Order Code RS22217
Updated February 15, 2006

The Digital TV Transition: A Brief Overview

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Summary

During the first session of the 109th Congress, policymakers sought to accelerate the nation's transition to digital television and to expedite the transfer of radio frequency channels from the broadcast industry to public safety and commercial users no later than 2009. Broadcasters are holding spectrum in the 700 megahertz (MHZ) band (channels 52-69) that they would be required to relinquish after the transition to digital television (DTV) is achieved. Without a hard deadline, the transition to digital television has been postponed. Meanwhile, public safety officials want 700 MHZ spectrum that has been assigned to them, but not delivered, in order to build new interoperable networks, while the commercial wireless industry would like access to the spectrum for new services.

Legislative language to clear spectrum and facilitate the transition to digital televison was included in both the House and Senate FY2005 budget reconciliation bills (H.R. 4241/S. 1932). The final version of the Deficit Reduction Act of 2005 (P.L. 109-171) sets the digital transition deadline at February 17, 2009, and allocates up to $1.5 billion for a digital-to-analog converter box program. P.L. 109-171 does not include provisions on "downconversion," nor does it address the debate over expanding "must carry" rules to include multicasting must carry. The enacted legislation also does not include provisions on the "broadcast flag." This report will not be updated.

The transition to digital television has two major policy components. One set of policy decisions is concerned with how best to move television broadcasters and their viewers to digital technology. Other key policy issues deal with radio frequency spectrum management and allocation. The public interest goals for these paths are not well aligned, presenting Congress with difficult choices to achieve its overall objective of completing the transition. Briefly discussed below are key points about the transition process: background, the impact on broadcasting, spectrum policy, and recent legislative activity.[1]

[1] Detailed information on these topics is available in CRS Report RL31260, *Digital Televison:* (continued...)

I. Background. The process of regulating the introduction of digital television (DTV) technology extends over more than a decade.

- DTV is considered the most significant development in television technology since color television because of features such as better picture resolution and the more efficient use of spectrum. DTV also allows a broadcaster to offer multiple programs (multicasting) or a single program of high definition digital TV. The United States and countries throughout the world are actively seeking to replace existing over-the-air analog TV with DTV broadcasting.
- The Telecommunications Act of 1996 (P.L. 104-104) provided that eligibility for DTV licenses should be limited initially to existing broadcasters. Digital signals cannot be transmitted with existing analog television technology. Therefore, broadcasters were issued additional licenses for new, DTV broadcast channels while continuing to broadcast on existing channels during the transition period. The old, analog licenses were to be returned to the federal government after the transition to DTV.
- In the Balanced Budget Act of 1997 (P.L. 105-33), Congress set a deadline of December 31, 2006 to complete the transition from analog to digital television but allowed several exceptions that can extend that deadline. A critical exception is the percentage of households, by market, that must be equipped to receive digital signals: 85% or more.
- Given the slower-than-expected rate of adoption for DTV in American homes, the goal of over-the-air digital television in 85% of American households by 2006 was viewed as not likely to be reached. Legislative language to clear spectrum and mandate the transition to digital televison by a specific deadline (a "hard" date) was included in both the House and Senate FY2005 budget reconciliation bills (H.R. 4241/S. 1932). The House proposal was for a December 31, 2008, deadline; the Senate specified April 7, 2009. The conference agreement on the S. 1932 (Deficit Reduction Act of 2005) sets a deadline of February 17, 2009.
- Switching from analog to digital broadcast means that broadcasters will begin to broadcast exclusively on channels assigned for digital use; broadcasts in analog mode will be ended. Viewers with conventional (not DTV) sets will lose over-the-air broadcast TV unless they either install a set-top converter box to convert digital signals to analog formats, or subscribe to a cable or satellite service that can accommodate both technologies.

II. DTV and Broadcasting. Several studies, such as those mentioned below, have attempted to estimate the number of over-the-air analog television households that will require converter boxes after the digital transition takes place. Much of the debate over

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[1] (...continued)
An Overview, by Lennard Kruger; and CRS Report RL32622, *Public Safety, Interoperability and the Transition to Digital Television*, by (name redacted).

the transition to DTV centers on how to assure continued access to over-the-air broadcast programs.

- According to the National Association of Broadcasters (NAB), there are currently 280.5 million analog televisions in United States. Of these, 73 million rely on over-the-air broadcasting.[2]
- A key issue in the digital transition is that the millions of analog televisions that rely on over-the-air broadcasts will no longer work once the analog signal is turned off. According to a Government Accountability Office survey, 19% of U.S. households (21 million) do not subscribe to a cable or satellite service and rely exclusively on over-the-air broadcasting. The GAO found that low-income, non-White, and Hispanic households are more likely to rely on over-the-air television broadcasting.[3] The Federal Communications Commission (FCC) estimates that 15% of TV households are exclusively over-the-air.[4] The Consumer Electronics Association (CEA) has estimated that less than 13% of TV households currently rely on over-the-air TV broadcasts.[5]
- In June 2005, the Consumers Union and the Consumer Federation of America issued a joint study[6] that estimated that approximately 16 million households would lose all TV reception when analog signals are cut off . Based on an estimate of a $50 price to purchase a converter box, the report concluded that "the direct government-imposed costs on consumers to preserve the usefulness of [analog television sets] would be $3.5 billion or more."
- The GAO estimated that the cost of assuring over-the-air broadcasting by supplying converter boxes to households that only have analog television could total from $460 million to $10.6 billion, depending on a number of variables such as the cost of the boxes and the number of households

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[2] Comments of the National Association of Broadcasters and the Association for Maximum Service Television, Inc., *In the Matter of Over-The-Air Broadcast Television Viewers*, FCC, MB Docket No. 04-210, August 11, 2004.

[3] See U.S. Government Accountability Office, Testimony before the Subcommittee on Telecommunications and the Internet, Committee on Energy and Commerce, House of Representatives, *Digital Broadcast Television Transition: Estimated Cost of Supporting Set-Top Boxes to Help Advance the DTV Transition*, February 17, 2005. Available at [http://energycommerce.house.gov/108/Hearings/05262005hearing1533/Shapiro.pdf]. Viewed July 7, 2005.

[4] FCC, *Annual Assessment of the Status of Competition in the Market for the Delivery of Video Programming*, Report FCC 05-13, MB Docket No. 04-227, released February 4, 2005.

[5] Statement of Gary Shapiro, President and CEO, Consumer Electronics Association, before the House Committee on Energy and Commerce, Subcommittee on Telecommunications and the Internet, May 26, 2005. Available at [http://energycommerce.house.gov/108 /Hearings/05262005hearing1533/Shapiro.pdf]. Viewed July 9, 2005.

[6] *Estimating Consumer Costs of a Federally-Mandated Digital TV Transition*, Consumers Union and Consumer Federation of America, June 29, 2005 at [http://www.hearusnow.org/fileadmin/ sitecontent/DTV_Survey_Report-Final_6-29-05.pdf]. Viewed August 10, 2005.

eligible to receive assistance.[7] The GAO cost estimates do not include the cost of implementing a subsidy program.

- Policy issues included whether some form of financial assistance (subsidies or tax credits, for example) should be provided by the federal government to enable over-the-air households to purchase converter boxes or digital televisions; whether such assistance should go to low-income households exclusively or to all households; whether subsidies, if warranted, should be financed by proceeds garnered by auctioning the analog spectrum; how much funding a subsidy program would require, and how much revenue is likely to be raised by auctioning the commercial portion of the reclaimed analog spectrum.
- Many cable households might wish to continue to use analog televisions after the transition. Cable companies might offer converter boxes to these customers. As an alternative, it is possible that cable providers might seek authority from Congress to "downconvert" the digital signal of selected local broadcast stations to analog format. To serve customers with digital televisions, cable providers would continue to provide digital signals as well (in other words, "dual carriage"). Under this scenario, a key issue is whether (and how) Congress should mandate which local broadcast stations would receive the benefit of "dual carriage" to cable customers, and for how long.
- A related issue is whether cable systems and satellite televison should be required to carry all the programs of over-the-air broadcasters. The simultaneous broadcasting of multiple channels of programming made possible by digital technology is referred to as multicasting. The FCC has ruled that it will not require what is usually referred to as multicasting must carry.
- NAB has announced that it accepts that there will be a hard date for ending analog television broadcasts but it is pressing for multicasting must carry, which NAB claims is a way of assuring quality and diverse programming. Opponents claim that this requirement would clog cable operators' systems, closing out many other programs and discouraging new entrants. There have also been expressions of concern that multicasting must carry would accelerate media concentration and reduce the diversity of viewpoints.[8]

III. Spectrum Policy. The completed transition process will free up 60 MHZ of spectrum in addition to freeing spectrum already allocated for public safety or sold for commercial use. Among the uses proposed for this 60 MHZ are: to provide additional spectrum for public safety use; to assign spectrum for unlicensed use; and to auction licenses for the channels.

- In the Intelligence Reform and Terrorism Prevention Act (P.L. 108-458), Congress expressed its sense that 1) it must act in the first session of the 109th Congress to establish a comprehensive approach to the timely

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[7] GAO-05-258T, pp. 14-15.

[8] "DIGITAL TELEVISION: Diverse Groups Oppose 'Must Carry' Provisions," by Drew Clark, National Journal's Technology Daily, PM Edition, October 17, 2005.

return of spectrum held by the broadcasters and that 2) any delay in doing this would delay planning by the public safety sector that is to receive some of the spectrum for new communications systems. (Section 7501.) The act also requires the FCC to prepare a study for Congress evaluating whether additional spectrum should be made available for public safety and homeland security wireless communications. (Section 7502.)

- Some of the channels to be vacated by broadcasters have been assigned to public safety and some have been auctioned for advanced wireless communications services. There is widespread interest in using the remaining, unassigned channels for broadband wireless. Based on actions approved to date by House and Senate committees, it appears that all the unallocated spectrum (60 MHZ) would be auctioned in 2008.
- Although estimates vary, spectrum auctions of frequencies in the 700 MHZ band have typically been projected to gross $20 billion to $30 billion.[9] Revenue potential is dependent on a number of factors, including timing of auctions and the date at which spectrum will be cleared and available. The Congressional Budget Office reportedly set a benchmark estimate of $10 billion in revenue from auction of this spectrum.[10] On December 20, 2005, CBO estimated auction proceeds at $12.5 billion.[11]

IV. Legislative Activity. Policymakers in the 109th Congress have allocated part of 700 MHZ auction funds toward meeting a budget resolution to reduce the federal deficit by the end of FY2010.[12] The goal is to maximize the amount of 700 MHZ spectrum available in a timely manner while minimizing the cost and inconvenience to TV viewers and the television industry that might result from the transition. The Senate passed the Deficit Reduction Omnibus Reconciliation Act of 2005 (S. 1932, Senator Gregg) on November 3, 2005, which contains some provisions regarding DTV. The House passed, on November 18, 2005, the Deficit Reduction Act of 2005 (H.R. 4241, Representative Nussle), with more extensive provisions for DTV. The budget reconciliation conference report on S. 1932 (H.Rept. 109-362) was approved by the House on December 19, 2005, and approved by the Senate on December 21, 2005. However, because the Senate removed three provisions from the conference report (provisions not related to digital television), S. 1932 again had to be approved by the House before final enactment. On February 1, 2006, the House again approved S. 1932. On February 8, 2006, the President signed the Deficit Reduction Act of 2005 into law (P.L. 109-171). Highlights of Title III – Digital Television Transition and Public Safety – include:

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[9] "Analysis of an Accelerated Digital Television Transition," prepared by the Analysis Group, sponsored by Intel Corporation, May 31, 2005, page 6 at [http://www.itic.org/archives/DTV%20Transition%20Report.pdf]. Viewed August 30, 2005.

[10] As discussed at full committee markup, Committee on Commerce, Science and Transportation, Senate, October 20, 2005.

[11] CBO, Cost Estimate for H.R. 2863, DOD Appropriations Act, 2006, December 20, 2005, page 3 at [http://www.cbo.gov/ftpdocs/69xx/doc6990/hr2863.pdf]. Viewed December 23, 2005.

[12] For the House Committee on Energy and Commerce, the commitment could be $14,734,000,000 for fiscal years 2006 through 2010; H.Con.Res. 95, Concurrent Resolution on the Budget for Fiscal Year 2006, Title II, Section 201 (a) (2) (C).

- Setting a definite date of February 17, 2009, for the release of spectrum at 700 MHZ[13] currently held by broadcasters. By February 18, 2009, full-power television broadcasters are required to cease their analog television service and broadcast exclusively in a digital format. (Section 3002)
- Requiring auctions by the Federal Communications Commission (FCC) of the freed spectrum beginning on January 28, 2008, and ending on June 30, 2008. (Section 3003)
- Requiring that auction proceeds will be deposited in a fund in the U.S. Treasury called the Digital Television Transition and Public Safety Fund. On September 30, 2009, $7.363 billion will be transferred from the Digital Television Transition and Public Safety Fund to the general fund of the Treasury. (Section 3004)
- Creating a fund to receive a portion of spectrum auction revenue to cover some of the costs to consumers of conversion to digital TV. Up to $990 million will be made available to the National Telecommunications and Information Administration (NTIA) to administer a digital-to-analog converter box program. Between January 1, 2008, and March 31, 2009, the program will supply up to two coupons per requesting household worth $40 each towards the purchase of converter boxes. The program may receive additional funding bringing the total up to $1.5 billion if NTIA notifies Congress that additional funding is needed. (Section 3005)
- Designating other uses of auction proceeds not to exceed: $1 billion for public safety interoperable communications, $30 million for New York City 9/11 digital transition, $75 million to assist low-power television stations during the digital transition, $156 million for a national alert and tsunami warning program, $43.5 million to implement the ENHANCE 911 Act of 2004, $30 million for the essential air service program administered by the Department of Transportation. (Sections 3006-3012)
- Continuing the FCC's authority to hold auctions, which expires in 2007. Auction authority is extended through 2011. (Section 3003)
- Providing for additional supplemental license fees to be assessed by the FCC in the aggregate amount of $10 million during FY2006. (Section 3014)

P.L. 109-171 did not retain the provisions in the House bill on digital-to-analog conversion and must carry (the "downconversion" issue), nor were the House provisions on a comprehensive consumer outreach program retained. Also, like the previous House and Senate versions, the conference agreement does not contain language addressing the multicast must-carry issue or other DTV issues such as the broadcast flag or DTV public interest obligations.

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[13] Wireless (radio frequency) spectrum is measured in cycles per second, or hertz (Hz). Standard abbreviations for measuring frequencies include kHz — kilohertz or thousands of hertz; MHz — megahertz, or millions of hertz; and GHz — gigahertz, or billions of hertz.