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**ESTIMATING CONSUMER COSTS OF A
FEDERALLY MANDATED DIGITAL TV TRANSITION:
CONSUMER SURVEY RESULTS**

JUNE 29, 2005

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EXECUTIVE SUMMARY

A recent nationally representative survey of U.S. households, conducted by Consumers Union (CU), publisher of Consumer Reports, and the Consumer Federation of America (CFA), found that 39 percent of U.S. television-viewing households rely on approximately 80 million television sets to receive some or all of their television programming from over-the-air broadcast signals.

This estimate closely mirrors other survey results reported by the Governmental Accountability Office (GAO) and the National Association of Broadcasters (NAB) which found 73 million over-the-air-only television sets, and diverges widely from estimates reported by the Consumer Electronics Association (CEA), which found less than half as many over-the-air-only sets.

Reliable estimates of the number of over-the-air-only sets are critical in determining the costs consumers will bear from a government-mandated transition to digital-only television broadcasting, as well as the appropriate size of a compensation program that would hold consumers harmless from those costs. GAO estimated that consumers who use one or more of their televisions to watch programming delivered by over-the-air signals can expect to incur costs of \$50 or more per set for converter boxes that will keep their otherwise useful televisions functioning after the transition.

Publicly owned analog spectrum currently occupied by broadcasters to deliver analog signals will be returned following the digital transition. Some will be set aside for public safety and the remainder will be allocated to new users in federal auctions expected to generate \$10 billion or more in revenue. Congress is discussing whether and how much of that auction revenue will be allocated to directly compensate consumers for the costs of the transition and how much will go to the federal treasury.

Based on the GAO estimate of converter box costs and the CU/CFA and NAB/GAO survey findings, the digital television transition could impose direct costs of \$3.5 billion on consumers. As Congress considers whether and how much to compensate consumers for the costs imposed on them by the government-mandated transition, CU/CFA believe it should allocate funding based on the number of OTA-only sets and OTA-only households reflected by the higher end of estimates provided to date. Relying on lower estimates could lead members of Congress to understate the number of households affected, the total costs to consumers and the level of the compensation necessary to hold consumers harmless from the congressionally mandated transition to digital television.

INTRODUCTION

Legislation mandating a hard date for the transition from analog to digital television broadcasting signals will have a substantial financial impact on consumers. The hard date is driven largely by the need to release for auction the surplus spectrum currently occupied by broadcasters to deliver both analog and digital signals. Though some of the returned spectrum will be allocated for public safety services, much of the remainder will be auctioned in order to generate new federal revenue required to meet Congressional budget reconciliation instructions and to make spectrum available for communications companies.

Though consumers have been promised clearer pictures and more programming choices as a result of the transition to digital TV, many others will face significant costs imposed by government-imposed date-certain for the termination of analog broadcast transmissions. Those costs will be borne largely by consumers who currently rely on televisions that receive only over-the-air broadcasts for some or all of their television viewing.

In order to continue viewing television over the publicly owned airwaves, consumers who own televisions not currently equipped to accept digital signals will need to buy either expensive, new televisions that are digital-ready or set-top boxes that will convert the digital signal into an analog one their TVs can accept, restoring the functionality of their sets. Because televisions have a lengthy useful life—15 years or more—most consumers that continue to rely on over-the-air signals will likely opt for the less expensive converter box. Television sets owned by consumers who take neither step will go dark after the transition's hard date.

Congress is currently considering whether and how much to compensate over-the-air consumers for the costs of keeping their otherwise fully functional television sets working after the government-mandated transition to digital broadcasting. Reliable estimates of the number of households that continue to rely on televisions receiving only over-the-air signals (over-the-air-only sets) are therefore critical in determining the appropriate size of any federal compensation program that Congress might pay for out of the surplus revenues generated by the auction of spectrum freed by the transition.

Those estimates have varied widely. Survey results reported by the Government Accountability Office (GAO)¹ and the Consumer Electronics Association² (CEA) suggest the number over-the-air-only sets in the United States range from range from 73 million to 33 million, respectively. The National Association of Broadcasters (NAB) also

¹ Digital Broadcast Television Transition: Estimated Cost of Supporting Set-Top Boxes to Help Advance the DTV Transition, GAO-05-258T, February 17, 2005 p. 7.

² Consumer Electronics Association, Letter to the House Committee on Energy and Commerce, June 7, 2005.

conducted its own analysis of households using a combination of Nielsen Media Research Data and the survey on which GAO relied.³

In dispute are the numbers of households that receive television programming solely through over-the-air broadcasts and the number of television sets in cable and satellite households that are not connected to the service but are relied upon for viewing over-the-air broadcasts. The sum of these two estimates produces the total number of televisions that will require digital-to-analog converter boxes to keep them fully functional after the transition.

To gain a clearer picture of the actual number of households that continue to use over-the-air-only sets, Consumers Union and Consumer Federation of America conducted an independent survey.

METHODOLOGICAL ISSUES

Counting the number of TV sets in households, how they receive their signals and the purposes for which they are used is not a simple matter. Television sets are primarily used to watch television programming. However, the signal can be obtained in a variety of ways – through free over-the-air (OTA) broadcasting or subscription-based cable, satellite and other multi-channel video program distribution (MVPD) services. Some households rely solely on over-the-air broadcasting, some rely solely on fee-based MVPD services, and others receive television programming in more than one way. Moreover, some TV sets are also used to watch movies and other content on DVDs or VHS tapes or to play video games. Of course, many TV sets may be used for multiple purposes. And a small number of households do not have TV sets at all.

It is important to determine how many of the sets in cable and satellite homes are not connected to the subscriber service but are used for over-the-air television viewing, since these would stop functioning after the shift to digital broadcasting. Because the current expectation is that policy makers will require cable and satellite providers to convert the digital signal they receive from broadcasters into an analog signal that can be viewed by their subscribers, those sets that are connected to MVPD services will not require digital-to-analog converter boxes.

In order to estimate the number of television sets that are used to receive over-the-air signals, consumers must be asked what they do with the TV sets in their homes. When and how the questions are asked will affect the estimate of the number of TV sets used for viewing over-the-air programming.

³ National Association of Broadcasters, Filing before the Federal Communications Commission, August 11, 2004, MB Docket No. 04-210

Questions

When people are asked what they use their TV sets for, there will always be a certain amount of uncertainty in the estimates. Ask the question in a different way and the answer will likely be different. The other participants in the debate over OTA-only set estimates have not made their questions publicly available.

CU and CFA approach consumer surveys by crafting questions that give respondents points of reference to focus their answers. CU/CFA's analysis of the number of OTA-only television sets is based on the following three short questions that attempt to eliminate ambiguity and provide such reference points. In particular, the CU/CFA survey explicitly asked survey respondents to exclude from their answers televisions used for only for non-program-viewing purposes (video games, DVD/VHS watching) or that were not used at all. Our questions also provided a reference for OTA-viewing in the context of how those televisions receive content—that is the use of various antennae.

- **Question 1:** Does your household currently subscribe to cable television or use a satellite dish or have both cable television and a satellite dish?
- **Question 2:** How many TV sets do you or other household members use in your home? Include all of the TVs you currently use to watch television, even those in the kitchen, bedrooms, basement or other locations, but DO NOT include TV sets that are ONLY used for video games, DVD players, or VCRs, or that are in storage.
- **Question 3:** [If cable, satellite or both ask:] Some homes that subscribe to cable or satellite service haven't hooked up all their TVs to that service, but receive TV broadcasts using rabbit ears, a rooftop antenna, or some other form of antenna on some TV sets. How many of the TVs you or other members of your household watch are not hooked up to cable or satellite?

Sampling

Survey research seeks to draw a representative sample of respondents from a target universe and then generalizes to the universe with a margin of error. There are minor sampling issues at play in the debate over estimates.

There is a slight difference between the GAO, NAB and the CEA in the number of U.S. households that use televisions to watch TV programming. The NAB put the number of TV-viewing households at 108.4 million households. CEA puts it at 107.6 million. For purposes of this analysis, we use the NAB estimate to create a consistent basis for comparison.

Surveys weight the respondents to ensure that they are representative of the target population. However, if the pool of potential respondents is not representative of the target universe, the estimates may be off the mark. In this case, households that are not

reachable by landline telephone are not in the pool of potential respondents. A small percentage (about four percent) of American households do not have any telephone service. A small percentage of American households (two to six percent) have wireless phones, but no landline phones. The former are much more likely to be lower income households and therefore much less likely to have cable or satellite. The latter are much more likely to be young and upper income, so they are more likely to have cable or satellite. Since all of the analyses related to this issue are based largely on telephone surveys and weighted to reflect the overall population, these sampling issues are not a problem for purposes of comparison, but users of these data should be aware of them.

The CU/CFA survey was executed by Opinion Research Corporation between June 10-13, 2005 with a sample size was 1007 adults. Estimates have a margin of error of plus or minus three percent.

The GAO and the NAB appear to have used the same survey data collected by Knowledge Networks/SRI in their spring 2004 *Home Technology Monitor Survey*. This is a survey of 2400 households. The CEA commissioned a survey of 1057 adults in mid-May 2005. ORC executed the survey. All surveys were conducted over the telephone.

Age of the Data

When the questions are asked also matters. Our survey was conducted in June 2005. The GAO and NAB analyses are based on data from 2003-2004. CEA's survey was conducted in May 2005. The difference between our estimates and the estimates based on older data are all in directions that are consistent with developments in the industry.

RESULTS

OTA-Only Households

Exhibit 1 shows the percentage of television-viewing households that receive only over-the-air programming (OTA-only households). The CU/CFA estimate of 15 percent falls between the GAO/NAB estimate of 18.9 percent and the CEA estimate of 12 percent. The GAO, in testimony before the House Subcommittee on Telecommunications and the Internet, states, "we recognize that others have estimated a lower value for the percentage of households relying on over the air television."⁴ The NAB has pointed out that the CEA estimate is quite low, especially when one factors in TV sets in over-the-air households that do not use them to view programming.

With a target universe of 108.4 million television program-viewing households, the difference between the GAO/NAB's estimate of 20.4 million OTA-only households and the CEA's estimate of 13.2 million amounts to just over 7 million households. The CU/CFA estimate is right in the middle of the two, with an estimate of slightly more than 16 million OTA-only households.

⁴GAO, February 17, 2005, p. 7.

Cable and Satellite Households

Exhibit 2 shows the percentage of MVPD households that also use TV sets to view over-the-air programming. Here, the CU/CFA percentages are higher than both the GAO/NAB and CEA numbers.

Percentage of Cable Households relying on some OTA-only sets: CU/CFA puts the percentage of cable households that view over-the-air programming using OTA-only sets (those not hooked up to the MVPD service) at 13 per cent of all TV-viewing households. GAO put the figure at nine percent. CEA did not report the number of cable households that received programming on OTA-only televisions, only the number of OTA-only sets. Adjusting CEA survey numbers by the number of OTA-only sets per household, CEA would put the figure at four percent, assuming one OTA-only set per household, or less than 3 percent if the figure is 1.6 OTA-only sets per household (the CU/CFA average number).

Percentage of Satellite Households relying on some OTA-only sets: CU/CFA puts the figure of satellite households that also use over-the-air programming on OTA-only sets at just under 10 percent of all TV households. GAO put the figure at just over six percent. The CEA puts it at just under six percent if one assumes only one over-the-air set per household, or three percent if one assumes the average number of such sets per household.

Percentage of Satellite/Cable Households relying on some OTA-only sets: The NAB combined cable and satellite households for the purpose of estimating over-the-air receptions and put the combined figure at 20.8 percent of all TV viewing households. This compares to our combined total of 23.6 percent.

Estimates of the number of households that subscribe to both cable and satellite services do not vary much across the different surveys. The CEA found about 2.4 percent of all TV viewing households subscribe to both cable and satellite. CU/CFA found that 2.3 percent do. The NAB/GAO put the figure at 2.7 percent, but they did not include these households in any estimates of over-the-air sets.

OTA-only Television Sets

Exhibit 3 shows the number of sets per household that are used to watch over-the-air broadcasts across the different estimates and broken down by the primary means of receiving programming. The CU/CFA estimates track closely with NAB estimates. The CEA estimates of OTA-only sets per household are much lower in every case, finding far fewer households viewing over-the-air programming on far fewer sets.

The stark differences cannot be easily explained. CU/CFA explicitly asked all OTA-only households, when reporting the number of sets in their homes, to exclude sets that were used only for video/DVD watching, for video games, or were not used at all. In its question of cable and satellite households, we clearly distinguished between TV viewing using “connected” sets and TV viewing on “unconnected” sets via over-the-air signals using rooftop antennas or rabbit ears. CEA has not released their questions.

Combining these factors (Exhibit 4), our survey estimated a total of approximately 80 million over-the-air-only sets, or 46 million more than the recent CEA estimate of just under 34 million sets. Our finding is closer to the NAB/GAO estimates of about 73 million sets, 40 million more than CEA. In Exhibit 4, we have added in the sets used to view over-the-air programming in combined cable-satellite households to the NAB and GAO analyses, which did not include these households in their estimates. We also used different combinations of assumptions about the number of households and the number of sets from the CU/CFA and NAB/GAO analyses. For example, we adjusted CU/CFA findings for total OTA-only sets by the lower number of sets per households estimated by GAO and adjusted GAO's findings by NAB's estimates of OTA-only sets in MVPD households.

These adjustments resulted in a range in the number of OTA-only sets from a low of 65 million to a high of 80 million. In all cases, we find that CEA estimate is low by at least 30 million OTA-only television sets. The CEA estimate could be off by as many as 45 million sets.

Differences between GAO/NAB and CU/CFA Findings

Although CU/CFA arrives at a higher number compared to the GAO and NAB for a number of summary statistics, the difference is small (less than 10 percent). Moreover, because the GAO and NAB estimates are based on older data, the differences can be explained by general trends in the industry. CU/CFA estimates differed from GAO/NAB in the following ways:

- The percentage of households with *both* cable and satellite was lower. This is consistent with the trend toward more local-into-local programming on satellite, which eliminates the need for households to subscribe to cable in order to receive local channels.
- The percentage of households that do not subscribe to an MVPD service was lower. This is consistent with the long-term trend of consumers increasingly relying on cable or satellite to receive TV programming.
- The number of sets per households is higher. This is consistent with the long term trend of consumers purchasing more television sets.
- The percentage of households with cable is slightly higher, which is consistent with industry analysts' reports of growing cable subscribership.
- The percentage of households with satellite was higher, which is consistent with industry reports of growing satellite subscribership.

CONCLUSIONS AND RECOMMENDATIONS

We are not claiming that our estimates of the number of over-the-air-only television sets are exact. However, their consistency with results from the GAO/NAB

survey vehicle suggests CEA has significantly underestimated the impact of the DTV transition. As we have pointed out, there are no perfect questions and no perfect answers. However, the CEA estimate appears to diverge widely from other survey results in ways that cannot be explained.

Based on this analysis, we conclude that Congress should place the number of sets that will stop functioning after the transition at no less than 70 million and plan accordingly. Given the GAO estimate of \$50 per tuner, the direct government-imposed costs on consumers who seek to preserve the usefulness of these sets would be \$3.5 billion or more.

As Congress considers whether and how much to compensate consumers for the costs imposed on them by the government-mandated digital television transition, they should allocate funding based on the number of OTA-only sets and OTA-only households reflected by the higher end of estimates provided to date. Relying on lower estimates could lead members of Congress to understate the number of households affected, the total costs to consumers and the level of the compensation necessary to hold consumers harmless from the congressionally mandated transition to digital television.

EXHIBIT 1

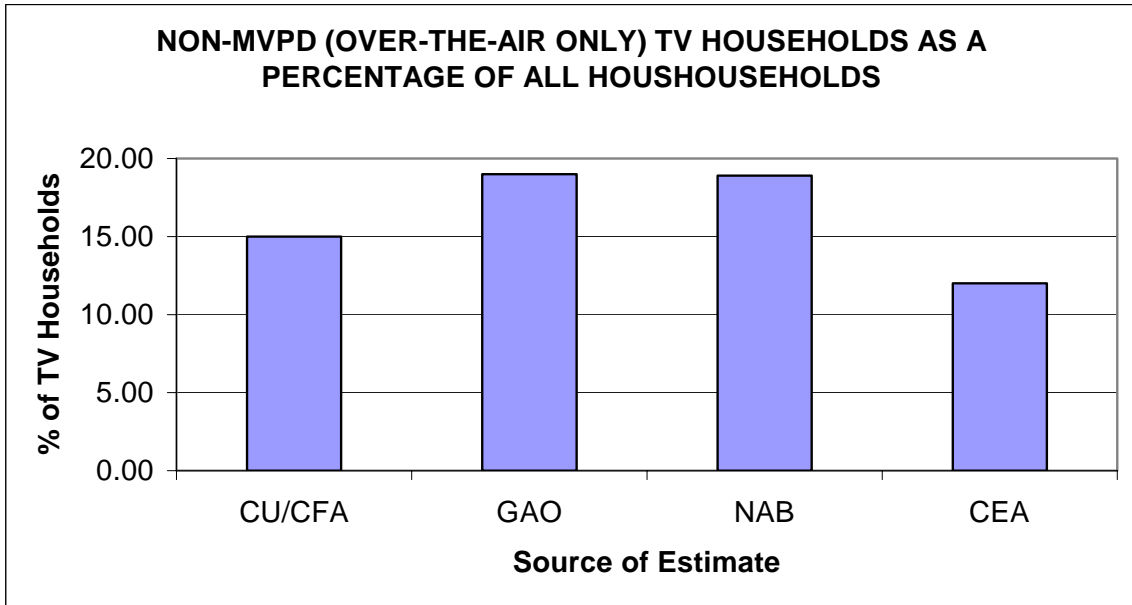


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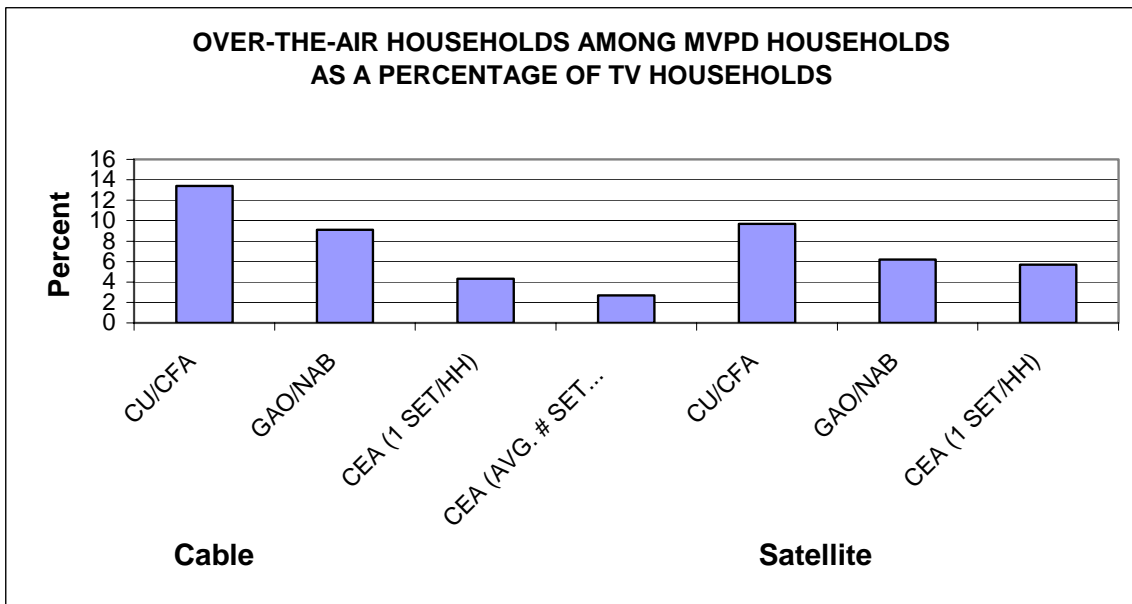


EXHIBIT 3

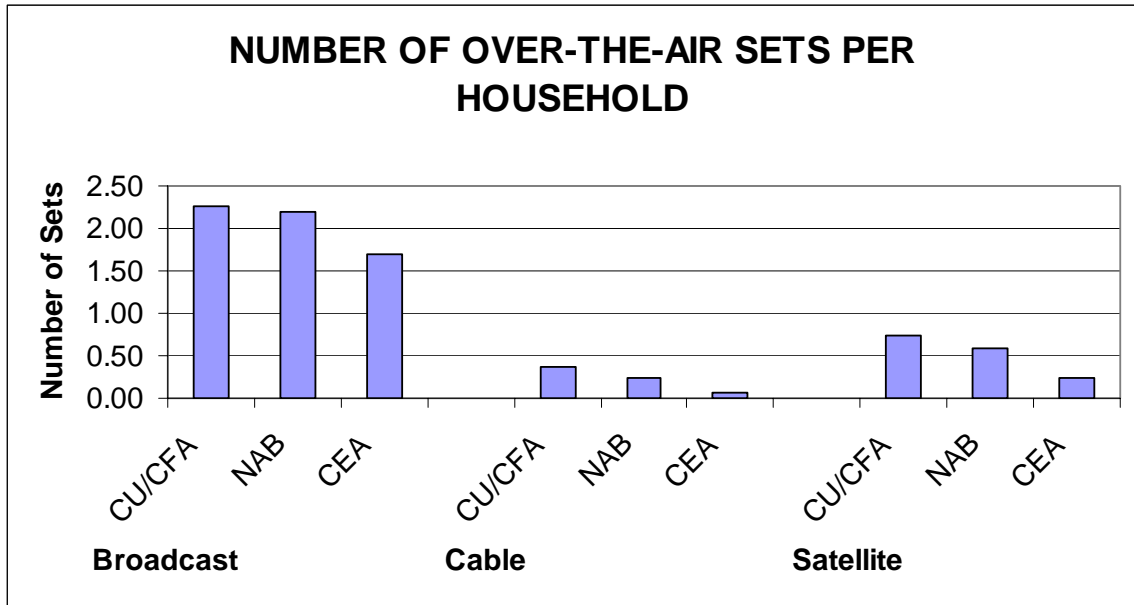


EXHIBIT 4

