
THE ROAD TO ANALOG SWITCH-OFF: HOW THE UNITED STATES CAN TURN OFF ANALOG TELEVISION WITHOUT SIGNIFICANT SERVICE DISRUPTION

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The American media landscape is undergoing a fundamental transformation as the television broadcast service transitions to a wholly digital infrastructure. Initiated by the Federal Communications Commission (“FCC”) in 1987,¹ and subsequently amended and modified by a series of FCC orders and Congressional acts, including the Telecommunications Act of 1996² and the Balanced Budget Act of 1997,³ the digital television (“DTV”) transition promises to revolutionize television. The inherent flexibility of DTV allows for the transmission of high-definition programming or the simultaneous transmission of multiple standard definition programming as well as ancillary data delivery.⁴ This flexibility can bring a new range of wireless entertainment and educational experiences to the American public that were not possible before.

Moreover, the DTV transition will require the return of 108 MHz of analog TV spectrum in the 700 MHz band back to the federal government and a repacking of the TV band into the core of channels 2 through 51.⁵ A portion of the former TV channels at 700 MHz is slated to be assigned for public safety

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¹ *In re Advanced Television Systems and Their Impact on the Existing Television Broad. Service, Notice of Inquiry*, 2 FCC Rcd. 5125, para. 3 (1987).

² Telecomm. Act of 1996, Pub. L. No. 104-104, 110 Stat. 56 (Feb. 8, 1996).

³ See Balanced Budget Act of 1997, Pub. L. No. 105-33, §3004, 111 Stat. 251 (1997).

⁴ LENNARD G. KRUGER, Cong. Research Serv., Order Code RL31260, DTV: An Overview, Congressional Research Service, at 1 (2004) [hereinafter KRUGER].

⁵ 47 C.F.R. §73.622 (2005).

purposes (24 MHz at the spectrum between 764 MHz through 806 MHz),⁶ while the remaining portion will be assigned for advanced wireless purposes through existing auction procedures.⁷ As a result, a successful DTV transition has the potential to enhance public safety, encourage the deployment of innovative wireless services to the American public, provide an estimated \$4-17 billion to the U.S. Treasury⁸ and contribute an even greater amount – estimated to be between \$30-60 billion annually -- to the U.S. economy by spurring economic development.⁹

To bring about a successful transition to DTV, Congress has mandated, and the FCC has implemented, a highly complex plan that involves the allocation of a second DTV channel to nearly all incumbent full power television broadcasters, the mandated build-out of digital facilities (and penalties for non-compliance), the creation of numerous service rules for digital broadcasts, limited cable carriage of DTV broadcast signals, and the eventual reclamation of channels used for analog transmission by the end of 2006 with market-by-market extensions allowed in cases where 15% or more households cannot receive the digital signals of over-the-air television stations.¹⁰

Only recently, however, have lobbyists and policymakers in Washington turned their attention to how analog switch-off should be implemented without causing major disruptions in service. In other words, once the DTV transition is completed, what will the final days look like? Will there be a gradual and largely unnoticed cessation of analog service? Or will there be a sudden, harsh and disorienting process that harms consumer interests and provokes a political backlash?

This article argues that, based on the lessons learned from Germany and Great Britain, the cessation of analog service need not be sudden, harsh or dis-

⁶ *Id.* §337(a)(1)(1999).

⁷ *Id.* §337(a)(2) (1999).

⁸ Bill McConnell, *Barton Targets DTV Bill for Spring*, BROADCASTING & CABLE, Mar. 15, 2005, at <http://www.broadcastingcable.com/article/CA510868.html?display=Search+Results&text=barton> (citing Joe Barton, Chair, House Commerce Comm.). Other estimates have been much higher, projecting auction revenue of \$50 billion. J.H. Snider & 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 Issue Brief #15, 3 at http://www.newamerica.net/Download_Docs/pdfs/Pub_File_1575_1.pdf (May 2004).

⁹ See *Digital Television Transition: Hearing Before the Senate Comm. on Commerce, Science and Transportation*, 108th Cong. (2004) (statement of Thomas W. Hazlett, Senior Fellow, The Manhattan Institute, Center for a Digital Economy) (reassigning 80 MHz of radio spectrum would result in \$30 billion annually in consumer benefits); see also Louis Trager, *FCC Economist: Supercharge Ferree's DTV Plan with Incentives*, COMM. DAILY (Sept. 10, 2004) (estimating \$60 billion in auction proceeds and consumer benefits); see also Snider & Calabrese, *supra* note 8.

¹⁰ See *infra* Part I.

orienting. Rather, an effective analog cessation plan can be crafted to accommodate those consumers who either (a) rely exclusively on over-the-air reception or (b) subscribe to a digital multichannel television service for one television set but who possess additional television sets that are not connected.¹¹ In this regard, there must be some means of subsidizing the purchase of digital-to-analog set-top converters for millions of households of this type. This article sets out what kind of subsidy could be used and how it could be implemented. In addition, consistent with proposals in Europe,¹² this article advocates a gradual cessation of analog television service—a “fade to black” approach whereby analog service would be shut off on a rolling geographic or market basis, coupled with a gradual decrease in power levels over time as digital broadcasters increase to full power. This article also argues, as various European nations have recognized, that there must be adequate and continuing publicity through a wide range of media concerning the schedule for analog cessation and options for continuing to receive broadcast television. To accomplish this purpose, the Federal government should create an independent quasi-governmental entity – SwitchCoUSA—that is modeled on the Corporation for Public Broadcasting, the National Science Foundation or the National Endowment for the Humanities. Lastly, this article proposes that it would be helpful, though not necessary, to the success of any analog cessation plan for private industry to replicate an equivalent in the U.S. of Great Britain’s Freeview service—a freely-available package of digital multichannel programming that has proven successful in driving consumer adoption of DTV in that country.¹³

Part I of this article provides an overview of the DTV transition to date and describes the issues with which Washington policymakers are faced concerning how to manage the cessation of analog television in the United States. Part II describes the European experience with DTV, as various European Union (EU) countries begin the process of planning for a cessation of analog broadcast television. Particular focus is placed on Germany and Great Britain and the lessons to be learned from the advanced deployment of DTV in those countries. Part III identifies the consumer impact of analog cessation in the United States, providing information on the extent and nature of reliance on over-the-air broadcasting in this country. Lastly, Part IV discusses targeted solutions to ensure a smooth post-analog transition, including subsidies for the purchase of converter equipment, a gradualist approach to shutting down analog service, the institutions and public outreach necessary to prevent massive disruption, and the importance of establishing a freely available digital broadcast service.

¹¹ See *infra* Part IV.

¹² See *infra* Part II.

¹³ See *infra* Part II.B.

I. THE DTV TRANSITION: AN OVERVIEW

Federal law requires that after December 31, 2006, all television licensees must broadcast solely in digital unless the FCC extends the deadline in a particular market.¹⁴ Extensions of the deadline may occur if 15% or more households in a market cannot receive the digital signals of over-the-air television stations, either directly or indirectly through a multichannel video programming distributor (i.e. cable or satellite).¹⁵ At the end of the DTV transition, the spectrum not needed for digital operation must be returned to the federal government for reallocation through auctions.¹⁶

To initiate this transition, the FCC allocated an additional 6 MHz channel to nearly all full-power broadcast television stations with which to begin digital broadcasts.¹⁷ It also required these stations to construct DTV facilities according to a graduated schedule¹⁸ and set forth operational rules governing the nature of digital broadcast operations, including requirements concerning replication of the analog coverage area,¹⁹ extension (“maximization”) beyond the analog coverage area,²⁰ analog-digital simulcasts,²¹ minimum hours of operation,²²

¹⁴ 47 U.S.C. §309(j)(14)(B)(2000).

¹⁵ *Id.*

¹⁶ *Id.* In encouraging the development of DTV and in managing the statutory mandate to convert all television broadcasting to digital, the FCC has articulated a number of goals. They are: (a) to preserve a free, universal broadcasting service; (b) to foster an expeditious and orderly transition to DTV; (c) to recover contiguous blocks of spectrum; (d) to ensure that the spectrum will be used to serve the public interest; (e) to ensure confidence and certainty in the DTV transition; (f) to increase the availability of new products and services to consumers; (g) to encourage technological innovation and competition; (h) to minimize regulation and to ensure that those regulations that are adopted do not last any longer than necessary. *In re Advanced Television Systems and Their Impact upon the Existing Televisions Broadcast Service, Fifth Report and Order*, 12 FCC Rcd. 12809, para. 4 (1997) [hereinafter *Fifth R & O*].

¹⁷ *In re Advanced Television Systems and Their Impact on the Existing Television Broadcast Service, Sixth Report and Order*, 12 FCC Rcd. 14588 (1997) [hereinafter *Sixth R&O*].

¹⁸ See *Fifth R&O*, *supra* note 16, at para. 76 (codified at 47 C.F.R. § 73.624(d) (2000)).

¹⁹ See *Sixth R&O*, *supra* note 17, at para. 33; see also *Fifth R&O*, *supra* note 16, at paras. 74 n.161, 91 (allowing for an initial broadcast of a low power signal).

²⁰ See *Sixth R&O*, *supra* note 17, at para. 31 (codified at 47 C.F.R. § 73.622(f) (5) (2000)) (permitting stations to maximize or increase their service areas by operating with additional power).

²¹ 47 C.F.R. §73.624(f) (2003) (requiring benchmarks from DTV licensees to transmit an analog-digital simulcast); but see *In re Second Periodic Review of the Comm’n’s Rules and Policies Affecting the Conversion To DTV, Report and Order*, 19 FCC Rcd. 18279, paras. 126-31 (2004) (explaining the reasons for abrogating the analog-digital simulcast).

²² See 47 C.F.R. §73.624(b) (date); see also *In re Second Period Review of the Comm’n’s Rules and Policies Affecting the Conversion to DTV, Order*, 18 FCC Rcd. 8166, paras. 3, 4 (2003).

and penalties for unexcused failure to construct digital facilities on time.²³ A key feature of the FCC's plan to migrate television broadcast operations solely to digital operation is a transition period during which television licensees would be required to temporarily operate both their analog and digital stations.²⁴ In this regard, it has been determined that a transitional period is necessary to ensure continuity of service until digital reception capability becomes so widespread that the cessation of analog service would create a minimal adverse impact on the public.²⁵

However, at present, the ubiquity of DTV signal access is far from being established. As of March 7, 2005, 1491 television stations were on-air with a DTV signal out of a total of 1722 authorized DTV stations—86.6% of the total.²⁶ Despite this apparent progress, the digital build-out has not occurred in as timely a fashion as the FCC had envisioned. In a process that began on May 1, 1999, when the forty network affiliates in the top ten markets were required to be on-air with digital, the FCC has granted numerous extensions of time to construct, including most recently the third of three six-month extensions to forty commercial stations that initially were required to be on air in May 2002²⁷ and the third of three six-month extensions for noncommercial stations that initially were required to be on air in May 2003.²⁸ Many of these stations, however, faced circumstances beyond their control that delayed construction, such as limited availability of tower crews, commercial tower disputes, adverse weather, zoning issues, FCC delay in issuing construction permits, financial problems and other factors.²⁹

In addition, many stations are broadcasting at less than authorized full power, pursuant to FCC rules, leading to allegations of less than complete coverage.³⁰ On the other hand, broadcast interests have countered that the extent to

²³ See *In re Remedial Steps for Failure to Comply with DTV Construction Schedule, Report and Order and Memorandum Opinion and Order on Reconsideration*, 18 FCC Rcd. 7174, paras. 10-12 (2003) (establishing a set of graduated sanctions imposed upon stations when they fail to meet DTV construction deadlines and adequately justify an extension).

²⁴ See *Fifth R&O*, *supra* note 16, at paras. 51-56.

²⁵ *Id.*

²⁶ FEDERAL COMMUNICATIONS COMMISSION, DTV STATIONS AUTHORIZED TO BE ON THE AIR, at <http://www.fcc.gov/mb/video/files/dtvonairsum.html> (Mar. 7, 2005). Of the total, 682 stations were operating with licensed facilities, while 809 were operating pursuant to a special temporary authority or experimental DTV authority. *Id.*

²⁷ *In re DTV Build-Out Requests for Extension of the Digital Television Construction Deadline; Commercial Television Stations with May 1, 2002 Deadline*, *Order*, FCC 05-67 (Mar. 10, 2005).

²⁸ *In re DTV Build-Out Requests for Extension of the Digital Television Construction Deadline; Noncommercial Television Stations with May 1, 2003 Deadline*, *Order*, FCC 05-68 (Mar. 10, 2005).

²⁹ See *id.*

³⁰ Annual Assessment of the Status of Competition in the Market for the Delivery of Video Programming, Eleventh Annual Report, FCC 05-13, para. 80 (Jan. 14, 2005) [herein-

which temporary low power operation compromises coverage is greatly exaggerated.³¹

Moreover, consumer adoption of broadcast DTV has been slow. One significant measure of DTV adoption can be gauged from consumer purchases. While the adoption of DTV products is increasing at a rapid pace, with a projected eleven million total DTV products expected to be shipped in 2005 (up from four million in 2003),³² most consumers purchasing DTV products buy DTV monitors that are not able to receive and display over-the-air TV signals.³³ Instead, consumers typically use these monitors to watch DVDs, and programming over cable or satellite.³⁴ At present, it is estimated that only two million households have DTV sets with integrated tuner.³⁵ A year ago, the figure (including stand-alone set-top digital receivers) was only slightly less.³⁶ Indeed, last year, it was estimated that between 8-9% of American homes had DTV equipment while only 1% were able to receive over-the-air DTV signals.³⁷

A likely explanation for this lack of adoption is that at present, integrated television sets with ATSC tuners are quite expensive.³⁸ Moreover, much con-

after 2005 Video Competition Report].

³¹ See generally Mark R. Fratrick, *Reaching the Audience: An Analysis of Digital Broad. Power and Coverage*, Prepared for the Ass'n of Maximum Service Television, Inc. (Oct. 17, 2003)(on file with the author).

³² "[S]ales of DTV equipment are rising rapidly, with approximately 1.4 million DTV units sold in 2001, 2.5 million in 2002, 4 million 2003, and 7.2 million in 2004. CEA [the Consumer Electronics Association] projects 10.77 million DTV units will be sold in 2005, 16.77 million in 2006, 23.25 million in 2007 and 27.05 million in 2008." *Federal Communications Commission Media Bureau Staff Report Concerning Over-the-Air Broadcast Television Viewers*, 2005 FCC LEXIS 1332, para. 27 (2005) (citations omitted) [hereinafter FCC OTA Staff Report]; see also 2005 Video Competition Report, *supra* note 30, at para. 87, and Consumer Electronics Association, Press Release, *Super Bowl XXXIX Boosts Digital Television Sales* (Jan. 28, 2005) (7.2 million DTV products sold in 2004).

³³ KRUGER, *supra* note 4, at 10; see also FCC OTA Staff Report, *supra* note 32, at para. 27.

³⁴ KRUGER, *supra* note 4, at 10.

³⁵ 2005 Video Competition Report, *supra* note 30, at n.409. *But see Federal Communications Commission Media Bureau Staff Report Concerning Over-the-Air Broadcast Television Viewers*, 2005 FCC LEXIS 1332, n.4 (2005) (citing NAB for the figure that only 177,000 television households view digital television exclusively over the air).

³⁶ See also Press Release, Consumer Elecs. Ass'n, CEA Reports More than 1.2 Million Over-the-Air DTV Tuners Sold to Date, at http://www.ce.org/press_room/press_release_detail.asp?id=10417 (Feb. 23, 2004). In June of 2004, it was 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*, N.Y. TIMES, June 24, 2004, at G1.

³⁷ KRUGER, *supra* note 4, at 11.

³⁸ At present, there are or will soon be available at retail 115 models of integrated television sets with digital tuners. Retail costs are as low as \$799 for two Samsung models measuring at 26" and 27" and \$1,000 for two Zenith models at 30" and 32". The more expensive

sumer confusion exists regarding the range of DTV products.³⁹

As a result of recent FCC policies mandating DTV tuners in certain sets, DTV tuner adoption will undoubtedly increase over time as consumers gradually replace obsolete televisions or purchase additional new ones. In this regard, to encourage the availability of integrated receivers and the reception of broadcast digital signals, the FCC has mandated the inclusion of digital receivers in every television set by July 1, 2007, according to a phased-in schedule,⁴⁰ and it has also mandated that any set manufactured in accordance with the recently approved one-way “plug and play” protocol should include over-the-air digital tuners.⁴¹ As a result of these mandates, the FCC has estimated that from 2007, twenty to thirty million television sets with digital receivers will be sold each year.⁴² Nevertheless, a significant pool of legacy analog sets, estimated to

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. See CONSUMER ELECS. ASS’N, *HDTV Guide*, 8-28 at http://www.ce.org/publications/books_references/dtv_guide/HDTV_Guide_Winter_05.pdf (Winter 2005); see also Rob Pegoraro, *Waiting for TV Technology to Inherit the Future*, WASH. POST, Jan. 9, 2005, at F07 (reporting that RCA recently announced the possibility of a \$300 27” integrated standard-definition set available in the Spring, 2005).

³⁹ See Press Release, Dove Consulting, Barriers to Purchase HDTV Are Falling, But Consumers Remain Confused About the Product, Dove Study Finds, at <http://www.doveconsulting.com/PR-2003-11-28HDTV.htm> (Nov. 28, 2003) (concluding that while barriers to consumers purchasing high definition TVs (HDTV) may be falling, many would-be buyers still remain confused about the product). The survey of 1556 individuals said 30% of non-HDTV owners indicated they were willing to pay up to \$700 for an HDTV, with 20% willing to pay \$1,000. However, 47% of consumers surveyed didn’t know whether programming was available in their area. In addition, the study found that the variety of HDTV equipment remained confusing to consumers, as 23% were unsure whether they had an HD-capable set, even though definitions and descriptions of equipment were provided. Overall, 17% of consumers reported having a good understanding of the equipment, while nearly 40% lacked knowledge or understanding.); see also Comments of the Envisioning Group to the *Public Notice* in MB Dkt. No. 04-210 (Aug. 11, 2004) (providing evidence that consumers are not only confused about their current means of accessing TV signals but also about issues surrounding the DTV transition itself).

⁴⁰ *In re* Review of the Comm’n’s Rules and Policies Affecting the Conversion to DTV, *Second Report and Order and Second Memorandum Opinion and Order*, 17 FCC Rcd. 15978 (2002), *aff’d* Consumer Elecs. Ass’n v. FCC, 347 F.3d 291 (D.C. Cir. 2003)[hereinafter DTV Rules Review]. Under the phase-in schedule: (1) 50% of TVs 36” and larger must include tuners by July 1, 2004—100% by July 1, 2005; (2) 50% of TVs 25” to 35” must have tuners by July 1, 2005—100% by July 1, 2006; (3) 100% of TVs 13”-24” must include tuners by July 1, 2007; and (4) 100% of TV interface devices such as VCRs and DVD players/recorders must include DTV tuners by July 1, 2007. *Id.*

⁴¹ *In re* 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*, 18 FCC Rcd 20885, para. 34 (2003)[hereinafter Implementation of Section 304].

⁴² FCC OTA Staff Report, *supra* note 32, at para. 27.

be between 250-280 million sets,⁴³ will remain in use for the foreseeable future, while over twenty million new analog-only sets continue to be sold each year.⁴⁴

While a successful transition to a fully digital broadcast service may seem to be simply a matter of time and consumer acceptance, there are a number of additional policy factors affecting the pace of the digital transition. As discussed herein, such factors include the widespread distribution of digital programming content, an effective means by which digital programming content is protected against illegal copying and distribution, the inclusion of over-the-air receivers in all DTV sets or related devices, standards for the connection of "cable ready" sets to cable systems, the conversion of low power and translator stations to digital operation, carriage of local broadcast DTV signals by multichannel video programming distributors, and adequate publicity concerning the DTV transition itself.

Recently, the FCC has made great strides to address all of these issues. The FCC has encouraged the production of quality digital content.⁴⁵ It has recently adopted rules mandating that by July 1, 2005, all digital equipment capable of receiving broadcast digital signals should recognize a "broadcast flag" designed to protect digital broadcast content from illegal piracy.⁴⁶ Further, as indicated above, the FCC has mandated the phased-in inclusion of over-the-air digital tuners in all television sets over a certain size.⁴⁷ It has also approved an industry agreement to facilitate the connection of consumer electronics reception equipment and digital cable systems.⁴⁸ It has issued comprehensive rules concerning the conversion and operation of low power and translator stations to digital.⁴⁹ It has definitively ruled on the nature and scope of carriage obliga-

⁴³ See Testimony of Michael Wilner before the Subcomm. on Telecommunications and the Internet, Committee on Energy and Commerce, U.S. House of Representatives, at 6 (Feb. 17, 2005) ("There are 250 million analog television sets in viewers' homes"); and Testimony of K. James Yager, Before the Subcomm. on Telecom. & the Internet, Comm. on Energy and Commerce, 109th Cong. 3 (2005) ("There are today approximately 280.5 million analog sets in use").

⁴⁴ In 2003, for instance, 25.4 million analog-only color TV sets were sold in the U.S. that number was expected to drop 17% in 2004 to 23.6 million. FCC OTA Staff Report, *supra* note 32, n.68 (citing CEA, *Digital America, Video, Analog Slips*, at http://www.ce.org/publications/books_references/digital_america/video/analog_slips.asp (last visited Jan. 10 2005)).

⁴⁵ See Letter from Michael K. Powell, Chairman of the FCC, to Rep. W.J. Tauzin (Apr. 4, 2002) (on file with the FCC in CS Dkt. No 98-120).

⁴⁶ The "broadcast flag" is a digital code that can be embedded into a digital broadcasting stream. It signals DTV reception equipment to limit the indiscriminate redistribution of digital broadcast content. See Digital Broadcast Content Protection, *Report and Order and Further Notice of Proposed Rulemaking*, 18 FCC Rcd 23550 (Nov. 4, 2003).

⁴⁷ DTV Rules Review, *supra* note 40.

⁴⁸ Implementation of Section 304, *supra* note 41.

⁴⁹ *In re* Amendment of Parts 73 and 74 of the Commission's Rules to Establish Rules for Digital Low Power Television, Television Translator, and Television Booster Stations and

tions that cable systems have with regard to broadcast digital signals, reaffirming that neither dual carriage of both the analog and digital signal of a local broadcaster nor carriage of multiple digital signals from a single broadcaster would be required.⁵⁰ It has also conducted a DTV consumer education initiative designed to inform the public about the DTV transition and to provide resources regarding the availability of HD and other digital programming, as well as to provide information on consumer equipment and retail outlets.⁵¹

Given the range of these policy issues, many of which have only recently been resolved, the policy conversation in Washington telecommunications and media circles has centered primarily around how to advance the digital transition. Until recently, however, few policy makers or lobbyists had seriously examined what would need to occur in order to turn off analog and ensure a smoother transition to digital-only broadcasting.

This policy conversation began in January 2003, when the FCC sought public comment on an extensive series of questions regarding how to interpret the statutory language that triggered the end of the digital transition.⁵² It continued when the Association of Public Television Stations (“APTS”) announced in November 2003 that its stations were considering an early return of analog spectrum.⁵³ Shortly afterwards, in January 2004, APTS circulated a white paper exploring issues surrounding the digital switchover and proposing a number of means to preserve service to households that relied on free, over-the-air reception.⁵⁴

However, it was not until March 2004, that W. Kenneth Ferree, now-former Chief of the FCC’s Media Bureau, formally suggested a plan that sought both to delay the transition completion date to January 1, 2009 (at which point mandatory cable and satellite carriage would switch from analog to digital) and to

to Amend Rules for Digital Class A Television Stations, *Report and Order*, 19 FCC Rcd. 22038 (2004).

⁵⁰ *In re* Carriage of Digital Television Broadcast Signals: Amendments to Part 76 of the Comm’n’s Rules, *Second Report and Order and First Order on Reconsideration*, 2005 FCC LEXIS 1215 (2005).

⁵¹ 2005 Video Competition Report, *supra* note 30, at paras. 97-98.

⁵² *In re* Second Periodic Review of the Comm’n’s Rules and Policies Affecting the Conversion to DTV, *Notice of Proposed Rulemaking*, 18 FCC Rcd. 1279, paras. 69-94 (2003). Specifically, the FCC sought comment on the process for filing extension requests, the definition of a television market, and the proper interpretation of the network DTV broadcast test, the converter technology test and the 15 % local availability test, among other issues. *Id.* at 69, 72, 79-92.

⁵³ See generally Bill McConnell, Public TV Mulls Early Analog Giveback, BROAD. & CABLE, Nov. 11, 2003, at 32, 37, at <http://www.broadcastingcable.com/>.

⁵⁴ See Comments of the APTS to the Nat’l Telecom. & Info. Agency, U.S. Spectrum Mgmt. Policy for the 21st Century, Dkt. No. 040127027-4027-01, App. A (2004) (updating and including portions of Andrew D. Cotlar, Digital-Only Broadcasting: A Roadmap for Early Return of Public Television’s Analog Spectrum (Jan. 2004)).

clarify which households would count towards the elusive 85% digital penetration goal.⁵⁵ Ferree's plan, together with the cessation of analog television broadcasts in Berlin, Germany, which occurred on August 4, 2003, and the success of Freeview in Great Britain, subsequently provoked increased attention the United States as to how to manage its own switchover from analog to digital.

Shortly after Mr. Ferree formally introduced his plan, in May 2004, J.H. Snider and Michael Calabrese at the Washington think tank, the New America Foundation, proposed a novel solution to manage the digital switchover.⁵⁶ Like Mr. Ferree's proposal, Snider and Calabrese proposed a hard date for analog shut-down of January 1, 2008, coupled with a "refundable" tax credit for a limited time to encourage the consumer purchase of digital reception equipment.⁵⁷

Also in May 2004, the FCC's Media Bureau sought comment on the extent and nature of over-the-air reliance for reception of television broadcast signals by consumers and possible solutions to address the preservation of access to this service when analog broadcasting ceases.⁵⁸ This investigation resulted in a comprehensive staff report in February 2005 that analyzed over-the-air reliance, its scope and demographics, and possible scenarios for shutting down analog television with minimum consumer disruption.⁵⁹

Increasingly, Congress began to turn its attention to the issue with greater interest. On June 9, 2004, the Senate Commerce Committee held a hearing on completing the DTV transition,⁶⁰ and on July 21, 2004, the House of Representatives Subcommittee on Telecommunications and the Internet convened a hearing on lessons that could be learned from the Berlin experience.⁶¹ Throughout 2004, lawmakers, such as House Commerce Committee Chairman Joe Barton and Senate Commerce Committee Chairman John McCain, supported a strict date for analog shut-off with some provision for protecting the

⁵⁵ *Advancing the DTV Transition: An Examination of the FCC Media Bureau Proposal: Hearing Before the Subcomm. on Telecomm. and the Internet*, 108th Cong. 3-5 (2004) (statement of W. Kenneth Ferree, Chief, Media Bureau, FCC), at <http://energycommerce.house.gov/108/Hearings/06022004hearing1289/Ferree2037.htm> [hereinafter Ferree Statement].

⁵⁶ See Snider & Calabrese, *supra* note 8.

⁵⁷ *Id.* at 1-2.

⁵⁸ See Media Bureau Seeks Comment on Over-the-Air Broadcast Television Viewers, *Public Notice*, 19 FCC Rcd. 9468 (2004).

⁵⁹ FCC OTA Staff Report, *supra* note 32, at para. 27.

⁶⁰ *Completing the Digital Television Transition, Hearing Before the Senate Comm. on Commerce, Science and Transp.*, 109th Cong., available at <http://commerce.senate.gov/hearings/witnesslist.cfm?id=1220> (June 9, 2004).

⁶¹ *The Digital Television Transition: What We Can Learn from Berlin, Hearing Before the House Comm. on Energy and Commerce, Subcomm. on Telecomms. and the Internet*, 108th Cong., at <http://energycommerce.house.gov/108/Hearings/07212004hearing1339/hearing.htm> (July 21, 2004).

continuity of free over-the-air television broadcasting, possibly through targeted subsidies.⁶²

In September 2004, this issue resulted in a dramatic confrontation in a Senate Commerce Committee mark-up of legislation, sponsored by Senator McCain. McCain sought the cessation of analog TV broadcasts by 2009, coupled with a \$1 billion subsidy to pay for digital-to-analog converter boxes for those viewers who relied on over-the-air broadcasting.⁶³ In a contentious session that pitted the chair of the committee against its members, the legislation was amended to require only the cessation of all TV operations on channels approved for public safety uses (channels 63, 64, 68, and 69) unless consumer disruption were to result.⁶⁴ This bill was ultimately dropped in conference because the issue faced substantial opposition from other members of Congress and the White House.⁶⁵ Thus, 2004 ended merely with a nonbinding "sense of Congress" that called for Congress to work on legislation to ensure a successful analog television cessation by the end of 2006.⁶⁶

Despite this set-back, momentum existed in Congress to consider what the final days of the digital transition would look like. In early 2005, the House Subcommittee on Telecommunications and the Internet held two key hearings. The first hearing focused on the role of technology in achieving a hard deadline for the DTV transition, where the subcommittee gathered information on availability and costs of DTV conversion equipment and the costs of various suggested subsidy programs.⁶⁷ The second hearing focused on the role that consumer education would play in preparing for the end of DTV transition and the impact on certain vulnerable constituencies, such as the elderly and non-English-language speakers.⁶⁸

⁶² See Terry Lane, *House Members Debate How to Implement Hard Date for DTV*, COMM. DAILY, July 22, 2004, available at 2004 WL 60706685; Broadcast, COMM. DAILY, Oct. 1, 2004, available at 2004 WL 6070781; see also Terry Lane, *Senate Commerce Rejects 2009 Deadline for Spectrum Return*, COMM. DAILY, Sept. 23, 2004, available at 2004 WL 60707288.

⁶³ Lane, *supra* note 62.

⁶⁴ *Id.*

⁶⁵ See John Eggerton, *White House Disses DTV Subsidy*, BROAD. & CABLE, Oct. 21, 2004, available at 2004 WL 82869864 (reporting that the White House, in a letter to Rep. Peter Hoekstra and Sen. Susan Collins, opposed the creation of a billion dollar fund to provide consumers subsidies to lessen the impact of analog cessation).

⁶⁶ See Intelligence Reform and Terrorism Prevention Act of 2004, Pub. L. No. 104-458, §7501, 118 Stat. 3638 (2004).

⁶⁷ *The Role of Technology in Achieving a Hard Deadline for the DTV Transition: Hearing Before the House Comm. on Energy and Commerce, Subcomm. on Telecomm. and the Internet*, at <http://energycommerce.house.gov/108/Hearings/02172005hearing1435/hearing.htm> (Feb. 17, 2005).

⁶⁸ *Preparing Consumers for the End of the Digital Television Transition: Hearing Before the House Comm. on Energy and Commerce, Subcomm. on Telecomm. and the Internet*, at <http://energycommerce.house.gov/108/Hearings/03102005hearing1451/hearing.htm> (Mar.

Since then, House Commerce Committee Chairman Joe Barton has been vocal in continuing to propose a hard deadline for the cessation of analog television broadcasts. He has voiced a preference for a December 31, 2006 deadline that is coupled with government subsidies to assist low income broadcast-dependent households to purchase an inexpensive digital-to-analog converter (one per household) through a rebate program managed by the Treasury.⁶⁹

Meanwhile, over the course of 2003 and 2004, some broadcast television stations had already taken the plunge and either returned their analog spectrum to the government or shut down their analog operations in preparation for an analog return.⁷⁰

The next section of this paper examines the European events that triggered the U.S. focus on the digital switchover and the progress that European nations have made so far toward effectively managing a cessation of analog television service under their jurisdiction.

II. THE EUROPEAN EXPERIENCE

Although the U.S. has yet to implement a mandatory return of analog spectrum, some portions of Europe have either already completed portions of this process or will soon complete it. The Commission of European Communities (the "European Commission") asked European Union member states to report by the end of 2003 on their plans for analog switch-off.⁷¹

10, 2005).

⁶⁹ McConnell, *supra* note 8.

⁷⁰ In particular, two public broadcasters, WNVT in Goldvein, Virginia, and KCSM in San Mateo, California, have already stepped into the brave new world of digital-only operation. *See* Broadcast, COMM. DAILY, Sept. 15, 2003, available at 2003 WL 5756356; *see also* Mark Whittington, KCSM Drops Use of Tower, Cutting Off Some Viewers, MERCURY NEWS, May 18, 2004, at 3; Broadcast, COMM. DAILY, May 21, 2004, available at 2004 WL 60706089. In addition, at least four commercial television stations have received authorization to shut down analog broadcast operations: KVMD, an independent station in Twentynine Palms, California; WMCN (formerly WWAC), an independent station in Atlantic City, New Jersey; KOPX, a Paxson station in Oklahoma City, Oklahoma; and WRNN, an independent station in Kingston, New York. *See* Broadcast, COMM. DAILY, May 5, 2003; *see also* Letter from Barbara A. Kreisman, Chief, Video Div., FCC Media Bureau, to WRNN-TV, 19 FCC Rcd. 12343 (2004). *But see* Letter from W. Kenneth Ferree, Chief, Media Bureau, Federal Communications Commission, to Barry A. Friedman, DA 05-343 (Feb. 9, 2005) (rejecting request to terminate analog operations for KKLA(TV) in Ventura California because, in part, analog cessation would eliminate the only source for Spanish-language programming in the community).

⁷¹ *See* Press Release, European Commission, Digital Broadcasting and Switchover, at <http://europa.eu.int/rapid/pressReleaseAction.do?reference=IP/03/1276&format=HTML&aged=1&language=EN&guiLanguage=en> (Sept. 22, 2003) (requiring member states of the EU to publish their analog-to-digital switchover plan by the end of 2003); *see also* COMM'N OF THE EUROPEAN COMMUNITIES, *ON THE TRANSITION FROM ANALOGUE TO DIGITAL BROADCASTING*, at

As part of this directive, the Commission set forth a number of suggested elements that may be part of member analog switch-off plans. First, it suggested that market forces and informed consumer demand drive the switch-off process, emphasizing that it should be a “market-led process, not a simple infrastructure change with no added value for citizens.”⁷²

Second, switch-off plans should be “transparent, justified, proportionate, and timely . . .”⁷³ Third, the European Commission 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.⁷⁴ Lastly, the European Commission 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.⁷⁵ 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.⁷⁶

Currently, in Western Europe, at least sixteen nations have legislation in place to govern the transition from analog to DTV; seven nations have already initiated digital broadcasts, and analog shut-off dates range from 2006 to 2015.⁷⁷ The following compares the DTV launch dates and analog shutoff dates for various Western European nations.⁷⁸

oc/shortcuts/digital_broadcasting/acte_en_vf.pdf (containing the full policy document) [hereinafter EU COMM’N COMMUNICATION]; see EUROPEAN COMM’N, NATIONAL SWITCH-OVER PLANS, at http://europa.eu.int/information_society/topics/ecom/highlights/current_spotlights/switchover/national_swo_plans/index_en.htm (displaying member state plans).

⁷² EU COMM’N. COMMUNICATION, *supra* note 71.

⁷³ *Id.*

⁷⁴ *Id.*

⁷⁵ See *id.*

⁷⁶ See *id.*

⁷⁷ See Alexander Shulzycki, *DTT in Europe: Market Overview and Assessment*, 3, at <http://www.digitag.org/events/IBC2004/Shulzycki.pdf> (Sept. 10, 2004) [hereinafter *DTT in Europe*].

⁷⁸ *Id.* This chart is based partially on one constructed by Alexander Shulzycki, with modifications based on more recent sources, as indicated in the footnotes. Although this chart is limited to Western European nations, there are digital television developments in Eastern Europe as well. For instance, Russia has set 2015 as its deadline for analog cessation. *Digital Television to Sweep Away the Old Analogue TV*, PRAVDA, at http://english.pravda.ru/printed.html?news_id=14929 (Feb. 7, 2005). Additionally, Hungary has set a date of 2012. László Géza, *DTT in Hungary*, 6, at <http://www.digitag.org> (Dec. 14, 2004).

Country	DTV Launch Date	Projected Switch-off Date
United Kingdom ⁷⁹	1998	2012
Sweden ⁸⁰	1999	2008
Spain ⁸¹	2000	2010 (some regions earlier)
Finland ⁸²	2001	2007
Luxembourg ⁸³	2002	No switch-off date
Germany ⁸⁴	2002	Ongoing on a regional basis with end date of 2010

⁷⁹ See Dugie Standeford, British Govt. Aims for 2012 DTV Rollout, More Delay Possible, *COMM. DAILY*, July 23, 2004; Press Release, DTV Project, Tessa Jowell Makes Announcement on the Progress of Digital Switchover, at http://www.digital-television.gov.uk/press/2004/dig_switchover_progress.html (July 22, 2004); see also U.K. Switch-Off Target Put Back to 2012, Digital TV Group, at <http://www.dtg.org.uk/news/news.php?class=Countries&Subclass=193&id=156> (July 22, 2004).

⁸⁰ GOVERNMENT OFFICES OF SWEDEN, DIGITAL RADIO AND TELEVISION, at <http://www.sweden.gov.se/sb/d/3011/a/19028> (last modified Nov. 2, 2004); see also DIGITAL -VERG NG I SVERIGE [hereinafter DIGITAL TRANSITION IN SWEDEN], SWEDISH MINISTRY OF CULTURE, at http://europa.eu.int/information_society/topics/ecommm/highlights/current_spotlights/switchover/sv_rdswo.doc (Jan. 9, 2004).

⁸¹ MINISTRY OF SCI. AND TECH., Strategic Plan for the Transition from Analogue to Digital Television, 3 at http://europa.eu.int/information_society/topics/ecommm/highlights/current_spotlights/switchover/es_estrategia_tdt_en.rtf (Dec. 18, 2003) (announcing that the national analog switch-off date was December 31, 2011, with some regions being shut off before that date). *But see Spanish Government Boost for Digital Terrestrial Television*, TECH EUROPE, Jan. 15, 2005, at sec. 0264 (stating that the analog shut-off was slated for 2010); David del Valle, *Spain Liberalises TV market and Boosts DTT*, ADVANCED-TELEVISION.COM at http://www.advanced-television.com/2005/news_archive_2005/Feb-7_Feb11.htm (Feb. 2005) (the Government has decided to bring forward to 2010 the analogue switch-off, two years earlier than initially planned).

⁸² EUROPEAN COMM'N, FINLAND, DIGITAL TELEVISION 1, at http://europa.eu.int/information_society/topics/ecommm/doc/highlights/current_spotlights/switchover/fi_0204_en.doc (last visited Feb. 9, 2005) (reporting a switch off date of August 31, 2007).

⁸³ See *Digital Television Arrives in Luxembourg!*, Broadcasting Center Europe, at <http://www.bce.lu/company/news/shownews/shownews.php?shonews=14> (last visited Feb. 9, 2005) (reporting that Luxembourg's single digital terrestrial service was initiated on July 6, 2002); EUROPEAN COMM'N, LUXEMBOURG, DIGITAL SWITCH OVER PLANS IN LUXEMBOURG 1, at http://europa.eu.int/information_society/topics/ecommm/doc/highlights/current_spotlights/switchover/l_modified2.doc (Feb. 27, 2004) (reflecting that Luxembourg has decided not to develop a switchover plan with specific target dates).

⁸⁴ See Part II.A, *infra*.

Italy ⁸⁵	2003	2007
Netherlands ⁸⁶	2003	No switch-off date
Portugal ⁸⁷	2004	2005 or later
Switzerland	2004	2015
Denmark ⁸⁸	2005	No switch-off date
France ⁸⁹	2005	2010 or later
Greece ⁹⁰	2005	2010 or later
Norway	2005	2006-2008
Austria ⁹¹	2006	2007-2010
Belgium	No DTV service yet	Flanders 2005
Ireland ⁹²	2005	2010-2015

The experience of two European countries -- Germany and Great Britain -- are particularly instructive and are examined in depth in the following sections.

⁸⁵ EUROPEAN COMM'N, ITALY, ITALIAN PLAN FOR DIGITAL SWITCHOVER 1, 5, at http://europa.eu.int/information_society/topics/ecom/doc/highlights/current_spotlights/switchover/it_digital_sw_it_rev1_en.doc (last visited Feb. 9, 2005) (reporting a switch-off date of December 31, 2006).

⁸⁶ The Netherlands has not formally established a switch-off date. EUROPEAN COMM'N, THE NETHERLANDS, DUTCH INTENTIONS REGARDING THE SWITCHOVER FROM ANALOGUE TO DIGITAL TV BROADCASTS OVER THE AIR 2, 3, at http://europa.eu.int/information_society/topics/ecom/doc/highlights/current_spotlights/switchover/nl_eu_info_switch_off_en.doc (last visited Feb. 9, 2005) (stating there will be no switch-off before 2007).

⁸⁷ Portugal will initiate digital broadcasts in early 2004 and intends to initiate a digital switchover sometime in 2005, but no definite end-date has been announced. EUROPEAN COMM'N, PORTUGAL, PORTUGUESE SWITCHOVER PLAN FROM ANALOG TO DIGITAL, at http://europa.eu.int/information_society/topics/ecom/doc/highlights/current_spotlights/switchover/pt_nswop.pdf (Jan. 9, 2004).

⁸⁸ EUROPEAN COMM'N, DENMARK, DENMARK'S PLANS FOR THE SWITCHOVER TO DIGITAL TV 1-2, at http://europa.eu.int/information_society/topics/ecom/doc/highlights/current_spotlights/switchover/dk_dtkom0104_en.doc (Jan. 12, 2004).

⁸⁹ Sotires Eleftheriou, *French DTT to Launch March 2005*, 1, at http://www.advanced-television.com/2004/news_archives_2004/June7_11.htm (June 11, 2004) (DTT to launch in March of 2005 with analog switch off in 2010).

⁹⁰ EUROPEAN COMM'N, GREECE, ANNOUNCEMENT BY GREECE CONCERNING THE STRATEGY FOR THE TRANSITION FROM ANALOG TO DIGITAL BROADCASTING 2, at http://europa.eu.int/information_society/topics/ecom/doc/highlights/current_spotlights/switchover/el_152_digtv_en.doc (Dec. 30, 2003).

⁹¹ EUROPEAN COMM'N, AUSTRIA, INTRODUCTION OF DIGITAL BROAD. IN AUSTRIA COMMUNICATION FROM THE REPUBLIC OF AUSTRIA TO THE EUROPEAN UNION 2, at http://europa.eu.int/information_society/topics/ecom/doc/highlights/current_spotlights/switchover/a_digitalisierungskonzept_oe_beilage_1_en.doc (Dec. 30 2003).

⁹² Dempsey to Announce Digital TV Pilot, BUSINESS WORLD, at <http://www.business-world.ie/livenews.htm?a=1138241;s=rollingnews.htm> (March 29, 2005).

A. Germany: Analog Switch-off in Berlin

On August 4, 2003, the German state of Berlin-Brandenburg became the first region in the world to shut down analog television service and replace it with an all-digital infrastructure. The Berlin media authority engaged in a massive publicity program through a wide range of media, coupled with a subsidy for the purchase of over-the-air converter boxes for welfare recipients, to successfully shut down all TV broadcast analog operations with a minimum of social discomfort in nine months.⁹³

A number of additional significant factors aided this transition. For instance, Berlin is an area with high cable and satellite penetration.⁹⁴ In addition, Berlin had additional spectrum available for a successful DTV transition because of legacy allocations from East Berlin.⁹⁵ Also, Berlin's relative distance from other major cities made it an ideal location to test DTV with little possibility of interference from broadcast operations in neighboring cities or countries.⁹⁶ Lastly, Berlin has a fairly simple topography that enables easier transmission of DTV signals over-the-air.⁹⁷

The national treatment of broadcasting in Germany as a whole also aided the transition. In Germany, approximately 40% of television viewing is directed toward the various public channels that are chartered by the different German states.⁹⁸ These public broadcasters are supported by a consumer fee (with exemptions for welfare recipients and low-income households) of €16 per month.⁹⁹ Private television broadcasting, which is a relatively recent development, is dominated by two broadcasting groups that often do not provide com-

⁹³ See Mark Landler, *German Way To Go Digital: No Dawdling*, N.Y. TIMES, Nov. 3, 2003, at C1 [hereinafter Landler]; see also DVB-T: DasüberallFernsehen, *Berlin Goes Digital: the Switchover of Terrestrial Television from Analogue to Digital Transmission in Berlin-Brandenburg, Experiences and Perspectives*, 6, at http://www.digital-law.net/switch-off/berlin_project_report.pdf [hereinafter *Berlin Goes Digital*]; see also *Telecom.: German DTV Transition Differs from U.S. Transition in Many Respects, but Certain Key Challenges Are Similar, Testimony Before the Subcomm. on Telecom. and the Internet, Comm. on Energy and Commerce*, GAO-04-926-T, 15-16 (2004) (statement of Mark L. Goldstein, Director, Physical Infrastructure Issues) [hereinafter Goldstein 2004 Testimony].

⁹⁴ Landler, *supra* note 93 ("In Berlin, which has 1.8 million TV households, 160,000 homes had over-the-air reception before the switchover, while 90,000 homes used over-the-air broadcast for second or third television sets."); see also Goldstein 2004 Testimony, *supra* note 93, at 15. 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*, at http://www.newamerica.net/Download_Docs/pdfs/Docfile_240_1.pdf (May 12, 2004).

⁹⁵ Goldstein 2004 Testimony, *supra* note 93, at 15.

⁹⁶ *Id.*

⁹⁷ *Id.*

⁹⁸ *Id.* at 7.

⁹⁹ *Id.*

plete service to all German regions.¹⁰⁰ Moreover, with the exception of one public broadcaster, the broadcast infrastructure is operated by Deutsche Telekom, which is paid for by terrestrial broadcasters to transmit their signals.¹⁰¹ On the whole, exclusive reliance on over-the-air broadcasting averages between 5-7% of German households,¹⁰² with such households receiving between three to twelve channels (and on average five to six channels).¹⁰³ Berlin over-the-air households in particular typically received eleven analog channels.¹⁰⁴ By way of contrast, cable subscribers (who typically pay €15 per month) receive between thirty and thirty-three channels from a service that is paid for by broadcasters for carriage of their signals.¹⁰⁵ Satellite subscribers receive many more channels (125) from a service that similarly receives monetary payment from broadcasters for carriage, but there is no monthly fee for the consumer.¹⁰⁶

The Berlin 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 DTV broadcasts and to provide some orientation for the households affected regarding the need to purchase new receivers.¹⁰⁷ During stage two (Feb. 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.¹⁰⁸ At this point, Berlin residents were able to receive over twenty separate free digital services over-the-air.¹⁰⁹ Lastly, at stage three (August 4, 2003), all analog frequencies were switched off completely.¹¹⁰ The digital broadcast service now brings twenty-seven free over-the-air DTV channels (plus additional multimedia services) to Berlin residents.¹¹¹

To facilitate the transition to a fully digital broadcast system, broadcasters

¹⁰⁰ *Id.*

¹⁰¹ Goldstein 2004 Testimony, *supra* note 93, at 8.

¹⁰² *Id.*

¹⁰³ *Id.*

¹⁰⁴ *Id.* at 19.

¹⁰⁵ *Id.* at 8-9.

¹⁰⁶ Goldstein 2004 Testimony, *supra* note 93, at 9 (noting that the consumer does pay the initial equipment and installation costs).

¹⁰⁷ *Berlin Goes Digital*, *supra* note 93, at 4; *see also* Hege, *supra* note 94, at 11; Goldstein 2004 Testimony, *supra* note 93, at 16.

¹⁰⁸ *Berlin Goes Digital*, *supra* note 93 at 4; *see also* Hege, *supra* note 94, at 11; Goldstein 2004 Testimony, *supra* note 93, at 16.

¹⁰⁹ *See* Hege, *supra* note 94, at 11.

¹¹⁰ *See Berlin Goes Digital*, *supra* note 93.

¹¹¹ Jörn Krieger, *Berlin to Expand DTT Offer*, THE DTV GROUP, at www.dtg.org.uk/news/news.php?class=sectors&subclass=Rollout&id=24 (May 21, 2004).

¹¹² Goldstein 2004 Testimony, *supra* note 93, at 16-17. Public broadcasters were also allowed to multiplex. *Id.* at 17, n.15.

received a number of favorable policy benefits. While public broadcasters were able to use the license fee to finance their digital transition, private broadcasters (which did not benefit from the license fee) were paid by the government for any additional costs they might incur by virtue of digital operation, were given the authority to provide multiplexed services (thus increasing the number of channels broadcast), and were given favorable “must-carry” status in exchange for participating in the DTV transition.¹¹²

The Berlin media authority also coordinated an extensive publicity program to further facilitate the digital transition. The publicity program entailed a concerted communication with the public from October 2002, through August 2003, and involved (a) broadcast spots, captioned information and local news and current affairs coverage by broadcasters; (b) a letter sent to every home in February 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; (f) an Internet web site; (g) information sessions with local retailers; and (h) advertisements on buses and subways.¹¹³ The costs were shared between broadcasters and the Berlin media authority and remained well below the budgeted €1.2 million.¹¹⁴

In addition, to ensure a successful switchover in a socially acceptable manner, the Berlin media authority also 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 converter equipment for €8.50 per month to entice purchase by low income homes. However, little use was made of this offer.¹¹⁵

The second subsidy was targeted to homes entitled to a TV set under German social security rules. Financially qualified homes dependent on terrestrial reception were entitled to a government-paid subsidy for the entire cost of a digital-to-analog set-top box; the Berlin media authority paid 75% of the subsidy cost, and the Social Welfare Office paid the remaining 25% at a rate of approximately €100 each over an estimated 6,700 boxes.¹¹⁶ Interestingly, set-top box purchases were not limited to homes that were dependent on over-the-

¹¹³ *Berlin Goes Digital*, *supra* note 93, at 6; Goldstein 2004 Testimony, *supra* note 93, at 18.

¹¹⁴ *Berlin Goes Digital*, *supra* note 93, at 6. The GAO reported that the effort cost € 800,000 but incorrectly stated that it lasted only four weeks. Goldstein 2004 Testimony, *supra* note 93, at 18.

¹¹⁵ *Berlin Goes Digital*, *supra* note 93, at 8.

¹¹⁶ *Id.* at 8, 15; Goldstein 2004 Testimony, *supra* note 93, at 17; *see also* Landler, *supra* note 93; Thomas Hazlett, *Finally, Something Good on German TV: Berlin has digital television. Why can't the U.S. follow?*, SLATE.COM at <http://slate.msn.com/id/2089424/> (Oct. 7, 2003). Hege, *supra* note 94 (estimating that 6,000 set-top boxes were provided at a total cost of € 550,000. *But see* Goldstein 2004 Testimony, *supra* note 93, at 17 (reporting a somewhat smaller total cost of €500,000).

air reception; homes that subscribed to cable or satellite also purchased set-top boxes, albeit without benefiting from state subsidies.¹¹⁷

By all accounts, the results have met with substantial consumer satisfaction, as there were only a few minor technical and reception-related problems.¹¹⁸ In conversations with the U.S. Government Accountability Office (“GAO”), government, industry and consumer representatives highlighted a number of factors that ensured the success of the project. First, the number of channels available to consumers increased from eleven to twenty-seven (including an electronic program guide), giving consumers more choice and services.¹¹⁹ Second, because the DTV platform simply relied on existing standard-definition programming, neither the government nor broadcasters were required to finance new programs.¹²⁰ Third, “[t]here was good cooperation between the government officials and broadcasters.”¹²¹ Fourth, “the transition affected a relatively small group of Berlin households.”¹²² Fifth, the set-top boxes were inexpensive and prices fell throughout the transition period.¹²³ Sixth, the timeline for scheduled analog cessation was firm and well-known.¹²⁴ Lastly, “there was good communication to consumers about the DTV transition.”¹²⁵ In addition, the GAO noted that the Berlin transition was made easier, because both cable and satellite were already carrying the digital signals of terrestrial broadcasters without requiring any additional equipment.¹²⁶

German authorities plan to continue analog shut-off on a regional basis with a target completion date likely to be 2010.¹²⁷ However, on July 14, 2004, the European Commission initiated an inquiry into whether German state financing of the commercial broadcast switchover costs violated Commission policies by being either discriminatory or by favoring one technology over another.¹²⁸ Nevertheless, the digital transition regional roll-out continues in Ger-

¹¹⁷ Hege, *supra* note 94.

¹¹⁸ *Id.* Goldstein 2004 Testimony, *supra* note 93, at 18 (“The technical and reception problems that did arise included difficulties installing and using the set-top box; reception problems in some multiple-dwelling units, particularly ground-floor units and buildings with rooftop antennas and boosters; and interference problems for some cable subscribers because of the strength of the digital signal”).

¹¹⁹ Goldstein 2004 Testimony, *supra* note 93, at 19.

¹²⁰ *Id.*

¹²¹ *Id.*

¹²² *Id.*

¹²³ *Id.*

¹²⁴ Goldstein 2004 Testimony, *supra* note 93.

¹²⁵ *Id.*

¹²⁶ *Id.* at 11.

¹²⁷ Hege, *supra* note 94.

¹²⁸ Press Release, European Commission, Enquiry into State Financing of Switchover Costs to a Digital Terrestrial Television (DVB-T) Project in Germany, at http://www.ebu.ch/CMSimages/en/BRUDOC_INFO_EN_136_DTT%20DE%20IP-04-911_tcm6-13694.pdf (July 14, 2004).

many unabated, with six million households capable of receiving digital television signals in March of 2005 and the successful cessation of analog television service in the Frankfurt/Main/Wiesbaden region in December of 2004.¹²⁹

B. United Kingdom: From Pay DTV to Freeview

While the Germans have used consumer subsidies to assist with the dissemination of converter equipment, the digital conversion in Great Britain has, to a certain extent, been governed more by market forces.

In Great Britain, over-the-air DTV was initially introduced as a subscription service ("ITV Digital"), which subsequently failed to gain consumer acceptance due to a number of factors, including limited channels.¹³⁰ Shortly afterwards, the government reclaimed spectrum from the failed subscription venture and reassigned it to a consortium of BBC, Sky and Crown Castle (a transmitter company), which engaged in a joint marketing effort, called Freeview, launched in October 2002. Through this service, homes with the ITV Digital boxes could receive about thirty 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. Although prices for the boxes initially averaged between £80-100 per unit toward the end of 2003,¹³¹ prices had fallen to approximately £50 per unit by the first quarter of 2004.¹³² Unlike in Germany, the distribution of this equipment was not supported by government-funded consumer subsidies.

By December 17, 2003, there were 1.8 million sales of Freeview equipment, with average sales approaching 100,000 units 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% of the 24.9 million homes would have DTV by the end of 2003.¹³³ In fact, at the close of 2004, the num-

¹²⁹ *Digital Terrestrial Television in Germany*, DIGITAG, at <http://www.digitag.org/news/webletters/Webletter-ext-38.htm> (April 2005).

¹³⁰ 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, at <http://news.bbc.co.uk/2/hi/entertainment/3197802.stm> (Oct. 30, 2003).

¹³¹ "Freeview reaches first birthday," BBC News (Oct. 30, 2003), at http://news.bbc.co.uk/go/pr/fr/-/1/hi/entertainment/tv_and_radio/3225241.stm.

¹³² OFFICE OF COMMUNICATIONS, *DIGITAL TELEVISION UPDATE—Q1 2004 9*, at www.ofcom.org.uk/research/industry_market_research/m_i_index/dtv (June 2, 2004). By Christmas 2003, some retailers were selling basic adapter boxes for about £40. Press Release, BBC, *Progress Towards Achieving Digital Switchover: a BBC Report to the Government*, 1-2, at http://www.culture.gov.uk/global/publications/archive_2004/bbc_report_on_digital_switchover.htm (April 26, 2004)[hereinafter BBC Report to the Government].

¹³³ *Half of UK 'Getting Digital TV'*, BBC NEWS, at

ber of Freeview homes had increased to 4.6 million, increasing the total number of digital homes in Britain to 59.4%.¹³⁴

Of those households that have adopted Freeview, consumer profiles apparently reflected those of the general population, with Freeview attracting consumers who would not ordinarily consider subscribing to a pay television service.¹³⁵ In fact, 75% of Freeview viewers are over thirty-five years old, while 40% are over the age of fifty-five.¹³⁶ Interestingly, however, “households with Freeview still watch more than half of their total viewing via the analog signal, bypassing their Freeview box altogether.”¹³⁷

The U.K. plans on ceasing all analog television broadcasts by 2012.¹³⁸ Led by the BBC and the national government, the planning process has been both extensive and thorough. For instance, in April 2003, an independent television commission and the BBC suggested a rolling geographic shut-down of analog service.¹³⁹ This approach was thought to have a number of advantages from a social standpoint, including ease of management, the opportunity to learn from experience, and a demonstration to consumers that the analog switchover process was indeed real.¹⁴⁰ In April 2004, the BBC again suggested a geographic

tainment/tv_and_radio/3327247.stm (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. See Press Release, BBC, About the Success of Digital TV, at www.digitag.org/news/newsdetail.php?Id=334 (Dec. 17, 2003)[hereinafter About the Success of Digital TV].

¹³⁴ Jonathan Webdale, *UK Digital TV Nudges 60%*, C21MEDIA, at <http://www.c21media.net/news/detail.asp?area=1&article=24114> (March 30, 2005).

¹³⁵ See About the Success of Digital TV, *supra* note 133; see also INDEPENDENT TELEVISION COMM. AND THE BBC, A REPORT ON PROGRESS TOWARDS DIGITAL SWITCHOVER 24 et. seq., at http://www.digitaltelevision.gov.uk/pdfs/ITC_BBC_switchover_report.pdf (Apr. 2003) [hereinafter BBC JOINT REPORT].

¹³⁶ *DTT in Europe*, *supra* note 77.

¹³⁷ Clair Cozens, *Freeview Fails to Boost Multichannel Ratings*, THE GUARDIAN, at <http://media.guardian.co.uk/digitaltv/story/0,12184,1109920,00.html> (Dec. 19, 2003); see also Broadcast, COMM. DAILY, available at 2004 WL 60704735 (Jan. 8, 2004) (reporting on a British Home Office study stating that while almost 50% of homes have DTV, 13% planned not to use it).

¹³⁸ See EU COMM’N. COMMUNICATION, *supra* note 71.

¹³⁹ BBC JOINT REPORT, *supra* note 135, at 11-12.

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.

Id.

¹⁴⁰ BBC JOINT REPORT, *supra* note 135, at 11-12.

In addition to potential coverage and reception benefits, a rolling switchover process

rolling shut-down of analog signals, and also identified a number of other challenges. First, it reported that, left entirely to the market, “digital penetration will not reach 95% of households (primary TV set only) until 2013.”¹⁴¹ The BBC also identified difficulties in converting secondary television sets, many of which rely on set-top antennas, and legacy video recording devices.¹⁴² 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.¹⁴³ British authorities also suggested the establishment of an independent corporation (dubbed “SwitchCo”) to coordinate a comprehensive publicity campaign and to manage the digital switchover process.¹⁴⁴ SwitchCo was formally launched in April 2005 and will assume its full responsibilities later in 2005 when it becomes fully operational.¹⁴⁵

Since the initial planning stage, both the BBC and the newly-constituted independent media regulatory authority, the Office of Communications (“Ofcom”), have issued regular planning papers, updates and consultation documents on the switchover process. Most recently, Ofcom has announced that it expects that the switchover process will be carried out over a period of four years between 2008 and 2012 on a region-by-region basis in six-month intervals. In this regard, Ofcom has solicited public comment on five different technical means of managing this process.¹⁴⁶

As the government continues to study the matter and solicit public input, this policy of regional switchover has already been implemented on a pilot ba-

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.

¹⁴¹ BBC Report to the Government, *supra* note 132, at 1.

¹⁴² *Id.*

¹⁴³ *Id.* at 1-2.

¹⁴⁴ *Id.* at 45.

¹⁴⁵ SwitchCo, Press Release, SwitchCo Launches Today, at <http://www.switchco.co.uk/pressrelease.htm> (April 13, 2005); see also OFFICE OF COMMUNICATIONS, DIGITAL TERRESTRIAL TELEVISION SPECTRUM MANAGEMENT UPDATE 1, at www.ofcom.org.uk/media_office/latest_news/nr_20050209 (Feb. 2, 2005).

¹⁴⁶ OFFICE OF COMMUNICATIONS, PLANNING OPTIONS FOR DIGITAL SWITCHOVER, CONSULTATION DOCUMENT, at <http://www.ofcom.org.uk/consult/condocs/pods/pods.pdf> (Feb. 9, 2005).

sis. On March 30, 2005, the U.K. government switched off analog television service in two small Welsh villages (totaling 450 homes), an initiative that has been met with apparent success.¹⁴⁷

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-outs. In Italy, for instance, which commenced digital broadcasting at the end of 2003, four digital multiplex operators are transmitting a total of twenty TV channels in selected regions. The Italian government created a €110 million fund to subsidize the purchase of set-top boxes with certain interactive features 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.¹⁴⁸ To date, 860,000 boxes have been sold.¹⁴⁹ Meanwhile, it was reported that Rupert Murdoch's Sky Italia is considering filing an antitrust claim before the European Commission because its equipment is not similarly subsidized.¹⁵⁰

In Belgium, the Flemish government has set aside €12.4 million for set-top box subsidies with the goal of universal coverage by the beginning of 2005 when analog broadcasting will cease in Flanders.¹⁵¹

In Switzerland, analog channels in non-local languages were switched off in 2002 in order to accommodate a region-by-region roll-out of digital service.¹⁵²

¹⁴⁷ See Stephen A. Booth and Barry Fox, *U.K. Govt. Needs Better Plan for DTV Transition*, *CE Group Says*, COMM. DAILY (April 1, 2005); see also OFFICE OF COMMUNICATIONS, DIGITAL SWITCHOVER TECHNICAL TRIAL, LLANSTEFFAN & FERRYSIDE, WEST WALES, at http://www.digitaltelevision.gov.uk/press/2005/welshtrial_factsheet.html (March 30, 2005).

¹⁴⁸ *Digital Subsidy Row in Italy*, DIGITAL TV GROUP, at <http://www.dtg.org.uk/news/news.php?class=&subclass=&id=296> (Sept. 17, 2004) [hereinafter *Digital Subsidy Row*]; see also Branislav Pekic, *Italian DTT on a Roll*, DIGITAL TV GROUP, at http://www.dtg.org.uk/world/-italian_dtt_roll.htm (May 20, 2004); *Digital TV: 150 Euro for Those Who Buy a Decoder*, AGENZIA GIRONALISTICA ITALIA, at <http://www.agi.it/english/NEWS.pl> (Feb. 23, 2004); *Digital TV: 273,557 Decoders Bought in Six Months*, AGENZIA GIRONALISTICA ITALIA, at <http://www.agi.it/english/news.pl?doc=200407231903-1221-RT1-CRO-0-NF11&page=0&id=agionline-eng.oggitalia> (July 23, 2004); see also Eric Pfanner, *Will Digital TV Hit Jackpot in Europe? Stay Tuned*, INTERNATIONAL HERALD TRIBUNE ONLINE at http://www.iht.com/bin/print_ipub.php?file=/articles/2004/10/31/business/digitv01.html (Nov. 1, 2004).

¹⁴⁹ Guido Gentile, *What a Difference an Year Makes*, GROUPO MEDIASET, 6, at <http://www.digitag.org/lateupdate/globupdate.htm> (Dec. 14, 2004).

¹⁵⁰ *Digital Subsidy Row*, *supra* note 148.

¹⁵¹ *DTT in Europe*, *supra* note 77.

¹⁵² *Id.* at 31; see also Jörn Krieger, *Swiss Switch off Analogue Frequencies*, DIGITAL TV

Non-local language channels 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.¹⁵³ A year later, in December 2003, it was reported that in the German-speaking part of Vale canton, four channels of analog terrestrial service were replaced by thirty-five digital terrestrial channels.¹⁵⁴

Unlike many of their European neighbors, Finland, Norway and Spain 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% of the population expected to have access by August 2004.¹⁵⁵ During 2003 alone, 202,000 converter boxes were shipped and over 20,000 integrated TV sets were purchased, apparently without government subsidies.¹⁵⁶ By November 2004, 400,000 households (or more than 17% of the Finnish TV audience) had technology capable of receiving digital terrestrial television signals.¹⁵⁷ Similarly, in Norway, a country in which analog shut-off is scheduled for January 1, 2008, it was originally suggested that all converter boxes be provided free of charge; however, the government decided not to provide any subsidies for such equipment, preferring instead to rely on a market-oriented "Freeview"-style approach.¹⁵⁸ Likewise, in Spain, where an initial digital terrestrial initiative collapsed, the government is considering a new DTV plan modeled on Freeview.¹⁵⁹

D. Learning from the European Experience

To be sure, there are significant differences between the United States and the above-mentioned European countries that counsel caution when applying

GROUP, at http://www.dtg.org.uk/reference/dtt_world/dtt_switzerland.htm (June 12, 2002) [hereinafter *Swiss Switch off Analogue Frequencies*].

¹⁵³ *Swiss Switch off Analogue Frequencies*, *supra* note 152.

¹⁵⁴ Jörn Krieger, *Local Swiss DTT Venture Broadcasts to Country's Skiing Regions*, DIGITAL TV GROUP, at http://www.dtg.org.uk/news/world/-swiss_dtt_skiing.htm (Dec. 18, 2003).

¹⁵⁵ Goran Sellgren, *Finnish DTT Soon to Achieve 99.9% Coverage*, DIGITAL TV GROUP, at http://www.dtg.org.uk/news/world/-finnish_99pc_coverage.htm (Jan. 19, 2004).

¹⁵⁶ *Id.*

¹⁵⁷ Pfanner, *supra* note 148.

¹⁵⁸ See Goran Sellgren, *Norwegian Legislation Establishes DTT by 2008*, DIGITAL TV GROUP, at http://www.dtg.org.uk/reference/dtt_world/dtt_norway.htm (March 19, 2004); see also Goran Sellgren, *Norges Televisjon Unveils New DTT Funding Model*, DIGITAL TV GROUP, at http://www.dtg.org.uk/reference/dtt_world/dtt_norway.htm (June 5, 2003).

¹⁵⁹ See David Del Valle Fernandez, *Spain: General Situation*, DIGITAL TV GROUP at http://www.dtg.org.uk/reference/dtt_world/dtt_spain.htm (Dec. 3, 2003).

the European experience to the U.S. digital transition.¹⁶⁰ For instance, the control and distribution of transmission facilities is quite different between the European nations and the United States. In this regard, in the United States, broadcasters generally own their own transmitters and operate them locally, except in some cases where local management agreements are in effect.¹⁶¹ Broadcasting in European countries, however, is usually divided between transmission companies that operate the physical plant on one hand and content providers on the other.¹⁶² In addition, while the distribution of broadcast spectrum licenses is diffuse and local in the United States, in Europe, there are frequently just a few licenses granted for broadcast with comparatively fewer over-the-air channels being available.¹⁶³

Programming is also treated differently. For example, the European digital terrestrial conversion is oriented towards providing packets of multiple standard-definition programming (multiplexes) transmitted over a single digital channel.¹⁶⁴ By way of contrast, in the United States, broadcasters are providing a mix of high-definition programming and multicast standard definition programming.¹⁶⁵

Also, access patterns are different. For instance, most European nations have a higher combined cable and satellite subscription rate than does the United States, partly due to the availability in some countries of free satellite services. For example, as discussed above, Germany has high cable subscription and a portion of satellite is free to air.¹⁶⁶ Great Britain, on the other hand,

¹⁶⁰ See Letter from Michael S. Schooler, Counsel, Nat'l Cable and Telecomm. Ass'n, to Marlene Dortch, Secretary, FCC, at http://www.ncta.com/pdf_files?033004_98_120_03_1-5_exparte.pdf (March 29, 2004) (discussing how the Berlin experience might not apply to the United States).

¹⁶¹ A local management agreement, or LMA, is a type of contract that generally involves the sale by a licensee of discrete blocks of time to a broker that then supplies the programming to fill that time and sells the commercial spot advertisements that support the programming. See *Review of the Commission's Regulations Governing TV Broadcasting, TV Satellite Stations Review of Policy & Rules*, 14 FCC Rcd 12903, para. 126 (1999); 47 C.F.R. §73.3555, Note 2(j) (2002).

¹⁶² For instance, in Great Britain, digital television transmission is the responsibility of companies such as Crown Castle. See CROWN CASTLE UK, ABOUT US, at <http://www.crown-castle.co.uk/aboutus/faq.shtml#faq14a>. In Germany, digital television transmission is the responsibility of Deutsche Telekom AG and its subsidiary T-Systems Media Broadcast. See *Berlin Goes Digital*, at 9; and Goldstein 2004 Testimony, *supra* note 93, at 8.

¹⁶³ John Burns, et. al., STUDY ON SPECTRUM MANAGEMENT IN THE FIELD OF BROADCASTING: FINAL REPORT, IMPLICATIONS OF DIGITAL SWITCHOVER FOR SPECTRUM MANAGEMENT, PREPARED FOR THE EUROPEAN COMMISSION, 23 (June, 2004) ("most EU Member States have up to four analogue programme channels providing national coverage.")

¹⁶⁴ COMM'N OF THE EUROPEAN COMMUNITIES, Comm'n Staff Working Paper, *The contribution of wide-screen and high definition to the global roll-out of digital television*, at 26 (Jan. 13, 2004).

¹⁶⁵ See KRUGER, *supra* note 4.

¹⁶⁶ See Hege, *supra* note 94.

has an unusually high over-the-air population and an extraordinarily weak cable sector.¹⁶⁷

Despite these differences, there are general lessons to be learned from the European experience that American decision makers should not ignore. Berlin teaches us that in areas where there is high cable penetration, a targeted over-the-air converter box subsidy, coupled with effective public relations and an attractive suite of free program offerings, can lay the foundations for a successful transition. Britain teaches us that in areas where over-the-air reliance is high, a market-oriented approach that encourages the distribution of over-the-air converter boxes may be more appropriate and effective.

As the next section of this paper establishes, the United States market is quite diverse, with some regions being highly-dependent on over-the-air service and other regions being less so. The lesson to be learned for the United States may therefore be that a single policy for a diverse nation may not be appropriate. In particular, decision makers may need to consider using both Berlin-like targeted subsidies for markets with high cable and satellite subscription rates while supplementing this approach with the establishment of a Freeview-like service to address markets with lower cable and satellite subscription rates.

The European experience also demonstrates that a simple replacement of analog technology with digital technology will not be successful without giving consumers something more than what they had previously and without significant additional cost. Berlin and Great Britain were successful because, in both instances, the new service offered consumers more freely-available channels than were previously available free over-the-air in analog. And in both cases, the start-up costs were minimal and nonrecurring. Previous attempts to establish a subscription-based broadcast digital platform failed in Britain because consumers did not see the added value they would receive for the additional and continuing subscription costs that such a model implied.

In addition, the European experience also demonstrates that analog shut-off need not be traumatic for consumers. A smooth transition will be accomplished only through careful planning and constant public relations, coordinated between private industry and the government. Without the solid expectation that analog service will cease by a certain date, neither of these initiatives would have reached the success that they have experienced.

Most importantly, the European experience demonstrates that as the process for the cessation of analog television progresses, an effective means for pro-

¹⁶⁷ In Great Britain, for instance, the rate of cable subscription is *lower* than in the U.S. (50% in Britain as compared to an average of 67% in the U.S.). BBC JOINT REPORT, *supra* note 135, at 9 ("The cable networks currently reach around 50% of U.K. households of which 50% have currently been upgraded to digital operation.")

tecting the more disadvantaged members of society can be crafted. The next section of this article identifies the consumer impact of analog cessation in the United States, providing information on the extent and nature of reliance on over-the-air broadcasting in this country.

III. IDENTIFYING THE IMPACT OF ANALOG CESSATION

In general, two types of households would be disproportionately affected by a cessation of analog over-the-air service: households that either (a) rely exclusively on over-the-air reception or (b) subscribe to a digital multichannel television service for one television set but possess additional television sets that are not connected. The following discusses the nature and extent of this reliance on over-the-air broadcast television as a foundation for crafting effective policy to minimize the consumer impact or political backlash that might be occasioned by analog switch-off.

A. Exclusive Reliance on Over-the-Air Reception

It is frequently reported that, on average, 15% of U.S. television households rely exclusively on over-the-air reception of television signals.¹⁶⁸ However, this figure, which is derived by subtracting all subscribers to cable and satellite-delivered television (and similar services) from the total of TV households, may be significantly higher depending on the methodology used to count such households. For instance, almost half of DBS subscribers, or approximately nine million households, subscribe exclusively to network feeds and national programming, receiving local broadcast stations over-the-air.¹⁶⁹ This would therefore increase over-the-air reliance by nine million households. In addition, the tally of non-broadcast households should be reduced to eliminate double-counting due to the fact that about 3% of households subscribe to both DBS and cable.¹⁷⁰ After considering evidence from a number of sources, the FCC currently estimates that the percentage of TV households that are over-

¹⁶⁸ *In re* Annual Assessment of the Status of Competition in the Market for the Delivery of Video Programming, *Eleventh Annual Report*, FCC 05-13, at para. 81 (Jan. 4, 2005) (estimating over-the-air reliance to be 15.99 million households, or 14.75% of all TV households); and FCC OTA Staff Report, *supra* note 32, at para. 7 (2005) (citing 14.86%).

¹⁶⁹ FCC OTA Staff Report, *supra* note 32, at para. 9. *But see The Role of Technology in Achieving a Hard Deadline for the DTV Transition: Testimony Before the House Comm. on Energy and Commerce, Subcomm. on Telecomms. and the Internet*, 109th Cong. 10 (Feb. 17, 2005) (statement of Mark L. Goldstein, Director, Physical Infrastructure Issues, Government Accountability Office) (citing this figure as one-fourth of all DBS subscribers) [hereinafter Goldstein 2005 Testimony].

¹⁷⁰ FCC OTA Staff Report, *supra* note 32, at n.8.

the-air dependent ranges from 13% to 19%.¹⁷¹ Similarly, the GAO found that 19% or 20.8 million households rely exclusively on free over-the-air television.¹⁷² This national statistic, however, is an average, with significant variations from one market to another without any obvious pattern related to urban, suburban or rural location.¹⁷³

Regarding the demographic characteristics of over-the-air reliant households, the FCC, after collecting evidence from a number of parties, has concluded that these households are somewhat disproportionately African-American, Hispanic and low-income.¹⁷⁴ The GAO has also found similar evidence stating:

Overall, over-the-air households are more likely to have lower incomes than cable or satellite households. Approximately 48 percent of exclusive over-the-air viewers have household incomes less than \$30,000, and 6 percent have household incomes over \$100,000. Additionally, non-white and Hispanic households are more likely to rely on over-the-air television than are white and non-Hispanic households; over 23 percent of non-white households rely on over-the-air television compared to less than 16 percent of white households, and about 28 percent of Hispanic households rely on over-the-air television compared to about 17 percent of non-Hispanic households.¹⁷⁵

With regard to whether age might be a determining factor for over-the-air reliant households, the FCC has concluded that the evidence is equivocal,¹⁷⁶ while the American Association of Retired Persons recently testified that of the approximately twenty-one million over-the-air dependent households, 8.6 million include at least one person over the age of fifty.¹⁷⁷

When these broadcast-dependent households are surveyed for the reasons why they do not subscribe to either cable or satellite (or similar services), the FCC found that 60% cited lack of interest (namely that television was not a priority for them), 30% cited lack of funds, and 10% cited other reasons.¹⁷⁸ A GAO survey of 100 respondents who exclusively watch television over-the-air found that cost and lack of interest were reasons cited in roughly equal propor-

¹⁷¹ *Id.* at para. 7.

¹⁷² Goldstein 2005 Testimony, *supra* note 169, at 7 (Feb. 17, 2005).

¹⁷³ FCC OTA Staff Report, *supra* note 32, at paras. 8, 13.

¹⁷⁴ *Id.* at para. 11.

¹⁷⁵ Goldstein 2005 Testimony, *supra* note 169, at 7-8 (Feb. 17, 2005); *see also* Testimony of Manuel Mirabal, Before the Subcommittee on Telecommunications and the Internet, Committee on Energy and Commerce, 109th Cong. 3 (2005) (indicating that one-third of Hispanic viewers rely exclusively on over-the-air reception, combined with 7% of Hispanic DBS households that rely on over-the-air reception for local programming, yielding a total of 40% for Hispanic broadcast-dependent households).

¹⁷⁶ FCC OTA Staff Report, *supra* note 32, at para. 12.

¹⁷⁷ Testimony of Lavada E. DeSalles on Behalf of AARP, Before the House Subcommittee on Telecommunications and the Internet of the House Committee on Energy and Commerce, 109th Cong. 5 (2005) (citing Nielsen Media Research data).

¹⁷⁸ FCC OTA Staff Report, *supra* note 32, at para. 16.

tions.¹⁷⁹

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

In addition to households that possess no access to subscription-based television, numerous television households that do subscribe to either cable or DBS possess additional televisions that are not connected to these services. These sets are used “for television viewing in kitchens, on patios, in recreational vehicles and at sports events, and for non-television uses such as playing games, VCR tapes, and DVDs.”¹⁸⁰ The FCC has stated that the number of such sets may approach 30 million,¹⁸¹ and the GAO has separately estimated that these additional sets are present in 16% of cable households and one-third of DBS households.¹⁸² The National Association of Broadcasters has estimated that 18.3 million households with multiple sets may be affected.¹⁸³ Combined with TV sets in over-the-air dependent households, the FCC has estimated that the total number of broadcast-dependent TV sets would be 73 million.¹⁸⁴

It should be noted that while the number of these additional television sets is large, the cessation of service to these sets, while politically problematic, is not accounted for as a legal matter. In this regard, if a household has at least one set that is either connected to a multichannel provider that carries the over-the-air DTV signal of all stations in the market or can receive such DTV signals over-the-air, then that house is counted as having complete access for purposes of analog cessation.¹⁸⁵

The following section provides some suggestions regarding how lawmakers could preserve service for households that have broadcast-dependent television sets.

IV. PRESERVING SERVICE: TARGETED SOLUTIONS

To address the significant number of consumers that may be harmed by the cessation of analog broadcast service, lawmakers concerned about preserving universal service may want to consider implementing some means to encour-

¹⁷⁹ Goldstein 2005 Testimony, *supra* note 169, at 8 (Feb. 17, 2005).

¹⁸⁰ FCC OTA Staff Report, *supra* note 32, at para. 9 (citations omitted).

¹⁸¹ *Id.*

¹⁸² Goldstein 2005 Testimony, *supra* note 169, at 8-9 (Feb. 17, 2005).

¹⁸³ Testimony of K. James Yager, *Before the Subcomm. on Telecom. & the Internet, Committee on Energy and Commerce*, 109th Cong. at 3 (Feb. 17, 2005) (“Approximately 18.3 million MVPD households have one or more television sets that rely solely on over-the-air television reception”).

¹⁸⁴ FCC OTA Staff Report, *supra* note 32, at n. 15.

¹⁸⁵ 47 U.S.C. §309(j)(14)(B)(iii) (2000).

age consumers to purchase inexpensive digital-to-analog converter boxes, preferably through a government-supported subsidy or similar mechanism. In addition, three more policy changes may be necessary to ensure an acceptable and consumer-friendly cessation of analog service. First, the government should implement 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 government should create an independent quasi-governmental corporation to comprehensively oversee the public relations aspects of the cessation of analog broadcasting. Third, the government should facilitate the creation of a cooperative marketing effort 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 for the Purchase of Over-the-Air Set-Top Boxes

In order to ensure continued access to the broadcast television service, the government should create subsidies for the purchase of at least one over-the-air DTV conversion box in each household that requests it. An adequately funded and well-planned subsidy program of this nature would ensure a measure of continuity of service for the two constituencies most affected by a cessation of analog transmissions. For households that rely exclusively on over-the-air analog transmissions, a subsidy program would ensure that at least one TV set would be capable of receiving over-the-air digital transmissions. And for households with one television set already connected to a subscription based provider, the subsidy program could ensure that at least one additional non-connected television set would continue to receive over-the-air signals.

To that end, 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 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 (thus reducing cost), but it may be extended if the need demonstrably exceeds the allocated resources. Second, it would place the incentive to purchase qualified equipment directly at the point of purchase, rather than delaying it until 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.

One significant draw-back of this policy, however, is that it is not means-tested. A means-tested subsidy would, of course be more targeted to those households that have a greater need for financial support and would have the added advantage of minimizing the cost of the subsidy. Nevertheless, it would be difficult to limit the subsidy to low-income households without further complicating what needs to be a simple procedure. For instance, in order to means-test the subsidy, the program would have to not only establish income-triggered eligibility cut-offs but also incorporate these factors into the administration of the subsidy (e.g., by providing some mechanism to deny reimbursement to claimants if they exceed the financial qualifications). This would create an additional level of administration that would be difficult to manage and might require several agencies to coordinate their relevant expertise. The approach suggested by this article, however, has the benefit of simplicity and transparency.

Moreover, it should be recognized that a policy crafted to minimize the impact of analog cessation has twin goals of addressing both a social problem and a political problem. A subsidy would address the social problem by assisting those economically disadvantaged households with the transition in ways that they could not otherwise afford. It would also address the political problem of assuaging the interests and emotions of consumers who, while not economically disadvantaged, would still be able to exercise collective political influence in reaction to their televisions going dark. A non-means-tested subsidy policy, therefore, would address both the social and political ramifications of analog cessation.

However, such a program is not without its costs. At present, in the U.S., converter boxes cost anywhere from \$300 to \$400,¹⁸⁶ although the relevant price is what such equipment would cost on the date that analog television

¹⁸⁶ FCC OTA Staff Report, *supra* note 32, at para. 17.

broadcasts cease. With mass production in a market the size of the United States, the cost of converter equipment could drop considerably. Under these circumstances, Motorola has projected that the cost could drop to \$67 per unit by 2007, and LG Electronics has projected a cost of less than \$100 per unit by late 2005 with a further drop in price to \$50 per unit by 2008.¹⁸⁷

Assuming that one converter box is purchased by each of the 20.8 million households that rely exclusively on over-the-air reception for local signals,¹⁸⁸ and assuming a conservative estimate of \$75 per converter box, the one-time cost of a 100% subsidy would be \$1.56 billion. To support a subsidy for one converter box for each of the 108.4 million television households in the United States,¹⁸⁹ the cost would increase to \$8.13 billion. If a partial subsidy were implemented under either of these options, the cost would drop proportionately.¹⁹⁰

While the subsidy proposed by this article rests on a directly funded trust-fund, other commentators have suggested manipulating the tax code to fund a subsidy program. For instance, one interesting and highly developed proposal has been raised by J.H. Snider and Michael Calabrese of the New America Foundation. New America 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.¹⁹¹ All households would be eligible for a single tax credit—to be included in the tax refund even if they pay no taxes—for a single tax year only.¹⁹²

This proposal, however, is significantly flawed. The mechanism of a tax credit creates a subsidy, not at the point of purchase, but instead a year later at tax time. Such an approach assumes, perhaps unrealistically, a forward-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 subscription services. Moreover, using the mechanism of a "refundable" tax credit would unnecessarily involve the IRS in

¹⁸⁷ Comments of Motorola to the *Public Notice* in MB Dkt. No. 04-210, at 7 (Aug. 11, 2004); Comments of LG Electronics to the *Public Notice* in MB Dkt. No. 04-210, at 3 (Aug. 11, 2004); see also FCC OTA Staff Report, *supra* note 32, at para. 17; *Testimony of Dr. Jong Kim, LG Electronics, Inc., before the Subcomm. on Telecom. & the Internet, Comm. on Energy and Commerce, 109th Cong.*, 4 (February 17, 2005) (\$100 by 2006 and \$50 by 2008, "assuming industry-wide demand of tens of millions of units").

¹⁸⁸ Goldstein 2005 Testimony, *supra* note 169.

¹⁸⁹ 2005 Video Competition Report, *supra* note 30, at Appendix B, Table B-1.

¹⁹⁰ Assuming a \$75 converter box, if the subsidy were means tested, at 300% of the poverty level it would cost \$937.5 million, and at 200% of the poverty level, it would cost \$697.5 million. See Goldstein 2005 Testimony, *supra* note 169, at 14 (Feb. 17, 2005) (setting forth cost estimates for \$100 and \$50 set-top box subsidies ranging over a 200% poverty, 300% poverty means test).

¹⁹¹ See Snider & Calabrese, *supra* note 8.

¹⁹² *Id.*

the administration of a program that should ideally be self-regulating with a minimum of governmental management. In addition, as a legislative proposal, this would require the difficult coordination of two powerful committee jurisdictions in Congress --Commerce and Ways and Means. For these reasons, a more traditional subsidy, triggered at the point of purchase, applicable only to the non-recurring costs of a single equipment purchase, and largely self-managed by the industry, would be the most efficient, equitable and politically viable approach.

B. Analog "Fade to Black."

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

For instance, taking a cue from Great Britain,¹⁹³ the government could mandate 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. To a certain extent, the current law already accomplishes this goal. While December 31, 2006 is the stated date for analog cessation, extensions of this date are available, as discussed at Part I of this article, if consumer acceptance of digital technology is too low.¹⁹⁴ However, the current law would allow for a staged market-by-market shut-off only on an *ad hoc* basis as conditions warrant. There would be no settled expectation regarding which markets would be turned off and when. As a result, there would be considerable uncertainty as the deadline approaches whether analog transmission in the market would cease. Consequently, consumers would have little incentive and inadequate time to prepare, resulting in precisely the kind of harsh and disorienting transition that should be avoided. Alternatively, a phased-in shut-down of analog service, according to a reliable and transparent schedule set in advance, would have the benefit of clarity and predictability, allowing for consumers to know when to expect cessation of analog service in their market by a certain date.

In addition, taking a cue from Berlin, the government could require that analog stations gradually reduce power over time while DTV stations would increase to full power. Under this scenario, more and more 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. Importantly, the gradual phase-out of analog in this regard must continue on a publicly trans-

¹⁹³ See *supra* Part II.B.

¹⁹⁴ 47 U.S.C. §309(j)(14)(B)(2000).

parent and predictable schedule without the kind of *ad hoc* market-by-market decision-making that the current law allows.

Either or both of these policies 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.

By way of contrast, the FCC has examined two additional gradualist approaches that it calls the “lifeline” and “700 MHz reclamation” options, both of which possess serious deficiencies.¹⁹⁵

The “lifeline” policy is described in the following manner:

At the switch-over date, a small number of analog television stations would be licensed to operate in each market. The pool from which these licensees are selected could be limited to existing broadcasters (which would simply be continuing their analog service) or opened to new applicants. This would ensure that analog OTA viewers continue to have access to at least some television programming without digital-to-analog converters. Eventually, when the number of analog OTA viewers is sufficiently small, all analog service would be terminated. This approach provides analog OTA households with an additional choice. Those for whom television service holds little value could do nothing and rely on the truncated analog service, while those who value television service more highly could obtain a digital-to-analog converter to receive the full complement of broadcast programming. In addition, a truncated service may be a preferable solution to converters for non-primary television sets in OTA households (or for those additional sets in MVPD households that are not connected to the MVPD service), especially for small or portable sets for which a converter box may be impractical.¹⁹⁶

However, the FCC has rightly recognized a number of problems with this approach, including but not limited to: “(a) finding spectrum on which these continuing analog stations could operate; (b) recognizing that not all pre-transition analog programming would be available; (c) establishing an economically viable analog service; and (d) accepting the opportunity costs of not being able to use the spectrum for other uses (*e.g.*, secondary services like low-power television).”¹⁹⁷

The “700 MHz reclamation” policy would work as follows. First a hard date for analog cessation would be applied to stations at channels 60-69, followed by a later deadline for stations at channels 52-59 and followed further by a still later deadline for stations within the core of channels 2 through 51.¹⁹⁸ While the FCC recognized the advantage this approach would pose for early reclamation of the 700 MHz band for public safety and advanced wireless services,¹⁹⁹ it also correctly recognized the following potentially significant disadvantages:

¹⁹⁵ FCC OTA Staff Report, *supra* note 32, at paras. 32-36.

¹⁹⁶ *Id.* at para 32 (citations omitted).

¹⁹⁷ *Id.* at para 33.

¹⁹⁸ *Id.* at para. 34.

¹⁹⁹ *Id.* at para. 35.

(1) the greater hardship imposed on stations on channels 52-69 (including the loss of their analog revenue streams and/or the cost of moving digital operations), many of which are relatively new entrants and were allotted those frequencies because lower frequencies were already occupied; (2) the greater hardship imposed on viewers of those channels, which, even though they tend to be more lightly viewed, often provide Spanish-language, religious, educational or other niche programming; (3) the potential of losing a popular analog service from one of the four major networks, whether because it was operating in analog on channels 52-69 or its digital operation on channels 52-69 displaced its in-core analog operation; (4) finding in-core spectrum on which the digital stations can operate without causing undue interference; (5) the likelihood that existing analog stations (and possibly some digital stations) would be subject to interference levels during the phase-out that are unacceptable under current rules; and (6) if no deadline is established for in-core analog stations, the inequitable treatment among broadcasters and the possibility that enough analog broadcasting will remain that the complete transition to digital will not occur.²⁰⁰

Common to any gradualist approach - whether it be a rolling geographic switch-off, a market-based switch-off or either of the FCC proposals above — may be the concern that anything short of a national switch-off could potentially reduce the value of subsequent auction receipts, because bidders for spectrum at auction would prefer to bid on national blocks of spectrum at one time. The assumption underlying this objection is that the auction of returned spectrum formerly used for analog television would have to occur on a gradual and piecemeal basis. However, this is not a valid assumption. The schedule for the return of analog spectrum and the schedule for spectrum auctions are entirely separable from each other. For instance, the auction of analog television spectrum could occur prior to its return to the government, as is the case now. In this instance, spectrum would be bid upon at auction with the assumption that it would be encumbered by current licensees for a limited period of time. Alternatively, if spectrum auctions were to be held *after* incumbent licensees have been cleared, auctions could proceed nationwide and on a single date, even though spectrum was returned on a gradual basis. Thus a number of options exist for managing the auction of spectrum returned to the federal government, apart and distinct from the schedule for analog switch-off.

C. Public Outreach

Neither the subsidy program, nor the gradualist approach discussed above, however, will work well without a comprehensive public outreach and education effort. As discussed above, one model for this comes from Berlin.²⁰¹ A second model comes from Britain, which, as discussed above, is in the process of establishing an independent corporation (“SwitchCo”) to coordinate a comprehensive publicity campaign and to manage the digital switchover process.²⁰²

²⁰⁰ *Id.* at para. 36 (citations omitted).

²⁰¹ *See supra* Part II.A.

²⁰² *See supra* Part II.B.

In a similar vein, the United States should establish an independent quasi-governmental corporation to comprehensively oversee the public relations aspects of the cessation of analog broadcasting. It should establish a SwitchCoUSA.

To ensure adequate, consistent, comprehensive and unbiased publicity, the public relations duties should not be left without supervision to the diverse and often conflicting commercial interests in the free market. On the other hand, the flexibility and sensitivity to local conditions may be difficult to accomplish by a single governmental agency. Accordingly, a quasi-governmental entity, modeled perhaps along the lines of the Corporation for Public Broadcasting, the National Science Foundation, or the National Endowment for the Humanities, may be more appropriate. In addition, to ensure local responsiveness while adhering to national policy, SwitchCoUSA could employ regional or state councils to further inform its efforts, much as the National Endowment for the Humanities relies on state humanities councils.

As part of its duties, SwitchCoUSA would be primarily tasked with communicating to communities the relevant shut-off dates and the means by which consumers could preserve television service. SwitchCoUSA and its component local affiliates would extensively use the electronic mass media (e.g., radio, television and the Internet) as well as other outdoor advertising methods (e.g., bus signs, billboards) to disseminate appropriate information regarding analog cessation. SwitchCoUSA could also work cooperatively with industry partners to encourage a consistent message in the private sector, encourage adequate training by retail staff, and ensure the availability of appropriate equipment. It could also serve as the administrator for the trust fund supporting the subsidy for the converter boxes described above.

D. United States Freeview

As the European experience demonstrates, in areas where there is low reliance on over-the-air reception, a Berlin-style swift transition plan with adequate notice and comprehensive publicity managed by a central agency may be most appropriate. However, where over-the-air reliance is considerably more extensive, as in Great Britain, a more market-oriented approach may better set the stage for a smooth transition. In fact, both approaches have their advantages and both may be implemented together.

In this regard, although an early return of analog spectrum could be accomplished without establishing it, the creation of a United States Freeview service could present a marketplace incentive to get over-the-air digital-to-analog converter equipment (or integrated sets with digital tuners) into the hands of consumers with a minimum of government intervention. In particular, it would

better set the stage and prepare the ground for an eventual analog shut-off along the lines of Berlin. Establishment of a United States Freeview service could also revitalize the over-the-air service by providing consumers with more free channels than are currently available. Moreover, if successful, it could also evolve into a competitive multichannel video service of its own, thus providing price competition to cable and satellite with the added benefit of reducing broadcasters' reliance on cable and satellite for the distribution of their signals.

Broadcasters, consumer electronics manufacturers and others are already exploring the possibility of establishing something like this within the unique parameters of the United States market. However, most publicized efforts so far have focused on the creation of subscription-based services, rather than a free service.²⁰³ This may be a mistake, as these initiatives have failed to attract either significant numbers of subscribers or sufficient investment capital.²⁰⁴

Could an entirely free multichannel television service ignite consumer interest in the United States as it did in Britain? Or, alternatively, would an initial free service, later supplemented by a subscription-based tier (i.e. a hybrid free/pay service), make more sense to investors? Would consumers be willing to adopt this technology if it meant fewer channels as compared to cable but better price for a core of popular programming? While the uncertainties of introducing a new multichannel television service are numerous, the fact is that in Great Britain, Freeview has been an enormous consumer success. If something close to an equivalent can be established in the United States, those regions where United States Freeview is actively adopted – especially those regions with high broadcast reliance—may experience less of a disruptive digital switchover process than otherwise might occur.

V. CONCLUSION

This article has argued that, based on the lessons learned from Germany and Great Britain, the cessation of analog broadcast television service in the United States need not be sudden, harsh or disorienting. In particular, an effective

²⁰³ See Ellen Sheng, *U.S. Digital Hopes Less is More for Viewers of its Pay-TV Service*, WALL ST. J., May 18, 2004, at B3A (describing USDTV, a digital multichannel subscription service); *PVR's Challenge to 30-Sec. Spot Can be Met, NAB Speakers Say*, COMM. DAILY, Apr. 22, 2004 (describing efforts by Emmis Broadcasting to aggregate DTV spectrum to provide for a subscription-based DTV multichannel service); see generally USDTV, at <http://www.usdtv.com/> (last visited Feb. 7, 2004). See also Press Release, Emmis Communications, Television Broadcasters Initiative Unveiled at <http://www.emmis.com/press/release.aspx?id=26371> (Apr. 20, 2004)(describing Emmis' initiative); 2005 Video Competition Report, *supra* note 30 at para. 85.

²⁰⁴ See John M. Higgins, *Running Out of Air: Two Ambitious Broadcasters Fight to Keep the Wireless-Cable Dream Alive*, BROAD. AND CABLE, Feb. 21, 2005, at 6.

analog cessation plan needs to ensure a continuity of service for consumers who rely on over-the-air reception for their television service (either for sole service or for additional television sets). To accomplish this purpose, this article has suggested the creation of a temporary and limited trust fund to subsidize the purchase of inexpensive digital-to-analog converter equipment. This subsidy program would use consumer-friendly mail-in coupons issued at the point of purchase and would involve an easily administered means by which manufacturers or retailers could seek reimbursement from the fund. In addition, this article has advocated for a gradual cessation of analog television service—a so-called “fade to black” approach whereby analog service would be shut off on a rolling geographic or market basis, coupled with a gradual decrease in analog power levels over time as digital broadcasters increase to full power—all on a transparent and easily predicted schedule. This article has also argued that there must be adequate and continuing publicity through a wide range of media concerning the schedule for analog cessation and options for continuing to receive broadcast television, and that this role should be fulfilled by an independent quasi-governmental entity called SwitchCoUSA. Lastly, this article has proposed that it would be helpful to the success of any analog cessation plan for private industry in the United States to replicate, to the greatest extent possible, a version of Great Britain’s Freeview service. As a result, regions of the country with high over-the-air reliance would possess additional market-oriented incentives to purchase DTV reception equipment, thus making it less of a possibility that such regions would experience a harsh or disorienting transition from analog broadcasting.

The DTV transition and the end of analog television service in the United States will occur, but the process, if carefully managed in accordance with the above principles, need not result in massive disruption to consumer interests. Nor need it necessarily provoke a political backlash. The United States would be wise to consider the European experience and apply these lessons in a careful and systematic manner to ensure that the bounty of digital television is delivered to consumer acclaim.