

CRS Report for Congress

The Transition to Digital Television: Is America Ready?

September 7, 2007

Lennard G. Kruger
Specialist in Science and Technology Policy
Resources, Science and Industry Division



Prepared for Members and
Committees of Congress

The Transition to Digital Television: Is America Ready?

Summary

The Deficit Reduction Act of 2005 (P.L. 109-171) directs that on February 18, 2009, over-the-air television broadcasts — which are currently provided by television stations in both analog and digital formats — will become digital only. Digital television (DTV) technology allows a broadcaster to offer a single program stream of high definition television (HDTV), or alternatively, multiple video program streams (multicasts). Households with over-the-air analog-only televisions will *no longer be able to receive television service* unless they either: (1) buy a digital-to-analog converter box to hook up to their analog television set; (2) acquire a digital television or an analog television equipped with a digital tuner; or (3) subscribe to cable, satellite, or telephone company television services, which will likely provide for the conversion of digital signals to their analog customers.

Households using analog televisions for viewing over-the-air television broadcasts are likely to be most affected by the digital transition. Of particular concern to many policymakers are low-income, elderly, disabled, non-English speaking, and minority populations. Many of these groups tend to rely more on over-the-air television, and are thus more likely impacted by the digital transition.

The Deficit Reduction Act of 2005 established a digital-to-analog converter box program — administered by the National Telecommunications and Information Administration (NTIA) of the Department of Commerce — that will partially subsidize consumer purchases of converter boxes. NTIA will provide up to two forty-dollar coupons to requesting U.S. households. The coupons are to be issued between January 1, 2008, and March 31, 2009, and must be used within three months after issuance towards the purchase of a stand-alone device used solely for digital-to-analog conversion.

The preeminent issue for Congress is ensuring that American households are prepared for the February 17, 2009 DTV transition deadline, thereby minimizing a scenario whereby television sets across the nation “go dark.” Specifically, Congress is actively overseeing the activities of federal agencies responsible for the digital transition — principally the Federal Communications Commission (FCC) and the NTIA — while assessing whether additional federal efforts are necessary, particularly with respect to public education and outreach. The Congress is also monitoring the extent to which private sector stakeholders take appropriate and sufficient steps to educate the public and ensure that all Americans are prepared for the digital transition. DTV-related bills, which address public education (H.R. 608, H.R. 2566, and H.R. 2917), have been introduced into the 110th Congress. At issue is whether the federal government’s current programs and reliance on private sector stakeholders will lead to a successful digital transition with a minimum amount of disruption to American TV households or, alternatively, whether additional legislative measures are warranted.

This report will be updated as events warrant.

Contents

Introduction	1
What is Digital Television?	2
Why is the Nation Transitioning to Digital Television?	2
Who is Likely to be Most Affected by the Transition?	3
How Will the Digital Transition Affect Cable and Satellite Households?	4
The Digital-to-Analog Converter Box Program	4
Status of DTV Public Education	6
Key Issues	8
Activities in the 110 th Congress	9
For Further Information	10

The Transition to Digital Television: Is America Ready?

Introduction

Under current law, after February 17, 2009, households with over-the-air analog-only televisions will *no longer be able to receive television service* unless they either: (1) buy a digital-to-analog converter box to hook up to their analog television set; (2) acquire a digital television or an analog television equipped with a digital tuner;¹ or (3) subscribe to cable, satellite, or telephone company television services, which will likely provide for the conversion of digital signals to their analog customers. The Deficit Reduction Act of 2005 (P.L. 109-171) directs that on February 18, 2009, over-the-air television broadcasts — which are currently provided by television stations in both analog and digital formats — will become digital only.² Analog broadcast television signals, which have been broadcast for over 60 years, will cease, and television stations will broadcast exclusively digital signals over channels 2 through 51.

The preeminent issue for Congress is ensuring that American households are prepared for the transition, thereby minimizing a scenario whereby television sets across the nation “go dark” on February 18, 2009. Specifically, Congress is actively overseeing the activities of federal agencies responsible for the digital transition — principally the Federal Communications Commission (FCC) and the National Telecommunications and Information Administration (NTIA) — while assessing whether additional federal efforts are necessary. The Congress is also monitoring the extent to which private sector stakeholders take appropriate and sufficient steps to educate the public and ensure that all Americans are prepared for the digital transition.

¹ As of March 1, 2007, *all* analog televisions manufactured, imported, or shipped across state lines are required to have a built-in digital tuner, and will therefore not require a converter box. Retailers are permitted to sell analog-only devices from existing inventory, but are required by the FCC to display a “consumer alert” label explaining that the device will require a converter box in order to receive over-the-air television signals after February 17, 2009.

² The February 17, 2009 deadline applies only to full power television stations. Low power television stations, including Class A stations and translator stations, will transition to digital broadcasting at a date yet to be determined by the FCC.

What is Digital Television?

Digital television (DTV) is a new television service representing the most significant development in television technology since the advent of color television. DTV can provide movie-quality pictures and sound far superior to traditional analog television. Digital television technology allows a broadcaster to offer a single program stream of high definition television (HDTV) or, alternatively, multiple video program streams (“multicasts”) of standard or enhanced definition television, which provide a lesser quality picture than HDTV, but a generally better picture than analog television. DTV technology also makes possible an interactive capability, such as “pay-per-view” service over-the-air.

In order to receive and view digital high-definition television service, consumers must have a digital television set equipped with a digital tuner capable of receiving the digital signal that is provided either over-the-air (in which case an antenna is required) or via cable or satellite television systems. Additionally, consumers can view high definition programs with a digital TV attached to a high definition DVD player (i.e. the HD-DVD or Blu-Ray Disc player).

Why is the Nation Transitioning to Digital Television?

One of the key drivers behind the digital transition is reclaiming a portion of the analog spectrum (broadcast channels 52 through 69, also known as the 700 MHz band) currently occupied by television broadcasters. Digital television uses radio frequency spectrum more efficiently than traditional analog television, thereby “freeing up” bandwidth. The goal of the FCC and Congress has been to complete the transition to DTV as quickly as is possible and feasible, so that analog spectrum can be reclaimed and subsequently reallocated for other purposes. Some of the analog spectrum will be auctioned for commercial wireless services (including wireless broadband), and some will be used for new public safety communications services. Additionally, it is mandated that some of the revenue raised in the spectrum auction will be returned to the U.S. Treasury, thereby contributing toward federal deficit reduction. For more information on the auction and use of the analog television spectrum, see CRS Report RS22218, *Spectrum Use and the Transition to Digital TV*, by Linda K. Moore.

Another rationale often cited for the digital transition is that — aside from offering a superior television viewing experience to consumers — DTV will give over-the-air broadcasters the capability to offer more channels of programming (via multicasting, if they so choose) as well as the ability to offer similar digitally-based services (such as pay-per-view or other interactive services) offered by cable and satellite television providers.

Who is Likely to be Most Affected by the Transition?

Households using analog televisions for viewing over-the-air television broadcasts are likely to be most affected by the digital transition. Estimates vary over the number of analog TV sets and households affected. For example, the National Association of Broadcasters (NAB) has estimated that there are 69 million analog television sets that will be potentially impacted by the digital transition,³ consisting of 19.6 million households (17% of all households) relying exclusively on over-the-air analog television sets and an additional 14.7 million cable and satellite households receiving some over-the-air programming on analog sets.⁴ On the other hand, the Consumer Electronics Association (CEA) has estimated that 36.5 million analog televisions (comprising 13.5 million households) will require converter boxes; according to CEA, an additional 30 million analog sets are used for non-broadcast purposes such as playing video games or watching DVDs, and will therefore likely not require converter boxes.⁵

Of particular concern to many policymakers are low-income, elderly, disabled, non-English speaking, and minority populations. Many of these groups tend to rely more on over-the-air television, and are thus more likely to be impacted by the digital transition. A survey commissioned by the Association of Public Television Stations (APTS) indicated that Americans aged 65 and older are consistently more likely to receive television signals via an over-the-air antenna than are Americans under 65. The survey found that during the first quarter of 2007, 24% of households with Americans 65 and older received their TV programming over-the-air, while only 19% of younger households were over-the-air. The study also found that of Americans aged 65 and older who rely solely on over-the-air connections to television programming, only 17% own a digital TV.⁶

Similarly, a 2005 Government Accountability Office (GAO) survey found that over-the-air households are more likely to have lower incomes than cable or satellite households. Specifically, GAO found that approximately 48% of exclusive over-the-air viewers have household incomes less than \$30,000, versus 6% with household incomes over \$100,000. GAO also found that nonwhite and Hispanic households are more likely to rely on over-the-air television, with over 23% of non-white households relying on over-the-air television compared to less than 16% of white households,

³ Testimony of K. James Yager on behalf of the National Association of Broadcasters and the Association for Maximum Service Television, hearing before the House Committee on Energy and Commerce, Subcommittee on Telecommunications and the Internet, March 28, 2007, p. 11. Available at [http://energycommerce.house.gov/cmte_mtgts/110-ti-hrg.032807.Yager-testimony.pdf]

⁴ Letter from Jack Sander, Joint Board Chair, National Association of Broadcasters, to the Honorable Kevin Martin, Chairman, FCC, Re: *In the Matter of DTV Consumer Education Initiative*, MB Docket No. 07-148, p. 1.

⁵ *National Journal's Technology Daily*, PM Edition, March 16, 2007, Vol. 10, No. 9

⁶ Association of Public Television Stations, "APTS Study Shows Older Americans Less Prepared for the Digital TV Transition," Press Release, July 24, 2007.

and about 28% of Hispanic households relying on over-the-air television compared to about 17% of non-Hispanic households.⁷

How Will the Digital Transition Affect Cable and Satellite Households?

Multichannel video programming distributor (MVPD) households — consisting of households receiving cable, satellite, or telephone company television services — constitute about 90% of all U.S. television households. Many of these households will likely continue to use analog televisions after the transition. For those customers, it is expected that providers will handle the digital-to-analog conversion, either at the “head end” by providing downconverted analog signals, or at the customer premises via a set top box provided by the cable or satellite company. At the same time, many cable and satellite households also have spare televisions relying on over-the-air broadcasts. These stand-alone over-the-air analog televisions will no longer function unless they are equipped with a converter box.

The Digital-to-Analog Converter Box Program

After February 17, 2009, most analog televisions will no longer be able to receive over-the-air broadcast signals, unless those televisions are equipped with a digital-to-analog converter box. A separate converter box — expected to be available for \$50 to \$70 — will be required for each analog over-the-air television set. Converter boxes will not only enable all analog televisions to function, they should also provide better reception and allow the viewing of multicasted channels. However, a converter box hooked up to an analog TV will not enable the viewer to watch a broadcast in the high-definition format.

The 109th Congress acted to establish a digital-to-analog converter box program that will partially subsidize consumer purchases of converter boxes. Title III of the Deficit Reduction Act of 2005 (P.L. 109-171) directs the National Telecommunications and Information Administration (NTIA) of the Department of Commerce to provide up to two forty-dollar coupons to requesting U.S. households. According to the statute, the coupons are to be issued between January 1, 2008, and March 31, 2009, and must be used within three months after issuance towards the purchase of a stand-alone device used solely for digital-to-analog conversion.

The converter box program will be funded by receipts from the auction of the analog television spectrum. P.L. 109-171 designates \$990 million for the converter box program, including up to \$100 million for administrative costs (of which no more than \$5 million can be used for consumer education). In the event that NTIA

⁷ 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, p. 7-8.

notifies Congress that additional funding is needed, the total may be raised up to \$1.5 billion, including up to \$160 million for administrative costs.

On March 12, 2007, NTIA released its final rule implementing the converter box program.⁸ The final rule states that starting on January 1, 2008, for the initial \$990 million program (the “Initial Period”), up to two forty-dollar coupons will be available to any and all requesting U.S. households to be used towards the purchase of up to two digital-to-analog converter boxes. In the event that NTIA determines that the additional \$510 million is needed, only exclusively over-the-air households will be eligible for coupons during this “Contingent Period.”

During the “Contingent Period,” households will be required to self-certify that they are exclusively over-the-air and do not subscribe to cable, satellite, or other pay television services. Cable and satellite households that contain extra over-the-air televisions **will** be eligible for coupons during the “Initial Period” of the program (the first \$990 million), but **will not** be eligible for coupons if there is a second phase (“Contingent Period”) of the program (the additional \$510 million).

The rule also sets forth procedures and requirements for manufacturers and retailers who wish to participate in the converter box program. Participation in the converter box program is voluntary. Manufacturers must submit test results and sample converter boxes to NTIA for approval. Approved devices must meet prescribed technical specifications that are intended to ensure an affordable state-of-the-art converter box. Additional permitted features include a smart antenna interface connector and program guide. Features that would disqualify a converter box from being covered by the coupon program include video recording, playback capability, or other capabilities that allow more than simply converting a digital over-the-air signal.⁹

Meanwhile, retailers must receive a certification from NTIA in order to participate in the converter box coupon program. Certified retailers must agree to have systems in place capable of processing coupons electronically for redemption and payment, track every transaction and provide reports to NTIA, train employees on the purpose and operation of the coupon program with NTIA-provided training materials, use commercially reasonable methods to order and manage inventory, and assist NTIA in minimizing incidents of waste, fraud, and abuse, including reporting suspicious patterns of customer behavior. Retailers are not responsible for verifying household eligibility.¹⁰

⁸ U.S. Department of Commerce, National Telecommunications and Information Administration, “Rules to Implement and Administer a Coupon Program for Digital-to-Analog Converter Boxes,” 47 CFR 301, *Federal Register*, Vol. 72, No. 51, March 15, 2007, pp. 12097-12121.

⁹ National Telecommunications and Information Administration, *DTV Converter Box Program Information Sheet for Manufacturers*, March 2007, available at [<http://www.ntia.doc.gov/otiahome/dtv/DTVmanufacturers.pdf>].

¹⁰ National Telecommunications and Information Administration, *DTV Converter Box Program Information Sheet for Retailers*, March 2007, available at (continued...)

On August 15, 2007, NTIA announced it had entered into a contract with IBM to run the Digital-to-Analog Converter Box Coupon program. The total award is \$119,968,468, which breaks down to \$84,990,343 for the initial period and \$34,978,125 for the contingent period. The contract performance began immediately and is to close out on September 30, 2009. The IBM-led team will provide services in three areas: consumer education, coupon distribution to consumers and retail store participation, and financial processing to reimburse retailers, to maintain records, and to prevent fraud, waste, and abuse.

Status of DTV Public Education

With the February 17, 2009 deadline for the digital transition approaching, and with the public launching of the converter box program in January 2008, Congressional concern is focusing on the adequacy of efforts to inform the public of the digital transition. A primary goal is preventing analog over-the-air households from losing television service in the event that these households do not purchase a converter box or take other measures to ensure the ability to receive digital broadcasts after February 17, 2009.

A survey conducted by the National Association of Broadcasters (NAB) found that 56% of over-the-air viewers have never seen, heard, or read anything about the digital transition, that only 10% were able to guess the right year when analog broadcasts will cease, and that only 1% to 3% knew that the transition would be complete by February 2009.¹¹

Two federal agencies — the NTIA and the FCC — are directly engaged in consumer education efforts regarding the digital transition. Currently, the NTIA is statutorily funded (by P.L. 109-171, the Deficit Reduction Act of 2005) at “not more than \$5,000,000 for consumer education concerning the digital television transition and the availability of the digital-to-analog converter box program.” The NTIA’s DTV consumer education efforts is focused on raising awareness of the coupon program, particularly with five target groups most likely to be affected by the digital transition: senior citizens, the economically disadvantaged, rural residents, people with disabilities, and minorities. To reach those groups and the American public in general, the NTIA is pursuing a strategy of leveraging its resources by partnering with private sector stakeholder groups representing those constituencies most at risk. NTIA is also working with the DTV Transition Coalition, a broad-based coalition of business, trade, and industry groups as well as grass roots and membership organizations. In addition to working with private sector groups, NTIA is also

¹⁰ (...continued)

[<http://www.ntia.doc.gov/otiahome/dtv/DTVretailers.pdf>]

¹¹ Testimony of K. James Yager on behalf of the National Association of Broadcasters and the Association for Maximum Service Television, hearing before the House Committee on Energy and Commerce, Subcommittee on Telecommunications and the Internet, March 28, 2007, p. 14. Available at [http://energycommerce.house.gov/cmte_mtg/110-ti-hrg.032807.Yager-testimony.pdf].

working with federal government agencies that target economically disadvantaged Americans.¹²

Meanwhile, the Administration has requested \$1.5 million for the FCC in FY2008 for DTV consumer education; the FY2008 House Financial Services and General Government Appropriations bill (H.R. 2829; H.Rept. 110-207), passed by the House on June 28, 2007, would provide \$2 million. Similar to the NTIA, the FCC is pursuing collaborative partnerships with private and public sector entities to target outreach to vulnerable populations and to raise the general awareness of the American public about the DTV transition. The FCC has become a member of the DTV Transition Coalition, prepared and issued consumer publications and web materials, and is promoting DTV awareness by attending and holding events and conferences.¹³

The significant reliance of the FCC and the NTIA on the private sector for DTV public education has led some to question whether the federal government should assume a more proactive role in promoting DTV public education activities. On July 30, 2007, in response to criticisms and suggestions on DTV consumer education raised by a May 24, 2007 letter¹⁴ from the House Energy and Commerce Committee, the FCC released a Notice of Proposed Rule Making (NPRM) on a DTV Consumer Education Initiative.¹⁵ The NPRM requests public comments on a number of proposals to raise awareness among the public of the DTV transition, including broadcaster public service announcements, broadcaster consumer education reporting, multichannel video programming distributor (MVPD) customer bill notices, consumer electronics manufacturer notices, consumer electronics retailer reporting on its staff training, and other proposals.

A major component of any DTV public education campaign is likely to be the airing of public service announcements (PSAs). The National Association of Broadcasters is preparing PSAs to be delivered to local broadcasters by December 2007. It will be up to local broadcasters to decide when and how often to air the PSAs. Meanwhile, in September 2007, the National Cable & Telecommunications Association (NCTA) began running on cable channels a \$200 million English and Spanish language advertising campaign on the digital transition; NCTA will continue

¹² For information on NTIA DTV consumer education efforts, see Testimony of John Kneuer, Assistant Secretary for Communications and Information, National Telecommunications and Information Administration, hearings held by the Senate Committee on Commerce, Science and Transportation, "Preparing Consumers for the Digital Television Transition," July 26, 2007. Available at [http://commerce.senate.gov/public/_files/JohnMRKneuerTestimonyv2.pdf].

¹³ Testimony of Catherine Seidel, Chief, Consumer and Governmental Affairs Bureau, Federal Communications Commission, hearings held by the Senate Committee on Commerce, Science and Transportation, "Preparing Consumers for the Digital Television Transition," July 26, 2007. Available at [http://commerce.senate.gov/public/_files/WrittenStatementofCathySeidel7262007Hearing.pdf].

¹⁴ Available at [energycommerce.house.gov/Press_110/FCC.052407.Martin.ltr.DTV.pdf].

¹⁵ FCC, *Notice of Proposed Rulemaking, In the Matter of DTV Consumer Education Initiative*, MB Docket No. 07-148, FCC 07-128, 22 p.

the advertising spots through February 2009.¹⁶ In its NPRM, the FCC states its belief that PSAs are the most effective and efficient way to reach over-the-air television viewers about the digital transition. The FCC is proposing to require television broadcast licensees to conduct on-air consumer education efforts and is asking for comments on the content of such PSAs, when and how often they should be run, whether similar requirements should be imposed on all broadcasters, and other related questions.¹⁷

Key Issues

The Deficit Reduction Act of 2005 set a February 17, 2009 deadline for the digital transition and established a digital converter box coupon program to mitigate the switch-over costs to consumers with analog televisions. The key issue for Congress is the extent to which American households will be ready for the digital transition, and whether measures taken by the government and the private sector are sufficient to ensure that televisions across America do not “go dark” on February 18, 2009.

Two lines of inquiry have repeatedly been raised in Congressional hearings. First, are public education and outreach efforts sufficient, and is the federal government playing a sufficient role in leading that effort? With limited funding, both the FCC and the NTIA are relying heavily on a strategy of leveraging private sector efforts. On the one hand, private sector groups have a market incentive to ensure that the public is ready for the digital transition: the consumer electronics industry wants to sell DTV products, and broadcasters want their viewers to be able to continue watching their local broadcasts. On the other hand, critics question whether market forces will ensure that public outreach efforts are sufficiently targeted to those segments of American society (the elderly, non-English speakers, rural areas, disabled citizens, minorities, the economically disadvantaged) that may be more at risk of being adversely affected by the digital switch-over.

A second major question is the extent to which NTIA’s converter box program will meet the needs of analog television households. According to the statute, households can begin requesting converter boxes as of January 1, 2008. Given that private sector participation in the converter box program is voluntary, will sufficient numbers of converter boxes be manufactured, and will retail outlets — whether large or small stores, whether in urban, suburban, or rural areas — stock sufficient numbers of boxes to meet the demand of consumers seeking to redeem the \$40 coupons? Also, given that coupons will expire three months after households receive them, how effectively will NTIA be able to assess and monitor the balance of the demand for coupons with the local supply of converter boxes? How effectively will fraud, waste, and abuse be avoided and combated — particularly among vulnerable populations such as the elderly? And finally, will funding for the coupons — \$990

¹⁶ National Cable & Telecommunications Association, Press Release, “Cable Launches \$200 Million Digital TV Transition Consumer Education Campaign,” September 6, 2007.

¹⁷ *Ibid.*, p. 3.

million in the initial period and a possible additional \$510 million in a contingent period — be sufficient to meet the total demand?

No definitive answers to these questions are possible until the converter box program is implemented and the digital transition proceeds. The best-case scenario is that public awareness of the digital transition will become ubiquitous during 2008, that converter boxes will be readily available to all who want them, and that the digital transition will proceed smoothly. The worst-case scenario is that public awareness of the digital transition will continue to lag and that converter boxes will not be uniformly available in retail outlets after January 2008, leading to widespread confusion and frustration in many American households. At issue for Congress is whether the federal government's current programs and reliance on private sector stakeholders will lead to a successful digital transition with a minimum amount of disruption to American TV households or, alternatively, whether additional legislative measures are warranted.

Activities in the 110th Congress

Congress is closely monitoring and overseeing federal and private sector efforts to ensure a digital transition that proceeds as smoothly as possible. The House Committee on Energy and Commerce, Subcommittee on Telecommunications and the Internet, held a hearing, "The Status of the Digital Television Transition," on March 28, 2007, and the Senate Committee on Commerce, Science and Transportation held a hearing, "Preparing Consumers for the Digital Television Transition," on July 26, 2007. At both hearings, Members expressed concerns that federal and private sector efforts to educate the public about the DTV transition may be inadequate, that DTV education programs at the FCC and NTIA are underfunded, that converter boxes may not be uniformly available at retail outlets throughout the nation, and that the FCC is not exercising sufficient overall leadership of the DTV transition.

The following are DTV-related bills introduced into the 110th Congress:

H.R. 608 (Barton). Digital Television Consumer Education Act of 2007. Requires the FCC to create a DTV public education program, to convene a DTV Advisory Group to coordinate consumer outreach, and to report to Congress every six months on the progress of consumer education efforts. Requires NTIA to report to Congress every 90 days on the progress of the converter box coupon program. Requires retailers, cable and satellite operators, and broadcasters to take various measures to inform the public about the digital transition. Introduced January 22, 2007; referred to Committee on Energy and Commerce.

H.R. 2566 (Engel). National Digital Television Consumer Education Act. Requires TV retailers and distributors to place signs next to all analog TV displays with an advisory that a set-top box is necessary after February 17, 2009, to continue using the TV. Also requires broadcasters to air Public Service Announcements for more than a year before the transition to inform the public about the change and the

set-top box subsidy program. Introduced June 5, 2007; referred to Committee on Energy and Commerce.

H.R. 2829 (Serrano). Financial Services and General Government Appropriations Act, 2008. House Appropriations Committee report H.Rept. 110-207, passed by the House on June 28, 2007, would provide \$2 million to the FCC for DTV consumer education. Senate Appropriations Committee report (S.Rept. 110-129) does not address DTV. Placed on Senate Legislative Calendar, July 13, 2007.

H.R. 2917 (Butterfield). Transition Education Accountability Report Act of 2007. Requires the FCC to submit a report to Congress describing the measures taken by the FCC, NTIA, and other federal agencies to inform the public of the transition to digital television. Introduced June 28, 2007; referred to Committee on Energy and Commerce.

For Further Information

A variety of websites have been established to provide basic information to consumers on many aspects of the digital transition. The following is a partial listing.

Federal Communications Commission (FCC)
[<http://www.dtv.gov>]

National Telecommunications and Information Administration (NTIA)
[<http://www.ntia.doc.gov/dtvcoupon/index.html>]

DTV Transition Coalition
[<http://www.dtvtransition.org/>]

National Association of Broadcasters (NAB)
[<http://www.dtvanswers.com/>]

Consumer Electronics Retailers Coalition (CERC)
[<http://www.ceretailers.org/dtv-flyer2006.pdf>]

Consumer Electronics Association (CEA)
[<http://www.myceknowhow.com/digitalTelevision.cfm>]

National Cable & Telecommunications Association (NCTA)
[<http://www.ncta.com//ContentView.aspx?contentid=79>]

Satellite Broadcasting and Communications Association of America (SBCA)
[http://www.sbca.com/hdtv_index.asp]