NEW AMERICA FOUNDATION
SPECTRUM POLICY PROGRAM

August 10, 2004

Kenneth Ferree, Chief
Media Bureau
Federal Communications Commission
The Portals
445 Twelfth Street, W.W.
Washington, DC 20554

Re: Media Bureau Seeks Comment on Over-the-Air Broadcast Television Viewers, ET Docket No. 04-210.

Dear Mr. Ferree:

I am responding to the FCC's request for comments on over-the-air broadcast television viewers, MB Docket No. 04-210. Attached is a New America Foundation issue brief with a detailed proposal for dealing with the problems outlined in your request for comments.

NAF's comments are based on two assumptions: First, that rapidly completing the broadcasters' digital TV transition—thereby freeing up 108 MHz of "beachfront" spectrum corresponding to TV channels 52-to-69—is in the public interest. Second, that this transition cannot come at the expense of large numbers of Americans losing access to "free" over-the-air TV.

A central part of the current debate over the DTV transition focuses on the best means to achieve these two ends. NAF believes the FCC should pursue these ends by shifting from the current "producer subsidy model" to the "consumer subsidy model" illustrated by the broadcasters' DTV transition in Berlin, Germany.

Berlin teaches us that the direct consumer subsidy model is a faster, fairer, and more efficient way to speed the broadcasters' DTV transition than the indirect producer subsidy model employed in the United States. In Berlin, the broadcasters' DTV transition took a total of 18 months and was completed at a cost per capita to taxpayers and consumers only a tiny fraction of the lagging transition in the United States.

NAF believes that the Media Bureau can best serve the public interest by adopting a modified version of the Berlin DTV transition that includes the following elements:

1. Fixed Turn-off Date: Announce a January 1, 2008 deadline (at the latest) for analog turn-off and spectrum clearance.

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2. Reschedule Auctions: Schedule auctions for assignment of licensed portion of the returned spectrum for 2006 (ideally only the initial license term would be auctioned, specifying an annual user fee to compensate the public thereafter).

3. Consumer Converter Subsidy: Using a fraction of auction revenues, authorize a refundable tax credit available to consumers during a 12-month period (calendar or fiscal year 2007) to offset the cost of converting from analog to DTV reception.

4. Consumer Choice: Give consumers the flexibility to apply the credit to a digital-to-analog (D-A) converter box, a new DTV set, or for initial satellite dish or cable set-up costs.

5. Revoke the DTV "Tuner Tax": Reverse the FCC's 2003 DTV tuner mandate, which seeks to reach the statutory 85% DTV threshold by requiring manufacturers to integrate over-the-air digital reception in every set over 13 inches by 2007 – increasing the cost to consumers by at least $1.4 billion annually – despite the fact that the 85 percent of consumers who receive TV by cable or satellite may not need or want an OTA tuner.

6. Spectrum Reallocation for both Unlicensed and Licensed Wireless: In addition to the 24 MHz allocated for public safety, divide the remaining 84 MHz equally for use by licensed and unlicensed wireless broadband providers.

7. Switch from Analog to Digital Must-Carry: Upon return of their analog channel license, a broadcaster should be allowed to choose single channel digital must-carry (with no signal degradation); after the fixed turn-off date, cable systems must pass through broadcasters' primary digital signal, but can choose to cease down converting the digital signal for analog reception.

8. Update the DTV Public Interest Obligations: The obligations of broadcast licensees should be extended to all "free" over-the-air programming streams and expanded to air each week the lesser of 3 hours, or 3 percent of programming time, of local civic and electoral programming (half of this in prime time).

9. Earmark spectrum revenue to capitalize a PBS trust and DOIT: A portion of the spectrum auction revenue should be earmarked for investment in the future of public television and digital education, capitalizing a trust fund for the future of PBS and/or a Digital Opportunity Investment Trust.

Sincerely,

J.H. Snider

NEW AMERICA FOUNDATION
SPECTRUM POLICY PROGRAM

ISSUE BRIEF

Spectrum Series Issue Brief #15 *May 2004*

Speeding the DTV Transition

A CONSUMER TAX CREDIT CAN UNPLUG ANALOG TV, REDUCE THE DEFICIT AND REDEPLOY LOW-FREQUENCY SPECTRUM FOR WIRELESS BROADBAND

by J.H. Snider and Michael Calabrese*

There is a general consensus that accelerating the digital TV transition – thereby freeing up the 108 MHz of "beachfront" spectrum corresponding to TV channels 52-to-69 – is clearly in the public interest. Because transmissions at this frequency range pass easily through walls and trees, the 700 MHz band could jumpstart the deployment of more affordable wireless broadband connections, particularly in rural areas. Although Congress has already reallocated a portion of these TV channels for public safety agencies (to address interoperability problems) and for auction to licensed cellular services (which would yield $20-to-$40 billion in federal revenue), the DTV transition is badly stalled, with no fixed deadline for redeploying these precious frequencies from analog broadcasting for the few to productive broadband for all. The controversial question is how to do it without stranding the roughly 15 percent of consumers still relying on analog over-the-air reception for their "free" TV.

Last month the FCC's Media Bureau floated a new DTV transition plan that represents a fairly radical departure from the government's current approach. Rather than continue awarding additional subsidies to broadcasters, the "Ferree Plan" (so-named after Ken Ferree, Chief of the Media Bureau) recognizes that the real DTV transition is taking place not over the air, but over the cable and satellite systems that already provide the primary TV service to at least 85 percent of U.S. households.[1] By counting all cable households as capable of receiving digital broadcasts, the FCC could declare that the statutory 85 percent threshold of DTV-capable homes in each market has been reached – and on that basis schedule the termination of analog broadcasting, and the reallocation of the spectrum used by TV Channels 52-to-69, for January 1, 2009.

Unfortunately, while the Media Bureau plan is a big step in the right direction, it is politically naïve. By focusing solely on meeting the 85 percent statutory threshold for ending analog broadcasting, it ignores the larger, political obstacle to redeploying the 700 MHz band to public safety and wireless broadband: Congress must address the fact that the switch from analog to digital-only broadcasting would currently force between 12 and 17 million households to purchase a digital TV, to purchase a digital-to-analog converter (so that their current TV still functions), or to subscribe to a paid cable or satellite service. It is true that product obsolescence is an everyday fact of life for Americans. For example, every year Americans throw away tens of millions of perfectly usable computers and mobile telephones because new technology comes along that makes them obsolete. Yet the potential political backlash from the government imposing a highly visible cost on the 15 percent of U.S. households that continue to rely on terrestrial (over-the-air) broadcasting means the Ferree Plan is unlikely to succeed without a legislated consumer subsidy.

For once, the FCC should admit the limit of its statutory authority – and Congress should step up and fix the problem it created when it loaned broadcasters, with no strings attached, a second free channel of spectrum in the 1996 Communications Act. This issue brief proposes a one-time consumer subsidy to facilitate a two-year switchover from analog to DTV. By January 1, 2008 the DTV transition could be completed, the 108 MHz of channel 52-to-69 spectrum could be repurposed to public safety and wireless broadband, tens of billions of dollars of new federal revenue could be collected, and the FCC's costly DTV tuner mandate could be repealed *if* Congress chooses to earmark a fraction of the spectrum auction revenue (between 5 and 10 percent) for a tax credit to offset the cost for consumers who still rely on analog over-the-air broadcasting.

New America DTV Transition Proposal[2]

In sum, this issue brief proposes that Congress both improve and accelerate the Media Bureau's DTV transition plan by incorporating the following provisions:

- Fixed Turn-off Date: Announce a January 1, 2008 deadline for analog turn-off and spectrum clearance.

J.H. Snider is a Senior Research Fellow and Michael Calabrese is Director of New America Foundation's Spectrum Policy Program.

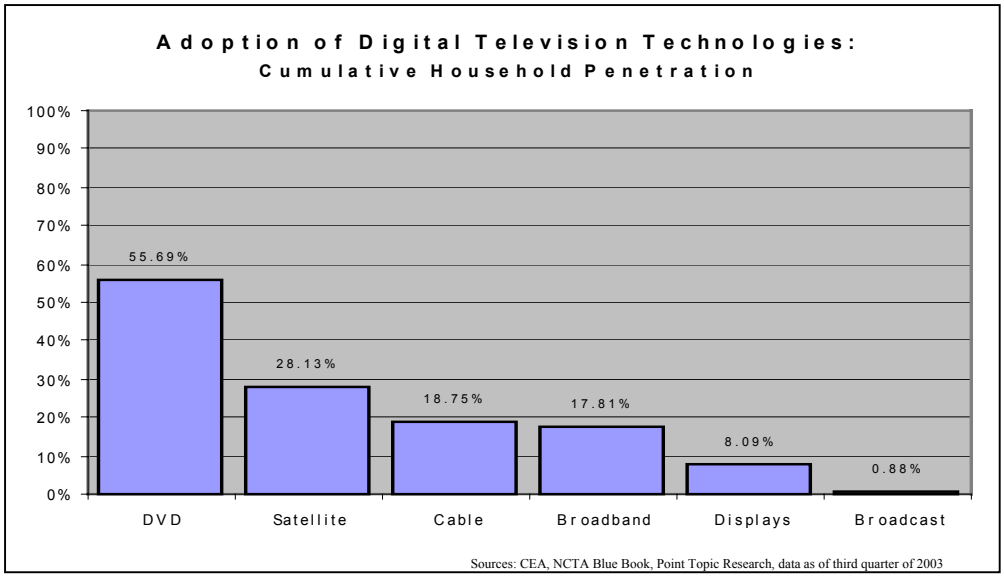
- Reschedule Auctions: Schedule auctions for assignment of licensed portion of the returned spectrum for 2006 (ideally only the initial license term would be auctioned, specifying an annual user fee to compensate the public thereafter).
- Consumer Converter Subsidy: Using a fraction of auction revenues, authorize a refundable tax credit available to consumers during a 12-month period (calendar or fiscal year 2007) to offset the cost of converting from analog to DTV reception.
- Consumer Flexibility: Give consumers flexibility to apply the credit to OTA converter boxes, new DTV sets, or for initial satellite dish or cable set-up costs.
- Revoke DTV Tuner Mandate: Reverse FCC's 2003 "tuner tax," allowing the vast majority of consumers to avoid the unnecessary cost of an OTA tuner.
- Spectrum Reallocation: In addition to the 24 MHz for public safety, divide the remaining 84 MHz equally roughly in half for use by licensed and unlicensed wireless broadband providers.
- Switch from Analog to Digital Must-Carry: Upon return of their analog channel license, a broadcaster can choose single channel digital must-carry (with no signal degradation); after Jan. 1, 2008, cable systems must pass through broadcasters' primary digital signal, but can choose to cease down-converting the digital signal for analog reception.
- Update DTV Public Interest Obligations: The obligations of broadcast licensees should be extended to all "free" OTA programming streams and expanded to include the lesser of 3 hours or 3 percent of programming time for local civic and electoral programming.[3]
- Earmark spectrum revenue for PBS and DOIT: A portion of the spectrum auction revenue should be earmarked for investment in the future of public television and digital education, capitalizing a trust fund for the future of PBS and/or a Digital Opportunity Investment Trust.

DTV Transition is Happening – Just Not Over the Air

In the late 1980s and throughout the 1990s, the broadcast industry argued that they could not transition to advanced TV unless the government loaned station licensees a second channel. Otherwise, those without the new advanced TVs would lose service.[4] In 1996, Congress loaned a second channel to TV station licensees with the same bandwidth, 6 MHz, as the first channel. During what was originally anticipated to be a 10-year transition (ending Dec. 31, 2006), one TV channel (the analog channel) would cater to viewers with the old TV sets; the other loaned channel (which eventually became known as the DTV channel) would cater to those with the new advanced TV sets. After the vast majority of Americans (later set at 85% of households) could receive broadcast DTV signals, the analog channel would be returned. At the end of the digital TV transition, channels 52-69, which occupy 108 MHz of spectrum[5], are supposed to be returned to the government.

In addition to crisper pictures, the DTV transition was also intended to free up inefficient analog broadcast spectrum for emerging services. The local TV broadcasting industry is currently allocated 402 MHz of spectrum for the delivery of channels 2 through 69, but the typical U.S. market has stations operating on less than 20% of those channels. This is considerably less on UHF channels 52-to-69, which are in use in only 7 percent of the nation's 210 markets on average.[6] The rest are unassigned guard bands that prevent interference from adjacent channels, or from stations operating in nearby markets. Digital broadcasting allows stations now operating on 52-69 to move down the dial without interfering with other stations. In addition, many of the current analog guard bands and unassigned channels can be used by short-range or low-power wireless services without interfering with DTV channels, as proposed in the important proceeding the FCC initiated this month important innovation such as the FCC's recent proposal to allow unlicensed wireless broadband providers access to unassigned channels below 52.

Although the FCC and Congress originally anticipated that the nation's conversion to HDTV would occur in large part over-the-air, the reality has been quite different. As the chart below indicates, a DTV transition is happening – but it is occurring almost entirely via satellite and cable subscription services. From 1998 through 2003, less than 1.2 million over-the-air DTV tuners (either stand-alone set-top boxes or integrated within the DTV set) were purchased – a take-up rate less than 1



percent of the nation's 106.6 million TV households.[7] More than 90 percent of so-called DTV sales are for monitors that lack over-the-air capability. In contrast, since DBS is all digital, its 20 million subscribers as of June 2003, can view all programming in digital, if they choose; and within five years, it's likely that most cable systems will be all digital, although many consumers may decide to continue watching down-converted digital programming on their older, less expensive analog sets.

In sum, the cable and satellite TV industries are making the DTV transition far faster than the broadcast industry – despite the lack of government subsidies.

Value of the Returned Spectrum

The 108 MHz to be returned is among the most valuable spectrum in nature. Spectrum, like real estate, varies greatly in value depending on its frequency location. A general rule of thumb is that as the frequency of spectrum decreases, its value increases. Low frequency spectrum can transmit information through obstacles such as walls, trees, and rain, which makes it ideal for both mobile and last-mile broadband applications. While nearly all TV content is consumed indoors, where the connection to a cable wire or satellite dish does not diminish its utility, mobile applications generate a price premium because wired connections are not close substitutes. Similarly, while every American could be receiving TV signals over the current allocation of high-frequency DBS spectrum, last-mile wireless broadband connections deployed in the low-frequency bands now used by broadcasting would be less expensive by a factor of 10 than wireless Internet connections using the spectrum at 5 GHz that the FCC made available last year for WiFi internet service providers.[8]

Table 1:

How U.S. Households Receive Television, Comparing 1993 and 2003[9]

TV Households in United States	Dec. 1993 (millions)	June 2003 (millions)	Change (%)
Over the Air Only	**33.9 (26%)**	**12.5 (11.7%)**	-63%
MVPD Subscribers*			
Cable	57.2	70.5[10]	
DBS	.07	20	
Other	3	3.4	
Total Subscription MVPD	**60.3 (64%)**	**93.9 (88.3%)**	37%

***MVPD =** Multichannel Video Programming Distributors are Cable, Direct Broadcast Satellite, and other service providers.

The location of the broadcasters' spectrum is the equivalent of real estate next to Central Park in Midtown Manhattan. At the peak of the telecom boom in 2001, U.S. and European cell phone companies bid an average $1.2 billion/MHz at government spectrum auctions.[11] Even today, comparable spectrum licenses are selling for $500 million/MHz.[12] (One company, Verizon, values its spectrum on its balance sheet, in SEC filed 10K reports, at $42 billion.) Even at today's depressed market prices, the auction value of the channel 52-to-69 spectrum licenses due to be returned is over $50 billion,[13] which is precisely why broadcasters pushed so hard in 2001 to persuade the FCC to allow them to reap a multi-billion dollar windfall for agreeing to clear the band – a decision overturned in June 2002 by Congress.[14]

Moreover, the spectrum has huge social value independent of its market value. The broadcasters' spectrum is ideal for public safety and unlicensed applications, which would yield no auction revenue in the short-term, but which generate huge social welfare and economic gains, respectively, to the American public. Former FCC Chief Economist Tom Hazlett has estimated that the annual consumer surplus that would result from the efficient reallocation of broadcast spectrum to advanced wireless services is at least equal to its initial auction value.[15]

Time to Shift from Broadcaster Subsidies to Consumer Subsidies

There are two general approaches to speeding up the broadcasters' DTV transition. The first is what we call the "Broadcaster Subsidy Model." This is the approach America has taken to date. The second approach, implemented successfully last year in Berlin, Germany, is the "Consumer Subsidy Model." This issue brief argues for the second approach, ideally earmarking about 5 percent of the auction value of just a portion of the channel 52-to-59 spectrum to give *every U.S. household* (not just low-income households, as they did in Berlin) the option to claim a tax credit to offset the cost of converting from analog to digital reception.

The Failed Producer Model

During the past 15 years, local TV broadcasters have lobbied for and won a myriad of government subsidies justified by the federal industrial policy in favor of transitioning to DTV while preserving "free" (ad-supported) over-the-air TV. Admittedly, few people have ever publicly argued that broadcasters are worthy of corporate welfare. But the track record of the last fifteen years demonstrates a consistent pattern. The economic benefits to broadcasters are provided upfront, while the bulk of any accompanying obligation – ranging from high-power

DTV transmission to public interest obligations – have been pushed to the future, where they can be renegotiated, reduced, and even eliminated altogether.

These costly subsidies can be divided into two major categories: supply and demand side. The basic premise behind the supply side subsidies is that the broadcasters' DTV transition is so expensive that the broadcasters cannot make it without direct government subsidies. The basic premise behind the demand side subsidies is that unless government forces consumers to act in ways that will boost demand for broadcast programming, the broadcasters' DTV transition will be slowed and perhaps fail altogether. These subsidies have included the following:

Supply Side Subsidies to Broadcasters:

- **"Free Spectrum Loan" –** An indefinite, interest-free loan to existing broadcast TV licensees of a second 6 MHz channel with no fixed loan termination date.
- **"Spectrum Flexibility" –** Rights to use new digital technology to transmit ten or more standard definition TV programs (or two or more high definition TV programs) in the 6 MHz of spectrum that could previously only transmit one standard definition analog program.[16]
- **"Pay TV over Public Airwaves"** – Rights to use at least 90% of the DTV spectrum channel for pay TV or other pay data services, the revenue from which is supposed to subsidize ad-supported ("free") broadcast DTV services (subject to a 5 percent ancillary services fee to the government).
- **"Better Spectrum"** – A shift after the DTV transition from less valuable higher frequency UHF spectrum (from channels 52-69) to more valuable lower frequency VHF and UHG spectrum (from channels 2-51).
- **"More Eyeballs"** – Expanded geographic and household coverage for existing broadcast TV licensees.
- **"Tax Exemption"** – The privilege to purchase DTV equipment without paying a sales tax (this pertains to state law, and only some states have granted broadcasters this exemption).

Demand Side Subsidies to Broadcasters:

- **"DTV Tuner Mandate"** – A phased in requirement that beginning in July 2004 for high end TVs and finishing in July 2007 for all other TVs, no consumer can purchase a TV set without a broadcast digital TV tuner inside it.
- **"Broadcast Flag"** – A requirement that all consumer electronics devices include a "broadcast flag" to prevent retransmission of an FCC licensed broadcast signal out-of-the-home without payment to the broadcaster.
- **"Plug and Play"** – A requirement that all set top boxes sold for cable TV include built-in compatibility with broadcast DTV.

In addition to the subsidies already passed into law above, there are subsidies currently being considered in FCC rulemakings. These include:

- **"Multicasting Must-Carry"** – Should must-carry rights be extended to anything a local TV broadcasting station might want to transmit on its new 6 MHz DTV channel, which can simultaneously carry up to 13 standard definition TV programs with the new enhanced VSB broadcast TV standard?[17]
- **"Closing the Analog Hole"** – Should the broadcast flag be extended to cover analog as well as digital TV broadcast signals? Should it close the hole allowing in-home retransmission of broadcast TV?
- **"White Space Warehousing"** – Should unused spectrum originally allocated to the broadcast industry but not presently assigned to individual broadcasters (called "white space") remain unassigned because incumbent broadcast licensees may one day want to offer new services that would use that spectrum? White space warehousing comes in many varieties, including unlicensed underlays and unused guard channels.
- **"Receiver Standards"** – Should consumers be forced to purchase TV sets with more sensitive receivers so broadcasters can expand their effective coverage territories? Stay tuned.

In addition to the tens of billions of dollars in costs imposed on consumers, both directly and because the spectrum is not available for advanced wireless services, the basic premise of the broadcaster subsidy is a fraud: Although current law assumes TV licensees will return their analog channel when 85% of the households in their market are capable of receiving digital signals, the political reality is that broadcasters and senior members of Congress will never turn off analog broadcast TV when as many as 15% of Americans who rely exclusively on analog TV will lose at least partial access to their TV sets. This is known in the House and Senate telecommunications committees as "The Last Granny Rule." It consists of two parts:

When the 85% threshold nears, local TV stations (and other media outlets, many owned by the networks and parents of the local TV stations), will broadcast a blizzard of stories of an arbitrary and arrogant government forcing poor grannies to abandon their TV sets, their lifeline to the world and major source of news and entertainment.

Responding to this reality, no politician in his right mind will oppose a waiver to the 85% rule when the implications of freezing out 15% of Americans become clear. [18]

After more than six years of this DTV industrial policy, the Consumer Electronics Association projects that only 53 percent of U.S. households will receive digital signals by 2007, the target date for the end of the 10-year transition adopted in 1996, the overwhelming majority of these signals received by cable or satellite.[19] This is a

primary rationale why many savvy insiders believe that the broadcast DTV transition, as defined under current law, won't be complete until 2025 at the earliest.

The abject failure of the U.S. producer subsidy model is demonstrated by the case of England (see Table 2). In England, producers were given minimal subsidies, yet the rate of broadcast DTV uptake is more than 1,200% (twelve times) higher than in the U.S. Moreover, the DTV transitions over satellite and cable have progressed at virtually the same rate in the U.S. and England. Why is this? It's certainly not because of HDTV; broadcasters in England don't offer it. It's also certainly not because of a desire to enhance free TV; broadcasters in England are far more committed to free TV than their U.S. counterparts. The simplest explanation may be that broadcasters in England have been exposed to market incentives, whereas U.S. broadcasters, with their extraordinary political power, have primarily used the transition as an excuse to win government subsidies and keep competitors at bay.

Table 2:
Digital TV Transition Rates in England vs. U.S.

	Digital Terrestrial (% of all Households)	Digital Cable (% of all Households)	Digital Satellite (% of all Households)	Total Digital[20]
U.K.[21]	12%	9%	29%	50%
U.S.[22]	1.1%[23]	20.8%[24]	19%[25]	41%

The Alternative: A Consumer Subsidy Model

In both the consumer and broadcaster subsidy models, the goal is to end the broadcasters' DTV transition as soon as possible. The key difference is that in the Consumer Subsidy Model the subsidy goes directly to consumers rather than producers. The theory behind the Consumer Subsidy Model is that if granny needs to be subsidized to speed the DTV transition, why not subsidize her *directly* rather than *indirectly* via handouts to producers? The Consumer Subsidy Model is derived from the successful broadcast DTV transition completed in the Berlin-Brandenburg area of Germany (henceforth "Berlin"). A similar model was briefly proposed but not seriously pursued by the Clinton Commerce Department in 1996 during the debate over the 1996 second channel giveaway. This issue brief suggests a number of changes to the Berlin Model to fit U.S. circumstances better.

The Berlin Example

On February 13, 2002, the Berlin-Brandenburg, Germany regulatory authority known as MABB (which may be loosely thought of as a local version of an FCC-like government authority) passed a law mandating that the digital TV transition would begin on November 1, 2002 and be complete by August 4, 2003. Consumers in general benefited because, thanks to the wonders of digital compression technology, they could receive approximately four times as many free (i.e., 100% ad-supported) standard definition TV programs after the transition as they could with analog broadcast TV before the transition. In addition, they could receive new types of data services such as on-demand news and weather reports.

Producers benefited because whereas before the transition they were only legally able to provide one standard definition TV program, after the transition they were able to provide additional programs plus other types of services.

In Berlin, only 7.4% of households were primarily reliant on free, broadcast TV. The rest chose to receive their TV from cable or satellite TV.

However, the government was worried that not everyone would be a winner in this transition. It didn't want low-income individuals to have to either pay for digital TV sets or do without free, ad-supported TV. So it purchased digital-to-analog converter boxes for 6,000 low-income individuals.

Also, the government mandated that after the DTV transition, cable TV companies continue with the status quo requirement that they broadcast analog versions of local TV broadcasts. Thus, cable subscribers were not affected by the transition.

According to all reports, the Berlin DTV transition went smoothly. As a result, very similar transitions will soon be implemented in half dozen other states in Germany.

The National Association of Broadcasters and National Cable and Telecommunications Association have argued that there are substantial differences between the U.S. and Berlin broadcast DTV transitions.[26] We agree, but from our perspective there is only one really important difference: in the U.S., the government gave broadcasters digital flexibility prior to the switchover, whereas in Germany it was done simultaneously to the switchover. This has forced practical policymakers in the U.S. to propose costly new producer subsidies in an attempt to win the broadcasters' political support.

A Proposal for the U.S.

We believe a rapid, efficient and politically viable DTV transition plan would include the following elements:

1. **Consumer Tax Credit Subsidy.**

In Berlin, only low-income households received subsidies to purchase digital to analog converter boxes. However, this narrowly targeted subsidy doesn't adequately address the "Granny Rule" that is so potent in U.S. politics. Although low-income homes may need a converter subsidy more, because "free" TV has taken on the nature of an entitlement in American culture – and legislation

that makes analog TV sets obsolete will be keenly felt as a type of "taking" – the combination of political prudence and the modest cost (and ability to pay for it with a fraction of the likely auction revenue) suggest that a limited but *universal* subsidy should be employed.
Moreover, as explained just below, since a refundable tax credit is the most efficient means to distribute the subsidy, enforcement issues are minimized by making eligibility as broad as feasible.

Broadcasters have justified subsidies for preserving "free" TV on the premise that a disproportionate number of low-income individuals rely on over-the-air TV. Although OTA households are indeed more likely to have very low than high incomes, the causal relationship between family income and reliance on over-the-air television reception is not very strong. Based on data from a number of sources, a 1998 academic study concluded that "even for households in the lowest income bracket, the decision not to subscribe to cable television is more often the result of a preference than an inability to afford services."[31] One plausible explanation is that for low-income households, the tremendous quantity and diversity of programming content available on an all-you-can-watch basis via cable or DBS is a tremendous value compared to other forms of entertainment. For example, the monthly cost of a subscription that an entire family can access 24/7 is no more than the cost of single ticket to a professional basketball or highbrow cultural event.

Table 3:
Four Eligibility Options for DTV Transition Subsidy[27]

Household eligibility based on reliance on over-the-air (OTA) TV	Number Of Credits (TVs Eligible) (million)	Refundable Credit (Subsidy/ Converter)	Total Cost (100% Subsidy)	Total Cost (Progressive Subsidy)
Option #1: Only low-income OTA exclusives; Limit one set/hh	7.7 m (44% of OTA Only HH)	$75	$578 m	$578 m (100%)
Option #2: All exclusive OTA hh; Limit One set/hh	17.4 m	$75	$1.3 B	$942 m (100% credit for low-income; 50% for all others)
Option #3: All TV hh; Limit one set/hh	62.5 m (17.4 + 50% of 90.1 million non-OTA hh)	$75	$4.7 B	$3.4 B (100%, low- income; 50% others)
Option #4 (NAB Scenario[28]): OTA sets in all hh; No limit on sets/hh	82 m	$75	$6.2 B	$4.4 B (100%, low income primary set; 50% others)

Sources: Cases #1 and #2,[29] Cases #3 and #4[30]

Another difference with the Berlin experience is the nature of the subsidy. In Berlin, the government purchased and distributed DTA converters for 6,000 very low-income households. In the U.S. context we believe that a one-time tax credit that reimburses consumers a flat dollar amount (e.g., $50) would be far more efficient and flexible. To simplify IRS implementation, the tax credit should be available only during a 12-month period corresponding to a single tax year (i.e., 2007). Although the government could certainly procure converter boxes in bulk at a wholesale price, the administrative costs of a government distribution could be excessive and unpredictable. A tax credit makes the public cost more predictable.

With respect to equity, it is most important that the tax credit be "refundable," which means that if a family has no income tax liability during that particular tax year, the subsidy would still be paid as a refund. The federal Earned Income Tax Credit works this way, although it is limited to families at very low income levels. Nevertheless, given the public purpose of the converter subsidy, there seems to be no reason to deny its benefits to a household – most typically a very low-income household – that cannot offset an income tax liability that particular tax year.

Table 3 estimates the cost associated with a range of eligibility options for a one-time $50 refundable tax credit to offset the cost of a digital-to-analog (DTA) converter or other qualifying device. Current DTA converters cost about $80 each. However, the price of these converter boxes, along with all other computer products, tends to fall both over time and with economies of scale. The FCC's Office of Plans & Policy estimates that in mass production the DTA chip sets being produced so that low-end analog display televisions can comply with the FCC's new DTV tuner mandate (which requires that by 2007 all new sets have the capability to decode digital signals OTA) will to drop less than $25/chip set within 24 months.[32] Similarly, both the FCC's Media Bureau and the Association of Public Television Stations (APTS) use $50 in their projections of the consumer cost to retrofit an existing analog set.[33] If used equipment qualified, the cost could be even less.[34]

One approach (Option 1: the 100% subsidy) would limit the $50 refundable credit to the approximately 7 million households that rely exclusively on OTA reception and have incomes under $40,000. This very restrictive approach would cost roughly $350 million – far less than 1 percent of the value of the returned spectrum. A second, more obvious option would be to limit the subsidy to consumers who rely exclusively on OTA reception, regardless of their income level.[35] Assuming each taxpayer/family is limited

to a single credit, the cost would be approximately $800 million – or $600 million if households above $40,000 in income were limited to a 50% ($25) credit.

While Options #1 and #2 would each cost the government less than 1 percent of the returned spectrum's market value, the tax credit would be denied to a household that subscribes to cable or DBS, but which also owns a secondary analog set that is used OTA only. Equity aside, it would be difficult if not impossible to enforce a rule limiting the tax credit to households that do not already subscribe to a paid TV service, since the IRS has no way to know how particular taxpayers receive their TV signals. Thus, the most defensible alternative appears to be Option #3, which would permit all TV households to claim a single credit for the purchase of qualifying DTV equipment.

The final Option (#4), indicates it would cost a comparable amount to convert all analog sets owned by households that do not subscribe to a paid TV service.[36] However, there appears to be no compelling reason to subsidize multiple sets, or to distinguish between the secondary sets of OTA and subscription TV households.

2. <u>Financing the Consumer Subsidy</u>. There are three major ways the consumer subsidy could be financed:

Auction some of the freed up spectrum. Even under the worst-case scenario, the market value of the 108 MHz of freed up spectrum (approximately $50 billion) is nearly 20 times the cost of offering every TV household a $50 refundable tax credit ($2.3 billion, Option #3 above). So if only 5 percent of the returned spectrum were auctioned, it could pay for the consumer transition subsidy. Indeed, because only a small portion of the spectrum freed up for reallocation would need to be auctioned in order to compensate consumers for the DTV transition, portions can be reallocated to public safety (which is to receive 24 MHz under current law) and to license-exempt access by wireless broadband providers.[37]

Charge a spectrum fee based on the opportunity cost of the spectrum. Every president since the late 1980s has recommended a spectrum fee for broadcasters. The Bush administration's Fiscal Year 2005 Budget includes a similar fee. One is a $500 million/year fee beginning in January 2007 for unreturned analog spectrum. The other is a $1.3 billion fee over seven years for all unauctioned spectrum, including post-transition local TV broadcast spectrum. The FCC is authorized to determine the implementation details. These two fees alone would be ample to fund the consumer subsidy. Moreover, they are a bargain for broadcasters. The opportunity cost of the broadcasters' 402 MHz of spectrum for channels 2-69 is in the range of $10-$40 billion/year.[38] Both the fee in the administration's budget and the consumer subsidy proposal here represent just a fraction of that amount.

Revoke existing producer subsidies. It's worth noting that as a group, even without a tax credit subsidy, U.S. consumers would come out ahead if Congress merely revoked the FCC's DTV tuner mandate and instead required that by 2008 households that wished to continue watching OTA would need to buy their own digital-to-analog converters. The reason is that whereas 100 percent of consumers are forced to pay the FCC's "tuner tax" (including the 90 percent not relying on OTA), at most 16 percent would be burdened by a "converter tax." The purpose of the tuner mandate is to meet the statutory 85% threshold for completion of the transition and to create economies of scale in production so that the cost of tuners for families that rely on over-the-air TV will be lower. Since 84% of American households receive their TV service via cable or satellite alone, non-OTA consumers will be paying more for a tuner they never use than if they simply gave the far smaller number of OTA households a tax break to purchase it.

3. <u>Qualifying DTV Devices</u>. There is no reason that a consumer subsidy should only be applied to a DTV converter box. Instead, every DTV device, including cable and satellite set top boxes, should qualify. Whether consumers receive their broadcast programs terrestrially over-the-air, or via satellite or cable TV, is not relevant to preserving the lost functionality stemming from turning off analog broadcast TV. Consumer choice allows for a closer fit with individual viewer preferences. Also, consumers should be allowed to use any subsidy to purchase the current standard of broadcast DTV tuner (VSB) or one with the new enhanced broadcast DTV tuner standards (enhanced VSB).[39]

4. <u>A Fixed Deadline for Analog Turn Off</u>. In Berlin, the total time from passage of the law to completion of the transition was approximately 18 months. The transition began nine months after the law was passed and was completed nine months after that. Assuming Congress can complete action by the end of its 2005 session (by November 2005), we believe that a two-year transition period would be more than adequate. Consumers need time to be educated about the need to purchase either a digital to analog converter or a new digital TV set. Education could begin as soon as a fixed deadline was chosen and, at least in theory, could end before the transition itself begins. Any auction for the reallocation of returned spectrum could occur in 2006 – and fetch full value thanks to the certainty of the January 1, 2008 turn-off and clearance deadline. Both consumers and manufacturers would then also know more than a year in advance of the coming 12-month window (presumably corresponding to fiscal or calendar/tax year 2007) for the procurement of digital-to-analog converters.[40]

Option to Phase in Transition. In Germany, each state is choosing its own deadline for completing the DTV transition. Since spectrum policy has historically been done at a national level in the U.S., this is probably not feasible. Nevertheless, since a phased transition has some advantages in terms of reducing public education costs,

reducing burdens on manufacturers and learning from experience, here are two suggested phased in plans:

(1) **Start with New York City, then roll out to rest of country**. Almost every broadcast tower in New York City was on the World Trade Center when it was destroyed. New Yorkers went without any over-the-air broadcast TV for an extended period; and in Manhattan, relatively few individuals rely on terrestrial, over-the-air broadcasts because reception is lousy amidst all the tall buildings. Even when the suburbs are included, at most 10 percent of households rely on over-the-air reception.

(2) **Start with the 30 TV markets with the lowest reliance on over-the-air reception**, **then roll out to the rest of the country**. According to the Television Bureau of Advertising, thirty markets have 10 percent or fewer households that rely on over-the-air reception. In nine markets, the percentage is even lower than in Berlin.

5. Down Conversion. An often cited difference between the U.S. and Berlin transition is that HDTV was not part of Berlin's transition. But for purposes of subsidizing digital to analog converters, this should not be a major obstacle if the goal is simply to preserve the functionality of existing analog TV sets. Moreover, even with a downconverter, consumers will still be able to receive a plethora of new standard definition TV programs. In Berlin, the ratio of new TV channels to old has been four to one. It is true that downconverting is a Chevy, not a Cadillac. But is it the government's responsibility to provide a Cadillac to every person? And if it were its responsibility, how could it justify favoring the broadcasters' DTV Cadillac over the Cable, Satellite, and Telco DTV Cadillacs? And what if broadcasters' competitors were offering a new 2004 Lexus for the price of the broadcasters' 1995 dented Cadillac? [41]

6. Cable vs. Broadcast DTV Transition. The cable DTV transition should be viewed as a completely separate issue from the broadcast DTV transition. The key question is whether cable TV's transition should be market based or not. The cable TV industry has strong motivations to transition to digital because it can then use its bandwidth far more efficiently. By transitioning from analog to digital, it can open up capacity for hundreds of new DTV channels and allocate more spectrum for next-generation broadband service. This will allow it to charge for additional services as well as better compete with both satellite and telephone competitors. On the cost side, digital conversion can be accomplished by adding a $25 chip to a standard set top box or offering a $50 standalone converter box. When this cost is amortized over the lifecycle of a set top box or cable subscription, its cost per month is expected to be negligible compared to the benefits it provides. One major cable company, Charter Communications, has already converted to DTV all its subscribers in Long Beach, California.[42] Major cable CEOs and the President of the National Cable and Telecommunications Association have forecast that many cable TV systems will be all digital by 2009, the date certain in the FCC's latest digital transition plan.[43] Consequently, the most important question may not be how to speed up cable TV's DTV transition, but whether to slow it down by preserving broadcasters' analog must-carry rights. We endorse terminating those rights as soon as possible. It is noteworthy that when the largest satellite TV operator in England converted from analog to digital, 98% of the analog subscribers made the switch because of the superior value offered.[44]

7. Digital Multicasting Must-Carry The consumer subsidy model obviates the public policy rationale for producer subsidies, including digital multicasting must-carry, which requires that cable TV carries all of a broadcasters' digital programming, not just one program stream.[45] Failure to recognize that in the consumer subsidy model multicasting must-carry is no longer linked to speeding the broadcast DTV transition is a fundamental flaw in the otherwise outstanding Association of Public Television Station white paper arguing for the consumer subsidy model for the broadcast DTV transition.[46] Indeed, instead of replacing analog must-carry with digital must-carry just for broadcasters, the goal should be to replace all forms of must-carry with video open access for all programmers. At best, digital must-carry for broadcasters can be viewed as a short-term stopgap measure while TVs and computers converge and the Internet backbone is upgraded for streaming video. But in the emerging era of high speed broadband access, there is no compelling reason why only local TV broadcasters should be guaranteed exclusive open access to cable systems. Cable open access should be for all video programmers or none at all. Any video must-carry regime that favors only local TV broadcast content should be viewed as Constitutionally suspect on First Amendment grounds.

8. Allocation of Spectrum After the Transition. Currently, public safety is promised 24 MHz (channels 63, 64, 68, and 69) of the 108 MHz (channels 52-69) available after the broadcast DTV transition. We propose that the balance be evenly divided (42 MHz and 42 MHz) between licensed and unlicensed spectrum, with the licensed spectrum auctioned to the highest bidder. We further propose that the auction revenues be used to address the distinctive information market failures of our information age, with 50% of the proceeds used to fund the public TV trust fund proposed by the Association of Public TV Stations and 50% used to fund the Digital Opportunity Investment Trust proposed by The Digital Promise Project. In addition, guard band spectrum between channels 2-51 should be opened up after the transition, as analog stations currently located there get shut down. For a variety of reasons, it is currently unknown how much of this spectrum will be opened up after the broadcasters' DTV transition. So it is premature to present here a formal proposal regarding what should done with that spectrum, except to say that a substantial portion should be allocated to unlicensed service.

The Politics of the DTV Transition

A speedy broadcast DTV transition, absent producer subsidies, is not in the interests of either the cable or broadcast industries. The reason is that the broadcast DTV transition would free up spectrum for wireless broadband Internet service that could result in massive competition for both industries. This is where multicasting must-carry has played so prominent a role in the debate so far. From a strictly policy standpoint, multicasting does not speed the transition and may in fact not only slow it down but also lead to many other undesirable consequences. However, it is a carrot worth tens of billions of dollars, and thus seems an obvious way to win the broadcasters' support. The fundamental problem is that past attempts at similar deals have failed to achieve their intended results. The broadcasters have taken the carrot and then renegotiated the payment, which in this case is the return of the spectrum loaned to them. If political necessity forces policymakers to offer broadcasters the multicasting must-carry carrot, we suggest careful attention to the timing. Digital multicasting rights should only be given after, not before, the transition. Alternative carrots should also be considered. Broadcasters are already seeking many forms of spectrum flexibility and will ask for many more over coming years. These rights are hugely valuable and can be made part of the negotiations over speeding the broadcasters' DTV transition.

The cable industry's opposition to the consumer subsidy model would seem to be less of a problem because whereas broadcasters are forced to return 108 MHz of spectrum as well as help create new competition, the cable industry only has to face new competition. The transition of broadcasters to DTV will free up large amounts of cable capacity for cable companies, and we think that should be an adequate carrot for them.

Conclusion

The world is rapidly shifting from analog to digital technology in almost every product category. Digital mobile telephones, for example, long ago supplanted analog mobile telephones. The shift to digital TV, although lagging behind many other digital devices, is also well underway. Only broadcast DTV, the recipient of tens of billions of government subsidies and the form of DTV that was supposed to lead the DTV revolution, has lagged behind the rest. Moreover, most of the rest of the world has abandoned America's now primitive broadcast DTV standard. Only four countries have adopted the U.S. broadcast DTV standard, a small fraction of the 36 countries that have adopted the superior European DVB standard. Even some countries that were thought to be committed to the U.S. broadcast DTV standard are having second thoughts. Only the promise of a new, enhanced U.S. broadcast DTV standard has kept the rest of the world and even U.S. broadcasters from jumping ship and adopting a new standard. With the ten year old U.S. standard already woefully out-of-date, U.S. broadcasters are vowing never again to stick with a single TV standard for 50 years.

Clearly, the producer subsidy model has been a dismal failure. Local TV broadcasting, perhaps the most profitable legal business in America today, has arguably received the largest government subsidy in U.S. history. Yet compared to its domestic and international rivals, that producer subsidy has to date not generated any of its promised returns. Moreover, there is no end in sight. Dozens of new producer subsidies can be anticipated over the coming decade. This suggests that it is time to learn from history and adopt a new model, the consumer subsidy model, that this issue brief has laid out.

Endnotes

[1] See Table 1, page 3. As of June 2003, according to the FCC only 12.5 million U.S. households relied on terrestrial (over-the-air) for their primary TV signal. More than 94 million of the nation's 106.6 million TV households subscribed to cable, direct broadcast satellite or other multichannel video program distribution service. *See* FCC, Annual Assessment of the Status of Competition in the Market for the Delivery of Video Programming, January 28, 2004, p. 54. However, because other credible survey data from the broadcast industry suggests that the OTA reliance may be as high as 17.5 million, or 16.1% of the nation's 108 million TV households (as of Nov. 2003), we use that conservative estimate here. *See* Andrew D. Cotlar, "Digital-Only Broadcasting: A Roadmap for Early Return of Public Television's Analog," Association of Public Television Stations, Feb. 2004, at pp. 12-13, and Appendix C.

[2] For an overview of the entire DTV transition, see Lennard G. Kruger, "Digital Television: An Overview," CRS Report for Congress, Order Code RL31260, Updated April 23, 2004. However, this issue brief and other New America publications cover many vital issues not addressed in that CRS report.

[3] *See* "Proposed Processing Guidelines for DTV Public Interest Obligations," submitted to the FCC April 7, 2004, by a coalition of nonprofit groups including Commons Cause, New America Foundation, Alliance for Better Campaigns, Center for Digital Democracy, Media Access Project, et al. Available at http://www.ourairwaves.org/docs/index.php?DocID=56

[4] This was a faulty assumption. Broadcasters could have made the digital TV transition, just as radio made the digital radio transition, without being loaned a second channel. But broadcasters and their political allies refused to pursue this approach. A key feature of the one channel transition model is that it creates a hybrid analog-digital system during an interim period and then converts to a fully digital signal at the end of a transition.

[5] 18 channels X 6 MHz/channel = 108 MHz

[6] J.H. Snider and Max Vilimpoc, "Reclaiming the Vast Wasteland: Unlicensed Sharing of Broadcast Spectrum," Spectrum Series Issue Brief #12, New America Foundation, July 2003, at p. 2.

[7] Sales figures are from the Consumer Electronics Association, as cited in Lennard G. Kruger, "Digital Television: An Overview," Congressional Research Service (updated April 23, 2004), at pp. 10-11. The CEA figures are for manufactured, not purchased tuners, so are somewhat inflated.

[8] *See* Mark McHenry, "Solving the West Virginia Broadband Access Problem Using Automated Secondary Spectrum Technology," Presentation to Russell J. Lefevre, Office of Senator John D. Rockefeller IV, Shared Spectrum Company, Vienna, VA, July 16, 2001.

[9] Based on data from 2003 from FCC, "Annual Assessment of the Status of Competition in the Market for the Delivery of Video Programming: Tenth Annual Report," January 28, 2004. *Available at* http://hraunfoss.fcc.gov/edocs_public/attachmatch/FCC-04-5A1.pdf. *Also see* Thomas M. Lenard, "Accelerating the Transition to Digital TV: The Satellite Home Viewer Improvement Act Can Help," Progress on Point, Release 11.4, The Progress and Freedom Foundation, February 2004. *Available at* http://www.pff.org/publications/communications/pop11.4shvia.pdf

[10] Of these 70.5 million cable subscribers, an estimated 22 million receive digital cable, National Cable and Telecommunications Association data from December 2003, available at http://www.ncta.com/Docs/PageContent.cfm?pageID=86

[11] *See* Coleman Bazelon, Michael Rothkopf, and Troy Kravitz, "The Value of the Airwaves," in *An Explanation of the Citizen's Guide to the Airwaves* [report] New America Foundation, 2003.

[12] *See* study by Kane Reece filed in FCC Docket No. 02-55.

[13] In 1995, while Congress was debating loaning broadcasters a 2nd channel, the FCC valued the returned spectrum at $70 billion based on auction values for unencumbered, flexible spectrum. *See* letter of Robert Pepper, Chief, FCC Office of Plans and Policy, to Senator Joseph Lieberman, May 5, 1995. This valuation was based on comparable sales considerably lower than the peak sales of the late 1990s and early 2000s. This would suggest that $70 billion is a conservative number. However, the FCC also estimated that 138 MHz could be returned after the DTV transition. After this estimate, broadcasters whittled down to 108 MHz the amount of spectrum to be returned after the transition. Thus, the $50+ billion estimate now seems more reasonable.

[14] *See* Michael Calabrese, "The Great Airwaves Robbery: How the FCC's Decision on Channels 60-69 Could Transfer $10 Billion or More from Taxpayers to Broadcasters," Spectrum Series Issue Brief #2, New America Foundation, November 2001.

[15] Thomas W. Hazlett, "The U.S. Digital TV Transition: Time to Toss the Negroponte Switch," Manhattan Institute, revised, December 26, 2002, pp. 15-16.

[16] This assumes use of a state-of-the-art digital compression technology. The current broadcast standard is generally thought to be able to support only about six standard definition programs or one true HDTV program and several standard definition programs. Microsoft Media Player 9 needs only about 1.5 Mbps for a standard definition program. With a 19.4 Mbps broadcast DTV data rate, 13 standard definition programs per DTV channel would be feasible. Broadcasters are only required to provide one standard definition program for owners of 1st generation broadcast equipment; they can use the rest of their spectrum for enhanced services.

[17] J.H. Snider, "Multicast Must-Carry for Broadcasters: Will It Mean No Public Interest Obligations for Broadcasters?" Spectrum Series Issue Brief #13, New America Foundation, December 2003.

[18] The U.S. General Accounting Office recognized the force of the granny rule when it observed: "Policy makers will likely find it unpalatable to disenfranchise a large number of American households." Cited in Bill McConnell, "GAO to FCC: Pick a DTV Date," Broadcasting & Cable, December 9, 2002, p. 24.

[19] Drew Clark, "Deadline for Transition May Be Missed Despite Progress," *TechDaily*, March 29, 2004.

[20] Some digital households may have more than one DTV tuner, thus the total here is an approximation and upper bound.

[21] Based on data from, "Driving Digital Switchover: A Report to the Secretary of State," OfCom, April 5, 2004. *Available at* http://www.ofcom.org.uk/research/dso_report/print/dso.pdf

[22] *See* FCC, "Annual Assessment of the Status of Competition in the Market for the Delivery of Video Programming: Tenth Annual Report," January 28, 2004.

[23] Based on Consumer Electronics Association estimates for the number of over-the-air DTV tuners shipped between 1998 and the end of 2003. *Available at* http://www.ce.org/press_room/press_release_detail.asp?id=10417

[24] *See* National Cable and Telecommunications Association data from December 2003, available at http://www.ncta.com/Docs/PageContent.cfm?pageID=86

[25] *See* FCC, "Annual Assessment of the Status of Competition in the Market for the Delivery of Video Programming: Tenth Annual Report," January 28, 2004.

[26] *See* National Association of Broadcasters, written Ex Parte submission to FCC Chair Michael Powell, in MB Docket Nos. 03-15 & 98-120, April 15, 2004; and National Cable & Telecommunications Association, written Ex Parte submission in MB Docket Nos. 03-15 & 98-120, March 29, 2004.

[27] All figures are derived from a November 2003 study by Television Bureau of Advertising (TVB), which states that 17.4 million, or 16.1% of 108,446,735 TV Households rely exclusively on over-the-air reception. Data from study is included as Appendix C from Andrew Cotlar, "Digital-Only Broadcasting: A Roadmap for Early Return of Public Television's Analog Spectrum," Association of Public Television Stations, February 2004, pp. 12, 14, 44.

[28] Option #4 is the scenario most cited by broadcasters as the one that needs to be solved. That's why we have labeled it the "NAB Scenario." Option #4 assumes that a converter credit be made available for every analog TV

set in all households that rely on OTA (i.e., all sets not connected to cable, DBS, or another subscriber service.)

[29] Case #1: 44% of American households earn less than $40,000. 16.1% of American households, or 17, 462,735, exclusively rely on terrestrial, over-the-air broadcast TV. 44% X 17.5 million = 7.7 million. Case #2: According to November 2003 figures provided by the Television Bureau of Advertising, 17,462,735 TV sets exclusively rely on terrestrial, over-the-air broadcast TV. All figures derived from Andrew Cotlar, "Digital-Only Broadcasting: A Roadmap for Early Return of Public Television's Analog Spectrum," Association of Public Television Stations, February 2004.

[30] Reply Comments of NAB, MSTV, ALTV, In the Matter of Carriage of Digital Television Broadcast Signals, Docket 98-120, August 16, 2001, p. 22; Comments of the NAB, In the Matter of Annual Assessment of the Status of Competition in the Market for the Delivery of Video Programming, CS Docket 01-129, August 3, 2001.

[31] Robert Kieschnick and B.D. McCullough, "Why Do People Not Subscribe to Cable Television? A Review of the Evidence" (1998), *Available at* www.tprc.org/abstracts98/kieschnick.pdf. A valuable discussion of the reliance of various groups on over-the-air reception is found in Andrew D. Cotlar, "Digital-Only Broadcasting: A Roadmap for the Early Return of Public Television's Analog Spectrum," Association of Public Television Stations (February 2004), at pp. 12-14.

[32] See Michael Feazell "Rogovin Says Courts Will Be 'Sympathetic' to DTV Transition Plan," *Communications Daily*, May 5, 2004.

[33] Andrew Cotlar, "A Roadmap for Early Return of Public Television's Analog Spectrum," February 2004; Washington, DC: Association of Public Television Stations, p. 17; Comments of W. Kenneth Ferree, FCC Media Bureau Chief, at the Progress & Freedom Foundation event, "Accelerating the Transition to Digital TV: Developments at the FCC and in Congress, April 30, 2004. *See* Michael Feazell "Rogovin Says Courts Will Be 'Sympathetic' to DTV Transition Plan," *Communications Daily*, May 5, 2004.

[34] By 2008, the broadcast DTV transition will be a decade old and millions of households will be on their 2nd or 3rd generation of broadcast DTV equipment. In Berlin, vouchers for low income households to purchase TV equipment are specifically targeted to the used market.

[35] By exclusively we mean those who rely on terrestrial over-the-air TV and do not subscribe to either cable or satellite TV. Since many satellite subscribers do not receive local broadcast TV programming, the number dependent on terrestrial over-the-air TV for their local broadcast channels is higher—approximately 22% of all Americans. However, we believe this is not the best number to use as a basis for a TV welfare program for two reasons. First, DBS operators are rapidly developing the capacity to provide local TV broadcast service in all U.S. TV markets and may provide 100% local TV broadcast coverage as early as 2006. Second, the primary reason satellite subscribers don't receive their local broadcast channels via satellite is that local TV broadcasters insist on charging approximately $72/year to view those channels. In many European countries, in contrast, citizens can view their local TV channels via satellite for free. We feel that if Congress doesn't care enough to preserve free TV for satellite (and cable) subscribers, then a TV welfare program should not be extended to them. Note that our preferred option, #3, does not depend on how over-the-air households are defined.

[37] *See* Testimony of Reed Hundt, U.S. Senate Commerce Committee, Hearing on the Future of Telecom Regulation, April 29, 2004. Hundt proposed that a contiguous 30 MHz band within the current TV channel 60-to-69 allocation be reallocated on a dedicated basis for unlicensed access, particularly for both commercial and community broadband access providers.

[38] Media analyst Tom Wolzien estimates the market value of the broadcasters 402 MHz of spectrum at $367. Using a 7% rate of return would generate $25.7 billion/year. Adjusted for the return of 108 MHz, the figure is $20.6 billion/year.

[39] Enhanced VSB allows for mobile broadcast TV. Current broadcast DTV receivers often require a fixed antenna on top of a house or an unobstructed line of sight to the TV tower. Accordingly, they don't work well for in-car and other mobile applications. Enhanced VSB, based on superior compression standards such as Windows Player 9, also allows for much more efficient data compression of TV signals.

[40] While channels 52-69 should, in general, be returned immediately upon conclusion of the 12-month tax credit period, analog channels on 2-51 might be returned after another six months. The exception, on a market-by-market and channel-by-channel basis, would be the relatively small number of stations that have both their analog and digital channels on 52-69. In that case, return of the channel would have to wait for the repacking at the end of the broadcast DTV transition. Although the clearing and reassignment of channel 52-69 spectrum is more pressing, the sooner the analog channels on 2-to-51 are turned off, the sooner those vacated channels could be opened for unlicensed access, on a market-by-market basis, by wireless broadband providers.

[41] The current broadcast DTV standard was approved in 1995 and has since become very dated, if not obsolete. The broadcast industry is working hard to remedy these deficiencies, but at the cost of making obsolete the broadcast DTV sets of early adapters.

[42] "Cable," Communications Daily, January 20, 2004. The article explains the economic benefits of the conversion: "Converting to digital from analog recovers capacity that can be used to provide more high-definition TV, as well as targeted services, including video-on-demand and specialized subscription packages. Charter said all-digital service would save money by using lower cost digital-only set-top boxes. Entry-level digital set-tops that support broadcast, interactive and on-demand services cost about 50% less than comparable

analog/digital set-tops…. The highly compressed MPEG-2 video distributed from the headend makes it possible for the DVR to store more content per gigabyte than in a mixed analog/digital service environment, Charter said."

[43] See Harry A. Jessell, "Cable Got an Idea," Broadcasting & Cable, June 16, 2003, p. 49. Kenneth Ferree, FCC Media Bureau Chair, mentioned the economic analysis of NCTA's President at a briefing explaining the FCC's DTV transition plan, April 7, 2004.

[44] Ofcom, "Driving Digital Switchover: A Report to the Secretary of State," April 5, 2004, p. 21.

[45] This issue is discussed at length in J.H. Snider, "Multicast Must-Carry for Broadcasters: Will It Mean No Public Interest Obligations for Broadcasters?" Spectrum Series Issue Brief #13, New America Foundation, December 2003.

[46] Andrew D. Cotlar, "Digital-Only Broadcasting: A Roadmap for Early Return of Public Television's Analog," Association of Public Television Stations (Feb. 2004).