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DIGITAL TELEVISION TRANSITION

Broadcasters' Transition Status, Low-Power Station Issues, and Information on Consumer Awareness of the DTV Transition

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Highlights of [GAO-08-881T](#), a testimony before the House Subcommittee on Telecommunications and the Internet

Why GAO Did This Study

The Digital Television (DTV) Transition and Public Safety Act of 2005, requires all full-power television station in the United States to cease analog broadcasting by February 17, 2009. Low-power stations are not required to cease analog transmissions and most will continue broadcasting in analog. Federal law also requires the National Telecommunications and Information Administration (NTIA) to subsidize consumers' purchases of digital-to-analog converter boxes. After the transition, households with analog sets that rely on over-the-air broadcasts must take action or they will lose television service, but some households might not be aware of this potential disruption. This testimony provides information on (1) technical and coordination issues facing full-power broadcast stations as they transition to digital, (2) issues pertaining to low-power broadcasting and how they affect consumers, and (3) the extent to which American households are aware of the DTV transition and likely to utilize the converter box subsidy program. GAO interviewed officials with the Federal Communications Commission (FCC) and NTIA and met with a wide variety of industry participants and other stakeholders. GAO conducted a Web-based survey of broadcasters to determine their status in transitioning to digital and issues they were encountering and commissioned a survey of the U.S. population on consumer awareness. This statement is based on GAO's body of work on the DTV transition.

To view the full product, including the scope and methodology, click on [GAO-08-881T](#). For more information, contact Mark L. Goldstein at (202) 512-2834 or goldsteinm@gao.gov.

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Broadcasters' Transition Status, Low-Power Station Issues, and Information on Consumer Awareness of the DTV Transition

What GAO Found

Broadcasters have made significant progress in preparing for the DTV transition. In fact, many stations are already broadcasting their full digital signal with the only remaining step being to turn off their analog signal. As of February 2008, 91 percent of broadcasters responding to our survey reported that they were already transmitting a digital signal. Nine percent of stations in our survey had yet to begin broadcasting a digital signal, but almost all of those stations expected to be broadcasting digitally by the transition date. In finalizing the transition to digital, some stations still must resolve technical, coordination, and construction issues. Technical issues include relocating either digital or analog antennas and, in some cases, constructing new broadcast towers. Some stations are bound by financial constraints related to the costs of resolving these issues. In addition, some stations have outstanding coordination issues, such as the U.S. government reaching agreements with the Canadian and Mexican governments regarding signal interference issues and coordinating with cable and satellite providers.

Since most low-power stations will not transition to digital by February 2009, it is possible for viewers to receive programming in analog and digital after the transition. Potentially millions of viewers can receive low-power analog transmissions, including programming from the major networks, Spanish language broadcasting, and public television. To have access to both analog and digital television signals after the DTV transition, viewers could purchase a special kind of converter box that passes through an analog signal and a digital signal, or purchase other equipment. Public and private stakeholders have taken steps to educate the public about the low-power broadcasts potentially remaining in analog but some advocacy groups and others have expressed concerns that the messages intending to explain the low-power issue are instead confusing the public. Further complicating matters, many consumers do not know the difference between full-power and low-power stations or whether the signals they receive are full or low power.

Most households will be unaffected by the DTV transition and a vast majority have heard of the transition. About 84 percent of people have heard of the transition, but fewer have more specific knowledge about the transition. Those at higher risk of being affected by the transition—households viewing over-the-air television signals—have higher levels of awareness than those who will be unaffected. Over half of the population has heard of the converter box subsidy program and those households at risk of losing television service who plan to take action are likely to utilize the program. However, only a third of those indicating plans to purchase boxes and utilize the coupons know how to obtain coupons. In addition, there are indications that some consumers are confused about the transition, as 45 percent of those households who are at risk plan inadequate or no action to prepare for the transition. Conversely, amongst those unaffected by the transition, 30 percent indicated they have plans to ready themselves for the transition—despite the fact that no action will be required to maintain television service.

Mr. Chairman and Members of the Subcommittee:

I am pleased to be here today to discuss our recently issued report on technical issues arising from the digital television (DTV) transition¹ — *Digital Television Transition: Majority of Broadcasters Are Prepared for the DTV Transition, but Some Technical and Coordination Issues Remain*—and our work on the extent of consumer awareness about the transition. My comments are based on our body of work on the DTV transition completed for this subcommittee.² We are continuing to review public and private sector efforts underway to implement the transition and plan to report on those issues later this year.

The Digital Television Transition and Public Safety Act of 2005 mandates that full-power analog television broadcast signals cease on February 17, 2009. After that date, households who view television on analog sets solely through the reception of over-the-air signals must take action to ensure that they have the necessary equipment, such as a digital-to-analog converter box, or subscription video service to be able to view the digital broadcast signals. If they do not take such action, they will not be able to watch television programs. The act also directed the National Telecommunications and Information Administration (NTIA) to establish a \$1.5 billion program through which households can obtain coupons for the purchase of digital-to-analog converter boxes. Beginning January 1, 2008, households could request up to two \$40 coupons toward the purchase of eligible³ digital-to-analog converter boxes. While federal law mandates that all full-power stations must cease to broadcast in analog on February 17, 2009, low-power television broadcast stations are not covered by the law.⁴ Low-power stations provide opportunities for locally-oriented television

¹[GAO-08-510](#).

²See appendix II for our related products on the DTV transition.

³NTIA established technical and performance specifications that converter boxes must meet to be eligible for the converter box subsidy program.

⁴In addition to low-power stations, there are other low-power facilities that are not required by law to transition to digital by February 17, 2009. These facilities include (1) Class A television stations, which are a type of low-power station that qualify for interference protection rights and must satisfy certain requirements; (2) television translator stations, which simultaneously rebroadcast the programs of a full-power broadcast station in communities that cannot receive the signals due to large geographic barriers; and (3) television booster stations, which are low-power facilities that retransmit programming from full-power stations and are intended to serve areas of low signal strength within full-power stations' contours.

service in small communities and these stations may continue to broadcast in analog after the DTV transition. Viewers who wish to continue watching low-power analog programming might need to take action to continue receiving analog signals after the transition. To help the public understand the DTV transition and the various options they have, FCC, NTIA, and industry stakeholders are conducting consumer education and awareness programs.

In my testimony today, I will discuss (1) the progress full-power broadcast stations have made in transitioning to digital, as well as the technical and coordination issues they face; (2) issues pertaining to low-power television stations and how they affect consumers; and (3) the extent to which American households are aware of the DTV transition and likely to utilize the converter box subsidy program.

To obtain information on the technical and coordination issues facing broadcast stations, we conducted a Web-based survey of the full-power commercial and noncommercial television broadcast stations. From a total of 1,747 broadcasters, we surveyed 1,682 stations located in the 50 states and the District of Columbia for which we could obtain contact information. To determine the extent of consumer awareness about the transition, we commissioned a telephone survey of the U.S. adult population. This survey followed a probability sampling procedure based on random selections of households and individuals. A total of 1,010 completed interviews were collected during late March and early April 2008. All percentage estimates presented have margins of error of plus or minus 6 percentage points or less. Further, we reviewed government documents and data and interviewed officials with the Federal Communications Commission (FCC) and NTIA, as well as a wide variety of industry and other private stakeholders, such as satellite and cable television providers, manufacturers, national retailers, industry associations, and consumer advocacy groups. See appendix I for more detailed information on our scope and methodology. We conducted our work in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

In summary:

- Broadcasters have made significant progress in preparing for the DTV transition. Many stations are already broadcasting their digital signal in full power with the only remaining step being to turn off their analog signal. Specifically, as of February 2008, 91 percent of broadcasters responding to our survey reported that they were already transmitting a digital signal. Nine percent of stations responding to our survey had yet to begin broadcasting a digital signal, but almost all of those stations expected to be broadcasting digitally by February 17, 2009. In finalizing the transition to digital, some stations still must resolve technical, coordination, and construction issues. Technical issues include relocating either digital or analog antennas and, in some cases, constructing new broadcast towers. Some stations are bound by financial constraints related to the costs of resolving these issues. In fact, at the time of our survey, 69 stations indicated they have yet to start construction on their final digital facilities due to financial constraints. In addition, some stations have outstanding coordination issues, such as the U.S. government reaching agreements with the Canadian and Mexican governments regarding signal interference issues and coordinating with cable providers and satellite companies.
- Since most low-power stations do not plan to transition to digital by February 2009, it is possible for some viewers to receive programming in analog (from low-power stations) and digital (from full-power stations) after the transition date. Potentially millions of viewers can receive low-power analog transmissions, including programming from the major networks (ABC, CBS, NBC, and Fox), Spanish language broadcasting, and public television. To have access to both analog and digital television signals after the DTV transition, viewers could purchase a special kind of converter box that passes through an analog signal and a digital signal, often referred to as analog pass through, or purchase other equipment. Currently, converter boxes with analog pass through are available for purchase online and at two national retailers. Public and private stakeholders have taken steps to educate the public about the low-power broadcasts potentially remaining in analog and options available to consumers, but some advocacy groups and others have expressed concerns that the messages intending to explain the low-power issue are instead confusing the public. Further complicating matters, many consumers do not know the difference between full-power and low-power stations or whether the signals they receive are full or low power.
- According to our consumer survey results, most households will be unaffected by the DTV transition and a vast majority have heard of the transition. While about 84 percent of people have heard of the transition, a

smaller number of people have more specific knowledge of the transition date and why the transition is taking place. Those at higher risk of being affected by the transition—households viewing over-the-air television signals—have higher levels of awareness than those who will be unaffected. Over half of households have heard of the converter box subsidy program and those households at risk of losing television service who plan to take action reported that they are likely to utilize the program. However, only a third of those indicating plans to purchase boxes and utilize the coupons reported knowing how to obtain coupons. While general awareness of the DTV transition is high, there are indications that some consumers are confused or unknowledgeable about the transition, as 45 percent of those households who are at risk plan no action or inadequate action to prepare for the transition. Amongst those unaffected by the transition, 30 percent indicated they have plans to ready themselves for the transition—despite the fact that no action will be required to maintain television service.

Background

All full-power television broadcasters are required by law to cease broadcasting their analog signal by February 17, 2009. There are numerous benefits to transitioning to digital-only broadcast signals, such as enabling better quality television picture and sound reception and using the radiofrequency spectrum more efficiently than analog transmission. With traditional analog technology, pictures and sounds are converted into “waveform” electrical signals for transmission through the radiofrequency spectrum, while digital technology converts these pictures and sounds into a stream of digits consisting of zeros and ones for transmission. A digital receiver can make the digital picture and sound near perfect until significant fading occurs, at which point no picture can be seen.

To facilitate the digital transition, Congress and FCC temporarily provided each eligible full-power television station (both commercial and noncommercial educational stations, including public stations) with additional spectrum so they could begin broadcasting a digital signal. This companion, or paired, digital channel simulcasts the analog program content in digital format. Assignment of the paired digital channel began in 1997 and FCC completed the digital channel assignment for most stations in August 2007. A station’s final digital channel could be (1) the same channel as its paired digital channel, (2) the same channel that its analog signal uses to broadcast, or (3) an entirely new channel.

The DTV transition involves preparation on the part of American households. This preparation will require citizens’ understanding of the

transition and the actions that some might have to take to maintain television service. The specific equipment needs for each household to transition to DTV—that is, to be able to view broadcast digital signals—depends on certain key factors. The method through which a household watches television, and whether it has already upgraded its television equipment to be compatible with digital television, will factor into the equipment needs of the household. While many households may need to take specific actions to ensure that they continue to receive television signals, others may not need to take any action. As we have previously reported, households with analog televisions that rely solely on over-the-air television signals received through a rooftop antenna or indoor antenna must take action to be able to view digital broadcast signals after the termination of analog broadcasting. Options available to these households include (1) purchasing a digital television set that includes a tuner capable of receiving, processing, and displaying a digital signal; (2) purchasing a digital-to-analog converter box, which converts the digital broadcast signals to analog so they can be viewed on an existing analog set; or (3) subscribing to a cable, satellite, or other service that provides the necessary signal to eliminate the need to acquire a digital-to-analog converter box.

The Digital Television Transition and Public Safety Act directed NTIA to establish a \$1.5 billion subsidy program through which households can obtain coupons for the purchase of digital-to-analog converter boxes. NTIA established that beginning January 1, 2008, households could request up to two \$40 coupons toward the purchase of eligible digital-to-analog converter boxes. Households requesting coupons must submit the name of the person requesting the coupon and a valid United States Postal Service address. Initially, any household is eligible to request and receive the coupons, but once \$890 million worth of coupons have been redeemed, and issued but not expired, NTIA must certify to Congress that the program's initial allocation of funds is insufficient to fulfill coupon requests. NTIA will then receive \$510 million in additional program funds, but any households requesting coupons during this second phase must certify that they do not receive cable, satellite, or other pay television service. Total possible program funding, which includes coupons redeemed, and issued but not expired, is \$1.5 billion. The last day for consumers to request coupons is March 31, 2009, and coupons can be redeemed through July 9, 2009. As required by law, all coupons expire 90 days after issuance. The fully funded program could provide 33.5 million coupons.

While all full-power broadcast stations must cease analog broadcasts, low-power stations may continue broadcasting in analog after February 17, 2009. FCC established low-power television service in 1982 to provide opportunities for locally-oriented television service in small communities. These communities may be in rural areas or may be individual communities within larger urban areas. Low-power stations provide programming from networks, syndicated programs, movies, and a wide range of locally-produced programs. According to FCC, there are more than 2,100 low-power stations in operation, some of which broadcast syndicated content of major commercial networks and public television and numerous other stations reaching a broad swath of the television viewing public. Low-power broadcast stations are not required to cease broadcasting in analog as of February 2009 and most will continue to broadcast in analog after the conclusion of the full-power transition. Because there is no mandated transition date for the low-power stations, it is unclear when these stations will transition to digital broadcasts.

The Vast Majority of Broadcasters are Transmitting a Digital Signal, but Some Broadcast Stations Face a Range of Technical, Coordination, or Other Issues in Completing Their DTV Transition

Most broadcasters have made significant progress in preparing their stations for the transition to digital, with approximately 91 percent of broadcasters responding to our survey reporting that they were already transmitting a digital signal. A small number of stations responding to our survey (9 percent) had yet to begin broadcasting a digital signal, but almost all of those stations expected to be broadcasting digitally by February 17, 2009. Before the transition to digital can be finalized, some stations still have to resolve (1) technical issues, such as the relocation of their digital or analog antenna; (2) coordination issues, such as the U.S. government reaching agreements with the Canadian and Mexican governments and coordinating with cable providers and satellite companies; or (3) other issues, such as the construction of broadcast towers or financial constraints that might hinder their ability to complete the steps necessary for the transition.

Almost All Stations are Transmitting a Digital Signal and the Majority are Operating at Full Power

Broadcast stations have made substantial progress in transitioning to DTV, with the vast majority already transmitting a digital signal. Information obtained from our survey of broadcast stations indicates that approximately 91 percent of full-power stations are currently transmitting a digital signal. Our survey further indicated that approximately 68 percent of respondents are transmitting their digital signal at full strength. In addition, 68 percent of survey respondents are currently transmitting their

digital signal on the channel from which they will broadcast after the transition date. Twenty-three percent of stations that responded to our survey indicated they will be moving their digital signal to their analog channel. In addition, other stations need to move to a completely new channel. While almost all full-power stations are already broadcasting a digital signal, 97 stations, or 9 percent of stations responding to our survey, are not currently broadcasting digitally. Almost all of these stations, however, indicated that they plan to have their digital signal operational by February 17, 2009. Three stations responded that they were not planning to broadcast a digital signal by February 2009. According to FCC, stations that are not currently transmitting a digital signal either (1) were granted a license to operate a digital signal along with their analog signal but have yet to begin broadcasting digitally or (2) were not given a companion, or paired, digital channel and plan to turn off their analog signal at the same time that they turn on their digital signal—known as “flash cutting.” According to our survey, 5 percent of the stations (61 stations) indicated that they plan to flash cut to a digital-only broadcast. According to FCC, flash cutting may present challenges, since it will involve stations’ ending their analog television operations and beginning their digital television operations on their current analog channel or, in some cases, will require that a station change to a new channel to be fully operational. Of those stations responding to our survey that plan to flash cut, only 21 percent had begun constructing final digital facilities at the time of our survey. Furthermore, 64 percent of the flash cutters responding to our survey noted that they need to order equipment to complete their digital facilities.

Some Broadcast Stations Need to Address Technical, Coordination, and Other Issues to Support a Smooth Transition

Some stations, including those already broadcasting a digital signal, still have technical, coordination, or other issues that need to be resolved before completing their transition. For example, over 13 percent of stations responding to our survey indicated that they have to install or relocate their digital or analog antennas in transitioning to digital. Some stations still needed to order equipment, such as antennas, to build their final digital facilities. According to an antenna manufacturer we contacted, it can take from 6 weeks to 9 months to design, order, and install an antenna, depending on the antenna’s complexity. This manufacturer told us that stations need to have their orders placed by June 2008 to be assured of having the equipment installed prior to the transition date. Furthermore, stations may have coordination issues to address in completing their final digital facilities. For example, some stations are awaiting agreements with the Canadian and Mexican governments regarding their signals crossing the borders of these respective countries

before the stations can complete their digital facilities. Stations will also need to coordinate with cable providers and satellite companies to ensure that cable and satellite facilities can receive digital signals when the analog signals are turned off; most of those responding to our survey indicated that they are coordinating with or are planning to coordinate with cable providers and satellite companies. Lastly, stations that have to construct broadcast towers or have financial constraints might be affected during their transition. According to our survey, 47 stations indicated that they need to construct a broadcast tower or reinforce an existing tower to build their digital facilities. Another 69 stations responding to our survey indicated that due to financial constraints, they have not started construction on their final digital facilities or that they have not begun broadcasting a digital signal.

Viewers Have Options to Prevent Loss of Service from Low-Power Analog Broadcasts, but Concerns Remain About the Clarity of Information Pertaining to this Issue

Potentially millions of viewers can receive low-power analog transmissions, including programming from the major networks (ABC, CBS, NBC, and Fox), Spanish language broadcasting, and public television. According to FCC data, 296 low-power stations broadcast one of the four major networks, 109 low-power stations broadcast a Spanish language network, and 45 low-power stations are affiliated with the public broadcasting service. Since most low-power stations will not transition to digital in February 2009, it is possible for viewers to receive programming in analog (from low-power stations) and digital (from full-power stations) after the transition date. As previously noted, one of the options households have to prepare for the transition is purchasing a digital-to-analog converter box. However, such a box could prevent the television from receiving low-power analog signals. To have access to both analog and digital television signals after the DTV transition, viewers could use a special kind of converter box that passes through an analog signal and a digital signal, often referred to as analog pass through. Absent a converter box with analog pass through capability, viewers could obtain a small device called a “splitter.”⁵ According to the National Association of

⁵Households with digital televisions will also be able to receive both digital and analog signals.

Broadcasters (NAB), installing the splitter and new wiring is similar to connecting a television to a DVD player and VCR.⁶

Currently, converter boxes with analog pass through are available for purchase online, and two national retailers indicated the boxes are available in their stores now. The remaining national retailers we contacted told us they would begin stocking such boxes in mid June through early September.⁷ At least one national retailer we spoke with is carrying items (such as the splitter) which would allow consumers to view both digital and analog signals without purchasing a converter box with analog pass through. The retailers we contacted said all of their stores will be selling converter boxes with analog pass through, regardless of location or prevalence of low-power stations. Some retailers said they are analyzing market data to help them understand which markets will have increased need for these boxes. For example, one retailer told us that it is analyzing data to determine which markets will need and therefore initially receive more boxes with analog pass through, with the goal of having boxes with analog pass through in all stores later in the summer of 2008.

Public and private stakeholders have taken steps to educate the public about the low-power issue and the options available to consumers. For example, FCC issued a consumer advisory which serves as a resource guide on low-power television.⁸ Further, FCC is urging all low-power broadcasters to immediately begin educating their viewers about this issue. FCC noted that such stations could notify their viewers that they are watching a low-power broadcast station that will continue to offer analog service after the transition date and viewers that plan to purchase a converter box should purchase a model with analog pass through. NTIA also developed a resource guide.⁹ According to NTIA, it has provided information to operators of low-power stations so they can inform their viewers of the options they have regarding the DTV transition. NTIA said it

⁶According to NAB, consumers who use an antenna splitter and/or an antenna A/B switch can then switch back and forth between analog reception directly with the television or digital through the converter box. An A/B switch and splitter and additional antenna cables are inexpensive and can be found at most consumer electronic retailers.

⁷We contacted all national retailers who are participating in the converter box subsidy program, except for one retailer who was unwilling to meet with us.

⁸The FCC guide is available online at <http://www.fcc.gov/cgb/consumerfacts/DTVandLPTV.html>.

⁹NTIA's resource guide is available online at <https://www.dtv2009.gov/lowpower/>.

has encouraged converter box manufacturers to consider the needs of all viewers, including viewers of low-power stations, in the development of converter boxes. NAB and others have added information about low-power stations to their Web sites and clarified that only full-power stations are transitioning in February 2009.¹⁰ However, the Community Broadcasters Association, which represents low-power stations, believes public and private education efforts about the DTV transition focus on the end of analog broadcasts and are misleading to viewers.

While public and private efforts are ongoing to inform the public about low-power stations not transitioning to digital, some have expressed concerns that the messages intended to explain this issue are instead confusing the public. Further complicating matters, many consumers do not know the difference between full-power and low-power stations or whether the signals they receive are full or low power. We heard from advocacy groups for disadvantaged populations that the messages intending to explain the low-power issue could be overly confusing. For example, one group questioned how those watching low-power stations would understand that (1) they are viewing low-power broadcasts, (2) these stations are not transitioning to digital, and (3) what actions they need to take to maintain the ability to watch low-power broadcasts. This group said many Spanish speakers are reliant on low-power stations to view Spanish language broadcasts but many in that community are not aware of the issue with low-power stations or that they are reliant on low-power stations.

Most People are Aware of the DTV Transition, but Many are Unprepared or Have Inadequate Plans

Most households will be unaffected by the DTV transition and a vast majority have heard of the transition. According to our consumer survey results, about 84 percent of the population has heard of the transition, but smaller numbers of people have more specific knowledge of the transition date and why the transition is taking place. Those at higher risk of being affected by the transition—households viewing over-the-air television signals—have higher levels of awareness than those who will be unaffected. Over half of the population has heard of the converter box subsidy program and those in households at risk of losing television service who plan to take action are likely to utilize the program. However, only a third of those indicating plans to purchase boxes and utilize the coupons know how to obtain coupons. While general awareness of the

¹⁰NAB's initiative can be found at <http://www.lptvanswers.com/>.

DTV transition is high, there are indications that some consumers are confused or unknowledgeable about the transition, as 45 percent of those households who are at risk plan no action or inadequate action to prepare for the transition.

About 65 Percent of Households Have All Televisions Connected to a Subscription Service, but the Remaining 35 Percent are at Risk of Losing Some or All of Their Television Service After the Transition

Our survey categorized households into varying risk levels of being affected by the DTV transition, with most households (65 percent) unlikely to lose television service. According to our survey of consumers, approximately 15 percent of households are at risk of losing television service once the transition is complete because they rely solely on over-the-air television signals. We refer to this group as “high risk.” An additional 21 percent of households have at least one television used to watch over-the-air signals. While this group of consumers has one or more televisions connected to a subscription service such as cable or satellite, they still have at least one television used to watch over-the-air television. We refer to this group as “medium risk” because unless they take action, they could lose television service on the set or sets not connected to cable, satellite, or other subscription service. Also, our survey found that 65 percent of households have all of their televisions used for watching programming connected to a subscription service. We refer to this group as “low risk” since they are unlikely to be adversely affected by the DTV transition.

Our survey suggests that while most Americans do not believe the transition will be disruptive, some do not fully understand the ramifications the transition could have on their ability to watch television. We asked respondents how disruptive they expected the change from analog to digital to be and found that 55 percent expect the transition will not be at all disruptive. Only 10 percent of the population expects the transition to be very disruptive and even among high risk households—those who most likely must take action or lose television service—only 20 percent expect the transition to be very disruptive. Nevertheless, while most households (69 percent) believe the transition will be either not at all disruptive or not too disruptive, of this segment of the population, 54 percent had inadequate or no plans for the transition despite being at medium or high risk of losing television service.

NTIA and FCC have identified a number of at-risk populations who might be more likely to be adversely affected by the transition. These groups include seniors, low-income, minority and non-English speaking, rural households, and persons with disabilities. Those most likely to be affected by the transition are spread across all types of households throughout the

country, but in some cases, there are particular characteristics of note regarding which types of households represent the high and medium risk groups. Our survey collected demographic information on households and found that certain subgroups of the population were more likely to be affected by the transition. For example, households at risk of losing all television service—those in the high risk group—were more likely to be in urban locations than households in the medium risk group. Households in the various income categories are spread across the different risk groups; however, the lower income group has a larger portion of high risk households. Specifically, those with income lower than \$50,000 are composed of 19 percent high risk, whereas 14 percent of households with income from \$50,000 to \$99,999 are high-risk and only 7 percent of households with income of \$100,000 and above are high risk.

General Awareness of the DTV Transition is High, but Detailed Knowledge is Much Lower

Overall, about 84 percent of Americans have heard of the DTV transition according to our survey results. To test the survey respondents' level of awareness, we asked if they had heard of the DTV transition and if they knew when and why the transition was taking place. We found the percentage of people with detailed knowledge about the transition declines with the specificity of information. For example, 62 percent knew the year (2009) that the transition would take place, but only 31 percent knew the month and year (February 2009). Additionally, only 35 percent of people who indicated they were aware of the transition—29 percent of the population as a whole—could explain why the transition is taking place. The most common responses on why the transition is taking place were related to technology improvements. Twenty percent indicated the transition would bring about general technological advancements and 30 percent cited better television picture quality as the reason for the transition. Much smaller percentages of the population indicated the transition was to free up airwaves for a variety of reasons, including improved emergency communications.

Those who may be more seriously affected by the transition have higher levels of knowledge about the transition and when it will take place than those who will be less seriously affected. To determine the awareness of the households that will be most affected by the transition, we segmented survey questions by risk group. Our survey indicates that consumer awareness was higher, in most cases, across a variety of questions, for the medium and high risk groups than for the population as a whole. In particular, for the medium risk group—the largest block of affected households—90 percent indicated they were aware of the transition. In the more detailed indicator of awareness, knowledge of the transition date, 40

percent of high risk households, 37 percent of medium risk households, and 27 percent of low risk households were aware of the month and year the transition will take place.

Our survey results indicate that some demographic groups show different levels of awareness from the overall population. We examined awareness of the transition across demographic factors, such as age, ethnicity, income, and disability and examined, additionally, the awareness of those households likely to be affected by the transition—the high and medium risk groups.

Age: Across various age categories, there were few differences in overall consumer awareness, but people in the middle-age group (45 to 64) have the highest rates of awareness of the DTV transition, its timing, and why it is occurring. Respondents who were 65 and older showed slightly lower levels of awareness. When looking specifically at awareness of the transition date for age groups, 29 percent of 18- to 44-year-olds, 36 percent of 45- to 64-year-olds, and 26 percent of those 65 and older knew the month and date of the transition. As for the reason for the transition, 18- to 44-year-olds had the lowest percentage of those aware of why the transition was taking place.

Ethnicity: By ethnicity, those self-described as white or Caucasian had higher general awareness (86 percent) than those nonwhite ethnic groups (78 percent). This trend in awareness followed for the additional specific questions about the transition and is more pronounced for the at-risk groups. When high and medium risk households were asked about why the transition was taking place, only 16 percent of nonwhite respondents were knowledgeable compared with 45 percent in the white/Caucasian group.

Income: Higher income was associated with greater awareness. For those individuals with incomes from \$15,000 to \$34,000, 84 percent were aware; for those with incomes ranging from \$35,000 to \$49,000, 90 percent were aware; \$50,000 to \$99,000, 90 percent were aware; and for those making over \$100,000, 94 percent were aware. On the other hand, 69 percent of those making less than \$15,000 per year were aware of the transition.

Disabilities: We found that 77 percent of those with disabilities were aware of the transition.

Community type: We found that awareness did not differ significantly in different community types. In urban, suburban, and rural/small-town groups, awareness was around 84 percent, similar to that of the

population. There was also little variance by region of the country: the Northeast, Midwest, West, and South regions all showed similar awareness.

Our results indicate that, across all risk groups, television is the most pervasive source of information about the transition. In particular, 82 percent of the population indicated they heard of the transition by television. In addition, 45 percent said they had heard about the transition by word-of-mouth and 30 percent from newspapers or magazines. Many fewer (17 percent) had heard about the transition from the Internet and 11 percent heard about the transition from retail stores.

Households Planning to Take Action for the DTV Transition are Likely to Utilize the Converter Box Subsidy Program, but Many Household Plan to Take No Action to Prepare for the Transition

Greater than half of the population is aware of the NTIA converter box subsidy program, but more detailed knowledge of the program is much weaker. Overall, awareness of the converter box subsidy program is at 55 percent. The high and medium risk groups have higher awareness, at 63 percent and 56 percent respectively, than the low risk group at 53 percent. While general awareness of the subsidy program itself is relatively high, of those households who intend to purchase a converter box and to request a coupon from the NTIA program, only 33 percent were aware of how to obtain a coupon.

Those households who indicated that they were likely to purchase a converter box reported very high rates of likelihood to request the coupons. In the high risk group, of those who intend to purchase a converter box, 100 percent of respondents said they were likely to request a coupon. In the medium risk group, 89 percent of these households said they were likely to request coupons. According to NTIA officials, the rate of those requesting two coupons is approximately 89 percent.

The intention of households to utilize the converter box subsidy program if they plan on purchasing converter boxes is clear. However, the percent of those who indicated they are likely to purchase a converter box in the first place is much lower. In the high risk group, 49 percent, and in the medium risk group, 32 percent of households are likely to purchase a converter box. Additionally, 15 percent of households in the low risk group said they would purchase a converter box when the transition takes place. This indicates not only that some households may be confused or unknowledgeable—low risk households should not need converter boxes—but that households with no need for converter boxes may utilize the subsidy program. Of the low risk households who plan to purchase a converter box, 86 percent said they would utilize the NTIA subsidy

program. Based on an analysis of our survey, we estimate that households will request roughly 30.6 million coupons. This estimate assumes that households will follow through with their plans to request coupons.¹¹

Despite high overall awareness of the DTV transition, many households were unprepared for the transition. We describe as unprepared for the DTV transition those in the medium or high risk groups who indicated that for the transition, they will do nothing, they do not know what they will do, or they specified some other action that will not prepare them for the transition. Our analysis determined that 35 percent in the high risk group were unprepared and 52 percent in the medium risk group were unprepared. Overall, these unprepared groups make up 16 percent of the total population. Amongst low risk households, 30 percent indicated they have plans to ready themselves for the transition—despite the fact that no action is required to maintain television service.

Thank you, Mr. Chairman, that concludes my statement. I will be pleased to answer any questions that you or other Members of the Subcommittee might have.

GAO Contact and Staff Acknowledgements

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¹¹We estimate that households with a landline telephone will request approximately 30.6 million coupons, ranging from 25.6 million to 35.5 million coupons. This estimate does not include non-landline households or household where telephone status could not be determined. While we could not substantiate an assumption that these households would respond similarly to landline households, if they do, this could add another 11 million coupon requests to the estimate.

Appendix I: Scope and Methodology

To obtain information on the technical and coordination issues facing broadcast stations, we conducted a Web-based survey of the full-power commercial and noncommercial television broadcast stations. We asked the broadcasters questions related to their digital facilities, construction plans, and issues affecting the digital transition. From a total of 1,747 broadcasters, we surveyed 1,682 stations located in the 50 states and the District of Columbia for which we could obtain contact information. We conducted our survey from December 2007 through February 2008 and obtained completed questionnaires from 1,122 stations, for a response rate of 66.7 percent. Of those completed questionnaires, 72 percent were from commercial stations and 28 percent were from noncommercial stations.

To obtain information on issues pertaining to low-power television stations and how they affect consumers, we reviewed data from the Federal Communications Commission and interviewed a wide variety of industry and other private stakeholders, such as national retailers, industry associations, and consumer advocacy groups.

To determine the extent of consumer awareness about the transition, we commissioned a telephone survey of the U.S. adult population. Our objectives were to produce nationally representative estimates of (1) knowledge and awareness of the DTV transition and sources of that knowledge and awareness, (2) knowledge about the converter box coupon program and likelihood to request one or two coupons, and (3) attitudes about the impact of the conversion to digital television (e.g. level of disruption) Although the survey was designed to measure these issues at the population level, our intent was also to focus on several sub-populations, including (1) those most at risk of losing their television signal, (2) those with lower household incomes, (3) older Americans, (4) African Americans and Hispanics, and (5) those with disabilities. We analyzed the comparisons between these sub-populations and report on differences statistically significant at the 95 percent level. Percentage estimates have margins of error of less than 6 percent.

This survey of the American public was conducted from March 24, 2008 to April 7, 2008 by a private research firm. A total of 1,010 completed interviews were collected and calls were made to all 50 states.

Telephone surveys require assumptions regarding the disposition of non-contacted sample households that meet certain standards. For this survey the response rates were calculated using American Association of Public Opinion Research (AAPOR) Response Rate 3. Based on these assumptions, the response rate for the survey is 38 percent. A random digit

dial (RDD) sampling frame was used that includes both listed and unlisted numbers from working blocks of numbers in the United States. Technically, it provides a near 100 percent coverage of all households with landlines however; the RDD sampling frame approach cannot provide any coverage of the increasing number of cell phone only households. The 30.6 million estimate for coupon requests (which ranges from 25.6 million to 35.5 million coupons) does not include 13.1 percent of the households that are cell phone only households or 13.3 percent of the households for which there was no telephone service or no reported telephone status. While we could not substantiate an assumption that these households would respond similarly to landline households, if they do, this could add another 11 million coupon requests to the estimate. Additionally, the number of households that decide to replace their television rather than add the converter box could increase, which may decrease the demand for converter boxes.

Because many households contain more than one potential respondent, obtaining an unbiased sample from an RDD frame requires the random selection of the individual respondent from among all potential respondents within the sampled household (as opposed to always interviewing the individual who initially answers the phone). This was accomplished using the most recent birthday method, in which the interviewer requests to speak to the household member aged 18 or older who had the most recent birthday. If the selected respondent was not reachable after three call attempts, a substitute respondent was selected from among household members 18 years of age or older who were available at the time of the call, or an appointment was set for a household member who was willing to participate at a later time.

The results of this survey reflect an estimated awareness of the DTV transition for the time frame of the survey only. Some questions in the survey ask about the respondent's knowledge or awareness of the transition and the coupon program. As consumer education about the transition and the coupon program increases, the number of people aware of the transition and the coupon program will probably increase. Additionally, the respondent may not be the person in the household responsible for obtaining a coupon or deciding how to handle the transition. As a result, the individual response may indicate that the person is unaware, but someone else in the household could be planning to take care of the issue. As a result, we may overestimate the percentage of unaware households.

Finally, in the survey we asked respondents about likely behavior once the transition occurred. Only those who said they were likely to purchase a converter box were asked if they would request a coupon and then were asked whether they would request one or two government coupons. In our calculation of coupon demand we assume that those who do not say they are likely to purchase a coupon box will not request a coupon.

Appendix II: Related GAO Products

Digital Television Transition: Majority of Broadcasters Are Prepared for the DTV Transition, but Some Technical and Coordination Issues Remain. [GAO-08-510](#). Washington, D.C.: April 30, 2008

Digital Television Transition: Increased Federal Planning and Risk Management Could Further Facilitate the DTV Transition. [GAO-08-43](#). Washington, D.C.: November 19, 2007.

Digital Television Transition: Preliminary Information on Progress of the DTV Transition. [GAO-08-191T](#). Washington, D.C.: October 17, 2007.

Digital Television Transition: Preliminary Information on Initial Consumer Education Efforts. [GAO-07-1248T](#). Washington, D.C.: September 19, 2007.

Digital Television Transition: Issues Related to an Information Campaign Regarding the Transition. [GAO-05-940R](#). Washington, D.C.: September 6, 2005.

Digital Television Transition: Questions on Administrative Costs of an Equipment Subsidy Program. [GAO-05-837R](#). Washington, D.C.: June 20, 2005.

Digital Broadcast Television Transition: Several Challenges Could Arise in Administering a Subsidy Program for DTV Equipment. [GAO-05-623T](#). Washington, D.C.: May 26, 2005.

Digital Broadcast Television Transition: Estimated Cost of Supporting Set-Top Boxes to Help Advance the DTV Transition. [GAO-05-258T](#). Washington, D.C.: February 17, 2005.

Telecommunications: German DTV Transition Differs from U.S. Transition in Many Respects, but Certain Key Challenges Are Similar. [GAO-04-926T](#). Washington, D.C.: July 21, 2004.

Telecommunications: Additional Federal Efforts Could Help Advance Digital Television Transition. [GAO-03-7](#). Washington, D.C.: November 8, 2002.

Telecommunications: Many Broadcasters Will Not Meet May 2002 Digital Television Deadline. [GAO-02-466](#). Washington, D.C.: April 23, 2002

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