

**Written Testimony of
Richard Slenker
Executive Vice President, Technology and Engineering Operations, DIRECTV, Inc.
Before the Senate Committee on Commerce, Science and Transportation
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Chairman Stevens, Senator Inouye, and members of the Committee, my name is Richard Slenker and I am the Executive Vice President, Technology and Engineering Operations at DIRECTV Inc. (“DIRECTV”). I am responsible for the day-to-day operations of DIRECTV’s satellites, broadcast centers, and other technologies used to provide direct broadcast satellite (“DBS”) service. Thank you for inviting me to testify on behalf of DIRECTV regarding the digital television (“DTV”) transition.

I have two simple messages for you today. First, DIRECTV is spending billions of dollars on satellites that will allow us to offer as many as 1500 local channels in high-definition (“HD”) by 2008 – all without a government mandate of any kind. Second, DIRECTV’s ability to offer these local HD channels will be seriously compromised, if not totally eliminated, if Congress adopts onerous carriage requirements. While such requirements would burden cable operators, they would cripple DIRECTV’s HD local plans.

In 1999, Congress granted satellite operators the right to carry local broadcast stations. In doing so, Congress created a “carry one carry all” carriage regime for satellite that reflected the technological differences between satellite and cable. This unleashed, for the first time, real competition to cable and the result has been nothing short of

astounding. In 1999 the DBS industry had 10 million customers – and today satellite has more than 26 million customers. This extraordinary success is due in no small measure to the fact that Congress recognized the differences between satellite and cable technology and crafted a law that takes these differences into account. As a result, DIRECTV has invested billions of dollars to provide *analog* local broadcast stations in over 135 local markets, serving over 93 percent of U.S. television households.

We are now extending this commitment to the provision of *high definition* local broadcast channels. We are investing billions more to design and launch four next-generation satellites over the next several years. These satellites, which markedly extend the state of the art in the satellite industry, will have the capacity for as many as 1500 high definition local broadcast channels. This investment will drive vigorous competition with cable and hasten the digital transition, all to the benefit of the American public.

I must caution members of the Committee that our ability to bring this digital and high definition broadcast programming to U.S. consumers will collapse if satellite operators are forced to carry broadcasters' multicast service or "all free bits." Any material increase in existing carriage obligations will cripple our high definition plans and undermine the ability of DBS to compete effectively with cable.

DIRECTV urges Congress not to let this happen. Congress should build on the success of "carry one carry all" such that the "the practical differences between the two industries are recognized and accounted for" in the digital world. In this way, Congress will ensure that the vibrant competitive marketplace we experience today will continue to exist tomorrow.

DIRECTV Relies on State of the Art Technology to Retransmit Local Stations

Given its dominance in the video market, it is understandable that the focus of the policy debate has centered on cable television. But it is critically important for policy makers to account for the capacity limitations and technical differences between DBS and cable in any DTV legislation. Otherwise, expanded digital carriage requirements will threaten DIRECTV's HD rollout in markets across the country, which would only serve to harm competition in the video marketplace.

First, satellite has far less effective capacity to carry local signals than do cable operators. This reflects the difference between offering local signals on a national satellite platform vs. a local cable system.

A typical cable central office, or "headend," collects over-the-air broadcast signals from the surrounding community and retransmits those signals to viewers. Thus, a cable system will typically retransmit ten to fifteen broadcast signals at a time. DIRECTV, by contrast, must retransmit broadcast signals in markets from coast to coast from a single satellite constellation, the satellite equivalent of the cable headend. DIRECTV today retransmits the signals of over 1000 local stations simultaneously. This requires an enormous amount of capacity and has been the principal engineering challenge DIRECTV has faced over the past five years.

DIRECTV has met this challenge by employing state of the art technology. First, DIRECTV has launched *spot-beam satellites* that create additional capacity by reusing spectrum in different geographic areas. The more traditional CONUS-beam satellites

have a single, multi-frequency (or multi-transponder¹) footprint that covers the entire continental United States. While CONUS satellites are excellent for retransmitting *national* programming, using them to retransmit *local broadcast* programming is a very wasteful use of spectrum. For example, if DIRECTV wanted to retransmit a Boston station on a CONUS satellite, it would have to retransmit the station to the entire United States, even though, by law, only Boston-area subscribers could watch it. Naturally, if one were to try to retransmit local broadcast stations in every market throughout the country via CONUS satellites, capacity on the satellites would quickly be exhausted leaving little, if any room for national cable programming.

By contrast, spot-beam satellites are much better for the retransmission of local broadcast signals because, rather than “seeing” the entire United States with a large number of transponders, they “see” multiple, discrete areas, each with only one or two transponders. Spot beam satellites thus allow the geographic “reuse” of satellite frequencies – as transponders operating over the same frequencies can simultaneously transmit signals to Houston and Chicago. This reuse is akin to your car radio – there might be FM stations operating at 99.5 in Washington, D.C., New York, and Boston, and, as long as they are far enough apart, they do not interfere with one another. Thus, the 99.5 frequency is “re-used” among these three cities. By covering discrete and non-overlapping geographic areas, satellite spot-beams can accomplish much the same thing.²

¹ A single DBS transponder covers 24 MHz of spectrum.

² To give you an idea of how important this technology is, DIRECTV has 46 DBS frequencies, 10 of which have been dedicated for use in spot beams to deliver nearly 900 local broadcast stations. If these same frequencies were used in CONUS beams, they could carry only on the order of 120 stations. Clearly, DIRECTV’s use of advanced spot beam technology has been the lynchpin of its local service capability.

The second technique used to increase capacity is *compression*, a technique for mathematically manipulating information to remove redundant and unneeded bits. In the early 1990s, compression rates were roughly 5:1 (meaning that you could fit five cable channels or broadcast signals on a standard 24 MHz DBS transponder). Today, for standard definition television signals, compression rates are typically between 11:1 to 12:1, and further improvements are on the horizon. Compression rates for HD signals are, of course, much lower – but these, too, are expected to improve.

Take, for example, the Washington D.C. designated market area. DIRECTV satellites have a spot beam with two transponders covering the region around Washington, D.C. At 12:1 compression, the retransmission of each of Washington's 12 analog broadcast stations in standard definition format can be achieved while leaving additional capacity for carriage of local signals in the other markets covered by the same spot beam.

However, if DIRECTV were required to carry each station's multicast signal without using compression, it would have to allocate up to an entire transponder to each station. Under this scenario, DIRECTV could carry only two Washington stations, and thus, under the current "carry one carry all" rules, DIRECTV could not retransmit *any* local signals to Washington (much less have capacity remaining to support local service in other markets within the beam). Accordingly, the spot beam infrastructure that DIRECTV has developed and deployed at a cost of billions of dollars would be rendered essentially useless. Moreover, even if it were possible to take all of the frequencies DIRECTV currently uses for local signal carriage nationwide and dedicate them to providing local stations in Washington at a 1:1 compression ratio, there still would not be sufficient capacity to serve even this single market.

The bottom line is that, if you want to know how much capacity a satellite operator has to retransmit local broadcast signals in a particular market, you need to know not just how many transponders the satellite operator has, but also how many transponders are available *in the spot beam* covering that market, as well as *how much the satellite operator is able to compress the signal* while still maintaining signal quality.

*When the transition ends, cable will set aside **less** bandwidth for broadcast signals while DBS will dedicate **more**.*

The cable industry does not face the same technological hurdles or bandwidth constraints as DBS when it comes to delivering local broadcast stations. And more importantly, the end of analog broadcasting will result in a huge spectrum windfall for the cable industry. Today, cable provides local broadcast signals in an analog format. Assuming the absence of additional carriage obligations, by switching to digital and employing compression techniques, cable operators will be able to **reduce** the amount of bandwidth they set aside for broadcasters by at least 100 percent, and in many cases, much more. The same is not true for DBS. We have always been digital and have already realized the efficiencies and bandwidth savings made possible by advanced modulation, coding and most importantly, digital compression. As these techniques have improved, DIRECTV has been able to “fit” more analog broadcast channels into spot beams, enabling us to comply with “carry one carry all” requirements. HD programming, however, contains far more data than analog, thus requiring far more capacity even after compression. Thus, the transition to digital broadcasting will significantly **increase** the amount of bandwidth that DIRECTV dedicates for broadcasters. And, any kind of multicasting or “free bit” requirement

would only further exacerbate this discrepancy imposing a far greater burden on DBS than on cable.

Multicast Proposals Would Cripple DIRECTV's Local into Local HD Service

DIRECTV is able to retransmit local broadcast signals in the first place because the “carry one carry all” rules specify only that DIRECTV retransmit the “primary video [and] accompanying audio” signals of local broadcast stations. They rightfully do not mandate the amount of *bandwidth* that DIRECTV must use to retransmit the signals, or that DIRECTV must retransmit signals that do not relate to the primary video feed. Indeed, the law specifically permits DIRECTV to use “reasonable compression techniques” in such retransmissions. DIRECTV can thus meet its statutory obligations while reducing the bandwidth of the signals, all the while maintaining the digital clarity that is a hallmark of our service.

Some broadcasters, however, want to change this formulation for the retransmission of DTV signals. They say that satellite carriers should be required to retransmit not just the “primary video” of digital signals but also multicast services or in the alternative “all free bits.” What that really means is that satellite carriers would be required to retransmit the entire bit stream of a broadcaster’s digital transmission – including redundant and other bits unnecessary for a quality digital video signal and even bits that have nothing to do with video service at all.³ Were such a rule applied under today’s carry one carry all regime, this would mean that satellite operators would have to offer such a “pipe” to *all*

³ See, e.g., Letter from Henry L. Baumann, NAB, *et al.*, to Chairman Michael Powell, FCC, MB Docket No. 98-120 (Sept. 5, 2002) (suggesting that cable operators not be permitted to “alter the bits within the ‘data packets’ of the broadcast DTV stream).

broadcasters in a market before retransmitting the digital signals of *any* such broadcaster. As my earlier discussion of the Washington, D.C. market illustrates, if that were the rule, DIRECTV would be carrying local stations in a handful of markets versus the 135 we are in today.

DIRECTV believes its future lies in bringing its customers more high-definition signals, particularly local stations in high definition. Moreover, those signals will have to be of sufficient quality to compete with the high-definition offerings of cable operators, or DIRECTV will likely lose subscribers to cable. Our plans depend critically upon two factors; (1) the ability to use cutting-edge technology, especially the use of advanced compression techniques, and (2) the carriage of a broadcaster's primary video signal only. If DIRECTV is required to carry each broadcaster's multicast programming, we will be forced to cut back dramatically on the number of digital markets we can serve.

*Multicast Must Carry Penalizes Creative Entrepreneurs and Threatens MVPD
Competition.*

Our decision to invest billions of dollars in order to provide a local into local HD broadcast service is a response to the demands of our customers and the competitive environment in which we operate. It would truly be unfortunate if Congress were to jeopardize this competition and our ability to meet consumer demand by imposing a multicast must carry obligation on DBS.

Quite frankly, the broadcasters have not made a compelling case as to why their existing must carry rights—carriage of their primary video and accompanying audio signal—

should be dramatically increased in a digital world. Broadcasters play an important role in their local communities and are required to serve the public interest in exchange for their use of the public airwaves. They play a special and unique role in our society and enjoy a special and unique privilege in the guaranteed carriage of their programming on cable and satellite systems. That privilege will remain undiminished once the transition to digital broadcasting is complete. But if the broadcasters want to exploit the opportunities that the digital era offers by creating new content and new services, there is simply no reason why they shouldn't have to compete with every other entrepreneur with a good idea. Mandating the carriage of any new service a digital broadcaster may offer is unfair to every other non-broadcast programmer and will force MVPD platforms to use precious bandwidth based on government fiat rather than consumer demand.

The MVPD marketplace is competitive and will respond to compelling ideas. If broadcasters create new programming services that consumers demand, competing distribution platforms will want to carry it (to the extent they have capacity to do so). Conversely, imposing a multicast must carry obligation on DBS would force DIRECTV to scrap its local into local HD plans and shrink its local into local broadcast service, casting an ominous shadow over what has been a successful congressional effort to promote multichannel video competition.

We encourage Congress to maintain policies that preserve a vibrant competitive video marketplace that has reaped enormous benefits for the American public.

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Mr. Chairman and Members of the Subcommittee, I would like to thank you for allowing me to give DIRECTV's perspective on these issues. I am happy to take your questions.