In the Matter of

Inquiry Concerning the Deployment of Advanced Telecommunications Capability to All Americans in a Reasonable and Timely Fashion, and Possible Steps to Accelerate Such Deployment Pursuant to Section 706 of the Telecommunications Act of 1996, as Amended by the Broadband Data Improvement Act

GN Docket No. 14-126

REPLY COMMENTS OF AMERICAN CABLE ASSOCIATION ON THE NOTICE OF INQUIRY ON IMMEDIATE ACTION TO ACCELERATE DEPLOYMENT

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April 6, 2015
SUMMARY

In its initial comments, ACA focused on a key barrier to broadband deployment: the high and increasing cost of video programming. ACA explained that –

- Video programming is an anchor service on networks offering advanced telecommunications capability (broadband),
- Video programming is the most expensive input for multichannel video programming distributor (“MVPD”) service, and
- The already high and increasing cost to acquire video programming is shrinking free cash flow and may inhibit investment by small and medium-sized providers in networks that would provide this capability — including in areas that are not receiving broadband service at speeds of greater than 25 Mbps/3Mbps.

ACA then submitted that flawed or inadequate federal regulations contribute significantly to the rise in video programming costs and that inaction by the Commission to reform these regulations has let this problem fester. Consequently, the Commission can and should take action to amend its regulatory regime to prevent video programmers from charging fees that are discriminatory or above fair market value and to otherwise stem increases that would not occur in a fully competitive marketplace. ACA urged the Commission to use its Section 706 authority in tandem with other authority in the Communications Act to complete action in pending proceedings to reform the program access and retransmission consent regimes by adopting the relief proposed by ACA.

In these comments, ACA provides additional compelling evidence about how increasing video programming prices have the potential to harm broadband deployment. ACA contracted with the business consulting firm, Cartesian, to develop research and supporting analysis regarding the effect of video programming cost increases on broadband deployment in different market scenarios. ACA then used this research and supporting analysis to develop the attached paper – “High and Increasing Video Programming Fees Threaten Broadband Deployment” – in which ACA analyzes and provides findings about video programming cost increases and the harm they cause to broadband deployment. In general, if current trends continue, traditional MVPD margins will be reduced substantially each year, and multichannel video service, which has been the foundational service for triple-play providers, may become a losing proposition for small to medium-sized providers within the next five years – by 2020 – or even sooner should conditions deteriorate more rapidly than anticipated. As a result of this revenue loss, MVPDs will have less free cash available for new investment which in turn will act as a drag on broadband deployment. In fact, because margins are shrinking today, this deleterious effect is already occurring. This heightens the need for immediate action by the Commission.

Section 706 directs the Commission to “take immediate action” to ensure deployment of advanced telecommunications capability is reasonable and timely. It thus has both the authority and charge to address the potential harm to broadband deployment caused by high and increasing video programming costs. Moreover, the Commission can take meaningful actions to address this concern by concluding pending proceedings where it is considering revisions to its video
regulatory regime to address tangible and substantial problems in the market and where ACA has provided a series of solutions to these problems. ACA thus submits that the Commission has the ability to make a real difference in propelling broadband deployment and urges it to move forward now.

Finally, the Commission should take special note of the fact that ACA’s Video Study indicates that broadband deployment will be greatly harmed if content providers charge an ISP fees on a per-subscriber basis to permit any of its subscribers to access the providers’ content (so-called “Cablization” of the Internet). Of all the scenarios examined in the study, this produces the most disconcerting outcome – where NPV drops precipitously, going negative within only two years. As a result, should content providers pursue this business model, the effect on broadband deployment will almost certainly be immediate and grave.

Not only should the Commission be concerned about this business model because of its effect on broadband deployment, but because it may jeopardize the open Internet. ACA has raised this problem in comments it filed last year in the Open Internet proceedings when it urged the Commission to ensure a content provider does not block access to its online content for any subscriber. Blocking after all is just another method by which a content provider exercises unreasonable leverage over broadband consumers. As such, it is tantamount to the cablization concern – where a content provider does not permit subscribers of the ISP to access its content unless the ISP pays the per-subscriber fee for all of its subscribers. ACA explained that if content (Internet edge) providers block or degrade (limit) Internet access, they too would break the “virtuous circle” by limiting the value of the Internet for end users and that too would suppress demand for broadband Internet access service, in which case ISPs would be less likely to invest in deploying broadband infrastructure and improving their service offerings.

Over the past five years, online content providers, like Disney, CBS, Fox, and Viacom have selectively blocked or threatened to block access to content otherwise made freely available on the Internet to users served by ISPs. There is every reason to believe that edge providers that offer sufficiently important content to end users of the Internet will seek to extract the maximum value from this content or otherwise maximize its leverage, including by threatening to block access by an ISP’s subscribers unless the ISP pays a fee on a per-subscriber basis for access. That result would not only be contrary to an open Internet, it would greatly inhibit broadband deployment. For that reason, the Commission has an obligation, at least, to monitor this activity and be prepared to address commercially unreasonable actions by edge providers.
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ACA VIDEO STUDY: HIGH AND INCREASING VIDEO PROGRAMMING FEES THREATEN BROADBAND DEPLOYMENT
Before the 
FEDERAL COMMUNICATIONS COMMISSION 
Washington, D.C. 20554

In the Matter of 
Inquiry Concerning the Deployment of 
Advanced Telecommunications Capability to 
All Americans in a Reasonable and Timely 
Fashion, and Possible Steps to Accelerate 
Such Deployment Pursuant to Section 706 of 
the Telecommunications Act of 1996, as 
Amended by the Broadband Data 
Improvement Act 

REPLY COMMENTS OF AMERICAN CABLE ASSOCIATION 
ON THE NOTICE OF INQUIRY ON IMMEDIATE ACTION 
TO ACCELERATE DEPLOYMENT 

The American Cable Association (“ACA”)\(^1\) hereby files reply comments in response to the Federal Communications Commission’s (“Commission’s”) Notice of Inquiry (“\textit{NOI}”) on immediate action to accelerate deployment of advanced telecommunications capability.\(^2\)

\(^1\) ACA represents over 800 independent cable operators, incumbent telephone companies, municipal utilities, and other local providers of video, broadband, and voice communications services using a variety of technology platforms. These providers offer service in smaller communities and rural areas, as well as by overbuilding other providers in urban and suburban markets. In aggregate, these providers pass nearly 19 million homes and serve nearly 7 million with video or broadband service. Approximately 2.75 million households subscribe to ACA members’ residential voice service, including non-nomadic VoIP service.

\(^2\) \textit{See In the Matter of Inquiry Concerning the Deployment of Advanced Telecommunications Capability to All Americans in a Reasonable and Timely Fashion, and Possible Steps to Accelerate Such Deployment Pursuant to Section 706 of the Telecommunications Act of 1996, as Amended by the Broadband Data Improvement Act, 2015 Broadband Progress Report and Notice of Inquiry on Immediate Action to Accelerate Deployment, GN Docket No. 14-126 (rel. Feb. 4, 2015).} In these comments, ACA distinguishes between \textit{2015 Broadband Progress Report} and the \textit{NOI}. It also treats the terms advanced telecommunications capability and broadband Internet access service (or broadband service) as being synonymous.
I. INTRODUCTION

Section 706 directs the Commission, where it finds that advanced telecommunications capability is not being deployed in a reasonable and timely fashion, to “take immediate action to accelerate deployment of such capability by removing barriers to investment and by promoting competition in the telecommunications market.” In the NOI, the Commission notes that these barriers may include lack of reasonable access to “utility poles, conduit, rooftops, and rights-of-way,” and then seeks comment on other barriers. In its March 6th comments, ACA focused on one of these other barriers: the high and increasing cost of video programming, which is inhibiting increased broadband deployment and warrants immediate attention by the Commission.

More specifically, ACA explained that –

3 47 U.S.C. 1302(b).

4 See NOI, ¶ 158. ACA shares the Commission’s concern about access to this poles and other essential infrastructure, which, when not offered on a reasonable basis, will inhibit builds of broadband networks. Prompt and continuing action to address this concern is warranted.


6 In these comments, ACA discusses the fact that video programming fees are “high and increasing.” ACA recognizes that fees may be high and increasing in a competitive market, for instance because the costs of developing content are increasing. That said, if an MVPD cannot pass along all these costs, its margins will be squeezed and free cash flow will decline, which, as discussed herein, has the potential to harm broadband deployment. At the same time, ACA contends, as set forth in numerous filings with the Commission, that to a significant extent programming prices are above competitive levels and terms and conditions for access to that programming are not commercially reasonable. This is due to a various factors, including the incentives of vertically-integrated programmers to charge MVPD rivals higher prices, a lack of a competitively neutral rules governing actors engaged in negotiations, and substantial market power discrepancies between programmers and smaller MVPDs. These supracompetitive prices and unreasonable terms and conditions are a key factor inhibiting broadband deployment, and they should be particularly offensive to the Commission. ACA has proposed solutions to the Commission to address these market and regulatory failures, and it focuses on some of these later in these comments.
• Video programming is an anchor service on networks offering advanced telecommunications capability (broadband),

• Video programming is the most expensive input for multichannel video programming distributor (“MVPD”) service, and

• The already high and increasing cost to acquire video programming is shrinking free cash flow and may inhibit investment by small and medium-sized providers in networks that would provide this capability — including in areas that are not receiving broadband service at speeds of greater than 25 Mbps/3Mbps.

ACA then submitted that flawed or inadequate federal regulations contribute significantly to the rise in video programming costs and that inaction by the Commission to reform these regulations has let this problem fester. Consequently, the Commission can and should take action to amend its regulatory regime to prevent video programmers from charging fees that are discriminatory or above fair market value and to otherwise stem increases that would not occur in a fully competitive marketplace. ACA urged the Commission to use its Section 706 authority in tandem with other authority in the Communications Act to complete action in pending proceedings to reform the program access and retransmission consent regimes by adopting the relief proposed by ACA.7

In these comments, ACA provides additional compelling evidence about how rising video programming prices have the potential to harm broadband deployment. ACA contracted with the business consulting firm, Cartesian, to develop research and supporting analysis regarding the effect of video programming cost increases on broadband deployment in different market scenarios. ACA then used this research and supporting analysis to develop the attached

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paper – “High and Increasing Video Programming Fees Threaten Broadband Deployment” – in which ACA analyzes and provides findings about video programming cost increases and the harm they cause to broadband deployment.\(^8\) In general, if current trends continue, traditional MVPD margins will be reduced substantially each year, and multichannel video service, which has been the foundational service for triple-play providers, may become a losing proposition for small to medium-sized providers within the next five years – by 2020 – or even sooner should conditions deteriorate more rapidly than anticipated.\(^9\) As a result of this compressed margin, MVPDs will have less free cash available for new investment which in turn will act as a drag on broadband deployment. In fact, because margins are shrinking today, this deleterious effect is already occurring. This heightens the reason for immediate action by Commission.

Section 706 directs the Commission to “take immediate action” to ensure deployment of advanced telecommunications capability is reasonable and timely. It thus has both the authority and charge to address the potential harm to broadband deployment caused by high and increasing video programming costs. Moreover, the Commission can take meaningful actions to address this concern by concluding pending proceedings where it is considering revisions to its video regulatory regime to address tangible and substantial problems in the market and where ACA has provided a series of solutions to these problems. ACA thus submits that the

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\(^8\) “High and Increasing Video Programming Fees Threaten Broadband Deployment a research paper from American Cable Association supported by analysis from Cartesian, (April, 2015) (“ACA Video Study”).

\(^9\) In its analysis, the consulting firm, using benchmarks from small to medium-sized providers and other industry sources, assumed that 60 percent of pay-TV revenues go towards programming fees in 2014, and conservatively estimated that programming fees for these providers will grow 10 percent a year. Based on data from SNL Kagan, it assumed that non-programming operating costs are 22 percent of pay-TV revenues and grow at 1.5 percent a year, roughly the level of inflation. Based on these market-based assumptions, margins for pay-TV for small and medium-sized service providers are projected to go negative by 2020.
Commission has the ability to make a real difference in propelling broadband deployment and urges it to move forward now.

II. SECTION 706 PROVIDES AN ADDITIONAL SOURCE OF LEGAL AUTHORITY AND COMPELLING POLICY RATIONALE FOR THE COMMISSION TO ACT TO REFORM VIDEO PROGRAMMING REGULATIONS

The ACA Video Study presented herein buttresses what the Commission has understood for many years: a provider’s ability to offer video services and the deployment broadband infrastructure are “linked intrinsically.” Just in the past month, in the Wilson/EPB Section 706 Preemption Order, the Commission again “recognized the role that offering video services can play in recovering deployment costs” and “that providers may not always have a business case for building a network unless they can optimize revenue by bundling multiple services.”

Accordingly, the Commission found that restrictions on the ability to offer video services “harmed deployment of advanced telecommunications capability.” The Commission then used its authority under section 706 “to displace” the state statute that imposed the restriction because

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11 See City of Wilson, North Carolina Petition for Preemption of North Carolina General Statute Sections 160A-340 et seq., WC Docket No. 14-115, The Electric Power Board of Chattanooga, Tennessee Petition for Preemption of a Portion of Tennessee Code Annotated Section 7-52-601, WC Docket No. 14-116, Memorandum Opinion and Order, FCC 15-25, ¶ 79 (rel. March 12, 2015) (“[w]e find persuasive EPB’s argument asserting that the inability to offer video services as part of a triple play package places the economic feasibility of investing in broadband infrastructure at risk”); see also id., n. 231 (“[t]he construction of modern telecommunications facilities requires substantial capital investment’ and ‘[a]s a consequence, the ability to offer video offers the promise of an additional revenue stream from which deployment costs can be recovered.’”).

12 See id. ¶ 119.
it effectuated “choices about the substance of communications policy that conflict with federal communications policy designed to ensure ‘reasonable and timely’ deployment of broadband.”

In its comments, ACA is asking the Commission to use its Section 706 authority to reform the program access and retransmission consent regimes and take related actions because these flawed or inadequate regulations are not preventing video programmers from charging fees that are discriminatory or above fair market value and are not otherwise stemming increases that would not occur in a fully competitive marketplace. Moreover, ACA submits that its request presents a much easier case than the Wilson and EPB petitions for the Commission to exercise its Section 706 authority. First, as noted above, the Commission has already recognized the nexus between the provision of video programming and broadband deployment. Second, the ACA Video Study provides additional evidence demonstrating that high and increasing video programming costs have the potential to harm broadband deployment. These harms appear greatest in rural and other harder to serve areas where the economic case is more tenuous – the very areas recognized by the Commission in the 2015 Broadband Progress Report and NOI as warranting greater attention. Third, the Commission’s authority to use Section 706 to amend its regulations does not present the challenges that arise when it seeks to preempt state laws.

Addressing flaws or inadequacies in its regulations and policies that inhibit broadband deployment

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13 See id. ¶ 146. Commissioners Pai and O’Rielly opposed the decision on numerous grounds, including because they did not agree that Section 706 provides the Commission with authority to preempt state statutes limiting the ability of municipalities to provide communications services. Nowhere in these dissents do the Commissioners object to the conclusion drawn by the Commission that there is a linkage between the provision of video programming and broadband deployment.

14 See 2015 Broadband Progress Report, ¶¶ 5-6 (“A digital divide persists between urban and non-urban parts of the country…The data also show that the problem is one of supply, not demand…While we have made concerted efforts…to shrink this gap, we have not eliminated it yet.”); see also NOI, ¶¶ 161-162 (“The Commission concluded that the disparity in broadband availability between Americans living in urban areas with those living in rural areas and Tribal lands is, standing alone, the basis for a determination that broadband is not being deployed to all Americans in a reasonable and timely fashion.”).
deployment are clearly within its purview. This is especially the case where the Commission has authority pursuant to the Communications Act to address these concerns, and ACA is asking the Commission to use in addition Section 706 to buttress its authority and rationale for acting.

Additionally, the Commission concluded in the 2015 Broadband Progress Report that “broadband is not being deployed to all Americans in a reasonable and timely fashion.”15 Pursuant to Section 706(b), this triggers a mandate for the Commission “take immediate action” to remove barriers to deployment.16

ACA’s request for relief in pending video programming proceedings goes to the heart of rationale underlying Section 706. As the Commission recently reiterated, “Section 706 shows a unique level of Congressional concern with broadband deployment,” and it specifically mandates the Commission to promote “infrastructure investment in broadband” by removing barriers.17 Moreover, Section 706 is not “mere exhortation” but “an affirmative grant of authority.” Accordingly, since excessive and escalating video programming costs have the ability to harm broadband deployment – especially in rural, harder to serve areas, and areas where there is no broadband service at speeds of at least 25/3 Mbps – the Commission is compelled to invoke its Section 706 authority, which it can use in addition to its authority over video programming in the Communications Act, to remove these barriers to infrastructure investment.

16 See id. ¶ 12.
17 See Wilson/EPB Section 706 Preemption Order, ¶¶ 134-135.
III. ACA VIDEO STUDY: HIGH AND INCREASING VIDEO PROGRAMMING FEES HAVE THE POTENTIAL TO INHIBIT BROADBAND INVESTMENT, ESPECIALLY BY SMALLER MVPDS

A. Introduction: Already High and Increasing Video Programming Fees are Shrinking Margins and Free Cash Flow

As ACA explained in its initial comments, in response to consumer demand, smaller-scale (small and medium-sized) MVPDs are focused on deploying new high-speed broadband networks, especially in rural areas. Between 2013 and 2014, these MVPDs upgraded or expanded their networks capable of providing a least 25 Mbps downstream to 11 million additional homes. In almost all instances, these providers are employing a triple-play business model of offering packages of multichannel video, broadband, and voice services, because even with the growth of online video and even though broadband service offers higher margins, multichannel video service, which provides the largest share of revenues, remains a key product for most households. The economics of multichannel video service are therefore fundamental to MVPDs’ decisions to invest in new broadband deployments.18

The problem MVPDs face, however, is that the economics of multichannel video service have been worsening. The underlying cost of programming acquisition has been rising much more rapidly than the prices MVPDs can charge for video service,19 and this disparity is

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18 Even with the growth of online video distribution in recent years, MVPD service remains an essential product for most households – and a key part of the triple-play package for providers. The research firm, LRG, found that while MVPDs experienced a net loss of subscribers in 2014, “the losses remained modest” – less than 100,000 subscribers. In 2014, approximately 84 percent of all households in the U.S. (116 million households) subscribed to pay-TV, and the revenues from MVPD service, which are in the many tens of billions, have been the primary source of revenue for triple-play providers. See ACA 706 Comments at 5.

19 Over the last eight years, video programming costs for the MVPD industry have more than doubled. According to data from SNL Kagan, per-subscriber programming costs across all MVPDs increased at an annual growth rate of 9.4 percent between 2010 and 2015. For smaller providers, the growth in programming costs has been much greater. Carriage fees for a typical member of the National Cable Television Cooperative (“NCTC”), have gone up 10.6 percent a year between 2010 and 2015, and this excludes the costs to acquire regional sports networks and local television broadcast stations,
expected to become even greater as programming fees continue to grow and distribution competition increases further.  This is especially the case for smaller-scale and more rural MVPDs, who typically pay programmers fees that amount to 60 percent of their video revenues.

**US Pay-TV Per-Subscriber Monthly Revenue and Programming Fee Growth Rate (2009-2014)**

![Chart showing growth rates](chart.png)

*Source: SNL Kagan*

If trends for traditional multichannel video continue, free cash flow for MVPDs will decline as well. This will reduce the overall amount of capital available for investment in new broadband deployment.

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20 Wireline MVPDs face competition from traditional sources, *e.g.* satellite providers, and from new sources, *e.g.* Netflix, Amazon Prime, and other over the top providers.

21 See ACA Video Study at 8.
The ACA Video Study investigates in greater depth how rising video programming fees affect the broadband investment case for smaller-scale MVPDs in different investment situations – rural expansion, new fiber overbuilds, “telephone” fiber overbuild, and suburban incumbent expansion – and with different scenarios based on the evolution of video service options and consumer preferences. To quantify this impact, ACA’s consultants developed and used an investment profitability model that aligns with the way that MVPDs measure the attractiveness of broadband investments. The results from this modeling show that as video programming fees continue to increase and so long as consumers continue to demand (and MVPDs supply) a triple-play bundle, free cash flow will decline, making the business case for new broadband deployment less tenable.

B. ACA Video Study’s Use Cases and Investment Model

Broadband deployments depend on numerous factors, including geography, competition, and provider size. For example, the decision by Google Fiber to deploy broadband in a suburban area with two entrenched MVPDs offering a triple play is different from a rural provider’s decision to deploy broadband in an area with no triple-play competition. To capture this variability, ACA’s Video Study employs four use cases, which are based on common situations faced by smaller-scale MVPDs –

- Rural Expansion – Rural MVPDs, typically smaller providers, would deploy in areas without existing competition using fiber to the home technology.
- New Fiber Overbuild – Overbuilders would enter in more densely populated urban areas, which leads to lower deployment costs, but with multiple triple-play competitors, which reduces penetration.
- Telco Fiber Overbuild – Incumbent telephone companies would upgrade existing facilities in urban and suburban areas, where cable provides competition, with fiber to the home plant.
Suburban Incumbent Expansion – Existing MVPDs would expand their footprint by building to non-serviced urban and suburban areas, and, in response, competitors would enter.

The model uses net present value ("NPV") as the metric for measuring the profitability of investments with a time horizon of 10 years. Since the focus is on smaller MVPDs, the model assumes the provider has fewer than 3 million subscribers and purchases national programming through the NCTC and regional sports networks and local broadcast stations on its own.22

C. If Video Programming Fees Continue to Escalate, the Profitability of Broadband Investments for all Use Cases Continue to Decline

If current conditions persist, video programming fees will continue to escalate. However, MVPDs will be constrained from passing all of these increases on to consumers who still demand multichannel video and who can move to competing MVPDs or online sources. Thus, multichannel video will remain a key product for MVPDs but with increasingly smaller margins. At the same time, broadband growth – both in terms of subscribers and revenues – is slowing. As result, overall MVPD margins are compressed, and free cash flow decreases. The model shows that between 2015 and 2025, EBITDA (earnings before interest, taxes, depreciation and amortization) margin for all use cases decreases by nearly half.

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22 For the terminal value after the 10-year time horizon, we have used the book value of the business, rather than the commercial value of the business. Book value is effectively the liquidation value of the business’s assets at the end of the investment period, while commercial value is based on the future earning potential of the business at the end of the investment period. Book value is calculated by taking the original investment and subtracting depreciation, while commercial value is typically calculated as a multiple of the perpetual earning potential of the business. Use of book value aligns with the Commission’s approach to modeling the terminal value of the assets that will be subsidized in the Connect America Fund model-based support (Phase II) program. The Commission uses book value because of the uncertainty around the future earning potential of broadband assets. See Connect America Fund et al., Report and Order, WC Docket Nos. 10-90 and 05-337, DA 13-807 ¶¶ 18, 34, 36 (rel. Apr. 22, 2013).
While EBITDA margins would still be expected to be positive by 2025, they will be reduced substantially, which in turn would result in reduced free cash and capital available for network construction – a major problem in a capital-intensive business. When capital expenditures are taken into account, the picture looks dramatically different, and the business case for broadband deployment for all use cases would be expected to decline even further and eventually become unprofitable in the coming decade. This is especially true for the Rural Expansion and Overbuild use cases. Incumbent expansion in suburban areas has the most positive outlook since the provider is building out in its own service territory without any competition.
D. Changes in Consumer Preferences Could Alter Broadband Deployment Scenarios But the Transition Away from the Multichannel Video Model for Triple-Play Providers is Challenging

Since 2010, the number of households without a multichannel video subscription in the United States rose from 4.5 percent of households to 6.5 percent of households.23 An Experian study revealed that adults under the age of 35 are almost twice as likely to be without a multichannel video subscription. As this generation ages and forms its own households, multichannel video service will likely become less pervasive. Rising programming fees have the potential to accelerate this shift. As a result, the multichannel video market is in a state of flux. The current market trajectory, described in the section above, is unlikely to continue indefinitely,

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at which point the traditional triple-play model with its reliance on multichannel video revenue would change significantly. In anticipation of the possible changes, the paper explores three alternative evolution paths for the triple-play market to examine how broadband deployment would be affected in each scenario:

- **Slimmer Video Bundle** – As more content is available via online video services, consumers are beginning to shift their allocation between traditional multichannel and online video services. In response, some MVPDs have begun moving toward slimmer multichannel video products to retain and acquire newly price-sensitive customers. The Slimmer Video Bundle scenario assumes providers offer more slimmer down multichannel video packages. Although MVPDs are constrained by contracts with content owners from offering only a subset of a content owner’s programming, they can drop entire packages of programming from content owners. In this scenario, multichannel video average revenue per user (“ARPU”) stays flat as subscribers pay for fewer channels that they do not watch. The growth of per subscriber programming fees slow as the average multichannel video subscriber subscribes to fewer channels.

- **Broadband Centric** – As consumer viewing shifts away from traditional multichannel video to online video and as additional programming becomes available online, more households may be willing to rely solely on broadband for their content needs. Providers are likely to respond to this change in consumer preferences by offering customer higher speed tiers to encourage more online viewing of content. In this scenario, broadband becomes the central product for consumers in the triple-play bundle in place of multichannel video, but multichannel video, while subscriptions declines, is not entirely displaced. Instead of the larger multichannel video packages offered today, providers will offer slimmer video packages. More flexible multichannel video packages offered over the Internet lead to flat multichannel video ARPU and slower growth of programming fees. The new focus on broadband would increase penetration, and broadband ARPU will rise as customers demand higher performance. The assumption for broadband ARPU growth is still moderate as the lack of differentiation between broadband offerings by different MVPDs makes it challenging for providers to push through large price increases to the customers without losing subscribers.

- **“Cablization” of the Internet** – The change in the market from a multichannel video-centric triple-play bundle to a broadband centric bundle inevitably affects content

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24 Comcast recently launched two slimmer double-play packages, both including Internet, HBO and Streampix, and 10 linear TV channels, with prices starting at $45/month for 50 Mbps download speed. Verizon FiOS launched a similar package that includes Internet, local TV stations, HBO or Showtime, and a free year of Netflix for $60/month with 50 Mbps download speed.

25 Between 2008 and 2014, the number of Netflix subscribers almost quadrupled from 9.4 million US subscribers to 36 million.
owners’ revenue and profits. Content owners may try to recapture revenue by transferring their current multichannel video business model to the Internet, i.e. charge carriage fees to providers per broadband subscriber (as they currently do in most instances for multichannel video subscribers) and require ubiquitous or near ubiquitous subscription. This scenario stems from the revenue generating strategy for ESPN3. Regardless of whether its broadband subscribers watched ESPN3, MVPD/Internet Service Providers (“ISPs”) were required to pay a per subscriber fee to Disney to give its subscribers even the option of viewing ESPN3. The underlying assumptions for this scenario are identical to the Broadband Centric scenario, with the one difference being that programming fees gradually switch from being charged on a per-multichannel video subscriber basis to a per-broadband subscriber basis.

Based on use of the model for each of the use cases and for each of these evolution scenarios, only one scenario shows a more favorable outcome for broadband deployment: moving to a broadband centric business model. This can be seen by reviewing each scenario for the rural expansion use case (see table below) – where, as discussed above, under the current market trajectory, broadband deployment NPV becomes negative by build-out year 2020 for the rural provider seeking to expand.

- **Slimmer Video Bundle** – As multichannel video products have a smaller role in the triple-play bundle in this scenario, the NPV decline is moderated as providers’ margins are less constrained by programming fees. Even so, the business case for deploying broadband goes away in 10 years.

- **Broadband Centric** – In the Broadband Centric scenario, the high margin broadband product more than makes up for the loss in the multichannel video product, thus increasing the value of building out broadband. Under this scenario, broadband deployment becomes more lucrative the later the build-out year.

- **Cablization of the Internet** – If content owners respond to the decline of the multichannel video market by charging MVPDs by broadband subscriber (cablization), the business case for broadband deployment becomes negative as soon as 2017. In other words, for this scenario, unless rural providers begin their build-out in the next three years, deploying new broadband may not be a sound investment.
While the model indicates that moving to a Broadband Centric business model may improve the case for broadband investment, it will be challenging for MVPDs, especially smaller-scale MVPDs, to shift to this model for various reasons, many of which are outside their control. Switching to a broadband centric model would require them to ignore the current and continuing customer demand for multichannel video programming as part of the triple-play bundle – and potentially the actions of their competition in response to these demands. It would jeopardize MVPD’s current prime source of revenue. Further, it would require that programmers offer consumers sufficient online programming alternatives, so they are seen as close substitutes for multichannel video programming. MVPDs are well aware of all these issues and their dilemma. While they are willing to experiment with slimmer video bundles and other models, none has yet dropped multichannel video entirely from the bundle. Thus, even if providers believe the market will eventually evolve to a different state than it is today, they will likely take
a wait-and-see attitude toward new investments so as to feel more certain about changes in consumer preference. In the meantime, multichannel video economics are deteriorating and may limit new broadband deployment in areas served by smaller-scale MVPDs.

**IV. BY AGGREGATING PURCHASES OF VIDEO PROGRAMMING BY SMALLER MVPDS, THE NATIONAL CABLE TELEVISION COOPERATIVE HELPS AMELIORATE THE RISE IN VIDEO PROGRAMMING FEES**

In addressing the effect of escalating video programming fees on broadband deployment by smaller MVPDs, the Commission should recognize the vital role played by buying groups in facilitating deals with video programming vendors. Nearly all smaller and medium-sized MVPDs license most of their national cable programming through NCTC, a buying group which has been negotiating agreements on behalf of its members for 30 years. By aggregating members’ purchases, NCTC is able to obtain better prices, terms, and conditions for its members than they could achieve by themselves. Programmers also benefit from this arrangement since they are able to deal with a single entity for purposes of negotiating contracts, determining technical standards, billing for payments, collecting payments, and other matters. This reduces the transaction costs of dealing with this group of smaller and medium-sized MVPDs, so they are more comparable to the transaction costs of dealing with a single large MVPD serving the same number of subscribers. Today NCTC has master agreements with nearly all of the top programming networks.

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26 Members of NCTC generally directly negotiate carriage of television broadcast stations and regional sports networks with these programming vendors.

27 Comments of American Cable Association (filed June 22, 2012 in MB Docket Nos. 12-68, 07-18, 05-192) (“ACA Video Competition Comments”), App. B, Declaration of Frank Hughes, Senior Vice President of Member Services for National Cable Television Cooperative, Inc., ¶ 3 (“NCTC Declaration”).

28 ACA Video Competition Comments, App. A, William P. Rogerson, "Proposed Revisions To Program Access Rules to Better Address The Potential Competitive Harms Created By Cable-Affiliated Programmers”, at 9 (“Rogerson”). Professor Rogerson is a Professor
NCTC has 890 member companies. While nearly 90 of them serve more than 10,000 subscribers, more than half serve 1,000 or fewer subscribers.\(^{29}\) NCTC’s four largest members do not currently license substantial amounts of programming through the buying group.\(^{30}\) However, the remaining members within the group of the largest 25 members do license substantial amounts of programming through the NCTC.\(^{31}\) NCTC members outside its 25 largest members generally rely even more heavily on NCTC to secure their programming.\(^{32}\)

In addition to negotiating the rates, terms, and conditions of master agreements with programmers, NCTC acts as an interface for all billing and collection activities between its own member companies and the programmer.\(^{33}\) At the end of each month, each member reports to NCTC its total number of subscribers receiving each programming service.\(^{34}\) NCTC collects the subscriber counts, calculates each individual member’s monthly balance for each programmer, bills the members, collects payments from them and remits a single aggregate payment to the programmer.\(^{35}\)

In sum, NCTC creates substantial efficiencies for both its member companies and programmers and other vendors with whom they conduct business. Without NCTC, smaller MVPDs would pay even higher programming fees. This in turn would harm consumers, lessen competition between smaller and medium-sized cable operators and their larger MVPD

\(^{29}\) The median size of an NCTC member is about 1,500 subscribers.

\(^{30}\) NCTC Declaration, ¶ 5.

\(^{31}\) \textit{Id.}

\(^{32}\) \textit{Id.}

\(^{33}\) \textit{Id.} ¶ 6.

\(^{34}\) \textit{Id.}

\(^{35}\) \textit{Id.}
competitors, like DIRECTV and DISH Network, and, as discussed in these comments, act as a drag on broadband deployment. Preserving NCTC’s presence in the market thus serves the public interest.

V. TO ENSURE THAT PROGRAMMING COSTS ARE NOT UNREASONABLY HIGH AND INCREASING, THE COMMISSION SHOULD COMPLETE ACTION ON PENDING PROCEEDINGS TO REFORM ITS VIDEO PROGRAMMING REGULATIONS, INCLUDING BY REFORMING ITS PROGRAM ACCESS AND RETRANSMISSION CONSENT RULES

The Commission has pending a number of proceedings to reform its video programming regulatory regime, all of which have the potential to ameliorate the harmful effects of unreasonably high and increasing programming fees. While ACA has urged the Commission to complete action on these matters, it submits there is even greater reason to act now because it has additional evidence from the ACA Video Study that high programming fees could inhibit broadband deployment. The Commission thus should use its Section 706 authority to augment its statutory authority on video programming to accelerate the deployment of advanced telecommunications capabilities.

In brief, as set forth more elaborately its initial comments, ACA proposes the Commission:

- Update the program access rules by ensuring than an MVPD buying group, like NCTC, has the right to bring a complaint against a cable-affiliated programmer who imposes discriminatory rates, terms, and conditions;\(^{36}\)

\(^{36}\) See ACA Program Access Comments. ACA has urged the Commission to adopt its reforms concerning buying groups: the definition of “buying group” that is used to determine if an entity qualifies for protection under program access rules should be expanded to include entities that satisfy an alternative liability condition that is consistent with current industry practices; a provision should be adopted that prohibits cable affiliated programmers from excluding a member of a buying group from participating in a master agreement the buying group has negotiated with a programmer, so long as the member is below a reasonable size threshold and satisfies other reasonable criteria normally applied in the industry for participation in programming agreements; and the Commission should clarify that cable-affiliated programmers are required to extend the
Ease the burden on aggrieved MVPDs and their buying groups to bring complaint cases and standstill requests against cable-affiliated programmers through the use of rebuttable evidentiary presumptions and other procedural mechanisms; and

Reform the Retransmission Consent regulations by adopting a rule mandating that broadcasters and MVPDs continue to offer a broadcast station’s signal to consumers after an existing retransmission consent agreement expires and while the terms of a new agreement are pending resolution of a dispute38 and by deeming the practice of online blocking video content by a broadcast station to be a per se violation of the retransmission consent good faith rules.

Launch the rulemaking requested by Mediacom Communications Corporation to limit forced program bundling and prohibit volume discounts which bear no relation to cost.39

same volume discounts to buying groups as they extend to individual MVPDs, controlling for other factors that program access rules allow programming rates to depend on.

37 Id. In regard to the rebuttable presumptions, ACA has proposed the Commission adopt the following: the presumption that the unfair act standard is met for the case of exclusive contracts with respect to cable-affiliated RSNs (satellite and terrestrial delivered); the presumption that both the significant hindrance standard and the unfair act standard are satisfied for the case of exclusive contracts over satellite-delivered, cable-affiliated National Sports Network (“NSN”) programming; and the presumption that both the significant hindrance standard and the unfair act standard are satisfied for the case of other satellite-delivered, cable-affiliated programming whose exclusive arrangement was successfully challenged by an MVPD.

ACA also has recommended the Commission can address the flaws with its standstill remedies with respect to all program access complaints by creating a process where program access complainants can request and receive an immediate temporary 14-day standstill while their request for a “standstill pending resolution of the complaint” is being decided and by requiring resolution of a request for a “standstill pending resolution of the complaint” within 14 days of when the request is filed. Together, these procedures will create comprehensive standstill relief that adequately protects MVPDs and their subscribers. Finally, the Commission should determine that discrimination with respect to cable-affiliated terrestrially-delivered programming that does not satisfy one of the four exceptions listed in Section 628(c)(2)(B) categorically satisfies the unfair act standard of Section 628(b).

38 Under ACA’s proposed rule, the parties’ existing retransmission consent agreement would automatically be extended past its expiration date, and an MVPD would continue to pay the broadcaster for retransmission consent rights per such contract. At the time that the dispute is resolved and a new agreement is signed, the prices and terms of the new agreement would retroactively apply to begin immediately after the previous agreement’s expiration date and any required true-up of prices would be applied.

In sum, the Commission’s video regulatory regime contributes to – or at least is not stemming – unreasonable video programming fees, which has the potential to deter broadband deployment. Accordingly, pursuant to Section 706, the Commission needs to act immediately. ACA has set forth an agenda for such action and urges the Commission to complete the proceedings discussed above promptly.

VI. TO PREVENT CABLIZATION OF THE INTERNET, WHICH WOULD HARM BROADBAND DEPLOYMENT AND THE OPEN INTERNET, THE COMMISSION SHOULD MONITOR ACTIONS BY VIDEO PROGRAMMERS TO IMPOSE ON INTERNET SERVICE PROVIDERS UNREASONABLE CHARGES FOR ACCESS TO THEIR ONLINE CONTENT BY INTERNET SUBSCRIBERS

ACA’s Video Study indicates that the Commission should be especially concerned about the harm to broadband deployment caused by content providers charging an ISP fees on a per-subscriber basis to permit any of its subscribers to access the providers’ content. Of all the scenarios examined, this produces the most disconcerting outcome – where NPV drops precipitously, going negative within only two years. As a result, should content providers pursue this business model, the effect on broadband deployment will almost certainly be immediate and grave.

As discussed briefly above, ACA’s concern is not merely hypothetical. Content providers ranging from Disney (ESPN) and Paramount, Lionsgate, and MGM (Epix) have pursued this business model, which effectively leverages their market power to compel all broadband Internet subscribers to pay for access to content even if they have no interest in the content.40 As video programming models evolve and online content becomes more available,

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there is increased potential for this activity to occur and grow, especially if the Commission is not vigilant.

Not only should the Commission be concerned about this business model because of its effect on broadband deployment, but it may jeopardize the open Internet. ACA has raised this problem in comments it filed last year in the Open Internet proceedings when it urged the Commission to ensure a content provider does not block access to its online content for any subscriber.41 Blocking after all is just another method by which a content provider exercises unreasonable leverage over broadband consumers. As such, it is tantamount to the cablization concern – where a content provider does not permit subscribers of the ISP to access its content unless the ISP pays the per-subscriber fee for all of its subscribers. ACA explained that if content (Internet edge) providers block or degrade (limit) Internet access, they too would break the “virtuous circle” by limiting the value of the Internet for end users and that too would suppress demand for broadband Internet access service, in which case ISPs would be less likely to invest in deploying broadband infrastructure and improving their service offerings.

Over the past five years, online content providers, like Disney, CBS, Fox, and Viacom have selectively blocked or threatened to block access to content otherwise made freely available on the Internet to users served by ISPs. There is every reason to believe that content (edge) providers that offer sufficiently important content to end users of the Internet will seek to extract the maximum value from this content or otherwise maximize its leverage, including by threatening access to block access by an ISP’s subscribers unless the ISP pays a fee on a per-subscriber basis for access. That result would not only be contrary to an open Internet, it would

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greatly inhibit broadband deployment. For that reason, the Commission has an obligation at least to monitor this activity and be prepared to address commercially unreasonable actions by content (edge) providers.42

VII. CONCLUSION

Because of the harm to consumers and competition, high and increasing video programming fees have been a concern of the Commission’s for years, and it has initiated proceedings to consider how it might address this concern. Of late, the Commission has further understood that this problem also affects materially broadband deployment. The ACA Video Study lends credence that the harm is tangible and immediate. As a result, the Commission should invoke its Section 706 authority and complete the proceedings it has initiated by adopting the proposals ACA has set forth.

42 In its Open Internet comments, ACA stated that “the Commission must avoid the mistake of imposing one-side rules that target potential block or commercially unreasonable practices by broadband ISPs while leaving Internet content providers free to block or act in commercially unreasonable ways. Not only would failure to apply open Internet rules on all Internet actors that have the ability to block or degrade fail to achieve the primary open Internet goals of the Commission, asymmetric regulation that constrain the business behavior of a single class of platform providers (i.e. fixed broadband ISPs that are also MVPDs) would distort market incentives and accentuate content providers’ abilities and incentives to threaten actors more constrained in their behaviors due to regulation, particularly ISPs subject to open Internet rules.” (at v) ACA faults the Commission for not adopting symmetrical open Internet regulations and urges it to revisit this issue.
Respectfully submitted,

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A research paper from American Cable Association

With research and supporting analysis from Cartesian
About ACA

The American Cable Association (ACA) advances the interests of smaller providers of broadband, video, voice and other communications services to a variety of customers—residential, business, government and institutional—by means of legal and government advocacy. Since 1993, the ACA has represented small- and medium-sized cable operators before the US Congress, Federal Communications Commission and other federal agencies.

About Cartesian™

Cartesian provides professional services in strategy, execution and managed solutions to global leaders in the communications, digital media, and technology industries.

Published April 2015
EXECUTIVE SUMMARY

Smaller-scale (small and medium-sized) multichannel video programming distributors (MVPDs) are at the forefront of deploying new high-performance broadband networks, especially in rural areas. Between 2013 and 2014, small and medium-sized MVPDs upgraded or expanded their networks of 25 Mbps or greater speeds to 11 million homes in the U.S.\(^1\) MVPDs contributing to this growth include cable operators using DOCSIS technology, new entrants like Google Fiber, and telephone companies like CenturyLink and Cincinnati Bell upgrading their low-speed copper networks to high-speed fiber-to-the-home. In almost all instances, these providers are employing the traditional triple-play business model of offering packages of multichannel video, broadband and phone, where multichannel video provides the largest share of revenues.

Despite the growth of online video in recent years, traditional multichannel video service remains a key product for most households – and an integral part of the triple-play package for providers. While broadband offers higher margins than multichannel video, few MVPDs see a viable business model in offering only broadband today. Even Google Fiber, which has gained significant media attention for its focus on ultra-fast broadband, sells multichannel video service as a way to attract broadband customers. The economics of multichannel video service are therefore fundamental to MVPDs’ decisions to invest in new broadband deployments.

In recent years, however, the economics of multichannel video service for smaller-scale MVPDs have been worsening. While MVPDs have historically been able to pass on these costs, we believe that going forward this will be more challenging. The underlying cost of programming acquisition has been rising much more rapidly than the prices MVPDs can charge subscribers for video service in recent years. This has especially been true for smaller-scale MVPDs, who often pay higher video programming fees than other MVPDs. If current trends for traditional multichannel video continue, free cash flow for MVPDs will decline as well. This would reduce the overall amount of capital available for investment in new broadband deployment.

This paper investigates the impact of this trend on the investment case for broadband for different investment situations involving smaller-scale MVPDs, and explores how some industry evolution scenarios could impact this trend. To quantify this impact, we have built an investment profitability model that aligns with the way that MVPDs measure the attractiveness of broadband investments. This paper demonstrates that if programming fees continue to climb, free cash flow will decline, making the business case for new broadband deployment less attractive.

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\(^1\) Analysis used the June 2013 and June 2014 National Broadband Map datasets, found at [http://www.broadbandmap.gov/data-download](http://www.broadbandmap.gov/data-download)
Smaller-scale MVPDs are at the forefront of new high-performance broadband deployments

Smaller-scale MVPDs are at the forefront of deploying new high-performance broadband networks, especially in rural areas. Google Fiber has received considerable media attention for its Gigabit fiber-to-the-home service in Provo, Utah; Austin, Texas; and Kansas City, Kansas and Missouri, and its plans to expand into nine other metro areas. Incumbent telephone companies like CenturyLink and Cincinnati Bell have been expanding their fiber-to-the-home footprints throughout their service territories as well. Hundreds of municipalities throughout the U.S. have also built fiber-to-the-home networks. These providers have been responsible for adding almost 11 million homes between June 2013 and June 2014 that meet the Federal Communications Commission’s definition of broadband as at or exceeding 25 Mbps downstream.

To attract and retain customers, nearly all of these broadband providers offer multichannel video services. Even smaller municipal broadband networks like the Electric Power Board, in Chattanooga, Tennessee, and Greenlight, in Wilson, North Carolina, offer triple play bundles of multichannel video, broadband and phone. In an interview with the Washington Post, former Windstream chief executive Jeff Gardner explained, “If you’re going to pull customers to your broadband and other services, you’ve got to lead with [multichannel video].”

It may seem sensible for these providers to drop their multichannel video product and focus on broadband, a product with much higher margins, especially considering the growth in broadband adoption. But very few providers are yet willing to take the plunge and move to a broadband-only business model due to the threat of losing subscribers to broadband competitors offering multichannel video services. While Google Fiber’s focus has been on ultra-fast broadband, it has felt compelled to offer multichannel video as part of its bundle in order to appeal to consumers. Speaking to an audience at the COMPTTEL telecom conference in Dallas in October 2014, Milo Medin, head of Google Fiber, referred to the need to offer multichannel video as the “single biggest impediment” to Google Fiber’s

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5 Analysis used the June 2013 and June 2014 National Broadband Map datasets, found at http://www.broadbandmap.gov/data-download
8 According to the Leichtman Research Group, the largest cable providers in the US, serving most of the cable market, now have more broadband subscribers than cable subscribers (“About 385,000 Add Broadband in the Second Quarter of 2014,” Leichtman Research Group, www.leichtmanresearch.com/press/081514release.html (August 15, 2014))
deployment. Unless consumer preferences and behavior changes rapidly in the next few years, providers are unlikely to drop their multichannel video services and move toward a broadband-only business model.

**Programming fees have risen rapidly in recent years**

In recent years, the economics of multichannel video service have become increasingly challenging. Programming fees, charged on a per-subscriber basis by multichannel video networks and broadcast TV stations, have generally risen much more rapidly than prices for multichannel video. Over the last eight years, total programming fees for the US multichannel video industry have more than doubled. On an annual basis, per subscriber programming fees have increased an average of 9.4% a year between 2010 and 2015.

For smaller-scale MVPDs, the growth in programming fees has been even greater. Carriage fees for a typical member of the National Cable Television Cooperative, a not-for-profit that acts as a buying group for smaller-scale multichannel video providers to negotiate lower rates from nationally-distributed video programming vendors, have gone up 10.6% a year between 2010 and 2015—and this excludes two categories of programming that have risen faster than the market, regional sports networks (like New England Sports Network) and local broadcast stations (affiliates of ABC, NBC, CBS and FOX). Some American Cable Association members have recently seen annual programming fee growth of 15% or greater.

**Programming fees will continue to grow rapidly in the future**

Moving forward, we expect this trend of steep programming fee increases to continue.

One of the biggest drivers or rising programming fees is retransmission consent fees. These fees, charged by local broadcast stations to MVPDs for retransmitting the broadcast signals, have been rising rapidly as broadcast ratings have fallen and advertising revenues have flat-lined. Industry analyst Michael Nathanson told TVNewsCheck that broadcasters will not approach a limit on how much they can receive in retransmission consent fees for many years. Leslie Moonves, CEO of CBS Corp., has set a target of $2 billion in annual revenue from retransmission consent fees by 2020, up from $500 million in 2013—which implies an average annual increase of 21%. Regional sports network fees are also expected to rise rapidly as well.

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11 All annual growth rates in the paper are compound annual growth rates


13 This does not include retransmission consent fees or regional sports network fees (aggregated information given by the National Cable Television Cooperative in February 2015)

14 These increases include retransmission consent fees and regional sports network fees. Interviews conducted with ACA members in January 2015


Figure 1: Historical Programming Growth Rate Benchmarks, and Cartesian Projection

Note: We collected publicly available data and interviewed smaller-scale MVPDs (less than 3 million subscribers) to estimate the growth in programming fees in recent years; the providers have been numbered to protect their anonymity.

Programming fees have been rising more rapidly than video revenues, putting pressure on MVPDs’ margins

As programming fees have continued to rise, multichannel video revenues have not kept up. According to analysis by SNL Kagan, U.S. multichannel video per subscriber programming costs grew at an annual rate of 9.4% between 2010 and 2015 while multichannel video average revenue per subscriber only grew at an annual growth rate of 4.1% during the same period.17

Sources: SNL Kagan, Interviews with ACA members, National Cable Television Cooperative

Looking forward, we expect MVPDs’ ability to pass programming fee cost increases along to customers to be constrained. Price hikes put MVPDs at risk of losing subscribers to direct competition and online video services like Netflix and Amazon Prime. The most price-sensitive multichannel video subscribers will disconnect their service in pursuit of lower-price options such as satellite TV. Between 2009 and 2014, multichannel video penetration in the U.S. decreased from 88.6% to 86.0%.\(^\text{18}\) This gradual decline in multichannel video penetration over the past few years suggests the danger for MVPDs of continually trying to pass along programming fee increases onto customers. If MVPDs are not able to pass on the programming fee increases to customers, their margins will continue to be squeezed, reducing free cash flow. This is especially the case for smaller scale MVPDs, who typically pass along 60%\(^\text{19}\) of their video revenues to programmers for programming fees. They therefore must increase their video revenue by 60% of the rate of increase of their programming costs, or their video margins will decline.

If we assume that the current market trends for programming costs and multichannel video revenues continue, video margins for smaller-scale MVPDs will become negative by 2020. For our analysis, we assumed that 60% of multichannel video average revenue per user (“ARPU”) is spent on programming fees in 2015. We project that programming fees continue to grow at a rate of 10%\(^\text{20}\) per year and that average multichannel video revenue per user grows 3.5%\(^\text{21}\) per year.

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\(^{18}\) Global Multichannel Comparison Table, SNL Kagan  
\(^{19}\) Refer to Table 2: Initial Value Assumptions on page 23  
\(^{20}\) Refer to Figure 1: Historical Programming Growth Rate on page 6  
\(^{21}\) Refer to Table 2: Initial Value Assumptions on page 23
Note: We’ve assumed that non-programming multichannel video costs are 22% of multichannel video average revenue per user and increase at 1.5% a year – roughly equivalent to inflation.

22 SNL Kagan estimates that multichannel video is an 18% margin product (Tony Lenoir, “Q2 Steady, but Red Flags in Future Outlook for Video Margins,” SNL Kagan, www.snl.com/interactivex/article.aspx?id=28833656&KPLT=6 (August 8, 2014). Our research shows (see Figure 10) that programming fees are 60% of multichannel video average revenue per user, which means that non-programming multichannel video costs are 22% of multichannel video average revenue per user.
This whitepaper explores the relationship between rising programming fees and broadband deployment for smaller-scale MVPDs

To quantify the impact of rising programming costs on broadband investment, we have built an investment profitability model that aligns with the way that MVPDs measure the attractiveness of broadband investments. Our hypothesis is that as programming fees continue to climb, absolute margins from the triple play bundle will decline, making the business case for new broadband deployment less tenable.

Introduction of use cases

All broadband deployments are not created equal. Competition, geography and provider size affect providers’ decisions to deploy broadband. For example, the decision by Google Fiber to deploy broadband in a suburban area with two entrenched MVPDs offering a triple play is very different from a rural provider’s decision to deploy broadband in an area with no triple-play competition. To capture this variability, we have identified four use cases based on situations in which broadband deployment is most likely. These use cases are modeled on common situations faced by smaller-scale MVPDs.

The Rural Expansion addresses deployment in rural areas without any existing competition. Rural expansion deployments are typically undertaken by small, rural providers, and usually utilize fiber-to-the-home technology.

The New Fiber Overbuild use case addresses broadband deployment in densely populated urban areas with multiple triple play competitors. The high density of the areas leads to lower deployment costs, but the overbuilder typically has two triple play competitors, one cable provider and one telephone company offering multichannel video, phone and broadband via digital subscriber line or fiber-to-the-home. In the Telco Fiber Overbuild use case, an incumbent telephone company is planning to upgrade its facilities in urban/suburban areas to offer triple play services via fiber-to-the-home. These areas are typically already served by an incumbent cable provider.

Incumbent MVPDs typically focus their new deployments on new developments. In the Suburban Incumbent Expansion use case, an existing MVPD is investigating the economics of building out cable in non-serviced urban/suburban areas within its existing service area. In this use case no competition exists at the start of the build, but we assume a telephone company will launch triple play service around the same time the incumbent does.

The investment profitability model considers key factors and cost inputs that influence MVPDs’ decision-making

We use net present value (NPV) as the metric for measuring the profitability of investments, which can be summarized as the sum of discounted free cash flows. Net present value is widely used by businesses and government entities for evaluating investment opportunities. It’s a way of calculating return on investment that accounts for key aspects of investment opportunities such as financing costs.

opportunity cost, and inflation as well as the long time horizon of most opportunities. Our model also accounts for the terminal value of the business, that is, the value of the business after the modeled time horizon.

In our model, we have used 10 years as the time horizon for the investments, which is typical for MVPDs considering new broadband investment. We calculate NPV by build-out year to see how profitability changes if MVPDs were to wait to deploy broadband.

For the terminal value after the 10-year time horizon, we have used the book value of the business, rather than the commercial value of the business. Book value is effectively the liquidation value of the business’s assets at the end of the investment period, while commercial value is based on the future earning potential of the business at the end of the investment period. Book value is calculated by taking the original investment and subtracting depreciation, while commercial value is typically calculated as a multiple of the perpetual earning potential of the business. Use of book value aligns with the FCC’s approach to modeling the terminal value of the assets that will be subsidized by the Connect America Fund Phase II. The FCC uses book value because of the uncertainty around the future earning potential of broadband assets.

When making investment decisions, MVPDs consider two key cost metrics: "cost to pass" and "cost to drop." Cost to pass refers to the cost to deploy broadband to a given area, divided by the number of homes. "Cost to drop" refers to the cost incurred when a household subscribes to the company’s service, which can require new wiring and equipment. While there are numerous factors that affect the cost to deploy new broadband, low housing density has the highest correlation with increased deployment cost. In rural areas with low housing density, there is much greater distance between homes, increasing labor costs of stringing wires or digging trenches for new wires. The cost to build out broadband to a single home is therefore much higher in rural areas than in urban areas. The cost to drop is dependent on the technology used in the deployment: fiber-to-the-home has a higher cost to drop than cable.

The size of the MVPD limits the negotiation leverage that the provider has with content owners and broadcasters and thus affects the per subscriber programming fee for the provider. Given the focus of this paper on smaller-scale MVPDs, all four use cases assume that the provider has less than three million subscribers and purchases programming via the National Cable Television Cooperative, which allows its members to receive the same price for multichannel video network programming due to the scale of the buying group.

To ensure that the most accurate data is used for each use case, we gathered data from public companies and research reports from widely used industry sources such as SNL Kagan and J.P. Morgan. Data was also collected from members of the American Cable Association and the National Cable Television Cooperative to better understand how triple play economics differ for smaller-scale MVPDs. The data were aggregated to best represent economics faced by each provider profile found in the use cases. The following assumptions are constant across all use cases and are based on historical industry trends:

- Overall market penetration for multichannel video, broadband, and phone

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25 Includes labor and equipment costs such as optical network terminals.
26 There are over 10 million households in the US served by MVPDs with less than 1 million subscribers (“Top Cable MSOs, SNL Kagan, https://www.snl.com/interactivex/TopCableMSOs.aspx”)
27 All MVPDs participating in deals negotiated by the NCTC are generally charged the same programming rates (information given by the National Cable Television Cooperative during an interview with the authors in January 2015).
28 Refer to Table 2: Initial Value Assumptions on page 23.
**METHODOLOGY**

- ARPU for multichannel video, broadband, and phone
- Overall market penetration annual growth rate for multichannel video, broadband, and phone
- ARPU annual growth rate for multichannel video, broadband, and phone
- Broadband costs
- Phone costs
- Cost of set top box

Additionally, we assumed that all new broadband deployments are capable of delivering download speed of at least 25 Mbps.

We use 60% as the assumption for programming fees as a percent of multichannel video ARPU. For providers with fewer than 3 million subscribers, the percentage ranged between 54.1% and 69.3%. We project that programming fees will grow 10% a year. We assume that the cost to pass in rural areas is $2,500 for the Rural Expansion use case based on interviews with smaller-scale MVPDs that operate in rural areas. Based on our research, we make the assumption that the cost to pass is $650 in urban/suburban areas. Refer to the Appendix, pages 19-30, to see details on all assumptions and their sourcing.

The use cases differ in their assumed market shares, cost to pass and cost to drop. The Rural Expansion use case involves expanding in areas with no existing triple-play competition, which would lead to higher market shares and quicker gain of market shares. At the same time, the rural nature of the markets significantly increases the cost to pass per home due to the lower housing density. For the New Fiber Overbuild use case, the presence of two triple play competitors in expansion markets constrains steady-state market shares and the ability to gain market shares quickly. Compared to New Fiber Overbuild, the Telco fiber overbuilder has only one triple play competitor, so it’s able to gain higher market shares. We assume that the Suburban Incumbent Expansion MVPD will build using cable instead of fiber-to-the-home, leading to a lower cost to drop.
If current market trends continue, the profitability of broadband investments for smaller-scale MVPDs will continue to decline

Under the current market trajectory, programming fees will continue to see rapid growth as retransmission and other programming fees grow and MVPDs are constrained by consumer demand for multichannel video products. Customers’ price sensitivity and the presence of competition from satellite providers, other MVPDs and online video services, will prevent MVPDs from passing on all of the programming fee increases to consumers. On current trends, total market broadband penetration will continue to grow slowly but multichannel video will remain a key product for broadband MVPDs. Total market multichannel video adoption is gradually declining but at a slow pace. The decline in the importance of multichannel video products and the slow increase of the higher-margin broadband product would not be enough to offset the impact of higher programming costs. In this scenario, between 2015 and 2025, EBITDA (earnings before interest, taxes, depreciation and amortization) margin for all use cases decreases by nearly half.

**Table 1: Projected EBITDA Margin under Current Market Trajectory (2015-2025)**

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<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Rural Expansion</td>
<td>43%</td>
<td>42%</td>
<td>41%</td>
<td>40%</td>
<td>39%</td>
<td>38%</td>
<td>36%</td>
<td>33%</td>
<td>31%</td>
<td>28%</td>
<td>24%</td>
</tr>
<tr>
<td>New Fiber Overbuild</td>
<td>44%</td>
<td>43%</td>
<td>42%</td>
<td>41%</td>
<td>40%</td>
<td>39%</td>
<td>37%</td>
<td>35%</td>
<td>32%</td>
<td>29%</td>
<td>26%</td>
</tr>
<tr>
<td>Telco Fiber Overbuild &amp; Suburban Incumbent Expansion</td>
<td>42%</td>
<td>41%</td>
<td>40%</td>
<td>39%</td>
<td>38%</td>
<td>36%</td>
<td>35%</td>
<td>32%</td>
<td>29%</td>
<td>26%</td>
<td>23%</td>
</tr>
</tbody>
</table>

While providers would still be expected to have positive EBITDA margins by 2025, telecommunications is a capital-intensive business. When capital expenditures are taken into account, the picture looks dramatically different.
Figure 4: NPV-Per Home Passed by Build-Out Year under Current Market Trajectory

Note: The chart shows the profitability for each provider type if they were to start their build-out in different years. For example, the Rural Expansion provider has a NPV of $570 if it began building in 2015 but if the build-out were to be delayed until 2020, the NPV will have become negative, at -$64.

Based on the current market trajectory, the business case for broadband deployment for all use cases would be expected to decline and eventually become unprofitable in the coming decade. The Rural Expansion use case appears to be the most vulnerable due to the high cost of building out new broadband. The Suburban Incumbent Expansion has the most positive outlook of all use cases under current market trajectory. Because the provider is building out in its own markets, the lack of competition during the initial expansion phase and the lower cost to drop for cable makes the situation more positive than the other use cases. Both overbuilder situations face similarly challenging economics.

The triple play bundle has several potential evolutionary scenarios for the future

With the rise of online video services, the slow decline in multichannel video penetration and rising programming fees, the multichannel video market is in a state of flux. The current market trajectory will likely not continue indefinitely. As MVPDs continue to grapple with rising programming fees and changing consumer preferences, the triple play market may evolve away from the current model. In anticipation of the possible changes, we explored three alternative evolution paths for the triple play market to see how broadband deployment would be affected in each scenario.

Since 2010, the number of households without a multichannel video subscription in the United States rose from 5.1 million (then 4.5% of households) to 7.6 million, 6.5% of households. An Experian study revealed that adults under the age of 35 are almost twice as likely to be without a multichannel video subscription. As this generation ages and forms its own households, multichannel video service will likely become less pervasive. Rising programming fees have the potential to accelerate this shift. Cable One CEO Tom Might told SNL Kagan that “coping simultaneously with spiraling content costs and

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escalating technologic disruption is something even a company the size of TWC could not manage. Is it any wonder that small cable companies...are starting to rethink their [multichannel video] models?44

In anticipation of potential shifts in the multichannel video market, we consider three potential evolution scenarios for the multichannel video market as consumer preference changes. The scenarios range from incremental change from the current market state to more dramatic shifts. In all cases, the base year, 2014, is based on current market conditions, but the market changes differently in the years that follow depending on the scenario. We have assessed the NPV of broadband deployment under each potential scenario.

**Slimmer Video Bundle**

As more content is available via online video services, consumers are likely to shift allocation within their entertainment budget. Where the budget was once used exclusively for multichannel video, it is now split between traditional linear TV and online video services. In response, some MVPDs have begun moving toward slimmer multichannel video products in order to retain and acquire newly price-sensitive customers. Comcast recently launched two slimmer double-play packages, both including Internet, HBO and Streampix, and 10 linear TV channels, with prices starting at $45/month for 50 Mbps download speed. Verizon FiOS launched a similar package that includes Internet, local TV stations, HBO or Showtime, and a free year of Netflix for $60/month with 50 Mbps download speed.

MVPDs have begun pushing back on rapidly increasing programming fees, especially from programmers with less popular programming. In April 2014, Cable One dropped all of Viacom’s 24 channels, including Nickelodeon, after protracted negotiations. Viacom asked for a rate increase greater than 100% and Cable One had asked Viacom to reduce its rates or allow Cable One to drop some of the less popular networks to reduce its total cost. Soon after Cable One dropped Viacom, Suddenlink followed suit.45

During an interview with SNL Kagan at the 2015 Consumer Electronics Show, Time Warner Cable Executive Vice President Joan Gillman explained her take on the future of multichannel video services. “Human beings aren’t going to change on one very fundamental principle, and that is they want to be able to control expense. They do not have unlimited income. They have a fixed budget to make tradeoffs between products and services.”46 She also said, “[I]f you think about the packaging of the future, it’s really going to be the best package that combines different entertainment experiences at the right price. It’s going to come.”

This Slimmer Video Bundle scenario assumes providers offer more slimmed down multichannel video packages. Although MVPDs are constrained by contracts with content owners from offering only a subset of a content owner’s programming, they can drop entire packages of programming from content owners, as CableOne and Suddenlink have done with Viacom. Multichannel video ARPU stays flat as subscribers pay for fewer channels. The growth of per subscriber programming fees slows as the average multichannel video subscriber subscribes to fewer channels.

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Broadband-Centric

As consumer viewing shifts more toward online video and away from traditional linear TV, and as more programming become available online, more households may be willing to rely solely on broadband for their content needs. Between 2008 and 2014, the number of Netflix subscribers more than tripled from 9.4 million\(^47\) US subscribers to 36 million\(^48\). Providers are likely to respond to this change in consumer preferences by encouraging more online viewing of content, which the providers may be able to monetize by offering customers higher speed tiers. Wave Broadband’s CEO Steve Weed said at the Independent Cable Show that the company will continue selling multichannel video packages but that it will focus on “what [Wave] can do to help customers get online, go get content directly from the content owner and pay that content owner directly.”\(^49\)

Online video will likely grow in popularity as content that was previously only available via linear video becomes available online. Dish Network’s Internet TV service, called Sling TV, launched in January 2015 and is available to all with an Internet connection, regardless of whether they are subscribers to a multichannel video package. The most basic package, called The Best of Live TV, costs $20/month and includes 12 channels such as ESPN, ESPN2, TNT, and TBS. In October 2014, CBS launched its own online video service offering its signal over the Internet for $6/month.\(^50\) Verizon is also working on an Internet TV service.

In the Broadband-Centric scenario, broadband becomes the central product for consumers in the triple play bundle in place of multichannel video, but multichannel video is not entirely displaced. Instead of the larger multichannel video packages offered today, providers will offer more flexible multichannel video packages to keep up with consumer demand for slimmer video packages. More flexible multichannel video packages offered over the Internet leads to flat multichannel video ARPU and slower growth of programming fees. Focus on broadband would accelerate uptake in broadband penetration and a sharper decline in multichannel video penetration. We assume that broadband ARPU will rise moderately more quickly than it has in recent past due to two contributing factors: (1) customers will demand higher speeds to keep up with their streaming needs and (2) MVPDs have more scope to raise broadband prices because demand for broadband becomes more inelastic. Our assumption for broadband ARPU growth is still moderate as the lack of differentiation between broadband offerings by different MVPDs makes it challenging for providers to push through large price increases to the customers without losing subscribers.

“Cablization” of the Internet

The change in the market from a multichannel video-centric triple play bundle to a broadband-centric triple play bundle inevitably affects content owners’ revenue and profits. Content owners may try to recapture revenue by transposing their current business model to the Internet, i.e. charge carriage fees to providers per broadband subscriber instead of per multichannel video subscriber and require ubiquitous or near ubiquitous subscription. This last scenario stems from the original revenue generating strategy for ESPN3. Regardless of whether its subscribers watched ESPN3, MVPDs were


\(^{48}\) James O’Toole, “Netfix Passes 50 Million Subscribers,” [CNN Money](http://money.cnn.com/2014/07/21/technology/netflix-subscribers/) (July 22, 2014)


required to pay a per broadband subscriber fee to Disney in order to give its subscribers even the option of accessing ESPN3.51

The underlying assumptions for this scenario are identical to the Broadband-Centric scenario, with the one difference being that programming fees gradually switch from being charged on a per-multichannel video subscriber basis to a per-broadband subscriber basis.

A broadband-centric future is the only scenario conducive to expanded broadband deployment

Shown below is the NPV of broadband deployment for the New Fiber Overbuild provider under each of the four scenarios: Current Market Trajectory, Slimmer Video Bundle, Broadband Centric and “Cablization” of the Internet.52 The charts for the other use cases (Rural Expansion, Telco Fiber Overbuild and Suburban Incumbent Expansion) are included in the Appendix on pages 16 and 17.

<table>
<thead>
<tr>
<th>Scenario</th>
<th>NPV (2020)</th>
<th>NPV (2025)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current Market Trajectory</td>
<td>$222</td>
<td>$30</td>
</tr>
<tr>
<td>Slimmer Video Bundle</td>
<td>$180</td>
<td>$120</td>
</tr>
<tr>
<td>Broadband Centric</td>
<td>$0</td>
<td>($200)</td>
</tr>
<tr>
<td>Cablization of the Internet</td>
<td>($600)</td>
<td>($400)</td>
</tr>
</tbody>
</table>

Note: The chart shows the profitability for a New Fiber Overbuild for each scenario if the provider were to start its build-out in different years. For example, under Current Market Trajectory, the New Fiber Overbuilder has a NPV of $222 if it began building in 2015 but if it were to wait until 2020 to begin building, the NPV will have decreased to $30.

Under the Current Market Trajectory, broadband deployment NPV becomes negative by build-out year 2020 for the new fiber overbuilder. As multichannel video products have a smaller role in the triple play bundle in the Slimmer Video Bundle scenario, the NPV decline is moderated as providers’ margins are less constrained by programming fees. Even so, the business case for deploying broadband goes away in 10 years. In the Broadband-Centric scenario, broadband takes center stage in the triple play bundle. The


52 See Figure 6 on page 19 for Rural Expansion, Figure 8 on page 20 for Telco Fiber Overbuild, and Figure 9 on page 20 for Suburban Incumbent Expansion.
high margin broadband product more than makes up for the loss of profits from multichannel video, Under this scenario, broadband deployment becomes more lucrative the later the build-out year. If content owners respond to the decline of the multichannel video market by charging MVPDs by broadband subscriber (as in “Cablization of the Internet” scenario), the business case for broadband employment becomes negative as soon as build-out year 2016. In other words, unless new fiber overbuilders begin their build-out in the next four years, deploying new broadband may not be a sound investment. The story is similar for the other use cases: Rural Expansion, Telco Fiber Overbuild and Suburban Incumbent Expansion (Appendix, pages 19 and 20).
CONCLUSION

Given the continued market power of programmers and broadcasters over MVPDs, programming fee growth is unlikely to abate in the near future. At the same time, continuing consumer demand for traditional multichannel video limits MVPDs’ ability to shift their business model, while competition limits their ability to raise prices. Although consumer preferences have been shifting in recent years, change has been slow, as more than 85% of households still subscribe to multichannel video. Rising programming fees will continue to squeeze margins, reducing free cash flow available for investment. If current trends persist, the business case for new broadband deployment will deteriorate in the coming years.

The case for new broadband deployment could improve if consumer preference shifts significantly. But no one is certain when, or if, the paradigm will shift. Providers are trying to offer slimmer multichannel video packages, but their success is uncertain. No triple-play provider has yet dropped multichannel video entirely. Even if providers believe the market will evolve to a different state than it is today, they will likely take a wait-and-see attitude toward new investments so as to feel more certain about changes in consumer preference. In the meantime, multichannel video economics are deteriorating and may limit new broadband deployment by smaller-scale MVPDs.
Scenario Results

Figure 6: NPV-Per Home Passed by Build-Out Year for Rural Expansion

Note: The chart shows the profitability for each provider type if each were to start its build-out in different years. For example, under Current Market Trajectory, the Rural Expansion provider has a NPV of $570 if it began building in 2015 but if it were to wait until 2020 to begin building, the NPV will have become negative at -$64.

Figure 7: NPV-Per Home Passed by Build-Out Year for New Fiber Overbuild

Note: The chart shows the profitability for each provider type if each were to start its build-out in different years. For example, under Current Market Trajectory, the New Fiber Overbuild provider has a NPV of $222 if it began building in 2015 but if it were to until 2020 to begin building, the NPV will have decreased to $30.
Figure 8: NPV-Per Home Passed by Build-Out Year for Telco Fiber Overbuild

Note: The chart shows the profitability for each provider type if each were to start its build-out in different years. For example, under Current Market Trajectory the Telco Fiber Overbuild provider has a NPV of $455 if it began building in 2015 but if it were to until 2020 to begin building, the NPV will have decreased to $120.

Figure 9: NPV-Per Home Passed by Build-Out Year for Suburban Incumbent Expansion

Note: The chart shows the profitability for each provider type if each were to start its build-out in different years. For example, under the Current Market Trajectory the Suburban Incumbent Expansion provider has a NPV of $602 if it began building in 2015 but if it were to until 2020 to begin building, the NPV will have decreased to $275.
**NPV Calculation**

The model uses net present value (NPV) as the measure of profitability for broadband investment based on the way MVPDs assess investment opportunities. Net present value is a financial concept used to estimate an investment’s future profitability. For a MVPD considering broadband deployment, a large portion of its cost is incurred at the beginning of the investment, while its revenue comes in as a series of payments from customers over a long time horizon. Due to the time value of money, the concept that money today is worth more than money in the future, the company cannot simply compare its costs to the sum of the monthly customer payments. Instead, it discounts future cash flows and adds the discounted cash flows up to determine the present value of these cash flows. The discount rate used is the cost of capital, which accounts for financing, opportunity costs, and inflation. Once the costs and revenues have been discounted to their current value, they can be summed to find the NPV, which is the value of the investment as of today. Using NPV to capture the profitability of broadband investment takes into consideration the long time horizon of the business. We have used 10 years as the time horizon for the investments, which is typical for MVPDs considering new broadband investment.

The 10-year net present value is calculated on a per-home-passed basis by build-out year to reflect the capital-intensive nature of broadband deployment. We have opted not to calculate NPV at the company level to avoid making assumptions about the mix of new build vs. existing footprint. MVPDs’ investments are largely fixed while their revenues are variable with a large portion of the cost driven by the initial capital expenditure. Thus, they look at NPV per home passed rather than per subscriber because the cost of build-out per home passed is a certain sunk cost, while the cost per subscriber is subject to variability.

Lastly, we calculate NPV by build-out year to see how profitability changes if MVPDs were to wait to deploy broadband. We observe some broadband expansion in the market today, as there is still a business case for broadband deployment. If the economics for multichannel video products worsen under the current market trajectory, the business case for broadband build-out would worsen as well. To understand the magnitude of the effect that rising programming fees have on broadband deployment, we calculate the net present value of investments for build-out year 2015 to 2024. For example, if multichannel video economics deteriorate over time, a provider may have a strong business case for deployment in 2015 but a worse one in 2020.

The NPV calculation uses the following variables:

**Total market penetrations**

- Total multichannel video market penetration: of homes passed, the percentage with a multichannel video subscription from a cable, telco, or satellite company
- Total broadband market penetration: of homes passed, the percentage with a primary broadband subscription from a cable, telco, or wireless company
- Total phone market penetration: of homes passed, the percentage with a phone subscription from a cable or telco

**Revenue**

- Multichannel video average revenue per user: average monthly revenue per subscriber for multichannel video services
- Broadband average revenue per user: average monthly revenue per subscriber for broadband services
Phone average revenue per user: average monthly revenue per subscriber for phone services

Cost

- Per subscriber programming fee: average monthly payment made to programming providers, including multichannel video networks and local broadcast stations charging retransmission consent fees
- Per subscriber non-programming multichannel video cost: average monthly cost of supplying multichannel video products, excludes programming fee
- Per subscriber broadband cost: average monthly cost of supplying broadband products
- Per subscriber phone cost: average monthly cost of supplying phone products
- Per home cost to pass: average cost to pass per home, includes cost of labor and equipment
- Per subscriber cost to drop: average cost to drop per home, includes cost of labor and equipment
- Set top box costs: average cost of a set top box (includes costs incurred by replacing set top boxes every five years)

Other

- Years it takes for provider to reach its expected (steady state) market share in new deployment areas
- Cost of capital
- Useful life of network
## Assumptions

### Use Case Initial Values

### Table 2: Initial Value Assumptions

<table>
<thead>
<tr>
<th>Variable</th>
<th>Rural Expansion</th>
<th>New Fiber Overbuild</th>
<th>Telco Fiber Overbuild</th>
<th>Suburban Incumbent Expansion</th>
<th>Sources</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Multichannel Video Market Penetration$^{33}$</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>SNL Kagan</td>
</tr>
<tr>
<td>Total Broadband Market Penetration$^{34}$</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Pew Research</td>
</tr>
<tr>
<td>Total Phone Market Penetration$^{35}$</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>SNL Kagan</td>
</tr>
<tr>
<td>Multichannel Video ARPU</td>
<td>$80</td>
<td></td>
<td></td>
<td></td>
<td>SNL Kagan, American Cable Association members</td>
</tr>
<tr>
<td>Broadband ARPU</td>
<td>$45</td>
<td></td>
<td></td>
<td></td>
<td>SNL Kagan, American Cable Association members</td>
</tr>
<tr>
<td>Phone ARPU</td>
<td>$25</td>
<td></td>
<td></td>
<td></td>
<td>SNL Kagan, American Cable Association members</td>
</tr>
<tr>
<td>Steady State Multichannel Video Market Share*</td>
<td>60%</td>
<td>20%</td>
<td>30%</td>
<td>30%</td>
<td>Adapted based on SNL Kagan, American Cable Association members</td>
</tr>
<tr>
<td>Steady State Broadband Market Share*</td>
<td>85%</td>
<td>30%</td>
<td>40%</td>
<td>40%</td>
<td>Adapted based on American Cable Association members</td>
</tr>
<tr>
<td>Steady State Phone Market Share*</td>
<td>100%</td>
<td>35%</td>
<td>50%</td>
<td>50%</td>
<td>Adapted based on American Cable Association members</td>
</tr>
<tr>
<td>Years from Build-Out to Steady State Market Shares</td>
<td>3</td>
<td>5</td>
<td>5</td>
<td>3</td>
<td>Cartesian</td>
</tr>
<tr>
<td>2015 Programming Fee as % of Multichannel video ARPU</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>SNL Kagan, American Cable Association members</td>
</tr>
<tr>
<td>Non-Programming Monthly Multichannel Video Cost</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>SNL Kagan, American Cable Association members</td>
</tr>
<tr>
<td>Broadband Costs (% of Broadband ARPU)</td>
<td>10%</td>
<td>($4.50)</td>
<td></td>
<td></td>
<td>Cartesian (assumed incremental cost)</td>
</tr>
<tr>
<td>Phone Costs (% of Phone ARPU)</td>
<td>20%</td>
<td>($5.00)</td>
<td></td>
<td></td>
<td>American Cable Association members (assumed incremental cost)</td>
</tr>
<tr>
<td>Cost to Pass</td>
<td>$2,500</td>
<td>$650</td>
<td></td>
<td></td>
<td>Cartesian, American Cable Association members</td>
</tr>
<tr>
<td>Cost to Drop</td>
<td>$350</td>
<td></td>
<td></td>
<td></td>
<td>Cartesian, American Cable Association members</td>
</tr>
<tr>
<td>Cost of Set Top Box</td>
<td>$150</td>
<td></td>
<td></td>
<td></td>
<td>Infonetics, American Cable Association members</td>
</tr>
<tr>
<td>Cost of Capital</td>
<td>8.5%</td>
<td></td>
<td></td>
<td></td>
<td>Federal Communications Commission, American Cable Association</td>
</tr>
<tr>
<td>Useful Life of Network (Terminal Value)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Cartesian</td>
</tr>
</tbody>
</table>

*Market shares are shown as percentages of the corresponding market penetrations

$^{33}$ Includes satellite

$^{34}$ Includes wireless broadband

$^{35}$ Does not include wireless phone
Programming Fee as Percentage of Multichannel Video ARPU

Figure 10: Programming Fee as Percent of Multichannel Video ARPU

Source: We interviewed smaller-scale MVPDs (fewer than 3 million subscribers) to estimate programming fees as a percent of multichannel video ARPU; the providers have been numbered to protect their anonymity.

Cost to Pass

Figure 11: Cost to Pass per Home (Urban/Suburban Areas)

Source: Jaguar, SNL Kagan, interviews with smaller-scale MVPDs (fewer than 3 million subscribers)
**Figure 12: Cost to Pass per Home (Rural Areas)**

Source: Interviews with smaller-scale MVPDs (fewer than 3 million subscribers)

**Cost to Drop**

**Figure 13: Cost to Drop per Home (Fiber-to-the-Home)**

Source: Jaguar, SNL Kagan; interviews with smaller-scale MVPDs (fewer than 3 million subscribers)
Figure 14: Cost to Drop per Home (Cable)

Sources: interviews with smaller-scale MVPDs (fewer than 3 million subscribers)

Cost of Capital

Figure 15: Cost of Capital

Sources: company websites; Federal Communications Commission; CAF stands for the Connect America Fund
## Competition-Dependent Variables

Steady state market shares are shown in grey.

Table 3: Competition-Dependent Variable Assumptions

<table>
<thead>
<tr>
<th>Use Case</th>
<th>Rural Expansion</th>
<th>New Fiber Overbuilder</th>
<th>Telco Fiber Overbuilder</th>
<th>Suburban Incumbent Expansion</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Triple Play Competitors</td>
<td>0</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>Assumption</td>
</tr>
<tr>
<td>Steady State Multichannel video Market Share</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Assumes satellite takes 40% market share</td>
</tr>
<tr>
<td>Steady State Broadband Market Share</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Assumes wireless broadband takes 15% market share</td>
</tr>
<tr>
<td>Steady State Phone Market Share</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>--</td>
</tr>
<tr>
<td>Years it takes for provider to reach its expected (steady state) market share in new deployment areas</td>
<td>3</td>
<td>5</td>
<td>5</td>
<td>3</td>
<td>Dependent on whether or not triple play competitor present at build-out</td>
</tr>
</tbody>
</table>
Growth Rates

Table 4: Growth Rate Assumptions by Scenario

<table>
<thead>
<tr>
<th>Variable</th>
<th>Current Market Trajectory</th>
<th>Slimmer Video Bundle</th>
<th>Broadband Centric</th>
<th>&quot;Cablization&quot; of the Internet</th>
<th>Sources</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Multichannel video Market Penetration</td>
<td>-0.5%</td>
<td></td>
<td>-5.0%</td>
<td></td>
<td>Adapted from SNL Kagan (US multichannel video, 2009-2014 CAGR) for Current Market Trajectory; Cartesian assumptions for others</td>
</tr>
<tr>
<td>Total Broadband Market Penetration</td>
<td>4.5%</td>
<td></td>
<td>9.0%</td>
<td></td>
<td>Adapted from SNL Kagan (US broadband, 2009-2014 CAGR) for Current Market Trajectory; Cartesian assumptions for others</td>
</tr>
<tr>
<td>Total Phone Market Penetration</td>
<td>-1.5%</td>
<td></td>
<td></td>
<td></td>
<td>Adapted from SNL Kagan (US phone, projected)</td>
</tr>
<tr>
<td>Multichannel video ARPU</td>
<td>3.5%</td>
<td>0.0%</td>
<td></td>
<td></td>
<td>Adapted from SNL Kagan (US cable, 2009-2014 CAGR) for Current Market Trajectory; Cartesian assumptions for others</td>
</tr>
<tr>
<td>Broadband ARPU</td>
<td>2.5%</td>
<td>3.5%</td>
<td>4.5%</td>
<td></td>
<td>SNL Kagan (US cable BB, 2009-2014) for Current Market Trajectory; Cartesian assumptions for others</td>
</tr>
<tr>
<td>Phone ARPU</td>
<td>-4.5%</td>
<td></td>
<td></td>
<td></td>
<td>Adapted from SNL Kagan (US cable phone, 2009-2014 CAGR)</td>
</tr>
<tr>
<td>Programming Fee</td>
<td>10%</td>
<td></td>
<td>5.0%</td>
<td></td>
<td>Adapted from SNL Kagan for Current Market Trajectory; Cartesian assumptions for others</td>
</tr>
<tr>
<td>Non-Programming Multichannel video Cost</td>
<td>1.5%</td>
<td></td>
<td></td>
<td></td>
<td>Inflation rate</td>
</tr>
<tr>
<td>Broadband Cost</td>
<td>2.5%</td>
<td></td>
<td></td>
<td></td>
<td>Tracks broadband ARPU growth</td>
</tr>
<tr>
<td>Phone Cost</td>
<td>-4.5%</td>
<td></td>
<td></td>
<td></td>
<td>Tracks phone ARPU decline</td>
</tr>
</tbody>
</table>

End State Market Penetrations

Given that the multichannel video, broadband, and phone markets are still in flux, we made assumptions around the equilibrium point for multichannel video, broadband, and phone market penetrations under the current market trajectory. We refer to these equilibrium points as end state market penetration. These end state market penetrations cap the growth of corresponding market penetrations.

Table 5: End State Market Penetration Assumptions

<table>
<thead>
<tr>
<th>Variable</th>
<th>Current Market Trajectory</th>
<th>Slimmer Video Bundle</th>
<th>Broadband Centric</th>
<th>&quot;Cablization&quot; of the Internet</th>
<th>Sources</th>
</tr>
</thead>
<tbody>
<tr>
<td>End State Multichannel video Market Penetration</td>
<td>75%</td>
<td></td>
<td></td>
<td></td>
<td>Cartesian assumption</td>
</tr>
<tr>
<td>End State Broadband Market Penetration</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Cartesian assumption</td>
</tr>
<tr>
<td>End State Phone Market Penetration</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Cartesian assumption</td>
</tr>
</tbody>
</table>
Model Structure

The model calculates NPV as follows:

Figure 16: Net Present Value Calculation

<table>
<thead>
<tr>
<th>Revenue</th>
<th>NPV</th>
<th>Costs</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Video</strong></td>
<td>[Video ARPU] x [Video Market Share] x [Total Video Market Penetration]</td>
<td></td>
</tr>
<tr>
<td><strong>Broadband</strong></td>
<td>[Broadband ARPU] x [Broadband Market Share] x [Total Broadband Market Penetration]</td>
<td></td>
</tr>
<tr>
<td><strong>Phone</strong></td>
<td>[Phone ARPU] x [Phone Market Share] x [Total Phone Market Penetration]</td>
<td></td>
</tr>
<tr>
<td><strong>Content Cost</strong></td>
<td>[Per Sub Content Cost] x [Video/Broadband Market Share] x [Total Video/Broadband Market Penetration]</td>
<td></td>
</tr>
<tr>
<td><strong>Opex</strong></td>
<td>[Non-Programming Video Cost] x [Video Market Share] x [Total Video Market Penetration] + [Broadband Cost] x [Broadband Market Share] x [Total Broadband Market Penetration] + [Phone Cost] x [Phone Market Share] x [Total Phone Market Penetration]</td>
<td></td>
</tr>
<tr>
<td><strong>Capex</strong></td>
<td>[Cost to Pass] + [Maintenance Capex] + [Cost of Set Top Box] x [Video/Broadband Market Share] x [Total Video Market Penetration]</td>
<td></td>
</tr>
<tr>
<td><strong>Terminal Value</strong></td>
<td>[Cost to Pass] + [Cost to Drop] [Depreciated]</td>
<td></td>
</tr>
<tr>
<td><strong>Cost of Capital</strong></td>
<td>Used in the NPV calculation</td>
<td></td>
</tr>
</tbody>
</table>

Methodological Notes

- **End State Market Penetration**: Given that the multichannel video, broadband, and phone markets are still in flux, we made assumptions around the equilibrium point for multichannel video, broadband, and phone market penetrations under the current market trajectory. We refer to these equilibrium points as end state market penetration. We believe that multichannel video market penetration will slowly decline from its current rate of 85% and flatten at 75%, the broadband market penetration will continue grow from its current rate of 70% and eventually reach 90%, and that the phone market penetration will continue its decline from its current rate of 50% to 10%.

- **Set top box replacement cycle**: We have assumed that set top boxes need to be replaced every 5 years and that the MVPDs pay for the replacement of set top boxes.

- **Terminal Value**: As noted previously, for the terminal value after the 10-year time horizon, we have used the book value of the business, rather than the commercial value of the business. Book value is effectively the liquidation value of the business’s assets at the end of the investment horizon. We’ve assumed that the equipment has a 40-year useful life, meaning that the equipment slowly loses value over the course of 40 years and is assumed to have no value after 40 years. The depreciation method used is linear depreciation, meaning that the equipment loses the same amount of value each year. For example, assume that a piece of equipment cost $400 and the cost is incurred during the first year of the build-out. After one year, it will have lost 1/40~2.5% of its
value, so it would be worth $390. After 10 years, at the end of our model’s time horizon, the equipment would be worth $310.