

Reaching the Audience:

An Analysis of

Digital Broadcast Power and Coverage

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Executive Summary

The transition to digital television service has been progressing for several years. It is an incredibly difficult process given the many different parties (e.g., over-the-air broadcasters, programming sources, cable systems, etc.) that all have to be involved. One key component in this process is the provision of a sufficiently strong DTV signal that consumers can receive. Access to broadcast signals is an important element in “jump starting” the digital transition. The purpose of this report is to evaluate those local station’s efforts by examining the availability of DTV signals to the American public with the present power levels of these stations.

Some of the highlights of that analysis include:

- Nearly three-quarters (73.7%) of U.S. television households are in markets where there are at least six over-the-air DTV facilities.
- Over ninety percent (92.7%) of the replication area populations of DTV stations on the air are presently being served by existing facilities.
- At current power levels, over 70 million US DTV households are reached by six or more over-the-air DTV signals, 49 million US TV households are reached by nine or more off-air DTV signals, and 30 million US TV households are reached by 12 or more over-the-air digital signals.
- The most popular television stations have operational DTV facilities that serve most, if not all, of their replication areas. The weighted average audience market share for those stations is 81.6% of all viewing to local broadcast stations.

The number and actual reach of DTV signals available today appears to be substantial and should be sufficient to stimulate the marketplace for over-the-air DTV receivers. A vast majority of the U.S. population has access to multiple DTV facilities at the present time. Given the reach of many of the DTV facilities and the fact that the most popular stations are reaching their replication areas, the viewing public has many choices of DTV stations to select. Clearly, the local over-the-air television stations have invested in and continue to operate enough DTV facilities to “jump start” the digital transition.

Reaching the Audience: An Analysis of Digital Broadcast Power and Coverage.

Introduction

For the past several years local television broadcasters have been in the process of constructing new digital transmission facilities. At the present time there are more than 1,000 operating digital television stations across the United States. These transmissions can be received in 201 television markets representing 99.7% of the total U.S. television households.¹

The construction of new digital facilities was accomplished with only a few digital television sets capable of receiving digital signals over-the-air as well as the lack of digital cable carriage. Nonetheless, some of these television broadcasters have been criticized for not initially operating their digital facilities at full power.

Operating at lower power levels involves important policy concerns. From a service perspective, the failure to operate at full power means that over-the-air television broadcasters may not be reaching some viewers in their market with digital signals. For many of these stations, operating at reduced power may only be a temporary situation. Stations may increase their power over time consistent with increased penetration of DTV sets. At the same time, the lack of digital receivers in the market may attenuate this concern, as many consumers are not being deprived of service because they lack over-the-air reception capability. Nonetheless, significant questions might arise, if lower power operations become permanent.

¹ *NAB News*, September 2, 2003

The focus of this report, however, is to examine such purported “lower power” operations and assess their impact on the digital transition. From an economic perspective, policy makers should be concerned that operating at lower power may freeze the marketplace. In this regard, consumers may decide not to purchase new digital receivers because they cannot receive these signals. In response, broadcasters may continue to operate at low power levels because there are no DTV receivers in the marketplace. Thus, there may be a direct impact on the digital transition if stations are not providing sufficient signals over the long term. In other words, are the digital television stations that operate at lower power levels affecting adversely the digital transition by reducing the demand for over the air digital television receivers? Stated alternatively, are DTV stations operating at sufficient power levels and providing sufficient coverage to serve as a marketplace catalyst for the digital transition? This report will try to answer these questions.

Analysis & Methodology: A Systematic Approach to Measuring DTV Service Reach

Simply looking at the number of DTV stations that are on the air may not provide a complete picture of how well the local television stations are “jump starting” the digital transition. A thorough analysis of local broadcasters’ roles so far begins with the listing and market size analysis of the number of operational DTV stations, followed by a study of the population being reached by these stations. We conclude by examining the popularity of these stations. With this review, we can then make a complete evaluation of broadcasters’ efforts. The methodologies of these three analyses are discussed below.

Number of Operational DTV Stations

The report will first examine the number of digital television stations that were currently operating in the U.S. as of September 2, 2003. At that time there were 1,000 television stations that were broadcasting digital signals according to NAB data.²

The report examines these stations³ on a market-by-market and national basis. Market specific examinations will provide a more accurate analysis of the number of potential consumers that are able to access DTV signals. From the perspective of marketing consumer electronics equipment, it is more important that DTV stations become operational in the largest, as opposed to the smallest, television markets. By virtue of their large populations, larger television markets provide a larger market for the sale of consumer electronic equipment, especially DTV receivers.⁴

Authorized DTV Power

For the purpose of this inquiry, we examined a DTV station's "authorized" power. This is the power level that appears in the station's construction permit, license or special temporary authorization (STA) and reflects the actual power levels of digital stations currently on the air.⁵

² NAB News, September 2, 2003.

³ At the time of the study, we had data only for 982 of these stations. In other words, the results reported herein actually understate the reach of the operational digital stations.

⁴ Providing digital service in smaller television markets is an important policy consideration. Nonetheless, in the context of the digital transition and driving the mass market for consumer equipment, large television markets occupy an extremely important role in stimulating the market forces that will accelerate the digital transition

⁵ Stations are required by FCC rules to operate at their "authorized" power. Operating at levels higher or lower than the authorized power level may subject a station to FCC sanctions. See 47 C.F.R. section 73.1560 [C].

Accordingly, those stations currently operating at a “lower power” pursuant to a STA are included in the analysis. Alternatively, the analysis also includes stations that have been authorized to maximize their power and operate at power levels allowing them to exceed their original DTV coverage area.

To date, the debate has been framed in terms of DTV power. Focusing solely on a station’s operational “power level,” however, may not yield an accurate representation of DTV service. First, given the propagation characteristics of a television signal, especially a UHF signal, there is no direct linear correlation between power and the geographic area or population covered by the DTV signal.⁶ For example, a significant amount of power is needed to “push” a UHF television signal out the last few miles, beyond the station’s “line of sight” or “radio horizon.” While measurements may vary due to terrain, extending a signal *three miles* beyond a UHF station’s “radio horizon” may require that station to *double* its power. Moreover, a twenty-five percent reduction in power does not mean that twenty-five percent of the people living in the market will not receive service, or that the geographic area covered by the DTV signal will be reduced by twenty-five percent. Indeed, operating at lower power on a temporary basis may affect only a small number of consumers living at the outer edge of a station’s coverage area,

⁶ While DTV channels have been allocated throughout the television band, more than 1200 DTV stations will be located in the UHF portion of the band.

i.e., outside the more congested metropolitan area of the station's market.⁷ Even in this context, however, consumers in these remote areas that have higher gain, amplified antennas may be able still to receive these signals.

Second, the FCC's table of DTV assignments sought to replicate a station's actual analog coverage area. In some instances, especially in the East coast, the Grade B coverage area is geographically larger than the station's economic market, as defined by the station's Designated Market Area (DMA). Indeed, it is common for the Grade B signals of a station to reach into an adjacent television market. The Baltimore/Washington corridor provides an excellent example shown in Appendix 1. In that Appendix the contours of four operational digital stations (two from Baltimore, two from Washington, DC) are displayed. As easily seen, consumers living in many areas such as Columbia, MD, have access to DTV signals from both markets. Thus, even where a station is operating at lower power, this does not necessarily mean that the station is not covering the entire population within its DMA.⁸

Third, the reverse may be the case in large geographically dispersed television markets, especially in the inter-mountain West. These DMA markets often exceed a station's Grade B coverage area. Nonetheless, while the geographic area may be expansive, in many areas most of the population is more centralized, living in and around the largest cities in the market. The

⁷ This does not mean that consumers living at the outer edges of a station's contour are less important or should have limited access to over-the-air DTV signals. From a public service standpoint, these consumers are an important part of a station's service area, and must be served. Nonetheless, in the context of serving as a catalyst for the digital transition by creating a mass market for digital receivers, the majority of consumers generally live closer to a television stations transmission tower.

⁸ Moreover, consumers living in smaller television markets that are adjacent to large television markets may be able to access DTV signals, even if stations in their own market have not yet been constructed or are operating at lower power.

contours for KTSU, Salt Lake City, are shown in Appendix 2 demonstrating this point. KSTU's digital facilities, operating under an STA have a smaller area than the licensed digital channel, which itself does not (from a geographic perspective) come close to serving the entire Salt Lake City, UT, DMA (represented by the horizontal lined area). However, even though it is serving a smaller geographic area than the allotted digital service area, that operating digital facility is reaching nearly 95% of the population that would be served by the licensed digital channel.

Thus, simply examining power may not provide the necessary context for determining the marketplace impact of a station's digital signal. The more relevant concern is whether consumers are able to access DTV signals. For the reasons stated below, population coverage is the most accurate measure for determining actual DTV station reach.

Population Coverage

This report will focus primarily on the population coverage patterns by local DTV stations, as it is the most relevant statistic for analysis because it translates the "power" issue into its most important element -- consumer access to digital signals.⁹ To examine population coverage, this report uses the database employed by the FCC for analyzing population coverage based on the power levels broadcast by digital television stations.

⁹ The FCC also believes this to be the most relevant approach. FCC Media Bureau Chief Ken Ferree sent out a series of questions regarding the status of the digital transition to local television stations, the networks, cable systems and the consumer electronics manufactures. The FCC asked stations in the top 100 markets to indicate the percentage of their population covered by their DTV signal. *See* Letter of Ken Ferree, Chief Media Bureau, Federal Communications Commission, May 20, 2003, (OMB No. 3060-1038.)

Accordingly, coverage predictions are based on *Longley-Rice* prediction propagation prediction models,¹⁰ the same approach employed by the FCC when it established the DTV table of assignments. The report will focus on the population coverage currently provided by DTV stations as a percentage of the total population that would be covered pursuant to a station's initial digital allotment as provided in the DTV table of allotments.¹¹ On balance, we believe that comparing actual DTV population coverage areas to the "replication coverage areas" assumed in a station's initial DTV assignment represents the most accurate measure of a station's reach.¹²

Popularity of TV Stations Broadcasting DTV Signals

As almost all participants in the DTV debate acknowledge, access to top quality programming drives the demand for purchasing DTV equipment. Program popularity is a significant factor in a consumer's decision to purchase a DTV receiver. For example, stations commencing digital operations that broadcast exclusively to narrow niche audiences, may not necessarily create a sufficient mass-market demand to spur the sales of DTV receivers.

¹⁰ Data regarding coverage was collected and analyzed by Techware, Inc., a universally recognized expert in spectrum and coverage analysis.

¹¹ Basing coverage comparisons directly to a station's analog Grade B coverage area may not be appropriate in some cases. For example, there are a number of instances where DTV stations were assigned a service area smaller than their analog Grade B coverage area. These assignments were made to avoid interference with surrounding stations. Thus, a station could not increase its power even if it so desired. It would be incorrect to classify these stations as operating at low powers as they are operating at levels consistent with the FCC rules.

¹² The population statistics employed in the report are based on the 1990 Census. This is the coverage database used by the FCC. Also, because the initial DTV coverage analysis was based on the 1990 Census, using this database will provide for an accurate comparative coverage analysis. Moreover, because the US population has increased since 1990, this database will generally underestimate the absolute number of consumers that have access to DTV signals.

Alternatively, digital operations may serve as a local catalyst for digital receivers, if the digital station is a popular station in the market.

Therefore, it is important to not only examine the absolute number of stations in a market, and population coverage but also, whether the most popular stations in the market have commenced digital operations. To the extent the most popular stations are providing signals covering their markets, then this will serve to spur the digital transition.

Unfortunately, there are no ratings results that measure exclusively the popularity of digital programs at this time.¹³ Accordingly, analysis used in this report is based on the popularity of the station's analog programming. Using these audience shares is a reasonable proxy for the station's popularity in the digital world as well. First, according to FCC rules, stations are already required to simulcast 50% of their analog programming in digital. This number is scheduled to increase over the next few years to 100%. Moreover, independent of the FCC's rules and requirements, the programming patterns of a commercial broadcaster's digital offerings have, for the most part, mirrored the program offerings of its analog facility. In some instances, local commercial stations have offered additional programming and services on the digital channel. Nonetheless, the most popular programs appearing on a station's analog channel are being broadcast on the station's digital channel.

¹³ At this point in time there are no Nielsen audience estimates that uniquely measure the ratings or audience share of off-air digital television stations. The audience data examined in this report are the "analog" sign-on to sign-off shares of television stations that have operational DTV stations. We are measuring popularity in terms of a station's analog programming as determined by the Nielsen audience survey for May 2003.

In summary, to properly examine the “power” issue and its impact on the digital transition, research must focus on three elements, the number of stations operating in digital, the population coverage provided by these digital signals, and finally the popularity of these stations in their respective markets.

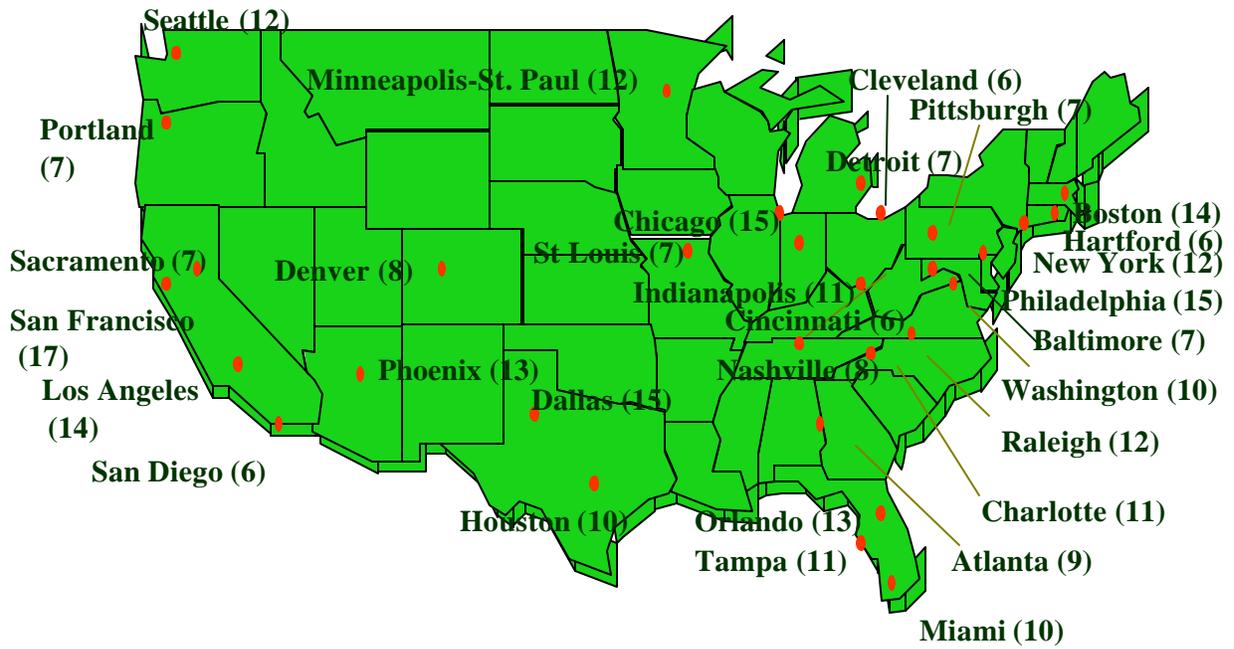
Results: Reaching the DTV Audience

Even with the reduced power for some television stations, most of the American public can receive multiple DTV signals. Moreover, the most popular stations in the largest markets are the ones with digital facilities on air reaching nearly all of their replication population (*i.e.*, at their maximum power) with their DTV signals. Hence, the programs most people are watching on local over-the-air television stations are available on the DTV facilities, which should provide the “jump start” to increased digital receiver sales.

Number of Operational DTV Stations

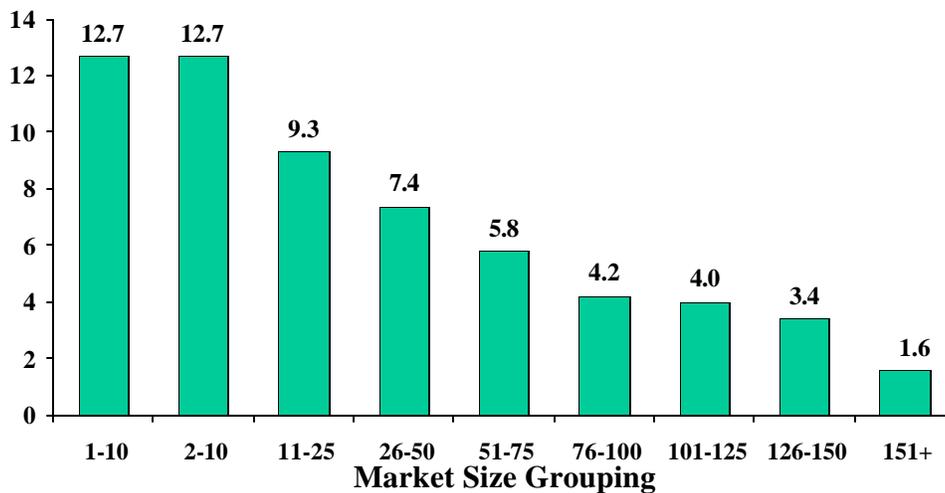
We examined the “authorized power levels” of the DTV stations for which we had data on their served populations. Many of these stations are in the most populated markets. Figure 1 shows the number of operational DTV stations in each of the top thirty markets.

Figure 1 Top 30 Markets Digital Stations



Not surprisingly, there are larger numbers and higher percentages of stations with operational DTV facilities in the largest markets. Figure 2 below shows the average number of DTV stations in various market size ranges.¹⁴ In the top ten markets there are more than twelve DTV stations on the air. On average there are more than nine DTV stations on the air in markets ranked between 11 – 25.

Figure 2
Average No. of DTV Stations On Air by
Market Size Grouping



¹⁴ In all of market range charts we include both market size ranges 1-10 and 2-10, given the special nature of the problems faced by the New York City television market stations.

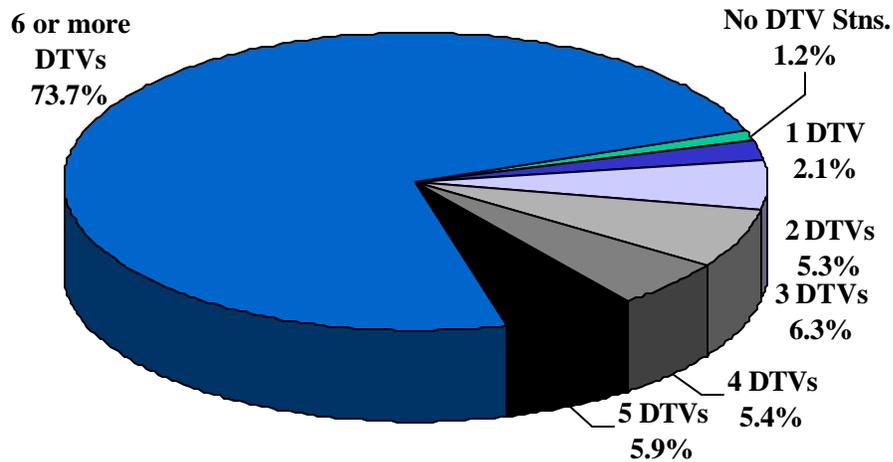
As a result of these stations operating in the various television markets, an overwhelming majority of viewers have access to multiple DTV signals.¹⁵ Associating these stations to the number of households in their markets enables us to determine the percentage of the population (in terms of the U.S. television households) presently in markets being served by varying numbers of DTV stations. Figure 3 shows those percentages.

What is particularly striking is that nearly three-quarters (73.7%) of U.S. television households are in markets where there are at least six over-the-air DTV facilities operating. This corresponds to seventy-two different television markets. Less than one-twenty fifth of the households (3.5%) are in markets with either one or no DTV stations operating, corresponding to 37 markets primarily in the smallest ranked range.¹⁶

¹⁵ According to the NAB, there are sixteen small and medium sized markets where *all* of the over-the-air broadcast stations have operational DTV facilities. These markets include: Cincinnati, OH; Knoxville, TN; Eugene, OR; Topeka, KS; Wheeling, WV; Steubenville, OH; Bangor, ME; Biloxi-Gulfport, MS; Sherman, TX-Ada, OK; Hattiesburg-Laurel, MS; Harrisonburg, VA; Lafayette, IN; St. Joseph, MO; Mankato, MN; Zanesville, OH; Victoria, TX; Presque Isle, ME; and North Platte, NE. *NAB News*, September 2, 2003.

¹⁶ Most of these markets with no DTV facilities are ranked 150 and higher.

Figure 2
Percentage of U.S. TV Households in
DMAs with Numbers of DTV Stations



The figures presented provide only an abstract conception of the reach of over-the-air DTV signals. Of course these data measure the *potential* market. To understand the true impact of these data, one should examine the information from the perspective of potential customers for DTV receivers. The critical question is whether consumers in these markets can actually receive these signals. To answer this question, we will now focus on authorized power and population coverage.

DTV Coverage by Population

In order to evaluate the relative populations being served currently by all operational DTV stations, we examined the percentages of replication populations being served by the operational DTV stations. We first looked at each television station's "authorized power" as it appears in the FCC records. The database records the current "authorized" power for all stations, including operating lower power facilities pursuant to a special temporary authorization (STA), as well as stations that have maximized power.¹⁷ Using the FCC's *Longley Rice* propagation model, we examined each station's DTV coverage area in terms of population covered by the signal (Station's Current Population Coverage: "SCPC"). We then compared this current population coverage area to the population coverage area that was assigned to the station in the original FCC DTV table of assignments (Station's Initial Replication Population Coverage: "SIRPC").¹⁸

**Station's Current Population Coverage (SCPC) = Percentage of Replication Population Covered
Station's Initial Replication Population Coverage (SIRPC)**

Dividing the station's current SCPC by its original SIRPC, yields the percentage of a station's initial replication coverage that is currently being served by the television station.

¹⁷ Looking at the overall database reveals that 367 of the 979 stations for which we have both current service and replication area population data have maximized and are serving larger populations than their replication population coverage areas.

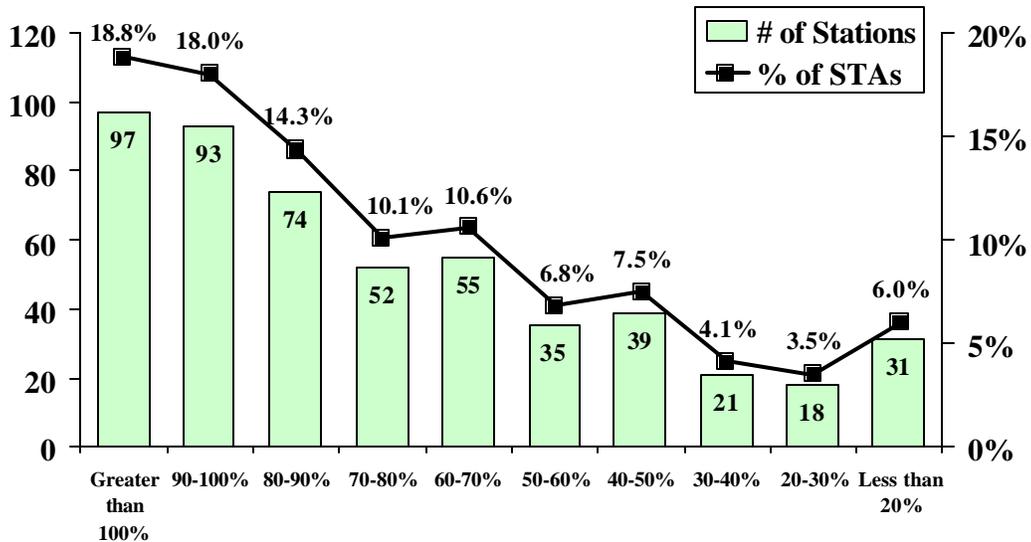
¹⁸ Data relating to power levels and population coverage for all operational DTV facilities was collected and analyzed by Techware, Inc., employing the same power and population coverage analysis used by the FCC.

Authorized Power/Special Temporary Authority

As explained previously, examining a station's current authorized power level is only the first step. These power levels include the authorized power levels for all stations including those with construction permits, operating pursuant to an STA, as well as licensed facilities. Some have argued that stations operating pursuant to a special temporary authorization, as a class, are operating at significantly lower power levels. This criticism is very important as over one half of the operational DTV facilities examined (52.6%) are operating pursuant to an STA. A close examination of the data reveals, however, that operating pursuant to an STA cannot be equated with operating at very low power levels. Of the 517 stations currently operating pursuant to an STA, most are operating at power levels that approximate or exceed their replication population coverage area.¹⁹ To be sure, there are some "STAs" covering a small percentage of their market. Figure 4 shows the number of stations operating pursuant to an STA corresponding with the percentage of replication population covered under that STA. Also shown are the percentages of all stations operating under an STA for each grouping of replication population percentage reached.

¹⁹ As shown in Figure 4 there are a number of stations operating pursuant to an STA that are exceeding the replication coverage area that was initially assigned to them in the DTV table of assignments. In this regard, some stations have asked to maximize their power but on a temporary basis operate pursuant to an STA. In these cases an STA facility is providing coverage to a population that is larger than the population coverage provided in the initial DTV table of assignments. Nonetheless, it is still less than the ultimate coverage that will be provided when the facility is fully maximized. Accordingly, the coverage population area for these stations will increase further once the station maximizes its power.

Figure 4
 Number of Stations and Percent of All STAs with
 Their Percent of Replication Population Covered



These data indicate that stations operating pursuant to an STA are in fact providing sufficient signal strength to reach a significant portion of their market. There are 97 stations, operating pursuant to an STA which are currently serving over 100% of their replication area population, corresponding to 18.8% of all stations operating DTV facilities pursuant to an STA. Approximately 60.4% of the stations operating pursuant to an STA are providing a sufficient signal to reach 70% or more of their replication population coverage area. The analysis is further evidence of the need to examine power levels in terms of population coverage, as opposed to analyzing power directly.

Market Level Results

To obtain population coverage data for each market, we summed every operational DTV stations’ SCPC in the market. For example, if there were five DTV stations in a market, each serving 100 people, the market’s current population coverage (MCPC) would be 500. We then summed the market’s total initial replication coverage (MIRC) based on the sum of stations’ initial population coverage area, as provided by the FCC in the initial DTV table of allotments. Thus, if the five stations mentioned above each had an initial population coverage of 125 people, the total initial market population coverage would be 625. To determine the Average Percent of Replication Population Covered for the market we divided the first sum by the second.

$$\frac{\text{Markets Current Population Coverage (MCPC)}}{\text{Markets Initial Replication Coverage (MIRC)}} = \frac{\text{Average Percent of Replication Coverage}}{\text{Coverage}}$$

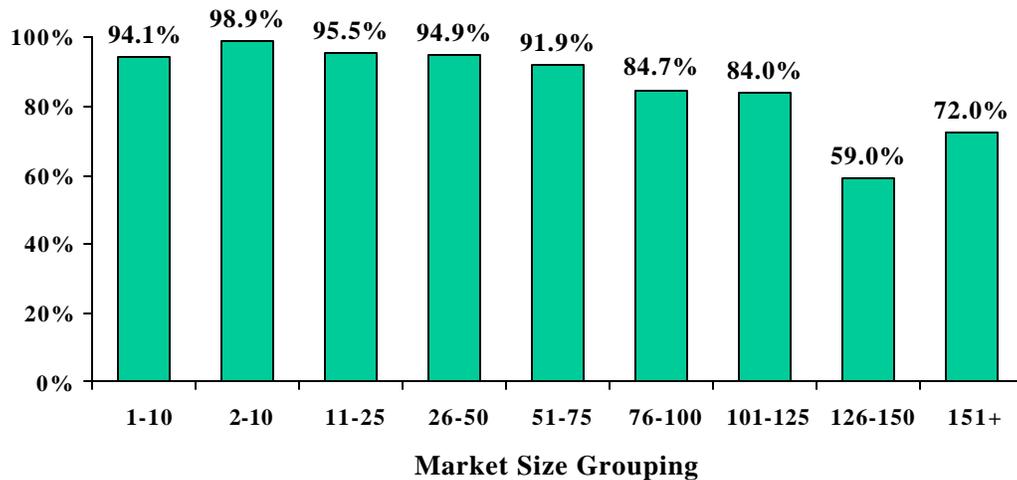
What these market level results clearly show is that in most of the market ranges, the local over-the-air television stations are generally serving their replication area populations with their DTV operations.²⁰ Only when you move to the smaller markets, e.g., markets ranked 126-150, do you see a drop in the average replication percentages. Even in those markets, however, more than half of the replication area populations are being served, on average, by the existing DTV operations. Moreover, that percentage increases to nearly three-quarters (72.0%) from that level when you move to the smallest markets, markets ranked 151 and above.²¹ Figure 5 shows

²⁰ These larger market areas with average replication percentages of 84% or higher, markets ranked between 1-125, collectively serve 91.5% of all U.S. television households.

²¹ In the smallest markets (ranked 151 and above) a larger percentage of the population is most likely based nearer the center of the market. Hence, a digital station does not have to be at its maximum allotted power in order to reach most of its potential market population.

the average for the various market size ranges. The national average percent of replication coverage was 92.7%.

Figure 5
Average Percent of Replication Population Covered by Market Size Grouping



These coverage patterns give rise to a potentially significant market stimulus when considered in conjunction with the number of operational DTV stations. For example, in the top 10 markets, consumers on average have access to nearly thirteen (12.7) DTV signals. According to the coverage analysis presented above, the operational DTV stations in markets 1-10 are reaching, on average, 94% of their replicated coverage area. While there may be some differences between the geographic size of the DMA and the station’s coverage area, a conservative analysis reveals that approximately 30 million TV households (94% of the total 31.9 million TV households) in the top ten DMA markets are reached by an average of nearly 13 over-the-air digital television signals. Looking at markets 11 – 25 reveals that conservatively

another 19.5 million homes in markets 11-25 (95.5% of the total 20.6 million TV households in these markets) can access an average of 9.3 off-air DTV signals. Looking at the top 25 television markets reveals that approximately 49.5 million households have access to nine or more off-air digital television signals.²²

As observed previously, nearly three quarters of U.S. television households, 73.7%, are in markets where there are at least six or more digital television signals. Given the percentage of replication population reached in the larger markets with many DTV stations, more than 70 million U.S. television homes now have access to six or more television signals, representing a significant market for the sale to DTV receivers.

Audiences Served by DTV Stations

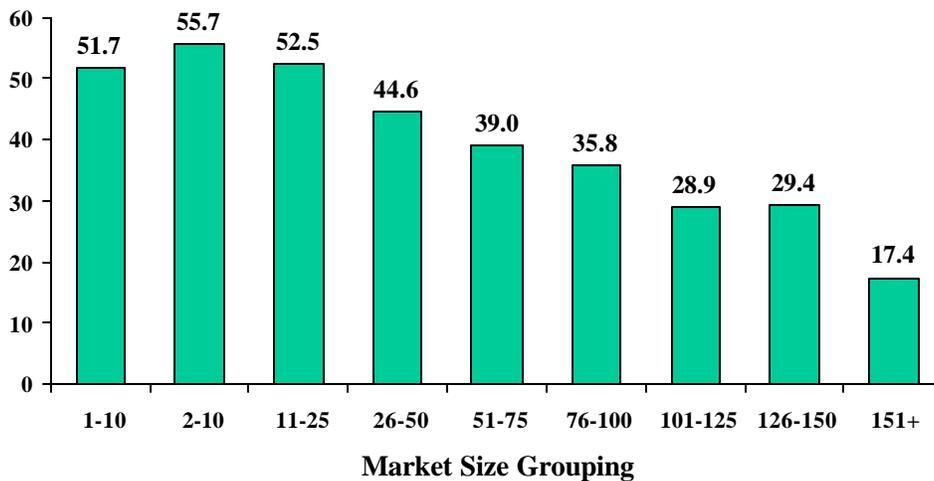
Providing signals and sufficient coverage is only one element in stimulating the marketplace for the provision of new DTV receivers. Popularity of programming is an equally important consideration. As noted previously, the popularity of the programming appearing on stations operating digital facilities is an important element in “jump starting” the digital transition. In order to evaluate whether the most popular stations are operating their DTV stations, we examined the “analog” audience shares of the stations that have operational digital stations. We first examined the “sign-on to sign-off analog audience share” for each station that

²² As noted previously, direct comparisons may be difficult because the geographic and population coverage area of a station’s signal is not necessarily coincident with the geographic boundary of a station’s DMA. Nonetheless, in most instances, especially in the east coast, the coverage area of a station’s signal generally exceeds the geographic coverage area of the station’s economic DMA. As a result, the analysis presented above may underestimate dramatically, the number of homes actually receiving digital signals. *See Appendix I.*

has an operational DTV facility. To obtain market wide data for all stations, we summed the audience shares of local stations that had digital operations on the air.²³

Figure 5 shows the average of those markets for the various market size ranges. As with many of the previous graphs, the largest markets have the highest values. In this case, more than half of the viewing in markets ranked 1-10 (51.7%) and 11-25 (52.5%) are to stations that have operational DTV stations.

Figure 6
Average Total Audience Share of Analog Stations with Operational DTV Facilities
 (by Market Size Grouping)



The national average (weighted by relative market size) of stations with DTV facilities across all 210 markets was 43.1%. In other words, in the average market, local over-the-air

²³ These audience share data are based on the Nielsen audience survey for May 2003.

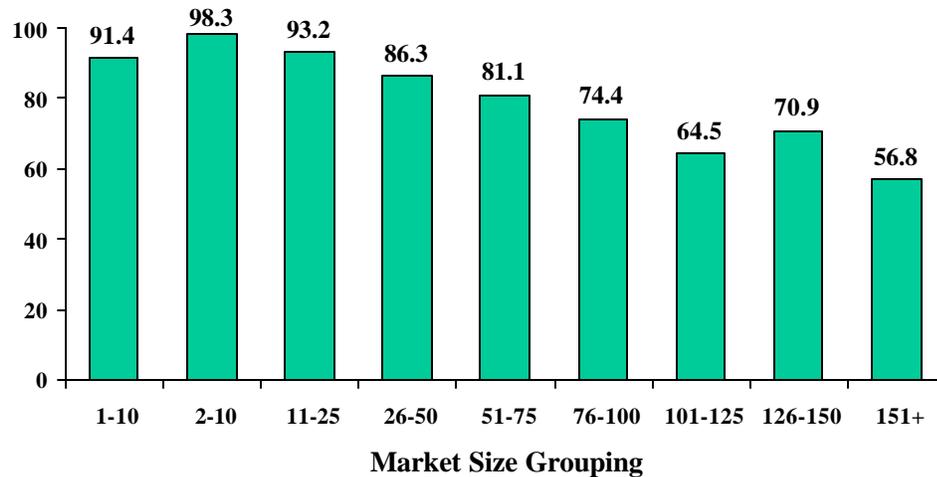
television stations with DTV facilities attracted 43.1% of the local market viewing. The remainder of the viewing is to the few television stations in those markets that do not have operational DTV stations and, more significantly, to cable networks.

The analysis presented above is significant because it demonstrates the viewing power of those over-the-air television stations that have constructed digital facilities. While attention has been paid to new cable HDTV and digital channels, over-the-air television signals will remain as the most important driving force in the overall digital transition. Viewed another way, in the top 50 markets, which comprise over 109 million television households, the stations that currently operate digital facilities account for an average of 50% of all the viewing. This would appear to have a direct and positive impact on the ability to market over-the-air DTV receivers.

A more narrowly focused question is to examine over-the-air television viewing in isolation. In other words, are the stations with operational digital stations more popular than stations that have yet to construct digital facilities? Such an examination is important because it focuses on the potential market for those consumers who do not want to subscribe to cable or satellite services, yet want to view new digital offerings.²⁴ Once again, we summed the local broadcast shares of stations that have operational DTV facilities. Figure 7 shows the average market totals of the local broadcast shares for the different market size averages.

²⁴ This local broadcast share is similar to the local commercial share often used when evaluating local television stations. The only difference is that we include the viewing that is going to local non-commercial stations in our calculations, as they are also an important part of the broadcasters “jump start” role.

Figure 7
Average Sum of Local Broadcast Audience Share of On Air DTV Stations by Market Size Grouping



In the top three market size ranges, nearly 90% or more of the viewing to local broadcast stations are to stations in those markets that have operational DTV facilities. In fact, once New York City is removed from the top ten markets, nearly all of the local broadcast stations in the next nine largest markets that attract audiences have their DTV facilities operating. The national weighted market average was 81.6%, more than four-fifths of the viewing to local broadcast stations is to stations that have operational DTV facilities.

Conclusion

Local over-the-air television stations faced a formidable challenge in the digital transition. They invested considerable sums to build their digital facilities while knowing that there were few, if any, receivers in the hands of the U.S. viewing public. Nevertheless, stations

generally complied with the regulations of being on air by certain dates. Some of these stations, especially in smaller markets, determined that for the immediate future they would operate at less than maximum power, and later increase their power to their allowable levels.

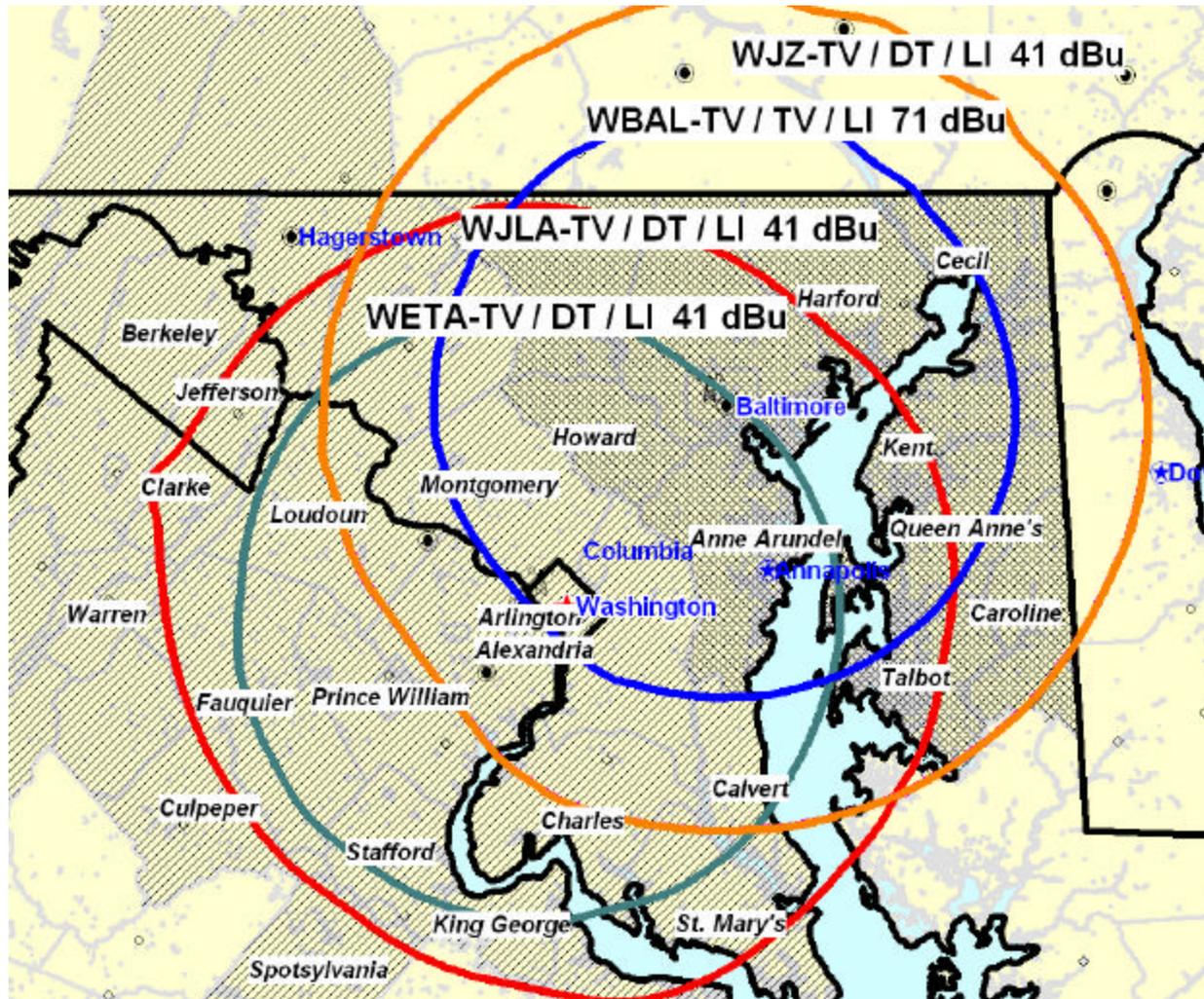
Based on the data presented, the number of stations operating at significantly lower power constitutes only a small group of operational DTV facilities. Even stations operating pursuant to an STA are providing sufficient signal strength to cover most of their replicated population coverage area. Many of the stations, even in the smaller markets, are reaching over three-quarters of their existing populations. As a result, when examined on a national scale, a vast majority of the U.S. population has access to multiple (*i.e.*, six or more) DTV facilities at the present time.

Another significant aspect of the present DTV service is that the most popular stations are the stations that are providing DTV service to their entire, or nearly entire, existing service area. This result is clearly seen when the audience shares of the stations providing DTV service are analyzed.

Given the reach of many of the DTV facilities and the fact that the most popular stations are reaching their replication areas, one can only conclude that the viewing public has many choices of DTV stations to select. Clearly, local over-the-air television stations have invested in and continue to operate enough DTV facilities to “jump start” the digital transition.

**Appendix 1 - Contours of Selected Digital Television Stations in Washington,
DC and Baltimore MD Markets**

Figure A-1 – Contours of Selected Digital Television Stations in Washington, DC and Baltimore MD Markets



**Appendix 2 - Contours of KSTU, Salt Lake City, UT (Existing Analog,
Licensed Digital, STA Digital)**

Figure A-2 – Contours of KSTU, Salt Lake City, UT (Existing Analog, Licensed Digital, STA Digital)

