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# DIGITAL BROADCAST TELEVISION TRANSITION

## Several Challenges Could Arise in Administering a Subsidy Program for DTV Equipment

Statement of Mark L. Goldstein, Director  
Physical Infrastructure Issues





Highlights of [GAO-05-623T](#), a testimony before the Subcommittee on Telecommunications and the Internet, Committee on Energy and Commerce, House of Representatives

## Why GAO Did This Study

The digital television (DTV) transition offers the promise of enhanced television. At the end of the transition, radiofrequency spectrum currently used for analog broadcast television will be used for other wireless services and for critical public safety services. To spur the digital transition while preventing any loss of television service to households, some industry participants and experts have suggested that the government subsidize DTV equipment to enable households to view digital broadcast signals. This testimony provides information on (1) some challenges to administering a subsidy program for DTV equipment, (2) some administrative options for implementing a DTV subsidy, (3) examples of government programs that make use of rebates or vouchers to provide subsidies, and (4) other efforts necessary for the completion of the DTV transition.

We discussed administrative challenges to and options for a DTV subsidy with federal and state government officials, electronics manufacturers and retailers, and experts in product promotion. As in our previous work, we take no position on whether a subsidy should be implemented or not, or whether, if a subsidy program is established, it should be implemented in any particular way. While policies other than a subsidy might help promote the DTV transition, any other such approaches were not part of this investigation.

[www.gao.gov/cgi-bin/getrpt?GAO-05-623T](http://www.gao.gov/cgi-bin/getrpt?GAO-05-623T).

To view the full product, including the scope and methodology, click on the link above. For more information, contact Mark Goldstein at (202) 512-2834 or [goldsteinm@gao.gov](mailto:goldsteinm@gao.gov).

# DIGITAL BROADCAST TELEVISION TRANSITION

## Several Challenges Could Arise in Administering a Subsidy Program for DTV Equipment

### What GAO Found

We found that several administrative challenges might arise in implementing a subsidy for DTV equipment. One of several key challenges we identified would be determining those eligible to receive a subsidy. If the subsidy were restricted to low-income households or to households that rely exclusively on over-the-air television, methods to identify these households would need to be developed and may prove to be challenging. Another key challenge would be ensuring that eligible recipients understand the availability of a subsidy, how they could obtain it, and what equipment would be subsidized. Effectively communicating this information will likely first require that information about the DTV transition itself is successfully communicated to the public.

Several administrative options could be used to provide a government subsidy to help households obtain DTV equipment, including a refundable tax credit, government distribution of equipment, a voucher program, and a rebate program. The suitability of any of these methods depends on aspects of the subsidy's design, such as which entity is most appropriate to administer the subsidy and who would be eligible to receive the benefit.

Various government programs make use of rebates or vouchers to subsidize consumers' purchase of products. We reviewed three rebate and three voucher programs that might provide insight for the development of a DTV subsidy and found that differences existed between these types of programs. We observed that eligibility for the voucher programs was specifically defined and the benefits were targeted to low-income individuals, whereas eligibility for the rebate programs was not based on income. Overall, however, we found these programs differed with respect to what might be undertaken for a DTV subsidy.

In addition to the administrative challenges of a subsidy program, there are other aspects of the DTV transition that are ongoing and will take time to complete or may pose their own challenges. For example, the channel election process, which will determine each television station's channel placement for its digital signal, will not be final until sometime in 2007, according to the Federal Communications Commission. Another issue that might arise relates to antennas used to receive digital broadcast signals. Although many stakeholders believe that antennas used for analog reception will work well for digital signals, we were also told that reception of digital signals may vary on the basis of a household's geography and other factors.

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Mr. Chairman and Members of the Subcommittee:

I am pleased to be here today to report on our work on the challenges to and the administrative options for implementing a subsidy program for consumers to purchase digital television (DTV) equipment. As you know, the return of radiofrequency spectrum used for analog broadcast television at the end of the DTV transition will provide many benefits to society, such as easing the spectrum scarcity facing public safety first responders, engendering economic growth and consumer value from spectrum redeployed to wireless services, and affording the federal government revenues from the proceeds of a spectrum auction. Under the law, the transition's end is, in part, dictated by consumers' adoption of digital television equipment. While the purchase of digital televisions is steadily increasing, it nevertheless appears unlikely that a sufficient proportion of households will have digital television equipment in place by the end of 2006—the date originally set by Congress as a goal for the transition's end.

Households viewing television solely through the reception of over-the-air signals must take action to ensure that they have the necessary equipment to be able to view digital broadcast signals before the transition occurs and analog broadcast signals are shut off. If they do not take such action, they will lose television service. Consequently, the DTV transition imposes costs on some American households, assuming those households purchase equipment capable of receiving digital television signals to avoid the loss of television service. In February we reported to this Subcommittee that of the roughly 21 million households in the United States that rely exclusively on over-the-air television, nearly half have incomes under \$30,000. Cable and satellite subscribers might also, at some point, need to upgrade their equipment—and thus incur costs related to the DTV transition—in order to be able to continue to receive broadcasters' digital signals through their subscription providers.

In order to spur households' adoption of the digital equipment necessary for the transition, some have suggested that the government provide a subsidy to certain households to purchase a device, known as a set-top box, that can receive digital broadcast television signals and convert them into analog signals so that they can be displayed on existing analog television sets. This device—which several manufacturers have stated

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could sell for as little as \$50<sup>1</sup> once they are produced in high volume—would enable the household to view digital broadcast signals without purchasing a digital television set.<sup>2</sup> To the extent a subsidy facilitates the DTV transition, it might be advantageous for several reasons, such as (1) promoting a more rapid reclamation of valuable radiofrequency spectrum for other uses, which could spur economic growth and improve public safety, (2) possibly increasing government revenues from spectrum auctions by ensuring that companies that bid on spectrum can more quickly and with greater assuredness claim unencumbered spectrum, and (3) minimizing any loss in television service that households might suffer because they have not yet obtained necessary equipment for receiving digital broadcasts. At the same time, policymakers might consider these benefits in relation to other contexts in which policy decisions of the federal government have imposed costs and burdens on Americans *without* compensation. We believe while it is difficult to measure the specific benefits and costs of undertaking a specific DTV subsidy program, it is also difficult to evaluate the suitability of subsidizing the costs imposed by this particular government policy relative to other policies that have also imposed costs on citizens.

While there may be other policy options to spur the DTV transition, my testimony today only will focus on the use of a DTV equipment subsidy program. In particular, I will discuss the challenges to and several administrative options for a possible subsidy program. As we developed this work, no specific option for administering a DTV subsidy was formed, and as such, our work focused on the possible challenges to a hypothetical program. As in our previous work, we take no position on whether a subsidy should be implemented or not, or whether, if a subsidy program is established, it should be implemented in any particular way.

In February we testified before this Subcommittee and provided estimates of the cost of a subsidy for set-top boxes using data on household television characteristics and expected set-top box costs. Today we will discuss (1) some challenges to administering a subsidy program for DTV equipment, (2) some administrative options for implementing a DTV

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<sup>1</sup>Set-top boxes that have enhanced features, such as digital video recorders and output of high definition signals, would be more costly.

<sup>2</sup>Viewers using such a set-top box would not actually be viewing the channels digitally, but would be viewing the broadcasters' digital signals after they have been downconverted to analog.

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subsidy, (3) examples of government programs that make use of rebates and vouchers to provide subsidies, and (4) some other efforts necessary for the completion of the DTV transition. In addition to information provided in this testimony, we will provide a more detailed study on these and other issues related to the DTV transition for the Committee later this year.

To address the issues we will discuss today, we interviewed federal and state government officials who have experience in providing assistance to individuals or households through various subsidy programs. The agencies we contacted include the Department of the Treasury, the Department of Agriculture's Food and Nutrition Service, the Department of Health and Human Services, and state social service agencies from Alabama, Illinois, Maryland, and Texas. These states were chosen to represent varied demographic and geographic characteristics. We also spoke with companies in several key industry segments including nine electronics manufacturers, four electronics retailers, and a rebate fulfillment house (a company that processes rebates for manufacturers and retailers). Additionally, we interviewed a rebate and retail promotion expert, an academic who has studied consumer rebate redemption behavior, and representatives from the Promotion Marketing Association. We also contacted a company that provides identification and credential verification services. For general information about the DTV transition, we spoke with seven broadcasters, three cable and satellite companies, and five television station owners. We also had several meetings with Federal Communications Commission (FCC) staff and various industry trade groups, such as the National Cable & Telecommunications Association, the Satellite Broadcasting and Communications Association, the Consumer Electronics Association, the National Association of Broadcasters, and the American Cable Association. We obtained information on government programs that used rebates or vouchers from program administrators and other sources. We contacted the National Telecommunications and Information Administration (NTIA) to ask questions about their views on the administration of a DTV subsidy program, but an agency official stated that they had no official comment.

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We conducted our work from August 2004 to May 2005 in accordance with generally accepted government auditing standards. We discussed this testimony with FCC officials to obtain their comments. FCC provided technical corrections that we incorporated where appropriate.

In summary:

- We found that several administrative challenges might arise in implementing a subsidy for DTV equipment. Key issues we identified include challenges related to making determinations about (1) which federal entity would administer a subsidy program, (2) whether a rulemaking process would be necessary to fully determine and stipulate how the subsidy program will be structured, (3) who would be eligible to receive a subsidy, (4) what equipment would be covered, (5) how information about the subsidy would be communicated to consumers and industry, and (6) what measures, if any, would be taken to limit fraud. Some of these issues could be particularly difficult to address. For example:
  - If the subsidy were only available to low-income households, a possible method of identifying these households would be to use receipt of some other low-income assistance—such as food stamps—to identify those eligible for the DTV subsidy. A drawback to this approach, however, is that agencies overseeing such programs may not be allowed to release lists of their recipients to others. If the subsidy is only provided to households that rely exclusively on over-the-air television, the identification of these households may be difficult because no list of such households exists, and information on the inverse—those households that subscribe to cable or satellite service—is dispersed across hundreds of providers in the country, and these providers may also face limitations on the release of their subscribers' lists to others.
  - Another key challenge would be to make sure that eligible recipients understand that a subsidy is available to them, how they can obtain it, which equipment the subsidy can be used for, and where they can obtain the equipment. Effectively communicating this information would likely first require that information about the broader DTV transition is effectively communicated to the public. Three years ago we found that many Americans did not have an awareness of the DTV transition. Recently, the Consumer Electronics Association reported that knowledge of DTV is increasing. Our interviews with several retailers and manufacturers, indicated, however, that while consumers are more familiar with the concept of high-definition television, many

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are still confused or unaware that at some point in the future analog television will cease operation and analog television sets will not be able to receive digital over-the-air television signals.

- Several administrative options could be used to provide a government subsidy to help households obtain DTV equipment. The four options for administering a DTV subsidy that we reviewed are a refundable tax credit, government distribution of equipment, a voucher program, and a rebate program. We found that the suitability of any of these methods depends on aspects of the subsidy's design, such as which entity is most appropriate to administer the subsidy and who would be eligible to receive the benefit. For example, if the DTV subsidy were only available to low-income households, a voucher might be a possible method to deliver the subsidy. Alternatively, if the subsidy is more widely available, a rebate might be a good delivery mechanism.
- Various government programs make use of rebates or vouchers to subsidize consumers' purchase of products. We reviewed three local government rebate programs that provide incentives for furthering environmental policy goals and three voucher programs, including one state program that subsidizes equipment for deaf and hard of hearing individuals and two federal programs that provide assistance to needy households to purchase food. For the programs we reviewed, we found differences existed between the rebates and vouchers programs that might provide insight for the development of DTV subsidy. Regarding eligibility determinations, we observed that eligibility for the voucher programs was specifically defined and the benefits were targeted to low-income individuals, whereas eligibility for the rebate programs was not based on income. Overall, however, we found these programs differed with respect to what might be undertaken for a DTV subsidy. Further, choosing not to participate in any of the programs we reviewed would not cause a household to lose any existing service or functionality. In contrast, if a household relying exclusively on over-the-air television chose not to take advantage of a DTV subsidy for which it is qualified, and then did not obtain the necessary equipment to receive broadcast digital signals, the household would lose access to broadcast television signals when the transition occurs.
- If a subsidy program is implemented, it will pose many challenges for the implementing agency and industry. However, there are other aspects of the DTV transition not related to the implementation of possible subsidy program that are ongoing and will take time to complete or may pose their own challenges. For example, the channel election process, which will determine the channel placement for each television station's digital

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signal, is ongoing. Because a proposed rulemaking will follow the end of this selection process (scheduled to be completed in August 2006), all stations' final selections will not be set until sometime in 2007, according to an FCC official. Another example of an issue that may arise as the DTV transition progresses relates to antennas used to receive digital broadcast signals. While many stakeholders we interviewed told us that antennas used for analog over-the-air reception should work well for the digital broadcast signal, a few stakeholders (including an antenna manufacturer, a broadcaster, and a retailer) told us that reception will depend on geographic and topographic factors and that some people may need new antennas or adjustment of existing antennas.

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## Background

The United States is currently undergoing a transition from analog to digital broadcast television. 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. Digital transmission of television signals provides several advantages compared to analog transmission, such as enabling better quality picture and sound reception as well as using the radiofrequency spectrum more efficiently than analog transmission.

A primary goal of the DTV transition is for the federal government to reclaim spectrum that broadcasters currently use to provide analog television signals. The radiofrequency spectrum is a medium that enables many forms of wireless communications, such as mobile telephone, paging, broadcast television and radio, private radio systems, and satellite services. Because of the virtual explosion of wireless applications in recent years, there is considerable concern that future spectrum needs—both for commercial as well as for varied government purposes—will not be met. The spectrum that will be cleared at the end of the DTV transition is considered highly valuable spectrum—sometimes called “beachfront spectrum”—because of its particular technical properties. In all, the DTV transition will clear 108 MHz of spectrum—a fairly significant amount. In the Balanced Budget Act of 1997, the Congress directed FCC to reallocate 24 MHz of the reclaimed spectrum to public safety uses. Since the terrorist attacks of September 11, 2001, there has been a greater sense of urgency to free spectrum for public safety purposes. The remaining returned

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spectrum will be auctioned for use in advanced wireless services, such as wireless high-speed Internet access.<sup>3</sup>

To implement the DTV transition, television stations must provide a digital signal, which requires them to upgrade their transmission facilities, such as transmission lines, antennas, and digital transmitters and encoders. Depending on each individual station's tower configuration, the digital conversion may require new towers or upgrades to existing towers. Most television stations throughout the country are now providing a digital broadcast signal in addition to their analog signal. After 2006, the transition will end in each market—that is, analog broadcast signals will no longer be provided—when at least 85 percent of households in a given market have the ability to receive digital broadcast signals.

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## Several Challenges Might Arise That Require Consideration in Administering a Subsidy Program for DTV Equipment

During the course of our review, we identified several administrative challenges to implementing a subsidy for DTV equipment. For example, prior to implementing a subsidy program, various determinations need to be made, including (1) which federal entity will administer a subsidy program, (2) whether a rulemaking process is necessary to fully determine and stipulate how the subsidy program will be structured, (3) who will be eligible to receive a subsidy, (4) what equipment will be covered, (5) how information about the subsidy will be communicated to consumers and industry, and (6) what measures, if any, will be taken to limit fraud.

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## It is Unclear What Entity Would Be Best Suited to Administer the Subsidy Program

One challenge to the DTV subsidy that we identified is determining which entity should administer the subsidy program. An industry representative told us that the implementing agency should have some level of telecommunications expertise in order to be able to set appropriate standards for the equipment being subsidized and to effectively educate consumers about the DTV transition. In our opinion, policymakers might also consider if the entity has experience administering a household assistance program.

Based on our discussions with government officials, it appears that no single entity has the combined technical knowledge and subsidy administration expertise that might be necessary to successfully

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<sup>3</sup>In addition to the 24 MHz that is allocated to public safety, another 24 MHz has already been auctioned.

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implement a DTV subsidy. For example, while FCC and NTIA have telecommunications knowledge and are responsible for managing the use of the radiofrequency spectrum, neither has experience administering a federal subsidy program of this kind. We asked these agencies about their ability, based on their experience, to administer a DTV subsidy. NTIA had no official comment. FCC officials told us they believe the Commission could have some role, such as defining which equipment would be eligible for the subsidy, but did not believe FCC was best suited to administer the entire subsidy program. Further, an FCC official said it might be advantageous for the administering entity to leverage the expertise of state government agencies to assist with delivering the subsidy to low-income households.

We also asked two agencies that have experience administering federal assistance programs, the Department of Health and Human Services and the Department of Agriculture's Food and Nutrition Service, about their ability to implement a DTV subsidy.<sup>4</sup> Although these agencies have experience with subsidy programs, they do not have expertise in telecommunications. Officials from the Department of Health and Human Services told us the agency would not be well suited to administer a DTV subsidy because their programs, such as Temporary Assistance for Needy Families, are narrowly defined—a household must have children to be eligible for Temporary Assistance for Needy Families—and would not offer broad enough coverage for a DTV subsidy. Similarly, officials from the Food and Nutrition Service said they did not believe their agency would be the best entity to administer the subsidy. However, after we asked whether the state agencies that administer food stamps could provide a DTV subsidy to their recipients, Food and Nutrition Service officials said that this might be possible under certain conditions, but that an agreement would most likely have to be reached with each state and, in their view, the states should be paid for the costs they incur in doing so.

When we contacted four state health and human services agencies that administer various assistance programs on behalf of the federal government, such as food stamps, all four indicated that it might be possible for the states to provide the DTV subsidy to the low-income individuals who already receive assistance from one or more programs

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<sup>4</sup>The Department of Health and Human Services administers a number of programs, including Temporary Assistance for Needy Families. The Food and Nutrition Service also administers various programs, including the nation's Food Stamp Program and the Special Supplemental Nutrition Program for Women, Infants, and Children, better known as WIC.

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they administer. However, they told us there would be costs associated with implementing a subsidy program, such as staff time, programming costs, postage, and envelopes. One state we contacted estimated that it would cost approximately \$552,000 to mail vouchers to the approximately 1.5 million households that receive food stamps, Medicaid, and Temporary Assistance for Needy Families within the state. However, two states told us that if the program ran over a period of time it would be difficult to track which households already received the DTV subsidy as people go on and off of assistance over time, so some households could receive duplicate benefits. Further, three of the four states told us that such a program would be burdensome on their limited staff resources.

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## Implementing a Subsidy Program May Require a Rulemaking Process

A rulemaking process might be required to implement a DTV subsidy, and if so, this would likely have implications for how quickly a subsidy program could be established. While legislation could broadly define the parameters of the subsidy program and may even prescribe specific elements of the programs' structure and administration, it is not uncommon for a federal agency to determine that a rulemaking process is necessary to more fully detail how a program will be implemented. Through a rulemaking, the agency would finalize the rules of the program that were not specifically addressed in the legislation. FCC told us that if the legislation is very specific a rulemaking process may not be necessary for a DTV subsidy. However, FCC did note that rulemakings have been used in the past after legislation enacted new programs. For example, rulemaking processes have been undertaken several times to make adjustments to the Lifeline Assistance Program since it was established in 1985.<sup>5</sup>

The rulemaking process generally takes time because it requires a wide range of procedural, consultative, and analytical actions on the part the agencies. Sometimes agencies take years to develop final rules. Among other things, the rulemaking process generally requires agencies to (1) publish a notice of proposed rulemaking in the Federal Register; (2) allow interested parties an opportunity to participate in the rulemaking process by providing written data, views, or arguments; (3) review the comments received and make any changes to the rule that it believes are necessary to respond to those comments; and (4) publish the final rule at least 30 days

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<sup>5</sup>The Lifeline program, created in 1985, provides a discount on local telephone bills for certain low-income customers so that basic local phone service is more affordable.

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before it becomes effective. Further, the Office of Management and Budget reviews significant proposed and final rules initiated by executive branch agencies other than independent regulatory agencies before those rules are published in the Federal Register.<sup>6</sup> A former official from the Department of Health and Human Services told us that industry participants, interest groups, or other stakeholders can challenge a proposed rulemaking, which can delay the process further. He said that in order to avoid such challenges, it is essential to have the key stakeholders involved early in the process. That is, if the key stakeholders have the opportunity to provide input prior to the development of the rulemaking and are satisfied that their concerns are addressed, they will be less likely to file a challenge to the proposed rulemaking.

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### Eligibility Criteria Pose Challenges to the Administration of a DTV Subsidy Program

Determining who would be eligible to receive the subsidy could present an administrative challenge to developing a subsidy program. If the government decides not to provide a DTV subsidy to all households, it would need to establish criteria to determine who is eligible. For example, a means test could be imposed to restrict eligibility to low-income households determined to be in financial need of the subsidy. The subsidy could also be limited to only those households relying on over-the-air television signals, on the grounds that these households are likely to be the most adversely affected by the DTV transition.

*Eligibility for Low-Income Households:* If it is determined that a DTV subsidy will only be made available to low-income households, a means test of some kind would need to be used to identify the appropriate target households. Officials from the Department of Health and Human Services told us that using the income-based eligibility criteria of existing social service programs to define eligibility for a DTV subsidy program would be the most efficient way to employ a means test. That is, by using the *receipt* of an existing program benefit that is means tested, a new program could be effectively implemented without developing a means test specifically for that program. However, we were also told that one of the drawbacks to using these existing programs is that not all who are eligible for any particular program actually choose to apply for and receive benefits. This would mean that by only providing a DTV subsidy to those already receiving other assistance, some people who would be eligible for the

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<sup>6</sup>The Office of Management and Budget does not review rules of independent regulatory agencies, such as FCC.

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subsidy based on their underlying income would not qualify for the subsidy because they have chosen not to receive another form of assistance. Officials from the Food and Nutrition Service told us that for the Food Stamp Program, approximately 54 percent of those who would be eligible for the program receive the benefit nationwide. It was thus suggested to us that if recipient lists from social assistance programs were used in developing eligibility determinations for a DTV subsidy, it might be beneficial to use more than one program. By combining the participants of several programs, a DTV subsidy for low-income households would target a higher percentage of needy households than if only one program was used to establish eligibility. For example, FCC told us that the Lifeline Assistance Program uses receipt of any of *seven* social assistance programs, including food stamps and Medicaid, as an eligibility requirement.<sup>7</sup>

Privacy concerns could, however, be a limitation of using existing social welfare programs to develop eligibility for a DTV subsidy because the agencies administering these programs may be prohibited from providing the list of recipients to any outside entity. Under current law for example, food stamp recipient information might not be available to other federal agencies or to any private party or outside entity that might be involved in the administering the subsidy. Another limitation in using these data is that there is continuous change in recipient rolls because of people entering and leaving the program. Those implementing a DTV subsidy program would need to take into account the volatility of recipient rolls in deciding how this information could be used.

*Eligibility for Over-the-Air Households:* Some stakeholders we contacted indicated that a DTV subsidy should be focused on or limited to only those households that rely exclusively on over-the-air television. Because no list of these households exists, limiting a subsidy in this manner will require determining who the over-the-air households are—a task that could pose administrative challenges. One possible approach to identifying over-the-air households is to first identify cable and satellite<sup>8</sup> subscribers. A

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<sup>7</sup>Consumers can receive assistance if they participate in Medicaid, the Food Stamp Program, Supplemental Security Income, Federal Public Housing Assistance (Section 8), the Low Income Home Energy Assistance Program, the National School Lunch Program's free lunch program, or Temporary Assistance for Needy Families.

<sup>8</sup>For satellite subscribers, we are referring to those that subscribe to a direct broadcast satellite (DBS) service, such as DIRECTV or DISH Network.

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combined list of all cable and satellite subscribers could be used as a mechanism to check whether those applying for a DTV subsidy are not qualified for the subsidy.

The process of combining cable and satellite subscriber information into a comprehensive list could be a highly challenging task. First, cable industry officials we interviewed expressed concern over providing their subscriber lists to a government agency or another entity. Cable officials told us that under current law, they could not turn over subscriber information to the government without prior permission from subscribers unless they were under a court order.<sup>9</sup> Cable industry officials also told us that any change in current legislation would need to include liability protection for cable and satellite companies because their subscriber lists—which include personal information provided to these companies from subscribers—would be outside their control. An industry official said that even more stringent safeguards would need to be in place if the information were provided to an outside entity—such as a contractor—rather than to a government agency. One cable company official stated that even if the law were changed to allow the company to provide its subscriber lists, it would be placed in the awkward situation of having to inform their subscribers that their names were provided to the government to help administer a subsidy that the cable subscribers are not eligible to receive. The cable company official also stated that subscribers would be sensitive to their information being used in this manner, especially in light of recent security issues related to personal information.

A second challenge to developing a national list of all cable and satellite subscribers is the difficulty of merging this information across all cable and satellite companies. Currently, there are over 1,100 cable and satellite companies operating throughout the country, with a total of nearly 90 million subscribers. Information from these companies, which is maintained in various formats, would have to be collected and combined into a comprehensive list of subscribers. Cable industry officials stated that the process of merging and maintaining a list of nearly 90 million subscribers would not be an easy undertaking. For example, one cable industry official estimated that the process of working through all the technical logistics for establishing a list could take 6 to 12 months. Additionally, cable industry officials stated that there is significant “churn” (i.e., the number of people moving on and off subscriber lists) in the

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<sup>9</sup>47 U.S.C. §§ 338(i) and 551.

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industry. For example, one cable company official stated that churn can be as high as 10 percent of subscribers from month to month. Another cable industry official told us that a significant level of resources would be needed to keep such a combined subscriber list up to date.

Another possible, albeit difficult, way to determine who the over-the-air households are would be to send queries to cable and satellite providers to ask if particular people who have applied for the DTV subsidy are, in fact, already subscribing to cable or satellite. For cable customers, a database would need to be developed to direct the queries to the applicable provider. According to FCC, the Commission maintains a master data base with information on all franchised cable areas—of which there are over 30,000. The most identifiable geographic information in that database is the name of county where each cable franchise is located. If an applicant for the DTV subsidy provided a county of residence, a query could be sent to all the franchised cable areas in that county. However, an FCC official told us that in many counties there are multiple cable franchises operating. Moreover, the FCC official stated that even though there is a contact name for each franchise area, in many cases, the contact was someone at a corporate headquarters of the cable company. Thus, we believe that to contact the local cable franchise directly, the database would need to be further developed to include information—perhaps an e-mail address at the local franchise level—to which the query could be sent. This process could be time consuming for both the entity processing the subsidy applications and the cable providers. On the satellite side, we believe querying the satellite providers might not be too difficult because there are only two primary providers. However, people may object to their personal information being sent to the satellite providers as well as the cable providers in their area. Another option might be to use information maintained by companies that perform subscriber billing for cable and satellite companies. We were told that about six large billing companies provide billing services for a substantial majority of the cable and satellite companies. Representatives from a company that provides identification and credential verification services told us they could verify that individuals applying for a DTV subsidy do not subscribe to a cable or satellite service by checking the applicant's address against the addresses maintained by the cable and satellite providers' billing companies. To protect the privacy of subsidy applicants, the identification and verification services company told us such queries should be based on an individual's address rather than name or Social Security number. Company officials also told us that it would likely take a few months to develop this checking process.

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## Congress and Implementing Agency Must Determine What Specific Equipment Would Be Subsidized

One of the administrative elements of a subsidy program that would likely need to be determined is exactly what equipment will be subsidized. In making this determination, policymakers might consider both policy issues as well as issues related to the ability of the program to be implemented and managed.

From a policy perspective, several of the manufacturers and retailers we contacted told us that they believe it would be most beneficial to consumers if the program did not put highly specific limits on the type of equipment they could buy with the subsidy. In particular, some stakeholders generally believed that eligible consumers should not only be allowed to apply the subsidy toward a basic set-top box, but should also be allowed to apply that amount toward enhanced set-top boxes (those with upgraded features or functions) or digital televisions capable of receiving and displaying digital broadcast signals. Several stakeholders noted that any product that enables consumers to receive digital broadcast signals does the job of ensuring that there is no loss in television service when the transition occurs. Moreover, some said a wide application of the subsidy provides consumers the most choice and promotes the adoption of digital television. An opposing view is that a subsidy should only be designed to ensure that there is no loss of television service when the DTV transition is completed, and therefore the subsidy should only be applicable to a set-top box.

From the perspective of administering the program, determining what items the subsidy can be applied towards is critical for communicating to manufacturers, retailers, and consumers a key parameter of the program. Some stakeholders noted that either the Congress or the administering agency would need to identify the products that would be subsidized so that manufacturers produce the appropriate equipment. If the intent is to subsidize only simple set-top boxes, FCC officials told us that the subsidy would cover boxes that have only *analog outputs*. If the Congress or the implementing agency determines that the subsidy will be more broadly applicable, the particular parameters of the program would need to be communicated to the manufacturing industry so that their business plans can proceed.

There would also likely be some process by which *specific items* meeting the parameters of the subsidy program are approved and flagged as eligible for the subsidy. Manufacturers need certainty about what items are approved for the subsidy if they are to place a rebate coupon on or inside of the equipment boxes, along with any related information.

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Specific identification of subsidized items will also be important for retailers as they make inventory decisions and train staff about how to guide consumers' purchasing decisions. Also, if retailers are asked to play a part in the administration of the program, such as by accepting vouchers or printing rebate coupons at the time of sale, it will be critical for them to have validation of items that are eligible for the subsidy. And, clearly, consumers need to understand which items they can purchase using the subsidy.

Some industry representatives we contacted also expressed concern about the interface between industry and the government in the design of the subsidy program. In particular, industry representatives said that the government should work with industry as the subsidy program is developed to ensure that the program is designed in a manner that will provide incentives for manufacturers and retailers to participate. Additionally, some companies noted that the government would need to provide industry with information on the expected scope of the program in order to avoid shortages of equipment at retail. In general, some companies told us that industry should be involved in the development of the program to help ensure that it is designed and implemented efficiently.

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### A Successful Subsidy Program Will Require an Effective Information Campaign about the DTV Transition and Subsidy

To successfully implement a DTV subsidy program, eligible recipients will need to understand that a subsidy is available, how to obtain it, which equipment the subsidy can be used for, and where they can obtain the equipment. Thus the agency responsible for implementing the program would need to undertake a communication campaign. At the same time, it could be difficult to provide information about the parameters of the subsidy program if there is not a general understanding about the broader DTV transition. As such, it appears that an information campaign regarding the availability of a subsidy for DTV equipment might need to be coordinated with a more general information campaign about the transition and its ramifications for American households.

Three years ago we found that many Americans did not have significant awareness of the DTV transition, and we recommended that FCC explore options to raise public awareness about the transition and the impact it will have on consumers.<sup>10</sup> Since that time, FCC and industry have

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<sup>10</sup>See GAO, *Telecommunications: Additional Federal Efforts Could Help Advance Digital Television Transition*, [GAO-03-7](#) (Washington, D.C.: Nov. 8, 2002).

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undertaken efforts to better inform the public about the transition. In March of this year, the Consumer Electronics Association, an association of electronics manufacturers, reported that consumers' understanding of digital television has improved. This association surveyed individuals and found that, compared to past years, there has been an increase in consumer familiarity and understanding of DTV, as well as an increase in the likelihood of over-the-air households to take action to avoid losing television service.

Based on our interviews with several stakeholders, it appears that despite these findings many consumers—particularly those who may be the most affected by the transition—may still be unaware or confused about the DTV transition. Several of the company representatives with whom we spoke told us that while consumers are more familiar with the concept of high-definition television, they are still unaware or confused about other aspects of the DTV transition. Some told us that few consumers understand that at some point analog television will cease operation and analog television sets will be unable to receive digital over-the-air signals. We were told that it is especially difficult to provide consumers with a better understanding of this in the absence of a hard transition date. Additionally, some populations might be difficult to reach because English may not be their primary language or because they only receive television over-the-air and have no business relationship with a subscription television provider that would likely provide them with information about the transition.

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### Minimizing Fraud Might Be a Consideration in the Development of a Subsidy Program

Depending on how a subsidy program is structured and implemented, there may be opportunities for people to defraud the government. For example, one official familiar with government subsidy programs noted that if everyone were eligible for the subsidy, the opportunities for fraud would decline. For this reason, the more restrictive the eligibility requirements, the greater may be the chances for fraud. In terms of reducing fraud, those familiar with rebates noted that the more requirements for rebate redemption—that is, the more documentation the consumer must provide to redeem the rebate—the fewer problems with fraud there are likely to be. However, we were also told that increased requirements would tend to reduce the number of people who attempt to redeem the rebate. An additional consideration regarding fraud is the cost of fraud mitigation. A former official from the Department of Health and Human Services told us that while minimizing fraud should be considered in developing a subsidy program, the cost-effectiveness of these efforts should also be measured. For example, we were told that administering

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systems to mitigate and prevent fraud may be costly and may not be worthwhile, especially if the value of the subsidy is low.

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## A Variety of Options Exist for Administering a DTV Subsidy, Each with Unique Challenges

While a government subsidy for consumers to purchase DTV equipment could be administered in several ways, each of the subsidy options we examined had advantages and disadvantages. Following is a description of and stakeholders' views on four DTV subsidy options: a refundable tax credit, government distribution of equipment, a voucher program, and a rebate program. As we noted above, we take no position on whether a subsidy should be implemented, or whether, if a subsidy program is established, it should be implemented in any particular way.

*Refundable Tax Credit Program:* One method that could be used to administer a subsidy program for DTV equipment would be a refundable tax credit, administered as part of the federal individual income tax. A refundable tax credit could be designed to provide qualifying taxpayers a refund greater than the amount of their tax liability before credits. Based on the manner in which tax credits work, we believe that a tax credit for DTV equipment would likely be structured such that consumers purchase an eligible set-top box, maintain required information on their purchase, and seek reimbursement for all or some portion of the cost from the federal government for the equipment when they file their federal income taxes. Based on discussions with an official from the Department of the Treasury, it does not appear that this method would be well suited for a DTV subsidy. The Treasury official told us that considerable administrative burdens would be imposed on the Internal Revenue Service (IRS) to administer a refundable tax credit for a one-time subsidy. This official noted that implementation of a new tax credit would require the IRS to change tax forms, as well as instructions, for the years that the program would be in operation. Changing tax forms imposes administrative costs, particularly if tax laws are changed after forms have been developed for a given tax year. Additionally, he noted that IRS Form 1040 is currently completely full, so that any new credit could require the form to be lengthened from two pages to three pages, which would be costly and burdensome. The official also noted that the availability of the tax credit may cause some individuals who otherwise would not file a tax form to do so, which would increase IRS administrative burdens. The Treasury official also noted that there could be compliance problems with a tax credit approach. Because of the small amount of the credit—likely about \$50—it would not be cost-effective for the IRS to assign resources to check compliance, thus it would be very difficult to minimize fraudulent

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use of the credit. In fact, IRS has had difficulty assuring compliance for a refundable tax credit. In particular, for the Earned Income Tax Credit, IRS estimated that roughly 30 percent of the dollars claimed was erroneous.

We heard from stakeholders that a tax credit for DTV equipment might not be the most helpful to low-income Americans because individuals would have to purchase the equipment with their own money and file—possibly many months later—for a tax refund. Also, we were told some low-income Americans do not file tax returns. We believe the additional costs and burdens for such individuals to file taxes for the purpose of obtaining a tax credit may exceed the value of the credit.

*Government Distribution:* With government distribution, the government provides certain goods for needy citizens. One example of government distribution is the Emergency Food Assistance Program whereby the government provides food, such as dried fruit, non-fat dry milk, and peanut butter, to states for distribution to selected local agencies—usually food banks—which, in turn, distribute the food to soup kitchens and food pantries that serve the public directly.

For the DTV transition, the government could directly provide the necessary equipment to individuals, but we found there would be a number of challenges to implementing and administering such a program, and, based on discussions with state social service agencies, it appears that this would be an unwieldy way to administer a DTV subsidy. One challenge would be finding locations for distributing the equipment. We heard from several officials whose state agencies administer benefit programs that using local social services offices as a distribution point would not be feasible. These officials cited the lack of space and staff resources to store, secure, and distribute equipment as reasons why local offices could not be used to administer such a program. Further, stakeholders told us that government distribution does not take advantage of existing retail supply chains that already move large quantities of goods to stores throughout the country.

While a government distribution program would not require households to pay for equipment in advance of receiving the subsidy, which would be beneficial to low-income households, the program could present other challenges to those eligible to participate. For example, stakeholders we interviewed told us that a distribution program limits consumers' choices and provides no mechanism for consumers to obtain support if the equipment does not work properly. Additionally, officials from one state agency told us that people obtaining equipment at local offices would have

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to wait in long lines, which could be problematic for those with physical limitations, such as the disabled and the elderly.

*Voucher Program:* Another mechanism to subsidize DTV equipment could be through a voucher program. A voucher—which is a coupon or electronic benefit card, similar to a credit card, which provides purchasing power for a restricted set of goods or services—could be provided to households that qualify for a DTV subsidy. The federal government has used vouchers to provide a variety of assistance to households, such as food stamps and housing subsidies. Also, vouchers have been used on a limited basis to provide benefits to consumers for the changeover of certain technology. For example, the Colorado Department of Human Services provided a voucher to individuals who qualified as hard of hearing to purchase text telephones and other specialized telecommunications equipment.

For a DTV equipment subsidy using a voucher system, various administrative steps would be necessary to design and implement an effective program. After decisions were made about the specific equipment to be covered, vouchers would need to be distributed to eligible households. Several of those we contacted noted that if the program is to be means tested, state agencies—such as those that administer the Food Stamp Program—might be able to mail vouchers to their existing recipients.<sup>11</sup> Additionally, with a voucher program, several administrative steps involving the retail industry would be required. Participating retailers would have to know how the program is structured, which specific items were covered by the subsidy, approximately how many pieces of DTV equipment were expected to be subsidized in a particular area, and how the mechanism for retailer reimbursement would operate.

Overall, using vouchers to administer a DTV subsidy might be beneficial for low-income households because such households would not be required to pay for the DTV equipment in advance and then wait to be reimbursed. However, stakeholders told us that this type of program could create a burden on retailers because they must determine the authenticity of the vouchers. Also, stakeholders mentioned that it might be more

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<sup>11</sup>State agencies we contacted suggested that mailing a paper voucher to recipients would be the least difficult and most effective way of distributing a voucher for a potential DTV subsidy. While food stamp benefits are provided to recipients electronically (through an Electronic Benefit Transfer (EBT) card), the state agencies told us it would be costly and time-consuming to add the DTV subsidy to these electronic cards.

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challenging to include smaller and independent retailers in a subsidy program that uses vouchers.

*Rebate Program:* A rebate program could also be used to administer a DTV subsidy. Rebates generally require consumers to pay the full cost of an item at the time of purchase and then send documentation to an address specified by the manufacturer or retailer to receive a rebate by mail. The documentation required generally includes the original sales receipt, the UPC code from the product packaging, a rebate slip, and the customer's name, address, and telephone number. In most cases, this paperwork must be sent within 30 days of the purchase, and consumers generally receive their rebates up to 12 weeks later. According to the three rebate experts we interviewed, only about 30 percent of rebates are ever redeemed. While two rebate experts said that redemption rates would likely rise with a larger rebate, such as might be provided with a DTV subsidy, none of the three we spoke with believed that the redemption rate would rise above 50 percent. Also we were told that depending on the type of rebate, on average 1 percent to 20 percent of rebate applications are rejected based on the lack of proper documentation.

Typically, a variety of decisions are made in developing a rebate program. For example, as we discussed these decisions with stakeholders, various methods of implementing a rebate were highlighted, including placing the rebate coupon inside the equipment box, affixing it to the outside of the box, or printing a coupon at the cash register at the time of sale. The method used would, in part, determine which entities have some administrative responsibility for the rebate program. If a DTV subsidy program were designed to have a rebate coupon placed in or on the box, it would be the responsibility of the manufacturer to do so, while if it were designed to have a rebate coupon generated at the cash register, the retailer would be responsible for managing this process. A consensus on the best rebate method did not emerge from our interviews with industry experts.

One of the most difficult elements associated with using a rebate for a DTV subsidy would be applying eligibility requirements. As previously discussed, information about over-the-air and low-income eligibility is not readily available to the rebate fulfillment houses—which are the entities that process rebates for manufacturers and retailers—and there are legal obstacles to the government collecting and providing that information to them. Another downside of rebates is that consumers generally pay the full cost of an item at the time of purchase, which could create a hardship for low-income households. Furthermore, one rebate fulfillment center

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representative told us that low-income individuals are less likely to redeem rebates than other segments of the population. Similarly, an official from a state agency told us that based on her experience a rebate program is not a good choice if the subsidy is supposed to target low-income individuals because many low-income individuals are not comfortable with rebates and will not redeem them. If eligibility for the subsidy is not restricted, a rebate might provide a good delivery mechanism. A benefit of using a rebate program for a DTV subsidy is that this method could take advantage of the relationships that already exist between retailers, manufacturers, and the rebate fulfillment industry.

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## Several Government Programs Have Employed Rebates or Vouchers to Provide Subsidies

We identified several government programs that have used or are using rebates or vouchers to subsidize consumers' purchase of products. While aspects of these programs might provide insight into the establishment of a DTV subsidy, we found, overall, that the programs we reviewed differed in many respects from what might be undertaken for a DTV subsidy. We reviewed three rebate programs that were implemented by local governments to provide incentives for furthering a policy goal, such as clean air, water conservation, and the use of energy-efficient appliances. We also reviewed three voucher programs, including one state program that subsidizes equipment for deaf and hard of hearing citizens and two federal programs that provide assistance to needy households to purchase food. See table 1 for key information about the six programs we reviewed.

**Table 1: Information on Rebate and Voucher Programs GAO Reviewed**

Program name	Subsidy type and amount	Administering entity	Item/commodity subsidized	Eligibility requirements	Total budget	Percent of budget allocated to administrative costs	Number of persons served	Time required to develop and implement program	Length of program existence	Information dissemination
<b>Santa Cruz County Electric Bike Commuter Incentive Program</b>	Rebate; maximum rebate is \$375	Ecology Action, Inc. on behalf of Santa Cruz County, California	Electric-powered bicycles	Must be a resident of Santa Cruz County, also must attend a safety training class	\$1 million	Start up administrative costs were 26.4 percent; once the program was established, administrative costs were 14 percent	879	About 12 months total; 6 months to design the program and 6 months to secure funding	August 2000 through June 2006	The program was launched with a high profile press conference attended by regional and national press; then used main stream media to promote the program
<b>Sacramento County Water Agency Ultra-low Flow Toilet Rebate Program</b>	Rebate; rebates vary from \$75 to \$125 per rebate	County of Sacramento, California	Ultra-low flush toilets (that use only 1.6 gallons of water per flush)	Must be a Sacramento County Water Agency customer (with a high flow toilet )	\$45,000 in 2004 and 2005	Administrative costs not separated out from general agency costs	142 in 2004	About 18 months to implement; majority of this time was spent coordinating with the various water agencies that were participating in the program	Ongoing; started in 2003	Advertised in water bills and newsletters; allowed installers to advertise program's availability

Program name	Subsidy type and amount	Administering entity	Item/commodity subsidized	Eligibility requirements	Total budget	Percent of budget allocated to administrative costs	Number of persons served	Time required to develop and implement program	Length of program existence	Information dissemination
<b>Consumer Rebate Program (for Energy Efficient Products)</b>	Rebate	Los Angeles Dept. of Water and Power (LADWP), California	Energy efficient appliances, lighting, and windows	Must be a LADWP customer	\$3 million	Approximately \$1.18 million, or 39 percent of the total budget, is for labor, marketing and materials	Approximately 6,000 per year	Original program development was lengthy; program implemented in 3 months once contractor was hired	Ongoing; started in 2002.	Provided handouts at retail stores and LADWP branch offices, advertised on radio, placed inserts in all residential utility bills, created special page on LADWP web site, had kick-off event at Home Depot that was carried on local news stations
<b>Colorado Telecommunications Equipment Distribution Program</b>	Voucher	Colorado Commission for the Deaf and Hard of Hearing	Text telephones, printing text telephones, phone signalers, and amplifier	Medically certified as deaf or hard of hearing and low income, defined as 185 percent of the federal poverty level	\$650,000	Not available	260	Not available	Ongoing; started in 2003	Worked with rehab and independent living centers, advocacy groups, subscriber based emails, and newsletters for groups representing the deaf and hard of hearing. Also did a one-time staffer in phone bills

Program name	Subsidy type and amount	Administering entity	Item/commodity subsidized	Eligibility requirements	Total budget	Percent of budget allocated to administrative costs	Number of persons served	Time required to develop and implement program	Length of program existence	Information dissemination
Special Supplemental Nutrition Program for Women, Infants, and Children (WIC)	Voucher <sup>a</sup>	Department of Agriculture, Food and Nutrition Service	Food	185 percent of federal poverty guideline, among other criteria	\$4.5 billion in fiscal year 2003	About 28 percent, includes nutrition services as well	7.6 million in fiscal year 2003		Ongoing; started in 1974	
Food Stamp Program	Voucher <sup>b</sup>	Department of Agriculture, Food and Nutrition Service	Food	130 percent of federal poverty guideline, among other criteria	\$23.9 billion in fiscal year 2003	About 10 percent	21.3 million in fiscal year 2003		Ongoing; started in 1964	

Source: GAO analysis.

<sup>a</sup>Most state agencies distribute WIC benefits through checks or vouchers that enable recipients to purchase specific foods each month. A few state agencies distribute WIC foods through warehouses or deliver the foods to participants' homes.

<sup>b</sup>The Food Stamp Program provides low-income households with coupons or electronic benefits that recipients use as cash at most grocery stores.

<sup>c</sup>For long-standing programs, we did not obtain information on time required to develop and implement the program and to disseminate information to eligible participants.

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We believe some aspects of the programs' implementation, such as the time required to develop a program and the manner in which program information was disseminated, might have relevance to the establishment of a DTV subsidy. For example, for two of the rebate programs, we learned that it took several months to develop and implement the programs, with one rebate program taking 12 months and another taking 18 months to implement. In reviewing various other aspects of the programs, such as eligibility determinations and what products were subsidized, we found that differences existed between the voucher and rebate programs that might also provide some insight for a DTV subsidy. For example, for all of the voucher programs we reviewed, benefits were targeted to low-income individuals, and eligibility was specifically defined. In contrast, eligibility for the rebate programs not based on income; rather, a person only had to reside in the location where the subsidy was being offered or be a water or power customer to be eligible. We also found differences in the types of products subsidized for the rebate and voucher programs that we reviewed. Whereas the rebates subsidized items in an effort to further a policy goal (generally environmental protection), the voucher programs provided recipients with items for their basic needs.

Overall, however, we observed that aspects of these programs' implementation are dissimilar to what might be undertaken for a DTV subsidy. First, choosing not to participate in any of the programs we reviewed would not cause a household to lose any existing service or functionality. In contrast, if a household chose not to take advantage of a DTV subsidy for which it was qualified, and then did not obtain the necessary equipment to receive broadcast digital signals, the household might lose access to broadcast television signals when the transition occurs. Additionally, none of the rebate programs we reviewed are comparable to the size of a potential DTV subsidy in terms of number of people served. While the national voucher programs serve millions of households, they are unlike the DTV subsidy in that they are long-established programs with an entire infrastructure designed to provide benefits to recipients on a recurring monthly basis. Due to differences in the scope of the rebate and voucher programs we reviewed and a potential DTV subsidy, it is not clear how applicable the administrative costs of these programs are to estimating the costs of a DTV subsidy.

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## Other Efforts Necessary for the Completion of the DTV Transition Are Ongoing

If a subsidy program is implemented, it will pose many challenges for the implementing agency and industry. However, there are other aspects of the DTV transition not related to the implementation of possible subsidy program that are ongoing and will take time to complete or may pose their own challenges. For example:

- Under current FCC time frames, the final process for television stations to select their permanent channel placement for their digital signals is ongoing. Broadcast stations began the process of choosing their final DTV channel in February 2005.<sup>1</sup> In August 2006, FCC expects to issue a Notice of Proposed Rulemaking that includes a tentative DTV Table of Allotments once the channel election process is finished. FCC will seek comment on the proposed Table and then issue an order with a Final DTV Table of Allotments, which, at a minimum, would take several months. An FCC official told us that it would likely be sometime in 2007 before all the allotments are finalized. In order for the DTV Table of Allotments to be finalized by the end of 2006, FCC officials told us that they would need to shorten the channel election process time frames that they currently have in place. We were told that once stations know their final channel assignments, they might need to make adjustments to certain equipment. Therefore, we found that for stations that do not have certainty on their assignments until sometime in 2007, equipment modifications will be undertaken well into that year.
- Currently, a small number of television stations are not yet broadcasting digital signals. FCC told us that issues of technical interference and the permitting process for locating and constructing broadcast towers are the primary reasons these stations are not yet online with a digital broadcast signal. For example, for any station located within 200 miles of the Canadian border, coordination and approval from the Canadian government is required, in accordance with international treaties.
- At present, no requirements for the application of the Emergency Alert System (EAS) apply to stations' digital broadcast signals. FCC is now considering how requirements will be set. An FCC official told us that rules for EAS on DTV stations that are similar to requirements for analog stations should be developed within a few months, but additional work

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<sup>1</sup>*In the Matter of Second Periodic Review of the Commission's Rules and Policies Affecting the Conversion to Digital Television, MB Docket No. 03-15, Report and Order, FCC 04-192, released September 7, 2004, FCC established a multistep channel election and repacking process through which broadcast licensees will select their ultimate DTV channel (i.e., channels 2-51).*

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will look at whether there will be expanded functionality required in the digital environment. According to FCC, the equipment that stations will be required to purchase to meet the basic requirements that are likely to be set before the end of 2005 is not very expensive. Because the requirements for expanded functionality are not yet set, an FCC official told us that it is not clear what the cost of any additional equipment will be.

- Another challenge that may be posed by the DTV transition relates to antenna reception of digital over-the-air broadcast signals. Many stakeholders said that antennas currently used to view analog over-the-air signals will be sufficient to receive DTV signals and an FCC official told us that many viewers will have improved picture quality with digital signals. However, a few indicated that improved antenna technology may be needed for some households. An antenna manufacturer, a broadcaster, a retailer, and other stakeholders said that the ability to receive digital over-the-air signals is variable and contingent on each household's geography, among other things, and that some people may need new antennas or adjustment of existing antennas. In particular, we were told that adjusting the antenna to receive digital broadcast signals can be more difficult than analog signals because if the antenna is not aimed correctly, the television may not be able to display any signal. Also, while interference from trees, buildings, and other structures can distort an analog picture, this type of interference can cause a complete loss of digital signals.
- Ensuring that households understand the transition and how they will be affected is critical to a smooth transition. Any household that does not understand what will occur could be adversely affected. Over-the-air households are the most likely to be impacted by the transition because, to whatever extent cable subscribers will be affected, they will likely have support and information provided by their subscription video providers. Based on our work, other specific populations might also be more difficult to reach with needed information about the transition, including low-income households and those who do not speak English as a first language. The consequences of any information gaps are serious because households could lose their access to television signals. During our work on the transition to DTV in Berlin, Germany, we found that an extensive information campaign was widely viewed as critical to the success of the transition.

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## Concluding Observations

There are many difficult decisions and determinations that will likely be considered if a subsidy program for DTV equipment is developed. In addition, there are unique interfaces between the challenges we identified and the administrative method used to deliver the subsidy that will require

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careful consideration. For example, if such a program were developed and eligibility were limited to only low-income individuals, it might be advantageous to leverage the infrastructure and expertise that state social service agencies have in providing assistance to needy households. But to utilize the state agencies, the subsidy might need to be provided in the form of a voucher because the state agencies have experience mailing information and could mail a voucher to the low-income recipients of other assistance. In contrast, if there were no eligibility restrictions applied to the subsidy, a rebate might be a good method for administering the subsidy because it would draw on the existing relationships between manufacturers, retailers, and rebate fulfillment companies, all of whom have extensive knowledge and experience in developing, advertising, and implementing rebates. However, such a design might render the subsidy less usable by low-income Americans.

The return of the spectrum for public safety and commercial purposes is a critical goal for the United States. Implementing a subsidy program for DTV equipment poses a variety of difficult challenges and may not be the only policy option that could help advance the overall goal of reclaiming spectrum. Given the importance of this transition, it seems critical for knowledgeable officials in government and in industry to work together to find the best means to address any issues that may impede progress in completing the DTV transition—and the associated reclamation of valuable radiofrequency spectrum.

Mr. Chairman, this concludes my prepared statement. I would be happy to respond to any questions you or other Members of the Committee may have at this time.

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## Contact and Acknowledgments

For questions regarding this testimony, please contact Mark L. Goldstein on (202) 512-2834 or [goldsteinm@gao.gov](mailto:goldsteinm@gao.gov). Individuals making key contributions to this testimony included Amy Abramowitz, Michael Clements, Andy Clinton, Simon Galed, Eric Hudson, Bert Japikse, and Sally Moino.

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