

B. Video and Audio Market Appendices

APPENDIX B-1
REPORT ON CABLE INDUSTRY PRICES

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I. INTRODUCTION AND EXECUTIVE SUMMARY

1. Section 623(k) of the Communications Act of 1934, as amended by the Cable Television Consumer Protection Act of 1992 (Cable Act)¹ and the Consolidated Appropriations Act of 2018,² requires the Federal Communications Commission (or Commission) to publish a statistical report

¹ Section 623(k), adopted as Section 3(k) of the Cable Act, Pub. L. No. 102-385, 106 Stat. 1460, codified at 47 U.S.C. § 543(k).

² The Consolidated Appropriations Act of 2018 included the Repack Airwaves Yielding Better Access for Users of Modern Services Act of 2018 (RAY BAUM’S Act of 2018), which amended Section 13 of the Communications Act of 1934 to require the Federal Communications Commission (Commission) to publish a single, biennial “*Communications Marketplace Report*,” in lieu of several individual reports that separately assessed competition among providers of various communications services, including voice, video, audio, and data services. Consolidated Appropriations Act, 2018, Pub. L. No. 115-141, Div. P—RAY BAUM’S Act of 2018, §§ 401-404, 132 Stat. 348, 1087-90 (2018) (RAY BAUM’S Act of 2018). Among the previous reports now included in the *Communications Marketplace Report* is information that in the past was submitted to Congress as the annual report on cable industry prices required by section 623(k) of the Communications Act. Initially, section 623(k) was adopted as Section 3(k) of the 1992 Cable Act, Pub. L. No. 102-385, 106 Stat. 1460, codified at 47 U.S.C. § 543(k). The prior annual reports provided statistical data on the average rates for basic cable service, cable programming service, and equipment, as well as a comparison of the average rates of cable systems that the Commission has found are subject to effective competition with those of systems that the Commission has found are not subject to effective competition. The instant report fulfills this statutory requirement, as amended by the recent RAY BAUM’S Act.

(Report)³ on the average rates cable operators charge for basic cable service and other cable programming, and cable equipment to access such programming.⁴ The statute requires the Commission to compare the rates of operators subject to effective competition to the rates of operators not subject to effective competition under a statutorily defined standard (herein after referred to as “effective competition”).⁵ In addition, section 110 of the STELA Reauthorization Act of 2014 requires the Commission to report on retransmission consent fees paid by cable operators to broadcast stations or groups.⁶ This Report fulfills the statutory directives and presents findings as of January 1, 2017.⁷

2. For the Report, Media Bureau staff surveyed a stratified random sample of cable communities nationwide in order to collect data on the cable rates (prices) in effect in communities as of January 1, 2017.⁸ In the Report, we refer to the communities in which the operator is subject to effective competition as the “effective competition group” and to communities in which the operator is not subject to effective competition as the “noncompetitive group.” Our sample includes communities from both groups. We collected data on monthly prices to purchase basic service, expanded basic service, the next

³ 47 U.S.C. § 543(k)(1) (cross-referencing 47 U.S.C. § 543(a)(2)). Citations to prior annual reports on cable industry prices: *Implementation of Section 3 of the Cable Television Consumer Protection and Competition Act of 1992, Statistical Report on Average Rates for Basic Service, Cable Programming Service, and Equipment*, 12 FCC Rcd 3239 (1997) (*1997 Report*); 14 FCC Rcd 8331 (1999) (*1998 Report*); 15 FCC Rcd 10927 (2000) (*1999 Report*); 16 FCC Rcd 4346 (2001) (*2000 Report*); 17 FCC Rcd 6301 (2002) (*2001 Report*); 18 FCC Rcd 13284 (2003) (*2002 Report*); 20 FCC Rcd 2718 (2005) (*2003-2004 Report*); 21 FCC Rcd 15087 (2006) (*2005 Report*); 24 FCC Rcd 259 (2009) (*2006-2008 Report*); 25 FCC Rcd 13350 (2010) (*2009 Report*); 27 FCC Rcd 2427 (2012) (*2011 Report*); 28 FCC Rcd 9857 (2013) (*2012 Report*); 29 FCC Rcd 5280 (2014) (*2013 Report*); 29 FCC Rcd 14895 (2015) (*2014 Report*); 31 FCC Rcd 11498 (2016) (*2015 Report*); and 33 FCC Rcd 1268 (2018) (*2016 Report*).

⁴ 47 U.S.C. § 522(5) (defining cable operator). Cable operators include operators of traditional coaxial and fiber cable systems, municipalities, and telephone companies including Verizon FiOS. Direct broadcast satellite (DBS) providers and AT&T U-verse systems are not registered with the Commission, and thus these systems’ prices are not part of the Report, although DBS and AT&T U-verse are competitors for purposes of assessing effective competition. “Service tier” (service) refers to a cable service for which a separate rate applies. 47 U.S.C. § 522(17). Operators must provide a separately available “basic cable service” (basic service) to which customers must subscribe before accessing any other tier of service. 47 U.S.C. § 543(b)(7). “Other cable programming” service means any video programming other than programming offered with the basic service or programming offered on a per channel or per program basis. *Id.* § 543(l)(2). Section II, Part C defines other cable programming for the purpose of the Report.

⁵ Commission findings of effective competition generally are made in reference to a “cable community identifier” (CUID). The Commission assigns a unique CUID to each operator for each community the operator serves. As discussed in Section II, Part A, the Commission recently changed its process and presumption for determining effective competition. In 2015, the Commission adopted a rebuttable presumption that cable operators in all cable communities are subject to effective competition. *Amendment to the Commission’s Rules Concerning Effective Competition, Implementation of Section 111 of the STELA Reauthorization Act, Report and Order*, 30 FCC Rcd 6574 (2015). As a result of this change, operators in nearly all communities are now subject to effective competition. Rates of an operator subject to effective competition are not subject to regulation by a local franchising authority (LFA). 47 U.S.C. § 543(a)(2); 47 CFR § 76.905(a). An LFA may elect to regulate the rate of basic service of an operator not subject to effective competition. *Id.*

⁶ Section 110 of the STELA Reauthorization Act of 2014 (STELAR). *See* Pub. L. No. 113-200, 128 Stat. 2059 (2014) enacted December 4, 2014 (H.R. 5728, 113th Cong.). Specifically, STELAR instructs the Commission to include in its now-biennial report on cable industry prices “the aggregate average total amount paid by cable systems in compensation under section 325 [of the Communications Act of 1934, as amended,]” and to report such information “in a manner substantially similar to the way other comparable information is published” in the report. 47 U.S.C. § 543(k)(2), as amended.

⁷ Consistent with past practice, the current survey and report collects data as of January 1 of a year prior to the current year. We will report on 2018 in a future report.

⁸ *See* the Survey Methodology Appendix for a detailed description of the sampling and stratification methodology.

most popular service, and cable equipment, as well as other information, as described in greater detail in the Overview Section below.⁹ The Report presents the average annual changes in prices and other variables by cable service tier.

A. Summary of Findings

3. *Average price over all communities (regardless of effective competition standing).* The average monthly price paid by subscribers who take only basic service grew by an average of 5.2 percent, to \$25.06, over the 12 months ending January 1, 2017. The average price for expanded basic service rose by 3.2 percent over the same one-year period to \$75.21. Over the five years ending January 1, 2017, the price of expanded basic service rose, on average, by 4.1 percent annually. Average price per channel (price divided by the number of channels offered with expanded basic service) fell by 10.1 percent to 49 cents per channel over the 12 months ending January 1, 2017. Over the last five years, price per channel has decreased, on average, by 0.8 percent annually. For comparison, the rate of general inflation measured by the Consumer Price Index (all items) rose by 2.5 percent over the 12 months ending January 1, 2017, and at an average annual rate of 1.4 percent over the last five years.

4. *Average price in the communities with a finding of effective competition compared to price in communities without a finding of effective competition.* On January 1, 2017, the average price of basic service was more than 50 percent higher in effective competition communities than in noncompetitive communities. However, the increase in the average price of basic service was smaller in effective competition communities than in non-effective competition communities. Specifically, over the 12 months ending January 1, 2017, the average price of basic service in effective competition communities rose by 5.2 percent to \$25.17. In noncompetitive communities, the average price of basic service grew by 9.8 percent, to \$16.61. The differences between these groups in both absolute price levels and in the change in prices over time likely reflect a complicated mix of factors, with operators providing different service offerings in reaction to competition and regulation.

5. *On January 1, 2017, the average price of expanded basic service in effective competition communities was about 3 percent lower than the average price of expanded basic in the noncompetitive communities.* Over the 12 months ending January 1, 2017, the average price of expanded basic service in effective competition communities rose by 3.2 percent to \$75.19. In noncompetitive communities, the average price of expanded basic service grew by 3.6 percent, to \$77.24. In contrast to the average price of expanded basic service, the average price per channel was higher in effective competition communities (49 cents per channel) than in noncompetitive communities (39 cents per channel). Although operators in noncompetitive communities charged slightly more for expanded basic service than operators in effective competition communities, operators in the effective competition group offered fewer channels. Operators in effective competition communities offered an average of 195 video channels while operators in noncompetitive communities offered an average of 212 channels.

6. *Average price in effective competition subgroups compared to price in noncompetitive communities.* As in prior years, we divided operators subject to effective competition into subgroups.¹⁰ Compared to the noncompetitive communities, the average price of basic service was higher in every effective competition subgroup, and the difference was statistically significant in all subgroups except the rival subgroup.¹¹ Compared to the average price of expanded basic service charged in noncompetitive communities (\$77.24), the average prices charged by incumbent operators and rival operators were each about 6 percent lower (\$72.87 and \$72.40 respectively). These differences are statistically significant.

⁹ The prices collected exclude state and local taxes as well as franchise fees.

¹⁰ We provide an overview of the sampling groups and subgroups in Section II, Part B.

¹¹ Throughout this report, we determine statistical significance using a 95% confidence level. A difference that is statistically significant at the 95% confidence level is unlikely to be due to random sampling error. Instead, the difference may therefore likely reflect a true difference between survey groups.

Looking at the other effective competition subgroups, the average price charged by operators of small systems was \$71.73 (7.1 percent lower), the average price charged by operators of midsize systems was \$75.35 (2.4 percent lower), and the average price charged by operators of large systems was \$76.25 (1.3 percent lower). The difference between the small systems subgroup and the noncompetitive group is statistically significant, but the other two differences are not statistically significant.

7. *Broadcast retransmission consent compensation fees.* From 2015 to 2016,¹² total retransmission consent fees paid by cable systems to television broadcast stations increased, on average, by 31.8 percent per year.¹³ Similarly, these same fees calculated on a per-subscriber basis increased on average by 30 percent, rising from \$55.82 to \$72.59 over the same period. Average monthly retransmission consent fees per subscriber per broadcast station increased by about 25 percent annually increasing from \$0.50 to \$0.63 from 2014 to 2016. Over the period 2013-2016, the compound average annual increase in retransmission consent fees was 42.3 percent, and the compound average annual increase in fees calculated on a per-subscriber basis was 37.8 percent.

8. *Comparison of DBS to cable programming services.* Direct broadcast satellite (DBS) providers DIRECTV and DISH offer multichannel video services similar to those offered by cable operators.¹⁴ Accordingly, we compared DBS services to the most popular cable offering as part of the Report even though the statute does not explicitly require it.¹⁵ We looked at the DBS services which appeared most comparable to cable's expanded basic cable service: DIRECTV's Choice and DISH's America's Top 120 Plus (AT120+). Though generally comparable, there were differences in the types of channels carried by cable operators and DBS providers. These differences are discussed further below.¹⁶

9. As of January 2017, the average price for cable's expanded basic service was \$75.21. This was below the price DIRECTV charged for Choice service (\$78.99) and similar in price to DISH's AT120+ service (\$74.99).¹⁷ Each cable and DBS service offered a core package of channels along with local broadcast channels (locals). DISH divided its price of \$74.99 into separate fees of \$64.99 for the core channel package and \$10.00 for the locals. In terms of average annual change in prices, from 2016 to 2017, expanded basic cable service increased by 3.2 percent, which was lower than the increases of 5.3

¹² The data for retransmission consent fees are collected somewhat differently than the rest of the data in the report. Retransmission data are collected for complete years, whereas all the rest of the data are collected as of a certain date (January 1). As a result, the retransmission consent fee data are for the *complete years* 2015 and 2016 (the latest two years for which annual retransmission consent data were available at the time of the 2017 survey), whereas the other data in the survey, by contrast, are snapshots as of January 1, 2016 or January 1, 2017.

¹³ More recent estimates show that growth in retransmission consent fees has slowed. From 2016 to 2017, SNL Kagan estimates that total retransmission consent fees paid to television stations increased by 17.7 percent. SNL Kagan, U.S. TV station industry total revenue projections, 2006-2023 (accessed December 7, 2017).

¹⁴ DIRECTV Group Holdings LLC (DIRECTV) and DISH NETWORK Corporation (DISH).

¹⁵ Attachment 16 reports our DBS survey sample methodology, data sources, and detailed statistics. We surveyed DBS services in 40 communities, separately from our cable survey, based on publicly available information. DBS prices vary only slightly nationwide.

¹⁶ In comparing cable and DBS, we further note that DBS satellite service is not local-facilities-based and DBS providers can therefore add subscribers anywhere with minimal incremental infrastructure cost. *Annual Assessment of the Status of Competition in the Market for the Delivery of Video Programming*, Fifteenth Report, 28 FCC Rcd 10496, 10546 at 112 (2014).

¹⁷ See Table 1 and Attachment 16. DBS prices do not include equipment fees. Similarly, most cable operators sold programming and equipment separately, but about one third of operators bundled programming and equipment together in a single price. The average cable price reported reflects prices reported by both cable operators who bundle equipment and those who do not bundle equipment. Operators who sold programming and equipment separately reported only the programming price, while operators who bundled programming and equipment reported the price of the bundle. None of the prices reported include taxes, franchise fees, or other surcharges.

percent for DIRECTV service and 7.1 percent for DISH service.¹⁸ We also calculated an average price per channel, which is the service price divided by the number of channels.¹⁹ The average cable price per channel was 49 cents and was significantly higher than DIRECTV's average of 33 cents per channel and DISH's average of 41 cents per channel.²⁰

10. Looking at the average number of channels each DBS service offered, compared to the 195 channels offered with cable's expanded basic service, DIRECTV's Choice service offered more channels (239 channels) and DISH's AT120+ service offered fewer channels (182 channels).²¹ As stated, each service offered a core channel package and local broadcast channels. The cable operators carried on average 37 broadcast channels, compared to the DIRECTV and DISH averages of 20 and 21 broadcast channels, respectively.²² The difference is primarily a result of cable operators carrying relatively more broadcast multicast channels. Another difference is related to regional sports networks (RSNs). With expanded basic service, cable operators offered, on average, 3.1 RSNs,²³ while DBS providers offered RSNs through a separately priced add-on package.

II. OVERVIEW OF THE SURVEY

11. The basis of information and analysis in the Report is the Commission's 2017 survey of cable industry prices (survey). The Commission directed cable operators serving a randomly selected sample of cable communities nationwide to respond to a survey questionnaire requesting prices and other information as of January 1, 2016 and January 1, 2017.²⁴ As noted, we selected communities that were subject to effective competition, as well as communities that are not subject to effective competition. We used the information collected to estimate average values and make comparisons across groups and subgroups of cable communities. We calculated annual changes in average values based on the data collected in the 2017 survey.²⁵ We calculated average values for each survey question by subgroup, by larger sample group, and for the full sample of communities. For each community selected for the sample, we asked the cable operator to complete a questionnaire that included questions on the prices of basic cable service and other cable programming service offerings.

¹⁸ *Id.*

¹⁹ Cable price per channel is not calculable directly from the price and channels averages discussed herein because of statistical weighting of observations. We discuss cable price per channel in Sections II(C) and III(B) and in the Methodology Appendix.

²⁰ See Table 3 and Attachment 16. Our method of calculating the cable price per channel adds an equipment fee to the price component. In contrast, DBS price per channel does not include an equipment fee. Calculating cable price per channel without adding the equipment fee results in an average cable price per channel of 45 cents, still higher than the DBS average price per channel.

²¹ See Table 5 and Attachment 16. We counted each separate channel viewable in digital format in either standard definition (SD), high definition (HD), and in the case of several DIRECTV channels, in 4K format. A network carried in both SD and HD formats counted as two channels.

²² See Table 6 and Attachment 16. A network carried in both SD and HD format was counted as two channels.

²³ See Table 7.

²⁴ *Implementation of Section 3 of the Cable Television Consumer Protection and Competition Act of 1992, Statistical Report on Average Prices for Basic Service, Cable Programming Services, and Equipment*, MM Docket No. 92-266, Order, 32 FCC Rcd 2984 (2017).

²⁵ Each annual change calculated is not a comparison of data from the 2016 survey and data from the 2017 survey because each survey includes a different sample of communities. To calculate the annual changes, the 2017 survey collected data from the sample of communities for January 1, 2016 and January 1, 2017 so as not to introduce random sampling variation that may occur between independent samples. While tables in the Report generally report the 2017 statistics and annual changes based on data collected in the 2017 survey, Table 4 reports a historical price series based on data from previous survey years.

12. In Part A of this section, we discuss effective competition communities and how the process for establishing effective competition has changed. In Part B, we provide an overview of the survey methodology, which is described in more detail in the Methodology Appendix. In Part C, we provide definitions of specific cable services. In Part D, we review survey accuracy and reliability.

A. Effective Competition Communities

13. The Commission recently changed its effective competition process by adopting a rebuttable presumption that all cable operators qualify for the type of effective competition known as competing provider effective competition, which is verified through the “50/15” test.²⁶ In the 2015 proceeding, the Commission concluded that the ubiquitous nature of DBS services made it appropriate to presume that competing provider effective competition is present in all communities, unless a showing is made to the contrary to rebut this presumption. In a community where competing provider effective competition does not exist, the local franchising authority (LFA) must certify the lack of effective competition by showing that the 50/15 test is not met. The certification is valid unless and until the Media Bureau issues a decision denying the certification request. LFAs with a valid certification may regulate basic cable rates. Few LFAs have filed certifications to date. As a result, operators are now found subject to effective competition, and basic cable rates are unregulated in nearly all communities in the country. Thus far, only in Massachusetts and Hawaii have LFAs successfully certified the lack of effective competition. The 118 certified communities in these states fail to meet the 50/15 test because less than the required percentage of households subscribe to DBS service in these communities.

B. Overview of Survey Methodology

14. We selected the sample of effective competition communities from five subgroups.²⁷ The first two subgroups are composed of the communities in which the Commission has made a finding of effective competition because a second wireline MVPD served the same area as the incumbent cable provider.²⁸ The first **subgroup** is made up of the *incumbent* cable system operators in areas with a second wireline MVPD overbuilding the incumbent. The incumbent is the operator who provided service prior to the rival MVPD’s arrival in the market. The second subgroup is made up of the *rival* MVPDs in these communities. The basis of findings of effective competition for the incumbent subgroup is either (a) the 50/15 test, resulting from the presence of at least two MVPDs, or (b) the local exchange carrier (LEC) test resulting from the presence of at least two MVPDs, one of which is a LEC or an entity affiliated with or using the LEC’s facilities.²⁹

²⁶ *Amendment to the Commission’s Rules Concerning Effective Competition, Implementation of Section 111 of the STELA Reauthorization Act*, Report and Order, 30 FCC Rcd 6574 (2015). The 50/15 test requires that at least two unaffiliated MVPDs offer comparable programming each of which offers its service to at least 50 percent of households in the market, and the percent of households taking service from MVPDs other than the largest MVPD exceeds 15 percent. Effective competition can also be found based on one of the following three tests: (1) fewer than 30 percent of households subscribe to the operator’s programming service (low penetration test); (2) a franchising authority operates as an MVPD in that franchise area and offers programming to at least 50 percent of households (municipal test); or (3) a local exchange carrier (LEC) or its affiliate (or an MVPD using the facilities of an LEC or affiliate) offers service by means other than DBS in the franchise area of an unaffiliated operator that is offering comparable programming (LEC test). 47 U.S.C. § 543(l)(1).

²⁷ These subgroups are designed to achieve desirable levels of statistical precision, and, thus, are not necessarily selected proportionately from the universe of communities belonging to each subgroup. See Attachment 1 and the Survey Methodology Appendix for a more complete description of our sampling methodology.

²⁸ The Commission made these findings of effective competition before it changed the presumption of effective competition.

²⁹ The incumbent subgroup uses publicly sourced data to account for communities also served by AT&T U-verse. As noted above, (*supra* note 4), the Commission considers AT&T U-verse to be a competing MVPD for the purpose of assessing effective competition. However, AT&T U-verse systems do not have cable community identifiers,

(continued....)

15. The remaining effective competition communities were selected from three subgroups based on system size. We define small systems as cable systems serving 10,000 or fewer subscribers, midsize systems as cable systems serving between 10,000 and 75,000 subscribers, and large systems as cable systems serving more than 75,000 subscribers.³⁰

16. We did not divide the noncompetitive group into subgroups. The noncompetitive group is a sample of 33 communities drawn from the population of 118 noncompetitive communities.

C. Programming Services

17. We next define the programming services referenced in the Report. Service prices in the Report reflect the non-promotional rates and exclude taxes and fees. Prices also exclude fees subscribers may incur in leasing cable equipment unless the customer received equipment along with programming without incurring a separate lease charge. We collected information on the basic service and other cable programming services not offered on a per channel or per program basis, as well as cable equipment. The other programming services on which the survey collected information are expanded basic service and the next most popular service.

18. *Basic service.* The Cable Act requires operators to offer a separately available basic cable service to which customers must subscribe before purchasing any other service.³¹ A basic service tier includes local broadcast stations entitled to carriage under the Cable Act; public, educational, and governmental access channels that a local franchising authority requires; and other channels the operator chooses to add.³²

19. *Expanded basic service.* Expanded basic service includes basic service channels in addition to the next most highly subscribed tier of channels, generally the tier that includes the most popular national cable networks.

20. *Next most popular service.* The next most popular service is the most highly subscribed service after expanded basic service. It generally consists of the channels offered with expanded basic service plus at least seven additional video channels. These additional channels could offer any type of content, for example, general entertainment, sports, or Spanish-language programming.³³

21. *Equipment lease charge.* Subscribers may incur a separate monthly charge to lease cable equipment such as a cable signal converter box and remote-control unit, cable card, or other equipment necessary to access programming. We collect data on such charges to the extent that respondents charge a separate monthly fee to lease such equipment. Specifically, we asked the survey respondents to report

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which are assigned to each registered cable operator for each individual community an operator serves, and are therefore not part of the database from which the survey samples are drawn. The rival subgroup includes telephone companies that do have CUIDs, and these range from large national systems like Verizon FiOS, to small municipal telecommunication systems.

³⁰ The first two subgroups (those of an incumbent or a rival in a community where at least two wireline competitors serve one community) also fall into one of the size strata groups (small, medium, or large), but the first two subgroups are selected separately from the size subgroups. This is to assure we draw a statistically significant sample for all five subgroups.

³¹ *Supra* note 4.

³² 47 U.S.C. § 543(b)(7), 534-35.

³³ As of January 1, 2017, on average, 87.8 percent of subscribers took at least expanded basic service, and 12.2 percent took only basic service. This 87.8 percent includes subscribers whose operators do not offer a separate expanded basic service tier but instead offer a basic service tier that includes many of the popular national networks typically associated with expanded basic service. In addition, on average, 56.4 percent of subscribers took the next most popular programming service as an additional tier. (We did not collect information on additional tiers beyond the next most popular.)

the price of the most commonly leased equipment at each service level (basic service, expanded basic service, and the next most popular service) unless the equipment was included at no extra charge or was not necessary to view all of the channels offered with the service.

22. *Price per channel.* Price per channel equals the price of the service divided by the number of channels the service offers. If equipment is necessary to view all channels in the service's channel lineup and is not included in the service price, the charge to lease equipment is added to the price component of price per channel. Price per channel is a proxy for quality adjusted price and declines as the number of channels increases, all else equal.

D. Survey Accuracy and Reliability

23. The data and analysis presented in this Report are consistent with the Commission's information quality guidelines.³⁴ Consistent with prior reports, we took steps to ensure the accuracy and reliability of the survey data. We provided the questionnaires to respondents to complete and submit on the Commission's website. Many survey questions have built-in checks for reasonableness, which prompted the respondents to recheck seemingly unreasonable or inconsistent responses. After receiving the submitted surveys, we examined responses using a computer program designed to identify apparent inaccuracies. If a response lay outside of its statistically expected range or was inconsistent with the answers to other questions, the program flagged that response for further review. We then asked the cable operator to review the response and make any necessary corrections. The Survey Methodology Appendix contains more detail on our data validation process.

III. SURVEY RESULTS

24. Tables in this section report results from our survey of cable operators in communities nationwide, as well as other publicly sourced data. Results are presented for the full sample and are further broken down into noncompetitive and effective competition sample groups, as well as effective competition subgroups. For our survey, we sampled 750 communities from the universe of 33,883 communities. In the universe of registered cable communities nationwide there are 118 noncompetitive communities and 33,765 competitive communities, and nearly all subscribers (98.7%) receive service in a competitive community. From the noncompetitive group, we sample 33 of the 118 communities to create a statistically significant sample. Looking within the effective competition group, the Incumbent subgroup accounted for 745 communities and 10 percent of subscribers nationwide. The Rival subgroup contained 557 communities and 3.3 percent of subscribers. Most effective competition communities were in one of the three subgroups stratified by system size.³⁵ The Large Systems subgroup had 8,837 communities and served 49.3 percent of subscribers. The Midsize Systems subgroup had 10,252 communities and served 28.8 percent of subscribers. Finally, the Small Systems subgroup had 13,374 communities and served 7.3 percent of subscribers.

A. Cable Programming Services

25. Table 1 reports the average prices of basic service, expanded basic service, and the next most popular service on January 1, 2017. In the full sample, average prices for basic service, expanded basic service, and the next most popular service were \$25.06, \$75.21, and \$89.28, respectively. Table 1 also reports the percent change in price from January 1, 2016 to January 1, 2017. In the full sample, the average price for each service increased by a statistically significant amount from January 1, 2016 to January 1, 2017. The average price for basic service increased by 5.2% (\$1.24), while the average price

³⁴ *Implementation of Guidelines for Ensuring and Maximizing the Quality, Objectivity, Utility and Integrity of Information Pursuant to Section 515 of Public Law No. 105-554, Information Quality Guidelines*, 17 FCC Rcd 19890 (2002).

³⁵ See *supra* fn. 30 and the Appendix for details.

for expanded basic service increased by 3.2% (\$2.33), and the average price for the next most popular service increased by 2.8% (\$2.43).

Cable Service	Full Sample	Non-competitive Group	Effective Competition Group	Effective Competition Subgroups				
				Overbuilt Communities		Small Systems	Midsize Systems	Large Systems
				Incumbent	Rival			
Basic	\$25.06	\$16.61	\$25.17	\$23.02	\$17.98	\$30.41	\$26.91	\$24.31
Annual change	5.2%*	9.8%*	5.2%*	9.7%*	3.1%	2.6%	5.5%*	4.9%
Expanded basic	\$75.21	\$77.24	\$75.19	\$72.87	\$72.40	\$71.73	\$75.35	\$76.25
Annual change	3.2%*	3.6%*	3.2%*	2.4%	1.5%	3.7%*	3.4%*	3.2%*
Next most popular	\$89.28	\$93.28	\$89.23	\$85.34	\$85.94	\$84.68	\$90.14	\$90.32
Annual change	2.8%*	3.0%*	2.8%*	2.4%	1.9%	3.1%*	3.0%*	2.8%*

Source: Attachment 2. * Indicates annual change is statistically significant at the 95% confidence level.

26. Table 2 reports the average price per channel by service tier on January 1, 2017. As stated, price per channel is calculated as the sum of the programming and equipment prices (if equipment is necessary to view all channels) divided by the number of channels offered. Average price per channel in the full sample is highest for the basic service tier (58 cents), lower for the expanded basic tier (49 cents), and is lowest for the next most popular service tier (37 cents). In the full sample, average price per channel decreased by a statistically significant amount from January 1, 2016 to January 1, 2017 for all three service tiers. This decrease ranged from 6.4 percent for the next most popular service to 10.1 percent for basic and expanded basic services. The decrease in price per channel comes from an increase in the number of channels offered on all service tiers (*see* Table 5) and contrasts to the increase in programming price shown in Table 1.

Cable Service	Full Sample	Non-competitive Group	Effective Competition Group	Effective Competition Subgroups				
				Overbuilt Communities		Small Systems	Midsize Systems	Large Systems
				Incumbent	Rival			
Basic	\$0.58	\$0.30	\$0.59	\$0.45	\$0.58	\$1.33	\$0.63	\$0.48
Annual change	-10.1%*	-3.7%	-10.2%*	-2.1%	1.4%	-2.5%	-10.4%	-14.3%*
Expanded basic	\$0.49	\$0.39	\$0.49	\$0.54	\$0.39	\$0.83	\$0.49	\$0.44
Annual change	-10.1%*	-5.4%	-10.2%*	-8.4%*	3.3%	-0.2%	-8.7%	-14.3%*
Next most popular	\$0.37	\$0.34	\$0.38	\$0.38	\$0.30	\$0.64	\$0.39	\$0.34
Annual change	-6.4%*	1.7%	-6.5%*	-3.0%	1.3%	-0.6%	-4.9%	-9.8%*

Source: Attachment 6. * Indicates annual change is statistically significant at the 95% confidence level.

27. Table 3 uses the results presented in Tables 1 and 2 to report the percent difference in average price between the effective competition group and subgroups and the noncompetitive group for each of the three service tiers. The average price of basic service in the effective competition group is 51.5 percent higher than the average price of basic service in the noncompetitive group. All the effective competition subgroups have a higher average basic service price than the noncompetitive group, and the difference is statistically significant in all subgroups except the rival subgroup. By contrast, the average price of expanded basic service is 2.7 percent lower and the average price of the next most popular service is 4.3 percent lower in the effective competition group than in the noncompetitive group. These tiers are not subject to rate regulation by local franchising authorities. Table 3 also reports the percent difference between the effective competition subgroups and the noncompetitive group in expanded basic price per channel. The average price per channel for expanded basic service is 26 percent higher in the effective competition group than in the noncompetitive group. These differences likely reflect a complicated mix of factors, including inherent differences in the types of systems included in both and different service offerings in reaction to competition and regulation.

Table 3
Percent Difference in Average Price
 Effective Competition Group and Subgroups compared to Noncompetitive Group
 January 1, 2017

Cable Service	Effective Competition Group	Effective Competition Subgroups				
		Overbuilt Communities		Small Systems	Midsize Systems	Large Systems
		Incumbent	Rival			
Basic	51.5%*	38.6%*	8.2%	83.1%*	62.0%*	46.3%*
Expanded basic	-2.7%*	-5.6%*	-6.3%*	-7.1%*	-2.4%	-1.3%
Next most popular	-4.3%*	-8.5%*	-7.9%*	-9.2%*	-3.4%*	-3.2%*
Expanded Basic Price per Channel	26.0%*	38.3%*	1.0%	114.7%*	26.0%*	12.4%*

Source: Attachments 3 and 7. * Indicates annual change is statistically significant at the 95% confidence level. *See* Attachments 3 and 7 also for comparisons between all subgroups.

28. Table 4 reports a historical series of basic service prices for all the communities surveyed; expanded basic service prices, channels, and price per channel; and the next most popular service prices. Table 4 also reports the compound average annual change in prices and channels over the latest five and ten years.³⁶ Using this measure, we compare the average annual increase in prices and channels over the five and ten-year periods to the annual increase from January 1, 2016 to January 1, 2017 reported in this survey. The price of basic service grew annually by 4.0 percent over the five-year period and by 5.0 percent over the ten-year period; these growth rates are somewhat smaller than the increase of 5.2 percent (*see* Table 1) observed over the 12-month period ending January 1, 2017. The price of expanded basic cable service grew annually by 4.1 percent over the five-year period and by 4.8 percent over the ten-year period; these growth rates are larger than the increase of 3.2 percent (*see* Table 1) observed over the 12-month period ending January 1, 2017. The average number of channels offered by cable operators with expanded basic service grew annually by 5.4 percent over the five year period and by 7.5 percent over the ten year period; these growth rates are substantially smaller than the one-year increase of 12.5 percent (*see* Table 5) observed over the 12-month period ending January 1, 2017.³⁷ ³⁸ Average price per channel for expanded basic service declined by 0.8 percent annually over the five-year

³⁶ The compound average annual change smooths and summarizes the annual changes observed over the period. It is the constant annual rate at which price would have changed over the period to result in the observed growth.

³⁷ Year 2010 was the start of a new data series for channels and price per channel, reflecting a change to the survey questionnaire. The channel and price per channel indices in Attachment 8 adjust for this change and are the basis of the compound average annual change, as discussed in the Appendix.

³⁸ The large one-year increase in number of channels offered may reflect changes after mergers and acquisitions that took place during this period.

period and by 1.6 percent annually over the ten-year period. This compares to a 10.1 percent decrease (see Table 2) observed over the 12-month period ending January 1, 2017.³⁹ The price of the next most popular service (and lease of equipment if not included in the programming price) increased by 3.8 percent over the five-year period and by 4.7 percent over the ten-year period. This compares to an increase of 5.0 percent (see Attachment 4) observed over the 12-month period ending January 1, 2017.

Table 4
Historical Price Series
2006–2017

Year	Basic Service Price	Expanded Basic Service			Next Most Popular Service and Equipment	CPI	
		Price	Channels	Price per Channel		All Items	Cable (CSR Index)
2006	\$14.59	\$45.26	71.0	\$0.650	\$59.09	132.2	174.4
2007	\$15.33	\$47.27	72.6	\$0.670	\$60.27	135.0	179.0
2008	\$16.11	\$49.65	72.8	\$0.680	\$63.66	140.8	183.9
2009	\$17.65	\$52.37	78.2	\$0.710	\$67.92	140.8	186.5
2010	\$17.93	\$54.44	117	\$0.560	\$71.39	144.5	191.9
2011	\$19.33	\$57.46	124.2	\$0.569	\$75.37	146.9	192.0
2012	\$20.55	\$61.63	149.9	\$0.505	\$78.91	151.2	199.8
2013	\$22.63	\$64.41	159.6	\$0.484	\$81.64	153.6	206.5
2014	\$22.78	\$66.61	167.3	\$0.496	\$84.65	156.0	212.0
2015	\$23.79	\$69.03	181.3	\$0.456	\$86.83	155.8	216.4
2016	\$25.40	\$71.37	181.0	\$0.469	\$90.42	158.0	220.1
2017	\$25.06	\$75.21	195.1	\$0.487	\$95.13	161.9	231.7
Compound Average Annual Rate of Change							
5-year average	4.0%	4.1%	5.4%	-0.8%	3.8%	1.4%	3.0%
10-year average	5.0%	4.8%	7.5%	-1.6%	4.7%	1.8%	2.6%

Source: Attachment 8. Attachment 8 shows the series back to 1995. Rates of change for channels and price per channel are based on the indices shown in Attachment 7 and cannot be calculated from this table.

29. Table 4 also reports the Consumer Price Index (CPI) for all items, published by the Bureau of Labor Statistics (BLS), which serves as a measure of general price inflation and a basis for comparison.⁴⁰ The CPI (all items) grew at an average annual rate of 1.4 percent over the last five years and by 1.8 percent annually over the last ten years. Over the 12 months ending January 1, 2017, the CPI grew by 2.5 percent. Table 4 also reports a BLS price index for Cable and Satellite Television and Radio Services (CSR Index).⁴¹ The CSR Index grew annually by 3.0 percent and 2.6 percent over the last five and ten years respectively, and by 5.3 percent for the 12-month period ending January 1, 2017. Because this index covers a different mix of services and is adjusted for changes in the number of programming

³⁹ The large decrease in price per channel results from a large increase in the number of channels offered.

⁴⁰ BLS, Department of Labor (BLS), *Consumer Price Index, All Urban Consumers, U.S. City Average, Not Seasonally Adjusted, All Items (1982-84=100)*. Series ID: CUUR0000SA0. (Accessed February 21, 2018).

⁴¹ BLS, *Cable and Satellite Television and Radio Service (Dec. 1983=100)*, Series ID: CUUR0000SERA02 (accessed February 21, 2018). This index is a sub-component of the overall CPI.

channels, the CSR Index is not directly comparable to changes in cable programming prices in the Report.⁴²

B. Cable Programming Channels

30. Table 5 shows the average number of video channels offered as of January 1, 2017, and the annual percent change in the number of channels. The number of channels offered under each service tier includes the channels offered under each lower tier. Also, the channel figures given here include video channels in all formats but exclude audio-only channels. In the full sample, an average of 67 channels were offered with the basic service tier, while the expanded basic and next most popular tiers offered 195 and 282 channels on average. A total of 512 video channels were offered by cable operators on average. This total includes pay and pay-per-view channels and other programming tiers not included in the Report.

Cable Service	Full Sample	Non-competitive Group	Effective Competition Group	Effective Competition Subgroups				
				Overbuilt Communities		Small Systems	Midsize Systems	Large Systems
				Incumbent	Rival			
Basic	67.2	65.2	67.3	83.6	57.4	36.6	60.2	73.2
Annual change	12.8%*	2.2%	13.0%*	-3.6%	0.6%	3.9%	10.6%*	20.4%*
Expanded basic	195.1	211.8	194.9	169.1	241.9	122.5	192.5	208.8
Annual change	12.5%*	10.0%*	12.5%*	-1.0%	5.1%	7.7%	11.9%*	16.5%*
Next most popular	281.7	285.7	281.7	263.6	336.0	173.5	272.3	302.0
Annual change	9.4%*	0.3%	9.5%*	2.2%	0.9%	5.9%	7.5%*	12.9%*
All channels	512.4	500.7	512.6	552.3	577.2	329.2	486.4	541.9
Annual change	0.8%	0.7%	1.1%	-1.7%	0.4%	10.5%*	7.5%*	10.0%*

Source: Attachment 9. * Indicates annual change is statistically significant at 95% confidence level. See Attachment 10 for comparisons of channel counts between subgroups.

31. Table 6 categorizes the channels available with basic service. The table reports the average number of channels in each category available with basic service. The categories are local broadcast; public, educational, and governmental (PEG) access; local commercial leased access; non-

⁴² BLS bases the CSR Index on a survey of items on consumers' monthly cable bills, including premium services and installation costs, which are not included in our monthly average. When an item shows a significant change in price, BLS makes a quality adjustment and may change the observed price depending on the change in the quality of the product or service in question. In the case of cable service, BLS generally perceives additional channels as an improvement in quality and adjusts the observed price downward. BLS, *How BLS Measures Price Change in the Consumer Price Index for Cable and Satellite Television and Radio*. <https://www.bls.gov/cpi/factsheets/cable-and-satellite-television-and-radio.htm>. (Last modified February 23, 2018).

premium regional sports networks; and other non-premium channels. Over half of the channels offered with basic service are broadcast channels. It is important to note that a broadcast channel is an individual channel – standard definition, high definition, or multicast – and not a broadcast television station. For example, if the primary signal of a broadcast television station is carried by a cable system in both standard and high definition on separate channels, this would count as two channels. In addition, any multicast subchannels carried count as additional channels.

Video Channel Category	Full Sample	Non-competitive Group	Effective Competition Group	Effective Competition Subgroups				
				Overbuilt Communities		Small Systems	Midsize Systems	Large Systems
				Incumbent	Rival			
Broadcast	37.2	40.5	37.2	40.9	47.3	17.8	32.6	41.3
PEG	4.7	3.2	4.7	4.4	5.0	2.1	3.6	5.7
Leased access	1.3	1.0	1.3	1.6	0.5	0.5	1.1	1.5
Regional sports	0.2	0.0	0.2	1.5	0.0	0.1	0.1	0.1
Other channels	23.9	20.5	23.9	35.3	4.5	16.5	22.9	24.6
Total	67.2	65.2	67.3	83.6	57.4	36.6	60.2	73.2

Source: 2017 survey. See Attachment 11 for comparisons of channel composition between subgroups.

32. Table 7 reports the average number of regional sports networks (RSNs) included with each service tier. The survey defines RSNs as networks that carry a substantial number of live games from at least one nearby professional sports team that is a member of the National Football League, Major League Baseball, National Basketball Association, or National Hockey League. No pay-per-view channel is considered an RSN. The average number of RSNs offered with basic service, expanded basic service, and the next most popular service are 0.2 channels, 3.3 channels, and 3.6 channels, respectively.

Cable Service	Full Sample	Non-competitive Group	Effective Competition Group	Effective Competition Subgroups				
				Overbuilt Communities		Small Systems	Midsize Systems	Large Systems
				Incumbent	Rival			
Basic	0.2	0.0	0.2	1.5	0.0	0.1	0.1	0.1
Expanded basic	3.3	4.5	3.3	3.3	7.1	2.2	3.5	3.1
Next most popular	3.6	4.5	3.6	3.3	8.0	2.4	3.6	3.6

Source: 2017 survey. See Attachment 12 for comparisons of RSN carriage between subgroups.

C. Cable Equipment

33. Table 8 reports the average equipment lease fee for each service tier.⁴³ Specifically, this is the monthly fee to lease the equipment most commonly leased by subscribers of each service tier. This equipment may be a converter box or other equipment necessary to view all channels offered with the service tier. The equipment lease fees reported represent the fee to lease a single piece of equipment, not the total amount paid for all equipment leased by a household. In the full sample, the average equipment lease fee was about \$9 for all service tiers, and this fee had not increased significantly over the previous year.

Cable Service	Full Sample	Non-Competitive Group	Effective Competition Group	Effective Competition Subgroups				
				Overbuilt Communities		Small Systems	Midsize Systems	Large Systems
				Incumbent	Rival			
Basic	\$9.17	\$7.11	\$9.18	\$9.63	\$10.33	\$8.78	\$8.51	\$9.36
Annual change	1.6%	1.3%	1.6%	5.7%*	-0.1%	1.5%	0.8%	0.9%
Expanded basic	\$9.29	\$7.10	\$9.31	\$9.63	\$10.95	\$8.83	\$8.69	\$9.46
Annual change	1.6%	1.3%	1.6%	5.9%*	-0.1%	1.5%	0.8%	0.9%
Next most popular	\$9.38	\$7.11	\$9.39	\$9.67	\$10.92	\$9.21	\$8.88	\$9.45
Annual change	1.8%	1.3%	1.8%	5.7%*	0.0%	2.6%	1.4%	0.9%

Source: Attachment 13. * Indicates annual change is statistically significant at the 95% confidence level. See Attachment 14 for comparisons between subgroups.

34. Table 9 shows the percentage of subscribers who have access to the following particular features with the most commonly leased equipment by service level: digital video recorder (DVR); high definition (HD); interactive programming guide (IPG); and remote-control unit (RCU).⁴⁴ In the full sample and for all service levels, DVR and HD capabilities were not widely available with the most commonly leased equipment. In contrast, an IPG and an RCU were almost universally available to subscribers with the most commonly leased equipment.

⁴³ Some operators do not charge an additional fee for equipment. Instead these operators bundle cable service and equipment. The average equipment lease fees reported in Table 8 are the average fees for operators who did not bundle cable service and equipment and priced cable service and equipment separately. In our sample, in most communities (65 percent), the operator did not bundle cable service and equipment.

⁴⁴ This is not the percentage of subscribers who receive a particular feature. Instead, we ask operators whether each feature is available with the most commonly leased equipment for each service level. The percentages above are the percentages of subscribers in communities where the feature is available with the most commonly leased equipment at a particular service level. Because one subscriber may lease multiple pieces of equipment for multiple television sets, the percentages reported in Table 9 are likely to be different from the percentages of subscribers who receive a particular feature.

Cable Service	Feature	Full Sample	Non-competitive Group	Effective Competition Group	Effective Competition Subgroups				
					Overbuilt Communities		Small Systems	Midsize Systems	Large Systems
					Incumbent	Rival			
Basic	DVR	12%	0%	12%	46%	4%	30%	8%	7%
	HD	27%	0%	28%	49%	83%	59%	17%	22%
	IPG	94%	100%	94%	91%	85%	84%	94%	97%
	RCU	96%	100%	96%	92%	100%	88%	95%	99%
Expanded basic	DVR	12%	0%	12%	46%	4%	30%	8%	6%
	HD	27%	0%	28%	49%	85%	61%	17%	22%
	IPG	95%	100%	95%	91%	97%	86%	94%	98%
	RCU	96%	100%	95%	92%	98%	88%	95%	97%
Next most popular	DVR	13%	0%	13%	46%	4%	32%	9%	6%
	HD	28%	0%	28%	49%	85%	60%	18%	22%
	IPG	95%	100%	95%	92%	97%	86%	95%	97%
	RCU	95%	100%	95%	92%	98%	83%	96%	97%

Source: 2017 survey.

D. Broadcast Retransmission Consent

35. Section 110 of the STELA Reauthorization Act of 2014 (STELAR) requires the Commission to report on retransmission consent fees paid by cable operators to broadcast stations.⁴⁵ Therefore, the survey asked operators to report total retransmission consent fees paid to broadcasters and the number of subscribers covered by retransmission consent payments in 2015 and 2016. The instructions requested that respondents exclude other fees such as copyright fees. In addition, operators reported the number of broadcast stations carried pursuant to retransmission consent agreements.

36. Table 10 presents information on retransmission consent compensation. Average annual retransmission consent fees calculated on a per subscriber basis increased by 30 percent, rising from \$55.82 to \$72.59, from 2015 to 2016.⁴⁶ The number of broadcast stations carried per cable system pursuant to retransmission consent agreements did not change between 2015 and 2016: about eleven broadcast stations were carried per cable system pursuant to retransmission consent each year. Average monthly retransmission consent fees paid by cable systems to broadcast stations on a per subscriber per station basis increased from \$0.50 to \$0.63 from 2015 to 2016. In the sample, a total of \$2.4 billion in retransmission consent fees was reported for 2015. In 2016, the total reported was \$3.3 billion. Operators in the sample reported fees covering about 46.1 million subscribers in 2015 and 47.6 million subscribers in 2016.

⁴⁵ See fn. 6, supra.

⁴⁶ To calculate annual retransmission consent fees on a per subscriber basis, we divided total retransmission consent fees reported per cable system by the number of subscribers subject to retransmission consent—those who received stations carried pursuant to retransmission consent—per cable system.

Table 10 Retransmission Consent Fees and Subscribers			
	2015	2016	Percent Change
Average Annual Retransmission Consent Fees Paid per Cable System	\$30,941,686	\$40,771,516	31.8%*
Average Number of Subscribers Pursuant to Retransmission Consent per Cable System⁴⁷	614,359	601,530	-2.1%
Average Annual Retransmission Consent Fees Paid per Subscriber	\$55.82	\$72.59	30.0%*
Average Number of Stations Carried Pursuant to Retransmission Consent per Cable System	11.09	11.37	2.5%
Average Monthly Retransmission Consent Fees Paid per Subscriber per Station	\$0.50	\$0.63	25.9%*
Total Retransmission Consent Fees Reported in Sample	\$2,382,129,408	\$3,252,965,120	36.6%
Total Subscribers under Retransmission Consent Reported in Sample	46,071,184	47,576,100	3.3%

Source: 2017 survey. * Indicates annual change is statistically significant at the 95% confidence level. Note: No test of statistical significance can be applied to total retransmission consent fees or total subscribers under retransmission consent. In the sample, total retransmission consent fees and total subscribers are known quantities.

37. To track changes in retransmission consent fees over time, Table 11 provides an index that reflects the annual changes reported in the three surveys that have collected retransmission consent data.⁴⁸ The base year of the index is 2013, and the index's value for 2014 reflects the increase in retransmission consent fees from 2013 to 2014 as reported in the 2015 survey, the first survey that collected data on retransmission consent fees.⁴⁹ The index shows that the growth of retransmission consent fees has slowed. Over the 2013-2014 period, retransmission consent fees per subscriber increased by 50 percent, while the 2014-2015 period showed an increase of 34.1 percent, and the 2015-2016 period showed an increase of 30.0 percent. Over the 2013-2016 period, the compound average

⁴⁷ In this table, cable system is not strictly defined. Retransmission consent fees and subscriber counts per cable system were reported at various system levels ranging from an individual cable community to a broad geographic region encompassing multiple markets. Respondents may vary this level of aggregation from year to year, and thus the "Fees Paid per Cable System" cannot be directly compared across surveys. However, the index reported on the next page adjusts for these issues and thus is comparable over time.

⁴⁸ Retransmission consent fee estimates are not directly comparable across surveys because of sampling variance and differences in reporting levels used by operators.

⁴⁹ The index's value for each of the following years is calculated analogously. The index's value for 2016 reflects the increase in retransmission consent fees from 2015 to 2016 as reported in the 2017 survey.

annual rate of increase was 42.3 percent and 37.8 percent for retransmission consent fees and fees per subscriber, respectively.

Year	Retransmission Consent Fee Index	Retransmission Consent Fees per Subscriber Index
2013	100	100
2014	163.2	150.0
2015	218.5	201.2
2016	287.9	261.6
Compound Average Annual Rate of Change		
2013-2016	42.3%	37.8%

38. Table 12 reports information on retransmission consent fees by system size. The noncompetitive, incumbent, and rival subgroup communities were added to the system size subgroups detailed in the Appendix. As before, a small system has 10,000 or fewer subscribers; a midsize system has 10,001 to 75,000 subscribers; and a large system has more than 75,000 subscribers. Table 12 shows that retransmission consent fees are higher for small systems. On average, small systems paid \$93.37 annually per subscriber in 2016, while midsize and large systems paid \$71.22 and \$70.88, respectively. The differences in fees paid per subscriber between small and midsize systems and between small and large systems are statistically significant (*see* Attachment 15). However, the difference in fees paid per subscriber between midsize and large systems is not statistically significant. Small systems also carry fewer stations pursuant to retransmission consent than midsize and large systems, and therefore, when retransmission consent fees are calculated per subscriber per station, fees are again highest for small systems. Midsize systems carry about one fewer station under retransmission consent than large systems, and, consequently, have higher fees than large systems when retransmission consent fees are calculated per subscriber, per station.

	Small Systems	Midsize Systems	Large Systems
Average Annual Retransmission Consent Fees Paid per Subscriber	\$93.37	\$71.22	\$70.88
Annual Change	19.9%*	27.8%*	33.2%*
Average Number of Stations Carried under Retransmission Consent per Cable System	7.56	11.06	11.99
Annual Change	2.3%	2.1%	2.8%
Average Monthly Retransmission Consent Fees Paid per Subscriber per Station	\$1.20	\$0.64	\$0.55
Annual Change	20.4%*	26.5%*	27.4%*

Source: 2017 survey. * Indicates annual change is statistically significant at the 95% confidence level. See Attachment 15 for comparisons of retransmission consent fees between system size groups.

IV. CONCLUSIONS

39. Cable service prices increased over the period covered by this report. Basic service prices grew 5.2 percent, while prices for expanded basic service increased by 3.2 percent over the 12 months ending January 1, 2017. These price increases are larger than the 2.5 percent increase in general inflation as measured by the CPI (All Items) for the same one-year period. Over the five-year period, 2012-2017, on average basic service prices increased by 4.0 percent annually and expanded basic service prices increased by 4.1 percent annually, while the average annual increase in inflation was 1.4 percent over the same period.

40. Basic service prices were about 50 percent higher in effective competition communities than in noncompetitive communities (where basic service rates may be subject to regulation by local franchising authorities), while expanded basic service prices were slightly lower in effective competition communities. Expanded basic price per channel, however, was about 25 percent higher in effective competition communities.

41. Annual retransmission consent fees paid by cable systems to television broadcasters increased by about 30 percent from 2015 to 2016 on average. Average annual retransmission consent fees paid by cable systems to television broadcast stations calculated on a per-subscriber basis increased from \$55.82 to \$72.59 over the same period. During the 2013-2016 period, the average annual increase in retransmission consent fees was 42.3 percent, and the average annual increase in fees per subscriber was 37.8 percent. Small system operators pay about 30 percent more in retransmission consent fees calculated on a per subscriber basis than midsize and large system operators.

42. DBS providers offer programming services similar to those offered by cable operators. Accordingly, the Report compared expanded basic service to the DBS services found to be the most comparable. As of January 1, 2017, the average price of expanded basic (\$75.21) was less than the average price for DIRECTV's Choice package (\$78.99), and slightly more than DISH's AT120+ (\$74.99). Cable operators, on average, offered 195 channels with expanded basic service, while the comparable services of DIRECTV and DISH offered 239 and 182 channels respectively. Expanded basic service had, on average, a higher price per channel (49 cents per channel) than DIRECTV's service (33 cents per channel) and DISH's service (41 cents per channel).

Attachment 1 Cable Price Survey Sampling Groups January 1, 2017				
Sampling Groups and Subgroups	Number of Cable Communities	Percent of National Subscribers	Survey Sample Size	Number of Survey Responses
Sampling Groups				
Noncompetitive group	118	1.3%	33	33
Effective competition	33,765	98.7%	717	713
Full sample	33,883	100%	750	746
Effective Competition Subgroups				
Large Systems: More than 75,000 subscribers	8,837	49.3%	230	230
Midsize Systems: 10,001 – 75,000 subscribers	10,252	28.8%	200	200
Small Systems: 10,000 and fewer subscribers	13,374	7.3%	175	171
Incumbents	745	10.0%	56	56
Rivals	557	3.3%	56	56

Sources: Federal Communications Commission, Cable Community Registration, FCC Form 322; Annual Cable Operator Report, FCC Form 325, and S&P Global, MediaCensus, Operator Subscribers by Geography 2016 Q3. See 47 CFR §§ 76.1801, 403. The Commission assigns a “cable community unit identifier” (CUID) to each registered cable operator for each individual community the operator serves. In cable overbuild communities, the table shows more incumbents than rivals. This is primarily because the communities of one rival, AT&T, do not have CUIDs. The Commission however considers AT&T U-verse as a competing service for the purpose of findings of effective competition.

Attachment 2							
Average Price of Programming							
by Subgroup and Programming Service							
Sample Group	Subgroup	Service	Year	n	Sample Mean	Standard Error	Annual Change
Full sample	---	Basic service	2017	746	\$25.06	0.265	5.2%*
			2016	737	\$23.81	0.266	
		Expanded basic	2017	746	\$75.21	0.261	3.2%*
			2016	737	\$72.90	0.226	
		Next most popular	2017	736	\$89.28	0.377	2.8%*
			2016	727	\$86.82	0.315	
Non-competitive Group	---	Basic service	2017	33	\$16.61	0.215	9.8%*
			2016	33	\$15.13	0.228	
		Expanded basic	2017	33	\$77.24	0.721	3.6%*
			2016	33	\$74.54	0.536	
		Next most popular	2017	33	\$93.28	0.981	3.0%*
			2016	33	\$90.59	0.786	
Effective Competition Group	---	Basic service	2017	713	\$25.17	0.269	5.2%*
			2016	704	\$23.93	0.270	
		Expanded basic	2017	713	\$75.19	0.264	3.2%*
			2016	704	\$72.87	0.229	
		Next most popular	2017	703	\$89.23	0.381	2.8%*
			2016	694	\$86.77	0.319	
	Overbuilt Communities incumbents	Basic service	2017	56	\$23.02	0.500	9.7%*
			2016	56	\$20.98	0.620	
		Expanded basic	2017	56	\$72.87	0.720	2.4%
			2016	56	\$71.15	0.547	
		Next most popular	2017	56	\$85.34	1.016	2.4%
			2016	56	\$83.38	0.824	
	Overbuilt Communities rivals	Basic service	2017	56	\$17.98	0.988	3.1%
			2016	55	\$17.44	0.875	
		Expanded basic	2017	56	\$72.40	0.717	1.5%
			2016	55	\$71.33	0.875	
		Next most popular	2017	55	\$85.94	1.696	1.9%
			2016	54	\$84.30	1.438	
	Small Systems	Basic service	2017	171	\$30.41	0.753	2.6%
			2016	171	\$29.63	0.696	
		Expanded basic	2017	171	\$71.73	0.721	3.7%*
			2016	171	\$69.15	0.680	
		Next most popular	2017	162	\$84.68	0.896	3.1%*
			2016	162	\$82.11	0.790	
Midsize Systems	Basic service	2017	200	\$26.91	0.363	5.5%*	
		2016	200	\$25.52	0.380		
	Expanded basic	2017	200	\$75.35	0.525	3.4%*	
		2016	200	\$72.88	0.455		
	Next most popular	2017	200	\$90.14	0.677	3.0%*	
		2016	200	\$87.50	0.586		
Large Systems	Basic service	2017	230	\$24.31	0.458	4.9%	
		2016	222	\$23.18	0.457		
	Expanded basic	2017	230	\$76.25	0.384	3.2%*	
		2016	222	\$73.89	0.333		
	Next most popular	2017	230	\$90.32	0.587	2.8%*	
		2016	222	\$87.86	0.484		

Source: 2017 survey. * Indicates annual change is statistically significant at the 95% confidence level. Price does not include equipment, unless the operator bundles the programming service and equipment in a single price.

Attachment 3					
Differences between Subgroups: Average Price of Programming					
January 1, 2017					
Service	Subgroup 1	Average Price 1	Subgroup 2	Average Price 2	Is Difference Statistically Significant?
Basic	Large Systems	\$24.31	Midsize	\$26.91	Yes
			Small	\$30.41	Yes
			Incumbent	\$23.02	No
			Rival	\$17.98	Yes
			Noncompetitive	\$16.61	Yes
	Midsize Systems	\$26.91	Small	\$30.41	Yes
			Incumbent	\$23.02	Yes
			Rival	\$17.98	Yes
			Noncompetitive	\$16.61	Yes
	Small Systems	\$30.41	Incumbent	\$23.02	Yes
			Rival	\$17.98	Yes
			Noncompetitive	\$16.61	Yes
	Incumbent	\$23.02	Rival	\$17.98	Yes
			Noncompetitive	\$16.61	Yes
	Rival	\$17.98	Noncompetitive	\$16.61	No
	Expanded Basic	Large Systems	\$76.25	Midsize	\$75.35
Small				\$71.73	Yes
Incumbent				\$72.87	Yes
Rival				\$72.40	Yes
Noncompetitive				\$77.24	No
Midsize Systems		\$75.35	Small	\$71.73	Yes
			Incumbent	\$72.87	Yes
			Rival	\$72.40	Yes
			Noncompetitive	\$77.24	No
Small Systems		\$71.73	Incumbent	\$72.87	No
			Rival	\$72.40	No
			Noncompetitive	\$77.24	Yes
Incumbent		\$72.87	Rival	\$72.40	No
			Noncompetitive	\$77.24	Yes
Rival		\$72.40	Noncompetitive	\$77.24	Yes
Next Most Popular		Large Systems	\$90.32	Midsize	\$90.14
	Small			\$84.68	Yes
	Incumbent			\$85.34	Yes
	Rival			\$85.94	Yes
	Noncompetitive			\$93.28	Yes
	Midsize Systems	\$90.14	Small	\$84.68	Yes
			Incumbent	\$85.34	Yes
			Rival	\$85.94	Yes
			Noncompetitive	\$93.28	Yes
	Small Systems	\$84.68	Incumbent	\$85.34	No
			Rival	\$85.94	No
			Noncompetitive	\$93.28	Yes
	Incumbent	\$85.34	Rival	\$85.94	No
			Noncompetitive	\$93.28	Yes
	Rival	\$85.94	Noncompetitive	\$93.28	Yes

Source: 2017 survey.

Attachment 4								
Average Price of Cable Programming and Equipment (Total Price)								
by Subgroup and Programming Service								
Sample Group	Subgroup	Service	Year	n	Sample Mean	Standard Error	Annual Change	
Full sample	---	Basic service	2017	746	\$30.73	0.245	5.0% *	
			2016	737	\$29.28	0.267		
		Expanded basic	2017	746	\$81.01	0.232	3.2% *	
			2016	737	\$78.51	0.244		
		Next most popular	2017	736	\$95.13	0.292	2.8% *	
			2016	727	\$92.50	0.253		
Non-competitive Group	---	Basic service	2017	33	\$18.96	0.404	8.7% *	
			2016	33	\$17.45	0.476		
		Expanded basic	2017	33	\$79.58	0.399	3.5% *	
			2016	33	\$76.86	0.261		
		Next most popular	2017	33	\$95.63	0.642	2.9% *	
			2016	33	\$92.91	0.458		
Effective Competition Group	---	Basic service	2017	713	\$30.88	0.248	4.9% *	
			2016	704	\$29.44	0.270		
		Expanded basic	2017	713	\$81.02	0.235	3.2% *	
			2016	704	\$78.54	0.247		
		Next most popular	2017	703	\$95.12	0.296	2.8% *	
			2016	694	\$92.49	0.256		
	Overbuilt Communities incumbents	---	Basic service	2017	56	\$30.99	0.431	9.2% *
				2016	56	\$28.37	0.583	
			Expanded basic	2017	56	\$80.84	0.527	2.8% *
				2016	56	\$78.68	0.455	
			Next most popular	2017	56	\$93.50	0.795	2.6% *
				2016	56	\$91.10	0.649	
	Overbuilt Communities rivals	---	Basic service	2017	56	\$27.85	0.652	2.0%
				2016	55	\$27.31	0.539	
			Expanded basic	2017	56	\$82.87	0.895	1.3%
				2016	55	\$81.80	1.077	
			Next most popular	2017	55	\$96.86	1.532	1.7%
				2016	54	\$95.22	1.283	
	Small Systems	---	Basic service	2017	171	\$36.37	0.852	2.7%
				2016	171	\$35.40	0.816	
			Expanded basic	2017	171	\$78.03	0.762	3.7% *
				2016	171	\$75.25	0.765	
			Next most popular	2017	162	\$91.79	0.875	3.0% *
				2016	162	\$89.09	0.805	
	Midsize Systems	---	Basic service	2017	200	\$31.59	0.427	4.9% *
				2016	200	\$30.12	0.456	
			Expanded basic	2017	200	\$80.17	0.462	3.3% *
				2016	200	\$77.62	0.446	
			Next most popular	2017	200	\$95.07	0.534	2.9% *
				2016	200	\$92.36	0.467	
Large Systems	---	Basic service	2017	230	\$29.86	0.392	4.8% *	
			2016	222	\$28.50	0.434		
		Expanded basic	2017	230	\$81.86	0.343	3.2% *	
			2016	222	\$79.32	0.386		
		Next most popular	2017	230	\$95.81	0.444	2.8% *	
			2016	222	\$93.16	0.384		

Source: 2017 survey. * Indicates annual change is statistically significant at the 95% confidence level. Equipment price added to programming price if equipment is necessary to receive all channels.

Attachment 5					
Differences between Subgroups: Average Total Price*					
January 1, 2017					
Service	Subgroup 1	Total Price 1	Subgroup 2	Total Price 2	Is Difference Statistically Significant?
Basic	Large Systems	\$29.86	Midsize	\$31.59	Yes
			Small	\$36.37	Yes
			Incumbent	\$30.99	No
			Rival	\$27.85	Yes
			Noncompetitive	\$18.96	Yes
	Midsize Systems	\$31.59	Small	\$36.37	Yes
			Incumbent	\$30.99	No
			Rival	\$27.85	Yes
			Noncompetitive	\$18.96	Yes
	Small Systems	\$36.37	Incumbent	\$30.99	Yes
			Rival	\$27.85	Yes
			Noncompetitive	\$18.96	Yes
	Incumbent	\$30.99	Rival	\$27.85	Yes
			Noncompetitive	\$18.96	Yes
	Rival	\$27.85	Noncompetitive	\$18.96	Yes
Expanded Basic	Large Systems	\$81.86	Midsize	\$80.17	Yes
			Small	\$78.03	Yes
			Incumbent	\$80.84	No
			Rival	\$82.87	No
			Noncompetitive	\$79.58	Yes
	Midsize Systems	\$80.17	Small	\$78.03	Yes
			Incumbent	\$80.84	No
			Rival	\$82.87	Yes
			Noncompetitive	\$79.58	No
	Small Systems	\$78.03	Incumbent	\$80.84	Yes
			Rival	\$82.87	Yes
			Noncompetitive	\$79.58	No
	Incumbent	\$80.84	Rival	\$82.87	No
			Noncompetitive	\$79.58	No
	Rival	\$82.87	Noncompetitive	\$79.58	Yes
Next Most Popular	Large Systems	\$95.81	Midsize	\$95.07	No
			Small	\$91.79	Yes
			Incumbent	\$93.50	Yes
			Rival	\$96.86	No
			Noncompetitive	\$95.63	No
	Midsize Systems	\$95.07	Small	\$91.79	Yes
			Incumbent	\$93.50	No
			Rival	\$96.86	No
			Noncompetitive	\$95.63	No
	Small Systems	\$91.79	Incumbent	\$93.50	No
			Rival	\$96.86	Yes
			Noncompetitive	\$95.63	Yes
	Incumbent	\$93.50	Rival	\$96.86	No
			Noncompetitive	\$95.63	No
	Rival	\$96.86	Noncompetitive	\$95.63	No

Source: 2017 survey. * As with Attachment 4, "Average Total Price" refers to average price of cable programming and equipment.

Attachment 6								
Average Price per Channel								
by Subgroup and Programming Service								
Sample Group	Subgroup	Service	Year	n	Sample Mean	Standard Error	Annual Change	
Full sample	---	Basic service	2017	746	\$0.58	0.012	-10.1%*	
			2016	737	\$0.65	0.015		
		Expanded basic	2017	746	\$0.49	0.008	-10.1%*	
			2016	737	\$0.54	0.010		
		Next most popular	2017	736	\$0.37	0.005	-6.4%*	
			2016	727	\$0.40	0.005		
Non-competitive Group	---	Basic service	2017	33	\$0.30	0.008	-3.7%	
			2016	33	\$0.31	0.017		
		Expanded basic	2017	33	\$0.39	0.008	-5.4%	
			2016	33	\$0.41	0.011		
		Next most popular	2017	33	\$0.34	0.003	1.7%	
			2016	33	\$0.33	0.005		
Effective Competition Group	---	Basic service	2017	713	\$0.59	0.012	-10.2%*	
			2016	704	\$0.65	0.015		
		Expanded basic	2017	713	\$0.49	0.008	-10.2%*	
			2016	704	\$0.54	0.010		
		Next most popular	2017	703	\$0.38	0.005	-6.5%*	
			2016	694	\$0.40	0.005		
	Overbuilt Communities incumbents	---	Basic service	2017	56	\$0.45	0.018	-2.1%
				2016	56	\$0.46	0.023	
			Expanded basic	2017	56	\$0.54	0.014	-8.4%*
				2016	56	\$0.59	0.017	
			Next most popular	2017	56	\$0.38	0.008	-3.0%
				2016	56	\$0.39	0.009	
	Overbuilt Communities rivals	---	Basic service	2017	56	\$0.58	0.034	1.4%
				2016	55	\$0.57	0.032	
			Expanded basic	2017	56	\$0.39	0.034	3.3%
				2016	55	\$0.38	0.016	
			Next most popular	2017	55	\$0.30	0.009	1.3%
				2016	54	\$0.29	0.008	
	Small Systems	---	Basic service	2017	171	\$1.33	0.067	-2.5%
				2016	171	\$1.37	0.068	
			Expanded basic	2017	171	\$0.83	0.041	-0.2%
				2016	171	\$0.83	0.040	
			Next most popular	2017	162	\$0.64	0.023	-0.6%
				2016	162	\$0.64	0.023	
	Midsize Systems	---	Basic service	2017	200	\$0.63	0.024	-10.4%
				2016	200	\$0.70	0.030	
			Expanded basic	2017	200	\$0.49	0.018	-8.7%
				2016	200	\$0.54	0.020	
			Next most popular	2017	200	\$0.39	0.011	-4.9%
				2016	200	\$0.41	0.012	
Large Systems	---	Basic service	2017	230	\$0.48	0.015	-14.3%*	
			2016	222	\$0.56	0.021		
		Expanded basic	2017	230	\$0.44	0.010	-14.3%*	
			2016	222	\$0.51	0.014		
		Next most popular	2017	230	\$0.34	0.005	-9.8%*	
			2016	222	\$0.38	0.007		

Source: 2017 survey. * Indicates annual change is statistically significant at the 95% confidence level. Price per channel is equal to sum of the programming price and the price of the most commonly leased equipment divided by the number of channels the service offers.

Attachment 7					
Differences between Subgroups: Average Price per Channel					
January 1, 2017					
Service	Subgroup 1	Price per Channel 1	Subgroup 2	Price per Channel 2	Is Difference Statistically Significant?
Basic	Large Systems	\$0.48	Midsize	\$0.63	Yes
			Small	\$1.33	Yes
			Incumbent	\$0.45	No
			Rival	\$0.58	Yes
			Noncompetitive	\$0.30	Yes
	Midsize Systems	\$0.63	Small	\$1.33	Yes
			Incumbent	\$0.45	Yes
			Rival	\$0.58	No
			Noncompetitive	\$0.30	Yes
	Small Systems	\$1.33	Incumbent	\$0.45	Yes
			Rival	\$0.58	Yes
			Noncompetitive	\$0.30	Yes
	Incumbent	\$0.45	Rival	\$0.58	Yes
			Noncompetitive	\$0.30	Yes
	Rival	\$0.58	Noncompetitive	\$0.30	Yes
	Expanded Basic	Large Systems	\$0.44	Midsize	\$0.49
Small				\$0.83	Yes
Incumbent				\$0.54	Yes
Rival				\$0.39	No
Noncompetitive				\$0.39	Yes
Midsize Systems		\$0.49	Small	\$0.83	Yes
			Incumbent	\$0.54	Yes
			Rival	\$0.39	Yes
			Noncompetitive	\$0.39	Yes
Small Systems		\$0.83	Incumbent	\$0.54	Yes
			Rival	\$0.39	Yes
			Noncompetitive	\$0.39	Yes
Incumbent		\$0.54	Rival	\$0.39	Yes
			Noncompetitive	\$0.39	Yes
Rival		\$0.39	Noncompetitive	\$0.39	No
Next Most Popular		Large Systems	\$0.34	Midsize	\$0.39
	Small			\$0.64	Yes
	Incumbent			\$0.38	Yes
	Rival			\$0.30	Yes
	Noncompetitive			\$0.34	No
	Midsize Systems	\$0.39	Small	\$0.64	Yes
			Incumbent	\$0.38	No
			Rival	\$0.30	Yes
			Noncompetitive	\$0.34	Yes
	Small Systems	\$0.64	Incumbent	\$0.38	Yes
			Rival	\$0.30	Yes
			Noncompetitive	\$0.34	Yes
	Incumbent	\$0.38	Rival	\$0.30	Yes
			Noncompetitive	\$0.34	Yes
	Rival	\$0.30	Noncompetitive	\$0.34	Yes

Source: 2017 survey.

Attachment 8									
Historical Price Series									
1995-2017									
Year	Basic Service Price	Expanded Basic Service					Next Most Popular Service and Equipment	CPI	
		Price	Channels		Price per Channel			All Items	Cable
			No.	Index	Dollars	Index			
Jul. 1995	---	\$22.35	44.0	100.0	\$0.600	100.0	---	1000	100.0
Jul. 1996	---	\$24.28	47.0	106.8	\$0.610	101.7	---	103.0	106.9
Jul. 1997	---	\$26.31	49.4	112.3	\$0.630	105.0	---	105.2	114.9
Jul. 1998	\$12.06	\$27.88	50.1	113.9	\$0.650	108.3	\$38.58	107.0	122.6
Jul. 1999	\$12.58	\$28.94	51.1	116.1	\$0.650	108.3	\$38.43	109.3	127
Jul. 2000	\$12.84	\$31.22	54.8	124.5	\$0.660	110.0	\$39.64	113.3	132.9
Jul. 2001	\$12.84	\$33.75	59.4	135.0	\$0.600	100.0	\$45.33	116.4	139.1
Jul. 2002	\$14.45	\$36.47	62.7	142.5	\$0.660	110.0	\$46.59	118.1	147.8
Jan. 2003	\$13.45	\$38.95	67.5	153.4	\$0.650	108.3	\$49.03	121.2	157.1
Jan. 2004	\$13.80	\$41.04	70.3	159.8	\$0.660	110.0	\$51.76	123.5	163.1
Jan. 2005	\$14.30	\$43.04	70.5	160.2	\$0.620	103.3	\$56.03	127.2	169.6
Jan. 2006	\$14.59	\$45.26	71.0	161.4	\$0.650	108.3	\$59.09	132.2	174.4
Jan. 2007	\$15.33	\$47.27	72.6	165.0	\$0.670	111.7	\$60.27	135.0	179.0
Jan. 2008	\$16.11	\$49.65	72.8	165.5	\$0.680	113.3	\$63.66	140.8	183.9
Jan. 2009	\$17.65	\$52.37	78.2	177.7	\$0.710	118.3	\$67.92	140.8	186.5
Jan. 2010	\$17.93	\$54.44	117.0	204.7	\$0.560	110.3	\$71.39	144.5	191.9
Jan. 2011	\$19.33	\$57.46	124.2	217.3	\$0.569	112.0	\$75.37	146.9	192.0
Jan. 2012	\$20.55	\$61.63	149.9	262.2	\$0.505	99.4	\$78.91	151.2	199.8
Jan. 2013	\$22.63	\$64.41	159.6	279.2	\$0.484	95.3	\$81.64	153.6	206.5
Jan. 2014	\$22.78	\$66.61	167.3	292.6	\$0.496	97.6	\$84.65	156.0	212.0
Jan. 2015	\$23.79	\$69.03	181.3	317.1	\$0.456	89.3	\$86.83	155.8	216.4
Jan. 2016	\$25.40	\$71.37	181.0	316.5	\$0.469	91.8	\$90.42	158.0	220.1
Jan. 2017	\$25.06	\$75.21	195.1	341.3	\$0.487	95.4	\$95.13	161.9	231.7
Compound Average Annual Rate of Change									
5 year average	4.0%	4.1%	---	5.4%	---	-0.8%	3.8%	1.4%	3.0%
10 year average	5.0%	4.8%	---	7.5%	---	-1.6%	4.7%	1.8%	2.6%
1995-2017	---	5.7%	---	5.7%	---	-0.2%	---	2.2%	3.9%

Sources: 1995-2017 survey reports. *See supra* note 2. Consumer price indices (CPIs) are from BLS, Department of Labor, *Consumer Price Index, All Urban Consumers, U.S. City Average, Not Seasonally Adjusted, All Items (1982-84=100)*. Series ID: CUUR0000SA0. (Accessed February 21, 2018); Series ID: CUUR0000SERA02 (accessed February 21, 2018). We re-based these CPI series to July 1995 = 100 for the purpose of this report. This attachment is described in the Methodology Appendix.

Attachment 9 Average Number of Channels by Sample and Programming Service								
Sample Group	Subgroup	Service	Year	n	Sample Mean	Standard Error	Annual Change	
Full sample	---	Basic service	2017	746	67.2	1.227	12.8%*	
			2016	737	59.6	1.039		
		Expanded basic	2017	746	195.1	2.494	12.5%*	
			2016	737	173.4	2.190		
		Next most popular	2017	736	281.7	3.134	9.4%*	
			2016	727	257.6	2.724		
Non-competitive Group	---	Basic service	2017	33	65.2	1.073	2.2%	
			2016	33	63.8	1.806		
		Expanded basic	2017	33	211.8	3.566	10.0%*	
			2016	33	192.6	2.876		
		Next most popular	2017	33	285.7	1.285	0.3%	
			2016	33	284.9	2.968		
Effective Competition Group	---	Basic service	2017	713	67.3	1.243	13.0%*	
			2016	704	59.5	1.053		
		Expanded basic	2017	713	194.9	2.526	12.5%*	
			2016	704	173.2	2.219		
		Next most popular	2017	703	281.7	3.175	9.5%*	
			2016	694	257.3	2.760		
	Overbuilt Communities incumbents	---	Basic service	2017	56	83.6	4.664	-3.6%
				2016	56	86.7	5.731	
			Expanded basic	2017	56	169.1	6.390	-1.0%
				2016	56	170.8	6.647	
			Next most popular	2017	56	263.6	8.239	2.2%
				2016	56	258.0	9.021	
	Overbuilt Communities rivals	---	Basic service	2017	56	57.4	1.616	0.6%
				2016	55	57.0	1.645	
			Expanded basic	2017	56	241.9	5.919	5.1%
				2016	55	230.3	5.242	
			Next most popular	2017	55	336.0	5.274	0.9%
				2016	54	333.0	5.175	
	Small Systems	---	Basic service	2017	171	36.6	1.744	3.9%
				2016	171	35.3	1.777	
			Expanded basic	2017	171	122.5	4.418	7.7%
				2016	171	113.8	3.674	
			Next most popular	2017	162	173.5	5.782	5.9%
				2016	162	163.9	4.976	
	Midsize Systems	---	Basic service	2017	200	60.2	1.677	10.6%*
				2016	200	54.4	1.623	
			Expanded basic	2017	200	192.5	4.220	11.9%*
				2016	200	172.1	3.750	
			Next most popular	2017	200	272.3	5.082	7.5%*
				2016	200	253.3	4.794	
Large Systems	---	Basic service	2017	230	73.2	2.008	20.4%*	
			2016	222	60.8	1.363		
		Expanded basic	2017	230	208.8	4.047	16.5%*	
			2016	222	179.3	3.535		
		Next most popular	2017	230	302.0	5.092	12.9%*	
			2016	222	267.6	4.213		

Source: 2017 survey.

Attachment 10					
Differences between Subgroups: Average Number of Channels					
January 1, 2017					
Service	Subgroup 1	Number of Channels 1	Subgroup 2	Number of Channels 2	Is Difference Statistically Significant?
Basic	Large Systems	73.2	Midsize	60.2	Yes
			Small	36.6	Yes
			Incumbent	83.6	No
			Rival	57.4	Yes
			Noncompetitive	65.2	Yes
	Midsize Systems	60.2	Small	36.6	Yes
			Incumbent	83.6	Yes
			Rival	57.4	No
			Noncompetitive	65.2	Yes
	Small Systems	36.6	Incumbent	83.6	Yes
			Rival	57.4	Yes
			Noncompetitive	65.2	Yes
	Incumbent	83.6	Rival	57.4	Yes
			Noncompetitive	65.2	Yes
Rival	57.4	Noncompetitive	65.2	Yes	
Expanded Basic	Large Systems	208.8	Midsize	192.5	Yes
			Small	122.5	Yes
			Incumbent	169.1	Yes
			Rival	241.9	Yes
			Noncompetitive	211.8	No
	Midsize Systems	192.5	Small	122.5	Yes
			Incumbent	169.1	Yes
			Rival	241.9	Yes
			Noncompetitive	211.8	Yes
	Small Systems	122.5	Incumbent	169.1	Yes
			Rival	241.9	Yes
			Noncompetitive	211.8	Yes
	Incumbent	169.1	Rival	241.9	Yes
			Noncompetitive	211.8	Yes
Rival	241.9	Noncompetitive	211.8	Yes	
Next Most Popular	Large Systems	302.0	Midsize	272.3	Yes
			Small	173.5	Yes
			Incumbent	263.6	Yes
			Rival	336.0	Yes
			Noncompetitive	285.7	Yes
	Midsize Systems	272.3	Small	173.5	Yes
			Incumbent	263.6	No
			Rival	336.0	Yes
			Noncompetitive	285.7	Yes
	Small Systems	173.5	Incumbent	263.6	Yes
			Rival	336.0	Yes
			Noncompetitive	285.7	Yes
	Incumbent	263.6	Rival	336.0	Yes
			Noncompetitive	285.7	Yes
Rival	336.0	Noncompetitive	285.7	Yes	
All Channels	Large Systems	541.9	Midsize	486.4	Yes
			Small	329.2	Yes
			Incumbent	552.3	No
			Rival	577.2	Yes
			Noncompetitive	500.7	Yes
	Midsize Systems	486.4	Small	329.2	Yes
			Incumbent	552.3	Yes
			Rival	577.2	Yes
			Noncompetitive	500.7	No
	Small Systems	329.2	Incumbent	552.3	Yes
			Rival	577.2	Yes
			Noncompetitive	500.7	Yes
	Incumbent	552.3	Rival	577.2	No
			Noncompetitive	500.7	Yes
Rival	577.2	Noncompetitive	500.7	Yes	

Source: 2017 survey.

Attachment 11					
Differences between Subgroups: Channel Composition					
January 1, 2017					
Channel Type	Subgroup 1	Number of Channels 1	Subgroup 2	Number of Channels 2	Is Difference Statistically Significant?
Broadcast	Large Systems	41.3	Midsize	32.6	Yes
			Small	17.8	Yes
			Incumbent	40.9	No
			Rival	47.3	Yes
			Noncompetitive	40.5	No
	Midsize Systems	32.6	Small	17.8	Yes
			Incumbent	40.9	Yes
			Rival	47.3	Yes
			Noncompetitive	40.5	Yes
	Small Systems	17.8	Incumbent	40.9	Yes
			Rival	47.3	Yes
			Noncompetitive	40.5	Yes
	Incumbent	40.9	Rival	47.3	Yes
			Noncompetitive	40.5	No
	Rival	47.3	Noncompetitive	40.5	Yes
PEG	Large Systems	5.7	Midsize	3.6	Yes
			Small	2.1	Yes
			Incumbent	4.4	Yes
			Rival	5.0	No
			Noncompetitive	3.2	Yes
	Midsize Systems	3.6	Small	2.1	Yes
			Incumbent	4.4	Yes
			Rival	5.0	Yes
			Noncompetitive	3.2	No
	Small Systems	2.1	Incumbent	4.4	Yes
			Rival	5.0	Yes
			Noncompetitive	3.2	Yes
	Incumbent	4.4	Rival	5.0	No
			Noncompetitive	3.2	Yes
	Rival	5.0	Noncompetitive	3.2	Yes
Leased Access	Large Systems	1.5	Midsize	1.1	Yes
			Small	0.5	Yes
			Incumbent	1.6	No
			Rival	0.5	Yes
			Noncompetitive	1.0	Yes
	Midsize Systems	1.1	Small	0.5	Yes
			Incumbent	1.6	Yes
			Rival	0.5	Yes
			Noncompetitive	1.0	No
	Small Systems	0.5	Incumbent	1.6	Yes
			Rival	0.5	No
			Noncompetitive	1.0	Yes
	Incumbent	1.6	Rival	0.5	Yes
			Noncompetitive	1.0	Yes
	Rival	0.5	Noncompetitive	1.0	Yes
Regional Sports Networks	Large Systems	0.1	Midsize	0.1	No
			Small	0.1	No
			Incumbent	1.5	Yes
			Rival	0.0	Yes
			Noncompetitive	0.0	Yes
	Midsize Systems	0.1	Small	0.1	No
			Incumbent	1.5	Yes
			Rival	0.0	Yes
			Noncompetitive	0.0	Yes
	Small Systems	0.1	Incumbent	1.5	Yes
			Rival	0.0	Yes
			Noncompetitive	0.0	Yes
	Incumbent	1.5	Rival	0.0	Yes
			Noncompetitive	0.0	Yes
	Rival	0.0	Noncompetitive	0.0	Yes

Source: 2017 survey

Attachment 12					
Differences between Subgroups: Regional Sports Networks					
January 1, 2017					
Service	Subgroup 1	Number of RSNs 1	Subgroup 2	Number of RSNs 2	Is Difference Statistically Significant?
Basic	Large Systems	0.1	Midsize	0.1	No
			Small	0.1	No
			Incumbent	1.5	Yes
			Rival	0.0	Yes
			Noncompetitive	0.0	Yes
	Midsize Systems	0.1	Small	0.1	No
			Incumbent	1.5	Yes
			Rival	0.0	Yes
			Noncompetitive	0.0	Yes
	Small Systems	0.1	Incumbent	1.5	Yes
			Rival	0.0	Yes
			Noncompetitive	0.0	Yes
	Incumbent	1.5	Rival	0.0	Yes
			Noncompetitive	0.0	Yes
	Rival	0.0	Noncompetitive	0.0	Yes
Expanded Basic	Large Systems	3.1	Midsize	3.5	No
			Small	2.2	Yes
			Incumbent	3.3	No
			Rival	7.1	Yes
			Noncompetitive	4.5	Yes
	Midsize Systems	3.5	Small	2.2	Yes
			Incumbent	3.3	No
			Rival	7.1	Yes
			Noncompetitive	4.5	No
	Small Systems	2.2	Incumbent	3.3	Yes
			Rival	7.1	Yes
			Noncompetitive	4.5	Yes
	Incumbent	3.3	Rival	7.1	Yes
			Noncompetitive	4.5	Yes
	Rival	7.1	Noncompetitive	4.5	Yes
Next Most Popular	Large Systems	3.6	Midsize	3.6	No
			Small	2.4	Yes
			Incumbent	3.3	No
			Rival	8.0	Yes
			Noncompetitive	4.5	No
	Midsize Systems	3.6	Small	2.4	Yes
			Incumbent	3.3	No
			Rival	8.0	Yes
			Noncompetitive	4.5	No
	Small Systems	2.4	Incumbent	3.3	Yes
			Rival	8.0	Yes
			Noncompetitive	4.5	Yes
	Incumbent	3.3	Rival	8.0	Yes
			Noncompetitive	4.5	Yes
	Rival	8.0	Noncompetitive	4.5	Yes

Source: 2017 survey

Attachment 13									
Average Equipment Lease Fee									
by Subgroup and Programming Service									
Sample Group	Subgroup	Service	Year	n	Sample Mean	Standard Error	Annual Change		
Full sample	---	Basic service	2017	472	\$9.17	0.125	1.6%		
			2016	458	\$9.02	0.124			
		Expanded basic	2017	479	\$9.29	0.115	1.6%		
			2016	467	\$9.15	0.114			
		Next most popular	2017	482	\$9.38	0.111	1.8%		
			2016	474	\$9.21	0.110			
Non-competitive Group	---	Basic service	2017	11	\$7.11	0.103	1.3%		
			2016	11	\$7.01	0.023			
		Expanded basic	2017	11	\$7.10	0.104	1.3%		
			2016	11	\$7.01	0.023			
		Next most popular	2017	11	\$7.11	0.103	1.3%		
			2016	11	\$7.01	0.023			
Effective Competition Group	---	Basic service	2017	461	\$9.18	0.125	1.6%		
			2016	447	\$9.04	0.125			
		Expanded basic	2017	468	\$9.31	0.116	1.6%		
			2016	456	\$9.17	0.114			
		Next most popular	2017	471	\$9.39	0.112	1.8%		
			2016	463	\$9.22	0.111			
	Overbuilt Communities incumbents	---	Basic service	2017	45	\$9.63	0.128	5.7%*	
				2016	44	\$9.10	0.109		
			Expanded basic	2017	45	\$9.63	0.128	5.9%*	
				2016	45	\$9.09	0.107		
			Next most popular	2017	46	\$9.67	0.134	5.7%*	
				2016	46	\$9.15	0.119		
	Overbuilt Communities rivals	---	Basic service	2017	53	\$10.33	0.372	-0.1%	
				2016	52	\$10.33	0.378		
			Expanded basic	2017	53	\$10.95	0.207	-0.1%	
				2016	52	\$10.96	0.210		
			Next most popular	2017	55	\$10.92	0.204	0.0%	
				2016	54	\$10.92	0.207		
	Small Systems	---	Basic service	2017	116	\$8.78	0.427	1.5%	
				2016	114	\$8.65	0.394		
			Expanded basic	2017	122	\$8.83	0.406	1.5%	
				2016	120	\$8.70	0.375		
			Next most popular	2017	125	\$9.21	0.369	2.6%	
				2016	126	\$8.98	0.340		
		Midsize Systems	---	Basic service	2017	110	\$8.51	0.296	0.8%
					2016	109	\$8.44	0.276	
				Expanded basic	2017	111	\$8.69	0.288	0.8%
					2016	110	\$8.62	0.268	
				Next most popular	2017	111	\$8.88	0.263	1.4%
					2016	111	\$8.76	0.247	
Large Systems	---	Basic service	2017	137	\$9.36	0.187	0.9%		
			2016	128	\$9.27	0.198			
		Expanded basic	2017	137	\$9.46	0.166	0.9%		
			2016	129	\$9.38	0.175			
		Next most popular	2017	134	\$9.45	0.170	0.9%		
			2016	126	\$9.37	0.179			

Source: 2017 survey. * Indicates the annual change is statistically significant at the 95% confidence level.

Equipment refers to a set-top converter box or other digital gateway. The average equipment lease fees reported are the average fees for operators who priced cable service and equipment separately. Because features vary, differences in price may reflect quality differences.

Attachment 14					
Differences between Subgroups: Average Equipment Lease Fee					
January 1, 2017					
Service	Subgroup 1	Lease Fee 1	Subgroup 2	Lease Fee 2	Is Difference Statistically Significant?
Basic	Large Systems	\$9.36	Midsize	\$8.51	Yes
			Small	\$8.78	No
			Incumbent	\$9.63	No
			Rival	\$10.33	Yes
			Noncompetitive	\$7.11	Yes
	Midsize Systems	\$8.51	Small	\$8.78	No
			Incumbent	\$9.63	Yes
			Rival	\$10.33	Yes
			Noncompetitive	\$7.11	Yes
	Small Systems	\$8.78	Incumbent	\$9.63	No
			Rival	\$10.33	Yes
			Noncompetitive	\$7.11	Yes
	Incumbent	\$9.63	Rival	\$10.33	No
			Noncompetitive	\$7.11	Yes
	Rival	\$10.33	Noncompetitive	\$7.11	Yes
	Expanded Basic	Large Systems	\$9.46	Midsize	\$8.69
Small				\$8.83	No
Incumbent				\$9.63	No
Rival				\$10.95	Yes
Noncompetitive				\$7.10	Yes
Midsize Systems		\$8.69	Small	\$8.83	No
			Incumbent	\$9.63	Yes
			Rival	\$10.95	Yes
			Noncompetitive	\$7.10	Yes
Small Systems		\$8.83	Incumbent	\$9.63	No
			Rival	\$10.95	Yes
			Noncompetitive	\$7.10	Yes
Incumbent		\$9.63	Rival	\$10.95	Yes
			Noncompetitive	\$7.10	Yes
Rival		\$10.95	Noncompetitive	\$7.10	Yes
Next Most Popular		Large Systems	\$9.45	Midsize	\$8.88
	Small			\$9.21	No
	Incumbent			\$9.67	No
	Rival			\$10.92	Yes
	Noncompetitive			\$7.11	Yes
	Midsize Systems	\$8.88	Small	\$9.21	No
			Incumbent	\$9.67	Yes
			Rival	\$10.92	Yes
			Noncompetitive	\$7.11	Yes
	Small Systems	\$9.21	Incumbent	\$9.67	No
			Rival	\$10.92	Yes
			Noncompetitive	\$7.11	Yes
	Incumbent	\$9.67	Rival	\$10.92	Yes
			Noncompetitive	\$7.11	Yes
	Rival	\$10.92	Noncompetitive	\$7.11	Yes

Source: 2017 survey.

Attachment 15 Differences between System Size Groups: Retransmission Consent 2016				
Size Group 1	Fees per Subscriber 1	Size Group 2	Fees per Subscriber 2	Is Difference Statistically Significant?
Small Systems	\$93.37	Midsize Systems	\$71.22	Yes
		Large Systems	\$70.88	Yes
Midsize Systems	\$71.22	Large Systems	\$70.88	No
Size Group 1	Number of Stations 1	Size Group 2	Number of Stations 2	Is Difference Statistically Significant?
Small Systems	7.56	Midsize Systems	11.06	Yes
		Large Systems	11.99	Yes
Midsize Systems	11.06	Large Systems	11.99	Yes
Size Group 1	Fees per Subscriber per Station 1	Size Group 2	Fees per Subscriber per Station 2	Is Difference Statistically Significant?
Small Systems	\$1.20	Midsize Systems	\$0.64	Yes
		Large Systems	\$0.55	Yes
Midsize Systems	\$0.64	Large Systems	\$0.55	Yes

Attachment 16			
Comparison of Cable to DBS Averages			
Price, Channels, and Price per Channel			
January 2017			
Statistic	Cable Expanded Basic Service	DBS DIRECTV Choice Service	DBS DISH Network America's Top 120 Plus
Mean price of programming	\$75.21	\$78.99	\$74.99
Number of sample observations	746	40	40
Standard error of the mean	0.261	0.000	0.000
Independent samples t-statistic	---	14.483 *	-0.843
Mean number of video channels	195.1	238.9	182.2
Number of sample observations	746	40	40
Standard error of the mean	2.494	1.495	1.372
Independent samples t-statistic	---	15.989 *	-4.836 *
Mean price per channel	0.49	0.331	0.413
Number of sample observations	746	40	40
Standard error of the mean	0.008	0.002	0.003
Independent samples t-statistic	---	-72.632 *	-24.859 *
Mean no. of broadcast channels	37.2	19.7	21.0
Number of sample observations	746	40	40
Standard error of the mean		1.464	1.342
Mean number of other channels	157.9	219.2	161.2
Number of sample observations	746	40	40
Standard error of the mean		0.084	0.084
<p>* The difference in the cable and DBS means is statistically significant at the 95-percent confidence level.</p> <p>Notes: This table is discussed in Section I(A) of the Report. Data in the column "Cable Expanded Basic Service" are from Attachments 2, 6 and 9, and Tables 5 and 6 of the Report. The DIRECTV data are from DIRECTV Group Holdings LLC (DIRECTV). http://www.directv.com. The DISH data are from DISH NETWORK Corporation (DISH). http://www.dish.com. DIRECTV and DISH prices became effective, respectively on Jan. 22, 2017 and Jan. 16, 2017.</p>			

APPENDIX B-1.1 Survey Methodology

A. Sampling Procedure

1. We conducted the 2017 survey to fulfill the reporting requirements of the Cable Act.⁵⁰ We selected communities nationwide at random to be part of the survey sample.⁵¹ In choosing our sample, we divided the communities into two groups: an effective competition group and a noncompetitive group.⁵² We divided the effective competition group into strata or subgroups and selected a sample of communities from each stratum. The noncompetitive group was not divided into subgroups; instead, the sample was selected from the full noncompetitive group. For each community, we asked the operator to complete a survey questionnaire on the prices charged for video programming service offerings as well as other aspects of the operator's system. We used the information collected to estimate and compare mean prices, and other statistics, across the different strata of communities.

2. The survey divided the effective competition group into strata to compare subgroups of communities and to achieve desirable levels of statistical precision. We stratified the effective competition communities into five strata. Two of the strata consisted of operators in cable overbuild locales – locations where an effective competition finding was made on the basis of the presence of a second “rival” cable operator. The first stratum consisted of incumbent operators and the second consisted of the rival cable operators in these overbuild areas. Cable operators in the incumbent stratum have sometimes cited municipals as rivals. Municipals cited as such are included in this rival stratum and a number are included in our survey. Other municipals, in communities where the Commission did not make a finding, are in the effective competition group, generally within the small system stratum, discussed below, and are also in our sample. Some incumbents in overbuild areas cited AT&T U-verse as a rival service; however the survey did not collect prices of U-verse, because these systems are not registered cable operators with the Commission. The Commission, however, considers U-verse as a competing service for assessing effective competition.

3. Because there is a positive correlation between system size and price, the remaining effective competition communities were stratified according to the size of the cable system. Doing so creates strata in which prices are less disparate than in the full group and tends to increase the efficiency of sampling through reducing sampling variance.⁵³ We define small systems as cable systems serving 10,000 or fewer subscribers, midsize systems as cable systems serving between 10,000 and 75,000 subscribers, and large systems as cable systems serving more than 75,000 subscribers.

4. We determined that 750 observations of communities, divided between the two sampling groups, were required for statistical precision. To determine the number to allocate to each group, we used a standard sampling size formula calibrated to yield sample price means within one percent of the

⁵⁰ See *supra* note 1, Section I.

⁵¹ The Commission assigns a unique community unit identifier (CUID) code to each registered cable operator for each community the operator serves; *i.e.*, even if two unaffiliated cable operators serve an overlapping area, the Commission assigns two CUIDs. 47 CFR § 76.1801

⁵² See *supra* Section II, Part A for a description of the recent change in the effective competition process.

⁵³ See *e.g.*, W. G. Cochran, *Sampling Techniques*, 2nd ed. (1977) at 87-107; G. W. Snedecor and W. G. Cochran, *Statistical Methods* at 434-59, 7th ed. (1980).

actual price means at a 95 percent confidence level.⁵⁴ After determining the overall sample size for each group, we allocated the number of selections among the strata. Allocation methods generally emphasize two criteria. First, selections allocated to a stratum are higher relative to other strata in proportion to the population or other size measure; in our case, the number of cable subscribers. Second, more selections are allocated the higher the dispersion of price. The sampling size formula we employed accounted for these criteria. In addition, we adjusted each allocation by a non-response factor.⁵⁵ Attachment 1 reports sample sizes for all strata.

5. After allocating the number of sample selections using the process described above, we drew independent samples of communities from the strata,⁵⁶ using probability proportional to size (PPS) sampling without replacement.⁵⁷ A PPS design is efficient for our survey because there is a correlation between the number of subscribers in the community and our key survey study variable, price.⁵⁸ Using the PPS method of sampling, we assigned a selection probability to each community within individual strata in direct proportion to its relative number of subscribers. The greater the number of subscribers in a community, relative to others in the same stratum, the higher the likelihood of selection. PPS sampling requires sampling selection probability not exceed one (or 100 percent). Thus, we took the standard approach and sub-stratified communities whose probability exceeded one into one-unit strata with selection probability equal to one.⁵⁹

6. The PPS sample design requires an estimate of the relative number of subscribers in each community. We estimated subscriber counts using 2016 county-level operator subscriber estimates and population estimates.⁶⁰ This is the first survey to use updated subscriber counts. In previous surveys, we used the FCC's 1994 census of cable communities, the first and only such census. Using more recent

⁵⁴ The formula was from B. J. Mandel, *Statistics for Management* (1984) at 258. See also, e.g., C. A. Boneau, *Effects of Violations of Assumptions Underlying the t-Test*, *Psychological Bulletin*, 57 (1960) at 49-64.

⁵⁵ Because previous surveys suggest not all selections will respond to the survey questionnaire for various reasons -- e.g., the system no longer operates -- the non-response factor adjusts selections by the expected number of non-responses. Our non-response factor equals $[1 + [NR_h / (NR_h + R_h)]]$, where in stratum h , NR equals the number of non-responses and R equals responses to our survey.

⁵⁶ To prevent sampling bias, we draw the samples independently, including separate samples for incumbents and rivals in locations with a second cable operator; *i.e.*, selection of an incumbent did not require that the rival would be selected and *vice versa*.

⁵⁷ We generated the samples using the SurveySelect procedure, PPS Method without Replacement, SAS software, Version SAS/STAT 9.4, SAS Institute Inc., Cary, NC (2016).

⁵⁸ See, e.g., F. Yates and P. M. Grundy, *Selection without Replacement from Within Strata with Probability Proportional to Size*, *Journal of the Royal Statistical Society*, 15 (1953) at 253-261; and B. K. Som, *Practical Sampling Techniques*, 2nd ed. (1996).

⁵⁹ We applied the following algorithm to sub-stratify each community (or unit) with selection probability greater than one. For a sampling stratum, where Z represents the total number of subscribers, z_i is the number of subscribers in unit (i); n is the sample size, $\pi_i = n (z_i / Z)$ is the selection probability of unit i ; and k is the number of units for which the sampling probability exceeds one. We sub-stratify each unit for which the sampling probability exceeds one, which reduces the sample size in the stratum to $n-k$. This then requires recalculating sampling probability π_i for each of the remaining communities in the stratum. We repeat the process until there are no communities left in the stratum with a sampling probability greater than one.

⁶⁰ Estimates of operator subscribers at the county level come from S&P Global, *MediaCensus, Operator Subscribers by Geography* (accessed November 15, 2016). The estimates refer to the second and third quarters of 2016. Population estimates come from Annual Estimates of the Resident Population: April 1, 2010 to July 1, 2015, U.S. Census Bureau, Population Division, May 2016 (accessed March 16, 2018).

subscriber counts improves the quality of the Report because our sample and the resulting estimates better reflect current cable subscribership.

B. Data Quality Control

7. To improve the quality of the survey data and reduce the burden on operators, the survey questionnaire is web-based.⁶¹ After the samples were drawn, we notified operators serving the selected communities and instructed them to complete the survey questionnaire on the Commission's website. We took steps to ensure the reliability and accuracy of the data collected. Computer checks notified respondents in real time of inconsistent responses. In addition, we asked a responsible party within each company to certify the completeness and accuracy of the company's responses. The survey response rate (ratio of completed to requested questionnaires) was 99.5 percent or 746 of the 750 communities in the sample. The four non-responses were cable operators that had either ceased operating in that community or had yet to commence operation.

8. We systematically examined all survey responses using algorithms designed to identify potentially inaccurate responses. When a particular response was deemed unreasonable or was inconsistent with responses to other questions, we contacted the operator and asked him to verify the answer or make a correction. The percentage of survey responses that require follow-up inquiries varies over time based on such factors as the familiarity of the respondents with the survey, the complexity of the questions, and introduction of new questions to the survey instrument. For the 2017 survey, we contacted approximately 10 percent of parent operators with follow-up inquiries via email or telephone calls. Each operator replied with a correction or explanation of the particular response. In the case of missing data, some operators provided these data and others explained that they did not collect that particular information or were not serving the community at the time.

C. Estimation of Means

9. The report presents the average (mean) levels of the survey data by cable service level for the full sample, sample groups, and subgroups of cable operators. The report tables summarize these findings and the attachments to the report display detailed statistics. After we collected and checked the responses, we estimated the population means and variances from the sample data. We estimated the means and variances of cable prices and the other variables on a subscriber basis rather than a cable community basis. We choose this level of analysis because we are interested in understanding the price paid by the average subscriber rather than the price charged in the average community. The two methods of analysis yield different results when there is a correlation between the size of a community (number of subscribers) and the level of price. To produce per-subscriber means, we use the Horvitz-Thompson ratio estimator.⁶² This estimator weights the price in each of the sampled communities by its number of subscribers. The numerator of the ratio sums the weighted product of price and subscriber count across

⁶¹ In our web-based questionnaire we include features that ease the respondent's filing burden. For example, the questionnaire pre-fills some survey questions based on information already on file with the Commission and asks the respondent to verify the information.

⁶² The Horvitz-Thompson ratio estimator is a well-known, unbiased method of estimation applicable to probability sampling. See D. G. Horvitz and D. J. Thompson, *A Generalization of Sampling without Replacement from a Finite Universe*, *Journal of the American Statistical Association*, 47 (1952) at 663-685; W. S. Overton and S. V. Stehman, *The Horvitz-Thompson Theorem as a Unifying Perspective for Probability Sampling: With Examples from Natural Resource Sampling*, *The American Statistician*, 49(3) (1995); and Cochran (1977) at 259. We began using the Horvitz-Thompson ratio estimator with the 2009 Report. Prior to the 2009 Report, we applied the unweighted mean in each stratum.

communities in the sample and is equivalent to total revenues from purchases of the cable service. The denominator of the ratio sums weighted subscriber counts across communities in the sample. The result is an estimate of service revenue per subscriber. For any price (X), the mean price (service revenue per subscriber) equals

$$\frac{\sum_{i=1}^N \frac{1}{\pi_i} X_i \cdot Sub_i}{\sum_{i=1}^N \frac{1}{\pi_i} Sub_i},$$

where X_i is the price within an individual community i , Sub_i is the number of subscribers in community i , and π_i is the size weighted probability of community i .⁶³

D. Historical Price Series

10. Attachment 7 reports average prices and channel counts for all annual survey reports to date. For example, the 2016 averages in Attachment 7 are from the 2016 survey, and the 2017 averages are from the 2017 survey. Note that 2016 averages in the other attachments of this report are from the 2017 survey (each year we collect two years of data) and may not match the 2016 numbers shown in Attachment 7 due to random variance between the 2016 and 2017 survey samples. With some exceptions, averages in Attachment 7 come from each year's survey report for the full sample. Indices reflect the year to year percentage changes in these averages.

11. The exceptions to the rule above are described here. The 1995-2000 prices and 2000-2001 channels are for the noncompetitive sample group of operators. The 1995 price of expanded basic programming is the price of programming and equipment less an estimate of the equipment portion. In 2003, the survey changed from a July to a January collection date. To account for the change, the 2003 index values reflect the changes in the January 2002 to January 2003 averages reported in the 2003 survey. In 2010, we began collecting data on a more expansive set of channels. To account for this change, the 2010 channel and price per channel index values reflect the changes in the 2009 to 2010 averages reported in the 2010 survey.

E. Survey Accuracy

12. Because the basis of our survey is a sample of communities rather than a 100 percent census, the average prices in this Report are subject to sampling variance. Expanding the survey to include all communities might increase accuracy, but would also increase the cost and burden of collecting the information. The attachments to the Report include estimates of sampling variance or statistical standard error for each average price. Standard errors express the degree of confidence that the true mean falls within a range around a sample mean. Most commonly, standard errors indicate whether price differences are statistically significant (meaning statistically different from zero) at a given confidence level. The discussion above refers to within-sample variance. To prevent random variance that may occur across samples when measuring annual percentage change, the survey collected two years of data rather than comparing estimates from two different surveys. The exception is the historical time series table, which reports means collected for that particular survey year.

⁶³ We conducted the data analysis using Stata Software, StataCorp. 2015. Stata Statistical Software: Release 14. College Station, TX: StataCorp LP.

13. In addition to the sampling variance discussed above, changes in the composition of sample subgroups affect the estimated means.⁶⁴ The composition of communities making up the strata changes every year due to operators starting, ceasing, merging, and transferring operations. Composition of the strata changes further as a result of findings of effective competition. Many communities that had been part of the noncompetitive group in the 2016 survey were in the effective competition group in the 2017 survey because of a change in the effective competition process.⁶⁵ Finally, the change in underlying sampling weights this year also led to a change in the sample composition.

⁶⁴ See, e.g., D. Holt and C. J. Skinner, *Components of Change in Repeated Surveys*, *International Statistical Review*, 57 (1989) at 1-18.

⁶⁵ See Section II, part A.