

September 16, 2004

Marlene H. Dortch, Secretary
Federal Communications Commission
445 12th Street, SW
Washington, DC 20554

Re: Carriage of Digital Television Broadcast Signals, CS Docket No. 98-120
(also CS Docket Nos. 00-96 and 00-2)

Dear Ms. Dortch:

On behalf of our client, Comcast Corporation, we wish to respond to a “white paper” entitled “Digital Multicast Must-Carry: Greater Public Benefits, Less Burden on Cable Operators” (hereinafter, “the NBC Paper”), written by two lawyers and an “independent” technical advisor for the NBC Television Affiliates and the NBC Television Station Group.¹ The NBC Paper portrays its authors’ understanding of how the bandwidth of modern cable systems is and will be used and purports to show that the *expanded* must-carry rights that broadcasters seek will in some way *diminish* the burden that must-carry obligations place on cable operators and cable programmers. In fact, what the NBC Paper demonstrates is that NBC’s lawyers and technical advisor have a seriously flawed understanding of cable system operations.

The NBC Paper fundamentally misapprehends how the “digital transition” will work for cable operators. The explicit and central premise of the argument is that, “[b]y 2007 . . . all major cable systems will have rebuilt their facilities to *replace analog with digital transmission.*” NBC Paper at 7 (emphasis added); *see also id.* at 10 (chart shows 450 MHz of analog bandwidth in 1992 and 750 MHz of entirely digital bandwidth for 2007), 14 (“Cable is quickly converting its subscribers to all-digital”). This is factually incorrect. Although the rebuilds and upgrades in which the cable industry has invested \$85 billion since 1996 have indeed expanded total bandwidth and do enable transmission of digital signals, the need to allocate much of that bandwidth for analog transmissions has *not* been (and will not soon be) eliminated.

¹ See attachment to Letter from NBC Television Affiliates Group, *et al.* to FCC Chairman Powell, CS Docket No. 98-120 (Apr. 16, 2004).

Although the cable industry has been extremely successful in attracting customers to its digital services, this does not obviate the continuing need to allocate bandwidth for delivery of cable programming in an analog format. At Comcast, for example, 37.5% of the company's customers subscribed to digital service as of June 30, 2004. Necessarily, that means that 62.5% did not. And of the 37.5% of households that do subscribe to the digital service, many have one or more television receivers that do not have a digital set-top box ("STB") and are used to receive only those channels that are delivered in analog. Thus, although it may turn out that "[m]any cable systems will have a majority of digital subscribers within two or three years" (NBC Paper at 14), it does *not* follow (*see id.*) that cable operators "will begin discontinuing analog services as soon thereafter as possible." That assertion is as absurd as predicting that broadcasters would cease analog broadcasting and relinquish the channels they use for analog broadcasting as soon as a majority of over-the-air viewers purchase digital TV sets or begin to receive any digital signals from a provider of cable or DBS services.

The simple truth is that cable operators need to plan to meet their customers' reasonable expectations, and given that approximately half of all TV sets connected to U.S. cable systems do not currently have *any* set-top attached (analog or digital) the cable industry cannot reasonably plan to discontinue delivering some significant number of channels in analog format for the foreseeable future. *This would be true even if the broadcasters were to cease analog broadcasting immediately*; in fact, the discontinuation of analog broadcasting may make it all the more important that cable operators offer those customers who wish to continue to use their NTSC TV sets without a set-top box the option of receiving at least the basic tier in analog.² The need to deliver signals over the cable system in analog format will be eliminated only when the cable operator is able to place some sort of digital decoder functionality on *every* TV of *every* cable subscriber, a development that is *not* contemplated in the near- or medium-term future.

At Comcast, the current working assumption is that, because of the need to deliver analog signals to television receivers that do not have digital reception and decoding devices attached, the signals that now comprise Comcast's "B1" offering (including all local broadcast stations in a given market, plus public, educational, and governmental and leased access channels, all of which Comcast is required by law to deliver to every cable customer) will need to be delivered in analog for at least the length of our planning horizon -- which extends well beyond the year 2007 (on which the NBC Paper focuses) or even 2009 (the year which is the focus of the Media Bureau's "aggressive DTV transition plan"). Similar constraints apply to some or all of the channels in Comcast's "B2" offering (also known as

² The NBC's Paper's claim about Charter having already begun operation of an "all-digital system" in Long Beach (NBC Paper at 14 & n.16) is mistaken. The press release cited by NBC (*available at* http://www.corporate-ir.net/ireye/ir_site.zhtml?ticker=CHTR&script=410&layout=-6&item_id=485244) refers to an "all-digital *service*" but not an all-digital *system*. In fact, as the first paragraph of Charter's press carefully states, "The new service has been successfully delivered . . . *simultaneously with basic analog cable programming.*" *Id.* (emphasis added).

expanded basic). The need to deliver many channels in analog will continue for years to come.

Thus, for the foreseeable future, any carriage requirements for digital multicast signals will create burdens that are *in addition to*, not in lieu of, the burdens imposed by carriage of analog broadcast signals. In fact, for some years past the expected termination of analog broadcasting, Comcast expects that -- as a result of marketplace forces alone -- it will need to allocate bandwidth to deliver *three different versions of many local broadcast signals for those broadcasters that are transmitting high-definition ("HD") programming*. Assuming that a given broadcaster offers programming that Comcast, operating in a vigorously competitive video marketplace,³ elects to carry, Comcast will carry: (1) an analog version (requiring 6 MHz of analog spectrum) to those TVs that have no digital decoding capability attached; (2) an HDTV version (requiring an additional 2-4 MHz of digital spectrum (see discussion below)) to subscribers viewing with an HD STB, and (3) a compressed digital signal (say 0.6 MHz of digital spectrum) to TVs connected to digital but non-HD STBs.⁴ All of this bandwidth, it should be noted, is needed to carry a *single* stream of broadcast programming, and all of this carriage will occur without government coercion; a carriage requirement applicable to multiple streams of video programming per broadcast licensee would obviously compound the bandwidth demands further.

Another major flaw in the NBC analysis concerns the bandwidth demands of other services that cable operators intend to deliver -- and cable customers want to buy.⁵

- For example, the NBC Paper asserts (at 10 n.9) that it is "extremely conservative" to estimate that "as many as 10 percent" of cable households will simultaneously use video-on-demand ("VOD").⁶ Comcast's planning assumptions anticipate a much

³ Comcast has presented detailed evidence of the intense and growing competition that it faces in delivering video programming to consumers. See Comments and Reply Comments of Comcast Corporation, MB Docket No. 04-227, filed July 23 and August 25, 2004. The NBC Paper's claim (at 16) that cable exercises greater market power today than in 1992 is patently absurd.

⁴ The non-HD digital STBs that have been deployed to roughly a third of Comcast's customers (but a smaller percentage of the TVs connected to Comcast's cable systems) are not capable of decoding an HD signal.

⁵ To NBC's credit, the paper at least implicitly acknowledges that the range of services now delivered over cable systems has expanded significantly. In 1992, cable bandwidth was used solely for carriage of broadcast networks and cable networks. Over the intervening years, the demand for services other than linear video programming services has skyrocketed. Now, broadcast stations and cable networks compete for bandwidth with high-speed cable Internet, circuit-switched and IP phone services, video-on-demand programming, high-definition programming, and so forth (with more to come).

⁶ NBC also asserts that "[a]ctual subscriptions and usage would be significantly lower." NBC Paper at 10 n.9.

higher level of viewing of non-linear program materials -- on the order of 40% of households using VOD simultaneously.⁷

- The NBC Paper also predicts (at 10 n.9) a level of usage of high-speed cable Internet based on what it calls the “extreme example” of customers receiving “downloads at speeds of 2 Mbps,” which the NBC Paper asserts is “a higher average speed than cable or DSL today.” In fact, beginning months before the NBC Paper was submitted, Comcast’s high-speed Internet service *already* offered downloads at 3 Mbps, Comcast has now introduced a 4 Mbps option, and customer demands are expected to drive download speeds to even higher levels in the future.⁸
- The NBC Paper also assumes (at 10) that only 54 MHz will continue to be used for upstream communications. In fact, as IP telephony, high-speed cable Internet, VOD usage, and other forms of interactivity develop, Comcast’s plans contemplate allocating 108 MHz for upstream communications.

In each of these respects, the assumptions that the NBC Paper claims (at 10 n.9) are “extremely conservative” actually skew the analysis in ways that *understate* the competing claims on bandwidth. No wonder then that NBC perceives (at 7) that cable bandwidth will be “abundant,” while those who actually manage that bandwidth see serious bandwidth constraints.

The NBC Paper also ignores the need to preserve cable operators’ flexibility in delivering broadcasters’ high-definition (“HD”) signals.⁹ Instead of carrying a 19.4 Mbps bit stream as it is delivered to the cable headend, a cable operator might reasonably wish to retain the flexibility to separate it into its components and then use advanced codecs like MPEG-4 to transmit it (while dynamically allocating bandwidth to other functions when carriage of the broadcaster’s primary video programming does not require the full 19.4 Mbps). The NBC Paper is internally inconsistent on this point. At various places (e.g., pages 3 & 7), it assumes that HDTV signals will be carried in 3 MHz, or one-half of the 6 MHz currently required for analog carriage of a broadcast signal, but elsewhere (e.g., page 2) it assumes that HDTV signals will be carried in 2 MHz, or one-third the 6 MHz that is currently required for analog carriage of a broadcast signal. The actual number, of course,

⁷ Assuming the same 700 subs per node that NBC uses, VOD could require 280 separate program streams at a time.

⁸ High-speed Internet services are subject to intense -- and still growing -- competition. If 10 Mbps or higher speeds are demanded by the market, cable operators will need to be prepared to deliver them.

⁹ Curiously, when calculating the number of channels cable operators will be able to carry, the NBC Paper works on the assumption that HD channels require 12.9 Mbps. NBC Paper at 10 n.9. Yet one page later the NBC Paper assumes (at 11 & n.10) that cable carriage of *broadcast* signals will require 19.4 Mbps. One can fairly ask: if broadcasters acknowledge that HDTV channels can be carried in 12.9 Mbps, then on what theory are they demanding compulsory carriage of 19.4 Mbps?

depends on the modulation scheme that the cable operator uses. The NBC Paper's assumption (at 3) that one full-motion HDTV signal, or six SDTV signals, will be carried in a 3 MHz cable channel would be correct if the cable operator uses 256 QAM (quadrature amplitude modulation). But contrary to the NBC Paper's claim (at 8) that the 256 QAM modulation scheme "has been adopted by the cable industry generally," today most of Comcast's digital channels are carried using 64 QAM, which requires 28 Mbps -- so the broadcasters' DTV signals currently require 2/3, not 1/2 (or 1/3) of a 6 MHz slot. Shifting to 256 QAM obviously can create some bandwidth efficiencies, but 256 QAM is more susceptible to noise (such as from airports, hospitals, public safety transmissions).

Thus, the bottom-line conclusions of the NBC lawyers and consultant are simply wrong. Although the NBC Paper asserts (at 13) that "[i]n no instance would carrying the entire digital broadcast signal on a digital cable system require more than half of the bandwidth currently utilized for analog transmissions," the important point is that, so long as analog transmissions must continue (and as shown here marketplace considerations will require this beyond 2007 and beyond 2009), the bandwidth demands of carrying digital broadcast signals will be *in addition to, not in lieu of*, the bandwidth needs for carriage of analog broadcast signals

The NBC Paper also makes numerous other claims that are erroneous, the vast majority of which have been fully refuted in prior submissions by Comcast, the National Cable & Telecommunications Association, and others. One or two new points warrant a brief comment.

- The NBC Paper asserts (at 19) that a cable operator offering 100 channels receives approximately 900 minutes per day of prime time advertising opportunities. This is untrue, as the market for local "avails" is nonexistent for many cable channels. Comcast is a leader in cable television advertising, but the company offers local avails on only about 40 channels, not 100. At a typical rate of two minutes per hour, there are approximately 240 minutes of prime time local avails to be sold in any given market.
- The NBC Paper states (at 20) that many local broadcast stations terminated their local news operations because they could not afford to support them with the advertising revenues from a single programming stream. This acknowledgment seriously undercuts the notion (*see id.* at 22) that each broadcaster will be able to use one of its multicast channels to produce "all day, ongoing local news reporting."
- The NBC Paper claims (at 23) that "[v]iewers also would benefit from a channel dedicated to local weather, traffic, travel, and alerts." That may well be, but if each broadcaster in a market were to make the same judgment, then the result would be governmentally coerced carriage of up to 24 such channels (*see id.* at 14). And the public "benefits" of these services obviously diminish as additional broadcasters in the same market copy the same model. Mandatory carriage of the images of 24

cameras pointed at 24 thermometers! Coerced carriage of “parades” (see *id.* at 23)! Is NBC really suggesting that these are “important governmental interests” justifying a burden on the First Amendment rights of cable operators and cable networks?

The NBC Paper does warrant the Commission’s attention for one reason. It acknowledges (at 7) that “[d]igital video programming transmission was not even a proven operational technology in 1992.” This statement is true, but it is not helpful to those who demand multicast must-carry rights. It certainly undermines any broadcaster claim that Congress could have consciously chosen in 1992 to grant must-carry rights for multiple digital program streams for each individual broadcaster. Indeed, given the state of the art as of 1992, Congress possessed none of the facts necessary to even begin an analysis of what “important or substantial governmental interest” would thereby be served or of whether such a requirement would “burden substantially more speech than is necessary” to further those interests. And of course the broadcasters have furnished no evidence that Congress ever even contemplated the question, much less that it consciously resolved the question in their favor.

Finally, we note that, while we have taken pains to set the record straight as to the NBC Paper’s mistaken assertions about cable bandwidth, there are many equally or more compelling reasons for the Commission not to expand must-carry in the digital environment. We refer the Commission to Comcast’s expansive earlier presentations on the Constitutional, statutory, and public interest infirmities of the broadcasters’ arguments for dual and multicast digital must-carry.

This letter is filed pursuant to Section 1.1206(b)(2) of the Commission’s rules. Please let me know if you have any questions.

Respectfully submitted,

James L. Casserly
Counsel for Comcast Corporation

ccs: Honorable Michael K. Powell, Chairman
Commissioner Kathleen Q. Abernathy
Commissioner Michael J. Copps
Commissioner Kevin J. Martin
Commissioner Jonathan S. Adelstein
W. Kenneth Ferree, Chief, Media Bureau
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