

Broadband/Internet Availability Survey Report



NTCA—THE RURAL BROADBAND ASSOCIATION

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INTRODUCTION/EXECUTIVE SUMMARY

Introduction

For nearly two decades, NTCA–The Rural Broadband Association (NTCA) has conducted its Broadband/Internet Availability Survey to gauge the deployment rates of advanced services by its member companies. NTCA is a national association representing nearly 850 rural rate-of-return regulated operating company telecommunications providers in 45 states.

All NTCA members are small carriers that are “rural telephone companies” as defined in the Communications Act of 1934, as amended by the Telecommunications Act of 1996, although all have evolved to become broadband providers as explained further in this report. Respondents have an average of 4,455 residential and 530 business fixed broadband connections in service.

This latest broadband survey is a follow-up to similar surveys conducted in recent years by NTCA and seeks to build upon the results of those surveys.¹ This year’s survey asked about technologies used to provide broadband service, broadband availability and subscription rates, anchor institutions,² mobile wireless and data services, quantity and type of competition, broadband marketing efforts, fiber deployment, internet backbone and middle mile connections, and video service. The survey also provided an opportunity for respondents to provide any specific comments they wished to share.

Executive Summary

In May 2018, NTCA contracted with Association Research, Inc. (ARI)³ to conduct this year’s survey. ARI sent an email with a survey link to each of the companies (as reflected at the holding company level) in NTCA’s email database; 194 members (31.8%) responded. It is important to note that not all respondents answered every question in the survey.

The average service area identified by respondents is approximately 2,244 square miles. Seven in 10 respondents (69.8%) had customer densities in their service areas of 10 residential customers per square mile or less; 25.4% had densities of two residential customers per square mile or less.

Respondents indicated that they use a variety of platforms within their respective service areas to provide broadband service to their customers.⁴ Nearly three in five (58.0%) of respondents’ broadband customers are served via fiber to the home (FTTH), while 27.9% are served via copper loops, 10.4% via fiber to the node (FTTN), 2.6% via cable modem, 0.8% via unlicensed fixed wireless, 0.4% via licensed fixed wireless and 0.1% via satellite.

¹ Copies of this and previous NTCA survey reports can be downloaded from the NTCA website at <https://www.ntca.org/ruraliscool/survey-reports>.

² Anchor Institutions are defined by the Federal Communications Commission as entities such as “schools, libraries, hospitals and other medical providers, public safety entities, institutions of higher education, and community support organizations that facilitate greater use of broadband by vulnerable populations, including low-income, the unemployed, and the aged.” A more in-depth look at types of broadband service that NTCA members offer to anchor institutions within their communities is available at https://www.ntca.org/sites/default/files/documents/2018-08/NTCA%20Rural%20Anchor%20Institution%20Survey%20Report_Final.pdf.

³ Association Research, Inc., an independent survey research organization located in Gaithersburg, Maryland, conducted the survey, analyzed the findings and prepared this report. All responses have been kept confidential; this report does not reveal information from any individual source.

⁴ For purposes of this survey, broadband is defined as throughput equal to or exceeding 200 kilobits per second in at least one direction.

On average, respondents indicated the following percentage of their customer base can receive maximum downstream speeds of:

- 1 Gig or greater: 23.4%
- 100 Mbps but less than 1 Gig: 33.9%
- Greater than/equal to 25 Mbps but less than 100 Mbps: 13.3%
- Greater than/equal to 10 Mbps but less than 25 Mbps: 17.3%
- Greater than/equal to 4 Mbps but less than 10 Mbps: 9.0%
- Greater than/equal to 1.5 Mbps but less than 4 Mbps: 2.3%
- Greater than/equal to 1 Mbps but less than 1.5 Mbps: 0.3%
- Greater than/equal to 768 kilobits per second (kbps) but less than 1 Mbps: 0.5%
- Greater than/equal to 200 kbps but less than 768 kbps: 0.1%

In 2016, 66.5% of the respondents' customers could receive a maximum downstream speed greater than 25 Mbps, which is lower when compared with the 70.6% who can in 2018. (Earlier surveys did not ask about distinct speed tiers above 25 Mbps.)

The average percentage of respondents' customer base that subscribes to maximum downstream speeds is:

- 2.0% subscribe to speeds greater than 1 Gig.
- 13.7% subscribe to greater than/equal to 100 Mbps but less than 1 Gig.
- 24.0% subscribe to greater than/equal to 25 Mbps but less than 100 Mbps.
- 27.2% of respondents' customers subscribe to a maximum downstream speed that is greater than/equal to 10 Mbps but less than 25 Mbps.
- 21.6% subscribe greater than/equal to 4 Mbps but less than 10 Mbps.
- 8.3% subscribe to service greater than/equal to 1.5 Mbps but less than 4 Mbps.
- 2.4% subscribe to speeds greater than/equal to 1 Mbps but less than 1.5 Mbps.

In 2016, 23.7% subscribed to a downstream speed greater than/equal to 25 Mbps compared with 39.7% in 2018.

Many survey respondents indicated that they face some type of competition for broadband in limited portions of their service areas from cable companies, national internet service providers (ISPs), satellite broadband providers, electric utilities and fixed and/or mobile wireless internet service providers (WISPs). Respondents are taking numerous marketing steps to increase broadband take rates, including bundling of services (80.2%), price promotions (74.1%), no separate fee for customer premises equipment installation (69.8%) or hardware including routers (48.1%), and free software (6.8%).

Companies' short-term and long-term strategies involve deploying fiber to the home. The main barrier to widespread deployment of fiber, as reported by 93.2% of respondents (up from 88.9% in 2016), is cost, although more than half (59.4%, up from 53.5% in 2016) also cited regulatory uncertainty as a barrier and 46.6% (down from 51.5% in 2016) cited long loops. Throughout the history of the survey, deployment cost has been respondents' most significant concern.

The average respondent is 117 miles from its primary internet backbone connection. Twenty percent of those that recently changed backbone providers did so for price reasons. Three-quarters (75.5%) of respondents indicated they are generally satisfied (very satisfied/satisfied) with their current backbone access provider.

Nearly half (47.6%) of respondents currently offer voice over internet protocol (VoIP) service, up from one-third (33.1%) in 2016. Approximately half (48.3%) of respondents not currently offering VoIP have plans to do so in the foreseeable future. Three-quarters (74.3%) of respondents offer internet protocol television (IPTV) service to their customers, while 41.9% offer cable TV and 21.3% offer over the top media (OTT). Nearly all respondents identified gaining access to programming at a reasonable price (96.2%) as the largest barrier they face in providing video services, unchanged from the 97.6% reporting the same in 2016. Yet, one-third (32.4%) of respondents rated having a video service as very important or extremely important for customers.

FIXED VOICE AND BROADBAND

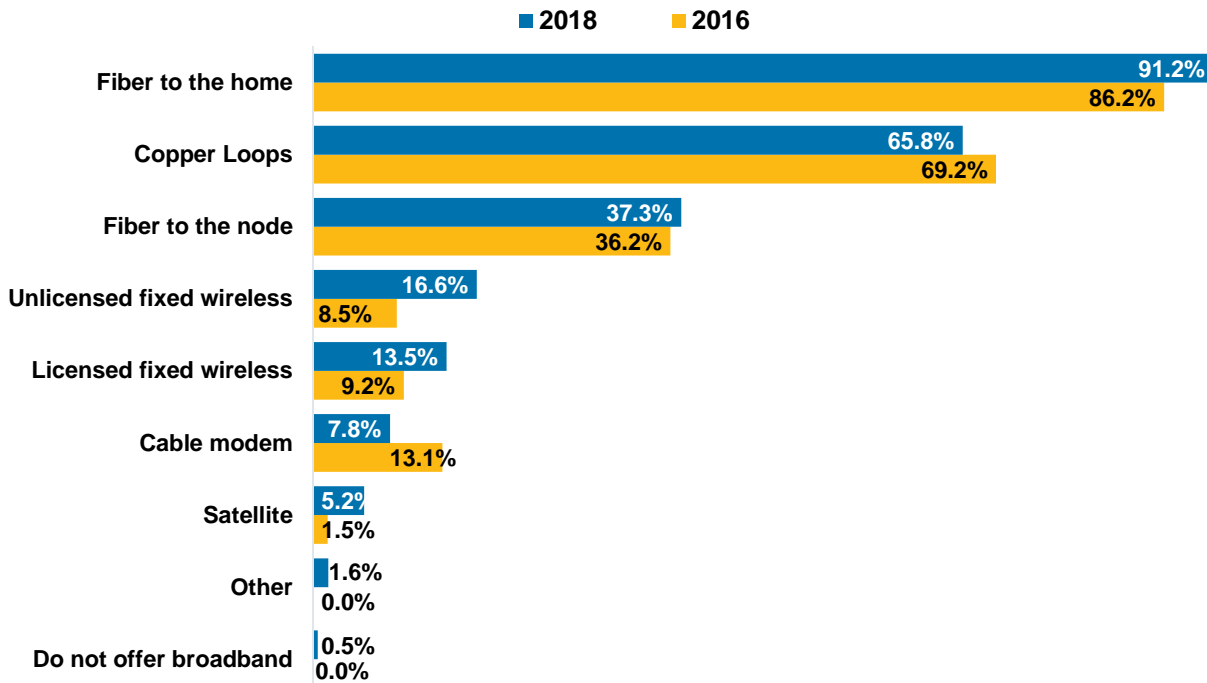
Fixed Voice Access Lines and Broadband Connections

Fixed Voice and Broadband	Residential	Business
	Mean	Mean
Number of voice grade access lines	4,355	1,493
Number of fixed broadband connections	4,455	530

Source: 2018 NTCA–Broadband/Internet Availability Survey

- The average respondent reports having 4,355 residential voice grade access lines in service. The average number of business voice grade access lines in service is 1,493.
- Respondents indicate that the average company has 4,455 residential fixed broadband connections in service. The number of business fixed broadband connections in service averages 530.
- The average service area is approximately 2,244 square miles. Nearly six in 10 (59.8%) survey respondents' service areas were 500 square miles or larger and approximately three in 10 (27.4%) were at least 2,000 square miles. These percentages are virtually unchanged from 2016 levels, 57.4% and 25.4%, respectively.

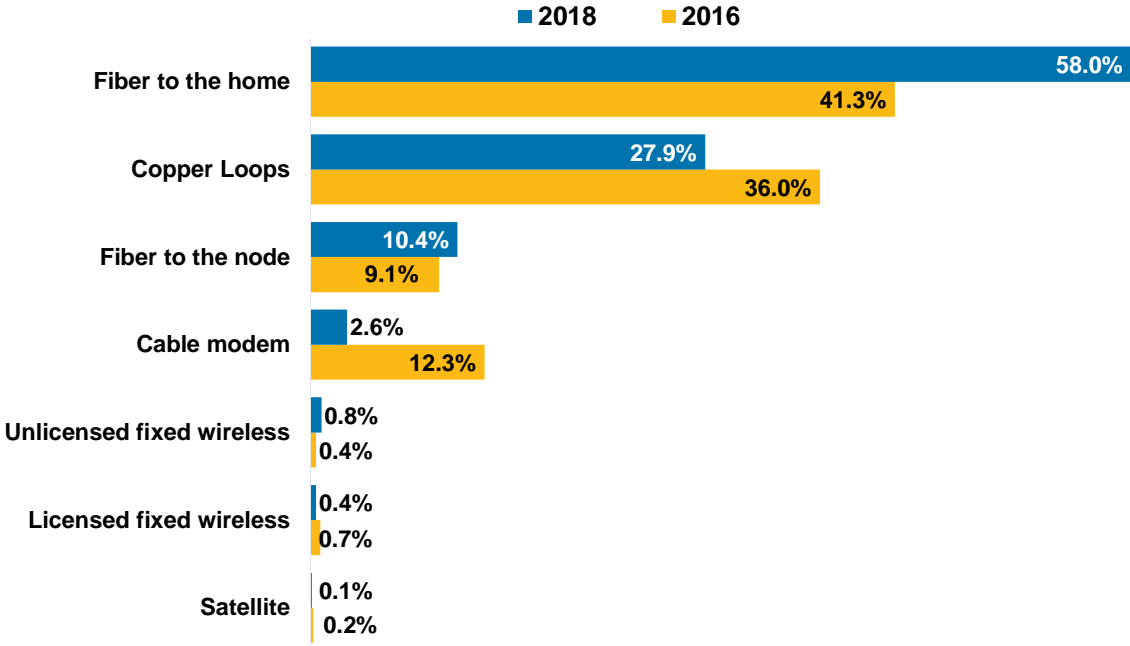
Network Platforms Used to Provide Fixed Broadband Service



Source: 2018 NTCA–Broadband/Internet Availability Survey

- Most respondents (91.2%) report using fiber to the home to provide fixed broadband service in some portion of their service areas, up from 86.2% in 2016. Almost two-thirds (65.8%) use copper loops and more than one-third (37.3%) use fiber to the node, largely unchanged from the proportions reported in 2016. Percentages add up to more than 100% due to the presence and use of multiple technology platforms in individual respondents' networks.
- The platform respondents use least often to provide fixed broadband service is satellite (5.2%). A slightly larger proportion uses cable modems (7.8%).

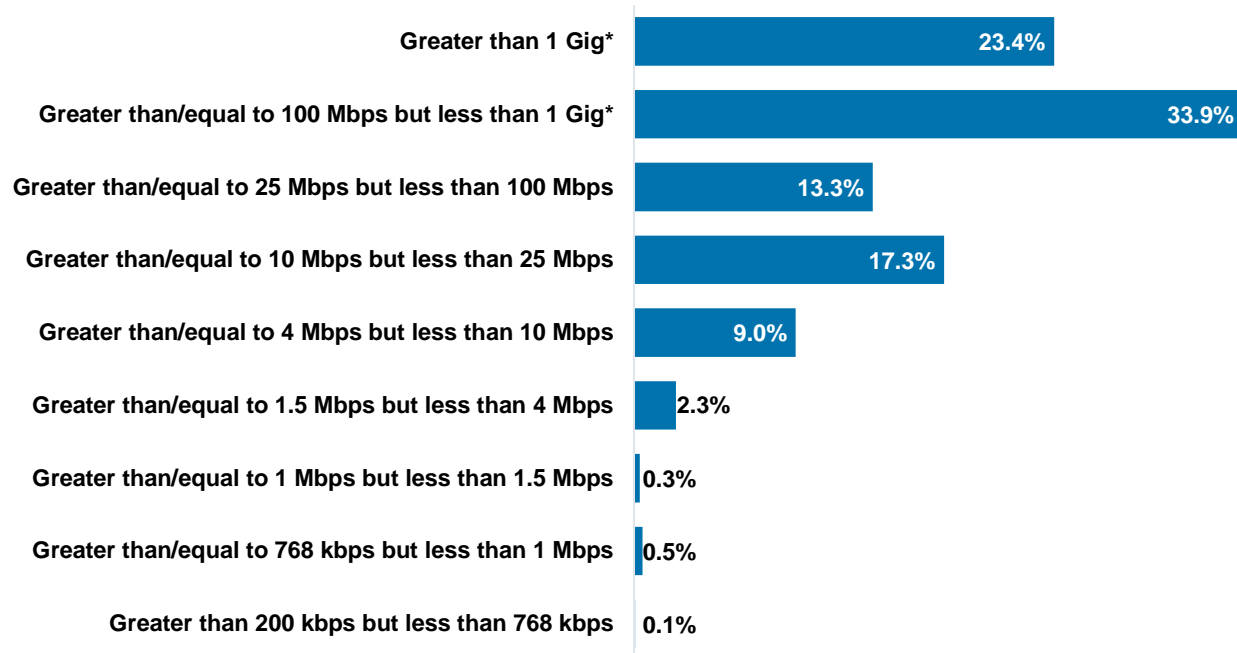
Average Percentage of Residential Broadband Customers Served by Network Platforms



Source: 2018 NTCA–Broadband/Internet Availability Survey

- On average, respondents indicate that 58.0% of their residential broadband customers are served by fiber to the home (up from 41.3% in 2016), while 27.9% are served by copper loops (down from 36.0% in 2016), 10.4% are served by fiber to the node, and 2.6% are served by cable modem (down from 12.3% in 2016).
- Few residential broadband customers are served by satellite (0.1%), while slightly larger proportions are served by licensed (0.4%) or unlicensed (0.8%) fixed wireless. These percentages are similar to those reported by NTCA members in 2016.

Maximum Downstream Speed Availability

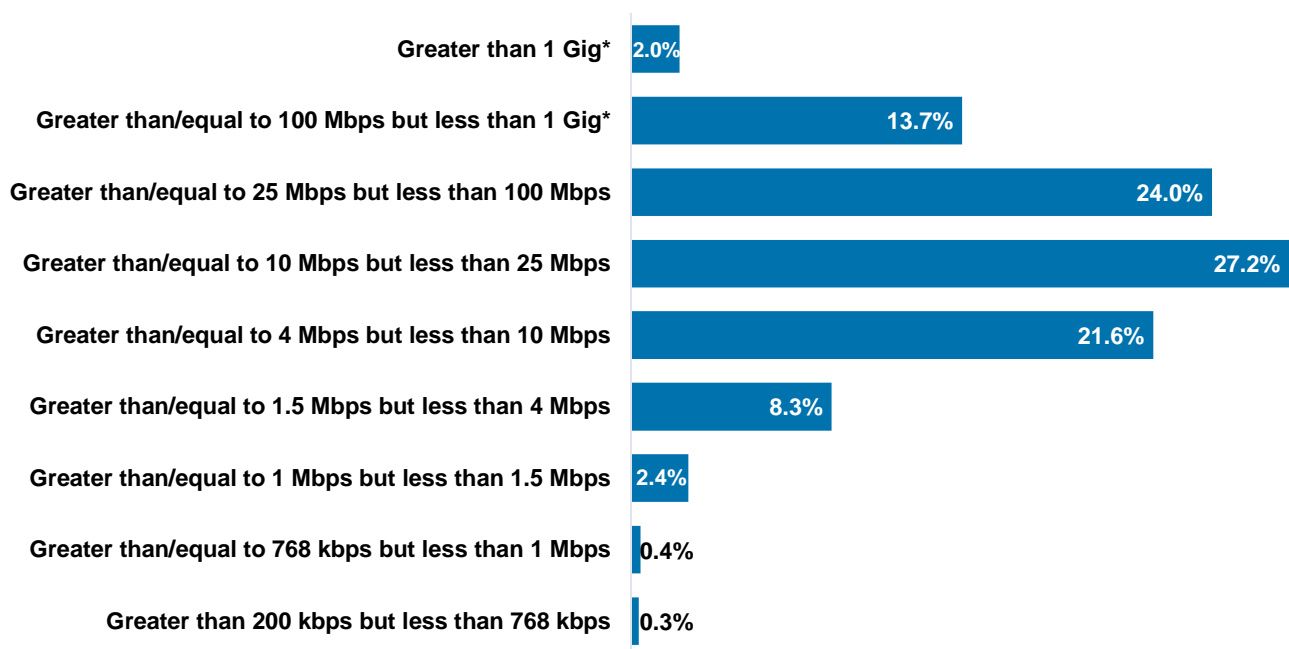


*1 Gig = 1,000 Mbps

Source: 2018 NTCA–Broadband/Internet Availability Survey

- Respondents report that an average of 33.9% of their customer base can receive a maximum downstream speed for fixed broadband of greater than or equal to 100 Mbps, but less than 1 Gig. The next largest percentage is that which can receive greater than 1 Gig (23.4%).
- On average, respondents say that 17.3% of their customer base can receive a maximum of greater than or equal to 10 Mbps but less than 25 Mbps, 13.3% can receive a maximum of greater than or equal to 25 Mbps but less than 100 Mbps, and 9.0% can receive greater than or equal to 4 Mbps but less than 10 Mbps.
- Respondents report that a very small percentage of their customer base can receive greater than or equal to 1.5 Mbps but less than 4 Mbps (2.3%), greater than or equal to 768 kbps but less than 1 Mbps (0.5%), greater than or equal to 1 Mbps but less than 1.5 Mbps (0.3%), or greater than or equal to 200 kbps but less than 768 kbps (0.1%).
- In 2016, two-thirds (66.5%) of the respondents' customers could receive a maximum downstream speed greater than 25 Mbps compared with 70.6% who can receive the same in 2018. It should be noted that the 2016 survey did not ask for specific speed tiers above 25 Mbps as is the case in the current survey.

Broadband Adoption by Speed Tier



*1 Gig = 1,000 Mbps

Source: 2018 NTCA–Broadband/Internet Availability Survey

- According to 2018 survey respondents, 27.2% of their customer base subscribes to a maximum speed for fixed broadband of greater than or equal to 10 Mbps but less than 25 Mbps (compared with 33.1% in 2016), followed by 24.0% subscribing to a maximum speed of greater than 25 Mbps but less than 100 Mbps, and 21.6% subscribing to a maximum speed of greater than or equal to 4 Mbps but less than 10 Mbps.
- It is less common for customers to subscribe to a maximum speed of greater than or equal to 100 Mbps but less than 1 Gig (13.7%). Respondents report that 8.3% subscribe to a maximum speed of greater than or equal to 1.5 Mbps but less than 4 Mbps, and 2.0% subscribe to maximum speed of greater than 1 Gig.
- Respondents report that just 0.4% of their customer base subscribes to a maximum speed of greater than or equal to 768 kbps but less than 1Mbps, and 0.3% subscribe to a speed of greater than or equal to 200 Mbps but less than 768 kbps.
- In 2018, 39.7% of the respondents' customer base subscribed to a maximum speed of greater than or equal to 25 Mbps, compared with just 23.7% in 2016. It should be noted that the 2016 survey did not ask for specific speed tiers above 25 Mbps as is the case in the current survey.

Estimated Cost of Bringing Customers Up to Each Level (Downstream Only)

Level of Service	Estimated Total Costs
	Mean
10 Mbps	\$17,924,100
25 Mbps	\$27,907,729
100 Mbps	\$37,713,558

Source: 2018 NTCA–Broadband/Internet Availability Survey

- Results show that it would cost an average of \$37,713,558 to bring customers who are not currently able to receive 100 Mbps fixed broadband service (downstream only) up to that speed.
- Respondents estimate that the total cost to bring customers up to the 25 Mbps level of service would be, on average, \$27,907,729.

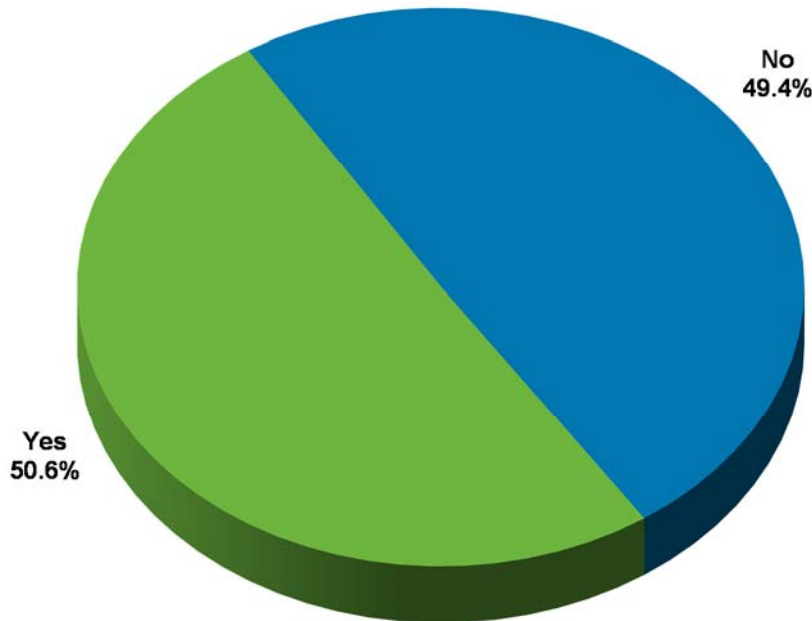
Upstream Speed Availability and Estimated Cost of Bringing Customers Up to Each Level

Upstream Speed	Mean
Percentage of customers that can receive an upstream speed of 1 Mbps or greater for fixed broadband service	95.0%
Estimated total cost of bringing all customers who are not already at 1 Mbps upstream up to that level	\$12,979,873
Percentage of customers that can receive an upstream speed of 3 Mbps or greater for fixed broadband service	78.1%
Estimated total cost of bringing all customers who are not already at 3 Mbps upstream up to that level	\$21,559,297

Source: 2018 NTCA–Broadband/Internet Availability Survey

- Respondents report that 95.0% of their customers, on average, can receive an upstream speed of 1 Mbps or greater for fixed broadband service, with the average total cost of bringing customers in their service area not already at 1 Mbps upstream up to this level being \$12,979,873.
- Respondents estimate that an average of 78.1% of their customers can receive an upstream speed of 3 Mbps or greater for fixed broadband service. The average total cost of bringing customers not at the level of 3 Mbps upstream to this level is estimated to be \$21,559,297.

Offer Standalone Broadband



Source: 2018 NTCA-Broadband/Internet Availability Survey

- Just over half of respondents (50.6%) report that they offer “standalone broadband,” i.e., broadband service only, with no regulated voice component for fixed broadband service, compared with 41.7% in 2016.

Number of Anchor Institutions in Service Area and Number Served With Fixed Broadband

Anchor Institutions	Number in Service Area	Number Served
	Mean	Mean
Public libraries	4	4
Primary/secondary schools	9	8
Community colleges	2	2
Public safety entities (police, fire, etc.)	12	10
Hospitals/medical clinics	8	8

- Respondents report serving an average of 10 out of 12 public safety entities (police, fire, etc.), and eight out of nine primary/secondary schools in their service areas with fixed broadband.
- Respondents also indicate that their service areas include an average of four public libraries, two community colleges and eight hospitals/medical clinics. The respondents serve all of these institutions with fixed broadband service.
- By comparison, the average respondent to the 2016 survey indicated they served approximately nine public safety entities (police, fire, etc.), eight primary/secondary schools, three public libraries, and three hospitals or medical clinics with fixed broadband.

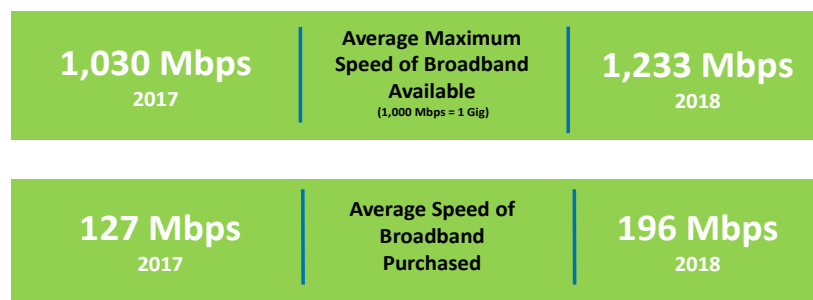
Anchor Institutions Connection and Speed

Anchor Institutions	% Connected to Network via Fiber	% Can Receive Service of 25 Mbps or Greater
	Mean	Mean
Public libraries	73.7%	83.9%
Primary/secondary schools	82.4%	89.9%
Community colleges	38.3%	44.8%
Public safety entities (police, fire, etc.)	69.9%	83.2%
Hospitals/medical clinics	69.8%	78.7%

Source: 2018 NTCA–Broadband/Internet Availability Survey

- The vast majority of primary/secondary schools are connected to respondents' networks via fiber (82.4%) while 89.9% of primary/secondary schools in respondents' service areas can receive service of 25 Mbps or greater.
- Public libraries are connected to the network via fiber with the second-highest frequency, at 73.7%, with 83.9% being able to receive service of 25 Mbps or greater.
- Almost seven in 10 hospitals and medical clinics (69.8%) or public safety entities (69.9%) are connected to respondents' networks via fiber, and about eight in 10 of those institutions (78.7% and 83.2%, respectively) can receive service of 25 Mbps or greater.
- The type of anchor institution least likely to be connected via fiber is community colleges; respondents report that 38.3%, on average, are connected, while 44.8% can receive service of 25 Mbps or greater.

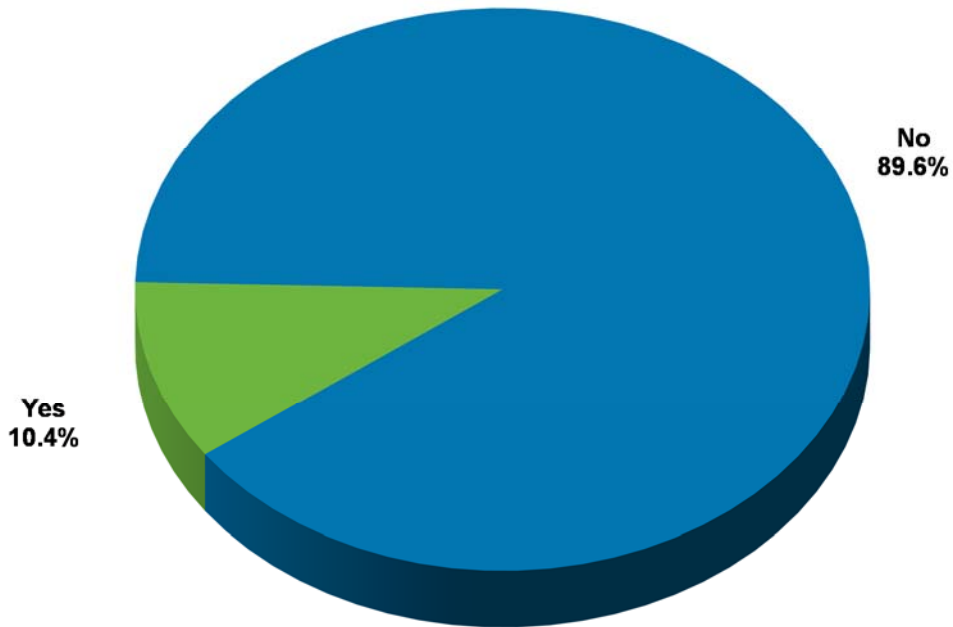
Anchor Institution Average Speed



- Respondents report in 2018 that the maximum broadband speed they make available to anchor institutions in their area is 1,233 Mbps (mean), and that the average broadband speed purchased by these institutions is 196 Mbps.
- In comparison, the maximum available speed offered to anchor institutions in 2017 averaged 1,030 Mbps, and 127 Mbps purchased speed. Those numbers were obtained by calculating the maximum available speed and average purchased speed by three institution types (public libraries, K–12 schools, and hospitals and medical clinics) as collected in NTCA's 2017 Anchor Institutions Survey.

MOBILE VOICE AND BROADBAND DATA SERVICE

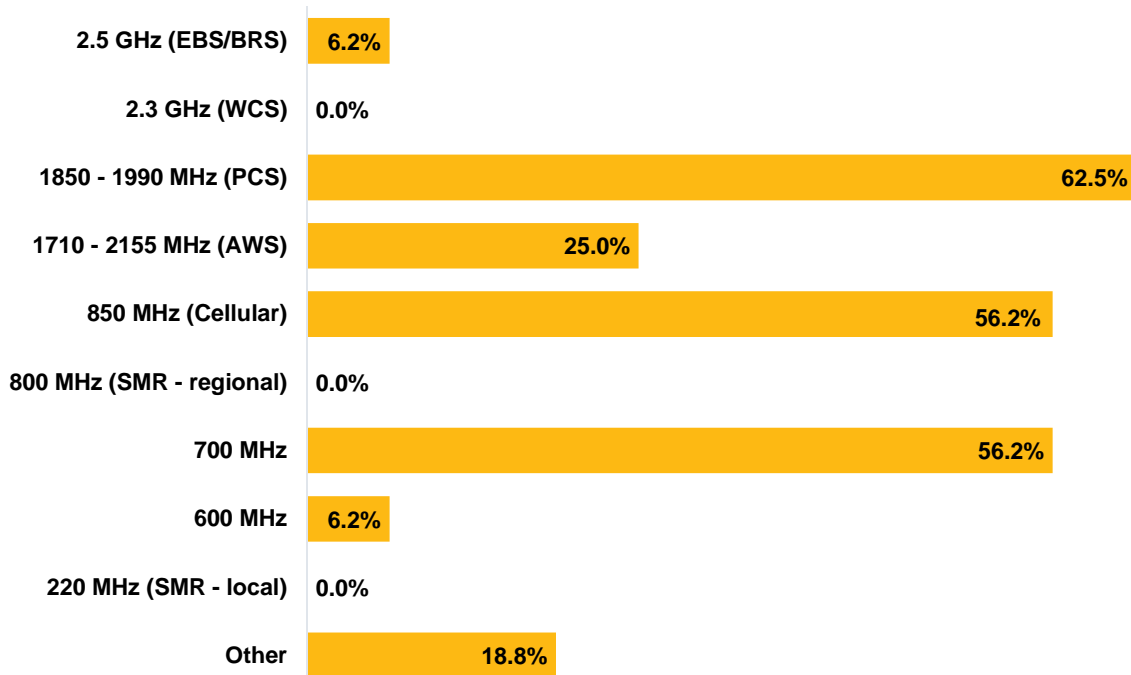
Offer Mobile Wireless Service



Source: 2018 NTCA-Broadband/Internet Availability Survey

- Slightly more than 10% of survey respondents offer mobile wireless service.

Spectrum Used to Offer Mobile Wireless Service

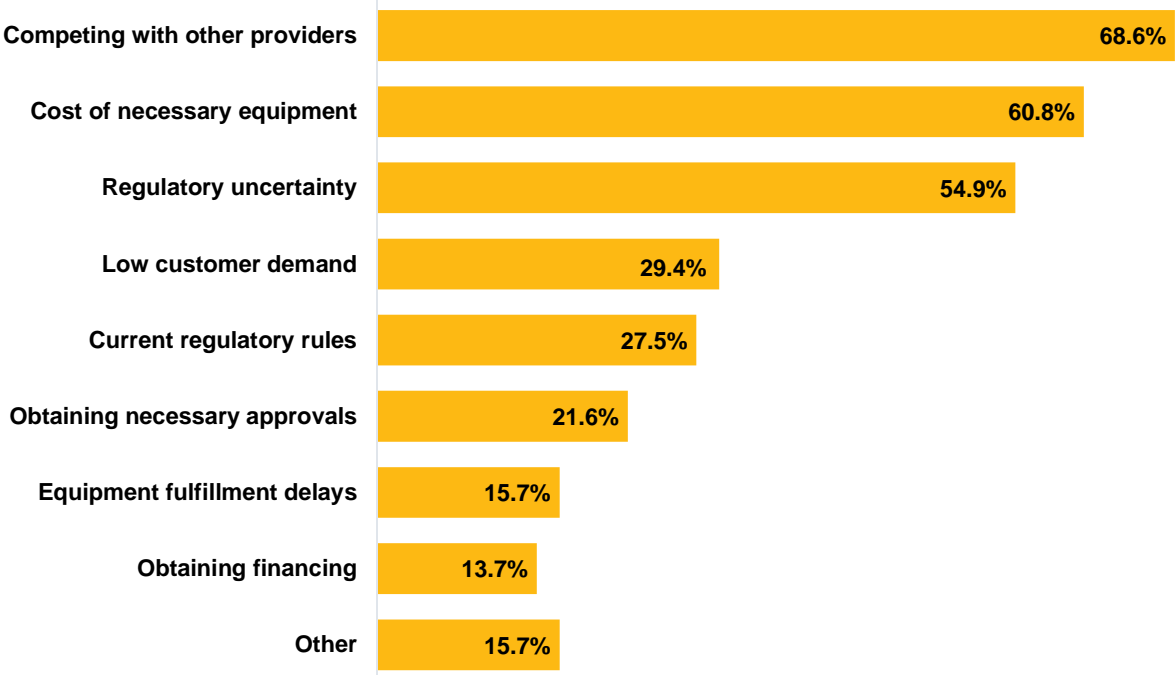


Source: 2018 NTCA-Broadband/Internet Availability Survey

- Of those that do offer mobile wireless service, the spectrum used most often is 1850-1990 MHz (PCS), with 62.5% offering service leveraging this spectrum. However, more than half (56.2%) also offer mobile wireless service using 850 MHz (Cellular) spectrum or the 700 MHz spectrum.

- None of the companies responding to the survey offer mobile wireless service on the 220 MHz (SMR-local), 800 MHz (SMR-regional) or 2.3 GHz (WCS) spectrum. Infrequently, service is offered via the 600 MHz (6.2%) or the 2.5 GHz (EBS/BRS) spectrum (6.2%).

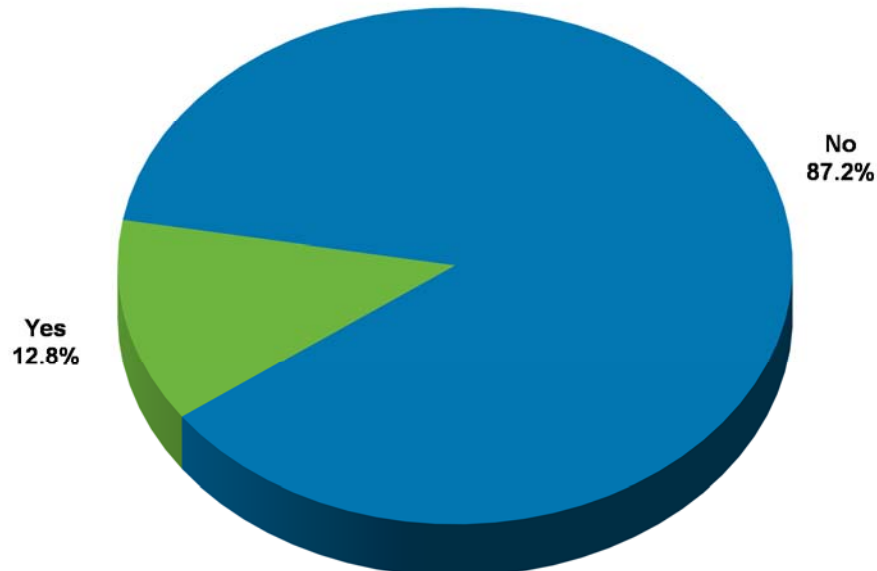
Primary Challenges in Offering a Mobile Broadband Data Service



Source: 2018 NTCA–Broadband/Internet Availability Survey

- The primary challenge that companies cite most often in offering a mobile broadband data service is competing with other providers (68.6%). More than six in 10 (60.8%) also mention the cost of necessary equipment as a primary challenge, and more than half report that they are challenged by regulatory uncertainty (54.9%).
- Less frequently, companies are challenged by obtaining financing (13.7%) or equipment fulfillment delays (15.7%).

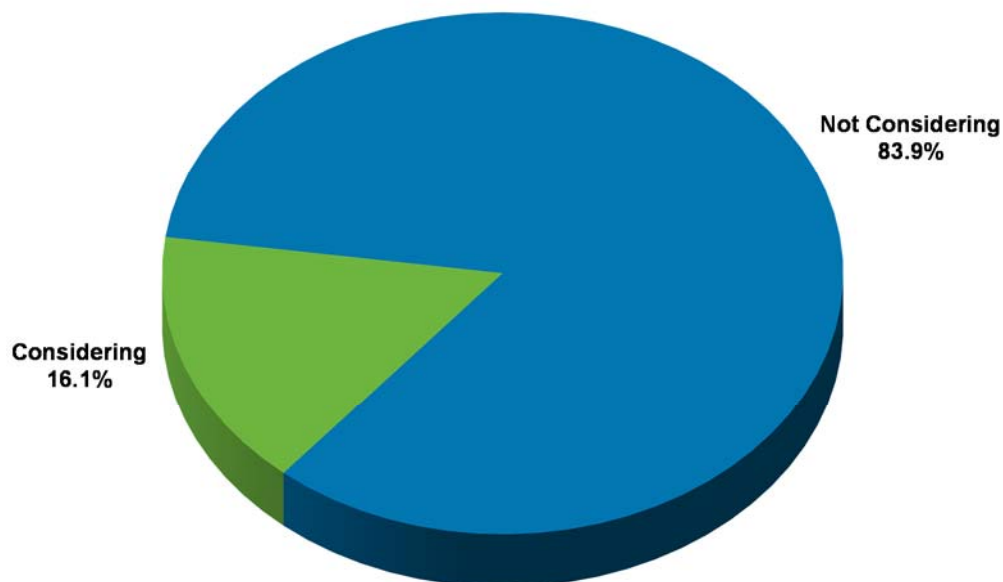
Considering Participating in Future Spectrum Auctions for the Provision of Mobile Broadband Data Service



Source: 2018 NTCA-Broadband/Internet Availability Survey

- Just over one in 10 responding companies (12.8%) are considering participating in future spectrum auctions for the provision of mobile broadband data service.

Plan to Participate in Future Mid-Band Spectrum Auctions



Source: 2018 NTCA-Broadband/Internet Availability Survey

- Less than one-fourth of respondents (16.1%) say they are considering participating in future mid-band spectrum auctions (e.g., Citizens Band Radio Service (CBRS)).

COMPETITION/MARKETING

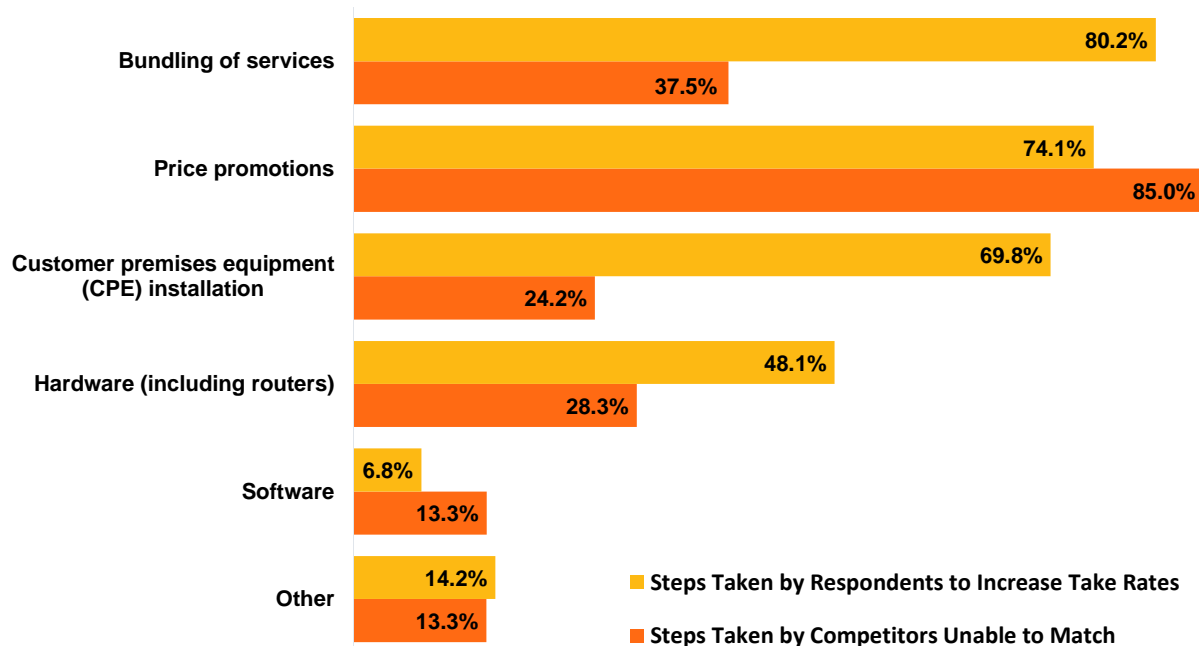
Competing Broadband Services in Respondents' Service Area

Type of Providers	Percentage in Service Area
Cable Companies	60%
National ISPs	24%
Electric Utilities	18%
Fixed Wireless ISPs (WISPs)	56%

Source: 2018 NTCA-Broadband/Internet Availability Survey

- Respondents were asked to identify the kinds of competitors, if any, that served limited portions of their service areas. Cable competition was most prevalent, with sixty percent (60%) of respondents indicating a cable provider operated somewhere within the service areas in question. Nearly as many respondents (56%) indicated that a fixed wireless internet provider operated within a limited portion of their service areas. Fewer respondents identified either national ISPs (24%) or electric utilities (18%) as offering broadband in a limited portion of their service areas.

Marketing Steps Taken



Source: 2018 NTCA-Broadband/Internet Availability Survey

- In 2018, more than three-quarters of companies (80.2%) offered bundling of services to attract more subscribers. Nearly three-quarters used price promotions (74.1%), and nearly seven in 10 did not charge a separate fee for customer premises equipment (CPE) installation (69.8%). Close to half (48.1%) also did not charge extra for hardware (including routers). Only a few companies offered free software (6.8%). In 2016, respondents offered free installation (87.1%), bundling of services (83.9%), and price promotions (79.0%) to increase broadband take rates.

- Most often, respondents report that their competitors have offered price promotions that they are unable to match (85.0%). By contrast, less than half report that their competitors have adopted other incentives such as bundling of services (37.5%), free hardware (including routers) (28.3%), or free customer premises equipment (CPE) installation (24.2%) that the responding companies have not been able to match. Few companies report that their competition has used free software (13.3%) and of those that do, approximately half (6.8%) have been unable to match this incentive.

FIBER DEPLOYMENT

Short-Term and Long-Term Fiber Deployment Strategy

SHORT-TERM STRATEGY

Deploy fiber to the node to X% of customers by year-end 2018

10.1%

% of Customers to the Node:
Average: 64.9%

Deploy fiber to the home to X% of customers by year-end 2018

48.2%

% of Customers to the Home:
Average: 61.0%

All fiber deployments are done

32.1%

No formal strategy

9.5%

LONG-TERM STRATEGY

Deploy fiber to the node to X% of customers by year-end 2020

7.9%

% of Customers to the Node:
Average: 82.3%

Deploy fiber to the home to X% of customers by year-end 2020

51.5%

% of Customers to the Home:
Average: 78.1%

All fiber deployments are done

32.1%

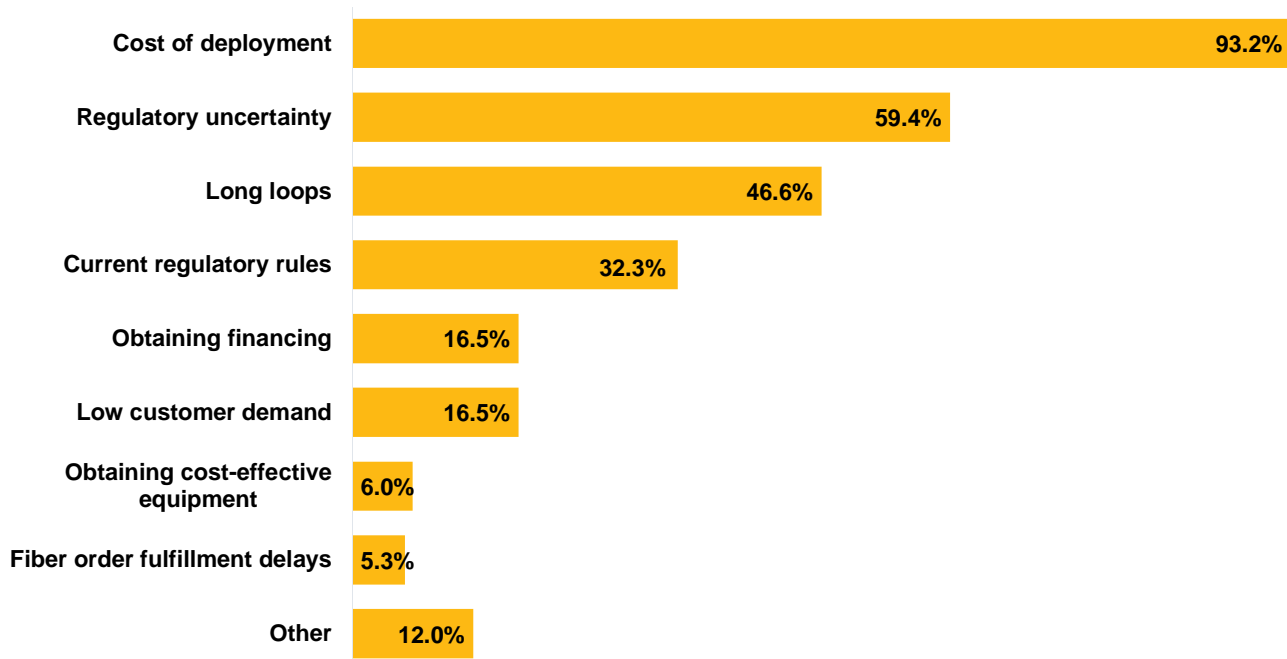
No formal strategy

8.5%

Source: 2018 NTCA–Broadband/Internet Availability Survey

- Nearly half of responding companies (48.2%) report that their short-term fiber deployment strategy is to deploy fiber to the home to an average of 61.0% of customers by year-end 2018. Similarly, the favored long-term strategy is to deploy fiber to the home to an average of 78.1% customers by 2020, which is being pursued by 51.5% of respondents. In 2016, 66.2% of respondents expected to provide fiber to the home to at least half of their customers by 2019.
- Nearly one-third of respondents (32.1%) reported that all fiber deployments are done, compared with 31.3% saying the same in 2016.
- Companies are far less likely to deploy fiber to the node as either a short-term (10.1%) or long-term (7.9%) strategy. In the short term, these companies plan to deploy fiber to the node to an average of 64.9% of customers, and to an average of 78.1% of customers long-term. In 2016, 39.3% of survey respondents expected to provide fiber to the node to more than 75% of their customers in the long term.

Significant Barriers to Widespread Fiber Deployment



Source: 2018 NTCA–Broadband/Internet Availability Survey

- The most common barrier to widespread fiber deployment is the cost, cited by 93.2% of companies (up from 88.9% in 2016). However, more than half also indicate that regulatory uncertainty is a significant barrier (59.4%, up from 53.5% in 2016), while 46.6% are deterred by long loops (down from 51.5% in 2016).
- Fiber order fulfillment delays (5.3%) and obtaining cost-effective equipment (6.0%) are not currently significant deterrents for many respondents. Those barriers were cited by higher proportions of respondents in 2016: 13.1% and 8.1%, respectively.

INTERNET BACKBONE/MIDDLE MILE

Internet Backbone/Middle Mile

	Mean
Number of miles from primary internet backbone connection	117
Number of middle mile transport providers available	3

Source: 2018 NTCA–Broadband/Internet Availability Survey

- On average, respondents report being 117 miles from their primary internet backbone connection and can choose to take service from an average of three middle mile transport providers.

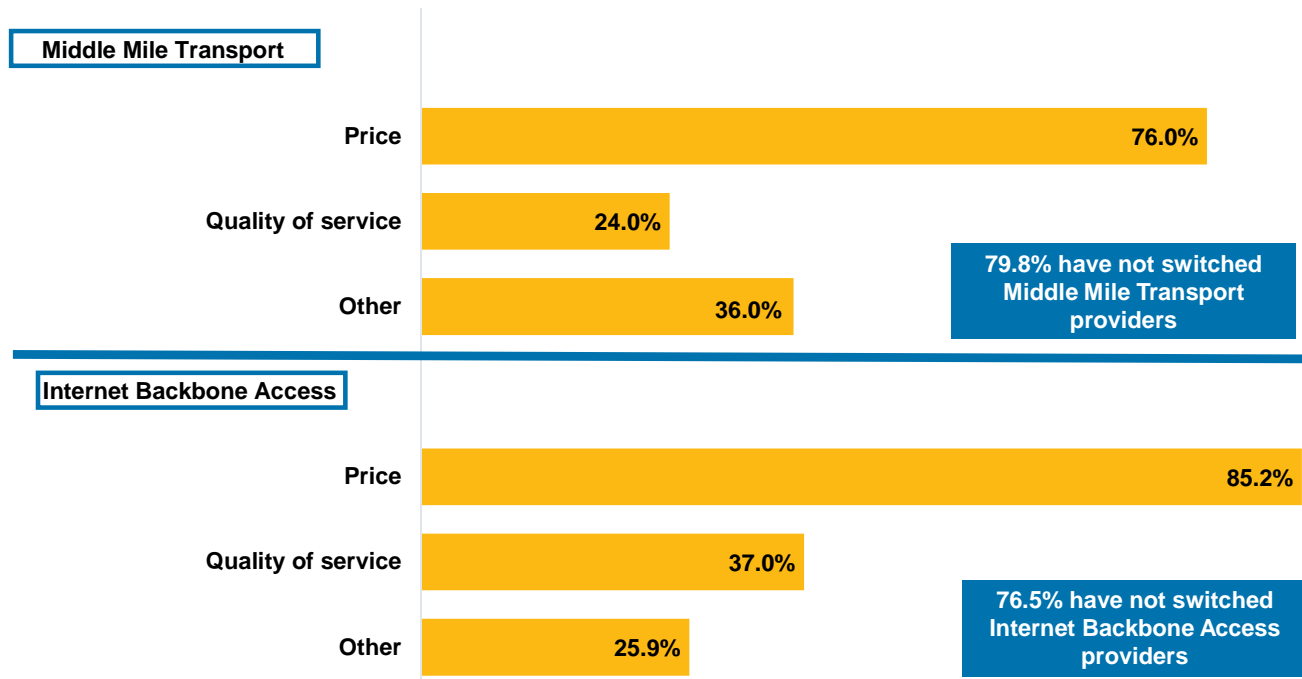
Middle Mile Bandwidth

	Mean
Middle mile bandwidth (in MB) currently subscribe to	12,000 MB
Number of years expect this capacity to remain sufficient	2 Years

Source: 2018 NTCA–Broadband/Internet Availability Survey

- Companies subscribe to an average of 12,000 MB of middle mile bandwidth. The average respondent expects this capacity to remain sufficient for two years.

Reasons for Switching Providers



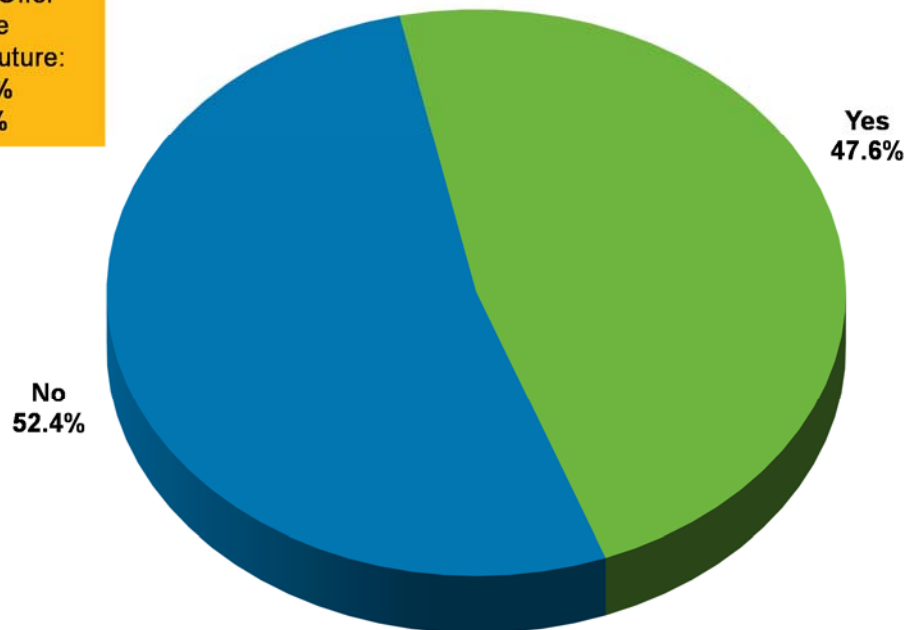
Source: 2018 NTCA-Broadband/Internet Availability Survey

- The vast majority of companies report that they have not switched middle mile transport providers (79.8%) or internet backbone access providers (76.5%) in the past two years.
- For those who have switched, 76.0% (up from 63.0% in 2016) named price as the reason for switching middle mile transport providers, while 85.2% (87.5% in 2016) named price as the reason for switching internet backbone access providers. Quality of service was named by 24.0% (29.6% in 2016) as the reason for switching middle mile transport providers, and by 37.0% (up from 25.0% in 2016) for switching internet backbone access providers.

VOICE OVER INTERNET PROTOCOL (VoIP)

Offer a VoIP Service

If No, Plan to Offer
VoIP in the
Foreseeable Future:
Yes=48.3%
No=51.7%



Source: 2018 NTCA-Broadband/Internet Availability Survey

- Fewer than half of companies currently offer a VoIP service (47.6%, up from 33.1% in 2016). Among those not currently offering VoIP, 48.3% plan to offer it in the foreseeable future. This is similar to 2016, when 46.9% of respondents said they planned to offer VoIP in the foreseeable future.

VIDEO

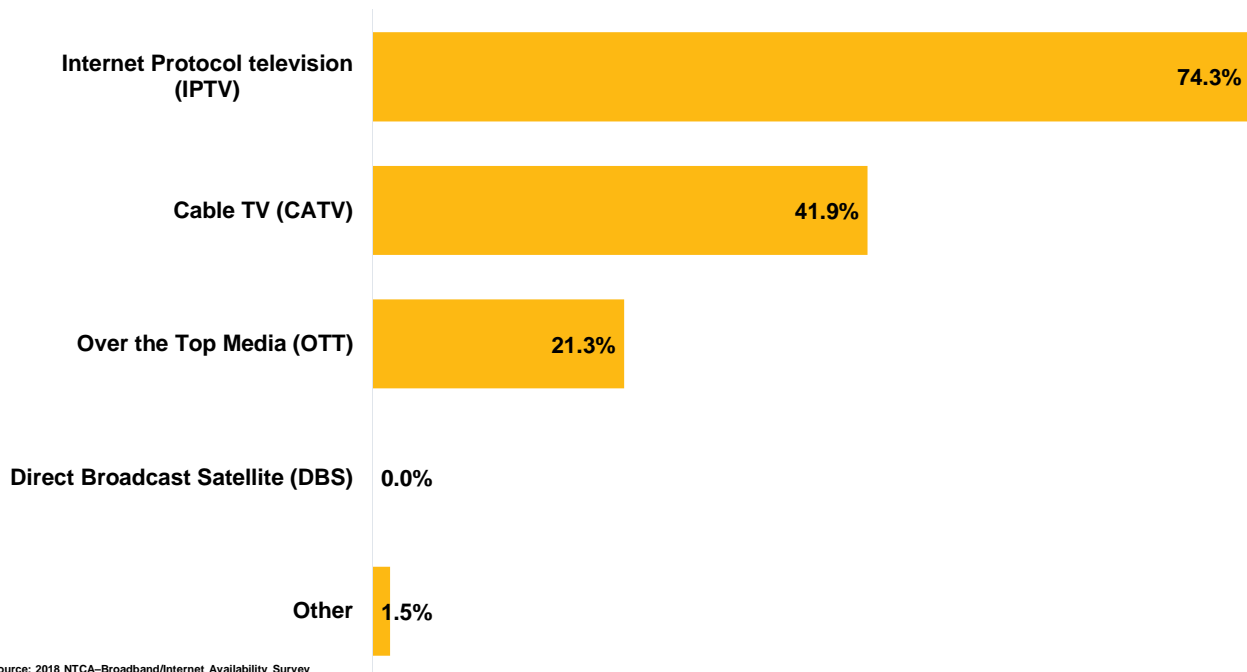
Video Service

	Mean
Number of customers that currently subscribe to video service	2,566
Estimated video take rate	36.0%

Source: 2018 NTCA–Broadband/Internet Availability Survey

- Respondents report that an average of 2,566 customers currently subscribe to their video service and the average video take rate is 36.0%, unchanged from 2016.

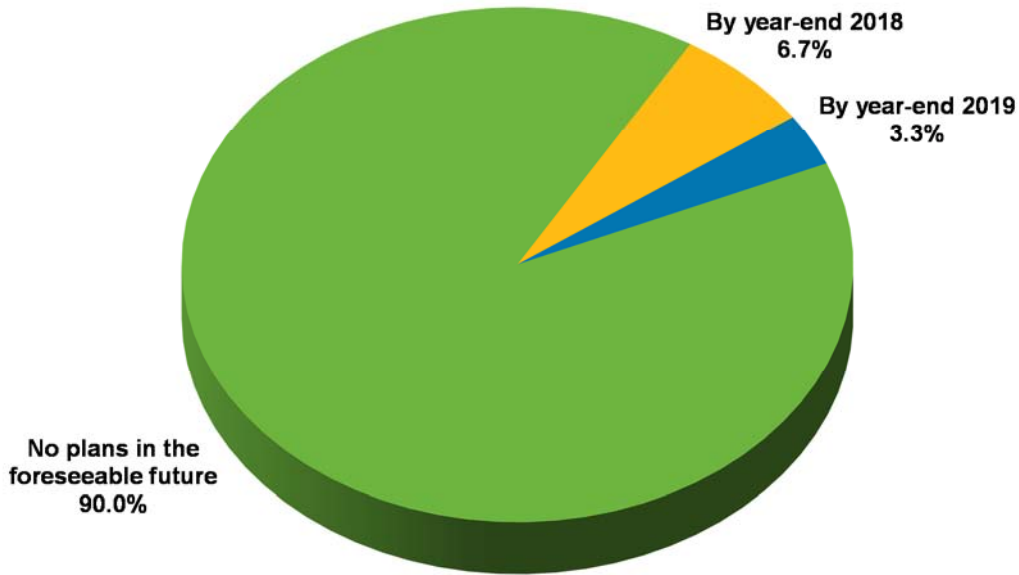
Types of Video Services Offered



Source: 2018 NTCA–Broadband/Internet Availability Survey

- Of the types of video services offered, companies most frequently offer internet protocol television (IPTV), with 74.3% indicating that they offer this service to their customers.
- More than four in 10 (41.9%) offer cable TV (CATV) to their customers, and 21.3% offer over the top media (OTT).
- In 2016, 69.8% of survey respondents offered video services to their customers, with 85.7% offering video via Internet Protocol television and 50.7% via CATV. It should be noted that the question about types of video services was asked differently (Yes/No) in 2016 than in 2018 (Select All That Apply), so comparisons of the results should be made with that in mind.

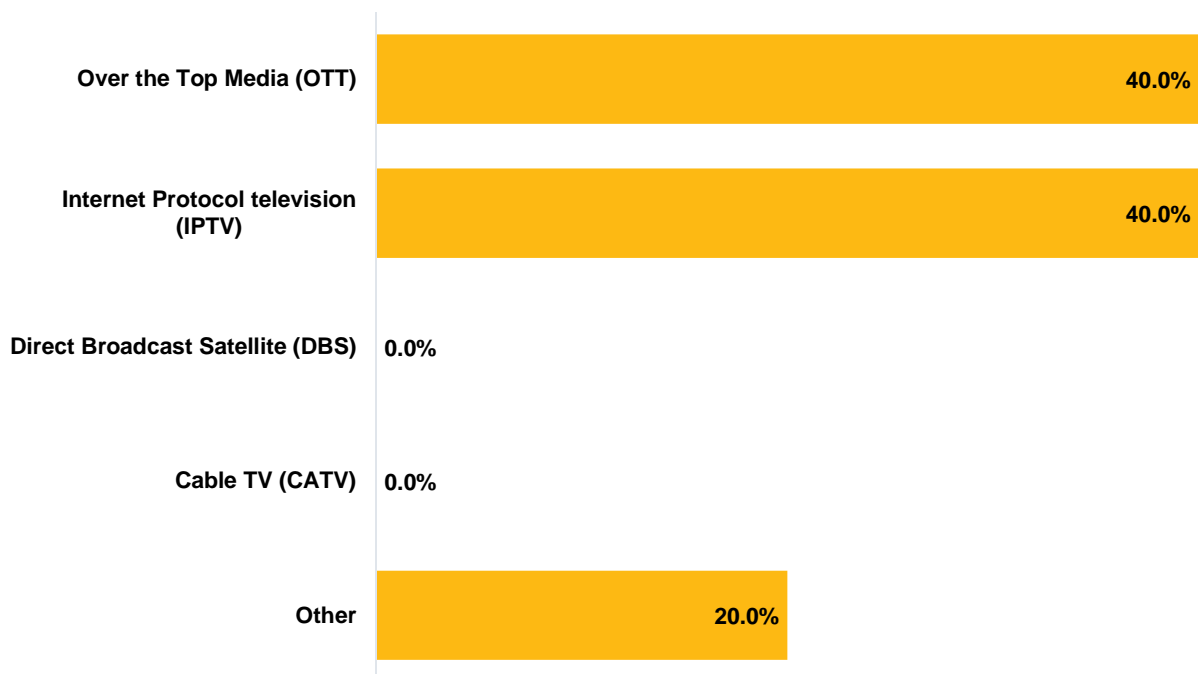
Plans to Offer Video Service if Not Currently Offered



Source: 2018 NTCA–Broadband/Internet Availability Survey

- The vast majority of companies that do not currently offer video service have no plans to do so in the foreseeable future (90.0%), compared with 86.5% in 2016.

Types of Video Services Planned for the Future



Source: 2018 NTCA–Broadband/Internet Availability Survey

- Of those that do not currently offer video services but have plans to do so in the future, Internet Protocol television (IPTV) and Over the Top Media (OTT) are planned at the same rate (40.0%). This is different from 2016, when 77.8% of those not offering video services planned to offer IPTV and 22.2% planned to offer cable TV (CATV).

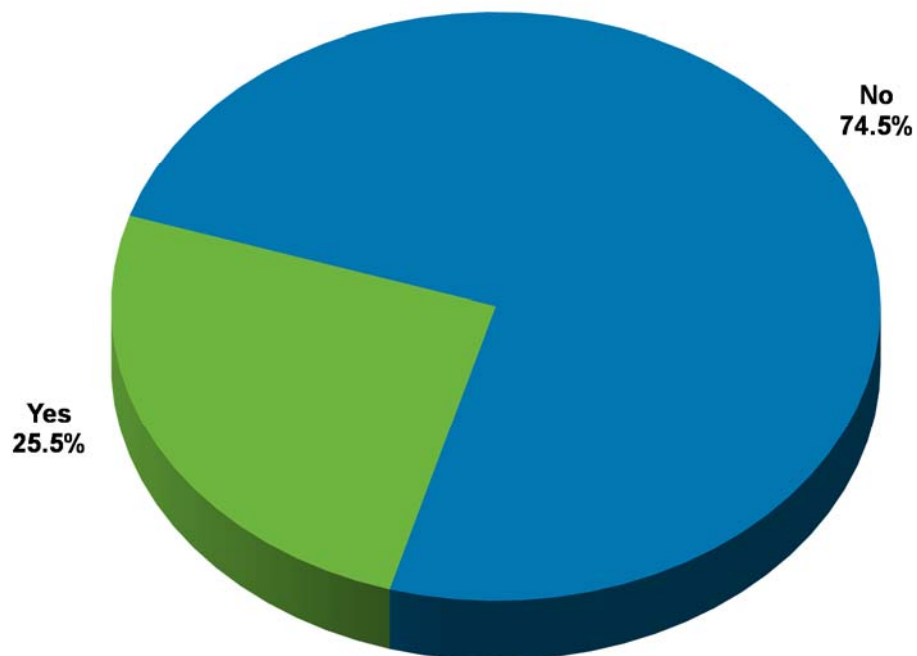
Entertainment Television Packages and Linear Channels Offered

	Mean
Number of "tiers" or entertainment television packages offered	3
Number of linear (i.e., nonvideo on demand) channels offered	194

Source: 2018 NTCA-Broadband/Internet Availability Survey

- Companies offer an average of three "tiers" or entertainment televisions packages and an average of 194 linear (i.e., nonvideo on demand) channels.

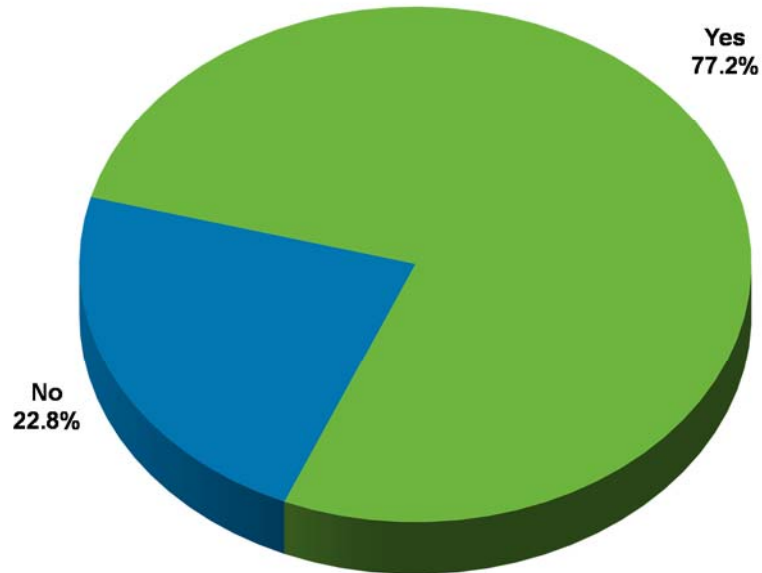
Offer Video on Demand (VOD)



Source: 2018 NTCA-Broadband/Internet Availability Survey

- Most respondents do not offer video on demand (VOD) (74.5%).

Customers Are Able to Watch Programming on Multiple Devices, Both Inside and Outside Homes

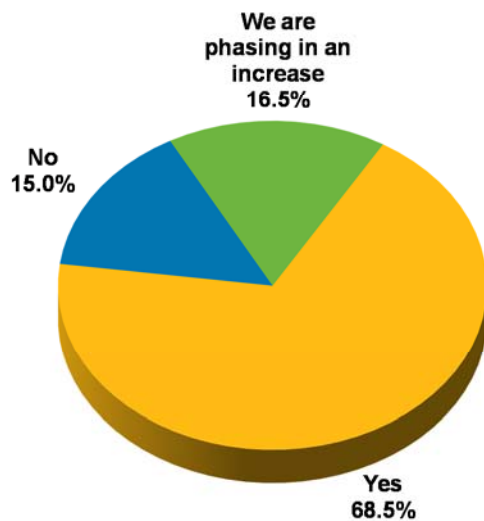


Source: 2018 NTCA-Broadband/Internet Availability Survey

- More than three-quarters of companies (77.2%) indicate that their customers are able to watch programming on multiple devices, both inside and outside their homes (e.g., “TV everywhere”). This is nearly unchanged from 2016 (77.8%).

Retransmission Consent Fees

Total Retransmission Fee Increase Passed on to Video Subscribers

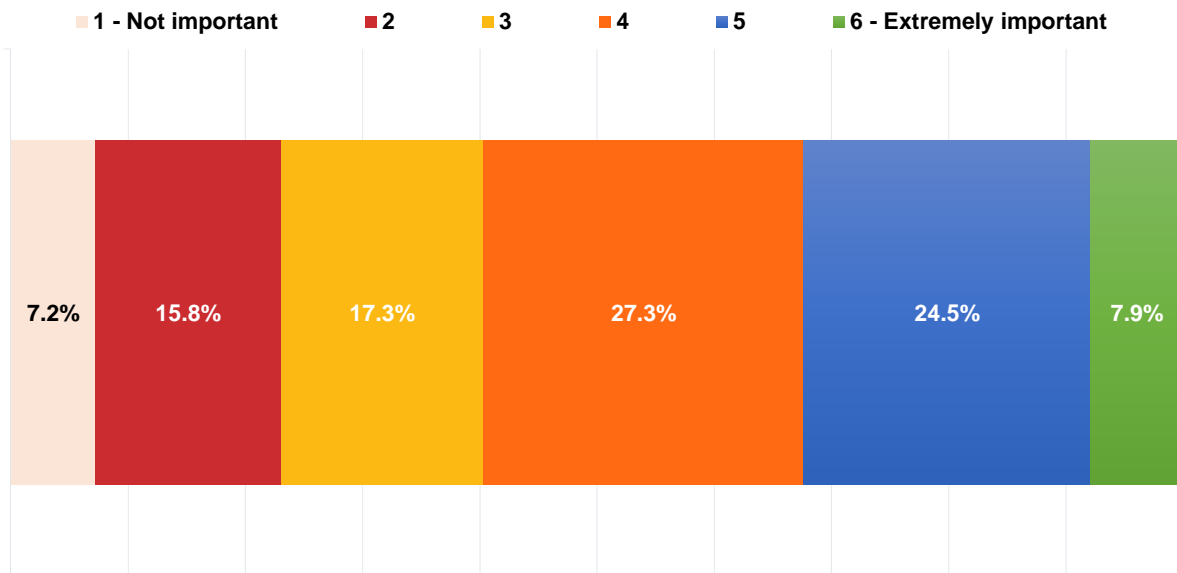


	Mean
Percentage of total operating expenditures go toward retransmission consent fees	33.6%
In total dollars, amount retransmission consent fees increased in the last negotiating cycle	\$43,855

Source: 2018 NTCA-Broadband/Internet Availability Survey

- Most companies (68.5%) pass this fee increase on to their subscribers, while an additional 16.5% are phasing in an increase.

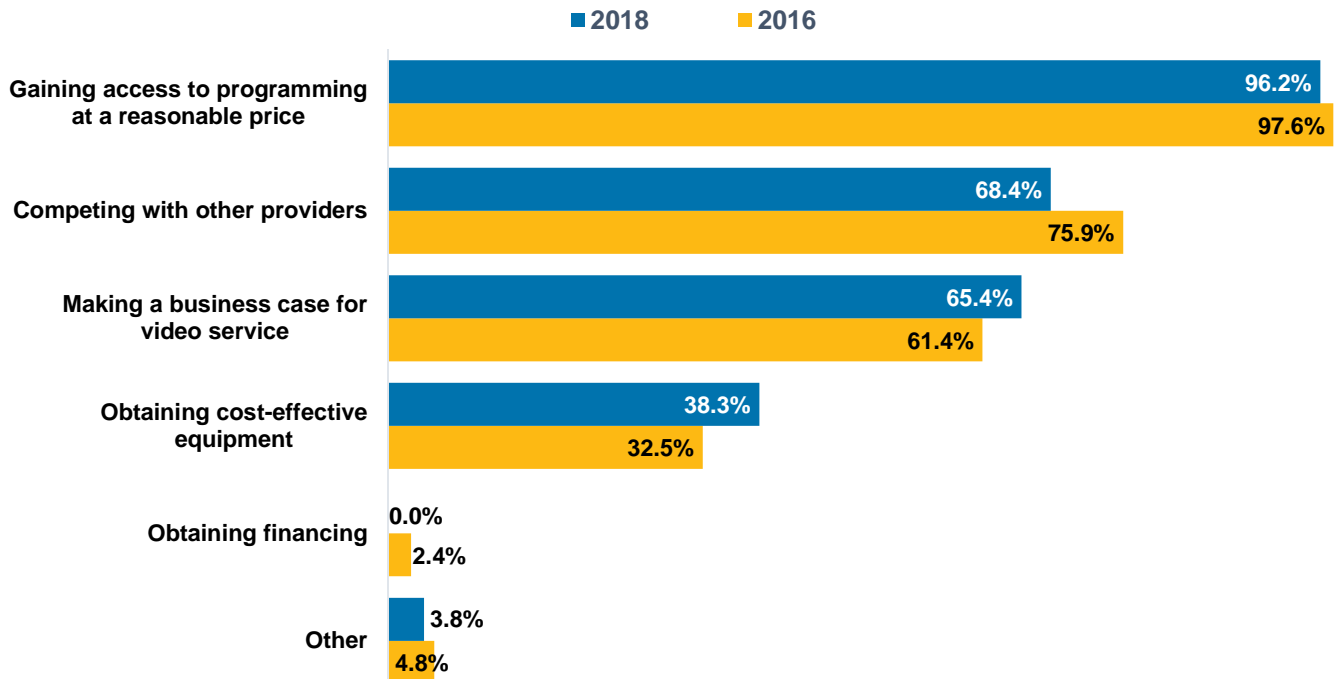
Importance of Offering Video to Customers



Source: 2018 NTCA–Broadband/Internet Availability Survey

- As broadband adoption has increased, 32.4% indicate that, on a scale of 1-6, where 1 is not important and 6 is extremely important, the importance of having a video offering for customers is rated as a “5” or a “6.”

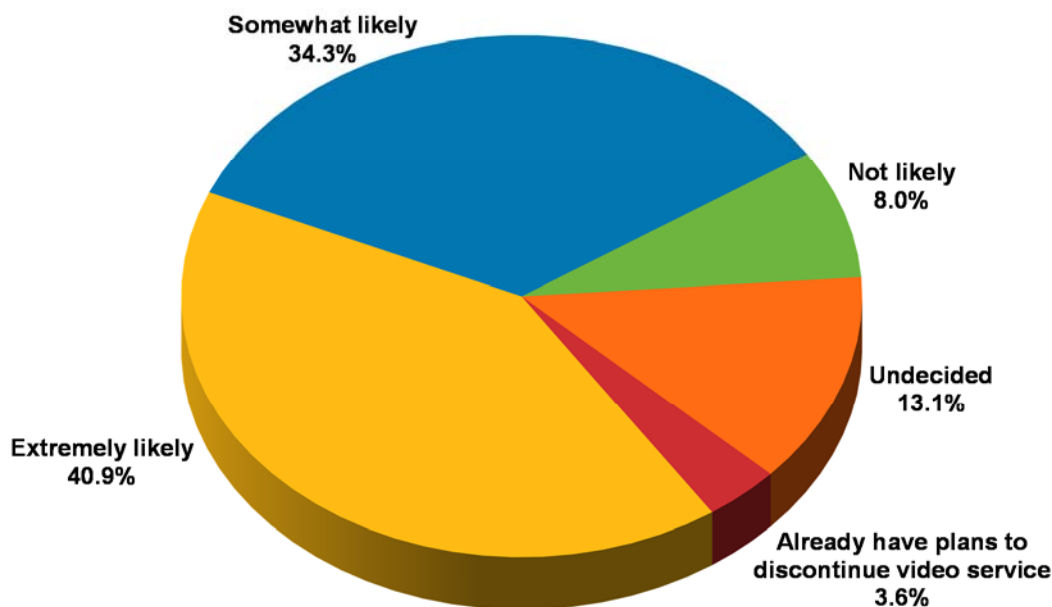
Barriers to Providing Video Service



Source: 2018 NTCA–Broadband/Internet Availability Survey

- Companies’ largest barrier to providing video service is gaining access to programming at a reasonable price (96.2%, similar to 97.6% in 2016). More than six in 10 indicate that competing with other providers (68.4%, down from 75.9% in 2016) and making a business case for video service (65.4%, up from 61.4% in 2016) are also barriers they face.

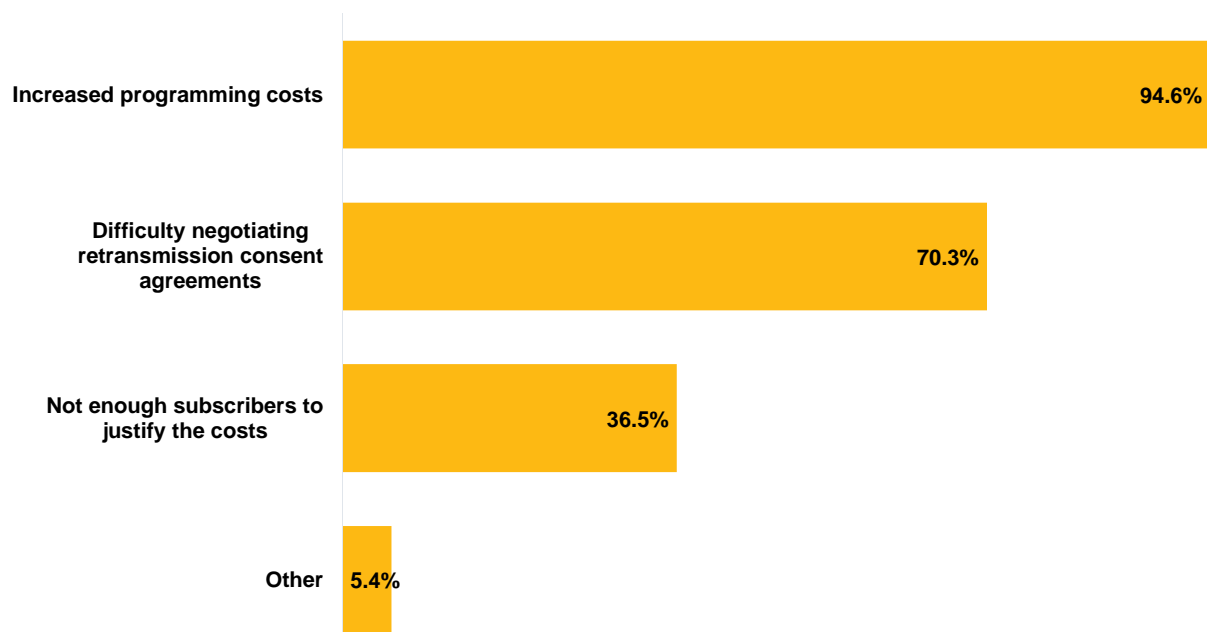
Likelihood of Continuing to Offer Video Services



Source: 2018 NTCA–Broadband/Internet Availability Survey

- More than one-third of companies (40.9%) say it is extremely likely they will continue to offer video services for the foreseeable future, while 34.3% say it is somewhat likely they will continue to do so.

Reasons for Discontinuing Video Service



Source: 2018 NTCA–Broadband/Internet Availability Survey

- The main reason respondents cite for considering discontinuing video service is increased programming costs (94.6%). Seven in 10 (70.3%) attribute this decision to difficulty negotiating retransmission consent agreements, and about one-third (36.5%) note not having enough subscribers to justify the costs.

CONCLUSIONS

- **Technology has brought about vast changes for rural consumers in the past few years.** NTCA members have made great strides in driving both higher speed deployment and adoption of broadband services in rural areas. NTCA members have taken substantial steps to replace aging copper in networks, with fiber to the home deployment up from 41.3% in 2016 to 58% of customers served in the most recent survey. In turn, broadband speeds made available by NTCA members have increased, with more than 70% of respondents' customers having access to 25 Mbps or higher broadband, including more than 57% with access to speeds of 100 Mbps or greater. The recent survey results similarly demonstrate remarkable gains in rural adoption of better broadband services, with nearly 40% of respondents' customers purchasing broadband at 25 Mbps or higher speeds (up from 23.7% in the 2016 survey), including almost 16% of consumers now subscribing to services with speeds of 100 Mbps or greater.
- **For all of the efforts of NTCA members, however, much work remains to be done to advance and sustain broadband in rural America.** Despite the progress described above, a substantial portion (nearly 30%) of the rural population served by survey respondents remains without access to 25 Mbps broadband service. Similarly, although NTCA members have sustained their efforts to replace aging copper in networks with fiber facilities as noted above, nearly 28% of respondents' customers continue to be served via copper-only loops. Regulatory and economic concerns are cited as challenges in reaching those remaining customers, with survey respondents indicating that it would cost on average nearly \$28 million to bring all customers up to 25 Mbps downstream speeds. Finally, even as the recent survey results demonstrate gains in adoption of higher speed services, nearly one-third of respondents' customers still subscribe to broadband with speeds of less than 10 Mbps.
- **NTCA members provide critically important broadband service to the vast majority of anchor institutions in their communities.** Respondents provide fixed broadband service to all of the hospitals, public libraries and community colleges located within their communities. They also provide fixed broadband service to nearly all primary/secondary schools and public safety entities (police, fire department, etc.) in their communities. These are critical lifelines for residents of their community and benefit the overall health and well-being of residents.
- **For mobile data services, competition is the primary challenge, followed closely by equipment costs and regulatory uncertainty.** Member companies face a number of challenges in offering a mobile broadband data service, with the primary one being competition (68.6%). Other significant challenges include equipment costs (60.8%) and regulatory uncertainty (54.9%). Consequently, just 12.8% of respondents are considering participating in future mobile broadband data spectrum auctions.
- **Respondents have had to find more effective marketing strategies than price promotions.** Nearly three-quarters of respondents have used price promotions to attract new subscribers. However, 85.0% indicate that their competition has used this strategy as well and they have been unable to match their competitors' price. Instead, member companies have found offering bundled services and not charging a separate fee for customer premises equipment installation to be their most effective marketing steps.

- **Video is becoming increasingly important, yet companies face significant barriers in offering video service to their customers.** Nearly one-third of respondents indicate that it is important to offer video service. However, nearly all respondents point to programming costs as a barrier they face in providing this service; similarly, those who are considering discontinuing video service mainly attribute this decision to increased programming costs (nearly three-quarters say it is due to difficulty in negotiating retransmission consent agreements).