

224. We report the emergence of several additional regional sports networks this year, including Channel 4 San Diego, MountainWest Sports Net, SportsNet New York, and SportTime Ohio.<sup>760</sup> We also note that TurnerSouth changed its name to SportsSouth.<sup>761</sup>

225. A dispute over carriage of sports programming arose following the Commission's approval of the Adelphia transaction. On August 1, 2006, NFL Enterprises filed a petition alleging that Time Warner violated Section 76.103 of the rules by dropping the NFL Network from cable systems that it had recently acquired from Adelphia and Comcast without the requisite 30-days' notice.<sup>762</sup> On August 3, 2006, the Commission instructed Time Warner to reinstate carriage of the NFL Network on all of its newly acquired systems, on a temporary basis, until the NFL's petition could be resolved on its merits.<sup>763</sup> Subsequently, the Media Bureau approved a Consent Decree with Time Warner and terminated the proceeding.<sup>764</sup>

226. In addition, on January 17, 2007, The America Channel filed a notice with Comcast of its intent to pursue arbitration under the RSN carriage condition of the *Adelphia Order*, in lieu of filing a program carriage complaint against Comcast. On January 24, 2007, Comcast filed a Petition for Declaratory Ruling with the Commission seeking a declaration that TAC is not a RSN as that term is defined in the *Adelphia Order*.<sup>765</sup> In its Response, TAC requests that the Commission find that TAC does meet the definition of RSN and direct Comcast to participate in arbitration to resolve TAC's program carriage complaint against Comcast.<sup>766</sup>

#### d. News and Public Affairs Programming

227. We requested comment on the extent to which MVPDs provide local news and

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Commission in the *News-Hughes Order* regarding access to the RSN programming controlled by Liberty Media. See Consolidated Application at 17-18.

<sup>760</sup> See Appendix C, Table C-3.

<sup>761</sup> *Id.*

<sup>762</sup> NFL Enterprises LLC, Emergency Petition for Declaratory Ruling and Enforcement Order, or in the Alternative, for Immediate Injunctive Relief (filed Aug. 1, 2006).

<sup>763</sup> *Time Warner Cable, A Division of Time Warner Entertainment Company, L.P.*, 21 FCC Rcd 8808 (MB 2006); *recon. denied*, 21 FCC Rcd 9016 (MB 2006).

<sup>764</sup> See *Time Warner Cable, A Division of Time Warner Entertainment Company, L.P.*, 21 FCC Rcd 8808 (MB 2006). In the absence of material new evidence relating to this matter, based on the record before us, in particular Time Warner's acknowledgement that its discontinuation of its carriage of the NFL Network without notification of its subscribers violated Section 76.1603, the Media Bureau concluded that there were no substantial or material questions of fact as to whether Time Warner possessed the basic qualifications to be or remain a Commission licensee.

<sup>765</sup> See Comcast, For Declaratory Ruling That The America Channel is Not a Regional Sports Network as That Term Is Defined in the Commission's *Adelphia Order*, CSR-7108 (filed Jan. 24, 2007). In the *Adelphia Order*, an RSN is defined as "any non-broadcast video programming service that (1) provides live or same-day distribution within a limited geographic region of sporting events of a sports team that is a member of Major League Baseball, the National Basketball Association, the National Football League, the National Hockey League, NASCAR, NCAA Division I Football, NCAA Division I Basketball and (2) in any year, carries a minimum of either 100 hours of programming that meets the criteria of subheading 1, or 10% of the regular season games of at least one sports team that meets the criteria of subheading 1." See *Adelphia Order*, 21 FCC Rcd at 8287 ¶¶ 190-91 and Appendix B.

<sup>766</sup> TAC Response, Exhibit D of Exhibit B.

community affairs programming because such programming allows MVPDs to provide a unique service that meets the interests and needs of their communities.<sup>767</sup> This year, of the 102 regional programming networks identified, 51, or 50 percent, are regional news networks.<sup>768</sup> A regional news network may concentrate on a single metropolitan area, as do NY1, the News 12 networks, Bay News 9, and News 8 Austin. They may originate their own content, or repurpose news content from co-owned broadcast channels. NewsChannel 5+ in Nashville, NewsWatch 15 in New Orleans, NewsChannel5 in San Diego, and News on One in Omaha are examples of the latter model. We also note that several regional news networks offer Spanish versions of their programming, including New York 1 News, which offers NY1 Noticias; Bay News 9, which offers Bay 9 News en Español; and Arizona News Channel, which offers ¡Mas! Arizona.<sup>769</sup> News 8 Austin has added several 24-hour channels dedicated to such news events as weather, traffic, and sports.<sup>770</sup>

e. **Other Programming**

228. In the *Notice*, we requested comment on a variety of other types of programming, including PEG programming, DBS public interest programming, non-English programming, locally originated and community-oriented programming, and children's programming. MVPDs use these types of programming to compete more effectively and to serve specific groups in their local communities.<sup>771</sup>

229. **PEG Programming.** Many cable operators set aside one or more channels on a cable system for public, educational, and governmental ("PEG") programming. Generally, these channels provide programming produced by local government entities, community groups, and individuals. Local franchising authorities may request, as part of the franchising process, that operators devote a certain amount of channel capacity and equipment for this purpose.<sup>772</sup> These channels may be heavily used in some communities, while other communities may not seek PEG channels. In Minnesota, for example, LMC/MACTA explains that some LFAs require significant capacity for PEG channels or institutional networks, and others may seek little or none.

230. PEG channels are the pre-eminent examples of local programming, according to the Maryland Counties. They state that the allocation of resources for PEG channels is based on local needs and interests. NYC advocates the importance of PEG access channels and institutional networks, stating that public access channels bring residents borough-specific information and local programming that might not otherwise be available. Its educational and governmental channels are used for programming by the City University of New York and for C-SPAN-type coverage of city council and other local governmental proceedings.<sup>773</sup>

<sup>767</sup> See *Notice*, 21 FCC Rcd at 12235 ¶ 15.

<sup>768</sup> See Appendix C, Table C-3.

<sup>769</sup> *Id.*

<sup>770</sup> *Id.*

<sup>771</sup> See *Notice*, 21 FCC Rcd at 12229 ¶ 15.

<sup>772</sup> 47 U.S.C. § 531. Local franchise authorities are allowed to establish procedures under which the cable operator may utilize unused PEG channel capacity for other services. 47 U.S.C. § 531(d)(1).

<sup>773</sup> *Id.*

231. **DBS Public Interest Programming.** DBS operators are required to reserve 4 percent of their channel capacity for “noncommercial programming of an educational or informational nature.”<sup>774</sup> To qualify for carriage on this reserved capacity, programmers must be organized for a noncommercial, nonprofit purpose; they must be a national educational programming supplier; and they must be responsible for 50 percent of the direct costs incurred by the DBS operator in making the programming available. Furthermore, the programming offered by such programmers must contain no advertisements, must be of an educational or informative nature, and must be available on a regular schedule.<sup>775</sup> EchoStar reports that it provides 21 channels of public interest programming.<sup>776</sup> DIRECTV provides 14 channels of public interest programming.<sup>777</sup>

232. **Non-English Programming.** Cable and DBS operators continue to add non-English language programming either as part of their general packages or as themed tiers. EchoStar states that it offers more than 125 international channels in more than 25 languages, including Arabic, Chinese, French, Hindi, Polish, Japanese, and Russian. EchoStar also now offers five DishLATINO packages ranging from a basic package offering 35 channels for \$24.99 to an Everything Pak that offers over 175 channels for \$79.99.<sup>778</sup> DIRECTV offers a wide variety of foreign language programming packages. Its WorldDirect platform consists of 45 channels that include programming in multiple languages, such as Russian, Hindi, Tamil, Telugu, Gujarati, Bengali, Cantonese, Vietnamese, Tagalog, Italian, and Ukrainian. During 2006, DIRECTV launched Polish, Arabic, Mandarin Chinese, and Korean language programming packages, and it continues to expand its international programming platform to reach more ethnic audiences. Prices for DIRECTV’s foreign language packages range from \$4.99 to \$39.99 per month, and certain foreign language channels are available on an a la carte basis for \$4.99 per month.<sup>779</sup>

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<sup>774</sup> See *Implementation of Section 25 of the Cable Television Consumer Protection and Competition Act of 1992, Direct Broadcast Satellite Public Interest Obligation*, 19 FCC Rcd 5647 (2004).

<sup>775</sup> See 47 U.S.C. § 25.701.

<sup>776</sup> EchoStar currently carries the following public interest channels: Brigham Young University, Classic Arts Showcase, Colours TV, C-SPAN, Eternal World Network, Florida Educational Channel, Free Speech TV, Good Samaritan Network, Hispanic Information & Telecommunications Network, Holistic Television Network, KBS World, NASA TV, Northern Arizona University, Pentagon Research Channel, The Documentary Channel, Trinity Broadcasting network, University of California, University of Washington, and Worldlink TV. EchoStar Comments at 19. See also [http://www.dishnetwork.com/content/whats\\_on\\_dish/programming\\_packages](http://www.dishnetwork.com/content/whats_on_dish/programming_packages) (visited May 9, 2007). Following the Commission’s ruling that RFD-TV does not qualify as public interest programming for purposes of the Commission’s public interest requirements for DBS operators, EchoStar and DIRECTV, no longer count this network towards their public interest set aside. See *Farm Journal, Inc. Petition For Declaratory Ruling*, 21 FCC Rcd 14265 (2006) (finding that RFD-TV fails to qualify for carriage by DBS operators in fulfillment of their public interest obligations).

<sup>777</sup> DIRECTV currently carries the following public interest channels: World Harvest Television, C-SPAN 1, Daystar, Trinity Broadcasting Network, the WORD Network, BYU TV, Link TV, NASA TV, TCT, Once Mexico, EWTN, HITN, and NRB. See DIRECTV Comments at 7; [http://www.directv.com/DTVAPP/global/secondary\\_index.jsp?assetId+900012](http://www.directv.com/DTVAPP/global/secondary_index.jsp?assetId+900012) (visited May 9, 2007). See also n.776 *supra*.

<sup>778</sup> EchoStar Comments at 23.

<sup>779</sup> DIRECTV Comments at 7.

233. Comcast reports that it offers a broad selection of Hispanic programming networks, including Discovery en Español, CNN en Español, and Toon Disney Español. It also states that in the past year it has launched several services catering to multicultural audiences and that, in total, Comcast carries more than 50 multicultural channels and plans to add several more in English or other languages.<sup>780</sup> On January 24, 2007, Cablevision launched iO International, a group of nine international language packages, which can be sent to viewers upon their request. This new technique, called switched video, allows operators to expand channel capacity by sending digital programming only when called for by subscribers.<sup>781</sup> These new packages range in cost from \$4.95 to \$29.95 per month, and are available to Cablevision's 2.3 million digital subscribers.<sup>782</sup> Comcast is testing a similar programming option and plans to deploy its switched video service in the second half of 2007, indicating that switched video will allow it to deliver more high-definition channels.<sup>783</sup>

234. ***Locally Originated and Community-Oriented Programming.*** APTS states that the nation's 361 local public television stations provide programming of interest to their communities. These stations, according to APTS, are owned and operated by local community foundations, colleges, universities and school districts, as well as locally responsive state commissions. APTS points out that one-quarter of public television stations' funding comes from individual donations and 15 percent is funded by the federal government. The remaining 60 percent is donated by businesses, state and local governments, local colleges and universities, and foundations. APTS further states that the programming that public television stations provide is responsive to the communities they serve because of the inherently local nature of these stations. Locally owned and controlled public broadcasting stations are models of local service to their communities, according to APTS, because they control their own programming content and schedules and tailor them to the interests of their communities.<sup>784</sup>

235. CBA states that Class A and LPTV station owners are a diverse group, and that these stations are often licensed to small communities or to serve niche audiences in larger communities. It notes that they are the only class of broadcast service required by statute to provide a minimal amount of locally produced programming. CBA states that these stations provide locally pinpointed information, including emergency information. CBA notes that almost all viewers of Class A and LPTV stations rely on over-the-air reception in the absence of must-carry rights.<sup>785</sup> To facilitate access to these stations, it urges the Commission to: (1) recommend that Congress repeal Section 614(e) of the Act, which required

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<sup>780</sup> Comcast Comments at 61.

<sup>781</sup> See Section IV, at ¶ 276.

<sup>782</sup> Cablevision Systems Corp., *iO Goes International with Launch of Diverse International Programming Services Across New York Metropolitan Area* (press release), Jan. 24, 2007.

<sup>783</sup> Todd Spanger, *Switching On Digital Video: Cablevision Does Big SDV Rollout; Test for Comcast*, MULTICHANNEL NEWS, Jan. 29, 2007, at 4; MULTICHANNEL NEWSWIRE, *Comcast Sets Switched Video Rollout*, at <http://www.multichannel.com/article/CA6410009> (visited Mar. 14, 2007).

<sup>784</sup> APTS Comments at 3-4.

<sup>785</sup> CBA Comments at 4-7.

the withdrawal of the A/B switch rule;<sup>786</sup> (2) recommend that Congress amend Section 325(b)(7)(B) of the Act that currently exempts Class A and LPTV stations from the reciprocal good faith retransmission consent bargaining requirements;<sup>787</sup> and (3) act on the petition filed by Venture Technologies Group proposing to apply the network nonduplication and syndicated exclusivity rules to Class A and LPTV stations.<sup>788</sup>

236. NAB states that broadcast stations remain a leading source of vital public safety information and local programming even for those households that subscribe to an MVPD service. It urges the Commission not to discount the important role that broadcasters play in the provision of local, diverse programming, as well as vital emergency information and alerts, to all television households, whether or not they subscribe to an MVPD service.<sup>789</sup>

237. Comcast reports using its VOD service to provide local content, including local public affairs programming and newscasts from local broadcast stations, in addition to providing movies and other entertainment offerings. In the Denver area, for example, Comcast is collaborating with 26 local municipalities to explore potential uses of new cable technology for their PEG access channels, including VOD, designed specifically to meet the needs of local communities and increase the value of community programming to television viewers. The resulting product, called *MetroBeat TV*, consists of viewer designed programming. Comcast also makes time available on its VOD service for local political candidates. During the 2006 election cycle, candidates in 70 of Comcast's local markets had an opportunity to use the service to reach Comcast subscribers with video messages ranging in length from two minutes to 30 minutes.<sup>790</sup>

238. **Children's Programming.** Cable television viewing continues to attract a growing audience among children and families. Total day viewing of cable television by children (ages 2-11) increased from a 33 share in 1993/1994 to a 73 share during the 2005/2006 television season.<sup>791</sup> Viacom reports that its networks serve a range of consumer interests, including Nickelodeon and Noggin for children.<sup>792</sup> In addition to providing traditional television content, Nickelodeon recently introduced Nicktropolis.com for children ages 6 to 14. It introduced this new web site with games and videos based on its original children's programming as a result of finding that more than 51 percent of children ages 8

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<sup>786</sup> 47 U.S.C. § 614(e). Previously, the Commission's rules required cable operators to make available input selector (A/B) switches to allow consumers to readily change between over-the-air reception and cable-delivered programming.

<sup>787</sup> 47 U.S.C. § 325(7)(B).

<sup>788</sup> See Venture Technologies Group, LLC, Petition for Rulemaking to Amend the Commission's Rules to Extend its Network and Non-Network Territorial Exclusivity, Syndicated Exclusivity, and Network Non-duplication Protection Rules to Low-power, Class A, and Noncommercial Broadcast Stations, RM 10335, filed Oct. 23, 2001.

<sup>789</sup> NAB Comments at 3-4.

<sup>790</sup> Comcast Comments at 64-65.

<sup>791</sup> Nielsen Media Research, *Share of Audience Report - Broadcast Calendar (TV Season)*, Dec. 31, 2006.

<sup>792</sup> Viacom, Inc., [http://www.viacom.com/view\\_brand.jhtml?inID=6&sectionid=2](http://www.viacom.com/view_brand.jhtml?inID=6&sectionid=2) (visited Jan. 31, 2007).

to 14 watch TV and videos online.<sup>793</sup> Noggin provides 12 hours daily (from 6 a.m. to 6 p.m.) of commercial-free educational programming designed to appeal to families with pre-school age children. Noggin also provides interactive programming for users with a special remote. At night, Noggin is replaced by The N, an ad-supported channel for teenagers.<sup>794</sup> Similarly, Nickelodeon shows programming originally shown on the broadcast networks intended for general audiences under the Nick-at-Nite name.<sup>795</sup> EchoStar reports that it offers BabyFirstTV, the nation's first and only channel dedicated to babies and toddlers, on an a la carte basis at a rate of \$9.99 per month.<sup>796</sup>

**f. Access to Programming by Persons with Disabilities**

239. We invited comment and information regarding the accessibility of closed captioning and video description to persons with disabilities.<sup>797</sup> In particular, we sought comment regarding the quality, accuracy, placement, technology, and instances of delayed or missing captioning. Currently, video programming distributors are required to caption 100 percent of all new English-language programming on each channel.<sup>798</sup> In addition, a video programming distributor must include captioning in 30 percent of its "pre-rule" English-language programming on each channel during each calendar quarter.<sup>799</sup> The phase-in schedule for "new" Spanish language programming currently requires distributors to caption at least 1350 hours of Spanish-language programming or all of its new non-exempt Spanish language

<sup>793</sup> Geraldine Fabrikant, *Nickelodeon Begins a Web Site Focusing on Interactive Play*, NEW YORK TIMES, Jan. 30, 2007, at C-10.

<sup>794</sup> Viacom Reply at 2, 10; Viacom, Inc., at [http://www.viacom.com/view\\_brand.jhtml?inID=5000003&sectionid=2](http://www.viacom.com/view_brand.jhtml?inID=5000003&sectionid=2) (visited Jan. 31, 2007).

<sup>795</sup> Nick-at-Nite, <http://www.nick-at-nite.com> (visited Jan. 31, 2007). Examples of Nick-at-Nite programming include *Full House*, *Roseanne*, and the *Cosby Show*.

<sup>796</sup> EchoStar Comments at 6. EchoStar Satellite L.L.C. (DISH Network), <http://www.dishnetwork.com/content/programming/alacarte/index.shtml> (visited Jan. 31, 2007). Other programming networks offered by EchoStar on an a la carte basis are The Outdoor Channel, Lime, and Bloomberg television, which are sold at monthly rates of \$1.99, \$1.99, and \$1.50, respectively.

<sup>797</sup> Notice, 21 FCC Rcd at 12229 ¶ 25. In 1997, the Commission adopted phase-in schedules to increase the amount of closed captioned video programming over time. See *Closed Captioning and Video Description of Video Programming, Implementation of Section 305 of the Telecommunications Act of 1996, Video Programming Accessibility*, Report and Order, 13 FCC Rcd 3272 (1998); Order on Reconsideration, 13 FCC Rcd 19973 (1998). The Commission has a pending proceeding addressing the current status of closed captioning and seeking comment on whether revisions should be made to the rules. See *Closed Captioning of Video Programming, Telecommunications for the Deaf, Inc. Petition for Rulemaking*, 20 FCC Rcd 13211 (2005).

<sup>798</sup> 47 C.F.R. § 79.1(b)(1) (phase-in schedule for captioning "new" English language programming, which is defined as programming first published or exhibited on or after January 1, 1998). Video programming first published or exhibited for display on television receivers equipped for display of digital transmissions or formatted for such transmission is defined as "new" as of July 1, 2002. 47 C.F.R. § 79.1(a)(6)(ii). See *Closed Captioning Requirements for Digital Television Receivers, Closed Captioning and Video Description of Video Programming, Implementation of Section 305 of the Telecommunications Act of 1996, Video Programming Accessibility*, 15 FCC Rcd 16788, 16808-09 ¶ 60 (2000) ("*Digital Captioning Order*").

<sup>799</sup> 47 C.F.R. § 79.1(b)(2) (phase-in schedule for "pre-rule" programming). See also 47 C.F.R. § 79.1(a)(6) (definition of pre-rule programming).

programming per channel per quarter, whichever is less.<sup>800</sup> The rules also currently require each video programming distributor to caption 30 percent of its pre-rule non-exempt Spanish-language programming on each channel during each calendar quarter.<sup>801</sup> The rules exempt several specific classes of programming from the closed captioning requirements.<sup>802</sup> Video programming providers also may petition the Commission for an exemption from the closed captioning rules if the requirements would impose an undue burden.<sup>803</sup> The closed captioning rules are enforced through a complaint process, with the complaint initially directed to the video programming distributor responsible for compliance with the rules.<sup>804</sup>

240. The Commission also has rules that specifically address the accessibility of emergency information shown on television. There are no exemptions to these rules.<sup>805</sup> In the case of persons who are deaf or hard of hearing, Commission rules require that emergency information provided in the audio portion of the programming must be made accessible using closed captioning<sup>806</sup> or other methods of visual presentation, such as open captioning, crawls, scrolls, or appropriate signage<sup>807</sup> that appear(s) on the screen. In the case of persons with vision disabilities, emergency information that is provided in the video portion of a regularly scheduled newscast, in a newscast that interrupts regular programming, or in "crawls" or "scrolls" during regular programming must be made aurally accessible. The Commission has released Public Notices recently reminding the public of these rules, and explaining and clarifying the overlap these rules have with the closed captioning rules for some video programming distributors as of January 1, 2006.<sup>808</sup>

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<sup>800</sup> 47 C.F.R. § 79.1(b)(3)(iii).

<sup>801</sup> 47 C.F.R. § 79.1(b)(4)(i).

<sup>802</sup> 47 C.F.R. § 79.1(d).

<sup>803</sup> 47 C.F.R. § 79.1(f).

<sup>804</sup> 47 C.F.R. § 79.1(g).

<sup>805</sup> 47 C.F.R. § 79.2.

<sup>806</sup> As of January 1, 2006, the date upon which 100 percent of new nonexempt English language programming must be closed captioned, the major national broadcast television networks (*i.e.*, ABC, CBS, Fox and NBC), affiliates of these networks in the top 25 television markets, and national nonbroadcast networks serving at least 50 percent of all homes subscribing to multichannel video programming services must close caption (or open caption) the emergency information they air.

<sup>807</sup> See, *e.g.*, *Waterman Broadcasting Corp. of Florida, Inc., Licensee of WBBH-TV, Fort Myers-Naples, FL, Montclair Communications, Inc., Licensee of WZVN-TV, Fort Myers-Naples, FL*, 20 FCC Rcd 13534 (EB 2005); *ACC Licensee, Inc., Licensee of WJLA-TV, Washington, D.C.*, 20 FCC Rcd 9832 (EB 2005).

<sup>808</sup> *Reminder to Video Programming Distributors of Obligation to Make Emergency Information Accessible to Persons with Hearing or Vision Disabilities*, 21 FCC Rcd 7994 (CGB 2006); see also *Clarification of Obligation of Video Programming Distributors to Make Emergency Information Accessible to Persons with Hearing Disabilities Using Closed Captioning*, 21 FCC Rcd 9066 (CGB 2006); see also *Obligation of Video Programming Distributors to Make Emergency Information Accessible to Persons with Hearing Disabilities Using Closed Captioning*, 21 FCC Rcd 15084 (CGB 2006).

241. We also requested comment on the availability of video description currently provided by programmers on a voluntary basis.<sup>809</sup> Specifically, we requested information regarding the amount and types of video programming that includes video description and whether MVPDs generally carry video descriptions inserted by programmers.

242. APTS comments that public television stations have been instrumental in working with the disability community to ensure full access to educational programming. It states that public television was at the forefront of the development of captioning technology when it established the WGBH National Center for Accessible Media ("NCAM") in 1971.<sup>810</sup> Today, nearly 100 percent of the PBS national programming service is closed captioned. APTS also comments that the descriptive video service ("DVS") was first developed by public broadcasting through WGBH. According to APTS, NCAM's DVS has described thousands of PBS programs as well as a variety of regular programming, special programs, and cinematic productions.<sup>811</sup>

243. DIRECTV again reports that it passes through all the analog closed captioning information. It states that its receivers have been tested for capability to receive HD programming with closed captions. With respect to video description, DIRECTV states that it carries the secondary audio program ("SAP") channels of 99 nonbroadcast networks and 175 broadcast stations, although the use of these channels is determined by the programmer and it is not sure how much of what it passes through to viewers contains video descriptions.<sup>812</sup> EchoStar offers similar closed captioning and video description capabilities, although with some variation across receiver models.<sup>813</sup>

244. Panasonic states that it manufactures many products which provide enhanced accessibility features for persons with disabilities. These products include DTVs with a separate button on the remote control for accessing the SAP so that people with vision disabilities can navigate the video description without the use of a visual menu.<sup>814</sup> Panasonic also has announced that all of its digital cable-ready products will support closed captioning by using caption decoders compliant with the CEA-708 standard (*i.e.*, the technical standards for closed captioning of digital programming). Panasonic states that

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<sup>809</sup> In August 2000, the Commission adopted rules requiring certain larger broadcasters and video programming distributors to include "video descriptions" with a small amount of their programming to increase their accessibility to persons with visual disabilities. See *Implementation of Video Description of Video Programming*, 15 FCC Rcd 15230 (2000), on recon., 16 FCC Rcd 1251 (2001). On November 8, 2002, the U.S. Court of Appeals for the D.C. Circuit vacated the Commission's video description rules, finding that they exceeded the Commission's authority. See *Motion Picture Association of America v. FCC*, 309 F.3d 796 (D.C. Cir. 2002).

<sup>810</sup> APTS Comments at 12. It also notes that public television was instrumental in establishing the National Captioning Institute.

<sup>811</sup> APTS Comments at 13.

<sup>812</sup> DIRECTV Comments at 5 n.17.

<sup>813</sup> See EchoStar, [http://tech.dishnetwork.com/departmental\\_content/TechPortal/content/tech/receiverhome.shtml](http://tech.dishnetwork.com/departmental_content/TechPortal/content/tech/receiverhome.shtml) (visited Feb. 21, 2007).

<sup>814</sup> Panasonic Comments at 12.

its recording products, such as DVD recorders, would support recording and playback of captioned content no later than March 1, 2007.<sup>815</sup>

### C. Other Competitive Issues

#### 1. Competitive Developments in Small and Rural Markets

245. In the *Notice*, we requested information and comment regarding issues specific to video programming distribution in rural and smaller markets.<sup>816</sup> Small cable operators and telephone companies have video subscribership ranging from 50 subscribers up to approximately 100,000 subscribers. In the aggregate, however, small cable operators and telephone companies serve a significant segment of the MVPD marketplace. For example, the ACA reports that its 1,100 members serve approximately 8 million subscribers. ACA notes that more than half of those members serve markets of fewer than 1,000 subscribers.<sup>817</sup> While their principal competitors remain DBS operators DIRECTV and EchoStar,<sup>818</sup> small cable operators and telephone companies often compete with each other in small and rural markets.<sup>819</sup> According to ACA, small MVPDs serve as a competitive check on larger MVPDs and, in some communities, as the only high-speed Internet access provider,<sup>820</sup> although they face growing competition from satellite broadband providers.<sup>821</sup> Small cable and telephone companies' chief competitive distinction from DBS operators is their origination of local content.<sup>822</sup>

246. MVPDs in small and rural markets consider access to must-have programming, including major national nonbroadcast networks and regional sports networks, on a timely basis and at competitive rates an important competitive issue. Small and rural cable operators and LECs that plan to offer video programming complain that securing access to programming is cumbersome and expensive.<sup>823</sup> Both

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<sup>815</sup> *Id.*

<sup>816</sup> *Notice*, 21 FCC Red at 12229 ¶¶ 21-22.

<sup>817</sup> ACA Comments at 3.

<sup>818</sup> *Id.* at 2.

<sup>819</sup> Michael Hopkins, *Small Cable: Looking for New Wave of Competition? Looking for a Level Playing Field*, THE BRIDGE, July 28, 2006, at 3-5. According to a survey conducted by OPATSCO, 49 percent of rural LECs reported competition with a cable operator, 67 percent with a DBS operator, and 12 percent with another telecommunications company. OPASTCO Reply at 4. See also NTCA Comments at 18.

<sup>820</sup> ACA Comments at 2-3. According to one small MVPD, Mediacom charges approximately \$12 less in its community than in nearby DMAs without competition. Hotchkiss Comments at 1.

<sup>821</sup> Ken Belson, *With a Dish, Broadband Goes Rural*, NEW YORK TIMES, Nov. 14, 2006, at C1.

<sup>822</sup> ACA Comments at 2-3; Viodi Reply at 7; OPASTCO Reply at 4 (noting that over 80 percent of rural telephone companies surveyed produce local content).

<sup>823</sup> Michael Hopkins, *Small Cable: Looking for New Wave of Competition? Looking for a Level Playing Field*, THE BRIDGE, July 28, 2006, at 8. According to a January 2006 ACA survey, independent MSOs' monthly programming costs range from thirty to eighty-five cents per subscriber, per station for retransmission consent fees. *Staying in Business: Typical Expenses for a Small MSO*, THE BRIDGE, July 28, 2006, at 6. Two respondents complained that their programming rates had increased as much as 70 and 84 percent over the last five years. *Programming, Retrans Costs... Ouch! Monthly Programming Costs per Home for Two Independent MSOs*, THE BRIDGE, July 28, 2006, at 1.

ACA and NTCA, a trade association representing more than 570 rural telecommunications providers, report that small providers' relatively small consumer bases translate into a lack of leverage in negotiations with video programmers. NTCA asserts that because lack of carriage on small systems has little negative impact on programmers' revenue streams, they can demand that small and rural video providers pay higher fees to carry broadcast stations.<sup>824</sup> NTCA states that its members who provide video service spend approximately 50 percent of their operating expenses for programming, adding that it expects that percentage to increase in the future.<sup>825</sup> APTS notes that it continues to negotiate with ACA regarding the digital carriage of local public broadcast stations on smaller cable systems.<sup>826</sup>

247. In addition, NTCA states that some of its members that have analog cable systems are being required to upgrade their facilities to digital in order to gain rights to carry certain programming.<sup>827</sup> Small MVPDs are further stymied by nondisclosure clauses in programmers' agreements with large MVPDs, which hinder access to market rate information,<sup>828</sup> and tying arrangements, by which a network requires an operator to carry as many as 12 additional networks in order to obtain a flagship network.<sup>829</sup> As a result, small and rural MVPDs report that they must charge more for their basic and expanded basic tiers and cannot offer programming packages tailored to their communities.<sup>830</sup> According to NTCA, large

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<sup>824</sup> NTCA Comments at 3-5, 10-11. *See also* BendBroadband Reply at 2, 5-6 (claiming that the full-power NBC affiliate in Bend, which uses one of its multicast streams for the CW Television Network and plans to use multicasting for Telemundo and a local news channel, is in the process of acquiring the local low-power stations affiliated with Fox and My Network TV. BendBroadband argues that this will give one station control of six of seven local commercial network affiliates through ownership of stations, and that it will use "its ability to control all of these networks and to tie them together in retransmission negotiations [to] extract virtually any price it wants, including per-subscriber cash payments that could be prohibitively high for a small market cable operator").

<sup>825</sup> NTCA Comments at 10. The general manager of one small MVPD states that he must spend approximately 55 percent of gross revenue on programming. Hotchkiss Comments at 1. We note that, in the 2005 Cable Price Survey Report, the Commission found that increases in programming expenses were equivalent to more than half of the overall increase in prices for the basic and expanded basic tiers. *See 2005 Cable Price Survey Report*, 21 FCC Rcd at 15088 ¶ 2.

<sup>826</sup> APTS Comments at 2. APTS reports that it already has an agreement with NCTA for such carriage on cable systems serving the vast majority of subscribers.

<sup>827</sup> NTCA Comments at 14-15. NTCA reports that one of its members provides analog cable television service to only 50 subscribers, and would be required to incur an expenditure of \$180,000-\$250,000 to upgrade its network to a digital platform, but the cost of the upgrade would require a substantial increase in rates that would put it at a disadvantage relative to DBS operators. *Id.* at 15.

<sup>828</sup> *Id.* at 11-12.

<sup>829</sup> *Id.* at 12. *See also* BendBroadband Reply at 2, 5-6.

<sup>830</sup> ACA Comments at 5. *See also* Hotchkiss Comments at 1. BendBroadband, a small-market cable operator in Oregon, states that as a result of higher programming charges and tying arrangements, "(1) [i]t would be forced to pass on these increased programming costs to its subscribers; (2) the quality of programming would diminish as BendBroadband is forced to replace more desirable cable programming with less appealing multicast programming streams demanded as a condition of carrying NBC and Fox; and (3) this would ultimately lead to a loss of subscribers as they decide that satellite or other alternative programming is both more desirable and more economical." BendBroadband Reply at 3.

MVPDs' ability to distribute costs allows them to drop their service charges below cost in an attempt to drive out competition from smaller market entrants,<sup>831</sup> and their larger subscriber bases afford them sufficient leverage to negotiate exclusive retransmission agreements with content providers.<sup>832</sup>

248. Many small cable operators purchase video programming through buying cooperatives, such as the National Cable Television Cooperative ("NCTC"), which represents approximately 1,100 independent cable operators serving approximately 10 million subscribers nationwide.<sup>833</sup> NCTC negotiates master agreements with programming networks, cable hardware and equipment manufacturers, and other service providers on behalf of its membership. Through NCTC, small cable operators receive volume discounts to which they would not be entitled on their own, although one NCTC member reports that their per-subscriber programming rates are still higher than those of MSOs of comparable size to NCTC.<sup>834</sup> On the other hand, small telephone companies that provide video service complain that they cannot benefit from participating in NCTC's master affiliation agreement, because the organization limits membership to companies that provide video service "primarily by means of a cable television system."<sup>835</sup>

249. Finally, small operators are concerned about difficulties in obtaining local franchises. According to OPASTCO, 68 percent of rural LECs provide video under a local franchise, but those that operate in multiple jurisdictions may face disparately high fees and resistance from large, incumbent cable operators.<sup>836</sup> At the same time, it notes that some states have eased access to statewide video franchises for new entrants, such as LECs, to the exclusion of incumbent cable operators, who therefore must continue to seek a video franchise from each local market.<sup>837</sup>

## 2. Competitive Developments in the MDU Market

250. Multiple dwelling units ("MDUs") comprise a separate segment of the MVPD marketplace because alternative video providers frequently have difficulty offering service in MDUs in competition with an incumbent provider, especially where the incumbent has a long-term exclusive contract with the building owner that prevents competitive entry.<sup>838</sup> Exclusive contracts are those that

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<sup>831</sup> NTCA Comments at 15-17.

<sup>832</sup> *Id.* at 17.

<sup>833</sup> NCTC, at <http://www.cabletvcoop.org>.

<sup>834</sup> PVT Comments at 2.

<sup>835</sup> NTCA Comments at 18 (citing NCTC's membership requirements).

<sup>836</sup> OPASTCO Reply at 3-4.

<sup>837</sup> Michael Hopkins, *Small Cable: Looking for New Wave of Competition? Looking for a Level Playing Field*, THE BRIDGE, July 28, 2006, at 7. One such state is Texas, which passed its video franchise reform bill in 2005; other states have applied their new rules equally to incumbents and new entrants. *Id.*

<sup>838</sup> The incumbent provider is not necessarily the incumbent cable operator. Private cable operators are the incumbent video provider for many MDUs. See PCO Section *supra*; see also *Telecommunications Services Inside Wiring, Customer Premises Equipment*, 22 FCC Rcd 10640 (2007). We note that a Commission proceeding regarding certain issues of inside and home run wiring is still pending. See *Exclusive Service Contracts for Provision of Video Services in Multiple Dwelling Units and Other Real Estate Developments*, 22 FCC Rcd 5935 (2007) ("MDU Notice"). See also *2004 Report*, 20 FCC Rcd at 2816-17 ¶¶ 111-112.

specify that video service in an MDU will be provided only by a particular MVPD. Perpetual contracts are those which grant an MVPD the right to provide service for an indefinite or very long period of time, or which have automatic renewal provisions (sometimes referred to as “evergreen” clauses). Several new entrants into the MVPD marketplace have raised concerns this year with these kinds of contracts, as they have for the past several years.<sup>839</sup>

251. These commenters identify long-term exclusive MDU access contracts as a barrier to entry. BSPA, for example, contends that long-term exclusive contracts are used as an “anticompetitive weapon” to prevent new entrants from competing with incumbents. This is particularly troublesome, it points out, where franchise conditions require the new entrant to build out to match the incumbent’s footprint, and the new entrant therefore is required to pass a number of MDUs, but cannot serve customers in those buildings due to the incumbent’s long-term exclusive contracts with the MDU owners.<sup>840</sup>

252. BSPA also states that the economics of system installation are such that BSPs cannot afford to provide service to MDUs unless they can offer three services: high-speed Internet access, telephony, and multichannel video services. APPA makes a similar point stating that many of today’s new broadband networks are being constructed based on a triple-play business model, *i.e.*, the sale of voice, video, and data services as a package; therefore, it is not cost effective to remove the video component from the mix because of an exclusive MDU agreement that prevents the new provider from offering video services. SureWest explains that these exclusive agreements lead to significant economic inefficiencies. As an example, SureWest provides broadband service as both a competitive local exchange carrier (“CLEC”) and an incumbent local exchange carrier (“ILEC”). In the ILEC case, its broadband service is provided over the same copper or fiber facilities as its legacy voice service. The voice service, however, is typically not subject to exclusive agreements. If a SureWest voice service subscriber resides in a building covered by an exclusive MVPD access agreement, then SureWest cannot use its existing facilities to provide video services to that customer, even though doing so would promote the efficient use of the network already in place, and SureWest would be willing to pass along the resulting economic efficiencies to its customers in the form of lower prices.<sup>841</sup>

253. BSPA states that, from the consumers’ perspective, an MDU resident may be locked into taking service from an older network with very limited capacity and no commitment to upgrade, while a fully upgraded service provider is available at the property boundary. SureWest states that exclusive MDU agreements are used primarily by incumbent cable operators to “lock up” large groups of customers and to prevent them from being able to choose their preferred MVPD. Although this foreclosure of choice clearly affects the options for video service available to consumers, it also affects the availability of high-speed Internet service and competitive telephone service that are provided by the same network. Verizon states that large numbers of consumers will be denied the benefits of competition if incumbent cable operators are able to preclude competitive entry into MDUs through exclusive agreements. Verizon

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<sup>839</sup> See, *e.g.*, BSPA Comments at 15-17; Verizon Comments at 24-28; USTelecom Comments at 3, 16-18; SureWest Comments at 2-8; APPA Reply at 11. See also *2005 Report*, 21 FCC Rcd at 2597 ¶ 208.

<sup>840</sup> BSPA Comments at 15. See also Verizon Comments at 24-25.

<sup>841</sup> BSPA Comments at 16; APPA Reply at 11; SureWest Comments at 4-5.

points out that approximately 30-35 percent of the U.S. population resides in MDUs, and that the adverse impact of widespread use of these agreements is “dramatic.”<sup>842</sup>

254. SureWest states that there have been several important changes in technology and in the marketplace since the Commission last looked at this issue. These changes include: (1) the advent of IP technology that makes possible a whole range of new services, if only the providers are allowed access; (2) more widespread packaging of video services together with high-speed Internet access and voice services, resulting in greater potential savings for consumers; and (3) the presence of an increased number of new competitors, as a result of changes in technology and new state-wide franchising laws in many states.<sup>843</sup> In view of these recent changes in the marketplace and in technology, as well as the significant adverse impact of long-term exclusive contracts on consumers and competitive providers alike, these commenters urge the Commission to revisit the MDU issue and consider adopting new rules that would prohibit MVPDs from executing new, or enforcing existing, MDU exclusive access agreements.<sup>844</sup>

255. In this regard, Comcast argues that the Commission is being asked to “overturn” its prior decision on this issue based “solely on anecdotes of isolated incidents.” Comcast states that the Commission has recognized that there are legitimate competitive benefits to exclusive access arrangements, and there is no evidence in this proceeding to suggest that the Commission should reconsider its previous findings.<sup>845</sup> NCTA asserts that the Commission has only recently conducted a lengthy rulemaking proceeding on the subject, and that the Commission ultimately concluded in that proceeding that the record did not support a prohibition on exclusive contracts for video services in MDUs.<sup>846</sup> In the absence of any new evidence of anticompetitive problems, NCTA concludes, the banning of MDU exclusive agreements would impair, not promote, fair marketplace competition.<sup>847</sup>

256. On March 27, 2007, the Commission released a Notice of Proposed Rulemaking seeking comment on the use of exclusive contracts for the provision of video service to MDU and other real estate developments in response to allegations that the use of exclusive contracts serves as a barrier to entry.<sup>848</sup> In the *MDU Notice*, we observed that greater competition in the marketplace for the delivery of video programming is one of the primary goals of federal communications policy. We also noted that, for many participants in the marketplace, the ability to offer video services to consumers and the ability to deploy broadband networks are linked intrinsically. Thus, the *MDU Notice* is designed to solicit comment on whether the use of exclusive contracts unreasonably impedes the achievement of the interrelated federal

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<sup>842</sup> BSPA Comments at 16; SureWest Comments at 6; Verizon Comments at 27.

<sup>843</sup> SureWest Comments at 6.

<sup>844</sup> BSPA Comments at 15-17; SureWest Comments at 7-8; Verizon Comments at 28; APPA Reply at 11; USTelecom Comments at 17.

<sup>845</sup> Comcast Reply at 40.

<sup>846</sup> See *Implementation of the Cable Television Consumer Protection and Competition Act of 1992: Cable Home Wiring*, 18 FCC Rcd 1342, 1367-68, 1370 (2003); Letter from Daniel L. Brenner, Senior Vice President, Law and Regulatory Policy, NCTA, to Marlene H. Dortch, Secretary, FCC, MB Docket No. 05-311 (Sept. 8, 2006) (regarding access arrangements with owners of MDUs) (“*NCTA Sept. 8, 2006 Ex Parte Letter*”).

<sup>847</sup> *NCTA Sept. 8, 2006 Ex Parte Letter* at 4.

<sup>848</sup> See *MDU Notice supra* note 838.

goals of enhanced MVPD competition and accelerated broadband deployment, and, if so, how the Commission should act to address that problem.<sup>849</sup> Specifically, the *MDU Notice* seeks comment on: (1) the current environment for service providers attempting to obtain access to MDUs or other real estate developments, including the use of exclusive contracts; (2) the impact of exclusive contracts on consumer choice and video competition, and whether the use of exclusive contracts reduces the likelihood of competitive entry; (3) a tentative conclusion that the Commission has authority to regulate exclusive contracts for the provision of video services to MDUs and other real estate developments where it finds that such contracts may impede competition and impair deployment of those services; and (4) what specific steps the Commission should take to ensure that exclusive contracts do not unreasonably impede competitive video entry.

### 3. Competitive Developments in Alaska and Hawaii

257. We sought comment on cable, DBS, and alternative MVPD services offered in Alaska and Hawaii, and information on the extent to which services differ from those provided in the 48 contiguous states. We also requested information on each type of MVPD, including pricing, programming, necessary equipment, and market share.<sup>850</sup> The State of Hawaii reports that DBS services provide the primary competition to incumbent cable networks in Hawaii, as they do in most other states.<sup>851</sup> Although it does not have data on the number of DBS subscribers in Hawaii, the State of Hawaii suggests that DBS penetration is lower in Hawaii than in the rest of the country.<sup>852</sup> We concur with the State of Hawaii, and observe that DBS penetration in that state is 4.65 percent and in Alaska it is 10.33 percent, compared to an average DBS penetration of 24.83 percent in the 48 contiguous states.<sup>853</sup>

258. The State of Hawaii contends that DIRECTV's subscriber levels are particularly low for a number of reasons. It indicates that distribution of DIRECTV's service is limited to independent retailers that are not as highly accessible as national retail chains used in other states.<sup>854</sup> Moreover, according to the State of Hawaii, an informal survey of the DIRECTV retailers indicates that consumers are more likely to purchase EchoStar's service.<sup>855</sup> The State of Hawaii attributes DIRECTV's difficulties

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<sup>849</sup> See 47 U.S.C. § 521(6) (stating that one of the purposes of Title Vi is "to promote competition in cable communications") and 47 U.S.C. § 157, nt. (incorporating section 706 of the Telecommunications Act of 1996, Pub.Law No. 104-104, 110 Stat. 56 (1996) (stating that the Commission shall promote competition in the local telecommunications market and shall remove barriers to infrastructure investment)).

<sup>850</sup> *Notice*, 21 FCC Rcd at 12238 ¶ 23.

<sup>851</sup> State of Hawaii Comments at 1.

<sup>852</sup> *Id.* at 1-2.

<sup>853</sup> CentrisBRIDGE at <http://online.centrisplus.com> (visited Mar. 27, 2007). As of June 30, 2006, the average cable penetration was 56.77 percent in the 48 contiguous states compared to 81.38 percent in Hawaii and 45.06 percent in Alaska.

<sup>854</sup> State of Hawaii Comments at 2. See also State of Hawaii Petition for Administrative Sanctions of the State against DIRECTV Holdings, LLC, DIRECTV Enterprises, Inc., and USSB II, Inc., MB Docket No. 03-83 (filed Feb. 6, 2003); *Request for Comment on Petitions Regarding DIRECTV's DBS Service to the States of Alaska and Hawaii*, 18 FCC Rcd 5501 (MB 2003).

<sup>855</sup> State of Hawaii Comments at 2.

in marketing its service in the state to the reception equipment that must be used. It states that subscribers in Hawaii must install a 1.2 meter antenna to receive basic DIRECTV packages that may include local channels and a second 1.2 meter antenna for HDTV or foreign language channels. State of Hawaii claims that installation of the equipment may be unattractive and burdensome for single family homeowners. It also notes that about half of the state's population lives in multi-family housing, where installation of a 1.2 meter antenna may be physically difficult or prohibited because the over-the-air reception device ("OTARD") regulations do not protect antennas greater than 1.0 meters in diameter.<sup>856</sup> The State of Hawaii concludes that in order for its residents to enjoy true MVPD competition, both major DBS licensees must make an effort to provide comparable service to that offered on the mainland, in terms of the necessary equipment and the marketing of the service through major retail outlets.<sup>857</sup>

259. We note that EchoStar's reception equipment may be even larger than DIRECTV's, requiring a 1.5 meter dish in some locations, although independent retailers may provide equipment as small as 24 inches when appropriate.<sup>858</sup> In large cities in Alaska and Hawaii, retailers provide a 30- or 36-inch antenna; however, subscribers in Alaska must use an additional 1.2 meter dish for HD services.<sup>859</sup> EchoStar also requires a second receiver for extended channels, and is unable to carry some public interest and international channels.<sup>860</sup> We note that EchoStar also relies on independent retailers for equipment and installation, but offers unique services tailored to both Alaska and Hawaii that may also include high-speed Internet access.<sup>861</sup> In addition, EchoStar reports that it continues to expand its service, most recently by launching a new HD Pak in the Alaska and Hawaii markets.<sup>862</sup>

260. DIRECTV states that it offers the same national and local-into-local programming in Alaska and Hawaii that is available in the rest of the country.<sup>863</sup> However, it asserts that regulatory obstacles create competitive disadvantage in the Alaska and Hawaii markets. It maintains the SHVERA requirement that DBS operators must carry the multicast and HD signals of broadcast stations in Alaska

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<sup>856</sup> State of Hawaii, Comments at 3. We note that elsewhere in the United States, DIRECTV offers a standard 0.5 meter (18 inches) dish for DBS services. See DIRECTV, <http://directv.com/DTVAPP/customer/faqPage.jsp?assetId=1100116#category5> (visited Jan. 22, 2007). The OTARD rule prohibits governmental and nongovernmental restrictions on viewers' ability to receive video programming signals from DBS service, BRS providers, and television broadcast stations. The rule applies to direct-to-home satellite dishes that are less than one meter in diameter (or of any size in Alaska), TV antennas, and wireless cable antennas. It, however, allows local governments, community associations, and landlords to enforce restrictions that do not impair the installation, maintenance, or use of antennas as well as restrictions needed for safety and historic preservation. See 47 C.F.R. § 1.4000.

<sup>857</sup> State of Hawaii Comments at 4-5.

<sup>858</sup> DISH Network, <http://www.dishnetwork.com/content/faq/search/about/> (visited Jan. 23, 2007).

<sup>859</sup> Jack Walda Electronics, Lihue Hawaii, 808-245-3321 (accessed Jan. 30, 2007). See Also Microcom, Anchorage Alaska, 907-2643474 (visited Jan. 30, 2007).

<sup>860</sup> DISH Network, at <http://www.dishnetwork.com/content/programming/packages/alaska/index2.shtml> (visited Jan. 23, 2007).

<sup>861</sup> DISH Network, at <http://www.dishnetwork.com/content/getdish/index.shtml> (visited Jan. 23, 2007).

<sup>862</sup> EchoStar Comments at 20.

<sup>863</sup> DIRECTV Comments at 20.

and Hawaii unduly burdens DBS as compared to other MVPDs, and it urges the Commission to reconsider this requirement.<sup>864</sup> DIRECTV claims that must-carry regulation in Alaska and Hawaii results in a sixfold increase in used capacity, and requires the elimination of some national channels, or the curtailment of local-into-local service.<sup>865</sup> NAB disagrees and states that DBS systems are not disadvantaged by carrying the required number of digital signals into Alaska and Hawaii. It notes that it has demonstrated that such carriage uses only 2.34 percent of DIRECTV's current capacity for the two states and that the Spaceway satellites were designed with the capacity to serve both states without diverting capacity that would be used for other national or local service.<sup>866</sup>

#### IV. TECHNICAL ISSUES

261. Technological developments are integral to the state of video competition. Accordingly, we report on a number of developments in this area that affect the manner and state of competition. We examine technological, regulatory, and marketplace developments that have affected, and will affect, competition in the future.

##### A. Navigation and Reception Devices

262. **Tuner Mandate.** In 2002, the Commission initiated a requirement that televisions with analog tuners also must contain DTV tuners, with a phase-in period based on screen size.<sup>867</sup> In 2005, the Commission accelerated and expanded the DTV tuner mandate. As a result, beginning March 1, 2007, all broadcast television receivers, regardless of size, as well as television reception devices (e.g. VCRs and DVRs) had to include a DTV tuner.<sup>868</sup> The Commission made these changes to increase DTV tuner penetration, ensure greater commercial availability, and ensure that consumers' expectations are met.

263. **CableCARDS.** In 2003, the Commission adopted rules that allow television sets to be built with "plug-and-play" functionality for one-way digital cable services, which include typical cable video services and premium channels, such as HBO and Showtime.<sup>869</sup> For these services, consumers are able to plug their cable directly into their digital television set without the need for a set-top box. Consumers, however, must obtain a security card (often called a CableCARD) from their local cable operator to be inserted into the television set. Consumers need a set-top box to receive two-way services (e.g., video-on-demand). The cable and consumer electronics industries continue to work on an

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<sup>864</sup> *Id.* at 19-20.

<sup>865</sup> *Id.* at 19-20.

<sup>866</sup> NAB Reply Comments at 9-10. *See also* Opposition of NAB to Petition for Reconsideration, MB Docket No. 05-181 (filed Dec. 8, 2005) at 4-6.

<sup>867</sup> *Review of the Commission's Rules and Policies Affecting the Conversion to Digital Television*, 17 FCC Rcd 15978 (2002).

<sup>868</sup> *Requirements for Digital Television Receiving Capability*, 20 FCC Rcd 11196 (2005).

<sup>869</sup> *Implementation of Section 304 of the Telecommunications Act of 1996, Commercial Availability of Navigation Devices, Compatibility between Cable Systems and Consumer Electronics Equipment*, 18 FCC Rcd 20885 (2003).

agreement for two-way “plug-and-play” functionality.<sup>870</sup> Recent work on downloadable security systems may serve as an alternative to CableCARDS.<sup>871</sup>

264. CableCARD development and deployment increased in 2006. CableCARDS currently permit the reception of one-way digital cable programming via commercially available devices (*i.e.*, without using a cable operator-supplied set-top box). As of March 26, 2007, more than 259,000 CableCARDS had been deployed by cable operators, up from 90,000 the previous year.<sup>872</sup> As of March 15, 2007, 548 models of Unidirectional Digital Cable Ready Products (“UDCPs”) had been verified for use with CableCARDS.<sup>873</sup> By June 2006, both major conditional access vendors, Motorola and Scientific Atlanta, had qualified multi-stream CableCARDS with CableLabs.<sup>874</sup> Testing procedures were established for multi-stream CableCARDS and CableLabs began testing of UDCPs in January 2007.<sup>875</sup> CEA has expressed concerns that the deployment of switched digital video<sup>876</sup> reduces the value of UDCPs, accelerating the need to achieve an agreement on two-way CableCARD use.<sup>877</sup>

265. **Integration Ban.** In order to promote a competitive market for set-top boxes, the Commission in 1998 required MVPDs to separate security in their leased devices and rely on the same conditional access mechanism that consumer electronics manufacturers use (commonly referred to as “common reliance”).<sup>878</sup> The integration ban originally was set to go into effect on January 1, 2005, but was extended twice, first to July 1, 2006, and ultimately to July 1, 2007, at the urging of cable

<sup>870</sup> For a description of the progress of negotiations between the consumer electronics and cable industries, see Consumer Electronics Association, *CS Docket No. 97-80: Joint Status Report of the Consumer Electronics Association and the National Cable & Telecommunications Association*, May 31, 2006, at [http://gullfoss2.fcc.gov/prod/ecfs/retrieve.cgi?native\\_or\\_pdf=pdf&id\\_document=6518353757](http://gullfoss2.fcc.gov/prod/ecfs/retrieve.cgi?native_or_pdf=pdf&id_document=6518353757) (visited Jan. 25, 2007). See also CableLabs, *2007 CES Featured Cable's Two-Way Future: High Definition Cable Content Now Available on PCs* (press release), Jan. 24, 2007.

<sup>871</sup> See Ted Hearn, *Set-Top-Box Vendor Claims Downloadable MediaCipher Will Satisfy FCC Rules*, MULTICHANNEL NEWS, Mar. 23, 2007.

<sup>872</sup> NCTA Comments, CS Docket No. 97-80, filed Mar. 26, 2007 (“*Q1 2007 CableCARD Status Report*”); NCTA Comments, CS Docket No. 97-80, filed Dec. 29, 2005.

<sup>873</sup> *Q1 2007 CableCARD Status Report*.

<sup>874</sup> *Id.*

<sup>875</sup> *Id.*

<sup>876</sup> Switched digital video is a two-way service that allows cable operators to conserve bandwidth by providing less popular channels only on demand. To consumers using a leased set-top box, the channel appears like any other linear channel, but it cannot be received on a UDCP.

<sup>877</sup> See, e.g., Letter from Julie Kearney, Senior Director and Regulatory Counsel for Consumer Electronics Association, to Marlene H. Dortch, Secretary, FCC, CS Docket 97-80 (Nov. 30, 2005).

<sup>878</sup> *Implementation of Section 304 of the Telecommunications Act of 1996: Commercial Availability of Navigation Devices*, 13 FCC Rcd 14775, 14808 ¶ 80 (1998); 47 C.F.R. § 76.1204(a)(1) (“*First Navigation Report and Order*”).

operators.<sup>879</sup> In 2006, the D.C. Circuit Court of Appeals upheld the integration ban against a challenge by the cable industry.<sup>880</sup>

266. In the *2005 Deferral Order*, the Commission stated that it would entertain waivers of the integration ban for low-cost, limited-capability devices.<sup>881</sup> A number of requests for waiver of the deadline for complying with the integration ban have been filed with the Commission.<sup>882</sup> On January 10, 2007, the Media Bureau ruled on three of these requests.<sup>883</sup> The Bureau granted Cablevision's request for a limited waiver of the integration ban for their set-top boxes, which rely on a different security card – a SmartCard – for separated security instead of the CableCARD.<sup>884</sup> The Bureau also granted a waiver request filed by Bend Broadband, seeking waiver of the ban on integrated set-top boxes, conditioned on Bend's migration to an all-digital network by 2008.<sup>885</sup> Finally, the Bureau denied Comcast's request for a permanent waiver from the integration ban for certain boxes that the Bureau found not to be the type of low-cost, limited capability boxes envisioned by the Commission in the *2005 Deferral Order*.<sup>886</sup> The Commission upheld the Bureau's decision in denying Comcast's application for review of the Bureau's decision.<sup>887</sup>

267. **Downloadable Conditional Access.** In the *2005 Deferral Order*, the Commission stated that one of the reasons for extending the deadline for compliance with the integration ban until July 1, 2007, was to provide cable with additional time to determine whether downloadable conditional access was feasible as an alternative to CableCARD, and if so, to provide a timeline for deployment.<sup>888</sup> In 2005, Comcast hosted two demonstrations of downloadable conditional access involving Motorola, Comcast,

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<sup>879</sup> *Implementation of Section 304 of the Telecommunications Act of 1996: Commercial Availability of Navigation Devices*, 18 FCC Rcd 7924, 7926 ¶ 4 (2003); *Implementation of Section 304 of the Telecommunications Act of 1996: Commercial Availability of Navigation Devices*, 20 FCC Rcd 6794, 6802-03 ¶ 13 (2005) (“*2005 Deferral Order*”).

<sup>880</sup> *Charter Communications Inc. v. FCC*, 460 F.3d 31 (D.C. Cir. 2006). Comcast and other cable operators continue to assert that the integration ban “will result in substantial public harms with no countervailing public benefit.” Comcast Comments at 38.

<sup>881</sup> *2005 Deferral Order*, 20 FCC Rcd at 6814 ¶ 31..

<sup>882</sup> To date, the Commission has received 40 such requests.

<sup>883</sup> See Federal Communications Commission, *Media Bureau Acts on Requests for Waiver of Rules on Integrated Set-Top Boxes and Clarifies Compliance of Downloadable Conditional Access Security Solution* (press release), Jan. 10, 2007.

<sup>884</sup> See *Cablevision Systems Corporation's Request for Waiver of Section 76.1204(a)(1) of the Commission's Rules*, 22 FCC Rcd 220 (MB 2007).

<sup>885</sup> See *Bend Cable Communications, LLC d/b/a BendBroadband Request for Waiver of Section 76.1204(a)(1) of the Commission's Rules*, 22 FCC Rcd 209 (MB 2007).

<sup>886</sup> See *Comcast Corporation Request for Waiver of Section 76.1204(a)(1) of the Commission's Rules*, 22 FCC Rcd 228 (MB 2007).

<sup>887</sup> See *Comcast Corporation Request for Waiver of Section 76.1204(a)(1) of the Commission's Rules*, 22 FCC Rcd 17113 (MB 2007).

<sup>888</sup> *2005 Deferral Order*, 20 FCC Rcd at 6795 ¶ 3.

Nagravision, and Samsung.<sup>889</sup> On November 30, 2005, NCTA submitted its report on downloadable security, containing a detailed timeline for its development and deployment.<sup>890</sup> At least two major efforts to promote downloadable security are underway. The first involves Comcast, Time Warner, and Cox, which have started a joint venture to develop downloadable security called PolyCipher.<sup>891</sup> The second concerns Beyond Broadband Technology (“BBT”), which was formed by three smaller cable operators to develop a downloadable security solution.<sup>892</sup> BBT reports that an open standard low-cost solution for separated security will be available in time to comply with the July 1, 2007 ban on integrated security devices. On January 10, 2007, the Commission noted that, “consistent with the Commission’s goal of ‘common reliance,’ BBT is offering its technology on an ‘open standard’ basis . . . to all CE and set-top box manufacturers.”<sup>893</sup>

268. *Two-Way Plug-and-Play.* Although the cable and consumer electronics industries continue to negotiate an agreement to provide two-way (*i.e.*, interactive) cable functionality in consumer electronics devices,<sup>894</sup> no major new developments were announced in the last year.<sup>895</sup> CableLabs has established a private negotiation process by which individual consumer electronics manufacturers may develop devices that include two-way functionality using the OpenCable Applications Platform (“OCAP”).<sup>896</sup> Several manufacturers have signed the requisite agreements to do so, with Comcast and Time Warner committing to begin deployment of OCAP on their systems.<sup>897</sup> In May 2007, four cable

<sup>889</sup> Letter from James L. Casserly, Counsel for Comcast, to Marlene H. Dortch, Secretary, FCC, CS Docket 97-80 (July 18, 2005); Letter from James L. Casserly, Counsel for Comcast, to Marlene H. Dortch, Secretary, FCC, CS Docket 97-80, (Nov. 30, 2005).

<sup>890</sup> Letter from Daniel L. Brenner, Senior Vice President for NCTA, to Marlene H. Dortch, Secretary, FCC, CS Docket 97-80 (Nov. 30, 2005). We note that while this timeline anticipated nationwide deployment by July 1, 2008, in its request for waiver of the deadline for compliance with the integration ban, NCTA stated that it needed until December 31, 2009, to deploy its downloadable conditional access system. NCTA, Request for Waiver of 47 C.F.R. § 76.1204(a)(1), CSR-7056-Z (filed Aug. 16, 2006).

<sup>891</sup> Jeff Baumgartner, *PolyCipher Key to Cable’s Downloadable Conditional Access Effort*, CED BROADBAND DIRECT, Aug. 17, 2006, at <http://www.cedmagazine.com/article/CA6363598.html> (visited Feb. 2, 2007).

<sup>892</sup> Letter from Seth A. Davidson, Counsel for Beyond Broadband Technology LLC, to Marlene H. Dortch, Secretary, FCC, CS Docket 97-80 (Dec. 22, 2006).

<sup>893</sup> *Commission Reiterates That Downloadable Security Technology Satisfies the Commission’s Rules on Set-Top Boxes and Notes Beyond Broadband Technology’s Development of Downloadable Security Solution*, Public Notice, 22 FCC Rcd 244 (MB 2007).

<sup>894</sup> 47 U.S.C. 544a, 47 U.S.C. 549. See also *First Navigation Report and Order*.

<sup>895</sup> Letter from Neal M. Goldberg, General Counsel, National Cable and Telecommunications Association and Julie M. Kearney, Senior Director and Regulatory Counsel, Consumer Electronics Association, to Marlene H. Dortch, Secretary, FCC, CS Docket 97-80 (Nov. 29, 2006). See also *2005 Report*, 21 FCC Rcd at 2600-01 ¶¶ 215-18.

<sup>896</sup> *Amended and Restated Nonexclusive CableCARD-Host Interface License Agreement (Apr. 18, 2006)*, at <http://www.opencable.com/downloads/CHILA.pdf>.

<sup>897</sup> See CableLabs, *CableLabs Certifies LG Electronics’ OCAP-Based, Two-Way Digital Television* (press release), Jan. 9, 2007; See also, CableLabs, *Cable Television Industry Voices Support for OCAP and Two-Way Digital Cable-Ready Product Deployments* (press release), Jan. 5, 2006.

operators (Comcast, Time Warner, Cox, and Bright House) announced that they will be upgrading system headends to support digital boxes embedded with OCAP middleware and expect to start shipping OCAP-enabled digital set-tops to their cable systems for deployment during summer 2007.<sup>898</sup>

269. While OCAP enables two-way functionality and other advanced interactive functionality, some manufacturers are reluctant to implement OCAP. This is so for a variety of reasons, including their desire to maintain control over the user interface and experience and issues regarding the sharing of resources within devices.<sup>899</sup> In November 2006, CEA presented an alternative means of achieving limited interactivity to provide support for video-on-demand, interactive program guides, and switched digital broadcast called DCR+.<sup>900</sup> DCR+ proposes to use standard protocols to send messages between the host device and CableCARD and uses the CableCARD to translate standard commands to proprietary cable operator protocols. Verizon also has voiced concern with the cable two-way plug-and-play solution because of the difference between the architectures of Verizon and other cable operators; it advocates instead an open standards approach.<sup>901</sup>

## B. Emerging Technologies

270. *Distributed Transmission Systems for Digital Television ("DTS")*. A DTV station employing a distributed transmission system uses multiple synchronized transmitters, each on the same channel, spread around its service area. DTV receivers contain "adaptive equalizer" circuitry that combines the signals from the multiple transmitters plus any reflected signals to produce a single signal. DTS operation is similar to analog TV booster stations, a secondary, low-power service using the parent station's channel to "fill in" gaps in its coverage area, but DTS technology may enable this type of operation more efficiently than analog TV boosters.<sup>902</sup> In the *Second DTV Periodic Report and Order*, the Commission approved, in principle, the use of DTS.<sup>903</sup> The Commission issued a *Notice of Proposed Rulemaking* in November 2005 to examine several policy issues related to the use of DTS.<sup>904</sup> The Commission proposed rules that would permit an existing authorized broadcast DTV station to use DTS to expand its service area after the establishment of a post-transition DTV Table of Allotments and the lifting of the current freeze on the filing of most applications. In addition, the Commission issued a *Clarification Order* with respect to the authorization of interim DTS operations as permitted in the

<sup>898</sup> *Four Top Cable MSOs Say They Plan to Launch OCAP*, COMM. DAILY, May 8, 2007, at 8.

<sup>899</sup> See CEA Comments at 12.

<sup>900</sup> Letter from Michael T. Williams, Executive Vice President, Secretary, and General Counsel, Sony Electronics, Inc., et al., to Kevin J. Martin, Chairman, FCC, CS Docket 97-08 (Nov. 7, 2006).

<sup>901</sup> Letter from Paul Brigner, Executive Director, Federal Regulatory, Verizon, to Marlene H. Dortch, Secretary, FCC, CS Docket 97-80 (July 10, 2006). See also Verizon Reply at 6.

<sup>902</sup> The Commission's Spectrum Policy Task Force recommended that DTV broadcasters be permitted to operate distributed transmission systems within their present service areas. See *Spectrum Policy Task Force Report*, ET Docket No. 02-135 (Nov. 2002), available at <http://www.fcc.gov/sptf/reports.html>.

<sup>903</sup> *Second Periodic Review of the Commission's Rules and Policies Affecting the Conversion to Digital Television*, 19 FCC Rcd 18279, 18283, 18355-57 ¶¶ 9, 174-78 (2004) ("*Second DTV Periodic Report and Order*").

<sup>904</sup> *Digital Television Distributed Transmission System Technologies*, 20 FCC Rcd 17797 (2005).

*Second DTV Periodic Report and Order.*<sup>905</sup> Those interim authorizations continue to be available for DTV stations prior to the completion of the DTS rulemaking proceeding.

271. **Advancements in Digital Broadcasting.** Broadcasters continue to improve their service and offerings through enhancements to digital Vestigial Sideband Broadcasting (“VSB”), called Enhanced VSB (“E-VSB”) and Advanced VSB (“A-VSB”). E-VSB was approved by the ATSC (American Television Standards Committee) in July 2004, as an amendment to the standard that allows broadcasters to choose between bit rates and added robustness without impeding HDTV.<sup>906</sup> Possible uses of the technology include applications such as robust data broadcasting to desktops or transmissions of file-based information to handheld receivers, and “fallback” audio.<sup>907</sup> However, E-VSB adoption has been slow due to a lack of demand and a lack of E-VSB enabled receivers.<sup>908</sup> A-VSB is another amendment being proposed to the ATSC for mobile video applications. ATSC has accepted the proposal of A-VSB but it has not yet reached the “candidate standard” stage,<sup>909</sup> which involves more exacting technical review.<sup>910</sup> The A-VSB system, proposed by Rohde & Schwartz, allows for signals to be distributed with a single high-power transmitter or via a network of smaller transmitters surrounding a coverage area and will not interfere with the current ATSC signals.<sup>911</sup> Samsung is working closely with Rohde & Schwartz and has agreed to make the necessary receiving devices available by December 2007.<sup>912</sup>

272. **Networking and Content Mobility.** The concept of interactive television continues to hold great promise for video programming providers. In 2006, the advancement of technology continued to bring the potential of interactive television to consumers through a variety of media. Home networking allows consumers to connect multiple devices in the home (e.g., set-top boxes, television sets, personal

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<sup>905</sup> *Id.*

<sup>906</sup> Broadcast Engineering, *Real-world Test Detail Reliable E-VSB Performance*, May 1 2006, at <http://broadcastengineering.com/news/evsb-performance-test-20060501/> (visited Jan. 29, 2007). A higher bit rate enables the broadcaster to transmit more data but limits the receivable range of the signal. Lowering the bit rate reduces the amount of data that can be sent, but increases the distance at which the data can be received.

<sup>907</sup> “Fallback audio” is a more robust audio stream used if the primary audio stream is unavailable due to signal degradation or other circumstances. Advanced Television Systems Committee, *ATSC Approves Enhancements to DTV Standard* (press release), July 20, 2004.

<sup>908</sup> Claudia Kienzle, *E-VSB in Search of a Market*, TV TECHNOLOGY, Apr. 24, 2006, at [http://www.tvtechnology.com/features/news/2006.04.24-n\\_E\\_VSB\\_in\\_search.shtml](http://www.tvtechnology.com/features/news/2006.04.24-n_E_VSB_in_search.shtml) (visited Jan. 29, 2007).

<sup>909</sup> A Candidate Standard is a document that has received significant review within a specialist group. Advancement of a document to Candidate Standard is an explicit call to those outside of the related specialist group for implementation and technical feedback. See The Advanced Television Systems Committee, *Candidate Standards*, [http://www.atsc.org/standards/candidate\\_standards.html](http://www.atsc.org/standards/candidate_standards.html) (visited Feb 7, 2007).

<sup>910</sup> Doug Lung, *NAB RF Reflections: A-VSB and DTx*, TV TECHNOLOGY, June 14, 2006 at [http://www.tvtechnology.com/features/On-RF/2006.06.14-f\\_Doug\\_Lung.shtml](http://www.tvtechnology.com/features/On-RF/2006.06.14-f_Doug_Lung.shtml) (visited Jan. 29, 2007).

<sup>911</sup> Broadcast Engineering, *Mobile Video is on the Way*, May 1 2006, at <http://broadcastengineering.com/news/Mobile-video-here-20060501> (visited Jan. 29, 2007).

<sup>912</sup> *Id.*

computers, video game consoles) with each other and to the Internet. Companies such as Verizon<sup>913</sup> and AT&T<sup>914</sup> are looking to technologies from standards groups such as the Multimedia over Coax Alliance ("MoCA"),<sup>915</sup> Home Phoneline Networking Alliance ("HomePNA"),<sup>916</sup> and HomePlug<sup>917</sup> to utilize existing wires in the home to carry networking signals. Current wireless networks, using the 802.11b/g technical standard, typically have lower throughput than wired networks and are subject to interference from other wireless devices.<sup>918</sup> These networks can have difficulty carrying a single HD video stream. A new wireless standard under development intended to address the throughput issue is IEEE 802.11n.<sup>919</sup> The 802.11n standard has not been finalized, but devices have been built based on draft versions of this standard and are currently available at retail (e.g., the Linksys WRT300N Wireless-N Broadband Router). The standard is targeted to have an estimated maximum throughput of 600 Mbps and should be capable of carrying multiple HD video streams simultaneously, allowing a wireless network to be a practical solution for moving video content around the home.

273. Multi-room DVR service, which allows programming recorded by one DVR to be accessed by other set-top boxes in the home, continues to be provided by cable operators. TivoToGo performs a similar function with Tivo Series 2 DVRs, and also allows programming to be sent to a personal computer or portable media player.<sup>920</sup> The new Tivo Series 3 DVR, featuring high definition and CableCARD support, does not yet support the TivoToGo service while content protection issues are being worked out with CableLabs.<sup>921</sup> Slingbox<sup>922</sup> and Sony's LocationFree<sup>923</sup> digitally encode a signal source, such as the video output of a set-top box, and stream the video over the home network or over the Internet to a personal computer or mobile device, allowing users to effectively take their multichannel

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<sup>913</sup> Craig Matsumoto, *Entropic, Verizon Serve Up MOCA*, LIGHT READING, Jan. 5, 2006, at [http://www.lightreading.com/document.asp?doc\\_id=86434](http://www.lightreading.com/document.asp?doc_id=86434) (visited Jan. 30, 2007).

<sup>914</sup> *AT&T Says 'Yes' to HomePNA, 'No' to MoCA*, THE ONLINE REPORTER, Sept. 2, 2006, at [http://www.onlinereporter.com/article.php?article\\_id=7568](http://www.onlinereporter.com/article.php?article_id=7568) (visited Jan. 30, 2007).

<sup>915</sup> Multimedia over Coax Alliance, at <http://mocalliance.org> (visited Jan. 30, 2007).

<sup>916</sup> Home Phoneline Networking Alliance, at <http://www.homepna.org> (visited Jan. 30, 2007).

<sup>917</sup> HomePlug Powerline Alliance, at <http://www.homeplug.org> (visited Jan. 30, 2007).

<sup>918</sup> Throughput is defined as the data-carrying capacity of a network, a result of the number of data bits transferred at one time and the rate at which they are transferred. The 802.11g standard estimates a maximum throughput of 54 million bits per second ("Mbps"), but real-world performance usually results in a maximum throughput of less than 24 Mbps shared among all devices on the network. An Ethernet home network usually has a reliable throughput of 100 Mbps for each device. A high definition video stream requires a constant 12-20 Mbps for reliable live playback.

<sup>919</sup> IEEE, *IEEE 802.11n Report*, at [http://grouper.ieee.org/groups/802/11/Reports/tgn\\_update.htm](http://grouper.ieee.org/groups/802/11/Reports/tgn_update.htm) (visited Jan. 30, 2007).

<sup>920</sup> TiVo Inc., *TiVo Desktop*, at <http://www.tivo.com/4.9.4.1.asp> (visited Jan. 30, 2007).

<sup>921</sup> TiVo Inc., *Buy TiVo*, at <http://www.tivo.com/2.0.3hdDvr.faq.asp#8> (visited Jan. 30, 2007).

<sup>922</sup> Swing Media, at <http://www.slingmedia.com/indexa.php> (visited Jan. 30, 2007).

<sup>923</sup> Sony, *Locationfree Living*, at <http://www.learningcenter.sony.us/assets/itpd/locationfreetv/index.html> (visited Jan. 30, 2007).

video service with them to wherever they can access the Internet. Microsoft's Windows Media Center can turn a user's personal computer into a home media server. A Media Center Extender (extender), such as the Microsoft Xbox 360,<sup>924</sup> can connect to the Media Center PC to stream multimedia files and display them on a TV elsewhere in the home. The extender can also connect through the PC to services like Movielink<sup>925</sup> to purchase and download video from the Internet. As home network-enabled devices such as these become more prevalent, some predict that future consumers may choose not to subscribe to a traditional multichannel video service and instead acquire video content from an Internet download service. Such content could be downloaded on a PC then streamed to another device, such as an extender, to display on a user's TV.

274. **WiMax and Municipal Wi-Fi.** Development of WiMAX continues in standards groups to create a last-mile solution for delivery of video, voice, and data.<sup>926</sup> The wireless technology, embodied in IEEE Standard 802.16, can be used to provide entire metropolitan areas with high-speed data access with speeds up to 75 Mbps and ranges up to 30 miles.<sup>927</sup> Mobile WiMAX, IEEE Standard 802.16, provides peak downstream data rates of up to 63 Mbps per sector and upstream data rates of up to 28 Mbps per sector in a 10 MHz channel.<sup>928</sup> Sprint Nextel announced that it would build a mobile WiMAX fourth-generation wireless network and plans to launch the service in trial markets by the end of 2007.<sup>929</sup> Additional efforts to create metropolitan wireless broadband access also are underway, including high-speed mesh networks, IEEE Standard 802.20, and municipal Wi-Fi.<sup>930</sup> Municipal wireless networks offering widespread coverage and high bandwidth could become an alternative video delivery platform. While WiMax continues in development, deployments of municipal Wi-Fi progressed and expanded during the last year. The opposition to municipal Wi-Fi noted in previous years has subsided and major

<sup>924</sup> Microsoft Inc., *Media Center Extender*, <http://www.microsoft.com/windowsxp/mediacenter/extender/default.aspx> (visited Jan. 30, 2007).

<sup>925</sup> Movielink, at <http://www.movielink.com> (visited Jan. 30, 2007).

<sup>926</sup> World Interoperability for Microwave Access ("WiMAX") is based on the IEEE 802.16 standard and offers higher speeds and greater distances than IEEE 802.11 based Wi-Fi. WiMAX is being developed as a solution to providing Metropolitan Area Networks ("MANs"). See, e.g. Intel Corporation, *What is WiMAX*, at <http://www.intel.com/netcomms/technologies/wimax/index.htm> (visited Mar. 27, 2007), The IEEE 802.16 Working Group on Broadband Wireless Access Standards, at <http://www.ieee802.org/16/> (visited Mar. 27, 2007), WiMAX Forum, at <http://www.wimaxforum.org/home/> (visited Mar. 27, 2007).

<sup>927</sup> Intel Corporation, *Understanding Wi-Fi and WiMAX as Metro-Access Solutions 3*, at <http://www.intel.com/netcomms/technologies/wimax/304471.pdf> (visited Feb. 5, 2007).

<sup>928</sup> WiMAX Forum, *Mobile WiMAX – Part 1: A Technical Overview and Performance Evaluation 10*, Aug. 2006, at [http://www.wimaxforum.org/technology/downloads/Mobile\\_WiMAX\\_Part1\\_Overview\\_and\\_Performance.pdf](http://www.wimaxforum.org/technology/downloads/Mobile_WiMAX_Part1_Overview_and_Performance.pdf) (visited Feb. 5, 2007).

<sup>929</sup> Sprint Nextel, *Sprint Nextel Announces 4G Wireless Broadband Initiative with Intel, Motorola, and Samsung* (press release), Aug. 8, 2006.

<sup>930</sup> Wi-Fi is a brand coined by the Wi-Fi alliance to indicate compatibility with the IEEE 802.11 wireless local area network ("WLAN") specifications. IEEE 802.11 is specified to work in either 2.4 GHz or 5 GHz spectrum bands and at speeds of either up to 11 Mbps or up to 54 Mbps. IEEE 802.11 and the term Wi-Fi have become synonymous with wireless networking provided for computers, laptops, and numerous other devices. See Wi-Fi Alliance, at <http://wi-fi-org>; see also IEEE, *802.11*, at <http://www.ieee802.org/11/>.

content providers, LECs, and cable operators have begun taking advantage of the technology as a way to reach consumers.<sup>931</sup>

275. *Next Generation Network Architecture.* Cable's Next Generation Network Architecture ("NGNA") refers to the ongoing efforts by major MSOs to advance cable operators' transition to all-digital networks and provide an alternative software-based downloadable conditional access ("DCAS") system that supports the cable operators' existing security. The non-profit company Polycipher, backed by Comcast, Cox Communications, and Time Warner, intends to continue the work NGNA LLC had begun on development of this technology.<sup>932</sup> The NGNA architecture would unify cable's IP and MPEG video infrastructures in an effort to drive down equipment costs, reclaim valuable hybrid fiber coaxial ("HFC") spectrum, and enable high-value digital services. Fulfilling the NGNA vision requires a new class of digital IP-based cable edge devices that integrate the functionality of high-density edge QAM platforms, DOCSIS CMTS, and video processing.<sup>933</sup> The ultimate goal is for IP traffic (data, voice, and video) and MPEG traffic (broadcast and on-demand standard and high-definition video) to flow over a common Gigabit Ethernet backbone to the cable network edge. There, the NGNA edge platform would dynamically route services to the appropriate customer premise devices, whether an MPEG set-top box, IP set-top box, cable modem, or PacketCable E-MTA.<sup>934</sup>

276. Cable operators also see Switched Digital Video ("SDV") as a solution for major near-term capacity problems. However, they view it as only a first step in a long-term migration to a new NGNA architecture.<sup>935</sup> Rather than transmitting all available channels to viewers at once, SDV combines the bandwidth efficiencies of compressed digital content with switching technology to enable content to

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<sup>931</sup> See, e.g., deployments by Google in Mountain View, California; deployment by Time Warner in Cedarburg, Wisconsin; and plans by AT&T in Illinois. MuniWireless, *December 2006 Update of Wireless Cities and Counties*, at <http://www.muniwireless.com/reports/docs/Dec-29-2006summary.pdf> (visited Feb. 5, 2007).

<sup>932</sup> Jeff Baumgartner, *Polycipher Key to Cable's Downloadable Conditional Access Effort*, CED MAGAZINE, August 17, 2006. See additional discussion of DCAS and Polycipher in Cable and Navigation Devices in Section IV. A. *supra*.

<sup>933</sup> The NGNA architecture requires several broadly defined components. The high density edge quadrature amplitude modulator ("QAM") packages digital video into 6 MHz streams to be delivered to consumer set-top boxes. The cable modem termination service ("CMTS"), operating using the DOCSIS standard, provides a central "hub" for the cable modems on the operators network to communicate with. The video processing aspect of NGNA will enable MPEG video stream processing immediately before the QAM device, permitting the insertion of streams (to enable pay-per-view and video-on-demand) as well as more advanced graphics services such as gaming or commercial insertion. See PDS Consulting, *NGNA Project*, at <http://www.pdsconsulting.net/NGNAProject.pdf> (visited Mar. 27, 2007).

<sup>934</sup> *Next-Generation Network Architecture (NGNA)*, LIGHT READING'S CABLE DIGITAL NEWS, Oct. 30, 2006, at [http://www.lightreading.com/document.asp?doc\\_id=109381&site=cdn](http://www.lightreading.com/document.asp?doc_id=109381&site=cdn) (visited Jan. 29, 2006).

<sup>935</sup> *MSO's Fight IPTV with IPTV*, LIGHT READING, Mar. 31, 2006, at [http://www.lightreading.com/document.asp?doc\\_id=91833](http://www.lightreading.com/document.asp?doc_id=91833) (visited Jan. 29, 2007).

be streamed to viewers only upon request.<sup>936</sup> The availability of open, IP-based architecture has catalyzed the development of reliable, cost-effective, and scalable solutions to this inefficiency.

277. **Digital Content Protection.** As high-value digital video content is being made available to consumers, the Motion Picture Association of America (“MPAA”) and other content creators are increasingly concerned about unauthorized copying and the use of such content. According to an MPAA study, the industry lost \$6.1 billion to piracy in 2005.<sup>937</sup> MPAA stresses the need to implement content protection measures such as digital rights management (“DRM”) in hardware, software, or both, to reduce these losses.<sup>938</sup> Several of the DRM measures widely used to protect video have recently been compromised. Advanced Access Content System (“AACCS”), the copy protection system used for HD-DVD and Blu-Ray Disc, was reportedly compromised in January 2007.<sup>939</sup> The DRM included in the new Microsoft Windows Vista operating system also has reportedly been attacked.<sup>940</sup> Despite these setbacks, content protection remains a part of digital video distribution systems, including digital cable-ready receivers.<sup>941</sup>

278. **DOCSIS 3.0.** CableLab’s Data Over Cable Service Interface Specification (“DOCSIS”) continues to be the dominant standard used to provide high-speed Internet service for cable operators. As the throughput available to operators increases, their ability to deliver additional and more complex services, including video over IP, increases.<sup>942</sup> On August 7, 2006, CableLabs announced the approval of the new DOCSIS 3.0 specifications that enable cable operators to offer significantly higher data rates to their broadband customers. DOCSIS 3.0 describes downstream data rates of 160 Mbps or higher and upstream data rates of 120 Mbps or higher,<sup>943</sup> thereby significantly increasing cable operators’ position relative to LEC competitors. DOCSIS 3.0 also incorporates support for the Internet Protocol version 6 (“IPv6”). IPv6 is the next generation of the Internet Protocol and greatly expands the number of Internet addresses that cable operators may use, allowing them to provide consumers with more IP-based services.<sup>944</sup> The new DOCSIS specification promises secure delivery of advanced interactive video that would otherwise require complex engineering in the networks and substantial upgrades to the plant. To

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<sup>936</sup> In a traditional cable plant, all video services are delivered to all subscribers at all times. Thus, even though at any given moment no customers are viewing a particular video stream, that stream still consumes bandwidth across the entire network.

<sup>937</sup> MPAA, *MPAA Releases Data From Piracy Study* (press release), May 3, 2006.

<sup>938</sup> MPAA, *Glickman Stresses Need For Content Protection in Digital Age* (press release), June 21, 2006.

<sup>939</sup> *AACS Confirms Hacks on High-Definition DVD Players*, EWEEK, Jan. 25, 2007 at <http://www.eweek.com/article2/0,1895,2087631,00.asp> (visited Feb. 2, 2007).

<sup>940</sup> David Berlind, *Vista DRM: How Fools and Their Copy Protection Investments Are Always Separated*, ZDNET, Jan. 30, 2007, at <http://blogs.zdnet.com/Berlind/?p=321> (visited Feb. 2, 2007).

<sup>941</sup> Letter from Neal M. Goldberg, General Counsel, NCTA, to Marlene H. Dortch, Secretary, FCC, CS-Docket 97-80 (Dec. 11, 2006) at 7, Exhibit A.

<sup>942</sup> “Throughput” is the actual amount of useful and non-redundant information which is transmitted or processed. See Harry Newton, *NEWTON’S TELECOM DICTIONARY* (CMP Books, 17<sup>th</sup> ed., 2001), at 697.

<sup>943</sup> CableLabs, *CableLabs Issues DOCSIS 3.0 Specification Enabling 160 Mbps* (press release), Aug. 7, 2006.

<sup>944</sup> *Id.*

achieve these higher data rates, DOCSIS 3.0 specifies a methodology called “channel bonding”<sup>945</sup> in both the upstream and downstream directions. DOCSIS 3.0 has fully replaced the widely anticipated 2.0b specification, which was never formalized and was identified only as an interim solution. While DOCSIS 2.0b was designed to produce significant gains in downstream data rates, it only provided an upstream rate of up to 30Mbps and was deemed insufficient in today’s marketplace.<sup>946</sup>

279. The transition to DOCSIS 3.0 will take place in two phases. Cable Modem Termination System (“CMTS”) equipment in the network must be replaced before the service can be offered. Later, partly by a process of natural replacement over time, the cable modems and set-top boxes in consumers’ homes also will change to DOCSIS 3.0-compatible equipment, often residential gateways supporting triple-play services.<sup>947</sup> Many major cable modem vendors, including BigBand Networks, Arris, and Cisco, participated in a week-long interoperability test in July of 2006, and all companies’ downstream channel bonding products were able to interoperate with each other with data successfully being transferred over the bonded channels.<sup>948</sup> In addition, developers successfully performed limited IPv6 testing.<sup>949</sup> The first volume shipments of DOCSIS 3.0-compliant network equipment are expected to occur in 2007. Speculation is that the penetration of DOCSIS 3.0 will reach nearly 60 percent for in-use CMTS by 2011. Penetration will be slower for the larger installed base of customer premise equipment, predicted to reach just under 40 percent in 2011.<sup>950</sup>

280. **PacketCable.** CableLabs’ PacketCable project continued standards development and certifications for delivering advanced IP services over broadband cable networks in 2006. While cable operators are deploying PacketCable 1.0 and 1.5 architecture for VoIP services within their cable networks, PacketCable 2.0 promises even greater flexibility and new services. PacketCable 2.0 is an application-agnostic architecture based on a common network core of standard protocols to register clients and establish sessions for voice, video, and text. PacketCable has the potential to allow the rapid introduction of new services, such as the integration of the cable network with wireless networks and cross platform feature integration (e.g., set-top box applications that integrate with the voice service for

<sup>945</sup> Channel bonding is a load-sharing technique for combining multiple DOCSIS channels. DOCSIS 3.0 defines channel bonding for both the upstream and downstream directions. Downstream channel bonding is possible for a minimum of four channels, approximately 38Mbps each, for a total of about 152 Mbps shared throughput. Upstream channel bonding is possible for a minimum of four channels, 10 to 30 Mbps each, for a total of 40 to 120 Mbps of shared throughput. Motorola, *White Paper: Scaling Bandwidth Through Channel Bonding*, May 1, 2005, at [http://broadband.motorola.com/ips/pdf/Scaling\\_Bandwidth.pdf](http://broadband.motorola.com/ips/pdf/Scaling_Bandwidth.pdf).

<sup>946</sup> Jeff Baumgartner, *Channel Bonding DOCSIS 2.0b*, COMMUNICATIONS TECHNOLOGY, June 1, 2006.

<sup>947</sup> ABIResearch, *DOCSIS 3.0 Penetration to Reach 60% by 2011* (press release), Aug. 23, 2006.

<sup>948</sup> Bonding DOCSIS channels is a process by which separate channels of data are coordinated to work together and provide data to a single point faster than any single channel would be capable of. CableLabs, *CableLabs Issues DOCSIS 3.0 Specifications Enabling 160 Mbps*, SPECS NEWS & TECHNOLOGY FROM CABLELABS, Vol. 18, No. 3, July 2006.

<sup>949</sup> CableLabs, *CableLabs Issues DOCSIS 3.0 Specifications Enabling 160 Mbps* (press release), Aug. 7, 2006).

<sup>950</sup> *Id.*