



NTCA 2016 WIRELESS SURVEY REPORT

January 2017

DISCLAIMER: Data from the survey has been presented as reported.

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EXECUTIVE SUMMARY

In the fall of 2016 NTCA–The Rural Broadband Association surveyed its members on their activities in the area of spectrum holdings and/or provision of wireless services to their customers. The survey was sent to each of the companies in NTCA’s membership database; 102 members (17%) responded.¹

Fifty percent of survey respondents are currently providing wireless service to their customers.² They hold a variety of wireless licenses, including 3650–3700 MHz, lower 700 MHz, 800 MHz cellular, and advanced wireless service (AWS). Eighty-nine percent of respondents use spectrum to offer fixed broadband, 41% fixed voice, 39% mobile broadband, and 36% mobile voice. Seventeen percent of survey respondents not currently offering wireless service are considering doing so.

The median total (cumulative) investment in wireless facilities, excluding spectrum, is \$1.2 million; median total (cumulative) investment in spectrum totaled \$65 thousand.

Sixty-one percent of survey respondents characterized the process of obtaining financing for wireless projects as “somewhat difficult” or “very difficult;” 35% characterized the process as “relatively easy” or “very easy.”

Forty-three percent of respondents are utilizing unlicensed spectrum to provide some wireless services, despite interference and line of sight problems.

Sixty-three percent of all respondents indicated that competition from nationwide carriers was their greatest concern, 63% selected the ability to make necessary investments to be able to offer the latest services, 45% the ability to obtain spectrum at auction, 35% backhaul capacity/cost, 33% handset/equipment availability, and 28% the ability to negotiate roaming agreements with national carriers.³

Sixty-seven percent of survey respondents categorized their experience in negotiating data roaming and in-market roaming agreements with other carriers as moderately to extremely difficult.

Forty percent of those respondents that have a reciprocal roaming agreement with another carrier indicated that they pay about as much as they themselves are paid, while 60% pay more and none pay less.

¹ Many NTCA member companies also have operating companies that are included in the Association’s total member count. This survey was sent to the parent companies only.

² Includes respondents utilizing unlicensed spectrum to provide wireless service.

³ Totals exceed 100% as respondents were allowed to select more than one concern.

Eight percent of those survey respondents offering wireless resell another carrier's service under their own brand, and 25% do so under a national brand. Seventy-three percent sell service for which they own spectrum under their own brand, and none do so under a national brand. Sixty-seven percent find it difficult to compete with promotions offered by the national carriers.

One hundred percent of those respondents providing wireless service offer their wireless customers voice mail, and 91% offer handset promotions. Ninety-one percent offer text messaging, 91% Internet access, 91% family plans, 82% unlimited local calling, 82% email, 82% caller ID, and 82% three-way calling. Sixty-four percent of survey respondents experience annual customer churn of less than 10%, while 36% reported annual churn of between 10% and 25%. These figures are well below the FCC's reported industry annual average of 24%.

INTRODUCTION

In the fall of 2016, NTCA–The Rural Broadband Association surveyed its members on their activities in the areas of providing wireless services to their members/customers. NTCA is a national association of more than 800 local exchange carriers in 44 states that provide service primarily in rural areas.

All NTCA members are small carriers that are “rural telephone companies” as defined in the Communications Act of 1934, as amended. Despite their small size, NTCA members deliver high-quality communications services in the most sparsely-populated, highest-cost rural areas of the country, in the face of substantial economic challenges. NTCA’s membership includes both cooperatives and small commercial companies.

This latest wireless survey is a follow-up to a similar survey last conducted by NTCA in 2015, and seeks to build upon the results of that survey.⁴

OVERVIEW OF SURVEY

The 2016 NTCA Wireless Survey was conducted online. Member companies were provided with a URL through which they could access the survey. Every effort was made to minimize the reporting burden on the survey respondents.

The survey itself was organized into two sections. The first section was comprised of general questions about the respondent’s current operations and future plans. The second section, which applied only to those respondents providing CMRS services to their customers, asked more specific questions about technology, customers, revenues, features offered, and capabilities.

SURVEY RESULTS

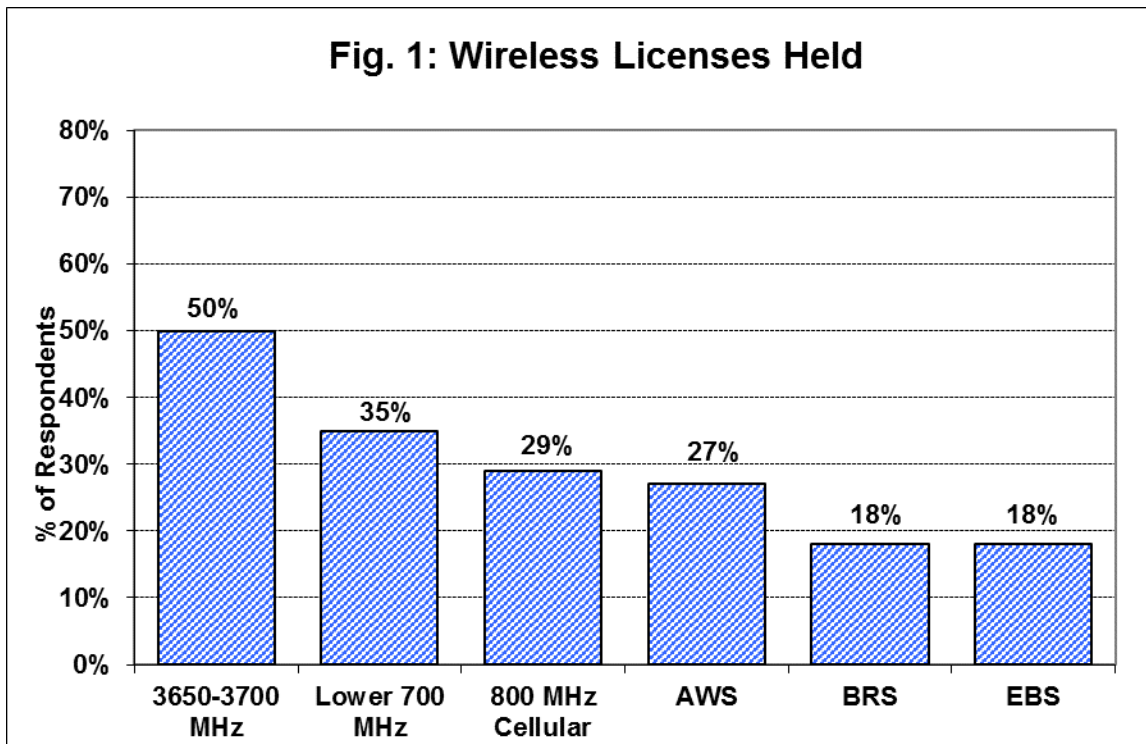
The survey URL was distributed via email to all of the NTCA member companies in NTCA’s database. The messages contained instructions for online access to the survey. Responses were received from 102 member companies, a 17% response rate.⁵

⁴ Copies of this and previous NTCA survey reports may be downloaded from the NTCA website, www.ntca.org.

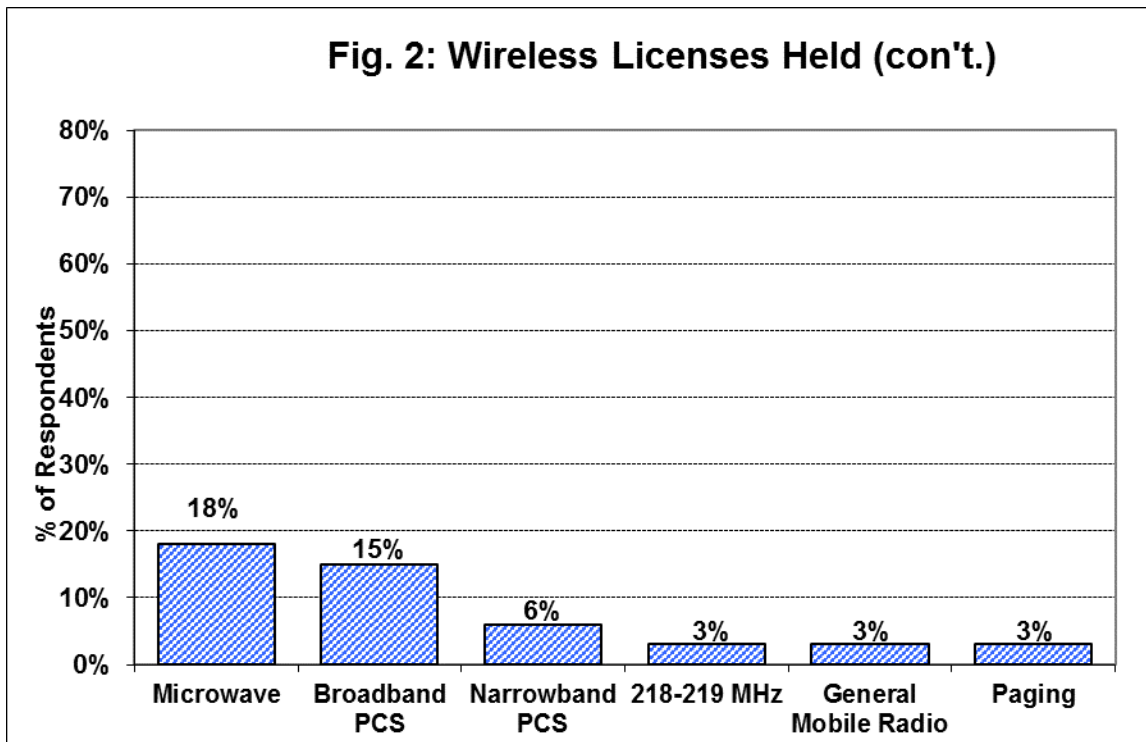
⁵ Many NTCA member companies also have operating companies that are included in the Association’s total member count. This survey was sent to the parent companies only. Response rate is calculated based on the number of verified email addresses in NTCA’s member database. Based on the sample size, results of this survey can be assumed to be accurate to within $\pm 9\%$ at the 95% confidence level.

Survey responses were received from companies in 28 states. While those respondents providing wireless services range in size from approximately 40 wireless customers to 20,000, the median respondent served just over 4,800 wireless customers. This heterogeneity in size and geographic location mirrors that of NTCA’s membership as a whole.

Of the 50% of survey respondents that currently provide wireless service, 50% hold a 3650–3700 MHz radio service license. Thirty-five percent hold a lower 700 MHz license, 29% an 800 MHz cellular service license, 27% an advanced wireless service (AWS) license, 18% a broadband radio service (BRS) license, 18% an Educational Broadband Service (EBS) license, 18% a microwave services license, 15% a broadband PCS license, 6% a narrowband PCS license, 3% a 218–219 MHz radio service license, 3% a general mobile radio license, and 3% a paging license. (See Figs. 1 and 2.)



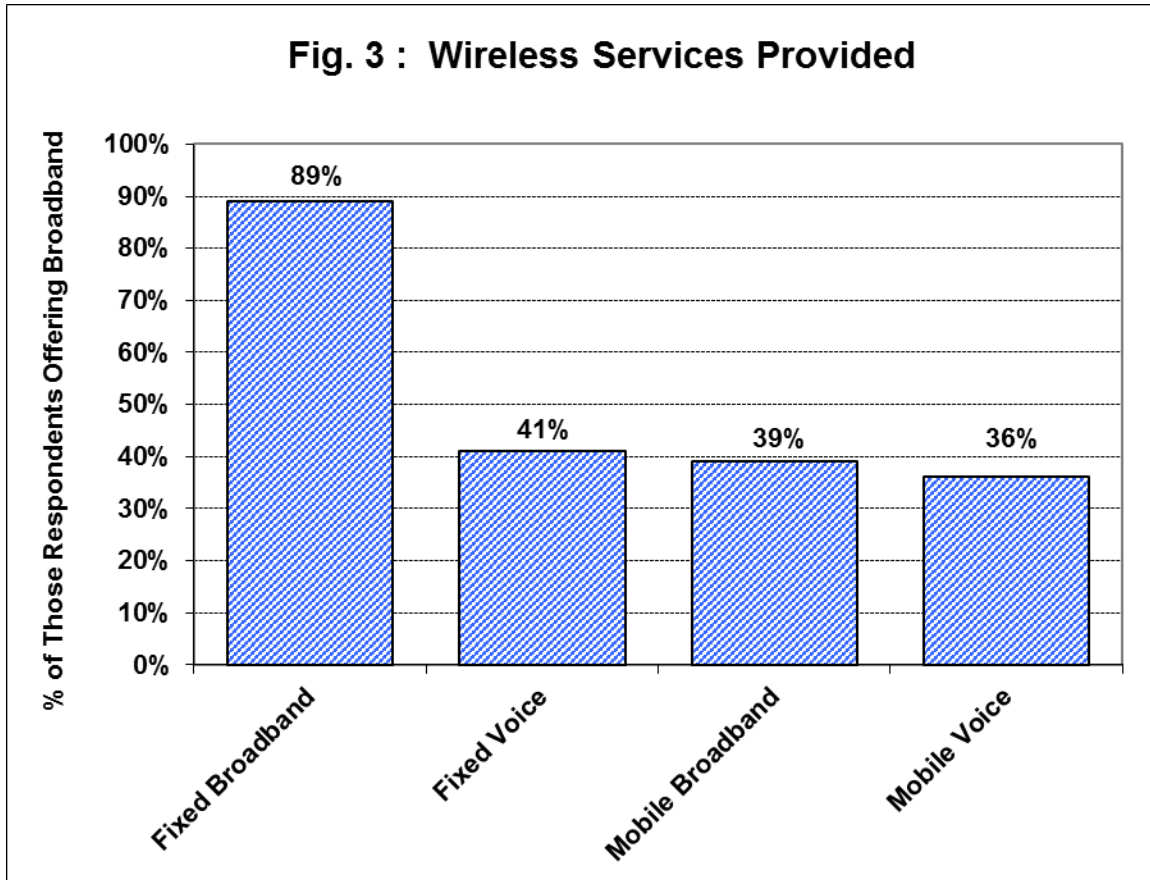
Note: Totals exceed 100% as carriers may hold more than one wireless license.



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Thirty-nine percent of survey respondents indicated that they use wireless spectrum for backhaul. Of those, 54% use licensed spectrum (down from 61% in 2015), while 46% use unlicensed spectrum (up from 39%.) Forty-seven percent said that their wireless spectrum currently used for backhaul will not be adequate to meet their forecasted future needs. Seventy-three percent of survey respondents indicated that 100% of their existing sites deployed today are currently IP backhaul ready, up from 62% a year ago.

Fifty percent of survey respondents are offering some type of wireless services to their customers.⁶ Of those, eighty-nine percent offer fixed broadband (up slightly from 87% a year ago), 41% fixed voice (up from 28%), 39% mobile broadband (40% last year), and 36% mobile voice (down from 42%). (See Fig. 3.)

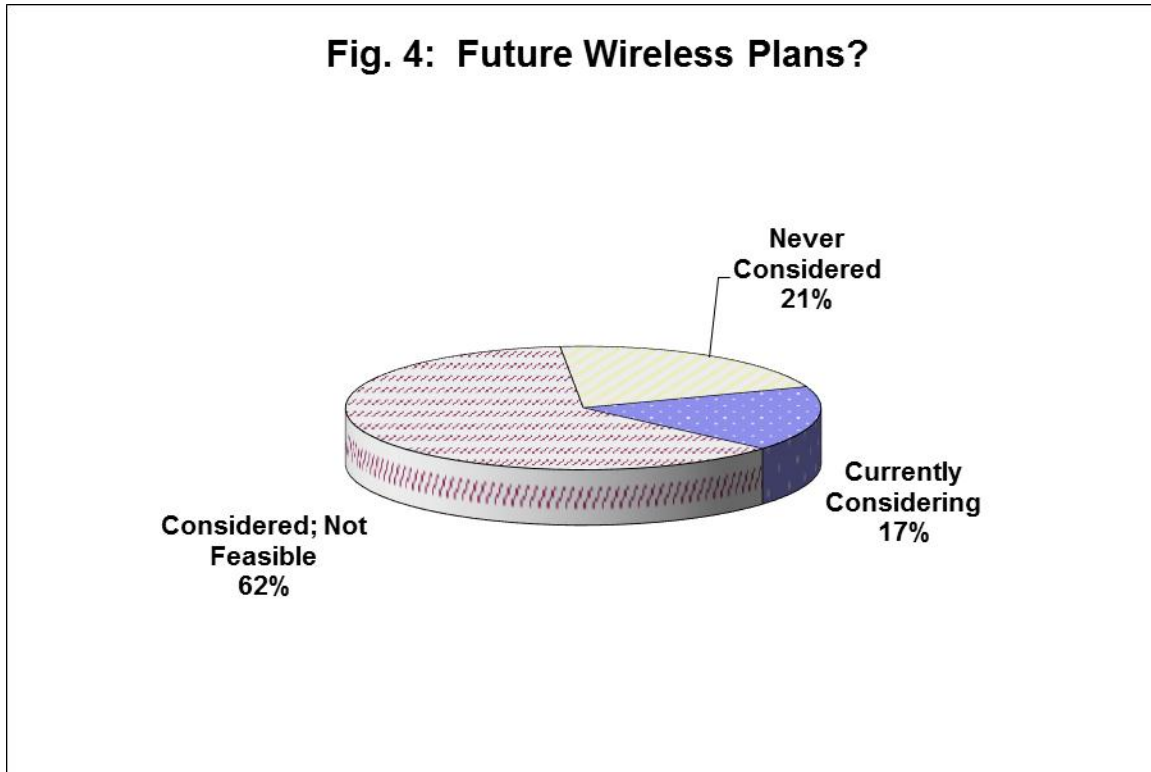


Note: Totals exceed 100% as carriers may provide more than one wireless service.

Thirty-six percent of survey respondents currently offer their customers text-to-911 service, up from 12% last year.

⁶ Includes respondents utilizing unlicensed spectrum to provide wireless service.

Seventeen percent of the respondents not currently offering wireless service indicated they are considering doing so (up from 16% in 2015.) Sixty-two percent have previously considered offering wireless service and deemed it not feasible (down from 69%), while 21% have never considered wireless (up from 15%.) (See Fig. 4.)

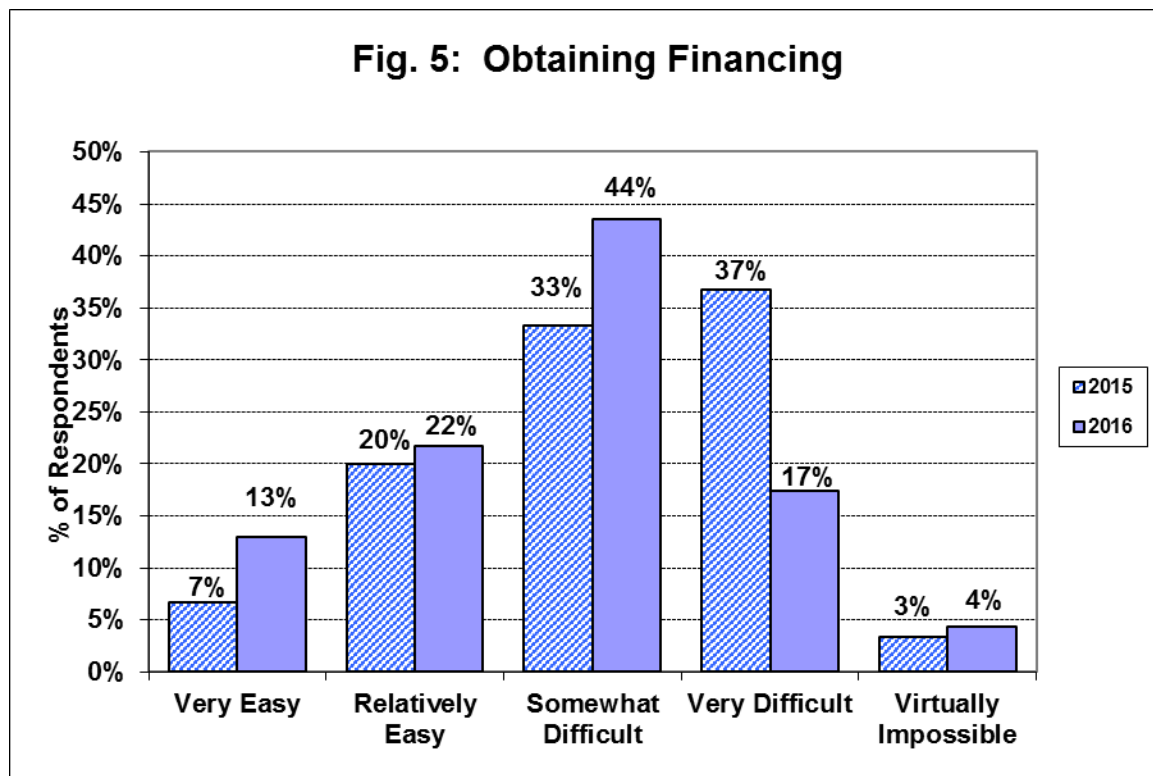


Survey respondents indicated that they have invested considerable resources in wireless. For those companies investing in wireless, the median total (cumulative) investment in wireless facilities, excluding spectrum, was \$1.2 million, ranging from a high of \$60 million to a low of \$20,000. The average investment was \$8.3 million. Median total (cumulative) investment in spectrum totaled \$65 thousand, and the average was \$941 thousand. Median annual wireless revenues were \$9.8 million, and the average was \$10.1 million. Revenues have increased over the past five years for two-thirds of respondents.

Survey respondents serve an average of 6,750 wireless subscribers with an average of 60 cell sites. (A few larger respondents skew these numbers upwards, however: the median number of wireless subscribers is 4,800 and the median number of cell sites is 55.) The average customer’s monthly wireless bill is between \$60 and \$70, and the typical customer uses just over 600 minutes monthly. Sixty-seven percent of responding

companies find it difficult to compete with promotions—such as free long-distance or free/reduced price handsets—being offered by the national carriers.

Survey respondents continue to find obtaining financing for wireless projects to be challenging. While approximately the same percentage of respondents classified the process as “relatively easy” as in the 2015 survey (22% in 2016 vs. 20% in 2015) many more found the process “somewhat difficult” (44% vs. 33%) in 2016 than in 2015. Fewer respondents classified the process as “very difficult” in 2016 as in 2015, 17% vs. 37%. (See Fig. 5.)



Survey respondents utilize a variety of means of funding their wireless operations. Eighty-seven percent reinvest company earnings, 47% utilize grants or loans, 21% receive high-cost USF support, and 3% use individual investors or general funds.⁷

Of those survey respondents involved in spectrum-related transactions, 41% indicated that they had relinquished spectrum in the preceding 12 month period, while 30% acquired spectrum. Thirty-seven percent entered into negotiations for the acquisition of

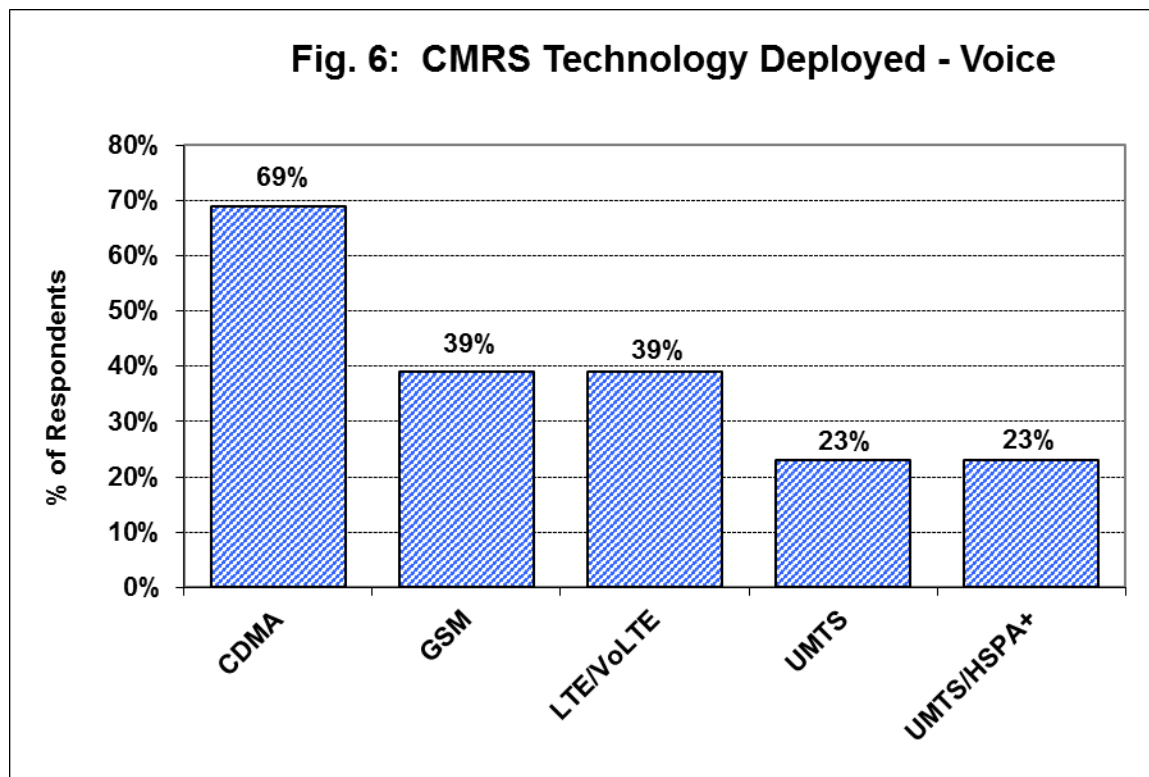
⁷ Totals exceed 100% as respondents may utilize more than one source of financing.

spectrum, and 30% made arrangements for the utilization of previously-acquired spectrum.

Forty-two percent of survey respondents are looking to provide wireless service to both their wireline service area and neighboring territories; 40% seek to serve neighboring territories only; and 19% their own wireline service territory only.

Forty-three percent of survey respondents are utilizing unlicensed spectrum to provide wireless services to their customers. Among the services identified are fixed broadband and backhaul. Sixty-eight percent of those respondents using unlicensed wireless spectrum indicated that they had experienced difficulties doing so, mainly interference and line-of-sight problems.

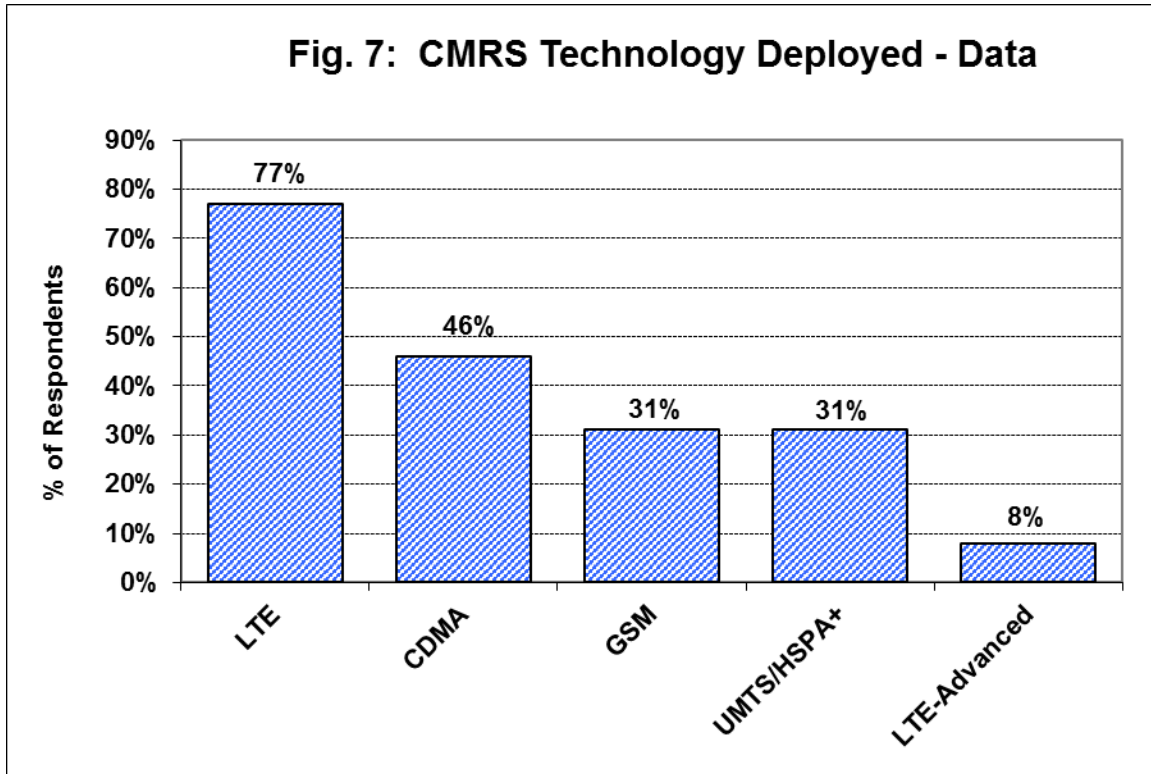
Asked which wireless CMRS technologies their company has deployed for voice, 69% percent of survey respondents indicated CDMA service (up from 55% in 2015), 39% GSM, 39% LTE/Voice Over LTE (VoLTE), 23% UMTS, and 23% UMTS/HSPA+. ⁸ (See Fig. 6.)



Note: Totals exceed 100% as respondents were allowed to select more than one technology.

⁸ Totals exceed 100% as respondents may have deployed more than one wireless CMRS technology.

Seventy-seven percent of respondents have deployed with LTE for data, while 46% have deployed CDMA, 31% GSM, 31% UMTS/HSPA+ and 8% LTE-Advanced. (See Fig. 7.)⁹



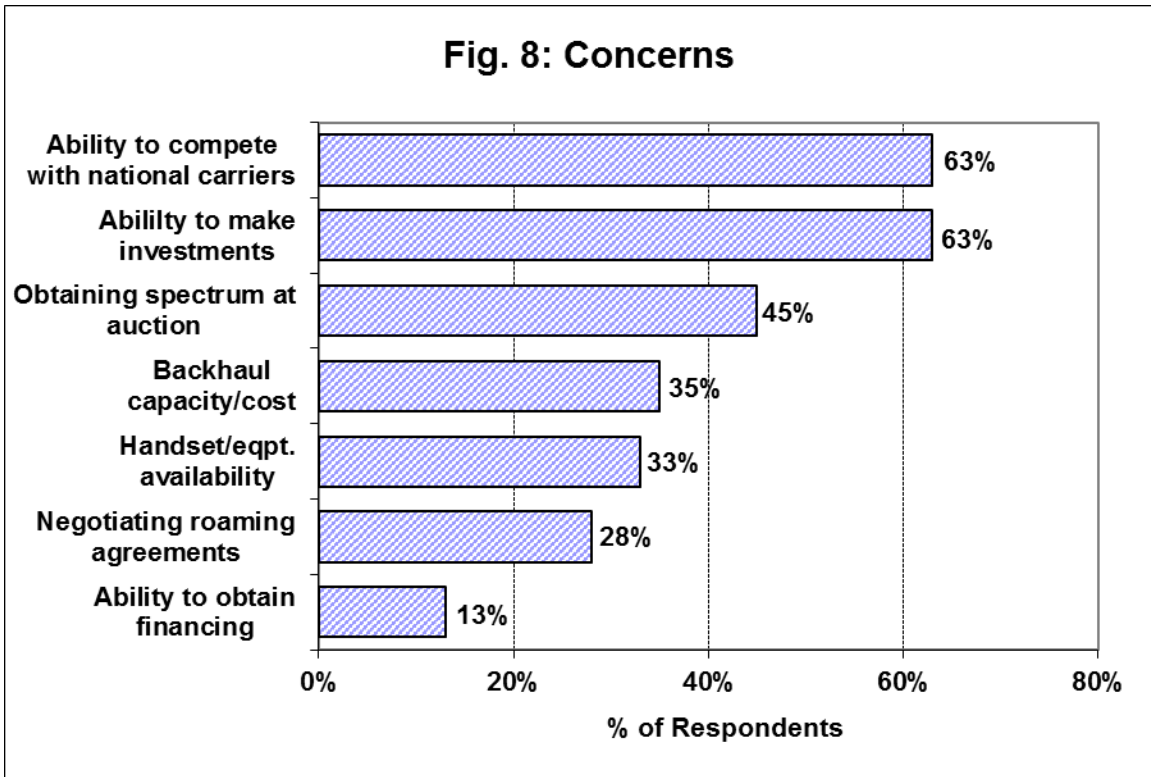
Note: Totals exceed 100% as respondents were allowed to select more than one technology.

Eighty-two percent of those survey respondents currently offering wireless indicated that they had plans to deploy next generation technology. Of those, 66% plan to deploy in the next 1–2 years.

The majority of those survey respondents that have plans to deploy next generation technology said that they would be deploying VoLTE.

A number of concerns, however, threaten survey respondents' future plans. Sixty-three percent indicated that they were concerned about their ability to compete with national carriers, down from 76% in 2015. Sixty-three percent also cited their ability to make necessary investments to be able to offer the latest services (versus 55% in 2015), 45% the ability to obtain spectrum at auction (42% in 2015), 35% backhaul capacity/cost (34% in 2015), 33% handset/equipment availability (42% in 2015), 28% their ability to negotiate roaming agreements with national carriers (39% in 2015), and 13% their ability to obtain financing for wireless projects (21% in 2015). (See Fig. 8.)

⁹ *Ibid.*



Note: Totals exceed 100% as respondents were allowed to select more than one concern.

“Other” concerns include the ability to retain spectrum, speed issues and the ongoing viability of universal service support.

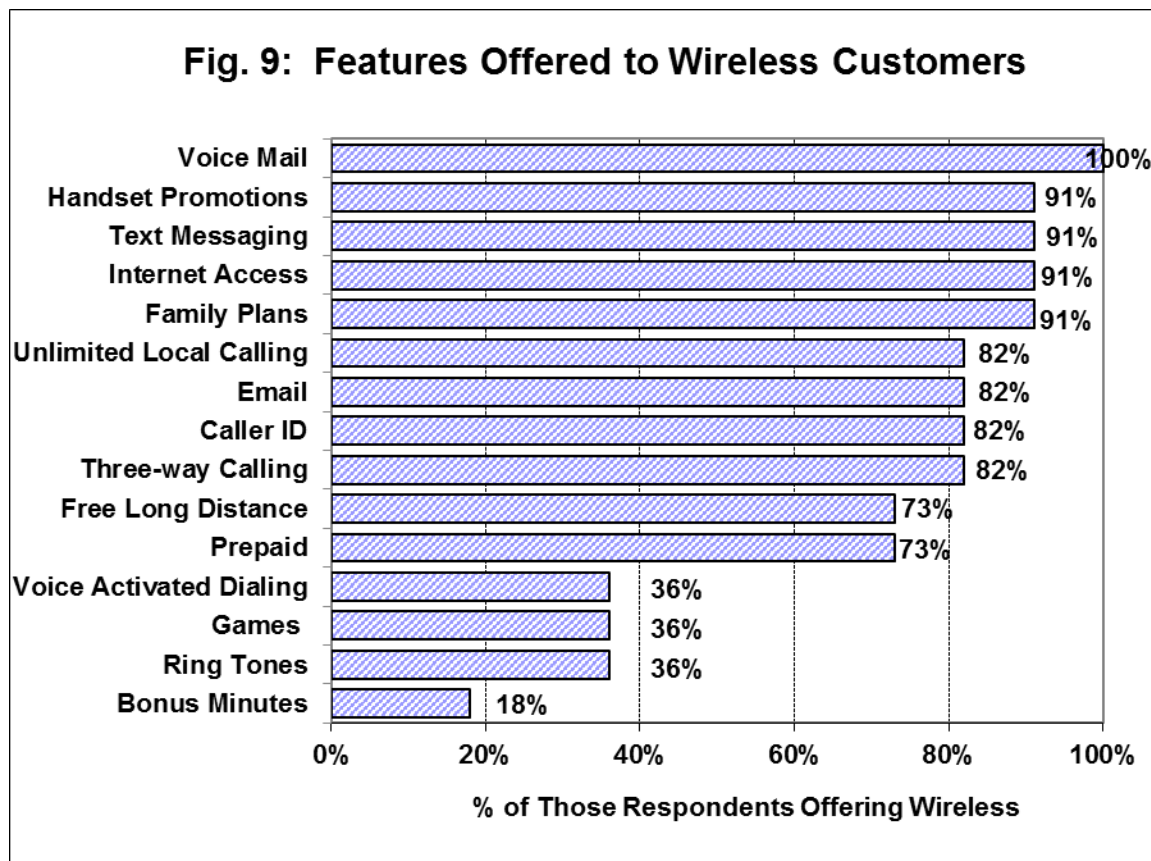
Asked to categorize their experience in negotiating data roaming and in-market roaming agreements with other carriers, 67% categorized it as moderately to extremely difficult (up from 60% in 2015.) Twenty-two percent categorized the experience as moderately to relatively easy and 11% as extremely easy.

Of those respondents that have a reciprocal roaming agreement with another carrier, 40% indicated that they pay about as much on a per minute basis as they themselves are paid (virtually unchanged from 39% in 2015.) Sixty percent pay more on a per-minute basis, while none pay less.

One hundred percent of survey respondents indicated they are facing competition from other carriers. However, 8% indicated that these competitors serve only a small portion of the respondent’s service area. Thirty-three percent of respondents have at one time been hindered in their ability to provide wireless service by the actions of a national wireless carrier.

Eight percent of survey respondents resell another carrier’s service under their own brand, while 25% do so under a national brand. Seventy-three percent sell service for which they own spectrum under their own brand, and none do so under a national brand. Sixty-two percent have at one time entered into a joint venture with another wireless carrier.

Survey respondents offer myriad features to their wireless customers. One hundred percent of respondents offer voice mail, 91% offer handset promotions (such as free/reduced price, short/no contract, reduced upgrade cycle, etc.), 91% text messaging, 91% internet access, 91% family plans, 82% unlimited local calling, 82% email, 82% caller ID, 82% three-way calling, 73% free long distance, and 73% prepaid. (See Fig. 9.)



Note: Totals exceed 100% as respondents may provide more than one wireless feature.

Respondents indicated considerable customer loyalty. Sixty-four percent of survey respondents experience annual customer churn of less than 10%, while 36% reported annual churn of between 10% and 25%. Nine percent of respondents reported no

customer churn. This compares favorably to the FCC's most recently cited estimate of industry wide average churn rate of 23.6% annually.¹⁰

Twenty-five percent of survey respondents indicated that wireless customers left due to lower prices from another carrier (down from 29% in 2015), 17% due to handset availability (down from 21%), 17% due to additional services available from another provider (down from 21%), and 8% due to the ability to bundle services with another provider.

CONCLUSIONS

While fewer survey respondents are concerned with competing with larger carriers, more are finding it difficult to make necessary investments. Sixty-three percent of respondents to the 2016 survey cited the ability to compete with larger carriers as a significant concern, compared with 76% in 2015 and 73% in 2014. At the same time, 63% of the 2016 respondents cited their ability to make necessary investments as a concern, versus 55% in 2015 and 54% in 2014. Ongoing investment is critical to maintaining and modernizing wireless networks; survey respondents will need to find ways to do so.

Negotiating roaming agreements remains challenging for survey respondents. Sixty percent of respondent to the current survey said that they pay more for their customers to roam on other carriers' networks than they themselves are paid, up from 50% in 2015. Lacking negotiating leverage due to their size, small carriers will continue to face these challenges absent policies that help level the playing field.

Despite its inherent limitations, unlicensed spectrum remains an important means for survey respondents to provide service. While 43% of survey respondents indicated that they utilize unlicensed spectrum to help them serve their customers, 68% of those said that they face difficulties in doing so, mainly interference and line-of-sight problems. The fact that so many respondents turn to unlicensed spectrum despite these limitations highlights the need for policies that make licensed spectrum available to small carriers at reasonable prices.

Considerably more survey respondents are offering text-to-911 service. More than a third—36%—of respondents to this year's survey indicated they provide the service, compared with 12% in 2015 and 10% in 2014. This has important implications for public safety in survey respondents' service areas.

¹⁰ Federal Communications Commission, *Nineteenth Annual Report and Analysis of Competitive Market Conditions With Respect to Commercial Mobile Services*, WT Docket No. 16-137, rel. September 23, 2016, p. 13.