliver ALL full-power 19.4 digital stations using only one of their Ka-band orbital slots and two spot beam satellites." Letter from Dianne Smith, Capitol Broadcasting Company to Marlene Dortch, Federal Communications Commission, CS Docket 98-120 and MB Docket 03-15 (January 22, 2004).

with the DTV tuner mandate, digital television infrastructure build-out and closed captioning requirements, among others. Alternatively, the Commission may mandate as an interim measure that all satellite set-top boxes come equipped with integrated digital off-air tuners until the end of the DTV transition, after which full digital carriage would be required on all satellite systems providing local service. This approach would impose little or no burden on satellite carriers themselves, as all three DBS services – DIRECTV, EchoStar and Cablevision's Voom satellite service—are already providing this technology to their HD customers. A Commission rule in this regard would therefore ensure the continuation of this laudable – but voluntary – industry practice for a limited period of time.[49]

D. Additional Means to Ensure An Acceptable and Successful Cessation of Analog Service

In addition to support for the purchase of inexpensive set-top boxes, full cable carriage and satellite carriage, a number of other means may be required to ensure an acceptable and successful cessation of analog service. These include a gradual cessation of analog – a "fade to black" approach—rather than a sudden turn-off date; a comprehensive consumer public relations program; and the possible creation of a version of Britain's Freeview in the United States.

[49] For the reasons articulated above, it is also fully within the Commission's authority, as a further alternative measure, to allow television broadcast stations that have returned their analog channel licenses to the Commission to substitute their digital signal (or an equivalent) under SHVIA.

1. Analog "Fade to Black"

One means of making the transition to digital-only broadcasting smoother would be to phase in the cessation of analog service through a variety of means: a "fade to black" approach, rather than a "snap to black."

One possible means would be to encourage a rolling market-by-market turn-off, beginning with either the highest ranked DMAs, those DMAs with the lowest over-the-air reliance, the most urban DMAs, or some other objective measure. In this regard, the United Kingdom has explicitly considered employing a similar approach by studying a geographic rolling shut-down of analog service.[50] This approach has been thought to have a number of advantages from a social standpoint.[51] (See Appendix C to this Comment: The European Experience)

A second and not inconsistent alternative would be to require that analog stations gradually reduce power over time while DTV stations would be required to increase to full power. To a certain extent, this was the approach applied in Berlin. (See Appendix C to this Comment: The European Experience) Under this scenario, more and more

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[50] As its Independent Television Commission has observed regarding what it called "digital terrestrial television" (DTT): "One means by which DTT coverage could be increased prior to nationwide switchover, enabling the process to start earlier, would be to implement switchover in a rolling region-by-region manner rather than as a nationwide "big bang." With a rolling switchover process, as switchover were implemented in each region, the power of DTT transmissions within that region could be significantly increased, especially for any multiplexes for which analogue conversions were undertaken." Independent Television Commission and the BBC, "A Report on Progress Towards Digital Switchover," pp. 11-12 (April 2003), available at: http://www.digitaltelevision.gov.uk/pdfs/ITC_BBC_switchover_report.pdf.

[51] "In addition to potential coverage and reception benefits, a rolling switchover process seems likely to have substantial practical advantages. It would enable the considerable deployment of technical resources necessary to implement switchover to be broken down into manageable chunks and for the switchover process to be continually improved, building upon the experience gained in those regions which underwent switchover earlier. It should also enable the broadcasters to focus their investment on improving DTT coverage where it was needed most and, as a rolling process got underway, credibility could be built amongst consumers nationwide as they were persuaded that switchover was "for real", building momentum and, perhaps, encouraging some consumers to "future-proof" their next TV set." Id. at 12.

over-the-air households would either lose analog service, or experience a degradation in picture quality, but on a gradual basis rather than on a single date. This approach would have the advantage of giving consumers time to adjust to the cessation of analog service over time and to plan accordingly under the settled expectation that analog service would cease on a particular date.

2. Public Outreach

In order to make the transition to digital-only broadcasting as socially acceptable as possible, the government, with close coordination of the private sector could also implement a comprehensive public outreach and education effort. One model for this comes from Berlin. (See Appendix C to this Comment: The European Experience). In Berlin, a comprehensive public-private partnership got the news out to all affected residents, including: (a) broadcast spots, running bar information and local news and current affairs coverage by broadcasters; (b) a letter sent to every home with details concerning the analog shut-off; (c) leaflets, brochures and newsletters distributed through local retailers; (d) close communication with local associations; (e) a telephone hotline; and (f) an Internet website. Meanwhile, British authorities are also considering the establishment of an independent corporation (currently dubbed "SwitchCo") to coordinate a comprehensive publicity campaign and to manage the analog switchover process.

Extensive use of the print press, radio and other advertising methods (e.g. bus signs, billboards) could also likely be helpful to ensure adequate notice to the populace concerning the immanent cessation of analog service and would encourage proactive

actions by consumers to ensure the continuation of service. In light of these actions, enhanced publicity would also encourage retailers to stock sufficient equipment and to ensure sufficient staff expertise, in order to accommodate increased consumer demand for selected equipment.

3. United States Freeview

An additional means of making the transition to digital over-the-air service easier for non-cable and non-satellite households would be the creation of a cooperative marketing effort to package a new, free digital over-the-air service, that provides consumers with a Freeview-like experience. In Great Britain, Freeview has been extraordinarily successful in fostering digital adoption in that country so far without the need for government subsidies. In the space of two years, the Freeview service, which provides a suite of free digital channels over the air to British homes equipped with a set-top box costing approximately £ 50 each, has pushed digital adoption to 3.7 million, or 53%, of British homes. (See Appendix C to this Comment: The European Experience.)

Although an early return of analog spectrum could be accomplished without establishing a United States Freeview service, it could present a marketplace incentive to get over-the-air set-top boxes (or integrated sets with VSB tuners) into the hands of consumers with a minimum of government intervention. It could also revitalize the over-the-air service by providing more channels than are available currently over-the-air through an inexpensive and consumer friendly technology. In addition, if successful, it could also evolve into a competitive multichannel video service of its own, thus providing competition to cable and satellite and reducing broadcasters' reliance on cable and satellite for the distribution of their signals.

Public television, consumer electronics manufacturers, commercial broadcasters and others are exploring the possibility of establishing such a service within the unique parameters of the United States market. However, if the Commission does enact new rules or policies to encourage the transition to DTV and to protect over-the-air viewership, it should be careful not to impede the development of such a service in the United States through any unnecessary proactive regulatory restrictions.

Conclusion

For the reasons articulated above, APTS urges the Media Bureau to pay particular attention to ensuring the continuation of service for households that rely on over-the-air reception when analog broadcast service ceases. To address this issue, APTS urges the Bureau and Commission to adopt, or recommend to Congress the adoption of, the policy changes outlined above.

_/s/ Lonna M. Thompson_____
Lonna M. Thompson
Vice President and General Counsel
Andrew D. Cotlar
Assistant General Counsel
Association of Public Television Stations
666 Eleventh Street, NW, Suite 1100
Washington, D.C. 20001
www.apts.org
Telephone: 202-654-4200
Fax: 202-654-4236

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Comments of the Association of Public Television Stations: APPENDIX A

Over the Air Reception Statistics from Highest Percentage of Over-the-Air Reliance to Lowest

Nov-03

DMA Rank	DMA Name	TV HH	Over the Air HH	Raw OTA Rank	%	OTA% Rank
97	Harlingen-Wslco-Brnsvl-McA, TX	297,390	120,146	41	40.4	1
203	Fairbanks	31,840	10,826	174	34.0	2
123	Boise	222,490	72,309	68	32.5	3
100	El Paso (Las Cruces)	283,870	89,987	54	31.7	4
57	Fresno-Visalia	521,160	153,742	28	29.5	5
36	Salt Lake City	786,030	229,521	18	29.2	6
155	Anchorage	135,950	37,658	111	27.7	7
14	Minneapolis-St. Paul	1,635,650	451,439	6	27.6	8
7	Dallas-Ft. Worth	2,255,970	615,880	4	27.3	9
11	Houston	1,848,770	495,470	5	26.8	10
191	Laredo	60,210	15,895	163	26.4	11
33	Milwaukee	871,490	228,330	19	26.2	12
136	Duluth-Superior	172,360	44,124	96	25.6	13
105	Ft. Wayne	268,610	67,690	72	25.2	14
68	Green Bay-Appleton	426,820	106,278	43	24.9	15
78	Springfield, MO	389,150	96,898	47	24.9	16
87	South Bend-Elkhart	330,200	80,239	62	24.3	17
21	St. Louis	1,202,170	290,925	11	24.2	18
85	Madison	355,010	85,557	56	24.1	19
49	Albuquerque-Santa Fe	633,500	152,040	30	24.0	20
147	Lubbock	152,090	35,893	114	23.6	21
153	Bangor	139,550	31,957	124	22.9	22
24	Portland, OR	1,073,210	244,692	16	22.8	23
134	Wausau-Rhinelander	178,910	40,255	106	22.5	24
172	Yuma-El Centro	99,290	22,340	149	22.5	25
73	Des Moines-Ames	404,580	90,626	51	22.4	26
169	Missoula	100,180	22,440	147	22.4	27
15	Phoenix (Prescott)	1,561,760	348,272	7	22.3	28
146	Joplin-Pittsburg	153,130	33,995	117	22.2	29
164	Idaho Falls-Pocatello	109,820	24,160	142	22.0	30
192	Twin Falls	58,840	12,945	164	22.0	31
71	Tucson (Sierra Vista)	413,460	90,134	53	21.8	32
38	Grand Rapids-Kalmzoo-B.Crk	724,290	151,377	31	20.9	33
3	Chicago	3,399,460	707,088	3	20.8	34
2	Los Angeles	5,402,260	1,118,268	1	20.7	35

80	Spokane	381,820	79,037	64	20.7	36
127	Yakima-Pasco-Rchlnd-Knnwck	200,950	41,396	103	20.6	37
120	Eugene	226,870	46,055	92	20.3	38
32	Cincinnati	872,330	175,338	26	20.1	39
139	Columbia-Jefferson City	166,500	33,467	120	20.1	40
60	Tulsa	505,000	101,000	45	20.0	41
126	La Crosse-Eau Claire	207,370	41,474	102	20.0	42
207	Helena	24,910	4,957	201	19.9	43
19	Sacramnto-Stktn-Modesto	1,278,430	250,572	15	19.6	44
112	Traverse City-Cadillac	248,930	48,043	90	19.3	45
190	Grand Junction-Montrose	62,380	12,039	172	19.3	46
94	Davenport-R.Island-Moline	308,460	58,916	79	19.1	47
132	Chico-Redding	185,920	35,139	116	18.9	48
69	Toledo	425,770	80,045	63	18.8	49
118	Fargo-Valley City	232,850	43,776	99	18.8	50
170	Billings	99,470	18,700	155	18.8	51
45	Oklahoma City	647,390	121,062	40	18.7	52
50	Louisville	624,470	116,776	42	18.7	53
37	San Antonio	736,240	136,941	35	18.6	54
144	Sioux City	157,970	29,382	128	18.6	55
43	Memphis	662,280	121,860	39	18.4	56
84	Columbia, SC	363,750	66,566	73	18.3	57
199	Bend, OR	50,980	9,329	182	18.3	58
18	Denver	1,399,100	254,636	13	18.2	59
25	Indianapolis	1,038,370	187,945	25	18.1	60
23	Baltimore	1,083,030	193,862	23	17.9	61
54	Austin	577,740	102,838	44	17.8	62
166	Quincy-Hannibal-Keokuk	106,110	18,888	154	17.8	63
194	Butte-Bozeman, MT	57,310	10,201	179	17.8	64
88	Cedar Rapids-Wtrlo-IWC&Dub	328,060	58,067	80	17.7	65
93	Colorado Springs-Pueblo	309,960	54,553	84	17.6	66
10	Detroit	1,923,230	334,642	8	17.4	67
31	Kansas City	875,090	152,266	29	17.4	68
75	Rochester, NY	395,350	68,791	71	17.4	69
110	Lansing	252,040	43,855	98	17.4	70
56	Little Rock-Pine Bluff	524,090	89,619	55	17.1	71
184	Meridian	71,090	12,156	169	17.1	72
188	Great Falls	64,000	10,816	175	16.9	73
29	Raleigh-Durham (Fayetvlle)	947,750	159,222	27	16.8	74
34	Columbus, OH	854,040	143,479	32	16.8	75
76	Paducah-Cape Girard-Harsbg	391,080	65,310	75	16.7	76
133	Rockford	178,930	29,881	126	16.7	77

141	Erie	159,140	26,576	136	16.7	78
104	Charleston, SC	269,880	44,800	94	16.6	79
152	Rochestr-Mason City-Austin	141,300	23,456	145	16.6	80
16	Cleveland-Akron (Canton)	1,542,970	254,590	14	16.5	81
113	Sioux Falls(Mitchell)	247,210	40,790	105	16.5	82
168	Hattiesburg-Laurel	101,810	16,799	161	16.5	83
64	Flint-Saginaw-Bay City	473,910	77,247	65	16.3	84
114	Augusta	244,490	39,852	109	16.3	85
159	Minot-Bismarck-Dickinson	132,070	21,395	151	16.2	86
58	Richmond-Petersburg	512,310	81,970	58	16.0	87
81	Shreveport	379,880	60,401	76	15.9	88
130	Bakersfield	189,650	29,965	125	15.8	89
59	Dayton	511,770	80,348	60	15.7	90
99	Evansville	284,000	44,588	95	15.7	91
148	Terre Haute	146,260	22,963	146	15.7	92
89	Burlington-Plattsburgh	323,070	50,399	87	15.6	93
181	Bowling Green	80,200	12,511	166	15.6	94
67	Wichita-Hutchinson Plus	447,710	68,947	70	15.4	95
129	Amarillo	191,330	29,465	127	15.4	96
137	Topeka	171,660	26,436	137	15.4	97
163	Abilene-Sweetwater	115,410	17,773	159	15.4	98
30	Nashville	904,380	138,370	33	15.3	99
51	Las Vegas	601,700	92,060	49	15.3	100
135	Monroe-El Dorado	174,000	26,622	135	15.3	101
35	Greenvll-Spart-Ashevll-And	806,930	122,653	38	15.2	102
117	Peoria-Bloomington	241,200	36,662	112	15.2	103
198	Mankato	51,460	7,770	193	15.1	104
193	Eureka	57,520	8,628	189	15.0	105
17	Miami-Ft. Lauderdale	1,510,740	225,100	20	14.9	106
131	Columbus-Tupelo-West Point	187,780	27,979	130	14.9	107
103	Greenville-N.Bern-Washngtn	270,560	40,043	108	14.8	108
161	Sherman, TX-Ada, OK	122,000	18,056	157	14.8	109
140	Medford-Klamath Falls	160,910	23,654	143	14.7	110
42	New Orleans	665,190	96,453	48	14.5	111
197	Ottumwa-Kirksville	51,470	7,463	194	14.5	112
101	Youngstown	279,260	40,213	107	14.4	113
12	Seattle-Tacoma	1,685,480	241,024	17	14.3	114
77	Omaha	389,270	55,666	83	14.3	115
200	Casper-Riverton	50,720	7,202	196	14.2	116
90	Jackson, MS	322,480	45,470	93	14.1	117
102	Lincoln & Hstngs-Krny Plus	274,480	38,702	110	14.1	118
46	Greensboro-H.Point-W.Salem	645,430	90,360	52	14.0	119
74	Portland-Auburn	398,500	55,790	82	14.0	120

92	Waco-Temple-Bryan	310,280	43,439	100	14.0	121
28	Charlotte	986,830	137,169	34	13.9	122
116	Reno	242,080	33,407	121	13.8	123
201	St. Joseph	50,400	6,955	197	13.8	124
52	Jacksonville, Brunswick	598,070	81,936	59	13.7	125
86	Chattanooga	349,260	47,499	91	13.6	126
66	Roanoke-Lynchburg	450,090	60,312	77	13.4	127
5	San Francisco-Oak-San Jose	2,440,920	324,642	9	13.3	128
8	Washington, DC (Hagrstwn)	2,224,070	293,577	10	13.2	129
40	Birmingham (Ann and Tusc)	697,570	91,382	50	13.1	130
79	Syracuse	384,290	49,958	88	13.0	131
82	Champaign&Sprngfld-Decatur	378,560	49,213	89	13.0	132
143	Wichita Falls & Lawton	158,290	20,578	152	13.0	133
108	Ft. Smith-Fay-Sprngdl-Rgrs	259,680	33,499	119	12.9	134
128	Corpus Christi	194,040	25,031	139	12.9	135
158	Panama City	132,860	17,139	160	12.9	136
174	Rapid City	93,610	12,076	170	12.9	137
186	Charlottesville	69,670	8,987	184	12.9	138
107	Tyler-Longview(Lfkn&Ncgd)	260,080	32,770	122	12.6	139
109	Myrtle Beach-Florence	258,430	32,304	123	12.5	140
44	Buffalo	647,920	80,342	61	12.4	141
185	Lima	70,850	8,715	187	12.3	142
13	Tampa-St. Pete (Sarasota)	1,644,270	200,601	22	12.2	143
41	Norfolk-Portsmth-Newpt Nws	693,660	84,627	57	12.2	144
55	Albany-Schenectady-Troy	542,670	66,206	74	12.2	145
157	Odessa-Midland	133,170	16,247	162	12.2	146
180	Harrisonburg	85,850	10,474	177	12.2	147
83	Huntsville-Decatur (Flor)	364,340	44,085	97	12.1	148
121	Monterey-Salinas	226,380	27,392	131	12.1	149
209	North Platte	15,670	1,896	210	12.1	150
62	Mobile-Pensacola (Ft Walt)	497,570	59,708	78	12.0	151
122	Macon	225,190	27,023	132	12.0	152
47	Harrisburg-Lncstr-Leb-York	637,240	75,832	66	11.9	153
125	Columbus, GA	207,820	24,731	140	11.9	154
142	Wilmington	159,060	18,928	153	11.9	155
145	Albany, GA	156,610	18,637	156	11.9	156
189	Lafayette, IN	63,130	7,449	195	11.8	157
48	Providence-New Bedford	635,610	74,366	67	11.7	158
176	Alexandria, LA	92,440	10,815	176	11.7	159

61	Knoxville	499,040	57,889	81	11.6	160
183	Jackson, TN	75,280	8,657	188	11.5	161
177	Watertown	91,280	10,315	178	11.3	162
95	Baton Rouge	299,980	33,598	118	11.2	163
204	Victoria	30,830	3,453	205	11.2	164
91	Tri-Cities, TN-VA	322,130	35,756	115	11.1	165
115	Montgomery (Selma)	243,000	26,730	134	11.0	166
124	Lafayette, LA	215,830	23,525	144	10.9	167
162	Gainesville	117,310	12,787	165	10.9	168
22	Pittsburgh	1,175,410	126,944	36	10.8	169
65	Lexington	466,980	50,434	86	10.8	170
111	Tallahassee-Thomasville	250,300	26,782	133	10.7	171
208	Alpena	18,220	1,950	209	10.7	172
175	Lake Charles	93,030	9,768	181	10.5	173
138	Beaumont-Port Arthur	171,310	17,816	158	10.4	174
206	Juneau, AK	25,840	2,662	208	10.3	175
182	Greenwood-Greenville	79,080	8,066	191	10.2	176
205	Presque Isle	29,930	3,053	206	10.2	177
171	Dothan	99,350	10,034	180	10.1	178
4	Philadelphia	2,874,330	287,433	12	10.0	179
179	Jonesboro	87,690	8,769	186	10.0	180
210	Glendive	49,680	4,968	200	10.0	181
1	New York	7,376,330	730,257	2	9.9	182
20	Orlando-Daytona Bch-Melbrn	1,263,900	125,126	37	9.9	183
98	Savannah	288,830	28,594	129	9.9	184
26	San Diego	1,029,210	99,833	46	9.7	185
119	SantaBarbra-SanMar-SanLuOb	230,400	22,349	148	9.7	186
178	Marquette	89,600	8,512	190	9.5	187
9	Atlanta	2,035,060	191,296	24	9.4	188
106	Springfield-Holyoke	260,880	24,262	141	9.3	189
156	Biloxi-Gulfport	133,530	12,285	167	9.2	190
53	Wilkes Barre-Scranton	590,100	52,519	85	8.9	191
196	Cheyenne, WY-Scottsbluff,	52,950	4,713	202	8.9	192
202	Zanesville	32,570	2,899	207	8.9	193
154	Binghamton	139,190	12,249	168	8.8	194
6	Boston (Manchester)	2,391,830	208,089	21	8.7	195
70	Ft. Myers-Naples	421,130	36,638	113	8.7	196
63	Charleston-Huntington	495,190	42,586	101	8.6	197
167	Utica	105,300	8,845	185	8.4	198
149	Salisbury	145,280	12,058	171	8.3	199
151	Wheeling-Steubenville	142,450	11,111	173	7.8	200
195	San Angelo	53,980	4,049	203	7.5	201
96	Johnstown-Altoona	297,460	21,715	150	7.3	202
27	Hartford & New Haven	1,001,320	71,094	69	7.1	203
72	Honolulu	412,190	26,380	138	6.4	204
150	Bluefield-Beckley-Oak Hill	144,210	9,229	183	6.4	205

160	Palm Springs	125,270	7,892	192	6.3	206
173	Elmira (Corning)	97,690	5,959	199	6.1	207
187	Parkersburg	64,560	3,938	204	6.1	208
165	Clarksburg-Weston	106,430	6,279	198	5.9	209
39	West Palm Beach-Ft. Pierce	709,290	41,139	104	5.8	210
	Total	108,454,860	17,462,735	16.1%		

Source: Dennis Haarsager and Television Bureau of Advertising (November, 2003)

Comments of the Association of Public Television Stations:
APPENDIX B

TESTIMONY OF
JOHN M. LAWSON
ASSOCIATION OF PUBLIC TELEVISION STATIONS
BEFORE THE
SENATE COMMITTEE ON COMMERCE, SCIENCE AND TRANSPORTATION
COMPLETING THE DIGITAL TELEVISION TRANSITION
JUNE 9, 2004

Thank you Mr. Chairman. I am John Lawson, president and CEO of the Association of Public Television Stations, the national representative of our nation's *local* public television stations. I emphasize the word *local* because, however one feels about increasing media concentration, one thing is clear: Local public television stations *are and will remain* locally controlled, operated, and programmed.

Historic Leadership from the Senate Commerce Committee

Let me begin by thanking you, Mr. Chairman, for your leadership in convening this hearing. Completing the digital transition is not just important for the communications industry, but for the economic competitiveness of our country as a whole. You are a real driver in getting this transition completed, and I appreciate your inviting me to testify today.

I also want to acknowledge the long history of bipartisan support that public broadcasting has enjoyed from members and leaders of the Senate Commerce Committee, including Senators Warren Magnuson and Barry Goldwater. They played key roles in building Public Television into a unique institution of public service that reaches and has been welcomed into nearly every home in America.

This long history includes current leaders such as Senators Ted Stevens and Daniel Inouye. And I especially want to acknowledge, upon his pending retirement, the leadership of Senator Hollings. He has supported public broadcasting from his governorship of South Carolina, my native state, through today. I want to thank you, Senator Hollings, for all you have done for locally-controlled, noncommercial media in this country.

Innovation with New Digital Services

Mr. Chairman, Public Television is bullish on DTV. Since 1996, our stations have raised over $1 billion for digital conversion, the majority of which has come from non-federal sources. This is $1 billion over and above what we have to raise each year for programming and operations. When economic pressures caused state and private funding to decline early in this decade, Congress stepped up federal funding, which has been crucial for many of our stations' getting on the air with a digital signal — currently 248 stations, or 70 percent of all public stations.

Our embrace of digital technology goes well beyond meeting a federal mandate. In fact, it is no exaggeration to say that our local stations view digital as their greatest opportunity ever to serve the public. Our stations have continuing infrastructure investment needs. Nevertheless, many are beginning the actual deployment of exciting new digital services. We are entering a time of great innovation and experimentation with digital technology, and the early results are very encouraging.

Most stations are broadcasting high-definition television, especially in primetime. During the daytime, many are broadcasting new, multiple standard-definition channels, which are expanding citizens' access to quality children's and educational programming and public affairs coverage. The South Carolina Channel from SCETV, for example, is a new digital channel that provides gavel-to-gavel coverage of the state legislature and other local and statewide programming.

Many of our member stations are using some of their digital bandwidth for datacasting, another service made possible by DTV. Datacasting uses a station's digital signal for sending high-end video, audio, text, and graphics, directly to personal computers – wirelessly. Several stations are datacasting standards-based content directly to school computer networks to boost academic achievement. This is one way that stations are fulfilling their voluntary commitment of one-quarter of their digital bandwidth for education.

Notably, many of our stations also are providing DTV datacasting to improve emergency communications and enhance our homeland security. The June 7 issue of *Broadcasting and Cable* magazine (see Appendix B) reports on a soon-to-be-finalized agreement between the Federal Emergency Management Agency at the Department of Homeland Security, the Association of Public Television Stations (my association), local public station WETA, and the Public Broadcasting Service (PBS). The project will pilot DTV as a backbone of emergency communications for the National Capital Region and could be rolled out nationally after that.

I encourage members of the Committee to examine Appendix C of my testimony. It lists just some of the examples of how local public television stations are pushing the envelope in the use of digital broadcasting in real ways to help real people. Stations are launching new initiatives every day.

Clear Choice for the Federal Government

However, despite recent progress in the DTV transition, the nation remains a long way from achieving the full benefits of digital. Carriage of the digital signals on cable and satellite is still uncertain for most stations. Broadcasters and elected officials are in the same boat when it comes to serving households with over-the-air analog television sets: we cannot just turn off people's access to free, broadcast television. And for public television, especially, we must find a way to fund the production of digital content that will help drive consumer acceptance of DTV.

The implication of the status quo in government policy is clear: without bold government and industry action to quicken the transition's pace, the benefits of digital television will remain beyond the reach of most households for an unacceptably long period of time. Furthermore, the current analog broadcast spectrum that is to be returned to the government for other uses will *likewise* remain unavailable for the same unacceptably long period of time.

Clearly, it is time for a bold initiative to unleash digital. We applaud the work of the FCC's Media Bureau in developing a proactive framework for completing the transition. We continue to have questions about some elements of the plan as it has been crafted to date, but we appreciate the bureau's continued willingness to work with us. I would note that one key element of the Media Bureau's draft plan is a national "hard date" of January 1, 2009 to turn off analog broadcasting. The plan that we in public television are developing would free up considerable blocks of analog spectrum well before 2009. At the same time, we have an obligation to ensure that viewers who only own analog TV sets will not be stranded by the imposition of a hard deadline. We take our universal service obligations very seriously.

Public stations hold licenses to 21 percent of the nation's broadcast spectrum. They know that they hold spectrum in trust, and that the government will reclaim the analog spectrum at some point. However, there is great disparity about when stations believe conditions will be in place that will allow them to switch off analog broadcasting and achieve what we call DOB—Digital-Only Broadcasting. In February, a survey of our member stations found that, assuming the status quo, 86 percent of stations do not believe conditions will be in place for DOB by 2009, the hard date proposed by the Media Bureau plan.

This is the bleak DTV transition scenario with which we are all too familiar. It led us to ask: What *would* it take to change that scenario?

So we asked the question again, this time proposing three reforms to take place:

- *first* – ensuring full post-transition cable and satellite carriage of digital broadcast signals, including multicasting;

- *second* – ensuring the availability of low-cost, digital-to-analog set-top converter boxes for serving households that rely upon free, over-the-air television; and,

- *third* – creation by Congress of a new funding stream, such as a digital content trust fund, for the production and distribution of a new generation of digital educational content to drive market acceptance of DTV.

The results were astonishing: *81 percent* of stations indicated that with implementation of these important reforms, the conditions would exist for *voluntary* surrender of analog by the end of *2007*, a year earlier than the Media Bureau would require. (See Appendix A)

Public Television's DTV Blueprint

Mr. Chairman, we think we are on to something here, and we would like to offer a blueprint today that would accomplish the triple goals of returning a significant amount of spectrum to the government in the next four years, providing a market-based boost for the transition and – most important – delivering new digital *services*, in the truest sense of the word, to consumers. Let me note that the plan we are presenting is still a work-in-progress, and much is dependent upon Congressional and FCC action. But we appreciate the opportunity to share our thinking with the Committee today.

First, we ask that the Commission adopt rules providing for full post-transition digital carriage rights, including multicasting, for local broadcast signals on cable and satellite, and that individual stations be accorded those rights *when they surrender analog*. We would rather negotiate these agreements with the cable and satellite industries, but it is critical that the Commission and/or Congress be prepared to weigh in if necessary. We have shared our views with the Committee regarding carriage provisions in the reauthorization of the Satellite Home Viewer Improvement Act.

Second, we propose that Congress create a trust fund, based upon auction revenues that would support the creation of digital education content by public stations and our partner institutions. The idea of a public broadcasting trust fund has been around since the 1960's, but this one is different. It is limited in scope, is highly targeted toward education and, we believe, will help unlock tremendous economic benefits for the country. Under our plan, public stations would be permitted to surrender their analog spectrum – on a market-by-market basis – almost immediately, if the policy changes we have outlined are instituted.

It is important that this be a *voluntary* plan. Stations in Roanoke, Virginia; Houston, Texas; Anchorage, Alaska; and Tucson, Arizona; have indicated they might be ready for Digital-Only Broadcasting by an early date if the above conditions are met. However, we need to protect consumers in states like Montana, Oregon and North Carolina where some believe that DOB may take much longer.

Our plan is based on the notion that it is not necessary or even desirable for all spectrum – public and commercial – to be returned at once. Moreover, all spectrum, like all politics, is local. Wireless service providers or others who want access to UHF and VHF spectrum might find it advantageous to market test new applications in specific markets before rolling them out nationwide.

Here is a hypothetical example: If ten public stations were willing to surrender analog by the end of 2005 or even sooner, some of the new wireless applications we have heard so much about might be tested in those markets, to be rolled out more broadly as spectrum became available. We would expect that wireless broadband companies would seek to work with stations in those markets to speed the process: For instance, might a wireless company be willing to help underwrite set-top boxes in a particular market if it knew it would gain access to the spectrum sooner?

No Viewer Left Behind

This last point addresses the need for protecting universal access for consumers who rely upon over-the-air television, either exclusively or for second and third sets in the home. Taking care of these citizens is a prerequisite for completing the digital transition.

There may be, therefore, a need to subsidize digital-to-analog set-top converter boxes for some Americans, perhaps on a means-tested basis. However, we believe most consumers can be motivated to *buy* set-top boxes or new digital sets. The key is rolling out and marketing new, over-the-air digital services to consumers. The success of the *Freeview* service in Great Britain is very encouraging in this regard. Perhaps in America, there is an opportunity to re-brand and re-launch broadcast television as "wireless TV" for new generations who have known only cable.

Trust Fund for a New Generation of Digital Education Content

The next step under our proposal is for stations electing DOB and an early return of analog to file a "universal service plan" with the Commission outlining how they would serve their over-the-air analog consumers in a digital-only world. Again, presumably, they would likely have the assistance and support of commercial entities in crafting these plans.

Upon acceptance of the plan, analog spectrum would be surrendered and – this is crucial – stations would be eligible for grants from a new federal digital educational services trust fund. This fund would *not* replace the current appropriation to the Corporation for Public Broadcasting; it would instead provide a new, targeted source of funding for Public Television educational digital content, paid for by future auction revenues.

Because stations would be unlikely to participate in this plan if they were forced to wait years for spectrum auctions, we propose that this fund be created by an initial appropriation. The Treasury then would be reimbursed later by the proceeds of the spectrum auctions but, in the meantime, local stations could begin immediately to deliver new digital educational content.

Mr. Chairman, I realize that much of the focus on the return of analog television spectrum has centered on auction revenue for the government. However, we believe there are much greater economic benefits at stake if the analog spectrum is freed up sooner rather than later. If the wireless industry is correct, their use of vacated spectrum will lead to a great deal of new economic activity. This means equipment orders, jobs, and tax revenue to the government.

The establishment of a digital educational services trust fund itself will have important economic benefits for the nation. The fund would support the creation of a new generation of education and training content and services, and the link between education and economic growth is well known. A trust fund would allow for the localization of educational content and services; universal access to education; meeting the training needs for tomorrow's workforce; building richer digital libraries; and finally, fulfilling

public television's original mission to provide quality educational services to the American public.

A Market-Based Solution

In sum, the Public Television digital transition plan, still in development, builds on ideas raised by the Media Bureau plan, such as full post-transition carriage rights, including multicasting, and goes a couple of steps further. We believe the voluntary, market-based solution we propose will free up large blocks of spectrum much earlier than would otherwise be the case with minimal consumer disruption.

Furthermore, our plan would rely upon market forces and the involvement of future spectrum beneficiaries in ensuring universal service and the provision of set-top converter boxes rather than relying heavily on a federal subsidy. The new educational content services that would flow from the creation of a dedicated fund would represent true digital public service that otherwise might not happen. And very importantly, our plan accelerates the day that public safety agencies will have access to the spectrum they sorely need.

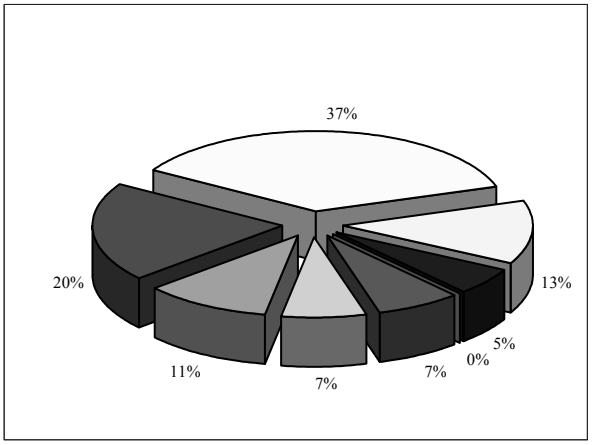
Mr. Chairman, we believe this is a win-win-win proposal that will advance the transition, begin to unleash the economic potential of the now-bottled up analog broadcast spectrum, and finally, deliver a new generation of digital educational services to our communities.

With the expectation that this Committee will consider reauthorizing the Public Broadcasting Act this summer, we believe there is no better time to launch an initiative such as this. We hope you will give this proposal your serious consideration and work with us to develop it. Thank you for the opportunity to be here today, and I look forward to responding to your questions.

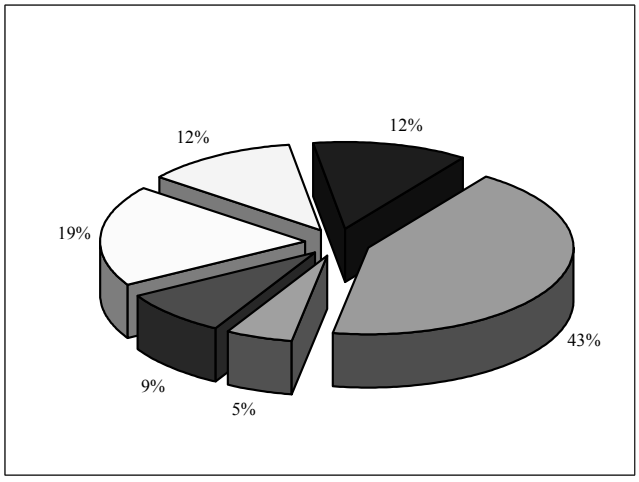
# # #

Exhibit A

Question A: If you knew that cable would carry your digital signals when you switch off analog, that low cost digital-to-analog set-top boxes were available to consumers, and that Congress would establish a trust fund tied to the return of PTV's analog spectrum, how soon would your station be willing to turn off analog?



Question B: Without cable carriage, low cost d/a set-top boxes, or a trust fund, how soon would you expect your station to turn off analog?



Source: *APTS Online Member Consultation, February 2004*

Exhibit B

How Public Television Stations Use Datacasting in the DTV Transition

One promise of the digital transition is the ability for stations to implement datacasting – using digital TV bandwidth to deliver data in many locations throughout the broadcast area of a local public television station. Much like a TV program is broadcast to many television receivers, datacasting delivers digital content – video, audio, data files – to local content servers. Datacasting provides significantly superior quality and reliability with several advantages over satellite or Internet mediums, such as:

- Datacasting is inexpensive compared to satellite transmissions.
- Datacasting in not dependent on large data pipes the way streaming is.
- Datacasting will not bottleneck limited network resources.
- Datacasting provides copyright protection to streaming.

Many APTS member stations are developing applications for datacasting that range from homeland security uses to education and workforce development as a vital part of the digital transition. Following is a sample of local station innovation in datacasting.

Homeland Security/Emergency Preparedness

- The **New Jersey Network (NJN)** was the first in the nation to utilize public digital television to enhance emergency preparedness for nuclear power plants. NJN uses its broadcast signal to send emergency messages at high speeds to desktop computers at New Jersey Office of Emergency Management (OEM) sites around the Oyster Creek Nuclear Generating Station. This is yet another example of NJN's pioneering work in digital transmission technology and will serve as a model for other communities.

- **KLVX/Las Vegas** has worked with the Clarke County Emergency Preparedness office to take advantage of the system KLVX has in place to transmit video and other information to the 300 schools in the region currently linked to KLVX. Current emergency plans from the county designate the public schools as safe evacuation sites and KLVX can communicate with these centers in case of emergency. KLVX is now working to leverage the same technologies to provide for communication links to rural communities and the protection of incoming water supplies to the area.

  KLVX is also using their television technology to help Las Vegas public safety personnel get up-to-the-minute information that can help them respond to emergencies. KLVX can use a portion of its digital television signal to beam information – such as building blueprints or video and audio files – directly to first responders' computers or mobile data terminals. The information can be received using a traditional television antenna that is connected to a special receiver that plugs into a computer or mobile data device. Through the over-the-air digital signal, emergency workers can receive files just as they would with an Internet connection. Because datacasting only uses excess parts of the spectrum, it doesn't interfere with the station's normal HDTV broadcasts.

- In partnership with the University of Texas Medical Branch-Galveston, the **KERA/Dallas** Homeland Security system can deliver crisis communications to discrete or general audiences, including simultaneously sending different messages to health departments, DMAT teams, hospitals, law enforcement/fire safety, and general public. The University of Texas Medical Branch-Galveston is the largest telemedicine provider in the nation and the only academic campus in the U.S. with a maximum CDC-related biological containment laboratory (BSL4 research laboratory).

- The **Kentucky Network (KET)** is capable of datacasting significant amounts of information over the airwaves through their digital transmitter network in what could be called the "wireless portion of Kentucky's information highway." This digital datacasting capability will enable emergency and other high priority information to be delivered to computers around the state on a moment's notice. KET is working with partners such as the Dept. of Public Health, Kentucky State Police, Emergency Management, NDS, Inc., and several others to develop the potential of this new service.

- **Thirteen/WNET** in New York City is developing a program to test and analyze end-to-end communication with first responders over the station's digital broadcast spectrum. A prototype of the Smart Dissemination Networks Project (Smart Nets) is currently being tested. Smart Nets will incorporate a sensor network to collect local data, integrate, disseminate and display video, other sensor data, and multi-source national intelligence data related to special operations for urban environments, perimeter defense, homeland defense, emergency response systems, emergency broadcast systems, and mobile command and control. Covering a 50-75 mile urban area, the system would also receive return requests for information in the same broadcast channel ("in-band return path"). The unique aspect of this system is that the architecture turns a traditionally one-way communications stream into a two-way band. In the event of a failure of cellular and landline communications during a catastrophe like that of 9/11 or the blackout of August 2003, Smart Nets would enable first-responders on the scene to remain in continuous contact.

  "The FDNY is very excited about the kinds of capabilities that Smart Nets will provide our units in the field," said Deputy Fire Commissioner of Support Services Milton Fischberger. "We have taken significant steps in improving our communications infrastructure since 9/11. The addition of Smart Nets will only further increase the scope of our ability to communicate to our members, and in turn, the ability to efficiently operate at emergencies."

Education

- **KERA/Dallas** uses a local content server to receive and store transmitted information, which maximizes the available DTV bandwidth because information can be received 24 hours a day. Data transmissions can occur at anytime and are then stored for use at a school's convenience. Beyond equipment, the KERA datacasting program includes installation, technical training and support, opportunistic bandwidth management (scheduling and capacity maximization), customer installations and front-line support, and the development of broad content networks to provide a wide range of quality titles and enriched content to the schools.

  The real value is to the teacher and ultimately the students. Most content is readily accessible from the KERA on-site content library. At the user interface, teachers can easily search the large library by grade, subject, title or indexed learning objectives. Teachers spend less time acquiring and manually manipulating the video segments and more time enriching their lesson plans. The students get more information in a more interesting and entertaining format, which increases the probability of connection and information retention.

- **KCPT/Kansas City**, in partnership with three other Missouri stations (**KMOS/Warrensburg-Sedalia, KETC/St. Louis** and **KOZK/Springfield**), the adult education division of the Missouri Department of Education, and the state library system are looking to use datacasting to train librarians in local libraries to mentor students taking GED courses for certification. This project is in the discussion phase, but builds on a successful datacasting pilot project with two local colleges and one area middle school to test the educational and practical applications of this enhanced service.

This proposal offers a unique solution for those living in rural areas. Trained librarians, who will act as facilitators for the students pursuing a GED certificate, help make up for the shortage of money to pay teachers. Situating the "study groups" in libraries makes it more readily available to adult students who may get cold feet having to enter a classroom setting again after years of being away from this environment. Study groups will meet at the library to watch videos and use workbooks from *GED Connection* that will be located at the sites along with curriculums. Librarians will connect students, via phone or Internet, with tutors when needed.

Workforce Development

- **New Jersey Network (NJN)** is working with the N.J. Department of Labor, other state agencies and community-based organizations to provide workforce development services through the "New Jersey Workplace Literacy Program." NJN is using a variety of technologies to deliver workforce training materials to welfare recipients, dislocated workers and other job seekers at 14 sites across the state.

  This program fully incorporates the *Workplace Essential Skills* video and web-based instructional system to teach individuals at the pilot sites basic skills needed for workplace success. A crucial element of the program is that it enables participants to address their own employment and skills issues at their own place. The videos teach basic reading, writing and math skills in the context of real-life work settings. At the same time, important concepts such as making a good impression, employee dependability, making the most of introductory training and growing within the job are reinforced.

- **WHYY/Philadelphia** has been involved in a two-year datacasting pilot project to digitize most of the *GED Connection* and *Workplace Essential Skills* content from PBS LiteracyLink. WHYY made this instructional content and accompanying print materials available at 20 locations in four counties, including a homeless shelter, job centers and two community colleges.

  The pilot project focuses on adult basic education: preparing the entry-level worker to enter the workplace and increase the number of residents in Pennsylvania completing their high school and college educations through distance learning. WHYY is participating in this pilot project to demonstrate the effectiveness and potential digital broadcast-based delivery to help bridge the digital divide and deliver training where people need it most.

Comments of the Association of Public Television Stations:
APPENDIX C

The European Experience

Andrew D. Cotlar
Assistant General Counsel, APTS

While the U.S. has yet to implement mandatory return of analog spectrum, some portions of Europe have either already completed portions of this process or will soon complete it. In this regard, the Commission of European Communities has recently asked European Union member states to report by the end of 2003 on their plans for analog switch-off.[52] As part of this directive, the Commission has set forth a number of suggested elements that may be part of member analog switch-off plans.

First, it has suggested that market forces and informed consumer demand must drive the process, emphasizing that it should be a "market-led process, not a simple infrastructure change with no added value for citizens."[53] Second, it has suggested that plans should be "transparent, justified, proportionate, and timely."[54] Third, it has suggested that plans should be non-discriminatory, technologically neutral and that analog switch-off should only occur when digital broadcasting has achieved almost universal penetration in order to minimize social cost.[55] Lastly, the Commission has stated that policy intervention to support the cessation of analog television service should occur solely on the national level with the EU possessing only an advisory and coordinating function.[56] In particular, the Commission does not envision that the EU would propose a common analog switch-off date; rather this would occur at a time of each nation's choosing.[57]

At present, in Western Europe, at least 15 nations have legislation in place to govern the transition from analog to digital television; eight European nations have

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[52] The eEurope 2005 Action Plan requires member states of the EU to publish their analog-to-digital switchover plan by the end of 2003. "Digital Broadcasting and Switchover," Press Release, European Commission (Sept. 22, 2003), available at: http://europa.eu.int/rapid/start/cgi/guesten.ksh?p_action.getfile=gf&doc=IP/03/1276|0|RAPID&lg=EN&type=PDF. For the full policy document, see: http://europa.eu.int/information_society/topics/ecomm/doc/shortcuts/digital_broadcasting/acte_en_vf.pdf.

[53] Commission of the European Communities, Communications from the Commission to the Council, the European Parliament, the European Economic and Social Committee and the Committee of the Regions, on the transition from analogue to digital broadcasting (from digital "switchover" to analog "switch-off"), SEC(2003)992, p. 4 (Sept. 17, 2003).

[54] Id.

[55] Id.

[56] Id.

[57] Id.

already initiated digital broadcasts; and analog shut-off dates range from 2006 to 2015.[58] Reproduced below is a chart that compares the various Western European nations.[59]

Country	DTV Launch Date	Projected Switch-off Date
UK	1998	2012[60]
Sweden	1999	2008[61]
Spain	2000	2012 (some regions earlier)[62]
Finland	2001	2007[63]
Luxembourg[64]	2002	---
Germany	2002	Ongoing-2010
Italy[65]	2003	2007

[58] See Alexander Shulzycki, "DTT in Europe: Market Overview and Assessment," DigiTAG Exploratory Meeting (Sept. 2003), available at: http://www.digitag.org/lateupdate/globupdate.htm.

[59] This chart is based partially on one constructed by Alexander Shulzycki, with modifications based on more recent sources indicated in footnotes. Id.

[60] Dugie Standeford, "British Govt. Aims for 2012 DTV Rollout, More Delay Possible," Communications Daily (July 23, 2004). Press Release, "Tessa Jowell makes announcement on the progress of digital switchover," (July 22, 2004), available at: http://www.digitaltelevision.gov.uk/press/2004/dig_switchover_progress.html. See also "UK switch-off target put back to 2012," Digital Television Group (July 22, 2004), available at: www.dtg.org.uk/news/uknews/-analogue_swo.htm.

[61] "Digital övergång I Sverige," Kulturedepartementet Swedish Ministry of Culture (January 9, 2004), available at: http://europa.eu.int/information_society/topics/ecomm/highlights/current_spotlights/switchover/national_swo_plans/index_en.htm.

[62] The national switch-off date is December 31, 2011 with some regions being shut off before that date "Strategic Plan for the Transition from Analogue to Digital Television," Ministry of Science and Technology, Government of Spain, p. 3 (December 18, 2003), available at: http://europa.eu.int/information_society/topics/ecomm/highlights/current_spotlights/switchover/national_swo_plans/index_en.htm.

[63] Switch-off date is August 31, 2007. "Government Resolution on the Switch-Over to Digital Television Broadcasting and the Related Measures," Government of Finland, p. 1 (no date), available at: http://europa.eu.int/information_society/topics/ecomm/highlights/current_spotlights/switchover/national_swo_plans/index_en.htm.

[64] Luxembourg's single digital terrestrial service was initiated on July 6, 2002. "Digital Television arrives in Luxembourg!" available at: www.bce.lu/company/news/shownews/shownews.php?shonews=14. Luxembourg has decided not to develop a switchover plan with specific target dates. "Digital Switch Over Plans in Luxembourg," Institut Luxembourgeois de Régulation (February 27, 2004), available at: http://europa.eu.int/information_society/topics/ecomm/highlights/current_spotlights/switchover/national_swo_plans/index_en.htm.

[65] The switch-off date is December 31, 2006. "Italian Plan for Digital Switchover," pp. 2, 5(no date), available at: http://europa.eu.int/information_society/topics/ecomm/highlights/current_spotlights/switchover/national_swo_plans/index_en.htm.

Netherlands[66]	2003	---
Portugal[67]	2004	2005+
Switzerland	2004	2015
Denmark[68]	2005	---
France[69]	2005	2010+
Greece[70]	2005	2010+
Norway	2005	2006-2008
Austria[71]	2006	2007-2010
Belgium	---	Flanders 2005
Ireland[72]	---	---

The experience of two of these European countries -- Germany and Great Britain -- is particularly instructive regarding the proper conditions for and means of managing an analog switch-off.

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[66] The Netherlands has not formally established a switch-off date but a working group states there will be no switch-off before 2007. "Dutch intentions regarding the switchover from analogue to digital TV broadcasts over the air," (no date), available at: http://europa.eu.int/information_society/topics/ecomm/highlights/current_spotlights/switchover/national_swo_plans/index_en.htm.

[67] After a failed attempt at a digital launch in 2002, Portugal will re-initiate digital broadcasts in early 2004. The government intends on initiating a digital switchover sometime in 2005 but no definite end-date has been announced. "Portuguese Switchover Plan from analogue to digital," (January 1, 2008), available at: http://europa.eu.int/information_society/topics/ecomm/highlights/current_spotlights/switchover/national_swo_plans/index_en.htm.

[68] Information Transmitted by the Ministry of Culture, Denmark to the European Commission (January 12, 2004), available at: http://europa.eu.int/information_society/topics/ecomm/highlights/current_spotlights/switchover/national_swo_plans/index_en.htm.

[69] Free-to-air digital television service in France is slated to begin on March 1, 2005, with the end of analog transmissions to be five years later, subject to sufficient coverage and penetration (i.e. 2010 or later). Sotires Eleftheriou, "French DTT to Launch March 2005," (June 11, 2004), available at: www.advanced-television.com/2004/news_archives_2004/June7_11.htm.

[70] "Announcement by Greece Concerning the Strategy for the Transition from Analog to Digital Broadcasting," Communication to the European Commission, p.3 (December 30, 2003), available at: http://europa.eu.int/information_society/topics/ecomm/highlights/current_spotlights/switchover/national_swo_plans/index_en.htm.

[71] "Introduction of digital broadcasting in Austria: Communication from the Republic of Austria to the European Commission," p. 5 (December 2003), available at: http://europa.eu.int/information_society/topics/ecomm/highlights/current_spotlights/switchover/national_swo_plans/index_en.htm.

[72] "Ireland's Intentions with Regard to the Transition from Analogue to Digital Broadcasting," (December, 2003), available at: http://europa.eu.int/information_society/topics/ecomm/highlights/current_spotlights/switchover/national_swo_plans/index_en.htm.

A. *Germany: Analog Switch-off in Berlin*

In Berlin-Brandenburg, an area with high cable and satellite penetration,[73] the government successfully shut down analog television service on August 4, 2003 – the first region in the world to go digital-only. Berlin engaged in a massive publicity program through a wide range of media, coupled with a subsidy for the purchase of over-the-air set-top boxes for those on the social welfare rolls, to successfully shut down all TV broadcast analog operations with a minimum of social discomfort.[74]

The analog shut-off occurred in three stages. At stage one (October 31, 2002), two high-power analog channels were switched to digital transmission to demonstrate the reception and quality of digital television broadcasts and to provide some orientation for the households affected regarding the need to purchase new receivers. During stage two (February 28, 2003), (a) all high-power transmitters were switched to digital transmission; (b) the analog transmissions of all national commercial broadcasters ceased; and (c) "public-sector" services continued analog transmission but only via lower power frequencies. At this point, Berlin residents were able to receive over 20 separate free digital services over the air. Lastly, at stage three (August 4, 2003), all analog frequencies were switched off completely.[75]

The publicity program entailed a concerted communication with the public from October of 2002 through August of 2003 and involved (a) broadcast spots, running bar information and local news and current affairs coverage by broadcasters; (b) a letter sent to every home in February of 2003; (c) leaflets, brochures and newsletters distributed in local shops; (d) close communication with the Berlin tenants' association and local consumer associations; (e) a telephone hotline; and (f) an Internet website.[76] The costs were shared between broadcasters and the Berlin-Brandenburg regulatory authority (mabb) and remained well below the budgeted € 1.2 million.[77]

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[73] In Berlin, which has 1.8 million television households, 160,000 homes relied on over-the-air reception and 90,000 homes received over-the-air signals for second and third television sets. Mark Landler, "German Way to Go Digital: No Dawdling," New York Times (Nov. 3, 2003). As a comparison, in the German TV market generally, out of 36.2 million TV households, 95% receive multichannel television via cable and/or satellite. As of December 2003, 14% were digital households. Hans Hege, "Digital Switch-Over in Berlin," (May 12, 2004), available at: http://www.newamerica.net/index.cfm?pg=event&EveID=370

[74] Mark Landler, "German Way to Go Digital: No Dawdling," New York Times (Nov. 3, 2003). See also "Berlin Goes Digital: the Switchover of Terrestrial Television from Analogue to Digital Transmission in Berlin-Brandenburg, Experiences and Perspectives," available at: http://www.digital-law.net/switch-off/berlin_project_report.pdf.

[75] "Berlin Goes Digital," p. 4. See also Hans Hege, "Digital Switch-Over in Berlin," (May 12, 2004), available at: http://www.newamerica.net/index.cfm?pg=event&EveID=370.

[76] Id. at p. 6.

[77] Id.

To ensure a successfully switchover in a socially acceptable manner, the authorities devised two separate subsidy programs. The first subsidy program was private and market-driven, with the receiver industry providing digital-to-analog over-the-air set-top boxes for € 8.50 per month to entice purchase by low income homes. However little use was made of this offer.[78] The second subsidy was targeted to homes entitled to a TV set under German social security rules. Homes dependent on terrestrial reception were entitled to a government-paid subsidy of 25% for boxes that cost approximately € 100 (equivalent to $127) each over an estimated 6,700 sets.[79] Interestingly, set-top box purchases were not limited to homes that were dependent on over-the-air reception; homes that subscribed to cable or satellite also purchased set-top boxes.[80] By all accounts, the results, which now bring 27 free over-the-air DTV channels (plus additional multimedia services) to Berlin residents,[81] have met with substantial consumer satisfaction.[82]

Germany plans on implementing similar, and in some cases unsubsidized, analog shut-offs in other regions, including Cologne-Bonn and Hanover-Bremen in the summer of 2004.[83] Analog shut-off will continue on a regional basis with a target completion date likely to be 2010.[84]

B. *United Kingdom: From Pay DTV to Freeview*

While the Germans had engaged a carefully planned conversion process for digital conversion and analog switch-off within the context of consumer subsidies for the purchase of converter boxes, in Great Britain, the digital conversion was governed more by market forces.

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[78] Id. at p. 8.

[79] Id. at pp. 8, 15. See also Mark Landler, "German Way to Go Digital: No Dawdling," New York Times (Nov. 3, 2003), and Thomas Hazlett, "Finally, Something Good on German TV: Berlin has digital television. Why can't the U.S. follow?" (Oct. 7, 2003), available at: http://slate.msn.com/id/2089424/. Hans Hege, the Director of the Berlin media regulator (Medienanstalt Berlin-Brandenburg) estimated that 6,000 set-top boxes were provided at a total cost of € 550,000. Hans Hege, "Digital Switch-Over in Berlin," (May 12, 2004), available at: http://www.newamerica.net/index.cfm?pg=event&EveID=370.

[80] Hans Hege, "Digital Switch-Over in Berlin," (May 12, 2004), available at: http://www.newamerica.net/index.cfm?pg=event&EveID=370.

[81] Berlin to Expand DTT Offer, The Digital Television Group, www.dtg.org.uk/news/world/-berlin_expands.htm.

[82] Hans Hege, "Digital Switch-Over in Berlin," (May 12, 2004), available at: http://www.newamerica.net/index.cfm?pg=event&EveID=370.

[83] Id.

[84] Id.

In the United Kingdom, over-the-air digital television was initially introduced as a subscription service (ITV Digital), which subsequently failed to gain consumer acceptance due to a number of factors.[85] Shortly afterwards, the government reclaimed spectrum from the failed subscription venture and reassigned it to a consortium of BBC, BSkyB and Crown Castle (a transmitter company), which engaged in a joint marketing effort, called Freeview, launched in October of 2002. Through this effort, homes with the ITV Digital boxes could receive about 30 over-the-air channels (in addition to other services like music channels) for free. Additional households could purchase over-the-air digital set-top boxes to allow them to view digital signals on their analog sets. While prices for the boxes averaged between £80-100 (equivalent to $136-170) toward the end of 2003 without government subsidies,[86] by the first quarter of 2004 equivalent equipment averaged approximately £50 each.[87]

By December 17, 2003, there were 1.8 million sales, with average sales approaching 100,000 per month (and in the middle of November, 100,000 sales in a single week), prompting projections that Freeview would be in 2.5 million homes and that 50 percent of the 24.9 million homes would have digital television by the end 2003.[88] In fact, at the close of the first quarter of 2004, the number of Freeview homes had increased to 3.7 million, increasing the number of digital homes in Britain to 53 percent.[89]

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[85] These included a limited number of channels that failed to compete with BSkyB's 500 channels and a costly deal to cover the Football League. Stephen Dowling, "Freeview marks its first year" BBC News, (Oct. 30, 2003), available at: http://news.bbc.co.uk/go/pr/fr/-/1/hi/entertainment/tv_and_radio/3197802.stm.

[86] "Freeview reaches first birthday," BBC News (Oct. 30, 2003), available at: http://news.bbc.co.uk/go/pr/fr/-/1/hi/entertainment/tv_and_radio/3225241.stm. See also Matt Wells, "Digital TV at turning point as converts top 50%," The Guardian (Dec. 17, 2003).

[87] "Digital Television Update—Q1 2004," Office of Communications, p. 9 (June 2, 2004), available at: www.ofcom.org.uk/research/industry_market_research/m_i_index/dtv. By Christmas of 2003, some retailers were selling basic adapter boxes for about £40. Progress Towards Achieving Digital Switchover: a BBC Report to the Government, pp. 1-2 (April 26, 2004), available at: http://www.culture.gov.uk/global/publications/archive_2004/bbc_report_on_digital_switchover.htm.

[88] "Half of UK 'Getting Digital TV," BBC News (Dec. 17, 2003); Matt Wells, "Digital TV at turning point as converts top 50%," The Guardian (Dec. 17, 2003). The 2.5 million figure is derived from adding sales of Freeview-type boxes to existing ITV boxes that already receive the Freeview service. The 50% figure is derived from adding up Sky's 7 million subscribers, the 2.2 million digital cable subscribers, owners of integrated digital sets, owners of ITV boxes and Freeview boxes. Matt Wells, "Digital TV at turning point as converts top 50%," The Guardian (Dec. 17, 2003). See also BBC Press Release About the Success of Digital TV, (Dec. 17, 2003), available at: www.digitag.org/news/newsdetail.php?Id=334.

[89] Hugo Martin, "Freeview Popularity Still Growing," Digital TV Group (May 26, 2004), available at: www.dtg.org.uk/latest/latest_freeview_progress.htm. See also "Digital Television Update—Q1 2004," Office of Communications, p. 1 (June 2, 2004), available at: www.ofcom.org.uk/research/industry_market_research/m_i_index/dtv.

The UK plans on ceasing all analog television broadcasts by 2012.[90] However, the process by which this switchover will be managed and accomplished are far from certain at this juncture. For instance, in April of 2003, an independent television commission and the BBC have suggested a geographic rolling shut-down of analog service.[91] This approach was thought to have a number of advantages from a social standpoint.[92] In April of 2004, the BBC again suggested a geographic rolling shut-down of analog but also identified a number of other challenges. First, it reported that left entirely to the market, digital penetration (of one primary set only) would not reach 95% of households until 2013.[93] The BBC also identified difficulties in converting secondary television sets, many of which rely on set-top antennas, and legacy video recording devices.[94] In addition, it reiterated the need for a comprehensive marketing and communications effort under the auspices of a properly staffed and budgeted organization, an appropriate regional switchover sequence, and a large-scale switchover pilot to convert one region to digital-only broadcasting.[95] In addition, British authorities are also considering the establishment of an independent corporation (currently dubbed "SwitchCo") to coordinate a comprehensive publicity campaign and to manage the analog switchover process.[96]

The importance of these issues were underscored by the fact that by the end of 2003, despite remarkable advances in digital distribution, 46 percent of UK households

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[90] Supra, note 60.

[91] "One means by which DTT coverage could be increased prior to nationwide switchover, enabling the process to start earlier, would be to implement switchover in a rolling region-by-region manner rather than as a nationwide "big bang." With a rolling switchover process, as switchover were implemented in each region, the power of DTT transmissions within that region could be significantly increased, especially for any multiplexes for which analogue conversions were undertaken." Independent Television Commission and the BBC, "A Report on Progress Towards Digital Switchover," pp. 11-12 (April 2003), available at: http://www.digitaltelevision.gov.uk/pdfs/ITC_BBC_switchover_report.pdf.

[92] "In addition to potential coverage and reception benefits, a rolling switchover process seems likely to have substantial practical advantages. It would enable the considerable deployment of technical resources necessary to implement switchover to be broken down into manageable chunks and for the switchover process to be continually improved, building upon the experience gained in those regions which underwent switchover earlier. It should also enable the broadcasters to focus their investment on improving DTT coverage where it was needed most and, as a rolling process got underway, credibility could be built amongst consumers nationwide as they were persuaded that switchover was "for real", building momentum and, perhaps, encouraging some consumers to "future-proof" their next TV set." Id. at 12.

[93] Progress Towards Achieving Digital Switchover: a BBC Report to the Government, pp. 1-2 (April 26, 2004), available at: http://www.culture.gov.uk/global/publications/archive_2004/bbc_report_on_digital_switchover.htm.

[94] Id.

[95] Id.

[96] Id. at 45.

still relied on analog terrestrial reception.[97] Meanwhile, the government has called for it, broadcasters and the independent telecommunications regulator Ofcom to engage in discussions to establish a timetable and process for analog shut-off.[98] In addition, the UK government has taken the first steps to consider shutting down analog service in two Welsh villages (totaling 350 homes) as a test pilot to be initiated in November of 2004.[99]

C. *Other European Nations: Digital Roll-Out and Subsidies*

In addition to Germany and the United Kingdom, a number of other European countries have also taken substantial steps towards converting to digital-only broadcasting, some with the assistance of subsidies and some without.

Italy, Belgium and Switzerland have each created effective subsidies to ensure the success of their digital roll-out. In Italy, for instance, where digital broadcast was initiated at the end of 2003, four digital multiplex operators are transmitting a total of 20 TV channels in selected regions. The government has created a € 110 million fund to subsidize the purchase of set-top boxes at € 150 each, allowing converter boxes to cost only € 49 at retail (the average cost of decoder boxes in Italy is €220). However, this program is limited to the first 750,000 buyers. Between January, 2004 and the end of June, 2004, an estimated 273,557 receivers have been sold with only 35 percent of the dedicated funds being drawn upon. It is expected that a million boxes will be in homes by the end of 2004.[100]

In Belgium, the Flemish government has set aside € 12.4 M for set-top box subsidies with the goal of universal coverage by the beginning of 2005 when analog broadcasting will cease in Flanders.[101]

In Switzerland, analog channels in non-local languages were switched off in 2002

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[97] Id. at 6.

[98] Statement of Tessa Jowell, Secretary of State for Culture, Media and Sport, to Parliament (May 19, 2004), available at: www.digitaltelevision.gov.uk/press/2004/ministerial_statement.html.

[99] Hugo Martin, "First Switchover Trial in Wales," Digital TV Group (May 13, 2004), available at: www.dtg.org.uk/latest/latest_welsh_trial.htm.

[100] See Branislav Pekic, "Italian DTT on a Roll," Digital TV Group (May 20, 2004), available at: www.dtg.org.uk/world/-italian_dtt_roll.htm; "Digital TV: 150 Euro for Those Who Buy a Decoder," Agenzia Gironalistica Italia, (February 23, 2004), available at: www.agi.it/english/news.pl; and "Digital TV: 273,557 Decoders Bought in Six Months," Agenzia Gironalistica Italia, (July 23, 2004), available at: www.agi.it/english/news.pl?doc=200407231903-1221-RT1-CRO-0-NF11&page=0&id=agionline-eng.oggitalia. See also "Italian Plan for Digital Switchover," pp. 2, 5(no date).

[101] See Alexander Shulzycki, "DTT in Europe: Market Overview and Assessment," DigiTAG Exploratory Meeting (Sept. 2003), available at: http://www.digitag.org/lateupdate/globupdate.htm.

in order to accommodate a region-by-region roll out of digital service.[102] Non-local languages in each region were made available via satellite for free; for low-income households, the government offered a subsidy for the purchase of satellite equipment necessary to decrypt non-local language services.[103] A year later, in December of 2003, it was reported that in the German-speaking part of Vale canton, four channels of analog terrestrial service replaced by 35 digital terrestrial channels.[104]

By way of contrast, Finland and Norway have not implemented subsidies. In Finland, the first European nation to commit to an analog switch-off date (initially early 2006 but now August 31, 2007), full national coverage has nearly been achieved with nearly 94 percent of the population expected to have access by August of 2004. During 2003 alone, 202,000 set-top boxes were shipped and over 20,000 integrated TV sets were bought apparently without government subsidies.[105] Similarly, in Norway, a country in which analog shut-off is scheduled for January 1, 2008, it was originally suggested that all set-top boxes be provided free of charge. However, the government decided not to provide any subsidies for such equipment, preferring to rely on a market-oriented "Freeview"-style approach.[106]

Throughout Europe in 2003, there were 29 brands and 34 models of digital terrestrial set-top boxes with an average cost between € 99-299 each.[107] It is expected that low-end set-top boxes will drop to € 36 each by 2007.[108]

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[102] See Alexander Shulzycki, "DTT in Europe: Market Overview and Assessment," DigiTAG Exploratory Meeting (Sept. 2003), available at: http://www.digitag.org/lateupdate/globupdate.htm. See also Jorn Krieger, "Swiss Switch Off Analogue Frequencies," Digital TV Group (June 12, 2002), available at: www.dtg.org.uk/reference/dtt_world/dtt_switzerland.htm.

[103] Jorn Krieger, "Swiss Switch Off Analogue Frequencies," Digital TV Group (June 12, 2002), available at: www.dtg.org.uk/reference/dtt_world/dtt_switzerland.htm.

[104] Jorn Krieger, "Local Swiss DTT Venture Broadcasts to Country's Skiing Regions," Digital TV Group (December 18, 2003), available at: www.dtg.org.uk/news/world/-swiss_dtt_skiing.htm.

[105] Goran Sellgren, "Finnish DTT Soon to Achieve 99.9% Coverage," Digital TV Group (January 19, 2004), available at: www.dtg.org.uk/news/world/-finnish_99pc_coverage.htm.

[106] See Goran Sellgren, "Norwegian Legislation Establishes DTT by 2008," Digital TV Group (March 19, 2004), available at: www.dtg.org.uk/reference/dtt_world/dtt_norway.htm; and Goran Sellgren, "Norges Televisjon Unveils New DTT Funding Model," Digital TV Group (June 5, 2003), available at: www.dtg.org.uk/reference/dtt_world/dtt_norway.htm. Likewise, in Spain, where an initial digital terrestrial initiative collapsed, the government is considering a new digital television plan modeled on Freeview. David Del Valle Fernandez, "Spain: General Situation," Digital TV Group (December 3, 2003), available at: www.dtg.org.uk/reference/dtt_world/dtt_spain.htm.

[107] Alexander Shulzycki, "DTT in Europe: Market Overview and Assessment," DigiTAG Exploratory Meeting (Sept. 2003), available at: http://www.digitag.org/lateupdate/globupdate.htm.

[108] Id.