



September 2017

VIDEO PROGRAMMING

FCC Should Conduct Additional Analysis to Evaluate Need for Set-Top Box Regulation

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Why GAO Did This Study

Millions of households subscribe to cable, satellite, and telephone companies—known as MVPDs—for television, which is generally delivered via a set-top box attached to a television. Congress directed FCC to adopt regulations to assure a commercial market for devices to access MVPDs, and in February 2016, FCC proposed a rule intended to do so. Many industry stakeholders raised concerns about the proposal's potential effects, and FCC did not issue the proposed rule. This report examines: (1) the role of set-top boxes in accessing video programming content and (2) views of selected stakeholders and experts on the need for FCC regulation regarding set-top boxes and FCC's analysis of such need.

GAO analyzed data from a media research group regarding the video market and interviewed 35 industry stakeholders including 12 MVPDs, 5 video content producers, 3 device manufacturers, 12 industry associations, and others; GAO selected stakeholders based on comments filed with FCC on its 2016 proposed rule. GAO also interviewed 11 industry analysts and experts selected based on industry coverage and publications.

What GAO Recommends

GAO recommends that FCC conduct a comprehensive analysis of how recent industry changes related to video services affect consumer choice for devices to access video services.

FCC agreed with GAO's recommendation and provided technical comments that GAO incorporated as appropriate.

View [GAO-17-785](#). For more information, contact Mark Goldstein at (202) 512-2834 or goldsteinm@gao.gov.

What GAO Found

Set-top boxes play a significant but diminishing role in delivering video content in an evolving video market. Subscribers to multichannel video programming distributors (MVPD)—companies that provide pay television services via subscriptions such as cable and satellite companies—generally need a set-top box to access MVPD television services, and most subscribers lease a set-top box from their MVPD. However, consumers can now access video through a wide range of Internet-based services without a set-top box, using a variety of Internet-capable devices, such as tablets. Internet-based services include those providing on-demand video such as Netflix and some, such as Sling TV, providing live content similar to that from MVPDs. Some Internet-capable devices, such as Roku, allow people to watch Internet-based video on televisions. In recent years, subscriptions to MVPDs have fallen as more Internet-based services have become available. Partly in response to this competition, many MVPDs have begun offering content over the Internet to subscribers, accessible on many Internet-capable devices, including streaming devices that display it on televisions. While in most cases, MVPD subscribers still need a set-top box, a few MVPDs GAO interviewed now allow subscribers to access content they subscribe to solely over the Internet, without a set-top box.

The Federal Communications Commission (FCC) has conducted limited analysis of the need for regulations to assure a commercial market for devices, such as set-top boxes, to access MVPD services. Most stakeholders and experts GAO interviewed said that further regulations for this purpose were not needed, given recent changes in the video content market. FCC is directed by law to set regulations to assure a commercial market for devices to access MVPD services. However, the law also specifies that any such regulations may no longer apply if FCC determines that the markets for both MVPD services and devices to access MVPDs are fully competitive. Moreover, while it does not extend to independent agencies, Office of Management and Budget guidance says agencies could use analyses to evaluate the need for proposed actions. However, FCC proposed a new rule in 2016 to promote a commercial set-top box market without undertaking a comprehensive analysis of the competitiveness of the market to support the proposed rule. FCC did not enact a final rule. Stakeholders had differing views on the potential effects of the proposed rule, but some raised concerns that the rule could have had negative effects on MVPDs and content providers. As described above, widespread changes in the video market in recent years have expanded consumers' choices for video services as well as devices to access those services. Nineteen of the 35 industry stakeholders GAO interviewed said rules are not needed at this time, while 8 said rules are still needed. (The rest gave uncertain answers or did not comment on this issue.) Without a comprehensive analysis, FCC lacks information on the extent of consumer choice and, furthermore, the extent to which increased options for video services affect the relative importance of consumer choice for devices to access MVPDs. Such an analysis could help FCC determine if additional regulations are needed and, as the market likely continues its rapid evolution, could serve as a benchmark in FCC's further consideration of whether market conditions have been met such that regulations may no longer apply.

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Abbreviations

FCC	Federal Communications Commission
MVPD	Multichannel video programming distributor

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September 29, 2017

The Honorable Greg Walden
Chairman
Committee on Energy and Commerce
House of Representatives

The Honorable Yvette D. Clarke
House of Representatives

Television programming has long been an integral part of society and the economy, delivering news, entertainment, advertisements, and more to the vast majority of American households. Multichannel video programming distributors (MVPD)—which include cable, satellite, and telephone companies—enable consumers to subscribe to a large package of video programming that includes local broadcast channels (such as local NBC stations) as well as an array of cable channels (such as ESPN and CNN). Over 75 percent of households subscribe to an MVPD for video programming services. To do so, the household typically needs a set-top box, which provides the video feed from the MVPD's network to the television, while securing the content to ensure, for example, that only channels included in the subscription can be accessed.¹ According to an analysis cited by the Federal Communications Commission (FCC), in 2016 approximately 99 percent of households that subscribed to MVPD service leased a set-top box, spending an average of \$231 per household.²

¹For the purposes of this report, we consider a set-top box to be a device to access MVPD services and not devices to access other types of video services such as those provided over the Internet.

²*In the Matter of Expanding Consumers' Video Navigation Choices and Commercial Availability of Navigation Devices*, Notice of Proposed Rulemaking and Memorandum Opinion and Order, 31 FCC Rcd 1544 (2016). In the proposed rule, FCC noted that there was some disagreement over the validity of the findings of this study. FCC referenced that one industry association official commented in a letter that this analysis was misleading regarding the profits earned by MVPDs for set-top box lease fees. In the proposed rule, FCC invited MVPDs to provide FCC additional data on their costs of buying set-top boxes and the lease fees they earn from them.

In the Communications Act of 1934, as amended by the Telecommunications Act of 1996 (herein known as “the Act,”)³ Congress directed FCC to adopt regulations to assure the commercial availability of devices—such as set-top boxes—that can access MVPD services. FCC has made efforts to meet this directive, including by issuing a Notice of Proposed Rulemaking in February 2016 that would have required MVPDs to offer certain information to companies that are not affiliated with an MVPD to allow those companies to design and build devices to access video services from MVPDs, giving subscribers more alternatives to leasing set-top boxes from their providers.⁴ However, in May 2017, the new FCC Chairman said he did not believe that the proposed rulemaking from the previous Commission furthered the goal of promoting a clear, consumer-focused, fair, and competitive regulatory path for video programming delivery, removed the proposed rule from circulation, and said he does not intend to resurrect it. Since FCC proposed the rule, a variety of stakeholders have disagreed on whether further regulation in this area is needed. In addition, some have claimed that the proposed rule would have negatively affected MVPDs and other industry stakeholders.

You asked us to review FCC’s efforts to address the Act’s requirements to assure commercial availability of devices to access MVPD services. This report examines: 1) the role of set-top boxes in accessing video programming and 2) views of selected stakeholders and experts on the need for FCC regulation regarding set-top boxes and how FCC has analyzed such need.

To review the role of set-top boxes in accessing video programming, we contracted with Kagan, a unit of S&P Global Market Intelligence, a private company, to obtain data and research on the video programming industry.⁵ We obtained data on the video programming industry, including data on subscriptions to MVPDs, online video distributors, and sales of devices including set-top boxes and devices to access Internet-based

³Communications Act of 1934, Pub. L. No. 73-416, 48 Stat. 1064 (1934), as amended by Telecommunications Act of 1996, Pub. L. No. 104-104, 110 Stat. 56 (1996) (codified as amended at 47 U.S.C. § 151).

⁴31 FCC Rcd 1544 (2016).

⁵S&P Global Market Intelligence is a company that collects and integrates financial and industry research and data, including data on the telecommunications and media industries.

content, among other types of data. The timeframes for these data vary based on the specific data points available. To determine the reliability of these data we interviewed representatives of Kagan, reviewed documentation on their data collection and analysis methodology, and conducted a literature review to gauge how Kagan's analysis has been used in the industry, as well as in previous GAO reports. We also considered the fact that Kagan's data are often used and cited by FCC in considering the reliability of the data. We did not assess all aspects of Kagan's methodological techniques, such as its forecasting and estimation procedures, due to the proprietary nature of this information. We determined that these data were sufficiently reliable for reporting on trends in the video programming industry in this report.

To address both objectives, we reviewed the following: relevant federal statutes and regulations including the Communications Act of 1934, as amended by the Telecommunications Act of 1996, and FCC's regulations issued in response to that statute; proposed rules, including FCC's February 2016 proposed rule on set-top boxes;⁶ and relevant literature identified through a literature search that discussed FCC's efforts to respond to the Act. We also reviewed Office of Management and Budget criteria for conducting regulatory analyses. In addition, we interviewed officials with FCC and the United States Copyright Office—part of the Library of Congress—and conducted semi-structured interviews with 35 stakeholders selected to include a range of industry stakeholders:

- nine larger MVPDs, including the five largest cable providers, as measured by number of subscribers,⁷ two satellite providers,⁸ and two telephone providers;
- three smaller MVPDs, selected based on recommendations from an industry association, WTA-Advocates for Rural Broadband;⁹

⁶31 FCC Rcd 1544 (2016).

⁷To determine subscriber numbers, we used public research published by Leichtman Research Group. Data are as of the end of June 2016.

⁸While one of these satellite providers also provides telephone-based video services, the interview with this provider focused only on its satellite service. As a result, we consider it a satellite provider for the purposes of this report.

⁹WTA-Advocates for Rural Broadband is an industry association representing rural telecommunications companies.

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- three manufacturers of set-top boxes and other devices to access video content;
 - three public-interest organizations;
 - three independent, minority, or diverse programmers and interest groups;
 - two large video broadcast networks;
 - ten industry associations, including associations representing MVPDs, technology companies, owners of copyright content, and others; and
 - two others representing different interests.

In selecting the industry stakeholders beyond the MVPDs, we considered comments filed with FCC on its 2016 proposed rule. Finally, we conducted semi-structured interviews with 11 industry experts and analysts. We selected these experts and analysts based on prior GAO work that included interviews with industry experts and analysts, a review of relevant publications and literature, a review of industry analysts who cover relevant companies, and recommendations from industry experts and analysts already interviewed. These interviews with industry stakeholders and analysts and experts covered the market for video programming, the role of set-top boxes and other devices to access video content, FCC efforts to increase consumer choice in the market for devices to access video content, and the need for FCC regulations regarding set-top boxes. Following the interviews, we analyzed responses across the interviews to identify and report on common themes. The results of these interviews are not generalizable. For a complete list of industry stakeholders and industry experts and analysts we interviewed, please see appendix I.

We conducted this performance audit from September 2016 to September 2017 in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

Background

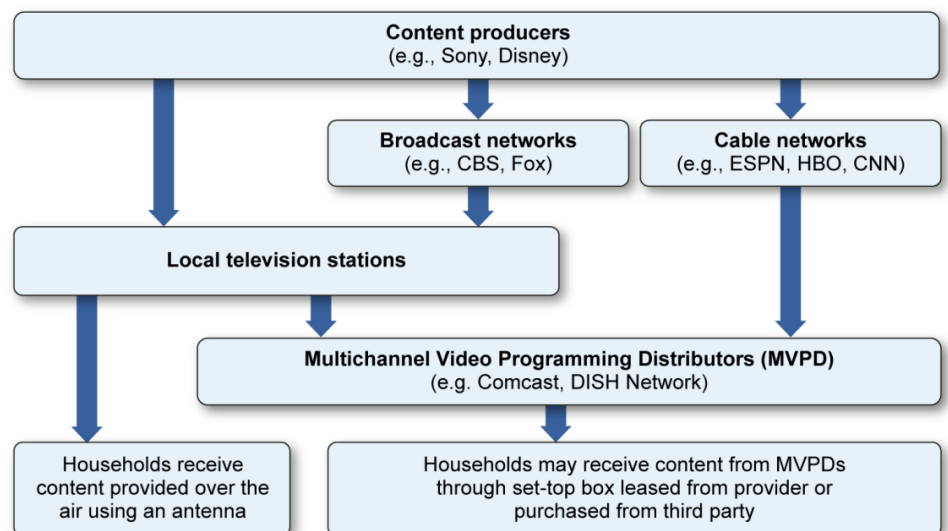
Set-top boxes provide a variety of functions, including enabling consumers to access their video subscriptions. They also secure the video provider's content to ensure that the subscriber can access only the channels subscribed to, and prevent unauthorized use, such as recording

of content that subscribers do not have the right to record. Among other features, set-top boxes may also allow subscribers to:

- view a channel guide and search for programming and record content for later viewing;
- view linear programming—meaning video programming that appears on a given channel at a given time; and
- view video on demand—meaning video programming available for consumers to access when they want to instead of at a specific time.

Traditionally, video content flows from content producers to households through various intermediaries (see fig. 1). Content producers negotiate and agree to a variety of terms and conditions with the networks or local television stations that carry the content, and those networks further negotiate and agree to terms and conditions with the MVPDs that distribute the content to subscribers. For example, a content producer may agree that in addition to its program showing on the linear cable channel at a specific time, its program is also available on demand, but only for a specific period of time. Furthermore, networks may negotiate for and agree to a range of terms with MVPDs regarding channel placement and other items. Protections programmed into the set-top box help ensure that such agreements are implemented.

Figure 1: Relationships among Stakeholders in the Video Programming Market



Source: GAO. | GAO-17-785

For over two decades, federal statutes and regulations have sought to foster consumer choice for video services and devices to access such services. The Cable Television Consumer Protection and Competition Act of 1992, for example, requires FCC to report annually on the status of competition in the video marketplace.¹⁰ Furthermore, Section 629 of the Communications Act of 1934, as amended by the Telecommunications Act of 1996 (“the Act,”) directed FCC to assure the commercial availability of devices that access MVPD service (which currently are typically set-top boxes) by making them available from third parties unaffiliated with MVPDs.

In response to the Act, FCC adopted regulations in October 2003 that allowed the direct connection of digital navigation devices (typically, set-top boxes) purchased from third parties to MVPD systems. To receive and display MVPD content, these devices require a CableCARD, a card provided by a subscriber’s MVPD and installed in the third party set-top box or other device, allowing a subscriber to view secure content they subscribe to with their MVPD.¹¹ As a result, such third party devices, which remain available today, are known as CableCARD devices.

Subsequent to the adoption of its CableCARD regulations, as noted earlier, FCC issued a Notice of Proposed Rulemaking in February 2016 that was intended to provide consumers additional choice for set-top boxes. In the proposed rule, FCC tentatively concluded that despite the availability of CableCARD devices, the market for navigation devices (such as set-top boxes) was not competitive, citing a previous analysis that found that approximately 99 percent of MVPD subscribers continued to lease a set-top box from their MVPD. Therefore, FCC stated in the proposed rule that it should adopt new regulations. Moreover, FCC stated that technological advances since the CableCARD regulations had been adopted enabled new solutions that, with certain ground rules, would make it easier to finally fulfill the purpose of the Act. One goal of the

¹⁰Communications Act of 1934, Pub. L. No. 73-416, 48 Stat. 1064 (1934), *as amended by* Cable Television Consumer Protection and Competition Act of 1992, Pub. L. No. 102-385, 106 Stat. 1460 (1992) (codified as amended at 47 U.S.C. § 548(g)).

¹¹This rule did not apply to satellite video distributors, for example, because, at the time the rule was promulgated, their customers already had commercially available devices to purchase at retail and use with their service. In 2010 FCC proposed a successor to CableCARD, AllVid, which would have required a FCC-designed standardized device that would allow any manufacturer to offer devices at retail without the need to coordinate with video providers. However, FCC did not move forward with that proposal.

proposed rule was to allow third party manufacturers to create new devices and user interfaces—the means through which users interact with a set-top box such as the menus, remote control, and methods of searching for programming—to access MVPD services. For such devices to work, the proposal required MVPDs to transmit to third party devices video programming content and data about that programming, including channel listings and schedules and data on what programming subscribers are entitled to access. Such devices, as proposed, would not rely on a CableCARD and would be compatible with any MVPD’s service.¹² As such, as envisioned by FCC, the proposed rule would enable a consumer to switch MVPDs without having to change the set-top box.

In September 2016, after receiving input from a wide range of stakeholders, the former FCC Chairman issued a three page fact sheet providing an overview of a proposed final rule that the Chairman scheduled for Commission vote in September 2016.¹³ According to the fact sheet, MVPDs would have been required to offer consumers a free electronic application (commonly referred to as an “app”), which would be controlled by the MVPD, that subscribers could download onto a variety of Internet-capable devices such as tablets and smartphones to access the programming they subscribe to. Under this scenario, control over the user interface would have been maintained by the MVPD, not the third-party device manufacturer, as the original proposed rule envisioned. However, the former Chairman ultimately deleted the proposed final rule from the list of items scheduled for consideration at the September 2016 meeting, and action on the proposed rule is no longer pending for consideration.

¹²Unlike the original CableCARD rule, this proposed rule would have applied to satellite video distributors in addition to cable companies. The proposed rule sought comment on how the proposed rule should be applied differently to small MVPDs. In particular, the proposed rule sought comment on the American Cable Association’s proposal to exempt MVPDs serving one million or fewer subscribers from any rules adopted in the proceeding.

¹³As FCC never acted on this proposed final rule, aside from the former Chairman’s fact sheet, and never published the details, for the remainder of this report when we discuss “proposed rule” we refer to FCC’s February 2016 Notice of Proposed Rulemaking.

Set-Top Boxes Play a Significant but Diminishing Role in Delivering Programming in an Evolving Video Market

The Internet Provides Opportunities for Viewing Video Programming without the Need For a Set-Top Box

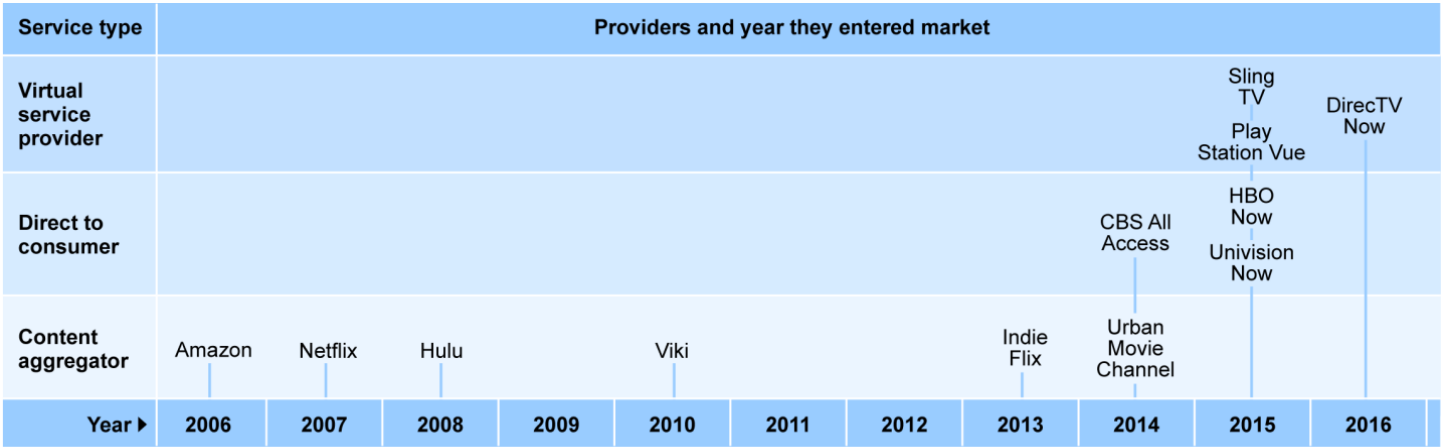
While over 75 percent of households still subscribe to MVPDs for video services and rely on a set-top box leased from their provider to access content, the Internet has created more opportunities for consumers to access video programming services in ways that do not require a leased set-top box. These providers vary regarding the types of video services they offer:

- *Content aggregators* (e.g., Netflix and Amazon): These providers offer video on-demand through a subscription. They aggregate content from multiple sources and may provide their own content (e.g., Netflix's original series *House of Cards*) along with content from other programmers. There are also niche aggregators such as Indie Flix that provide specialized programming.
- *Direct to Consumer* (e.g., CBS All Access, HBONow, and Univision Now): Some programmers and networks that distribute their content through MVPDs are now separately providing live and on-demand content directly to consumers through the Internet for a monthly subscription. Consumers do not have to subscribe to an MVPD to subscribe to such content. For example, HBO provides its content on demand to its customers through the HBO Now app without requiring a customer to subscribe through an MVPD.
- *Virtual Service Providers* (e.g., Sling TV, DIRECTV Now, and PlayStation Vue): These providers use a model similar to the MVPD model by providing live and on-demand programming from a variety of networks over the Internet in generally smaller channel lineups. Such services are targeted to households looking for a smaller channel lineup at a lower cost than from MVPDs.

According to Kagan, subscriptions to content aggregators and direct to consumer Internet-based services are expected to grow from 109 million

in 2016 to 137 million in 2020.¹⁴ Many new Internet video services have launched since 2005, and there has been a particularly large growth since 2014. (See fig. 2.)

Figure 2: Selected Internet Video Providers’ Launch Dates



Source: Kagan, a unit of S&P Global Market Intelligence. | GAO-17-785

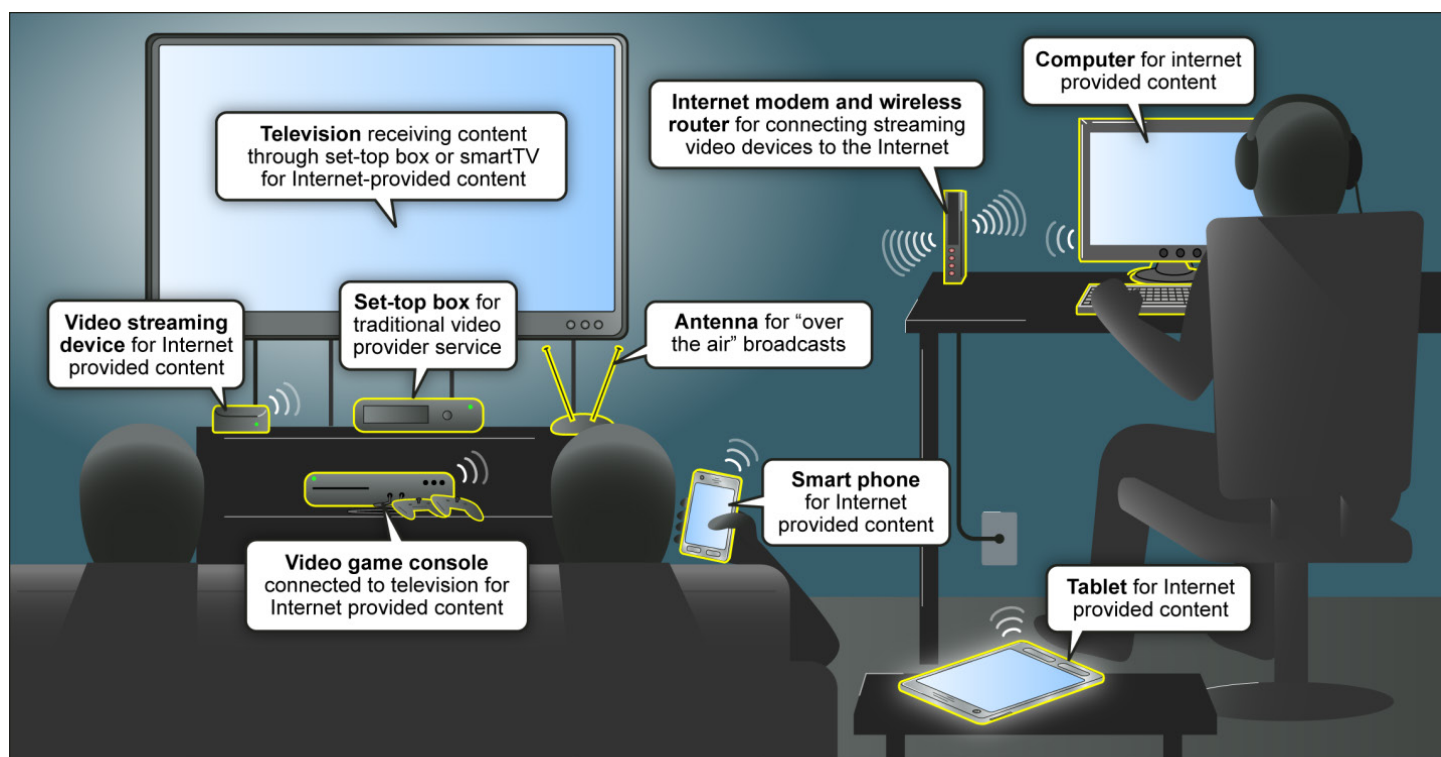
Subscribers can access Internet-based video services using many different Internet-connected devices and do not need a set-top box. These devices include stand-alone devices such as video game consoles (e.g., Xbox One), laptops, tablets, smart phones, and smart TVs—which include an integrated computer with an Internet browser, operating system, and apps to stream Internet video subscriptions without a separate device. Third party manufacturers have also developed streaming media devices (e.g., Roku) designed to allow viewers to watch Internet-provided content on their television set. Some of these devices, such as tablets, allow consumers to view video programming content in or out of the home with an Internet connection.¹⁵ Figure 3 below shows the

¹⁴Because households can, and many do, subscribe to multiple Internet-based services, this figure represents total subscriptions and not households. For example, according to Kagan, in 2016 Netflix had approximately 48 million subscribers and Amazon had 41 million subscribers. While it is likely that some of those subscribers overlap, the extent of overlap is unknown.

¹⁵Agreements between content providers and distributors may limit the extent to which certain content can be viewed outside the home.

variety of devices, including set-top boxes, households can use to access video programming.

Figure 3: Range of Possible Devices to View Video Programming Content at Home



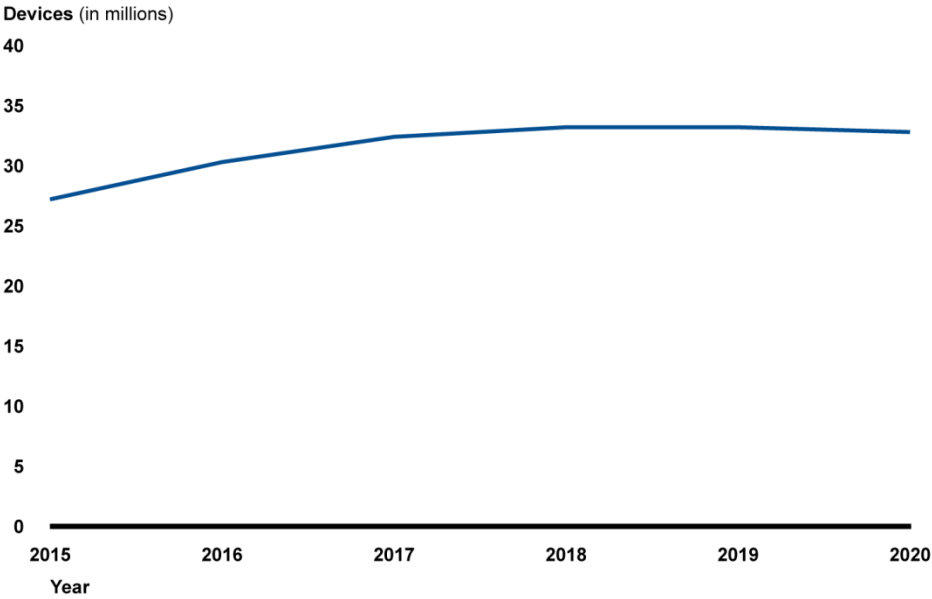
Source: GAO. | GAO-17-785

These new Internet-based providers offer greater choice in video services, eliminating the need to lease a set-top box for households that choose to subscribe to one or more of these providers in lieu of an MVPD subscription. According to Kagan, the percentage of households subscribing to MVPDs is down from a peak of approximately 91 percent of households wired for service in 2009 to 79 percent in 2016, and Kagan estimates that in 2016 there were 29 million households that either cancelled their MVPD subscription or never had it. Additionally, Kagan projects that there will be a continued decline in MVPD video subscriptions by 2020, when 74 percent of households will subscribe to MVPDs, in part due to competition from Internet video programming. Eight of 11 industry experts and analysts we interviewed also stated that they believed MVPDs' market share is falling due in part to Internet video. Kagan reports based on results of an online survey it conducted of households that never had an MVPD subscription that many in this group

are generally younger and have less income than other households, and have in the past relied on over-the-air television because the cost of MVPD service is too high.¹⁶ One industry expert told us that it is unclear what will happen to these younger households' viewing habits as they age. According to this expert, in the past these younger non-subscribers would eventually subscribe to MVPDs as their income grew, but it is no longer clear that this will happen due in part to Internet video options.

While consumers are increasingly subscribing to Internet programming that does not require a set-top box, the market for alternative devices to access programming is also growing. According to Kagan, sales of these alternative devices, such as streaming devices and smart TVs, have been growing. (See fig.4.) For example, Kagan estimates that 70 percent of television shipments in 2016 were smart TVs.

Figure 4: Actual and Projected Sales of Streaming Video Devices over Time, 2015–2020



Source: Kagan. | GAO-17-785

Note: Figures are in millions and include streaming media sticks and devices.

¹⁶March 2017 Kagan online survey of 2,565 U.S. Internet adults matched by age and gender to the U.S. census. The survey results have a margin of error of +/-1.9 at the 95 percent confidence level. GAO did not formally assess the methodology of this survey.

MVPDs Generally Still Require a Set-Top Box but Have Offered Subscribers Additional Ways to Access Video in Response to the Changing Marketplace

Many subscribers to MVPDs are still reliant on at least one set-top box, usually leased from their provider, to access video programming. In the wake of FCC's 2003 CableCARD regulations, third-party providers developed CableCARD devices that consumers could purchase at retail outlets and use to access their MVPD subscription with a CableCARD.¹⁷ Such devices are still available currently. For example, one of the better-known of these options, the TiVo set-top box, was available on Amazon.com as of July 2017. However, in spite of the commercial availability of these devices, according to FCC in its 2016 proposed rule, about 99 percent of subscribers to MVPDs lease at least one set-top box from their MVPD. While all five of the large cable providers we interviewed said that their customers have the option of using a third party device, they all added that very few customers do so and the majority lease their set-top box.¹⁸ All five of the large cable providers we interviewed cited limited customer interest as key reason consumers did not adopt third party CableCARD devices. Each also cited one or more of the following reasons:

- limited functionality, including limited ability to access on-demand content when devices were first available;
- high up-front costs to purchase a third party device; and
- the ease of leasing a set-top box from a provider, which will replace the box if it breaks, compared to owning a third party device where if it breaks the consumer may have to buy a new one.

However, public interest organizations we interviewed stated they believe that the low rate of adoption of CableCARD devices was due to limited support from MVPDs. Specifically, representatives of one public interest group we interviewed stated that MVPDs have not been advocates of third party devices and have not devoted customer service toward this effort, for example by providing their technicians with training. They also stated that MVPDs have made it difficult for customers to use CableCARD devices by, for example, requiring technicians to install the

¹⁷In *EchoStar Satellite L.L.C. v. FCC*, the D.C. Circuit vacated two 2003 FCC orders that adopted the CableCARD standard. *EchoStar Satellite L.L.C. v. FCC*, 704 F.3d 992 (D.C. Circ. 2003); however, most MVPDs we interviewed continue to support CableCARD devices.

¹⁸Satellite providers are not required by law to have CableCARD-enabled devices. However, one of the two satellite providers we interviewed told us that they provided consumers a third party device option to access video programming from them.

CableCARD.¹⁹ Representatives of one public interest group also stated that because MVPDs charge their customers a monthly fee for using CableCARD devices, as they do for a set-top box, customers have little financial incentive to adopt these alternative devices. Another public interest group stated that MVPDs do not make their subscribers aware of their ability to purchase and use such devices.

Although subscribers to MVPDs generally require a set-top box in most cases to access content they subscribe to, many MVPDs are also offering their video programming over the Internet and through alternative devices. For example, according to Kagan, MVPDs have started to allow consumers to access their subscription content via the Internet in and out of the home, on multiple devices, and when they want, for example:

- Many cable networks allow subscribers to MVPDs that carry that network to access live or on-demand content through an app or website specific to that network. MVPDs do not develop or control these apps and websites. Such service is often referred to as “television everywhere.” Kagan forecasts that views of Internet-based television everywhere from MVPDs will increase from approximately 5.4 billion views in 2016 to 11 billion views in 2020. All nine of the larger MVPDs we interviewed told us that their customers can access some “television everywhere” content online.
- Many MVPDs have also developed their own apps allowing their subscribers to access a range of content. Eight of the nine larger MVPDs told us they have developed apps for Internet-capable devices such as smart phones and tablets that allow their subscribers to access content in and out of the home. Such apps may allow for viewing both live and on-demand content. For example, consumers can use a Comcast application on their smart phone out of their home to view content.²⁰ In addition, some MVPDs have developed apps for streaming devices such as Roku. In some, but not all, cases such apps can be used as a replacement for a set-top box; however, only three of the nine larger MVPDs we interviewed said that their

¹⁹In October 2010 FCC issued regulations attempting to remedy shortcomings in CableCARD devices to improve consumers’ experiences for those who choose to buy a retail device rather than lease the MVPD’s set-top box. Among other things these regulations require MVPDs to allow their customers to self-install CableCARD devices. 47 C.F.R. § 76.1205(b).

²⁰MVPD content views away from home might be limited by contractual agreements with content developers.

subscribers may be able to use apps and alternative devices to access their subscriptions without the need for any set-top box. For example, one MVPD told us that customers can use an app on a Roku streaming device to access content without needing any set-top boxes.

These changes by MVPDs may be due to competition from new Internet-based services; 10 out of 11 industry experts and analysts we interviewed told us that MVPDs are providing access to their programming through alternative devices other than set-top boxes due to such competition.

Despite growth in alternative devices and services, a Kagan report indicated and MVPDs we interviewed told us that set-top boxes will still play an important role in the near future for accessing video content from MVPDs as the industry replaces many current set-top boxes with higher end versions. For example, the set-top box for one MVPD we interviewed now provides advanced functions such as voice control, universal searching, and increased storage of programming. All nine larger MVPDs we interviewed told us that they foresee the set-top box still playing a role in their service in the near future, and only three said their customers may be able to access their subscriptions solely on alternative devices without the need for a set-top box.²¹ One MVPD told us that although it sees video providers moving to apps on their own in the future, there will still be an option for consumers to access content from their set-top box. This MVPD has made upgrades to its set-top box to provide more features and has incorporated Internet video applications such as Netflix directly into its set-top box. Additionally, eight out of the 11 experts and industry analysts we interviewed said that they expect the set-top box to continue to be needed for traditional provider services for households in the future. One expert stated that the set-top box is the most efficient way to access and deliver programming, and that it remains the best solution for consumers and an important component of video programming.

²¹One does not offer such apps and five require their subscribers to have at least one set-top box to access content despite the availability of such apps.

Some Consumers May have Difficulty Taking Advantage of Internet Services That Do Not Require a Set-Top Box

While the Internet has provided consumers with more choice for accessing video programming without subscribing to an MVPD and using an associated set-top box, consumers must have broadband access to be able to use these alternative products. However, FCC, in a 2016 broadband progress report, estimated that 10 percent of the population does not have adequate access to in-home fixed broadband Internet and the lack of broadband access is particularly concentrated in rural and tribal areas.²²

Although subscriptions to broadband Internet service are rising as those to MVPD video services are declining, most households are dependent upon MVPDs to receive broadband Internet service. According to FCC, 97 percent of consumers are reliant on their MVPD for broadband service, and according to Kagan the ten largest video providers account for 91 percent of broadband subscriptions.²³ However, as we recently reported, continuing technological changes may provide new options for obtaining access to broadband as, in the future, wireless Internet access may be able to serve as a substitute to in-home broadband for some consumers, and satellite-provided Internet service may also become an option for consumers who don't have access to in-home wired broadband.²⁴ For example, Kagan expects wireless broadband to serve as a growing substitute choice for consumers with the advancement of higher speeds in the future.

²²The FCC identified 25Mbps/3 Mbps benchmark as necessary to access "advanced telecommunications capability;" according to FCC, while satellite companies that provide video services also offer Internet service, no satellite provider offered Internet service at those speeds as of January 2016. *In the Matter of International Comparison Requirements Pursuant to the Broadband Data Improvement Act*, International Broadband Data Report, 31 FCC Rcd 2667 (2016).

²³31 FCC Rcd 2667 (2016).

²⁴Recent moves by some wireless providers to offer unlimited data plans make such services a better substitute for in-home Internet due to the increase in speed of wireless services and the ability for the consumer to access unlimited data, including internet video providers. See GAO, *Broadband: Additional Stakeholder Input Could Inform FCC Actions to Promote Competition* [GAO-17-742](#) (Washington, D.C.: Sept. 19, 2017).

Experts and Stakeholders Suggest Additional FCC Efforts on Choice in Set-Top Boxes are Not Needed, but FCC has Conducted Limited Analysis of this Issue

Generally, Selected Stakeholders and Experts Did Not See Need for FCC Regulation to Increase Consumer Choice for Set-Top Boxes

Most selected stakeholders and industry experts we spoke to did not see a need for FCC to intervene in the set-top box market at this time, given the changes taking place that provide consumers with more choices for services and devices to access video programming. All 11 of the experts and analysts we interviewed said that the industry is moving away from set-top boxes on its own by providing content through other means and 9 of those 11 added that, as a result, there is no need for FCC regulatory intervention. Furthermore, only 8 of the 35 total industry stakeholders we interviewed stated that regulations are needed.²⁵ These stakeholders pointed to the development of apps and devices beyond set-top boxes that consumers can use to access video content. For example, one of the larger MVPDs said that competitive pressures have pushed the company to offer consumers new ways and devices with which to access the content they subscribe to.

However, representatives of all three public interest organizations we interviewed said that FCC regulations are still needed to promote consumer choice for devices. Specifically, representatives of one public interest organization we interviewed said that although the market has evolved to provide more device choices for consumers, the fact that almost all MVPD subscribers lease a set-top box shows that the intent of the Act has not yet been met. They added that while MVPDs have been

²⁵In addition, 19 said regulations are not needed at this time, 2 gave uncertain answers, and 6 did not comment

increasing the development of apps for their subscribers to access content, these apps so far do not have all the functionality of leased set-top boxes, meaning that the apps are not an adequate substitute. As discussed earlier, despite the growth in apps, most larger MVPDs we interviewed still require their subscribers to have at least one set-top box.

Some Experts and Industry Stakeholders Raised Concerns about the Potential Effects of FCC's Recent Proposal to Expand Consumers' Choices for Devices

Some industry stakeholders and experts and analysts we interviewed thought that FCC's proposed rule²⁶ could have had negative effects on MVPDs as well as other industry participants, including content providers. As discussed earlier, the proposed rule would have required MVPDs to transmit information—including video programming itself—to third party devices. According to representatives of one industry association we interviewed, this could have meant that MVPDs, and the programmers whose content they distribute, would lose control over content that they had created or purchased the distribution rights to. Programmers negotiate terms and conditions—such as channel lineup and other issues—with MVPDs that distribute their content. Some stakeholders expressed concern that under the proposed rule there would be no guarantee that third party device and service companies would adhere to all those terms and conditions under which that content was provided to the MVPDs. Some MVPDs and programmers expressed concern that some third-party device companies might modify the stream of programming by, for example, changing channel placement or overlaying advertising.

Five of the 11 experts and analysts we interviewed thought that the proposed rule could have led to copyright violations.²⁷ Almost all larger MVPDs, broadcast networks, and independent and diverse programmers and interest groups we interviewed expressed concerns that should there be copyright violations, content providers could also be negatively affected.²⁸ For example, one industry association said if a third party device were to overlay advertising on a program, the value of advertising availability that is usually sold by broadcast or cable networks or by cable distributors would decrease since there might be competing advertising

²⁶As mentioned earlier, the former FCC Chairman issued a "fact sheet" of a proposed final rule, but FCC did not publish the proposed final rule. When we discuss "proposed rule" here we only refer FCC's February 2016 Notice of Proposed Rulemaking.

²⁷Six did not comment.

²⁸One larger MVPD did not comment.

displayed to viewers. This stakeholder added that any reduced ad revenues would, in turn, reduce the ability to invest in content. Seven of the 11 experts and analysts we interviewed reported that the proposed rule could negatively affect content providers.²⁹ Furthermore, some stakeholders told us that they believed the possible negative effects of the proposed rule could have especially affected independent and diverse programmers such as Vme, a national Spanish language network. According to one independent and diverse programmer we interviewed, its business is dependent upon agreements with MVPDs that distribute its programming. Those agreements include a range of terms including advertising restrictions and channel placement. To the extent a third party could modify the content—such as by overlaying advertising—that programmer would have a harder time negotiating with MVPDs, potentially reducing the compensation received from MVPDs for carrying its channel, thus harming its business model. Furthermore, according to a letter written by the Copyright Office, the proposed rule could have interfered with the rights of copyright owners to license their works by requiring MVPDs to provide content to third parties that would not necessarily have a contractual relationship with the copyright owner.

However, some other stakeholders we interviewed stated that they believed there was little likelihood that the proposed rule would have led to licensing terms not being followed and reported that the proposed rule may have provided public benefits, specifically:

- Two public interest groups we interviewed said that because there have not been violations with copyrights on CableCARD devices, such violations would be unlikely on any new devices that would have been created under the rule.
- Representatives with one industry association representing technology companies said that the proposed rule could have benefited independent and diverse programmers by increasing the number of devices available to consumers to access content, providing such programmers with increased opportunities for consumers to find their content.
- Representatives with one public interest group said that consumers would benefit from the proposed rule as new devices created in

²⁹Two said they may not be negatively affected, one was unsure, and one did not comment.

response to the rule would increase access to programming on new devices, thus increasing programming options overall.

- Representatives with a device manufacturer said that the proposal could have provided consumers with new and innovative ways to access video content.

FCC Has Conducted Limited Analysis to Support Response to Statutory Requirement Regarding Consumer Choice for Set-Top Boxes

FCC was directed by statute to adopt regulations to assure a commercial market for devices (such as set-top boxes) to access MVPD services, and both its existing regulations (the CableCARD regulations) and its 2016 proposed rule that was not enacted were developed in response to that statute. However, in the context of a rapidly evolving video market offering increased consumer choices in many relevant areas, FCC conducted limited analysis to support the need for its 2016 proposed rule prior to proposing it. In addition, letters to Congress from the new FCC Chairman stating his intention to not move forward with this issue did not contain or cite any analysis supporting that decision.³⁰ The Office of Management and Budget's *Circular A-4* states that regulatory agencies could use regulatory analyses to analyze the need for proposed actions, as required under Section 6(a)(3)(C) of Executive Order 12866.³¹ In the proposed rule, FCC supported the need by stating that "consumers have few alternatives to leasing set-top boxes from their MVPDs, and the vast majority of subscribers lease boxes from their traditional video distributor," adding that, according to an analysis cited by FCC, approximately 99 percent of consumers lease a device. The proposed rule did not fully pursue the question of why approximately 99 percent of consumers lease a device when many of them could choose a CableCARD device. The proposed rule noted some of the technical limitations of CableCARD devices and stated that cable companies generally provided poor CableCARD support, making it more difficult for consumers to set up a retail device than a leased device. However, it did not give any further consideration to why so few consumers have adopted such devices; as discussed earlier, cable providers we interviewed said customers have

³⁰In commenting on a draft of this report, FCC noted that the limited action of taking a not-yet-adopted proposal off circulation would not generally be an occasion for providing a regulatory impact analysis since such an action would have no regulatory effect.

³¹Office of Management and Budget, *Circular A-4* (Sept. 17, 2003). We note that this requirement—unlike others in Executive Order 12866 like Sections 4(b) and 4(c)—does not extend to independent regulatory agencies such as FCC, which are excluded from the definition of the term "agency" by Section 3(b) of that order. However, we believe that these criteria are still useful and relevant to FCC's analysis of its 2016 proposed rule.

limited interest in adopting such devices for a variety of reasons, such as the ease of leasing a set-top box from a provider, which will replace the box if it breaks, compared to owning a third party device where if it breaks the consumer may have to buy a new one.

The proposed rule also contained limited analysis of the potential effects of this rule on consumers, MVPDs, or others. For example, while FCC supported the proposed rule by stating that the average household pays over \$230 a year in set-top box lease fees, the proposal did not estimate the extent to which any increased competition in the market for set-top boxes might lead to cost savings for consumers. More broadly, FCC has conducted some analysis of the evolving video market, which, as discussed earlier, is providing consumers with more choices for both video services as well as devices to access services. For example, FCC's most recent congressionally mandated annual video competition report—published in January 2017—includes discussion of the increasing popularity of Internet-based video services and the competitive pressures they have placed on MVPDs, among other things.³²

While the Act requires FCC to set regulations to assure the commercial availability of devices to access MVPD services, it also states that any regulations implemented under the statute shall cease to apply if FCC deems that: (1) the market for MVPDs is fully competitive, (2) the market for devices used to access MVPD services is fully competitive, and (3) the elimination of the regulations would promote competition and the public interest. While, as discussed above, FCC has conducted some analyses related to these issues, neither the proposed rule nor the recent video competition report reflect a comprehensive analysis looking at how these interrelated issues affect each other. In addition, May 2017 letters to Congress from the new FCC Chairman stating his intention to not move

³²This report also discusses the limited adoption of CableCARD devices by consumers and the fact that most lease a set-top box from their MVPD. It also acknowledges the growing use of apps by MVPDs that can be used on a variety of devices and states that it is not yet clear if such devices are used as substitutes for set-top boxes leased from MVPDs or merely as complements. FCC, *Annual Assessment of the Status of Competition in the Market for the Delivery of Video Programming: Eighteenth Report* (Washington, D.C.: Jan. 17, 2017).

forward with this issue did not contain or cite any analysis supporting that decision.³³

Specifically, FCC's analyses do not consider the effect that increasing consumer choice for video services has on the importance of consumer choice for devices to access MVPD services. Increased consumer choice for services may reduce the market power of MVPDs and may restrict what they can do and what they can charge for set-top boxes—as well as potentially spurring innovation in how they offer access to their MVPD services. While the 2017 video competition report touches on consumer choice for both services and for devices, it does not discuss the extent to which new choices for services have affected the importance of consumer choice for devices. Furthermore, this analysis does not consider what level of consumer choice for devices must exist for the market for devices to be “fully competitive.”

While FCC's former Chairman believed that new regulations were needed to fulfill the requirements of the Act, the current Chairman believes that the 2016 proposed rule did not further his goal of promoting a clear, consumer-focused, fair, and competitive regulatory path for video programming delivery. As stated earlier, the proposed rule contained limited analysis. In addition, the new Chairman's letters to Congress noted that he had removed his predecessor's proposal from circulation but were silent as to whether the Commission would take any future action in this proceeding. A future Commission may again determine that regulations are needed or decide not to take any further action on this issue.

As discussed earlier, the market has evolved in recent years and provided consumers with expanded choices for video services and for devices to access such services. For example, some MVPDs now allow their subscribers to access their content with apps on streaming devices without the need for a set-top box. It is possible that in the future each new year may see the market providing new choices for services and devices. Without an analysis of the effects of new Internet-based video services on consumer choice for devices to access MVPD programming, FCC may not fully understand the extent of consumer choice and furthermore, the extent to which increased consumer choices for video services affects the relative importance of consumer choice for devices to

³³In commenting on a draft of this report, FCC noted that the limited action of taking a not-yet-adopted proposal off circulation would not generally be an occasion for providing a regulatory impact analysis since such an action would have no regulatory effect.

access MVPDs. Such an analysis, conducted as part of FCC's existing annual video competition reports—which, as discussed, already include relevant analyses—could help FCC determine if additional regulations are needed.

Conclusions

The market for video services and devices to access video services has evolved significantly in recent years so that consumers now have considerably more choices for video services and devices to access such services than when Congress passed the Telecommunications Act of 1996. Given the fast pace of change in the video market in recent years and the likelihood that it will continue to evolve to offer consumers more choices in how they access video content, it is important that FCC analyze the implications of these changes for its responsibilities under the Act to assure the commercial availability for devices that can access MVPD programming.

However, FCC has not conducted a comprehensive analysis to support an informed decision as to whether further action is needed or not. FCC's recently proposed rule and most recent annual video competition report contain limited analysis of the extent to which Internet-based providers affect consumer choice for video programming and what that change means for the importance of consumer choice for devices in the context of the Act. In contrast, a comprehensive analysis could inform FCC as to whether the market conditions of competition for both video services and devices have been reached under which, as stated in the Act, any regulations implemented under the statute shall cease to apply. Should such analysis show that those market conditions have not yet been reached, a clear articulation by FCC of what elements have and have not yet been met could help as a benchmark in FCC's further consideration of this issue as the market likely continues to evolve. Without more comprehensive analysis of the industry's evolution and its effects on consumer choice for devices to access MVPD services, FCC could potentially take regulatory action—or choose not to take action—in a way that is not beneficial to consumers and does not meet the goals of the Act.

Recommendation

To help ensure that any future decisions by FCC regarding its efforts under the Act are based on comprehensive analysis, we recommend that FCC, as part of its future annual video competition reports, analyze how the ongoing evolution in the video programming market affects competition in the related market for set-top boxes and devices, including

how this evolution affects the extent to which consumer choice for devices to access MVPD content remains a relevant aspect of the competitive environment. (Recommendation 1)

Agency Comments

We provided a draft of this report to FCC and the Library of Congress for review and comment. FCC responded with a letter in which it agreed with our recommendation. This letter is reprinted in appendix II. FCC also provided technical comments that we incorporated as appropriate. The Library of Congress reviewed our report and did not provide any comments.

We are sending copies of this report to interested Congressional committees and the Chairman of the FCC. In addition, the report will be available at no charge on the GAO website at <http://www.gao.gov>.

If you or your staff have any questions about this report, please contact me at (202) 512-2834 or goldsteinm@gao.gov. Contact points for our Offices of Congressional Relations and Public Affairs may be found on the last page of this report. GAO staff that made significant contributions to this report are listed in Appendix III.

Sincerely yours,

A handwritten signature in black ink, appearing to read 'M. Goldstein', with a long horizontal flourish extending to the right.

Mark Goldstein
Director, Physical Infrastructure Issues

Appendix I: Industry Stakeholders and Experts and Analysts Interviewed

The following tables list the industry stakeholders and industry analysts and experts GAO interviewed as part of this engagement.

Table 1: 35 Industry Stakeholders Interviewed

Larger Multichannel Video Programming Distributors
Altice
AT&T
Charter Communications
Comcast
Cox Communications, Inc.
DISH Network
Frontier
Mediacom Communications
Verizon
Smaller Multichannel Video Programming Distributors
3 Rivers Communications ^a
Volcano Communications ^a
Wheat State Telephone ^a
Large Broadcast Networks and Programmers
CBS
The Walt Disney Company
Independent or Diverse Programmers and Non Profit Organizations
Multicultural Media, Telecom and Internet Council
Up Entertainment
Vme
Industry Associations
American Cable Association
Computer and Communications Industry Association
Copyright Alliance
INCOMPAS
Independent Film and Television Alliance
Motion Picture Association of America
NCTA – The Internet & Television Association
National Association of Broadcasters
Writers Guild of America West
WTA - Advocates for Rural Broadband

Device Manufacturers
ARRIS
Hauppauge Digital, Inc.
TiVO
Public Interest Organizations
Consumers Union
Electronic Frontier Foundation
Public Knowledge
Streaming Video Provider
Netflix
Other
Corporation for Public Broadcasting

Source: GAO GAO-17-785

^aThese providers were interviewed as part of a meeting with WTA – Advocates for Rural Broadband

Table 2: 11 Industry Experts and Analysts Interviewed

Industry Experts and Analysts
Jason Bazinet, Citi
Professor Nicholas Economides, New York University Leonard J. Stern School of Business
George Ford and Lawrence Spiwak, Phoenix Center
Rich Greenfield, BTIG
Jonathan Chaplin, New Street Research
Bryan Kraft, Deutsche Bank
Bruce Leichtman, Leichtman Research Group
Simon Leopold, Raymond James & Associates
Marci Ryvicker, Wells Fargo
Dr. Nicol Turner-Lee, Brookings Institution
Brian Wieser and Jeffrey Wlodorczak, Pivotal Research Group

Source: GAO | GAO-17-785

Appendix II: Comments from the Federal Communications Commission



Federal Communications Commission
Washington, D.C. 20554

September 21, 2017

Mark Goldstein
Director, Physical Infrastructure Issues
Government Accountability Office
441 G Street NW
Washington, DC 20548

Dear Mr. Goldstein:

Thank you for the opportunity to comment on the Government Accountability Office's (GAO) draft report entitled *FCC Should Conduct Additional Analysis to Evaluate Need for Set-Top Box Regulation* (GAO 17-785), which reviews the FCC's efforts to ensure commercial availability of devices to access programming provided by multichannel video programming distributors (MVPDs).

The draft report finds that the Commission, under the former Chairman, conducted limited analysis to support the need for the rules proposed in a February 2016 Notice of Proposed Rulemaking. The draft report concludes that, in order to determine whether further action is needed or not with respect to its statutory responsibility to ensure the competitive availability of devices that can access multichannel video programming, the FCC should conduct a more comprehensive analysis of the implications of the significant changes that have occurred in recent years in the markets for video services and devices to access video services. Specifically, GAO recommends that the FCC, as part of its future annual video competition reports, "analyze how the ongoing evolution in the video programming market affects competition in the related market for set-top boxes and devices, including how it affects the extent to which consumer choice for devices to access MVPD content remains a relevant aspect of the competitive environment." The Commission is statutorily required to report annually to Congress on the status of competition in the market for the delivery of video programming. We agree that the Commission's annual video competition report proceedings are an appropriate forum to gather data and solicit comment on issues relevant to whether there is a need for further regulations to ensure the commercial availability of devices to access MVPD programming. We will include an analysis of these data and comments in future annual video competition reports.

Thank you again for the opportunity to respond to the recommendation in the draft report. We look forward to working with GAO in the future.

Sincerely,

A handwritten signature in blue ink that reads "Michelle Carey".

Michelle Carey
Chief, Media Bureau

Appendix III: GAO Contact and Staff Acknowledgments

GAO Contact

Mark Goldstein, (202) 512-2834 or goldsteinm@gao.gov.

Staff Acknowledgments

In addition to the contact above, Alwynne Wilbur (Assistant Director); Matt Rosenberg (Analyst in Charge); Amy Abramowitz; West Coile; Leia Dickerson; Sharon Dyer; Camilo Flores; Joshua Ormond; Nitin Rao; Amy Rosewarne; and Elizabeth Wood made key contributions to this report.

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