

SHENANDOAH TELECOMMUNICATIONS CO/VA/
Form 10-K
February 28, 2019

UNITED STATES OF AMERICA
SECURITIES AND EXCHANGE COMMISSION
Washington, D. C. 20549
FORM 10-K

(Mark One)

ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934

For the fiscal year ended December 31, 2018

TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934

For the transition period from _____ to _____

Commission File No.: 000-09881

SHENANDOAH TELECOMMUNICATIONS COMPANY

(Exact name of registrant as specified in its charter)

VIRGINIA

54-1162807

(State or other jurisdiction of incorporation or organization) (I.R.S. Employer Identification No.)

500 Shentel Way, Edinburg, Virginia 22824

(Address of principal executive offices) (Zip Code)

(540) 984-4141 (Registrant's telephone number, including area code)

SECURITIES REGISTERED PURSUANT TO SECTION 12(B) OF THE ACT:

Common Stock (No Par Value) NASDAQ Global Select Market

(Title of Class)

(Name of Exchange on which Registered)

SECURITIES REGISTERED PURSUANT TO SECTION 12(G) OF THE ACT: NONE

Indicate by check mark if the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act.

Yes No

Indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or Section 15(d) of the Exchange Act. Yes No

Note - Checking the box above will not relieve any registrant required to file reports pursuant to Section 13 or 15(d) of the Exchange Act from their obligations under those Sections.

Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days. Yes No

Indicate by check mark whether the registrant has submitted electronically and posted on its corporate Web site, if any, every Interactive Data File required to be submitted and posted pursuant to Rule 405 of Regulation S-T (§ 232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit and post such files). Yes No

Indicate by check mark if disclosure of delinquent filers pursuant to Item 405 of Regulation S-K (§ 229.405 of this chapter) is not contained herein, and will not be contained, to the best of registrant's knowledge, in definitive proxy or

information statements incorporated by reference in Part III of this Form 10-K or any amendment to this Form 10-K.

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, or a smaller reporting company. See the definitions of “large accelerated filer,” “accelerated filer” and “smaller reporting company” in Rule 12b-2 of the Exchange Act.

Non-accelerated filer Smaller reporting company Large accelerated filer Accelerated filer

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 13(a) of the Exchange Act.

Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Exchange Act).

Yes No

The aggregate market value of the registrant’s voting stock held by non-affiliates of the registrant at June 30, 2018 based on the closing price of such stock on the Nasdaq Global Select Market on such date was approximately \$1.6 billion.

The number of shares of the registrant’s common stock outstanding on February 22, 2019 was 49,830,871.

DOCUMENTS INCORPORATED BY REFERENCE

Portions of the registrant’s definitive proxy statement relating to its 2019 annual meeting of shareholders (the “2019 Proxy Statement”) are incorporated by reference into Part III of this Annual Report on Form 10-K where indicated. The 2019 Proxy Statement will be filed with the U.S. Securities and Exchange Commission within 120 days after the end of the fiscal year to which this report relates.

SHENANDOAH TELECOMMUNICATIONS COMPANY
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PART I

Some of the information contained in this report concerning the markets and industry in which we operate is derived from publicly available information and from industry sources. Although we believe that this publicly available information and the information provided by these industry sources are reliable, we have not independently verified the accuracy of any of this information.

Unless we indicate otherwise, references in this report to “we,” “us,” “our,” “Shentel” and “the Company” means Shenandoah Telecommunications Company and its subsidiaries.

ITEM 1. BUSINESS

Our Company

Shenandoah Telecommunications Company and its subsidiaries (collectively, the “Company”) provide wireless personal communications service (“PCS”) under the Sprint brands, and telephone service, cable television, unregulated communications equipment sales and services, and internet access under the Shentel brand. In addition, the Company operates an interstate fiber optic network and leases its owned cell site towers to both affiliates and non-affiliated third-party wireless service providers. The Company’s reportable segments include: Wireless, Cable, Wireline and Other. See Note 17, Segment Reporting, in our consolidated financial statements for further information.

Pursuant to an agreement with Sprint and its related parties (collectively, “Sprint”), the Company has been the exclusive Sprint PCS Affiliate providing wireless mobility communications network products and services on the 800 megahertz (MHz), 1900 MHz and 2.5 gigahertz (GHz) spectrum ranges in a multi-state area covering large portions of central and western Virginia, south-central Pennsylvania, West Virginia, and portions of Maryland, North Carolina, Kentucky, and Ohio. The Company is licensed to use the Sprint brand name in this territory, and operates its network under Sprint's radio spectrum licenses.

Description of Business

Wireless

Since 1995, the Wireless operations have provided personal communications services over a digital wireless telephone and data network through an agreement with Sprint. The Company currently provides service in a multi-state area covering large portions of central and western Virginia, south-central Pennsylvania, West Virginia, and portions of Maryland, North Carolina, Kentucky, and Ohio (“Sprint Affiliate Area”). The current Sprint Affiliate Area covers approximately 6.1 million POPS (“Covered POPS”). In the Sprint Affiliate Area, the Company is the exclusive provider of the Sprint-branded wireless services using the 800 MHz, 1900 MHz and 2.5 GHz spectrum ranges. The Company provided network service to 795,176 postpaid Sprint PCS subscribers at December 31, 2018, representing an increase of 8.0% compared with December 31, 2017. The Company provided service to 258,704 prepaid Sprint PCS subscribers at December 31, 2018, representing an increase of 14.6% compared to December 31, 2017. Of the Company’s total consolidated operating revenues, approximately 68% in 2018, 72% in 2017 and 69% in 2016 were generated by or through Sprint and its customers using the Company’s portion of Sprint’s nationwide network.

Sprint provides the Company significant support services, such as customer service, billing, collections, long distance, national network operations support, inventory logistics support, use of the Sprint brand names, national advertising, national distribution and product development.

The Company's wireless revenue is variable based on billed revenues to Sprint's customers in the Sprint Affiliate Area less applicable fees retained by Sprint. Sprint retains an 8% Management Fee and an 8.6% Net Service Fee on postpaid revenues and a 6% Management Fee on prepaid wireless revenues. The Company is also charged for the costs of subsidized handsets sold through Sprint's national channels as well as commissions paid by Sprint to third-party postpaid resellers in our service territory. Sprint also charges the Company separately to acquire and support prepaid customers. These charges are calculated based on Sprint's national averages for its prepaid programs, and are billed per user or per gross additional customer, as appropriate.

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Effective January 1, 2016, the Company amended its agreement with Sprint, and Sprint agreed to waive the Management Fees charged on both postpaid and prepaid revenues, up to approximately \$4.2 million per month, until the total amount waived reaches approximately \$255.6 million, which is expected to occur in 2022.

Cable

The Cable operations provide video, broadband and voice services to customers in franchise areas covering portions of Virginia, West Virginia, and western Maryland, and leases fiber optic facilities throughout its service area. Most of these markets served in the Cable operations are connected by a fiber network of 3,514 miles, which interconnects with the Wireline operations' 2,127 mile fiber network.

There were 135,145 cable revenue generating units at December 31, 2018, an increase of 1.5% compared with December 31, 2017. A revenue generating unit consists of each separate service (video, broadband and voice) subscribed to by a customer.

Wireline

The Wireline operations provide regulated and unregulated voice services, internet broadband, long distance access services, and leases fiber optic facilities throughout portions of Virginia, West Virginia, Maryland, and Pennsylvania. This fiber optic network connects to and supports the Company's Wireless operations. The Company leases fiber optic capacity from this network to third parties.

Wireline provided local telephone services to 19,131 customers, primarily in Virginia, as of December 31, 2018. The Wireline operations provide access for interexchange carriers to the local exchange network and switching for voice products offered through the Cable segment. Wireline has a 20 percent ownership interest in Valley Network Partnership ("ValleyNet"), which offers fiber network facility capacity to business customers and other telecommunications providers throughout portions of Virginia.

The Wireline operations also provided video services to 4,742 customers and broadband services to 14,464 customers through its own coaxial network, located in Shenandoah County, Virginia, as of December 31, 2018.

Other

Other provides investing and management services to the Company's subsidiaries.

Competition

The telecommunications industry is highly competitive. We compete primarily on the basis of the price, availability, reliability, variety and quality of our offerings and on the quality of our customer service. Our ability to compete effectively depends on our ability to maintain high-quality services at prices competitive with those charged by our competitors. In particular, price competition in the integrated telecommunications services markets generally has been intense and is expected to continue. Our competitors include, among others, larger providers such as AT&T Inc., Verizon Communications Inc., T-Mobile USA, Inc., U.S. Cellular Corp., CenturyLink, Inc., Frontier Communications Corp., DISH Network Corporation, DIRECTV, and various other smaller competitive service providers. Our primary competitors have substantially greater infrastructure, financial, personnel, technical, marketing and other resources, larger numbers of established customers and more prominent name recognition than the Company.

Competition is intense in the wireless communications industry. Competition has caused the market prices for wireless products and services to decrease. This has resulted in some carriers introducing pricing plans that are

structurally different and often more aggressively priced than in the past. Wireless providers are upgrading their wireless services to better accommodate real-time and downloadable audio and video content as well as Internet browsing capabilities and other services. Our ability to compete effectively will depend, in part, on our ability to anticipate and respond to various competitive factors affecting the wireless industry.

In our cable operations where we provide video services, we also compete in the provision of telephone and broadband services against the incumbent local telephone company. Incumbent local telephone carriers enjoy substantial competitive advantages arising from their historical monopoly position in the local telephone market, including pre-existing customer relationships with virtually all end-users.

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Competition is also intense and growing in the market for video services. Incumbent cable television companies, which have historically provided video service, face competition from direct broadcast satellite providers, on-line video services, such as NetFlix, Hulu, and Amazon, and from large wireline providers of telecommunications services (such as Verizon, CenturyLink, Frontier and AT&T) which have upgraded their networks to provide video services in addition to voice and broadband services. Our ability to compete effectively will depend, in part, on the extent to which our service offerings overlap with our competitors, and on our ability to anticipate and respond to the competitive forces affecting the market for video and other services.

A continuing trend toward consolidation, mergers, acquisitions and strategic alliances in the telecommunications industry could also increase the level of competition we face by further strengthening our competitors.

Regulation

Our operations are subject to regulation by the Federal Communications Commission (“FCC”), the Virginia State Corporation Commission (“VSCC”), the West Virginia Public Service Commission, the Maryland Public Service Commission, the Pennsylvania Public Utility Commission, the Kentucky Public Service Commission and other federal, state, and local governmental agencies. The laws governing these agencies, and the regulations and policies that they administer, are subject to constant review and revision, and some of these changes could have material impacts on our revenues and expenses.

Regulation of Wireless Operations

We operate our wireless business using radio spectrum made available by Sprint under the Sprint Management Agreement. Our wireless business is directly or indirectly subject to, or affected by, a number of regulations and requirements of the FCC and other governmental authorities that apply to providers of commercial mobile radio services (“CMRS”).

Interconnection. Federal law and FCC regulations impose certain obligations on CMRS providers to interconnect their networks with other telecommunications providers (either directly or indirectly) and to enter into interconnection agreements (“ICAs”) with certain types of telecommunications providers. Interconnection agreements typically are negotiated on a statewide basis and are subject to state approval. If an agreement cannot be reached, in certain cases parties to interconnection negotiations involving CMRS providers can submit unresolved issues to federal or state regulators for arbitration. In addition, FCC regulations previously required that local exchange carriers (“LECs”) and CMRS providers establish reciprocal compensation arrangements for the termination of traffic to one another. Disputes regarding intercarrier compensation can be brought in a number of forums (depending on the nature and jurisdiction of the dispute) including state public utility commissions (“PUCs”), FCC and the courts. The Company does not presently have any material interconnection or intercarrier compensation disputes with respect to its wireless operations.

On October 27, 2011, the FCC adopted a report and order which comprehensively reformed and modernized the agency’s intercarrier compensation (“ICC”) rules governing the telecommunications industry. Under the current FCC regime, since December 29, 2011, local traffic between CMRS providers and most LECs must be compensated pursuant to a default bill-and-keep framework if there was no pre-existing agreement between the CMRS provider and the LEC. A federal appeals court has affirmed the FCC’s report and order. Additionally, the FCC is considering a number of petitions for declaratory ruling and other proceedings regarding disputes among carriers relating to interconnection payment obligations. During 2017 the FCC initiated a further proceeding to consider whether additional changes to interconnection obligations are needed, including how and where companies interconnect their networks with the networks of other providers. Resolution of these proceedings and any additional FCC rules

regarding interconnection could directly affect us in the future. Interconnection costs represent a significant expense item for us and any significant changes in the intercarrier compensation scheme may have a material impact on our business. We are unable to determine with any certainty at this time whether any such changes would be beneficial to or detrimental to our wireless operations.

On December 18, 2014, the FCC issued a declaratory ruling which provides additional guidance concerning how the agency will evaluate the reasonableness of data roaming agreements. The agency clarified that it will consider the reasonableness of data roaming rates based upon, in part, whether such rates exceed retail, international and resale rates, as well as how such rates compare to other providers' rates. The ruling also clarifies other aspects of the FCC's 2011 data roaming order concerning the appropriate presumptions applied to certain contract terms and the inclusion

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of build-out terms when considering the reasonableness of roaming rates and terms. The ruling is expected to provide improved negotiating leverage to Sprint, and other providers, in negotiating new data roaming agreements with AT&T and Verizon. It is unclear whether such leverage will result in lower data roaming rates for Sprint, or whether such reduced rates will accrue to the benefit of our operations. There is also a possibility that the ruling could provide a basis for smaller wireless providers to seek more beneficial terms in their roaming agreements with Sprint, which may impact roaming costs in our territory.

Universal Service Contribution Requirements. Consistent with the terms of our Management Agreement, Sprint is required to contribute to the federal universal service fund (the "USF") based in part on the revenues it earns in connection with our wireless operations. The purpose of this fund is to subsidize telecommunications and broadband services in rural areas, for low-income consumers and for schools, libraries and rural healthcare facilities. Sprint is permitted to, and does, pass through these mandated payments as surcharges paid by its subscribers.

Transfers, Assignments and Changes of Control of Spectrum Licenses. The FCC must give prior approval to the assignment of ownership or control of a spectrum license, as well as transfers involving substantial changes in such ownership or control. The FCC also requires licensees to maintain effective working control over their licenses. Our Sprint Affiliate Agreement reflects an alliance that the parties believe meets the FCC requirements for licensee control of licensed spectrum. If the FCC were to determine that the Sprint Affiliate Agreement should be modified to increase the level of licensee control, we have agreed with Sprint to use our best efforts to modify the agreement as necessary to cause the agreement to comply with applicable law and to preserve to the extent possible the economic arrangements set forth in the agreement. If the agreement cannot be modified, the agreement may be terminated pursuant to the terms. The FCC could also impose sanctions on the Company for failure to meet these requirements.

Spectrum licenses are granted for ten-year terms. Sprint's spectrum licenses for our service area are scheduled to expire on various dates throughout the term of our Sprint Affiliate Agreements. Pursuant to recently adopted changes concerning wireless license renewals, spectrum licensees have an expectation of license renewal if they can satisfy three "safe harbor" certifications which, if made, will result in routine processing and grant of the license renewal application. Those certifications require the licensee to certify that it has satisfied any ongoing provision of service requirements applicable to the spectrum license, that it has not permanently discontinued operations (defined as 180 days continuously off the air), and that it has substantially complied with applicable rules and policies. If for some reason a licensee cannot meet these safe harbor requirements, it can file a detailed renewal showing based on the actual service provided by the station. All of the PCS licenses used in our wireless business have been successfully renewed since their initial grant.

Construction and Operation of Wireless Facilities. Wireless systems must comply with certain FCC and Federal Aviation Administration ("FAA") regulations regarding the registration, siting, marking, lighting and construction of transmitter towers and antennas. The FCC also requires that aggregate radio frequency emissions from every site meet certain standards. These regulations affect site selection for new network build-outs and may increase the costs of improving our network. We cannot predict what impact the costs and delays from these regulations could have on our operations.

The construction of new towers, and in some cases the modification of existing towers, may also be subject to environmental review pursuant to the National Environmental Policy Act of 1969 ("NEPA"), which requires federal agencies to evaluate the environmental impacts of their decisions under some circumstances. FCC regulations implementing NEPA place responsibility on each applicant to investigate any potential environmental effects of a proposed operation, including health effects relating to radio frequency emissions, and impacts on endangered species such as certain migratory birds, and to disclose any significant effects on the environment to the agency prior to commencing construction. In the event that the FCC determines that a proposed tower would have a significant environmental impact, the FCC would require preparation of an environmental impact statement, which would be

subject to public comment.

In addition, tower construction is subject to regulations implementing the National Historic Preservation Act. Compliance with FAA, environmental or historic preservation requirements could significantly delay or prevent the registration or construction of a particular tower or make tower construction more costly. On July 15, 2016, Congress enacted new tower marking requirements for certain towers located in rural areas, which may increase our operational costs. However, statutory changes adopted by Congress in the 2018 FAA Reauthorization Act may ameliorate or mitigate some of those costs. In some jurisdictions, local laws or regulations may impose similar requirements.

Wireless Facilities Siting. States and localities are authorized to engage in forms of regulation, including zoning and land-use regulation, which may affect our ability to select and modify sites for wireless facilities. States and localities

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may not engage in forms of regulation that effectively prohibit the provision of wireless services, discriminate among functionally equivalent services or regulate the placement, construction or operation of wireless facilities on the basis of the environmental effects of radio frequency emissions. Courts and the FCC are routinely asked to review whether state and local zoning and land-use actions should be preempted by federal law, and the FCC also is routinely asked to consider other issues affecting wireless facilities siting in other proceedings. We cannot predict the outcome of these proceedings or the effect they may have on us.

Communications Assistance for Law Enforcement Act. The Communications Assistance for Law Enforcement Act (“CALEA”) was enacted in 1994 to preserve electronic surveillance capabilities by law enforcement officials in the face of rapidly changing telecommunications technology. CALEA requires telecommunications carriers and broadband providers, including the Company, to modify their equipment, facilities and services to allow for authorized electronic surveillance based on either industry or FCC standards. Following adoption of interim standards and a lengthy rulemaking proceeding, including an appeal and remand proceeding, all carriers were required to be in compliance with the CALEA requirements as of June 30, 2002. The FCC extended CALEA obligations to VoIP and broadband services in 2005. We are currently in compliance with the CALEA requirements.

Local Number Portability. All covered CMRS providers, including the Company, are required to allow wireless customers to retain their existing telephone numbers when switching from one telecommunications carrier to another. These rules are generally referred to as wireless local number portability (“LNP”). The future volume of any porting requests, and the processing costs related thereto, may increase our operating costs in the future. We are currently in compliance with LNP requirements. The FCC has selected a new Local Number Portability Administrator, and the transition to a new Local Number Portability Administrator may impact our ability to manage number porting and related tasks, or may result in additional costs related to the transition.

Number Pooling. The FCC regulates the assignment and use of telephone numbers by wireless and other telecommunications carriers to preserve numbering resources. CMRS providers in the top 100 markets are required to be capable of sharing blocks of 10,000 numbers among themselves in subsets of 1,000 numbers (“1000s-block number pooling”); the FCC considers state requests to implement 1000s-block number pooling in smaller markets on a case-by-case basis, and has granted such requests in the past. In addition, all CMRS carriers, including those operating outside the top 100 markets, must be able to support roaming calls on their network placed by users with pooled numbers. Wireless carriers must also maintain detailed records of the numbers they have used, subject to audit. The pooling requirements may impose additional costs and increase operating expenses on us and limit our access to numbering resources. We are currently in compliance with the FCC number pooling requirements.

Telecommunications Relay Services (“TRS”). Federal law requires wireless service providers to take steps to enable the hearing impaired and other disabled persons to have reasonable access to wireless services. The FCC has adopted rules and regulations implementing this requirement to which we are subject, and requires that we pay a regulatory assessment to support such telecommunications relay services for the disabled. The Company is in compliance with these requirements.

Consumer Privacy. The Company is subject to various federal and state laws intended to protect the privacy of end-users who subscribe to the Company’s services. For example, the FCC has regulations that place restrictions on the permissible uses that we can make of customer-specific information, known as Customer Proprietary Network Information (“CPNI”), received from subscribers, and that govern procedures for release of such information in order to prevent identity theft schemes. Other laws impose criminal and other penalties for the violation of certain CPNI requirements and related privacy protections.

As a result of the FCC’s December 2017 decision to reclassify broadband Internet access service as an “information service,” the FTC has the authority to enforce against unfair or deceptive acts and practices, to protect the privacy of

Internet service customers, including our use and disclosure of certain customer information.

After the repeal of the FCC's 2016 privacy rules through the Congressional Review Act, many states and local authorities have considered legislative or other actions that would impose additional restrictions on our ability to collect, use and disclose certain information. Despite language in the FCC's December 2017 decision reclassifying broadband Internet access service as an "information service" that preempts state and local privacy regulations that conflict with federal policy, we expect these state and local efforts to regulate online privacy to continue in 2019. Additionally, several state legislatures are considering the adoption of new data security and cybersecurity legislation that could result in additional network and information security requirements for our business. There are also bills pending in both the U.S. House of Representatives and Senate that could impose new privacy and data security obligations. We cannot predict whether

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any of these efforts will be successful or preempted, or how new legislation and regulations, if any, would affect our business

Our operations are also subject to federal and state laws governing information security. In the event of an information security breach, such rules may require consumer and government agency notification and may result in regulatory enforcement actions with the potential of monetary forfeitures.

In addition, restrictions exist, and new restrictions are considered from time to time by Congress, federal agencies and states, on the extent to which wireless customers may receive unsolicited telemarketing calls, text messages, junk e-mail or spam. Congress, federal agencies and certain states also are considering, and may in the future consider imposing, additional requirements on entities that possess consumer information to protect the privacy of consumers. The Company is required to file an annual certification of compliance with the FCC's CPNI rules. Complying with these requirements may impose costs on the Company or compel the Company to alter the way it provides or promotes its services.

Consumer Protection. Many members of the wireless industry, including us, have voluntarily committed to comply with the Cellular Telecommunication and Internet Association ("CTIA") Consumer Code for Wireless Service, which includes consumer protection provisions regarding the content and format of bills; advance disclosures regarding rates, terms of service, contract provisions, and network coverage; and the right to terminate service after a trial period or after changes to contract provisions are implemented. The FCC and/or certain state commissions have considered or are considering imposing additional consumer protection requirements upon wireless service providers, including billing-related disclosures and usage alerts, as well as the adoption of standards for responses to customers and limits on early termination fees. On December 12, 2013, CTIA filed a letter with the FCC detailing voluntary commitments by large wireless providers, including Sprint, which will permit subscribers and former subscribers to unlock their mobile devices, subject to contract fulfillment time frames for postpaid plans, or after one year for prepaid plans. The carriers have agreed to fully implement the voluntary commitments within 12 months of adoption. Subsequently, on February 11, 2014, CTIA-The Wireless Association adopted six standards on mobile wireless device unlocking into the CTIA Consumer Code for Wireless Service. Finally, on August 1, 2014, the Unlocking Consumer Choice and Wireless Competition Act was enacted to make it easier for consumers to change their cell phone service providers without paying for a new phone. This new statute reverses a decision made by the Library of Congress in 2012 that said it was illegal for consumers to "unlock" their cell phones for use on other networks without their service provider's permission. Adoption of these and other similar consumer protection requirements could increase the expenses or decrease the revenue of the Company's wireless business. Courts have also had, and in the future may continue to have, an effect on the extent to which matters pertaining to the content and format of wireless bills can be regulated at the state level. Any further changes to these and similar requirements could increase our costs of doing business and our costs of acquiring and retaining customers.

Net Neutrality. For information concerning the FCC's non-discrimination requirements for wireless broadband providers, see the discussion under "Regulation of Wireline Operations - Broadband Services / Net Neutrality".

Radio Frequency Emission from Handsets. Some studies (and media reports) have suggested that radio frequency emissions from handsets, wireless data devices and cell sites may raise various health concerns, including cancer, and may interfere with various electronic medical devices, including hearing aids and pacemakers. Most of the expert reviews conducted to date have concluded that the evidence does not support a finding of adverse health effects but that further research is appropriate. Courts have dismissed a number of lawsuits filed against other wireless service operators and manufacturers, asserting claims relating to radio frequency transmissions to and from handsets and wireless data devices. However, there can be no assurance that the outcome of other lawsuits, or general public concerns over these issues, will not have a material adverse effect on the wireless industry, including us.

Accessibility. The FCC imposes obligations on telecommunications service providers and multi-channel video programming distributors ("MVPDs"), intended to ensure that individuals with disabilities are able to access and use telecommunications and video programming services and equipment. FCC rules require telecommunications service providers, including wireless providers, to be capable of transmitting 911 calls from persons who are deaf, hard of hearing or speech disabled, including through text telephone ("TTY") capability over the public switched telephone network ("PSTN"), various forms of PSTN-based and internet protocol ("IP")-based TRS, and text-to-911 (where available). The FCC rules allow wireless telecommunications service providers to transition to use of real time text ("RTT") in lieu of TTY technology for communications using wireless IP-based voice services. In addition, telecommunications services, including Voice over Internet Protocol ("VoIP"), and advanced communications services ("ACS") (such as email and text messaging) must be accessible to and usable by disabled persons, including by ensuring

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that email and texts are compatible with commonly used screen readers, unless doing so is not achievable. FCC rules require that customer support for covered telecommunications and ACS services (including website based) is accessible and also imposes extensive recordkeeping for both telecommunications services and ACS, and subject providers to significant penalties for non-compliance with accessibility requirements as well as for falsely certifying compliance with recordkeeping obligations. Existing FCC rules also require us to offer a minimum number of hearing aid-compatible (“HAC”) handsets to consumers. The FCC recently adopted rules that update technical specifications for HAC handsets and extend HAC compatibility requirements to VoIP handsets. FCC rules also require video programming delivered on MVPD systems to be closed captioned unless exempt and require MVPDs to pass through captions to consumers and to take all steps needed to monitor and maintain equipment to ensure that captioning reaches the consumer intact. Video programming delivered over the Internet must be captioned if it was delivered previously on television with captions. An MVPD must also pass through audio description provided in broadcast and non-broadcast programming if it has the technical capability to do so, unless it is using the required technology for another purpose. FCC rules also require MVPDs to ensure that critical details about emergencies conveyed in video programming are accessible to persons with disabilities, and that video programming guides are accessible to persons who are blind or visually impaired. We cannot predict if or when additional changes will be made to the current FCC accessibility rules, or whether and how such changes will affect us.

911 Services. We are subject to FCC rules that require wireless carriers to make emergency 911 services available to their subscribers, including enhanced 911 services that convey the caller’s telephone number and detailed location information to emergency responders. The FCC has also sought public comment to investigate further requirements regarding the accuracy of wireless location information transmitted during an emergency 911 call. Additionally, the FCC adopted rules requiring all wireless carriers to support the ability of consumers to send text messages to 911 in all areas of the country where 911 Public Safety Answering Points (“PSAP”) are capable of receiving text messages. Also, in May 2013, the FCC adopted rules which require CMRS providers to provide an automatic “bounce-back” text message when a subscriber attempts to send a text message to 911 in a location where text-to-911 is not available. In August 2014, the FCC ordered that all CMRS and interconnected text providers must be capable of supporting text-to-911 by December 31, 2014. Such covered text providers had until June 30, 2015, to begin delivering text-to-911 messages to PSAPs that have submitted requests for such delivery by December 31, 2014, unless otherwise agreed with the PSAP, and six months to begin delivery after any such request made after December 31, 2014. We are not able to predict the effect that these, or any other, changes to the 911 service rules will have on our operations.

Regulation of Cable Television, Interconnected VoIP and Other Video Service Operations

We provide cable services to customers in franchise areas covering portions of Virginia, West Virginia and western Maryland.

The provision of cable service generally is subject to regulation by the FCC, and cable operators typically also must comply with the terms of the franchise agreement between the cable operator and the local franchising authority. Some states, including Virginia and West Virginia, have enacted regulations and franchise provisions that also can affect certain aspects of a cable operator’s operations. Our business can be significantly impacted by changes to the existing regulatory framework, whether triggered by legislative, administrative, or judicial rulings.

Pricing and Packaging. Federal law limits cable rate regulation solely to communities that lack “effective competition,” as defined by federal regulation. In the absence of effective competition, federal law authorizes local franchising authorities to regulate the monthly rates charged for the minimum level of video programming service (the “basic service tier”) and for the installation, sale and lease of equipment used by end users to receive the basic service tier. None of our local franchise authorities presently regulate our rates. Congress and the FCC from time to time have considered imposing new pricing and packaging restrictions on cable operators. We cannot predict whether or when

such new pricing and packaging restrictions may be imposed on us or what effect they would have on our ability to provide cable service.

Must-Carry/Retransmission Consent. Local broadcast television stations can require a cable operator to carry their signals pursuant to federal “must-carry” requirements. Alternatively, local television stations may require that a cable operator obtain “retransmission consent” for carriage of the station’s signal, which can enable a popular local television station to obtain concessions from the cable operator for the right to carry the station’s signal. Although some local television stations today are carried by cable operators under the must-carry obligation, popular broadcast network affiliated stations, such as ABC, CBS, FOX, CW and NBC, typically are carried pursuant to retransmission consent agreements. The retransmission consent costs charged by broadcast networks affiliate stations are increasing rapidly.

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We cannot predict the extent to which such retransmission consent costs may increase in the future or the effect such cost increases may have on our ability to provide cable service.

Copyright Fees. Cable operators pay compulsory copyright fees, in addition to possible retransmission consent fees, to retransmit broadcast programming. Although the cable compulsory copyright license has been in place for more than 40 years, there have been legislative and regulatory proposals to modify or even replace the compulsory license with privately negotiated licenses. We cannot predict whether such proposals will be enacted and how they might affect our business.

Programming Costs. Satellite-delivered cable programming, such as ESPN, HBO and the Discovery Channel, is not subject to must-carry/retransmission consent regulations or a compulsory copyright license. The Company negotiates directly or through the National Cable Television Cooperative (“NCTC”) with satellite-delivered cable programmers for the right to carry their programming. The cost of acquiring the right to carry satellite-delivered cable programming can increase as programmers demand rate increases.

Franchise Matters. Cable operators generally must apply for and obtain non-exclusive franchises from local or state franchising authorities before providing video service. The terms and conditions of franchises vary among jurisdictions, but franchises generally last for a fixed term and are subject to renewal, require the cable operator to collect a franchise fee of as much as 5% of the cable operator’s gross revenue from video services, and contain certain service quality and customer service obligations. A significant number of states today have processes in place for obtaining state-wide franchises, and legislation and regulation have been introduced from time to time in Congress, the FCC, and in various states, including those in which we provide some form of video service, that would require the implementation of state-wide franchising processes, potentially lowering barriers to entry and increasing competition in the marketplace for video services. Virginia’s franchising statute largely leaves franchising responsibility in the hands of local municipalities and counties, but it governs the local government entities’ award of such franchises and their conduct of franchise negotiations. We cannot predict the extent to which these rules and other developments will accelerate the pace of new entry into the video market or the effect, if any, they may have on our cable operations.

Leased Access/PEG. The Communications Act permits franchising authorities to require cable operators to set aside channels for public, education and governmental access (“PEG”) programming. The Communications Act also requires certain cable systems to make available a portion of their capacity for commercial leased access by third parties. The FCC is currently conducting proceedings that may impact commercial leased access and PEG access usage. Increases in the amount of such access usage could reduce the number of channels available to us to provide other types of programming to subscribers.

Pole Attachments. The Communications Act requires investor-owned utilities to provide cable systems with access to poles and conduits and simultaneously subjects the rates charged for this access to either federal or state regulation. In 2011 and again in 2015, the FCC amended its existing pole attachment rules to promote broadband deployment. The 2011 order allows for new penalties in certain cases involving unauthorized attachments, but generally strengthens the cable industry’s ability to access investor-owned utility poles on reasonable rates, terms and conditions. Additionally, the 2011 order reduces the federal rate formula previously applicable to “telecommunications” attachments to closely approximate the rate formula applicable to “cable” attachments. The 2015 order, which was affirmed following an appeal by utility pole owners, continues that rate reconciliation, effectively closing the remaining “loophole” that potentially allowed for significantly higher rates for telecommunications attachments in certain scenarios, and minimizing the rate consequences of any of our services being deemed “telecommunications” for pole attachment purposes. Neither the 2011 order nor the 2015 order directly affect the rate in states that self-regulate (rather than allow the FCC to regulate) pole rates, but many of those states have substantially the same rate for cable and telecommunications attachments.

In August 2018, the FCC adopted rules, scheduled to become effective thirty (30) days after Office of Management and Budget approval, to permit a "one-touch" make-ready process for poles subject to its jurisdiction. The "one touch" make-ready rules allow new attachers to alter certain components of existing attachments for "simple make-ready" (i.e. where the alteration of existing attachments does not involve a reasonable expectation of a service outage, splicing, pole replacement or relocation of a wireless attachment). The rules are intended to promote broadband deployment and competition by facilitating communications attachments, although there are concerns regarding potential damage to existing networks by third parties. Utility pole owners have appealed the rules to the United States Court of Appeals for the Eleventh Circuit. We cannot predict the effect that these rules will have on our business when they ultimately take effect.

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Broadband Services. For information concerning the regulation of Broadband services, see the related discussions under “Regulation of Wireline Operations.”

Net Neutrality. For information concerning the FCC’s non-discrimination requirements for fixed broadband providers, see the discussion under “Regulation of Wireline Operations - Broadband Services / Net Neutrality.”

Privacy. For information concerning the privacy obligations of our Broadband service, see the discussion under “Regulation of Wireless Operations - Consumer Privacy.”

VoIP Services. We provide voice communications services over our cable network utilizing interconnected VoIP technology and service arrangements. Although similar to telephone service in some ways, our VoIP service arrangement utilizes different technology and is subject to many of the same rules and regulations applicable to traditional telephone service. The FCC order adopted on October 27, 2011, established rules governing intercarrier compensation payments for the origination and termination of telephone traffic between carriers and VoIP providers. In May 2014 the United States Court of Appeals for the Tenth Circuit upheld the FCC order reducing intercarrier compensation payments. The rules have substantially decreased intercarrier compensation payments we may have otherwise received over a multi-year period. The decreases over the multi-year transition have affected both the amounts that we pay to telecommunications carriers and the amounts that we receive from other carriers. The schedule and magnitude of these decreases, however, has varied depending on the nature of the carriers and the telephone traffic at issue. These changes have had a negative impact on our revenues and expenses for voice services at particular times over this multi-year period.

Further regulatory changes are being considered that could impact our VoIP service. The FCC and state regulatory authorities are considering, for example, whether certain common carrier regulations traditionally applied to incumbent local exchange carriers should be modified or reduced, and the extent to which common carrier requirements should be extended to VoIP providers. The FCC has already determined that certain providers of voice services using Internet Protocol technology must comply with requirements relating to 911 emergency services, CALEA, USF contribution, customer privacy and CPNI issues, number portability, network outage, rural call completion, disability access, battery backup, regulatory fees, and discontinuance of service. In March 2007, a federal appeals court affirmed the FCC’s decision concerning federal regulation of certain VoIP services, but declined to specifically find that VoIP service provided by cable companies, such as we provide, should be regulated only at the federal level. As a result, certain states, including West Virginia, began proceedings to subject cable VoIP services to state-level regulation. Although the West Virginia proceeding concluded without any new state-level regulation, it is difficult to predict whether it, or other state regulators, will continue to attempt to regulate our VoIP service. For example, the Minnesota PUC recently attempted to regulate another cable operator's VoIP service as a telecommunications service, although that was recently reversed by a federal appellate court. We have registered with, or obtained certificates or authorizations from, the FCC and the state regulatory authorities in those states in which we offer competitive voice services in order to ensure the continuity of our services and to maintain needed network interconnection arrangements. It is not clear how the FCC Order to reclassify wireline and wireless broadband services as Title II common carrier services, and pursuant to Section 706, will affect the regulatory status of our VoIP services. Further, it is also unclear whether and how these and other ongoing regulatory matters ultimately will be resolved.

Prospective competitors of Shenandoah Cable Television, LLC (Shentel Cable), a subsidiary of the Company, may also receive disbursements from the USF. Some of those competitors have requested USF support under the Connect America Fund to build broadband facilities in areas already served by Shentel Cable. Although Shentel Cable has opposed such requests where we offer service, we cannot predict whether the FCC or another agency will grant such requests or otherwise fund broadband service in areas already served by the company.

Other Issues. Our ability to provide cable service may be affected by a wide range of additional regulatory and related issues, including FCC regulations pertaining to licensing of systems and facilities, set-top boxes, equipment compatibility, program exclusivity blackouts, advertising, public files, accessibility to persons with disabilities, emergency alerts, pole attachments, equal employment opportunity, privacy, consumer protection, and technical standards. In addition, proceedings before the FCC and state regulatory bodies have examined the rates that cable operators must pay to use utility poles and conduits, and other terms and conditions of pole attachment agreements. Pole attachment costs are significant and changes in pole attachment regulation and the resulting rates could have an adverse impact on our operations. We cannot predict the nature and pace of these and other developments or the effect they may have on our operations.

Regulation of Wireline Operations

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As an incumbent local exchange carrier ("ILEC"), Shenandoah Telephone Company's ("Shenandoah Telephone") operations are regulated by federal and state regulatory agencies.

State Regulation. Shenandoah Telephone's rates for local exchange service, intrastate toll service, and intrastate access charges are subject to the approval of the Virginia State Corporation Commission, ("VSCC"). The VSCC also establishes and oversees implementation of certain provisions of the federal and state telecommunications laws, including interconnection requirements, promotion of competition, and consumer protection standards. The VSCC also regulates rates, service areas, service standards, accounting methods, affiliated transactions and certain other financial transactions. Pursuant to the FCC's October 27, 2011 order adopting comprehensive reforms to the federal intercarrier compensation and universal service policies and rules (as discussed above and further below), the FCC preempted state regulatory commissions' jurisdiction over all terminating access charges, including intrastate terminating access charges, which historically have been within the states' jurisdiction. However, the FCC vested in the states the obligation to monitor the tariffing of intrastate rate reductions for a transition period, to oversee interconnection negotiations and arbitrations, and to determine the network edge, subject to FCC guidance, for purposes of the new "bill-and-keep" framework. A federal appeals court has affirmed the decision. The outcome of those further challenges could modify or delay the effectiveness of the FCC's rule changes. During 2017 the FCC initiated a further proceeding to consider whether additional changes to interconnection obligations are needed, including how and where companies interconnect their networks with the networks of other providers. Although we are unable to predict the ultimate effect that the FCC's order will have on the state regulatory landscape or our operations, the rules may decrease or eliminate revenue sources or otherwise limit our ability to recover the full value of our network assets.

Interconnection. Federal law and FCC regulations impose certain obligations on incumbent local exchange carriers to interconnect their networks with other telecommunications providers (either directly or indirectly) and to enter into ICAs with certain types of telecommunications providers. Interconnection agreements typically are negotiated on a statewide basis and are subject to state approval. If an agreement cannot be reached, parties to interconnection negotiations can submit unresolved issues to federal or state regulators for arbitration. Disputes regarding intercarrier compensation can be brought in a number of forums (depending on the nature and jurisdiction of the dispute) including PUCs, the FCC, and the courts. The Company is working to resolve routine interconnection and intercarrier compensation-related disputes concerning the volume of traffic exchanged between the Company and third parties, appropriate access rates, and terms for the origination and termination of traffic on third-party networks.

Regulation of Intercarrier Compensation. Shenandoah Telephone participates in the access revenue pools administered by the FCC-supervised National Exchange Carrier Association ("NECA"), which collects and distributes the revenues from interstate access charges that long-distance carriers pay us for originating and terminating interstate calls over our network. Shenandoah Telephone also participates in some NECA tariffs that govern the rates, terms, and conditions of our interstate access offerings. Some of those tariffs are under review by the FCC, and we may be obligated to refund affected access charges collected in the past or in the future if the FCC ultimately finds that the tariffed rates were unreasonable. We cannot predict whether, when, and to what extent such refunds may be due.

On October 27, 2011, the FCC adopted a number of broad changes to the ICC rules governing the interstate access rates charged by small-to-mid-sized ILECs such as Shenandoah Telephone. For example, the FCC adopted a national "bill-and-keep" framework, which will result in substantial reductions in the access charges paid by long distance carriers and other interconnecting carriers, possibly to zero, accompanied by increases to the subscriber line charges paid by business and residential end users. In addition, the FCC has changed some of the rules that determine what compensation voice service providers, including but not limited to wireless carriers, competitive local exchange carriers, VoIP providers and providers of other Internet-enabled services, should pay and receive for originating and terminating traffic that is interconnected with ILEC networks.

The FCC's changes to the ICC rules have been affirmed by a federal appeals court. These changes, and potential future changes, to such compensation regulations could increase our expenses and/or reduce our revenues.

The VSCC has jurisdiction over local telephone companies' intrastate access charges, and has indicated in the past that it might open a generic proceeding on the rates charged for intrastate access, although the scope and likelihood of such a proceeding is unclear in light of the FCC's overhaul of the intercarrier compensation rules (discussed above), which affect states' jurisdiction over intrastate access charges.

Interstate and intrastate access charges are important sources of revenue for Shenandoah Telephone's operations. Unless these revenues can either be replaced through a new universal service mechanism, or unless they can be reflected in

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higher rates to local end users, or replaced through other newly created methods of cost recovery, the loss of revenues to the Company could be significant. There can be no assurance that access charges in their present form will be continued or that sufficient substitutes for the lost revenues will be provided. If access charges are reduced without sufficient substitutes for the lost revenues, this could have a material adverse impact on our financial condition, results of operations and cash flows. In addition, changes to the intercarrier compensation rules and policies could have a material impact on our competitive position vis-à-vis other service providers, particularly in our ability to proactively make improvements to our networks and systems.

Universal Service Fund. Shenandoah Telephone receives disbursements from the USF. In October 2011, the FCC adopted comprehensive changes to the universal service program that are intended in part to stabilize the USF, the total funding of which had increased considerably in recent years. Some of the FCC's reforms impact the rules that govern disbursements from the USF to rural ILECs such as Shenandoah Telephone, and to other providers. Such changes, and additional future changes, may reduce the size of the USF and payments to Shenandoah Telephone, a subsidiary of the Company, which could have an adverse impact on the operating results of the Company. The Company is not able to predict if or when additional changes will be made to the USF, or whether and how such changes would affect the extent of our total federal universal service assessments, the amounts we receive, or our ability to recover costs associated with the USF. We cannot predict the extent to which such access charges may decrease or change in the future or the effect such access charge increases may have on our ability to provide cable service.

If the Universal Service Administrative Company ("USAC") were required to account for the USF program in accordance with generally accepted accounting principles for federal agencies under the Anti-Deficiency Act (the "ADA"), it could cause delays in USF payments to fund recipients and significantly increase the amount of USF contribution payments charged to wireline and wireless consumers. Each year since 2004, Congress has adopted short-term exemptions for the USAC from the ADA. Congress has from time to time considered adopting a longer term exemption for the USAC from the ADA, but we cannot predict whether any such exemption will be adopted or the effect it may have on the Company.

In February, 2012, the FCC released an order making substantial changes to the rules and regulations governing the federal USF Lifeline Program, which provides discounted telephone services to low income consumers. The order imposes greater recordkeeping and reporting obligations, and generally subjects providers of Lifeline-supported services to greater oversight. In 2016, the FCC released a second substantial Lifeline order that amended the program to provide support for broadband services and phase out support for voice services. Included among the new rules was a requirement that any eligible telecommunications carrier ("ETC") which offered broadband service, on its own or through an affiliate, must also offer Lifeline-supported broadband service. Due to this requirement, our Company began offering Lifeline-supported broadband in areas where it operates as an ETC. In 2017, the FCC released a Lifeline order that included clarifications to the 2016 Lifeline order and proposed reforms aimed at improving program integrity. As a result of our Company providing Lifeline-supported services, we are subject to increased reporting and recordkeeping requirements, and could be subject to increased regulatory oversight, investigations or audits. The FCC, USAC and other authorities have conducted, and in the future are expected to continue to conduct, more extensive audits of USF support recipients, as well as other heightened oversight activities. The impact of these activities on the Company, if any, is uncertain.

Broadband Services. In December 2010, the FCC adopted so-called net neutrality rules that it deemed necessary to ensure an open Internet that is not unduly restricted by network gatekeepers. Those rules subjected wireline and wireless broadband Internet access service providers to varying regulations (depending upon the nature of the service) including three key requirements: 1) a prohibition against blocking websites or other online applications; 2) a prohibition against unreasonable discrimination among Internet users or among different websites or other sources of information; and 3) a transparency requirement compelling the disclosure of network management policies. Our cable

and wireline subsidiaries that provide broadband Internet access services were subject to these rules. However, on January 14, 2014, the U.S. Court of Appeals for the D.C. Circuit, in *Verizon v. FCC*, struck down major portions of the FCC's net neutrality rules governing the operating practices of broadband Internet access providers like us. The Court struck down the first two components of the rules, the prohibition against blocking and unreasonable discrimination, concluding that they constitute common carrier restrictions that are not permissible given the FCC's earlier decision to classify Internet access as an information service, rather than a "telecommunications service." The Court simultaneously upheld the FCC's transparency requirement, concluding that this final requirement does not amount to impermissible common carrier regulation.

In 2015, the FCC determined that broadband Internet access services, such as those we offer, were a form of telecommunications service under the Communications Act and, on that basis, imposed rules banning service providers

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from blocking access to lawful content, restricting data rates for downloading lawful content, prohibiting the attachment of non-harmful devices, giving special transmission priority to affiliates, and offering third parties the ability to pay for priority routing. The 2015 rules also imposed a transparency requirement, i.e., an obligation to disclose all material terms and conditions of our service to consumers.

In December 2017, the FCC adopted an order repudiating its treatment of broadband as a telecommunications service, reclassifying broadband as an information service, and eliminating the 2015 rules other than the transparency requirement, which it eased in significant ways. The FCC also ruled that state regulators may not impose obligations similar to federal obligations that the FCC removed. Various parties have challenged the FCC's December 2017 ruling in court, but we cannot predict how any such court challenges will be resolved. Moreover, it is possible that the FCC might further revise its approach to broadband Internet access, or that Congress might enact legislation affecting the rules applicable to the service.

As the Internet has matured, it has become the subject of increasing regulatory interest. Congress and Federal regulators have adopted a wide range of measures directly or potentially affecting Internet use. The adoption of new Internet regulations or policies could adversely affect our business.

On January 29, 2015, the FCC, in a nation-wide proceeding evaluating whether advanced broadband is being deployed in a reasonable and timely fashion, increased the minimum connection speeds required to qualify as advanced broadband service to 25 Mbps for downloads and 3 Mbps for uploads. As a result, the FCC concluded that advanced broadband was not being sufficiently deployed and initiated a new inquiry into what steps it might take to encourage broadband deployment. This action may lead the FCC to adopt additional measures affecting our broadband business. At the same time, the FCC has ongoing proceedings to allocate additional spectrum for advanced wireless service, which could provide additional wireless competition to our broadband business.

Other Regulatory Obligations. Shenandoah Telephone is subject to requirements relating to CPNI, CALEA implementation, interconnection, access to rights of way, number portability, number pooling, accessibility of telecommunications for those with disabilities, protection for consumer privacy, and other obligations similar to those discussed above for our wireless operations.

The FCC and other authorities continue to consider policies to encourage nationwide advanced broadband infrastructure development. For example, the FCC has largely deregulated DSL and other broadband services offered by ILECs. Such changes benefit our ILEC, but could make it more difficult for us (or for NECA) to tariff and pool DSL costs. Broadband networks and services are subject to CALEA rules, network management disclosure and prohibitions, requirements relating to consumer privacy, and other regulatory mandates.

911 Services. We are subject to FCC rules that require telecommunications carriers to make emergency 911 services available to their subscribers, including enhanced 911 services that convey the caller's telephone number and detailed location information to emergency responders. In December 2013 the FCC adopted a rule requiring all 911 service providers that serve a public safety answering point or other local emergency responder, to take reasonable measures to ensure 911 circuit diversity, availability of backup power at central offices that directly serve PSAPs, and diversity of network monitoring links.

Long Distance Services. We offer long distance service to our customers through our subsidiary, Shentel Communications, LLC. Our long distance rates are not subject to FCC regulation, but we are required to offer long distance service through a subsidiary other than Shenandoah Telephone, to disclose our long distance rates on a website, to maintain geographically averaged rates, to pay contributions to the USF and make other mandatory payments based on our long-distance revenues, and to comply with other filing and regulatory requirements. In November 2013 the FCC issued an order imposing greater recordkeeping and reporting obligations on certain long

distance providers delivering calls to rural areas. The order imposes greater recordkeeping and quarterly reporting obligations on such providers, and generally subjects such providers to greater oversight.

CLEC Operations. We are authorized to operate as a Competitive Local Exchange Carrier ("CLEC") in Maryland, Virginia, West Virginia and Pennsylvania. CLECs generally are subject to federal and state regulations that are similar to, but not as stringent as, those that apply to our ILEC operations. Both the FCC and the state regulatory authorities require that, in most circumstances, CLEC access charges be no higher than the access charges of the ILECs in areas where they operate.

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Employees

At December 31, 2018, we had approximately 1,029 employees, of whom approximately 1,018 were full-time employees. None of our employees is represented by a union or covered by a collective bargaining agreement.

Executive Officers of the Registrant

The following table presents information about our executive officers who, other than Christopher E. French, are not members of our board of directors. Our executive officers serve at the pleasure of the Board of Directors.

Name	Title	Age	Date in Position
Christopher E. French	President and Chief Executive Officer	61	April 1988
David L. Heimbach	Executive Vice President and Chief Operating Officer	43	May 2018
James F. Woodward	Senior Vice President – Finance and Chief Financial Officer	59	November 2017
William L. Pirtle	Senior Vice President – Sales and Marketing	59	January 2019
Thomas A. Whitaker	Senior Vice President – Fiber Operations	58	January 2019
Edward H. McKay	Senior Vice President – Engineering and Operations	46	January 2019
Raymond B. Ostroski	General Counsel, Vice President - Legal and Corporate Secretary	64	January 2013

Mr. French is President and Chief Executive Officer of the Company, where he is responsible for the overall leadership and strategic direction of the Company. He has served as President since 1988, and has been a member and Chairman of the Board of Directors since 1996. Prior to appointment as President, Mr. French held a variety of positions with the Company, including Vice President Network Service and Executive Vice President. Mr. French holds a B.S. in electrical engineering and an MBA, both from the University of Virginia. He has held board and officer positions in both state and national telecommunications associations, including service as a director of the Organization for the Promotion and Advancement of Small Telecommunications Companies (OPASTCO) and was president and director of the Virginia Telecommunications Industry Association. Mr. French is currently a member of both the Board of Directors and the Leadership Committee of the USTelecom Association.

Mr. Heimbach is Executive Vice President and Chief Operating Officer for Shentel. He joined the Company in May 2018 having previously served in a variety of senior management roles with both large companies and entrepreneurial start-ups. He most recently served as Chief Operating Officer of Rise Broadband, the nation's largest fixed wireless service provider, with responsibility for sales, marketing, product management, engineering, construction, field and customer operations, and corporate strategy. Prior to joining Rise Broadband, Mr. Heimbach held several executive positions at Cincinnati Bell over a 14 year period including Chief Operating Officer; Senior Vice President/General Manager, Business & Carrier Markets; Vice President & General Manager of the Evolve Business Solutions subsidiary; Vice President, Product Development; Director, Small & Medium Business Strategy; Director of Operations, Extended Territories; and Product Manager. Mr. Heimbach holds a B.S. in Communications from the J. Warren McClure School of Information & Telecommunications Systems from Ohio University and is a board member of the American Cable Association and a member of Young Presidents Organization (YPO).

Mr. Woodward is Senior Vice President – Finance and Chief Financial Officer for Shentel. He joined Shentel in November of 2017. Prior to joining Shentel, he held various positions in a 34-year career with Media General Inc., a public diversified American media company, including Senior Vice President-Finance and Chief Financial Officer,

Group Vice President – Growth and Performance and Vice President – Corporate Human Resources. He holds a B.A. degree in Accounting from James Madison University.

Mr. Pirtle is Senior Vice President - Sales and Marketing for Shentel. He joined the Company in 1992 as Vice President - Network Services responsible for Shentel's technology decisions, maintenance and operation of its telephone, cable, cellular, paging and fiber optics networks. Most recently, he served as the Company's Senior Vice President - Wireless from September 2015 to December 2018 until he assumed his current role as of January 2019. He helped launch Shentel's Internet business in 1994, and led its participation in its wireless PCS business and Sprint affiliation beginning in 1995. He was in the pre-med program and holds a B.A degree in Biology from the University of Virginia. Mr. Pirtle is a co-founder of the Shenandoah Valley Technology Council and has represented the Company on the Board of

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ValleyNet. Mr. Pirtle currently serves on the CTIA and CCA boards of directors and will serve as chairman of the CCA board in 2019.

Mr. Whitaker is Senior Vice President - Fiber Operations for Shentel. He was promoted to Senior Vice President - Cable in September 2015 and served in that position until assuming his new role in January of 2019. Mr. Whitaker joined Shentel in 2004, through the Shentel acquisition of NTC Communications. Mr. Whitaker began his career in 1983. He previously was Chief Operating Officer of NTC Communications, and served as Vice President of Network Operations at Broadslate Networks, Director of Wireless Operations for nTelos, and was Co-Founder and Vice President of Nat-Com, Incorporated. Mr. Whitaker holds a B.A. degree in Biology from West Virginia Wesleyan College in Buckhannon, WV. Mr. Whitaker also serves on the board of National Cable Television Cooperative (NCTC).

Mr. McKay is Senior Vice President - Engineering and Operations for Shentel. He is responsible for network planning, engineering, construction, and operations for Shentel's networks. He was promoted to Senior Vice President in September 2015. Previously he was Vice President - Wireline and Engineering. Mr. McKay joined Shentel in 2004 and began his telecommunications industry career in 1996, including previous engineering management positions at UUNET and Verizon. He is a graduate of the University of Virginia, where he earned master's and bachelor's degrees in Electrical Engineering. He represents the Company on the Board of ValleyNet.

Mr. Ostroski is General Counsel and Vice President – Legal and Corporate Secretary for Shentel. He joined Shentel in 2013 and is responsible for all legal and regulatory compliance matters for the Company. He also acts as Corporate Secretary to the Company's Board of Directors. Mr. Ostroski began his career in the telecommunications industry in 1985 and has served as Executive Vice President and General Counsel for One Communications, Senior Vice President and General Counsel for Commonwealth Telephone Enterprises, Executive Vice President and General Counsel for RCN Corporation and Senior Vice President and General Counsel of C-TEC Corporation. Mr. Ostroski earned a BS degree in Social Science from Wilkes University and also earned a Juris Doctor degree from Temple University School of Law.

Websites and Additional Information

The Company maintains a corporate website at www.shentel.com. We make available free of charge through our website our annual report on Form 10-K, quarterly reports on Form 10-Q, current reports on Form 8 K and all amendments to those reports, as soon as reasonably practicable after we electronically file or furnish such reports with or to the Securities and Exchange Commission ("SEC"). The contents of our website are not a part of this report. In addition, the SEC maintains a website at www.sec.gov that contains reports, proxy and information statements and other information regarding the Company.

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ITEM 1A. RISK FACTORS

Our business and operations are subject to a number of risks and uncertainties. The risks set forth under "Business" and the following risk factors should be read carefully in connection with evaluating our business. The following risks (or additional risks and uncertainties not presently known to us or that we currently believe to be immaterial) could materially affect our financial results and conditions.

Risks Related to the Telecommunications Industry

Intensifying competition in all segments of our business may limit our ability to sustain profitable operations.

As new technologies are developed and deployed by competitors in our service area, some of our subscribers may select other providers' offerings based on price, capabilities or personal preferences. Most of our competitors possess greater resources, have more extensive coverage areas and offer more services than we do. If significant numbers of our subscribers elect to move to competing providers, or if market saturation limits the rate of new subscriber additions, we may not be able to sustain profitable operations.

Nationwide, incumbent local exchange carriers have experienced a decrease in access lines due to the effect of wireless and wireline competition. We have experienced reductions in the number of access lines to date, and based on industry experience we anticipate that the long-term trend toward declining telephone subscriber counts will continue. There is a significant risk that this downward trend will have a material adverse effect on the Company's landline telephone operations in the future.

The Company's revenue from fiber leases may be adversely impacted by price competition for these facilities.

Alternative technologies, changes in the regulatory environment and current uncertainties in the marketplace may reduce future demand for existing telecommunication services.

The telecommunications industry is experiencing significant technological change, evolving industry standards, ongoing improvements in the capacity and quality of digital technology, shorter development cycles for new products and enhancements and changes in end-user requirements and preferences. Technological advances, industry changes, changes in the regulatory environment and the availability of additional spectrum or additional flexibility with respect to the use of currently available spectrum could cause the technology we use to become obsolete. We and our vendors may not be able to respond to such changes and implement new technology on a timely basis, or at an acceptable cost.

Adverse economic conditions in the United States and in our market area involving significantly reduced consumer spending could have a negative impact on our results of operations.

Sprint's subscribers are individual consumers and businesses. Any national economic weakness, restricted credit markets or high unemployment rates could depress consumer spending and harm our operating performance. In addition, subscribers in our affiliate area are located in a relatively concentrated geographic area; therefore, any material adverse economic conditions that affect our geographic markets in particular could have a disproportionately negative impact on our results.

Regulation by government and taxing agencies may increase our costs of providing service or require changes in services, either of which could impair our financial performance.

Our operations are subject to varying degrees of regulation by the FCC, the Federal Trade Commission, the Federal Aviation Administration, the Environmental Protection Agency and the Occupational Safety and Health

Administration, as well as by state and local regulatory agencies and franchising authorities. Action by these regulatory bodies could negatively affect our operations and our costs of doing business. For example, changes in tax laws or the interpretation of existing tax laws by state and local authorities could increase income, sales, property or other tax costs.

Our access revenue may be adversely impacted by legislative or regulatory actions or by technology developments that decrease access rates or exempt certain traffic from paying for access to our regulated telephone network.

On October 27, 2011, the FCC adopted a number of broad changes to the intercarrier compensation rules governing the interstate access rates charged by small-to-mid-sized ILECs such as Shenandoah Telephone. For example, the FCC

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adopted a national “bill and keep” framework, which has resulted in substantial reductions in the access charges paid by long distance carriers and other interconnecting carriers, eliminating such payments in many instances, accompanied by increases to the subscriber line charges paid by business and residential end users. In addition, the FCC has changed some of the rules that determine what compensation carriers, including but not limited to wireless carriers, competitive local exchange carriers, VoIP providers and providers of other Internet-enabled services, should pay (and receive) for their traffic that is interconnected with ILEC networks. More recently, the FCC initiated a further proceeding to consider whether additional changes to interconnection obligations are needed, including how and where companies interconnect their networks with the networks of other providers. These changes, and potential future changes, to such compensation regulations could increase our expenses or further reduce our revenues. In addition, the Company is working to resolve routine interconnection and intercarrier compensation-related disputes concerning the volume of traffic exchanged between the Company and third parties, appropriate access rates, and terms for the origination and termination of traffic on third-party networks.

Our distribution networks may be subject to weather-related events that may damage our networks and adversely impact our ability to deliver promised services or increase costs related to such events.

Our distribution networks may be subject to weather-related events that could damage our networks and impact service delivery. Some published reports predict that warming global temperatures will increase the frequency and severity of such weather-related events. Should such predictions be correct or for other reasons there are more weather-related events, and should such events impact the Mid-Atlantic region covered by our networks more frequently or more severely than in the past, our revenues and expenses could be materially adversely impacted.

Risks Related to our Overall Business Strategy

We may not benefit from our acquisition strategy.

As part of our business strategy, we regularly evaluate opportunities to enhance the value of the Company by pursuing acquisitions of other businesses. Although we remain subject to financial and other covenants in our credit agreement that may limit our ability to pursue certain strategic opportunities, we intend to continue to evaluate and, when appropriate, pursue strategic acquisition opportunities as they arise. We cannot provide any assurance, however, with respect to the timing, likelihood, size or financial effect of any potential transaction involving the Company, as we may not be successful in identifying and consummating any acquisition or in integrating any newly acquired business into our operations.

The evaluation of business acquisition opportunities and the integration of any acquired businesses pose a number of significant risks, including the following:

- acquisitions may place significant strain on our management, financial and other resources by requiring us to expend a substantial amount of time and resources in the pursuit of acquisitions that we may not complete, or to devote significant attention to the various integration efforts of any newly acquired businesses, all of which will require the allocation of limited resources;

- acquisitions may not have a positive impact on our cash flows or financial performance;

- even if acquired companies eventually contribute to an increase in our cash flows or financial performance, such acquisitions may adversely affect our operating results in the short term as a result of transaction-related expenses we will have to pay or the higher operating and administrative expenses we may incur in the periods immediately following an acquisition as we seek to integrate the acquired business into our operations;

- we may not be able to realize anticipated synergies or eliminate as many anticipated redundant costs;

- our operating and financial systems and controls and information services may not be compatible with those of the companies we may acquire and may not be adequate to support our integration efforts, and any steps we take to improve these systems and controls may not be sufficient;

- our business plans and projections used to justify the acquisitions and expansion investments are based on assumptions of revenues per subscriber, penetration rates in specific markets where we operate and expected

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operating costs. These assumptions may not develop as projected, which may negatively impact our profitability or the value of our intangible assets;

growth through acquisitions will increase our need for qualified personnel, who may not be available to us or, if they were employed by a business we acquire, remain with us after the acquisition; and

acquired businesses may have unexpected liabilities and contingencies, which could be significant.

Our ability to comply with the financial covenants in our credit agreement depends primarily on our ability to generate sufficient operating cash flow.

Our ability to comply with the financial covenants under the agreement governing our secured credit facilities will depend primarily on our success in generating sufficient operating cash flow. Under our credit agreement, we are subject to a total leverage ratio covenant, a minimum debt service coverage ratio covenant and a minimum liquidity test. Industry conditions and financial, business and other factors, including those we identify as risk factors in this and our other reports, will affect our ability to generate the cash flows we need to satisfy those financial tests and ratios. Our failure to satisfy the tests or ratios could result in a default and acceleration of repayment of the indebtedness under our credit facilities. If the maturity of our indebtedness were accelerated, we may not have sufficient funds to repay such indebtedness. In such event, to the extent permitted by our credit agreement and applicable law, our lenders would be entitled to proceed against the collateral securing the indebtedness, which includes substantially all of our assets and the assets of our subsidiaries.

Our level of indebtedness could adversely affect our financial health and ability to compete.

As of December 31, 2018, we had \$785.2 million of total indebtedness. Our level of indebtedness could have important adverse consequences. For example, it may:

increase our vulnerability to general adverse economic and industry conditions, including interest rate increases, because as of December 31, 2018, a significant portion of our borrowings were, and may continue to be, subject to variable rates of interest;

require us to dedicate a substantial portion of our cash flow from operations to payments on our indebtedness, thereby reducing the availability of our cash flow to fund working capital, capital expenditures, dividends and other general corporate purposes;

limit our ability to borrow additional funds to alleviate liquidity constraints, as a result of financial and other restrictive covenants in our credit agreement;

limit our flexibility in planning for, or reacting to, changes in our business and the industry in which we operate; and

place us at a competitive disadvantage relative to companies that have less indebtedness.

In addition, our secured credit facilities impose operating and financial restrictions that limit our discretion on some business matters, which could make it more difficult for us to expand, finance our operations and engage in other business activities that may be in our interest. These restrictions limit our ability and that of our subsidiaries to, among other things:

incur additional indebtedness and additional liens on our assets;

engage in certain mergers or acquisitions or asset dispositions;

pay dividends or make other distributions;

voluntarily prepay other indebtedness;

enter into transactions with affiliated persons;

make certain investments; and

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change the nature of our business.

In addition to the term loan secured indebtedness we have incurred and the \$75 million of revolving credit indebtedness we may draw against from time to time, we may incur additional indebtedness under our credit facilities. Any additional indebtedness we may incur in the future may subject us to similar or even more restrictive conditions.

Our ability to refinance our indebtedness in the future, should circumstances require it, will depend on our ability in the future to generate cash flows from operations and to raise additional funds, including through the offering of equity or debt securities and through our access to bank debt markets. We may not be able to generate sufficient cash flows from operations or to raise additional funds in amounts necessary for us to repay our indebtedness when such indebtedness becomes due and to meet our other cash needs.

Disruptions of our information technology infrastructure could harm our business.

We depend on our information technology infrastructure to achieve our business objectives. A disruption of our infrastructure could be caused by a natural disaster, manufacturing failure, telecommunications system failure, cybersecurity attack, intrusion or incident, or defective or improperly installed new or upgraded business management systems. Portions of our IT infrastructure also may experience interruptions, delays or cessations of service or produce errors in connection with systems integration or migration work that takes place from time to time. In the event of any such disruption, we may be unable to conduct our business in the normal course. Moreover, our business involves the processing, storage and transmission of data, which would also be negatively affected by such an event. A disruption of our infrastructure could cause us to lose customers and revenue, particularly during a period of heavy demand for our services. We also could incur significant expense in repairing system damage and taking other remedial measures.

We could suffer a loss of revenue and increased costs, exposure to significant liability, reputational harm and other serious negative consequences if we sustain cyber-attacks or other data security breaches that disrupt our operations or result in the dissemination of proprietary or confidential information about us or our customers or other third parties.

We utilize our information technology infrastructure to manage and store various proprietary information and sensitive or confidential data relating to our operations. We routinely process, store and transmit large amounts of data for our customers, including sensitive and personally identifiable information. We depend on our information technology infrastructure to conduct business operations and provide customer services. We may be subject to data breaches and disruptions of the information technology systems we use for these purposes. Our industry has witnessed an increase in the number, intensity and sophistication of cybersecurity incidents caused by hackers and other malicious actors such as foreign governments, criminals, hacktivists, terrorists and insider threats. Hackers and other malicious actors may be able to penetrate our network security and misappropriate or compromise our confidential, sensitive, personal or proprietary information, or that of third parties, and engage in the unauthorized use or dissemination of such information. They may be able to create system disruptions, or cause shutdowns. Hackers and other malicious actors may be able to develop and deploy viruses, worms, ransomware and other malicious software programs that attack our products or otherwise exploit any security vulnerabilities of our systems. In addition, sophisticated hardware and operating system software and applications that we procure from third parties may contain defects in design or manufacture, including “bugs,” cybersecurity vulnerabilities and other problems that could unexpectedly interfere with the operation or security of our systems.

To date, interruptions of our information technology infrastructure have been infrequent and have not had a material impact on our operations. However, because technology is increasingly complex and cyber-attacks are increasingly sophisticated and more frequent, there can be no assurance that such incidents will not have a material adverse effect on us in the future. The consequences of a breach of our security measures, a cyber-related service or operational

disruption, or a breach of personal, confidential, proprietary or sensitive data caused by a hacker or other malicious actor could be significant for us, our customers and other affected third parties. For example, the consequences could include damage to infrastructure and property, impairment of business operations, disruptions to customer service, financial costs and harm to our liquidity, costs associated with remediation, loss of revenues, loss of customers, competitive disadvantage, legal expenses associated with litigation, regulatory action, fines or penalties or damage to our brand and reputation.

In addition, the costs to us to eliminate or address the foregoing security challenges and vulnerabilities before or after a cyber incident could be significant. In addition, our remediation efforts may not be successful and could result in

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interruptions, delays or cessation of service. We could also lose existing or potential customers for our services in connection with any actual or perceived security vulnerabilities in the services.

We are subject to laws, rules and regulations relating to the collection, use and security of user data. Our operations are also subject to federal and state laws governing information security. In the event of a data breach or operational disruption caused by an information security incident, such rules may require consumer and government agency notification and may result in regulatory enforcement actions with the potential of monetary forfeitures as well as civil litigation. We have incurred, and will continue to incur, expenses to comply with privacy and security standards and protocols imposed by law, regulation, industry standards and contractual obligations.

Negative outcomes of legal proceedings may adversely affect our business and financial condition.

We may become involved in legal proceedings from time to time. These proceedings may be complicated, costly and disruptive to our business operations. We might also incur significant expenses in defending these matters or may be required to pay significant fines, awards and settlements. Any of these potential outcomes, such as judgments, awards, settlements or orders could have a material adverse effect on our business, financial condition, operating results or our ability to do business.

Our balance sheet contains certain intangible assets including goodwill that we may be required to write off or write down in the future in the event of the impairment of certain of those assets arising from any deterioration in our future performance or other circumstances. Such write-offs or write-downs could adversely impact our earnings and stock price, and our ability to obtain financing in the future.

At December 31, 2018, we had \$146.5 million in goodwill and \$366.0 million of other intangible assets capitalized on our balance sheet, which collectively represented 34.5% of our total assets at that date.

We test our goodwill and other intangible assets for impairment annually or when events or circumstances warrant. If the testing performed indicates that impairment has occurred, we are required to record an impairment charge for the difference between the carrying value of the intangible asset and the fair value of the intangible asset, in the period in which the determination is made.

We may be required in the future to write off or write down certain intangible assets including goodwill in the event of deterioration in our future performance, sustained slower growth or other circumstances. Such a write-off or write-down could adversely impact our earnings and market price of our common stock, and our ability to obtain financing in the future.

We have identified material weaknesses in our internal control over financial reporting that, if not properly corrected, could materially adversely affect our operations and result in material misstatements in our financial statements.

In accordance with Section 404 of the Sarbanes-Oxley Act, we, along with our independent registered public accounting firm, are required to report on the effectiveness of our internal control over financial reporting. Failure to design and maintain effective internal control could constitute a material weakness which could result in inaccurate financial statements, inaccurate disclosures or failure to prevent fraud.

As of December 31, 2018, we did not maintain an effective control environment attributable to certain identified material weaknesses. We describe these material weaknesses in Item 9A. Controls and Procedures in this Annual Report on Form 10-K. These control deficiencies create a reasonable possibility that a material misstatement to the consolidated financial statements will not be prevented or detected on a timely basis, and therefore we concluded that the deficiencies represent material weaknesses in the Company's internal control over financial reporting and our internal control over financial reporting was not effective as of December 31, 2018. The existence of these or other material weaknesses in our internal control over financial reporting could also result in errors in our financial statements that could require us to restate our financial statements, cause us to fail to meet our reporting obligations and cause stockholders to lose confidence in our reported financial information, all of which could materially and adversely affect our business and stock price.

We have an underfunded non-contributory defined benefit pension plan.

Through our acquisition of nTelos, we assumed nTelos' non-contributory defined benefit pension plan and other post-retirement benefit plans, covering all employees who met eligibility requirements and were employed by nTelos prior

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to October 1, 2003. This pension plan was closed to nTelos employees hired on or after October 1, 2003. As of December 31, 2018, the plan was underfunded by approximately \$5.1 million. See Note 2, Summary of Significant Accounting Policies, included with the Notes to our consolidated financial statements for additional information regarding the accounting for the defined benefit pension and other postretirement benefit plans. We do not expect that we will be required to make a cash contribution to the underfunded pension plan in 2019, but we may be required to make cash contributions in future periods depending on the level of interest rates and investment returns on plan assets.

Increases in our costs of providing benefits under our non-contributory defined benefit pension plan and other postretirement benefit plans could negatively impact our results of operations and cash flows.

The measurement of the plan obligations and costs of providing benefits under the defined benefit pension and other postretirement benefit plans involves various factors, including the development of valuation assumptions and accounting policy elections. We are required to make assumptions and estimates that include the discount rate applied to benefit obligations, the long-term expected rate of return on plan assets, the anticipated rate of increase of health care costs, our expected level of contributions to the plan, the incidence of mortality, the expected remaining service period of plan participants, the level of compensation and rate of compensation increases, employee age, length of service, and the long-term expected investment rate credited to employees of certain plans, among other factors. If our benefit plans' costs increase, due to adverse changes in the securities markets, resulting in worse-than-assumed investment returns and discount rates, and adverse medical cost trends, our financial condition and operating results could be adversely affected.

Our business may be impacted by new or changing tax laws or regulations and actions by federal, state and/or local agencies, or how judicial authorities apply tax laws.

In connection with the products and services we sell, we calculate, collect and remit various federal, state and local taxes, surcharges and regulatory fees to numerous federal, state and local governmental authorities, including federal USF contributions and common carrier regulatory fees. In addition, we incur and pay state and local taxes and fees on purchases of goods and services used in our business.

Tax laws are subject to change as new laws are passed and new interpretations of the law are issued or applied. In many cases, the application of tax laws (including the recently enacted Tax Cuts and Jobs Act) is uncertain and subject to differing interpretations, especially when evaluated against new technologies and telecommunications services, such as broadband internet access and cloud related services.

In the event that we have incorrectly calculated, assessed or remitted amounts that were due to governmental authorities, we could be subject to additional taxes, fines, penalties or other adverse actions, which could materially impact our business, financial condition and operating results. In the event that federal, state and/or local municipalities were to significantly increase taxes on our network, operations or services, or seek to impose new taxes, it could have a material adverse effect on our business, financial condition, operating results or ability to do business.

Risks Related to the Wireless Industry

New disclosure or usage requirements could adversely affect the results of our wireless operations.

The FCC may impose additional consumer protection requirements upon wireless service providers, including billing-related disclosures and usage alerts. Such requirements could increase costs related to or impact the amount of revenue we receive from our wireless services.

Customer concerns over radio frequency emissions may discourage use of wireless handsets or expose us to potential litigation.

In the past, media reports and certain professional studies have suggested that certain radio frequency emissions from wireless handsets may be linked to various health problems, including cancer, and may interfere with various electronic medical devices, including hearing aids and pacemakers. Additionally, the FCC has in the past commenced rulemakings and inquiries that seek public comment on a variety of issues, including whether revisions to the existing radio frequency standards and testing requirements are warranted. Any decrease in demand for wireless services, increases in the costs of litigation or damage awards resulting from substantiation of harm from such emissions could impair our financial condition and results of operations.

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Regulation by governmental authorities or potential litigation relating to the use of wireless handsets while driving could adversely affect the results of our wireless operations.

Some studies have indicated that some aspects of using wireless handsets while driving may impair driver's attention in certain circumstances, making accidents more likely. These concerns could lead to litigation relating to accidents, deaths or serious bodily injuries, or to new restrictions or regulations on wireless phone use. A number of state and local governments are considering or have enacted legislation that would restrict or prohibit the use of a wireless handset while driving a vehicle or, alternatively, require the use of a hands-free handset. Additionally, certain federal agencies have adopted rules and proposed guidelines for the use of wireless handsets while operating commercial and non-commercial vehicles. These rules, and any legislation that could be enacted, may require wireless service providers to supply to their subscribers hands-free enhanced services, such as voice-activated dialing and hands-free speaker phones and headsets, in order to continue generating revenue from subscribers, who make many of their calls while on the road. If we are unable to provide hands-free services and products to subscribers in a timely and adequate fashion, the volume of wireless phone usage would likely decrease, and the ability of our wireless operations to generate revenues would suffer.

Risks Related to our Wireless Services

Our business may suffer as a result of competitive pressures.

Our revenue growth is primarily dependent on the growth of Sprint wireless subscribers and monthly recurring charges to these users. Competitive pressures in the wireless services industry have increased. These competitive pressures in the wireless telecommunications market have caused some major carriers to offer unlimited plans at lower prices. Increased price competition could lead to lower monthly recurring charges or a loss of subscribers in the future. Continued competitive pressures could require Sprint to lower its prices, which will limit growth in monthly recurring charges to subscribers and could adversely affect our revenues, profitability and cash flows from operations.

We may not be able to implement our business plan successfully if our operating costs are higher than we anticipate.

Increased competition may lead to higher promotional costs to acquire Sprint's subscribers. If these costs are more than we anticipate, the actual amount of funds available to implement our operating strategy and business plan may fall short of our estimates.

The dynamic nature of the wireless market may limit management's ability to correctly identify causes of volatility in key operating performance measures.

Our business plan and estimated future operating results are based on estimates of key operating performance measures, including subscriber growth, subscriber turnover, commonly known as churn, average monthly revenue per subscriber, equipment revenue, subscriber acquisition costs and other operating costs. Continued moves by all carriers to offer installment billing and leasing for wireless handsets will have an effect on revenues, cost of goods sold and churn. The dynamic nature of the wireless market, economic conditions, increased competition in the wireless telecommunications industry, the entry of potential new competitors due to past or future FCC spectrum auctions, new service offerings by Sprint or competitors at lower prices and other issues facing the wireless telecommunications industry in general have created a level of uncertainty that may adversely affect our ability to predict these key measures of performance.

We may experience a high rate of affiliate subscriber turnover, in our territory, which could adversely affect our future financial performance.

Subscriber turnover, or churn, has been relatively stable in recent years. Because of significant competition in the industry, the popularity of prepaid wireless service offerings, and unlimited postpaid plans, changes to Sprint's competitive position and economic uncertainty, among other factors, this relative stability may not continue and the future rate of subscriber turnover may be higher than in recent periods.

A high rate of churn could increase the sales and marketing costs we incur in obtaining new subscribers, especially because, consistent with industry practice, even with the introduction of wireless handset installment billing and leasing, we expect to continue to subsidize a portion of the costs related to the purchases of wireless handsets by some subscribers.

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If we are unable to secure and retain tower sites, the level of service we provide could be adversely affected.

Many of our cell sites are co-located on leased tower facilities shared with one or more wireless providers. A large portion of these leased tower sites are owned by a limited number of companies. If economic conditions adversely affect the leasing company, then our ability to enter into leases at new locations may be affected, which could leave portions of our service area without service and increase subscriber turnover or adversely affect our ability to expand into new geographic areas.

Most of the towers that we own are located on leased real property. If such leases are not renewed, we may have to relocate those cell sites, which would create significant additional expenses, or leave portions of our service area without service, increasing the likelihood of subscriber turnover.

Our business could be adversely affected by findings of product liability for health/safety risks from wireless devices and transmission equipment, as well as by changes to regulations/radio frequency emission standards.

We do not manufacture the devices or other equipment that we sell, and we depend on our suppliers to provide defect-free and safe equipment. Suppliers are required by applicable law to manufacture their devices to meet certain governmentally imposed safety criteria. However, even if the devices we sell meet the regulatory safety criteria, we could be subject to claims along with the equipment manufacturers and suppliers for any harm caused by products we sell if such products are later found to have design or manufacturing defects.

Allegations have been made that the use of wireless handsets and wireless transmission equipment, such as cell towers, may be linked to various health concerns, including cancer and brain tumors. Lawsuits have been filed against manufacturers and carriers in the industry claiming damages for alleged health problems arising from the use of wireless handsets. In addition, the FCC has from time to time gathered data regarding wireless handset emissions and its assessment of this issue may evolve based on its findings. The media has also reported incidents of handset battery malfunction, including reports of batteries that have overheated. These allegations may lead to changes in regulatory standards. There have also been other allegations regarding wireless technology, including allegations that wireless handset emissions may interfere with various electronic medical devices (including hearing aids and pacemakers), airbags and anti-lock brakes. Defects in the products of our suppliers or their smartphone devices could have a material adverse effect on our business, financial condition, operating results or ability to do business.

Additionally, there are safety risks associated with the use of wireless devices while operating vehicles or equipment. Concerns over any of these risks and the effect of any legislation, rules or regulations that have been and may be adopted in response to these risks could limit our ability to sell our wireless services.

Risks Related to Our Relationship with Sprint

The performance of our wireless service provider Shenandoah Personal Communications, LLC, our largest operating subsidiary in terms of revenues and assets, may be adversely affected by any interruption in, or other adverse change to, Sprint's business.

We rely significantly on Sprint's ongoing operations to continue to offer wireless subscribers in our affiliated service area the seamless national services that we currently provide. Any interruption in, or other adverse change to, Sprint's business could adversely affect our results of operations, liquidity and financial condition. Our business could also be adversely affected if competing national or regional wireless carriers are able to introduce new products and services or otherwise satisfy customers' service demands more rapidly or more effectively than Sprint.

The costs associated with our ongoing participation in Sprint's network upgrade and expansion plans may affect our operating results, liquidity and financial position.

Sprint continues to upgrade and expand its wireless network with the intention of improving voice quality, coverage and data speeds and simultaneously reducing future operating costs. We participate in this plan and, to date, we have made significant upgrades in our service areas, but ongoing modernization efforts are expected to continue.

The continuing success of Sprint's upgrade and expansion plans will depend on the timing, extent and cost of implementation and the performance of third parties. Should Sprint's implementation plan be delayed, our margins

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could be adversely affected and such effects could be material. Should Sprint's future delivery of services expected to be deployed on the upgraded network be delayed, it could potentially result in the loss of Sprint's subscribers to our competitors and adversely affect our revenues, profitability and cash flows from operations.

Sprint may make business decisions that are not in our best interests, which may adversely affect our business and our relationships with subscribers in our territory, increase our expenses and decrease our revenues.

Under its agreements with us, Sprint has a substantial amount of control over the operations of our wireless business. Accordingly, Sprint may make decisions that could adversely affect our wireless business, such as the following:

• Sprint could price its national plans based on its own objectives and could set price levels or other terms that may not be economically advantageous for us;

• Sprint could develop products and services that could adversely affect our results of operations;

• if Sprint's costs to perform certain services exceed the costs they expect, subject to limitations under our Sprint Affiliate Agreement, Sprint could seek to increase the amounts charged to us for such services;

• Sprint could make decisions that could adversely affect the Sprint brand names, reputation, or products or services, which could adversely affect our business;

• Sprint could make technology and network decisions that could greatly increase our capital investment requirements and our operating costs to continue offering the seamless service we provide;

Sprint could restrict our ability to offer new services needed to remain competitive. This could put us at a competitive disadvantage relative to other wireless service providers if those other wireless service providers begin offering those new services in our market areas, increasing our churn, adversely affecting our ability to obtain new subscribers and reducing our revenues and operating income from wireless services; and

• Sprint may not be able to provide the amount of spectrum that is necessary to adequately operate our business.

In addition, if the pending business combination between T-Mobile US, Inc. (T-Mobile) and Sprint is completed, it is possible that the combined company may not want to continue our affiliate services arrangement with Sprint. For additional information, see the risk factor below titled "Some provisions of the Sprint agreements may diminish the value of our common stock and restrict or diminish the value of our business."

Our dependence on Sprint for services may limit our ability to forecast operating results.

Our dependence on Sprint injects a degree of uncertainty into our business and financial planning. We may, at times, disagree with Sprint concerning the applicability, calculation approach or accuracy of Sprint-supplied revenue data.

We are subject to risks relating to Sprint's provision of back-office services and to changes in Sprint's products, services, plans and programs.

Any failure by Sprint to provide high-quality back-office services could lead to subscriber dissatisfaction, increased churn or otherwise increased costs or loss of revenue. We rely on Sprint's internal support systems, including customer care, billing and back-office support. Our operations could be disrupted if Sprint is unable to provide or expand its internal support systems while maintaining acceptable service levels, or to efficiently outsource those services and systems through third-party vendors.

In addition, restrictions exist, and new restrictions are considered from time to time by Congress, federal agencies and states. Our reliance on Sprint to perform those functions could subject us to potential liabilities.

The competitiveness of Sprint's wireless products and services is a key factor in our ability to attract and retain subscribers. Changes in Sprint's wireless products and services may reduce subscriber additions, increase subscriber churn and decrease subscriber credit quality.

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Sprint's roaming arrangements to provide service outside of the Sprint National Network may not be competitive with other wireless service providers, which may restrict our ability to attract and retain subscribers and may increase our costs of doing business.

We rely on Sprint's roaming arrangements with other wireless service providers for coverage in areas where Sprint wireless service is not available. If customers are not able to roam quickly or efficiently onto other wireless networks, we may lose current subscribers and Sprint wireless services may be less attractive to new subscribers.

The risks related to our roaming arrangements include the following:

- the quality of the service provided by another provider while roaming may not approximate the quality of the service provided by the Sprint wireless network;

- the price of a roaming call off network may not be competitive with prices of other wireless companies for roaming calls, or may not be "commercially reasonable" (as determined by the FCC);

- customers may not be able to use Sprint's advanced features, such as voicemail notification, while roaming; and

- Sprint or the carriers providing the service may not be able to provide accurate billing information on a timely basis.

Some provisions of the Sprint agreements may diminish the value of our common stock and restrict or diminish the value of our PCS business.

On April 29, 2018, T-Mobile and Sprint entered into a business combination agreement, pursuant to which T-Mobile and Sprint agreed to combine their respective businesses. It is possible that the combined company would not want to continue our affiliate services arrangement with Sprint. If the transaction is completed and we are unable to enter into a mutually acceptable addendum to the Sprint agreements with the combined company, the combined company under certain circumstances may purchase the operating assets of our wireless operations for a price equal to 90 percent of the entire business value ("EBV") as that term is defined in our agreement with Sprint. EBV is calculated as: (i) the fair market value of a going concern paid by a willing buyer to a willing seller in a change of control transaction; (ii) valued as if the business will continue to utilize existing brands and operate under existing agreements; and, (iii) valued as if we have continued access to the spectrum and the frequencies then in use in the network. Under our agreement with Sprint, the determination of EBV is made by an independent appraisal process using the then-current customary means of valuing a wireless telecommunications business. If the combined company purchases our wireless operating assets, our affiliate services arrangement with Sprint would end, which generated approximately 68% of our total consolidated operating revenue in 2018, 72% in 2017 and 69% in 2016.

In addition, under limited circumstances involving non-renewal of the Sprint agreements or a breach by us, Sprint may purchase the operating assets of our wireless operations for a purchase price of 90% of EBV in the event of non-renewal, or 81% in the event that termination is the result of a material breach of the Agreement by Shentel. Sprint also must approve any assignment of the Sprint agreements by us and has a right of first refusal to purchase our wireless operating assets if we decide to sell those assets to a third party.

These restrictions and other restrictions contained in the Sprint agreements could adversely affect the value of our common stock, may limit our ability to sell our wireless operating assets on advantageous terms, may reduce the value a buyer would be willing to pay to acquire those assets and may reduce the EBV, as described in the Sprint agreements. In addition, the possibility that the combined company may purchase the operating assets of our wireless operations may make it difficult for us to attract or retain employees or subscribers or pursue other business opportunities.

We may have difficulty in obtaining an adequate supply of wireless handsets from Sprint.

We depend on our relationship with Sprint to obtain wireless handsets. Sprint orders wireless handsets from various manufacturers. We could have difficulty obtaining specific types of wireless handsets in a timely manner if:

Sprint does not adequately project the need for wireless handsets, or enter into arrangements for new types of wireless handsets or other customer equipment, for itself, its wireless affiliates and its other third-party distribution channels, particularly in connection with the transition to new technologies;

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• Sprint gives preference to other distribution channels;

• we do not adequately project our need for wireless handsets;

• Sprint modifies its wireless handset logistics and delivery plan in a manner that restricts or delays access to wireless handsets; or

• there is an adverse development in the relationship between Sprint and its suppliers or vendors.

The occurrence of any of the foregoing could result in a decrease in the wireless subscribers in our Sprint Affiliate Area or adversely affect our ability to attract new subscribers.

If Sprint does not continue to enhance its nationwide digital wireless network, we may not be able to attract and retain subscribers in our Sprint Affiliate Area.

Our wireless operations are dependent on Sprint's national network. Sprint's digital wireless network may not provide nationwide coverage to the same extent as the networks of its competitors, which could adversely affect our ability to attract and retain subscribers in our Sprint Affiliate Area. Sprint currently covers a significant portion of the population of the United States, Puerto Rico and the U.S. Virgin Islands. Sprint offers wireless services, either on its own network or through its roaming agreements, in every part of the United States.

If Sprint's wireless licenses are not renewed or are revoked, our wireless business would be harmed.

Wireless spectrum licenses are subject to renewal and revocation by the FCC. There may be opposition to renewal of Sprint's wireless licenses upon their expiration, and Sprint's wireless licenses may not be renewed. The FCC has adopted specific standards to apply to wireless license renewals. Any failure by Sprint to comply with these standards could cause revocation or forfeiture of Sprint's wireless licenses, which would significantly harm us.

If Sprint does not maintain control over its licensed spectrum, our Sprint agreements may be terminated, which would render us unable to continue providing service. Sprint may also need additional spectrum to keep up with customer demands and the availability and cost of this spectrum could impact our wireless business.

Risks Related to Our Cable Services

Our cable segment faces risks from increasing competition for the provision of video services, including competition resulting from new technologies.

Incumbent cable companies, which have historically provided video service, face competition from direct broadcast satellite providers, and more recently from large providers of wireline telecommunications services (such as Verizon, CenturyLink and AT&T), which have begun to upgrade their networks to provide video services in addition to voice and broadband services. Wireless providers are also entering the market for video services by making such services available on handsets and tablets. In some areas, direct broadcast satellite providers have partnered with large incumbent telecommunications service providers to offer triple-play services. Moreover, consumers are increasingly accessing video content from alternative sources, such as Internet-based "over the top" providers such as Netflix, Amazon, and Hulu, and related platforms. The influx of competitors in this area, together with the development of new technologies to support them, are resulting in significant changes in the video business models and regulatory provisions that have applied to the provision of video and other services. These developments may lead to a decline in the demand, price and profitability of our cable and related video services.

Our programming costs are subject to demands for increased payments.

The cable television industry has continued to experience an increase in the cost of programming, especially sports programming retransmission fees. In addition, as we add programming to our video services for existing customers or distribute existing programming to more customers, we incur increased programming expenses. Broadcasters affiliated with major over-the-air network services have been increasing their demands for cash payments and other concessions for the right to carry local network television signals on our cable systems. If we are unable to raise our customers' rates, these increased programming costs could have an adverse impact on our results of operations.

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Moreover, as our programming contracts and retransmission agreements with programming providers expire, there can be no assurance that they will be renewed on acceptable terms.

Changes to key regulatory requirements can affect our ability to compete.

The cable industry is subject to extensive governmental regulation, which impacts many aspects of our operations. Legislators and regulators at all levels of government frequently consider changing, and sometimes do change, existing statutes, regulations, and interpretations thereof. Future legislative, judicial, or administrative actions may increase our costs or impose additional challenges and restrictions on our business.

Federal law strictly limits the scope of permissible cable rate regulation, and none of our local franchising authorities currently regulate our rates. However, as the rates charged to cable consumers have increased, Congress and the FCC have expressed concern about the impact on consumers, and they could impose restrictions affecting cable rates and programming packages that could adversely impact our existing business model.

The Company operates cable television systems in largely rural areas of Virginia, West Virginia and Maryland pursuant to local franchise agreements. These franchises are not exclusive, and other entities may secure franchise authorizations in the future, thereby increasing direct competition to the Company.

Many franchises establish comprehensive facilities and service requirements, as well as specific customer service standards and monetary penalties for non-compliance. In many cases, franchises are terminable if the franchisee fails to comply with significant provisions set forth in the franchise agreement governing system operations. Franchises are generally granted for fixed terms and must be periodically renewed. Franchising authorities may resist granting a renewal if either past performance or the prospective operating proposal is considered inadequate. Franchise authorities often demand concessions or other commitments as a condition to renewal. Our local franchises may not be renewed at expiration in which case we would have to cease operations or, operate under either temporary operating agreements or without a franchise while negotiating renewal terms with the local franchising authorities. We cannot offer assurance that we will be able to comply with all significant provisions of our franchise agreements. Additionally, although historically we have renewed our franchises without incurring significant costs, we cannot offer assurance that we will be able to renew, or to renew as favorably, our franchises in the future. A termination of or a sustained failure to renew a franchise in one or more key markets or obtaining such franchise on unfavorable terms could adversely affect our business in the affected geographic area.

Pole attachments are wires and cables that are attached to utility poles. Cable system attachments to investor-owned public utility poles historically have been regulated at the federal or state level, generally resulting in reasonable pole attachment rates for attachments used to provide cable service. In contrast, utility poles owned by municipalities or cooperatives are not subject to federal regulation and are generally exempt from state regulation and their attachment rates tend to be higher. Future regulatory changes in this area could impact the pole attachment rates we pay utility companies. In August 2018, the FCC adopted rules, scheduled to become effective thirty (30) days after Office of Management and Budget approval, to permit a "one-touch" make-ready process for poles subject to its jurisdiction. The "one touch" make-ready rules allow third parties to alter certain components of existing attachments for "simple make-ready" (i.e. where the alteration of our components does not involve a reasonable expectation of a service outage, splicing, pole replacement or relocation of a wireless attachment). The rules are intended to promote broadband deployment and competition by facilitating communications attachments, although there are concerns regarding potential damage to existing networks by third parties. Utility pole owners have appealed the rules to the United States Court of Appeals for the Eleventh Circuit. We cannot predict the effect that these rules will have on our business when they ultimately take effect.

The FCC has periodically considered proposals for new regulations intended to make our cable set-top boxes open to other service providers. If enacted, such new regulations concerning set-top boxes could increase our cost for equipment, affect our relationship with our customers, and/or enable third parties to try to offer equipment that accesses disaggregated cable content merged with other services delivered over the Internet to compete with our premium service offerings.

Risks Related To Our Broadband Services

Increases in broadband usage may cause network capacity limitations, resulting in service disruptions, reduced capacity or slower transmission speeds for our customers.

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Video streaming services, gaming and peer-to-peer file sharing applications use significantly more bandwidth than other Internet activity such as web browsing and email. As use of these newer services continues to grow, our broadband customers will likely use much more bandwidth than in the past. If this occurs, we could be required to make significant capital expenditures to increase network capacity in order to avoid service disruptions, service degradation or slower transmission speeds for our customers. Alternatively, we could choose to implement network management practices to reduce the network capacity available to bandwidth-intensive activities during certain times in market areas experiencing congestion, which could negatively affect our ability to retain and attract customers in affected markets. Competitive or regulatory constraints may preclude us from recovering costs of network investments designed to address these issues, which could adversely impact our operating margins, results of operations, financial condition and cash flows.

Our broadband services may be adversely impacted by legislative or regulatory changes that affect our ability to develop and offer services or that could expose us to liability from customers or others.

The Company provides broadband Internet access services to its cable and telephone customers through cable modems and DSL. As the Internet has matured, it has become the subject of increasing regulatory interest. Congress and Federal regulators have adopted a wide range of measures directly or potentially affecting Internet use. The adoption of new Internet regulations or policies could adversely affect our business.

In 2015, the FCC determined that broadband Internet access services, such as those we offer, were a form of “telecommunications service” under the Communications Act and, on that basis, imposed rules banning service providers from blocking access to lawful content, restricting data rates for downloading lawful content, prohibiting the attachment of non-harmful devices, giving special transmission priority to affiliates, and offering third parties the ability to pay for priority routing. The 2015 rules also imposed a “transparency” requirement, i.e., an obligation to disclose all material terms and conditions of our service to consumers.

In December 2017, the FCC adopted an order repudiating its prior (2015) treatment of broadband as a “telecommunications service,” reclassifying broadband as an “information service,” and eliminating the rules it had imposed at that time (other than a transparency/disclosure-requirement, which it eased in significant ways). The FCC also ruled that state regulators may not impose obligations similar to federal obligations that the FCC removed. Various parties have challenged this ruling in court, and, we cannot predict how any such court challenges will be resolved. Moreover, it is possible that the FCC might further revise its approach to broadband Internet access, or that Congress might enact legislation affecting the rules applicable to the service.

On January 29, 2015, the FCC, in a nation-wide proceeding evaluating whether “advanced broadband” is being deployed in a reasonable and timely fashion, increased the minimum connection speeds required to qualify as advanced broadband service to 25 Mbps for downloads and 3 Mbps for uploads. As a result, the FCC concluded that advanced broadband was not being sufficiently deployed and initiated a new inquiry into what steps it might take to encourage broadband deployment. This action may lead the FCC to adopt additional measures affecting our broadband business. At the same time, the FCC has ongoing proceedings to allocate additional spectrum for advanced wireless service, which could provide additional wireless competition to our broadband business.

The FCC imposes obligations on telecommunications service providers, including broadband Internet access service providers, and multichannel video program distributors, like our cable company, intended to ensure that individuals with disabilities are able to access and use telecommunications and video programming services and equipment. We cannot predict the nature and pace these requirements and other developments, or the impact they may have on our operations.

Risks Related to Our Voice Services

Offering voice communications service may subject us to additional regulatory burdens, causing us to incur additional costs.

We offer voice communications services over our cable broadband network and continue to develop and deploy VoIP services. The FCC has ruled that competitive telephone companies that support VoIP services, such as those we offer our customers, are entitled to interconnect with incumbent providers of traditional telecommunications services, which ensures that our VoIP services can compete in the market. The scope of these interconnection rights are sometimes

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contested by third-party providers, which may affect our ability to compete in the provision of voice services or result in additional costs. The FCC has also declared that certain VoIP services are not subject to traditional state public utility regulation. The full extent of the FCC preemption of state and local regulation of VoIP services is not yet clear. Expanding our offering of these services may require us to obtain certain additional authorizations. We may not be able to obtain such authorizations in a timely manner, or conditions could be imposed upon such licenses or authorizations that may not be favorable to us. Telecommunications companies generally are subject to other significant regulation which could also be extended to VoIP providers. If additional telecommunications regulations are applied to our VoIP service, it could cause us to incur additional costs.

The FCC has already extended certain traditional telecommunications carrier requirements to many VoIP providers such as us, including E911, USF collection, CALEA, privacy of CPNI, number porting, rural call completion, network outage reporting, disability access, rural call completion and discontinuance of service requirements. In November 2014, the FCC adopted an order imposing limited backup power obligations on providers of facilities-based fixed, residential voice services that are not otherwise line-powered, including our VoIP services. This became effective for providers with fewer than 100,000 U.S. customer lines in August 2016 and now requires the Company to disclose certain information to customers and to make available back up power at the point of sale.

In November 2011, the FCC released an order significantly changing the rules governing intercarrier compensation payments for the origination and termination of telephone traffic between carriers, including VoIP service providers like us. The Tenth Circuit Court of Appeals upheld the rules in May 2014. The new rules have resulted in a substantial decrease in intercarrier compensation payments over a multi-year period. In addition, the transition of the Local Number Portability Administrator may impact our ability to manage number porting and related tasks, and/or may result in additional costs arising from the transition to a new administrator.

ITEM 1B. UNRESOLVED STAFF COMMENTS

None.

ITEM 2. PROPERTIES

The Company owns its corporate headquarters, which occupies a 60,000-square foot building in Edinburg, Virginia, and also owns or leases other warehouse, office and retail space in various locations to support its operations. The leases for the foregoing land, buildings and tower space expire on various dates between 2019 and 2043. For information about these leases, see Note 13, Commitments and Contingencies, included with the notes to the consolidated financial statements. The Company plans to lease additional land, equipment space, and retail space in support of its operations. The Company owns various additional buildings including:

- a 26,500-square foot building in Edinburg, Virginia that houses the Company's main switching center and technical staff,
- a 14,000-square foot building in Edinburg, Virginia that includes warehouse space and houses operations staff,
- a 10,700-square foot building in Edinburg, Virginia used for customer services and retail sales,
- a 17,500-square foot building in Waynesboro, Virginia that houses a switching and data center and technical staff,
- a 15,500-square foot building in Waynesboro, Virginia that houses operational staff,
- a 4,000-square foot building in Waynesboro, Virginia used for retail sales, and
- a 15,600-square foot building in Clifton Forge, Virginia that is leased to a third party.

The Company owns nine telephone exchange buildings that are located in the major towns and some of the rural communities that are served by the regulated telecommunications operations. These buildings contain switching and fiber optic equipment and associated local exchange telecommunications equipment. The Company owns a building that houses customer service operations in Rustburg, Virginia. The Company has fiber optic hubs or points of

presence in Pennsylvania, Maryland, Virginia and West Virginia.

The Company leases land, buildings and tower space in support of its Wireless operations. As of December 31, 2018, the Company had 1,853 PCS sites, including Wireless sites on property owned by the Company, and approximately 30 retail locations.

ITEM 3. LEGAL PROCEEDINGS

None

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ITEM 4. MINE SAFETY DISCLOSURES

Not applicable

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PART II

ITEM MARKET FOR THE REGISTRANT'S COMMON EQUITY, RELATED STOCKHOLDER MATTERS
5. AND ISSUER PURCHASES OF EQUITY SECURITIES

The Company's stock is traded on the Nasdaq Global Select Market under the symbol "SHEN." The following table indicates the closing high and low sales prices per share of common stock as reported by the Nasdaq Global Select Market for each quarter during the last two years:

2018	High	Low
Fourth Quarter	\$51.41	\$34.74
Third Quarter	39.40	31.10
Second Quarter	39.65	29.93
First Quarter	38.60	30.00

2017	High	Low
Fourth Quarter	\$39.92	\$32.65
Third Quarter	38.58	28.06
Second Quarter	32.48	27.21
First Quarter	30.64	25.67

As of February 22, 2019, there were 4,073 holders of record of the Company's common stock.

Shenandoah Telecommunications Company historically has paid annual cash dividends during the fourth quarter of each year. The cash dividend was \$0.27 per share in 2018 and \$0.26 per share in 2017. Dividends are paid to Shenandoah Telecommunications Company shareholders from accumulated dividends paid to it by its operating subsidiaries. Under the Company's credit agreement, the Company is restricted in its ability to pay dividends in the future. So long as no Default or Event of Default, as defined in the credit agreement, exists before or will result after giving effect to such dividends, distributions or redemptions on a pro forma basis, the Company may declare or pay a lawful dividend or other distribution of assets, or retire, redeem, purchase or otherwise acquire capital stock in an aggregate amount which when added to any such dividends, distributions or redemptions of capital stock or other equity interest made, declared or paid from January 1, 2016 to the date of declaration, does not exceed \$25 million plus 60% of the Company's consolidated net income (excluding non-cash extraordinary items such as write-downs or write-ups of assets, other than current assets).

The following graph and table show the cumulative total shareholder return on the Company's common stock compared to the Nasdaq US Index and the Nasdaq Telecommunications Index for the period between December 31, 2013 and December 31, 2018. The Nasdaq Telecommunications Index represents a wide mix of telecommunications service and equipment providers and smaller carriers that offer similar products and serve similar markets. The graph assumes \$100 was invested on December 31, 2013 in the Company's common stock, and the other two indexes, and that all dividends were reinvested and market capitalization weighting as of December 31, 2014, 2015, 2016, 2017 and 2018.

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Our performance graphs use comparable indexes provided by Nasdaq Global Indexes.

	2013	2014	2015	2016	2017	2018
Shenandoah Telecommunications Company	\$100	\$124	\$172	\$220	\$275	\$361
NDAQ US	\$100	\$112	\$113	\$128	\$155	\$147
NDAQ Telecom Stocks	\$100	\$103	\$106	\$132	\$132	\$123

The Company maintains a dividend reinvestment plan (the “DRIP”) for the benefit of its shareholders. When shareholders remove shares from the DRIP, the Company issues whole shares in book entry form, pays out cash for any fractional shares, and cancels the fractional shares. In conjunction with the vesting of shares or exercise of stock options, the grantees may surrender awards necessary to cover the statutory tax withholding requirements and any amounts required to cover stock option strike prices associated with the transaction.

The following table provides information about the Company’s shares surrendered for the settlement of certain elements regarding equity award issuances and vesting events, during the three months ended December 31, 2018:

	Number of Shares Surrendered	Average Price Paid per Share
October 1 to October 31	250	\$ 38.43
November 1 to November 30	38,207	49.03
December 1 to December 31	267	47.40
Total	38,724	\$ 48.95

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ITEM 6. SELECTED FINANCIAL DATA

The following table sets forth selected consolidated financial data for the years presented and at the dates indicated below. Our historical results are not necessarily indicative of our results in any future periods. The summary of our consolidated financial data set forth below should be read together with our consolidated financial statements and related notes, as well as the sections entitled “Management’s Discussion and Analysis of Financial Condition and Results of Operations,” included elsewhere in this Annual Report on Form 10-K.

(in thousands, except share and per share amounts)	Years Ended December 31,				
	2018	2017	2016	2015	2014
Operating revenue	\$630,854	\$611,991	\$535,288	\$342,485	\$326,946
Operating expenses	537,608	565,481	512,762	268,399	265,003
Operating income (loss)	93,246	46,510	22,526	74,086	61,943
Interest expense	34,847	38,237	25,102	7,355	8,148
Income tax expense (benefit)	15,517	(53,133)	2,840	27,726	22,151
Net income (loss)	46,595	66,390	(895)	40,864	33,883
Total assets	1,484,766	1,411,860	1,484,407	627,151	619,242
Total debt - including current maturities	770,242	821,958	829,265	199,661	224,250
Shareholder Information:					
Shares outstanding	49,630,119	49,327,671	48,934,708	48,475,132	48,264,994
Earnings (loss) per share - basic	\$0.94	\$1.35	\$(0.02)	\$0.84	\$0.70
Earnings (loss) per share - diluted	\$0.93	\$1.33	\$(0.02)	\$0.83	0.70
Cash dividends per share	\$0.27	\$0.26	\$0.25	\$0.24	\$0.24

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ITEM MANAGEMENT'S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF
7. OPERATIONS

This annual report contains forward-looking statements within the meaning of Section 27A of the Securities Act of 1933 and Section 21E of the Securities Exchange Act of 1934, including statements regarding our expectations, intentions, or strategies regarding the future. These statements are subject to certain risks and uncertainties that could cause actual results to differ materially from those anticipated in the forward-looking statements. The Company undertakes no obligation to publicly revise these forward-looking statements to reflect subsequent events or circumstances, except as required by law. The following discussion and analysis of our financial condition and results of operations should be read in conjunction with Part II, Item 6 "Selected Financial Data" and our consolidated financial statements and notes thereto appearing elsewhere in this Annual Report on Form 10-K.

Overview

Shenandoah Telecommunications Company and its subsidiaries, (the "Company", "we", "our", or "us"), provide wireless personal communication service ("PCS") under the Sprint brand, and telephone service, cable television, unregulated communications equipment sales and services, and internet access under the Shentel brand. In addition, the Company operates an interstate fiber optic network and leases its owned cell site towers to both affiliates and non-affiliated third-party wireless service providers. The Company's reportable segments include: Wireless, Cable, Wireline, and Other. See Note 17, Segment Reporting, included with the notes to our consolidated financial statements for further information regarding our segments. The following provides a description of the operations within our segments:

Wireless provides digital wireless mobile service as a Sprint PCS Affiliate in a multi-state area covering large portions of central and western Virginia, south-central Pennsylvania, West Virginia, and portions of Maryland, North Carolina, Kentucky, and Ohio, "our wireless network coverage area". In these areas, we are the exclusive provider of Sprint-branded wireless mobility communications network products and services on the 800 MHz, 1900 MHz and 2.5 GHz spectrum bands. Wireless also owns 208 cell site towers built on leased and owned land, and leases space on these towers to both affiliates and non-affiliated third party wireless service providers.

Cable provides video, broadband and voice services in franchise areas in portions of Virginia, West Virginia, and western Maryland, and leases fiber optic facilities throughout its service area.

Wireline provides regulated and unregulated voice services, internet broadband, long distance access services, and leases fiber optic facilities throughout portions of Virginia, West Virginia, Maryland, and Pennsylvania.

Additionally, our Other operations are represented by Shenandoah Telecommunications Company, the parent holding company, that provides investing and management services to the Company's subsidiaries.

Basis of Presentation

The Company adopted ASU No. 2014-09, Revenue from Contracts with Customers ("Topic 606"), effective January 1, 2018, using the modified retrospective method as discussed in Note 3, Revenue from Contracts with Customers. The following tables identify the impact of applying Topic 606 to the Company for the year ended December 31, 2018:

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	Year Ended December 31, 2018				
	Topic 606 Impact - CONSOLIDATED				
(\$ in thousands, except per share amounts)	Prior to Adoption of Topic 606	Changes in Presentation (1)	Equipment Revenue (2)	Deferred Costs (3)	As Reported 12/31/2018
Service revenue and other	\$632,340	\$(86,637)	\$—	—\$16,753	\$562,456
Equipment revenue	8,298	—	60,100	—	68,398
Total operating revenue	640,638	(86,637)	60,100	16,753	630,854
Cost of services	193,860	—	—	162	194,022
Cost of goods sold	28,377	(24,518)	60,100	—	63,959
Selling, general & administrative	175,753	(62,119)	—	(412)	113,222
Depreciation and amortization	166,405	—	—	—	166,405
Total operating expenses	564,395	(86,637)	60,100	(250)	537,608
Operating income (loss)	76,243	—	—	17,003	93,246
Other income (expense)	(31,134)	—	—	—	(31,134)
Income tax expense (benefit)	10,926	—	—	4,591	15,517
Net income (loss)	\$34,183	\$—	\$—	—\$12,412	\$46,595
Earnings (loss) per share					
Basic	\$0.69			\$0.25	\$0.94
Diluted	\$0.68			\$0.25	\$0.93
Weighted average shares outstanding, basic	49,542				49,542
Weighted average shares outstanding, diluted	50,063				50,063

(1) Amounts payable to Sprint for the reimbursement of costs incurred by Sprint in their national sales channel for commissions and device costs for both postpaid and prepaid, and to provide on-going support to their prepaid customers in our territory were historically recorded as expense when incurred. Under Topic 606, these amounts represent consideration payable to our customer, Sprint, and are recorded as a reduction of revenue. In 2017, these amounts were approximately \$44.8 million for the postpaid national commissions, previously recorded in selling, general and administrative, \$18.7 million for national device costs previously recorded in cost of goods and services, and \$16.9 million for the on-going service to Sprint's prepaid customers, previously recorded in selling, general and administrative.

(2) Costs incurred by the Company for the sale of devices under Sprint's device financing and lease programs were previously recorded net against revenue. Under Topic 606, the revenue and related costs from device sales are recorded gross. These amounts were approximately \$63.8 million in 2017.

(3) Amounts payable to Sprint for the reimbursement of costs incurred by Sprint in their national sales channel for commissions and device costs, which historically have been expensed when incurred and presented net of revenue, are deferred and amortized against revenue over the expected period of benefit of approximately 21 to 53 months. In Cable and Wireline, installation revenues are recognized over a period of approximately 10-11 months. The deferred balance as of December 31, 2018 is approximately \$75.8 million and is classified on the balance sheet as current and non-current assets, as applicable.

Recent Developments

Big Sandy Broadband, Inc. Acquisition: Effective February 28, 2019, the Company completed its acquisition of the assets of Big Sandy Broadband, Inc., ("Big Sandy"). Big Sandy has served Eastern Kentucky for 56 years and is the leading provider of cable television, telephone, and broadband services in Johnson and Floyd counties. All customary closing conditions have been satisfied. The acquisition of Big Sandy furthers Shentel's strategy to expand the Company's cable segment with the addition of quality networks in contiguous markets. Big Sandy adds approximately 4,747 customers to Shentel's expanding Cable segment.

Credit Facility Modification: On November 9, 2018, the Company entered into an Amended and Restated Credit Agreement (the "amended 2016 credit agreement") with various financial institutions (the "Lenders") and CoBank, ACB, as administrative agent for the Lenders. These amendments resulted in several changes for the Company. The amended 2016 credit agreement reduced near term principal payments, extended the maturity of both Term Loan A-1 and A-2, allowed access to the Revolver for an extended period of time, and reduced the applicable base interest rate by 75 basis points. It also shifted \$108.8 million in principal from Term Loan A-1 to Term Loan A-2. See Note 14, Long-Term Debt for additional information.

Sprint Territory Expansion: Effective February 1, 2018, we signed the Expansion Agreement with Sprint to expand our wireless network coverage area to include certain portions of Kentucky, Pennsylvania, Virginia and West Virginia, (the "Expansion Area"), effectively adding a population (POPs) of approximately 1.1 million. The agreement includes certain network build out requirements, and the ability to utilize Sprint's spectrum in the Expansion Area along with certain other amendments to the Affiliate

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Agreements. Pursuant to the Expansion Agreement, Sprint agreed to transition the provision of network coverage in the Expansion Area to us. The Expansion Agreement required a payment of \$52.0 million to Sprint for the right to service the Expansion Area pursuant to the Affiliate Agreements plus an additional payment of up to \$5.0 million after acceptance of certain equipment at the Sprint cell sites in the Expansion Area. A map of our territory, reflecting the new Expansion Area, is provided below:

Other Events

United States Tax Reform: In December 2017, the Tax Cuts and Jobs Act (the “2017 Tax Act”) was enacted. The 2017 Tax Act represented major tax reform legislation that, among other provisions, reduced the U.S. corporate income tax rate from 35 percent to 21 percent. Certain income tax effects of the 2017 Tax Act, included approximately \$0.8 million and \$53.4 million of one-time non-cash tax benefits that were recorded in 2018 and 2017, respectively, principally due to the revaluation of our net deferred tax liabilities. See Note 16, Income Taxes, included with the notes to our consolidated financial statements for further information on the financial statement impact of the 2017 Tax Act.

Sprint Territory Expansion: Parkersburg - On April 6, 2017, we completed the expansion of our affiliate service territory, under our agreements with Sprint, to include certain areas in North Carolina, Kentucky, Maryland, Ohio and West Virginia effectively adding approximately 500 thousand POPs in the Parkersburg, WV and Cumberland, MD areas. The expanded territory includes the Parkersburg, WV, Huntington, WV, and Cumberland, MD, basic trading areas, (the "Parkersburg Expansion Area").

Acquisition of nTelos and Exchange with Sprint: On May 6, 2016, we completed the acquisition of NTELOS Holdings Corp. (“nTelos”) for \$667.8 million, net of cash acquired. The purchase price was financed by a credit facility arranged by CoBank, ACB. We have included the operations of nTelos for financial reporting purposes for periods subsequent to the acquisition. For additional information regarding the acquisition of nTelos, please refer to Note 4, Acquisitions, included with the consolidated financial statements.

Results of Operations

Revenue

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We earn revenue primarily through the sale of our wireless, cable and wireline telecommunications services that include video, broadband, voice, and data services. We also lease space on our cell site towers and our fiber network. Our revenue is primarily driven by the number of Sprint subscribers that utilize our wireless network as well as the number of our customers that subscribe to our cable and wireline services, our ability to retain our customers and the contractually negotiated price of such services.

Operating Expenses

Our operating expenses consist primarily of cost of services, cost of goods sold, selling, general and administrative, acquisition, integration and migration expense related to the nTelos acquisition, and depreciation and amortization expenses, described as follows:

Cost of Services - Cost of services consists primarily of network-related costs attributable to the operation of our wireless, cable and wireline networks, including network costs, site costs for telecommunications equipment, and maintenance expenses, programming costs for our Cable operations, and expenses for employees who provide direct contractual services to our clients, including salaries, benefits, discretionary incentive compensation, employment taxes, and equity compensation costs. In 2017 and 2016 our cost of services also included network and maintenance related expenses incurred to integrate nTelos. Cost of services does not include allocated amounts for occupancy expense and depreciation and amortization. Overall, we expect cost of services to grow as we expand our network to capitalize on expansion opportunities in our market, which will require us to add additional staff, enter into additional tower and ground leases, and incur additional backhaul and network expenses.

Cost of Goods Sold - Cost of goods sold consists primarily of the cost of handsets and accessories for our Wireless subscribers. It excludes any allocation of depreciation and amortization. We expect cost of goods sold to grow as we expand our network to capitalize on growth of the subscriber base.

Selling, General and Administrative - Our selling, general and administrative expense consists primarily of employee-related expenses, including salaries, benefits, commissions, discretionary incentive compensation, employment taxes, and equity compensation costs for our employees engaged in the administration of sales, sales support, business development, marketing, management information systems, administration, human resources, finance, legal, and executive management. Selling, general and administrative expense also includes occupancy expenses including rent, utilities, communications, and facilities maintenance, professional fees, consulting fees, insurance, travel, and other expenses. In 2017 and 2016 our selling, general and administrative expense also included certain general expenses, such as severance, incurred to integrate nTelos. Our sales and marketing expense excludes any allocation of depreciation and amortization. We expect our selling, general and administrative expenses to increase as we strategically invest in our sales support organization to expand our business, both organically and in our newly-acquired Sprint Expansion Areas.

Acquisition, Integration and Migration - Our acquisition, integration and migration expense consisted primarily of costs required to migrate subscribers acquired in the May 2016 acquisition of nTelos to the Sprint billing and network systems, costs required to integrate the acquired nTelos administrative and operational support functions, severance costs for former nTelos employees who were not retained, transaction related fees; and gains or losses associated with the disposal of certain property. We completed the migration of nTelos subscribers to the Sprint network during 2017.

Depreciation and Amortization Expense - Our depreciation and amortization expense consists primarily of depreciation of fixed assets, and amortization of acquisition-related intangible assets. We expect our depreciation and amortization expense to increase as we expand our networks organically and through acquisitions.

Other Income (Expense)

Our other income (expense) consists primarily of interest expense, net gain (loss) on investments, and net non-operating income (loss), described as follows:

Interest Expense - Interest expense represents interest incurred on our Credit Facilities (as defined below, under the heading Financial Condition, Liquidity and Capital Resources, and in Note 14, Long-Term Debt). We expect our interest expense to fluctuate in proportion to the outstanding principal balance of the Credit Facilities and the prevailing London Interbank Offered Rate ("LIBOR") interest rate.

Gain (Loss) on Investments, net - Net gain (loss) on investments, consists of gains and losses realized as changes occur in the value of the assets and obligation underlying the Company's Supplemental Executive Retirement Plan ("SERP")

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retirement plan. We expect our net gain (loss) on investments to fluctuate in proportion to the prevailing market conditions as they relate to our SERP assets and obligations.

Non-Operating Income (Loss), net - Net non-operating income (loss), primarily represents interest and dividends earned from our investments, including our patronage arrangement that is connected to our Credit Facility. We expect our non-operating income (loss) to fluctuate in proportion to the amount of funds we invest and the continuation of the patronage arrangement.

Income Tax Expense (Benefit)

Our provision for income taxes consists of federal and state income taxes in the United States, and the effect of the 2017 Tax Act, including deferred income taxes reflecting the net tax effects of temporary differences between the carrying amounts of assets and liabilities for financial reporting purposes and the amounts used for income tax purposes, and excess tax benefits or shortfalls derived from exercises of stock options and vesting of restricted stock.

We expect that in the near-term our effective tax rate may fluctuate due to the effect of the 2017 Tax Act and the recognition of excess tax benefits and tax shortfalls associated with the exercise of stock options or the vesting of restricted stock. Excluding discrete items impacting the effective tax rate, we expect our long-term tax rate to reflect the applicable federal and state statutory rates. Refer to Note 16, Income Taxes, included with the notes to our consolidated financial statements for additional information concerning income taxes and the effects of the 2017 Tax Act.

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Results of Operations

2018 Compared with 2017

The Company's consolidated results from operations are summarized as follows:

	Year Ended December 31,				Change	
(\$ in thousands)	2018	% of Revenue	2017	% of Revenue	\$	%
Operating revenue	\$630,854	100.0	\$611,991	100.0	18,863	3.1
Operating expenses	537,608	85.2	565,481	92.4	(27,873)	(4.9)
Operating income (loss)	93,246	14.8	46,510	7.6	46,736	100.5
Interest expense	(34,847)	(5.5)	(38,237)	(6.2)	(3,390)	(8.9)
Other income (expense), net	3,713	0.6	4,984	0.8	(1,271)	(25.5)
Income (loss) before taxes	62,112	9.8	13,257	2.2	48,855	368.5
Income tax expense (benefit)	15,517	2.5	(53,133)	(8.7)	68,650	129.2
Net income (loss)	\$46,595	7.4	\$66,390	10.9	(19,795)	(29.8)

Operating revenue

Operating revenue increased approximately \$18.9 million, or 3.1%, in 2018 compared with 2017. Excluding the impact of adopting Topic 606, operating revenue increased approximately \$28.6 million, or 4.7%, driven by the Wireless and Cable operations.

Operating expenses

Operating expenses decreased approximately \$27.9 million, or 4.9%, in 2018 compared with 2017. Excluding the impact of adopting Topic 606, operating expenses decreased approximately \$1.1 million, or 0.2%, primarily due to the absence of acquisition, integration and migration costs related to the completion of the transformation of the nTelos network in 2017 as well as lower depreciation and amortization costs due to the retirement of assets acquired with nTelos, partially offset by increased costs necessary to support our continued growth and expansion.

Interest expense

Interest expense decreased approximately \$3.4 million, or 8.9%, in 2018 compared with 2017. The decrease in interest expense was primarily attributable to the 2018 amendments to the Credit Facility Agreement that reduced the applicable base interest rate by 75 basis points, partially offset by the effect of increases in the LIBOR.

Other income (expense), net

Other income, net decreased approximately \$1.3 million, or 25.5%, in 2018 compared with 2017. The decrease was primarily attributable to a reduction in interest income related to the former nTelos equipment installment plan. The integration of the acquired nTelos business was completed during 2017.

Income tax expense (benefit)

Income tax expense increased \$68.7 million from a \$53.1 million benefit in 2017 to a \$15.5 million expense in 2018. The increase was primarily attributable to growth in our income before taxes during 2018 and the one-time non-cash tax benefit of \$53.4 million recorded in 2017 as a result of the reduction in the U.S. corporate income tax rate from 35% to 21% as the 2017 Tax Act became effective. The Company's effective tax rate increased from a benefit of 400.8% in 2017 to an expense of 25.0% in 2018. Refer to Note 16, Income Taxes for additional information concerning income taxes.

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2017 Compared with 2016

The Company's consolidated results from operations are summarized as follows:

(\$ in thousands)	Year Ended December 31,		Change			
	2017	% of Revenue	2016	% of Revenue	\$	%
Operating revenue	\$611,991	100.0	\$535,288	100.0	76,703	14.3
Operating expenses	565,481	92.4	512,762	95.8	52,719	10.3
Operating income (loss)	46,510	7.6	22,526	4.2	23,984	106.5
Other income (expense), net	(33,253)	)(5.4	)(20,581)	)(3.8	12,672	61.6
Income (loss) before taxes	13,257	2.2	1,945	0.4	11,312	581.6
Income tax expense (benefit)	(53,133)	)(8.7	2,840	0.5	(55,973)	(1,970.9)
Net income (loss)	\$66,390	10.8	\$(895)	)(0.2	67,285	7,517.9

Operating revenues

Operating revenues increased approximately \$76.7 million, or 14.3%, in 2017 compared with 2016. Wireless segment revenues increased \$66.3 million compared with 2016; this increase was primarily due to the expansion of our Wireless network coverage area through our 2016 acquisition of nTelos. Cable segment revenue grew approximately \$10.4 million, primarily as a result of a 1.2% growth in average revenue generating units and a 8.3% increase in revenue per subscriber. Wireline segment revenue increased approximately \$4.3 million, led by growth in carrier access fees, fiber revenues and internet service revenues.

Operating expenses

Total operating expenses increased approximately \$52.7 million, or 10.3%, in 2017 compared with 2016. Wireless operating expenses increased approximately \$58.4 million primarily due to our 2016 acquisition of nTelos that resulted in additional network costs required to support our expanded Wireless network, while operating expenses in our Other operations decreased approximately \$6.8 million, primarily due to the completion of integration activities associated with the acquisition of nTelos. Cable and Wireline operating expenses increased approximately \$1.6 million and \$3.8 million, respectively. Within consolidated operating expenses, cost of goods and services sold increased approximately \$18.0 million, selling, general and administrative expenses increased approximately \$32.6 million, depreciation and amortization increased approximately \$33.3 million, primarily due to our 2016 acquisition of nTelos. Increases in operating expenses were offset by a decrease in acquisition, integration and migration costs of approximately \$31.2 million as a result of the completion of integration and migration activities related to the acquisition of nTelos.

Other income (expense)

Other expense increased approximately \$12.7 million or 61.6% in 2017 compared with 2016, primarily due to an increase in interest expense due to borrowings, related to our acquisition of nTelos, under our credit facility that were outstanding for the full year 2017.

Income tax expense (benefit)

The Company's effective tax rate decreased from an expense of 146.0% in 2016 to a benefit of 400.8% in 2017. The decrease is primarily attributable to the changes in federal tax regulations related to the 2017 Tax Act that was enacted during December 2017 and non-deductible transactions costs incurred in 2016. We are expecting our long-term tax rate to more closely reflect the applicable federal and statutory rates offset for any excess tax benefits or shortfalls related to vesting or exercise of equity awards.

We recognized an income tax benefit of approximately \$53.1 million for the year ended December 31, 2017. This includes a one-time non-cash decrease of approximately \$53.4 million in our net deferred tax liabilities as a result of the remeasurement of our deferred tax assets and liabilities as of December 31, 2017 to reflect the reduction in the U.S. corporate income tax rate from 35 percent to 21 percent. The 2017 Tax Act also provides immediate expensing for certain qualified assets acquired and placed into service after September 27, 2017 as well as prospective changes beginning in 2018, including acceleration of tax revenue recognition, additional limitations on deductibility executive compensation and limitations on the deductibility of interest.

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Wireless

Wireless earns postpaid, prepaid and wholesale revenues from Sprint for their subscribers that use our Wireless network service in our Wireless network coverage area. The Company's wireless revenue is variable based on billed revenues to Sprint's customers in the Sprint Affiliate Area less applicable fees retained by Sprint. Sprint retains an 8% Management Fee and an 8.6% Net Service Fee on postpaid revenues and a 6% Management Fee on prepaid wireless revenues. For postpaid, the Company is also charged for the costs of subsidized handsets sold through Sprint's national channels as well as commissions paid by Sprint to third-party resellers in our service territory. Sprint also charges the Company separately to acquire and support prepaid customers. These charges are calculated based on Sprint's national averages for its prepaid programs, and are billed per user or per gross additional customer, as appropriate.

Under our amended affiliate agreement, Sprint agreed to waive the Management Fees charged on both postpaid and prepaid revenues, up to approximately \$4.2 million per month, until the total amount waived reaches approximately \$255.6 million, which is expected to occur in 2022. The cash flow savings of the waived management fee waiver have been incorporated into the fair value of the affiliate contract expansion intangible, which is reduced, in part, as credits are received from Sprint.

The following table identifies the impact of Topic 606 on the Company's Wireless operations for the year ended December 31, 2018:

(\$ in thousands)	Year Ended December 31, 2018				
	Topic 606 Impact -				
	WIRELESS				
	Prior to Adoption of Topic 606	Changes in Presentation (1)	Equipment Revenue (2)	Deferred Costs (3)	As Reported 12/31/2018
Service revenue	\$450,735	\$(86,637)	\$	—\$16,720	\$ 380,818
Equipment revenue	7,410	—	60,100	—	67,510
Tower and other revenue	14,327	—	—	—	14,327
Total operating revenue	472,472	(86,637)	60,100	16,720	462,655
Cost of services	131,166	—	—	—	131,166
Cost of goods sold	28,001	(24,518)	60,100	—	63,583
Selling, general & administrative	109,657	(62,119)	—	—	47,538
Depreciation and amortization	127,521	—	—	—	127,521
Total operating expenses	396,345	(86,637)	60,100	—	369,808
Operating income (loss)	\$76,127	\$—	\$	—\$16,720	\$ 92,847

(1) Amounts payable to Sprint for the reimbursement of costs incurred by Sprint in their national sales channel for commissions and device costs for both postpaid and prepaid, and to provide on-going support to their prepaid customers in our territory were historically recorded as expense when incurred. Under Topic 606, these amounts represent consideration payable to our customer, Sprint, and are recorded as a reduction of revenue. In 2017, these amounts were approximately \$44.8 million for the postpaid national commissions, previously recorded in selling, general and administrative, \$18.7 million for national device costs previously recorded in cost of goods and services, and \$16.9 million for the on-going service to Sprint's prepaid customers, previously recorded in selling, general and administrative.

(2) Costs incurred by the Company for the sale of devices under Sprint's device financing and lease programs were previously recorded net against revenue. Under Topic 606, the revenue and related costs from device sales are recorded gross. These amounts were approximately \$63.8 million in 2017.

(3) Amounts payable to Sprint for the reimbursement of costs incurred by Sprint in their national sales channel for commissions and device costs, which historically have been expensed when incurred and presented net of revenue, are deferred and amortized against revenue over the expected period of benefit of approximately 21 to 53 months. The deferred balance as of December 31, 2018 is approximately \$75.8 million and is classified on the balance sheet as current and non-current assets, as applicable.

The following tables indicate selected operating statistics of Wireless, including Sprint subscribers:

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	December 31, 2018 (3)	December 31, 2017 (4)	December 31, 2016 (5)
Postpaid:			
Retail PCS subscribers - postpaid	795,176	736,597	722,562
Gross PCS subscriber additions - postpaid	190,334	173,871	132,593
Net PCS subscriber additions (losses) - postpaid	58,579	14,035	5,085
PCS average monthly retail churn % - postpaid	1.82 %	2.04 %	1.84 %
Prepaid:			
Retail PCS subscribers - prepaid (1)	258,704	225,822	206,672
Gross PCS subscriber additions - prepaid (1)	150,662	151,926	102,352
Net PCS subscriber additions (losses) - prepaid (1)	32,882	19,150	(58,643)
PCS average monthly retail churn % - prepaid (1)	4.45 %	5.07 %	6.72 %
PCS market POPS (000) (2)	7,023	5,942	5,536
PCS covered POP (000) (2)	6,109	5,272	4,807
CDMA base stations (sites)	1,853	1,623	1,467
Towers owned	208	192	196
Non-affiliate cell site leases	193	192	202

(1) As of September 2017, the Company is no longer including Lifeline subscribers to be consistent with Sprint's policy. Historical customer counts have been adjusted accordingly.

"POPS" refers to the estimated population of a given geographic area. Market POPS are those within a market area which we are authorized to serve under our Sprint PCS affiliate agreements, and Covered POPS are those covered by our network. The data source for POPS is U.S. census data. Historical periods previously referred to other third party population data and have been recast to refer to U.S. census data.

(3) Beginning February 1, 2018 includes Richmond Expansion Area except for gross PCS subscriber additions.

(4) Beginning April 6, 2017 includes Parkersburg Expansion Area except for gross PCS subscriber additions.

(5) Beginning May 6, 2016 includes acquired nTelos Area except for gross PCS subscriber additions.

The subscriber statistics shown above, excluding gross additions, include the following:

	February 1, 2018 Expansion Area	April 6, 2017 Expansion Area	May 6, 2016 nTelos Area
PCS subscribers - postpaid	38,343	19,067	404,965
PCS subscribers - prepaid (1)	15,691	4,517	154,944
Acquired PCS market POPS (000)	1,082	511	3,099
Acquired PCS covered POPS (000)	602	244	2,298
Acquired CDMA base stations (sites) (2)	105	—	868
Towers	—	—	20
Non-affiliate cell site leases	—	—	10

(1) Excludes Lifeline subscribers.

(2) As of December 31, 2018 we have shut down 107 overlap sites associated with the nTelos Area.

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2018 Compared with 2017

Wireless results from operations are summarized as follows:

(\$ in thousands)	Year Ended December 31,				Change	
	2018	% of Revenue	2017	% of Revenue	\$	%
Wireless operating revenue						
Wireless service revenue	\$380,818	82.3	\$431,184	94.7	(50,366)	(11.7)
Tower lease revenue	11,622	2.5	11,604	2.5	18	0.2
Equipment revenue	67,510	14.6	9,467	2.1	58,043	613.1
Other revenue	2,705	0.6	2,823	0.7	(118)	(4.2)
Total wireless operating revenue	462,655	100.0	455,078	100.0	7,577	1.7
Wireless operating expenses						
Cost of services	131,166	28.4	129,626	28.5	1,540	1.2
Cost of goods sold	63,583	13.7	22,653	5.0	40,930	180.7
Selling, general and administrative	47,538	10.3	118,257	26.0	(70,719)	(59.8)
Acquisition, integration and migration expenses	—	—	10,793	2.4	(10,793)	(100.0)
Depreciation and amortization	127,521	27.6	139,610	30.7	(12,089)	(8.7)
Total wireless operating expenses	369,808	79.9	420,939	92.5	(51,131)	(12.1)
Wireless operating income (loss)	\$92,847	20.1	\$34,139	7.5	58,708	172.0

Operating revenue

Wireless operating revenue increased approximately \$7.6 million, or 1.7%, in 2018 compared with 2017. Excluding the impact of Topic 606, wireless operating revenue increased approximately \$17.4 million, or 3.8%. This increase was driven by growth in postpaid and prepaid PCS subscribers, improvements in average monthly churn, and was partially offset by a decline in postpaid average revenue per subscriber primarily related to promotions and discounts.

As a result of the adoption of Topic 606 in 2018, wireless service revenue was reduced by approximately \$86.6 million of costs payable to Sprint, our customer, related to the reimbursement to Sprint for costs incurred in their national sales channel for commissions and device costs for both postpaid and prepaid, and to provide ongoing support to their prepaid customers in our territory. Commissions, device costs and costs for ongoing support of Sprint's prepaid customers were previously recorded as operating expenses. Additionally, we recorded \$60.1 million of equipment revenue and cost of goods sold for the sale of devices under Sprint's device financing and lease programs. Prior to the adoption of Topic 606, equipment costs were presented net of equipment revenue.

The table below provides additional detail for Wireless service revenue.

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(\$ in thousands)	Year Ended December 31,		Change	
	2018	2017	\$	%
Wireless service revenue:				
Postpaid billings (1)	\$383,235	\$372,237	10,998	3.0
Amortization of deferred contract and other costs (3)	(18,742)	—	18,742	100.0
Management fee	(30,749)	(29,857)	892	3.0
Net service fee	(32,969)	(30,751)	2,218	7.2
Total postpaid service revenue	300,775	311,629	(10,854)	(3.5)
Prepaid billings (2)	111,462	103,161	8,301	8.0
Amortization of deferred contract and other costs (3)	(52,846)	—	52,846	100.0
Sprint management fee	(7,014)	(6,189)	825	13.3
Total prepaid service revenue	51,602	96,972	(45,370)	(46.8)
Travel and other revenue (2)	28,441	22,583	5,858	25.9
Total service revenue	\$380,818	\$431,184	(50,366)	(11.7)

Postpaid net billings are defined under the terms of the affiliate contract with Sprint to be the gross billings to (1) customers within our wireless network coverage area less billing credits and adjustments and allocated write-offs of uncollectible accounts.

The Company includes Lifeline subscribers revenue within travel and other revenue to be consistent with Sprint. (2) The above table reflects the reclassification of the related Assurance Wireless prepaid revenue from prepaid gross billings to travel and other revenue.

Due to the adoption of Topic 606, costs reimbursed to Sprint for commission and acquisition cost incurred in their national sales channel are recorded as a reduction of revenue and amortized over the period of benefit. (3) Additionally, costs reimbursed to Sprint for the support of their prepaid customer base are recorded as a reduction of revenue. These costs were previously recorded in cost of goods sold, and selling, general and administrative.

The decline in postpaid service revenue during 2018 was primarily the result of the adoption of Topic 606. Excluding the impact of adopting Topic 606, postpaid service revenue increased approximately \$6.2 million or 2.0%, primarily due to growth of approximately 58.6 thousand postpaid PCS retail subscribers and an improvement in postpaid PCS average monthly retail churn, partially offset by a decline in average revenue per subscriber. The growth in our postpaid PCS retail subscribers includes approximately 38.3 thousand acquired with the Richmond Expansion Area. Postpaid service revenue was further reduced by approximately \$2.2 million due to an increase in net service fee as nTelos subscribers were migrated to Sprint's billing and back-office systems. The migration of these subscribers resulted in the elimination of costs to operate the nTelos back-office systems which were recorded in selling, general and administrative.

The decline in prepaid service revenue during 2018, was primarily the result of the adoption of Topic 606. Excluding the impact of adopting Topic 606, prepaid service revenue increased approximately \$7.5 million or 7.7% due to growth of approximately 32.9 thousand prepaid PCS retail subscribers, improvements in prepaid PCS average monthly retail churn and average revenue per subscriber. The growth in our prepaid PCS retail subscribers includes approximately 15.7 thousand subscribers acquired with the Richmond Expansion Area.

Travel and other revenue increased \$5.9 million, or 25.9%, in 2018 compared with 2017, primarily due to Lifeline subscribers acquired through our expansion events.

Cost of services

Cost of services increased approximately \$1.5 million, or 1.2%, in 2018 compared with 2017, primarily due to the expansion of our network and wireless network coverage area and was partially offset by repricing Wireless backhaul

circuits to market rates and migrating Wireless voice traffic from traditional circuit-switched facilities to more cost effective VoIP facilities.

Cost of goods sold

Cost of goods sold increased approximately \$40.9 million, or 180.7%, in 2018 compared with 2017. The increase in costs of goods sold was primarily the result of the reclassification of approximately \$60.1 million of expenses for equipment costs, which were previously classified as reductions of revenue, and was partially offset by \$24.5 million of costs incurred for subsidy loss reimbursements that are now presented within revenue, driven by the adoption of Topic 606. Excluding the impact of the adoption of Topic 606, cost of goods sold increased approximately \$5.3 million, or 23.6% due to an increase in equipment costs primarily related to prepaid handsets.

Selling, general and administrative

Selling, general and administrative costs decreased approximately \$70.7 million, or 59.8%, in 2018 compared with 2017. The decrease in selling, general and administrative was primarily attributable to the reclassification of approximately \$62.1 million of

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commissions and subscriber acquisition costs to reductions of revenue as required by the adoption of Topic 606. Excluding the impact of Topic 606, selling, general and administrative costs decreased approximately \$8.6 million, or 7.3% primarily due to a reduction of back-office expenses required to support former nTelos subscribers that migrated to the Sprint back-office during 2017.

Acquisition, integration and migration expenses

Acquisition and integration costs were not incurred during 2018, as the completion of integration and migration activities related to the acquisition of nTelos was completed during 2017.

Depreciation and amortization

Depreciation and amortization decreased approximately \$12.1 million, or 8.7%, in 2018 compared with 2017, primarily due to the retirement of assets acquired in the nTelos acquisition.

2017 Compared with 2016

Wireless results from operations are summarized as follows:

(\$ in thousands)	Year Ended December 31,				Change	
	2017	% of Revenue	2016	% of Revenue	\$	%
Wireless operating revenue						
Wireless service revenue	\$431,184	94.7	\$359,769	92.5	71,415	19.9
Tower lease revenue	11,604	2.5	11,279	2.9	325	2.9
Equipment revenue	9,467	2.1	10,674	2.7	(1,207)	(11.3)
Other revenue	2,823	0.7	7,031	1.9	(4,208)	(59.8)
Total wireless operating revenue	455,078	100.0	388,753	100.0	66,325	17.1
Wireless operating expenses						
Cost of goods and services	152,279	33.5	133,113	34.2	19,166	14.4
Selling, general and administrative	118,257	26.0	95,851	24.7	22,406	23.4
Acquisition, integration and migration expenses	10,793	2.4	25,927	6.7	(15,134)	(58.4)
Depreciation and amortization	139,610	30.7	107,621	27.7	31,989	29.7
Total wireless operating expenses	420,939	92.5	362,512	93.2	58,427	16.1
Wireless operating income (loss)	\$34,139	7.5	\$26,241	6.8	7,898	30.1

Operating revenue

Wireless service revenue increased approximately \$71.4 million, or 19.9%, in 2017 compared with 2016, primarily due subscriber growth related to the expansion of our wireless network coverage area that was driven by our 2016 acquisition of nTelos and was offset by a decline in revenue per subscriber as a higher percentage of Sprint's postpaid customer base moved from higher revenue subsidized phone price plans to lower phone price plans associated with leased and installment sales. Postpaid net billings increased approximately \$57.7 million, or 18.3%, as Postpaid Retail PCS Subscribers increased 1.9% primarily due to new subscribers from nTelos. Prepaid net billings increased \$23.1 million, or 28.9%, due to 9.3% growth in Prepaid Retail PCS Subscribers and higher average revenue per subscriber due to improvements in product mix. Travel and other revenues increased \$4.0 million due to a full year of travel revenue in the former nTelos service area compared to eight months in 2016.

Equipment revenue decreased approximately \$1.2 million or 11.3%, driven by a decline in handset sales as more subscribers are leasing their handsets directly from Sprint, and as of August 2017, the Company is no longer being compensated for accessory sales through Sprint's national retailer channel.

Other revenue decreased \$4.2 million, or 59.8%, in 2017 compared with the same period in 2016 primarily due to the migration of the nTelos subscribers to the Sprint billing platform and corresponding reduction in regulatory recovery

revenues that we billed the subscribers from the former nTelos platform prior to their migration.

The table below provides additional detail for Wireless service revenue.

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(\$ in thousands)	Year Ended December 31,		Change	
	2017	2016	\$	%
Wireless service revenue:				
Postpaid billings (1)	\$372,237	\$314,579	57,658	18.3
Management fee	(29,857)	(25,543)	4,314	16.9
Net service fee	(30,751)	(22,953)	7,798	34.0
Total postpaid service revenue	311,629	266,083	45,546	17.1
Prepaid billings (2)	103,161	80,056	23,105	28.9
Sprint management fee	(6,189)	(4,960)	1,229	24.8
Total prepaid service revenue	96,972	75,096	21,876	29.1
Travel and other revenue (2)	22,583	18,590	3,993	21.5
Total service revenue	\$431,184	\$359,769	71,415	19.9

1) Postpaid net billings are defined under the terms of the affiliate contract with Sprint to be the gross billings to customers within our wireless network coverage area less billing credits and adjustments and allocated write-offs of uncollectible accounts.

2) The Company is no longer including Lifeline subscribers to be consistent with Sprint. The above table reflects the reclassification of the related Assurance Wireless prepaid revenue from prepaid gross billings to travel and other revenues for both years shown.

Cost of goods and services

Cost of goods and services increased approximately \$19.2 million, or 14.4%, in 2017 compared with 2016 due to the expansion of our network as a result of our 2016 acquisition of nTelos. Network costs increased \$22.7 million, while maintenance costs increased \$2.8 million and are both primarily attributable to a full year of nTelos and the expansion of our network and wireless network coverage area. Handset costs decreased approximately \$7.0 million due to the completion of the migration of nTelos subscribers to the Sprint platform.

Selling, general and administrative

Selling, general and administrative costs increased approximately \$22.4 million, or 23.4%, in 2017 compared with 2016 primarily due to the expansion of our network as a result of our 2016 acquisition of nTelos. Expenses associated with prepaid wireless programs increased approximately \$14.1 million in 2017 compared with 2016 as a result of the nTelos acquisition. Advertising and sales expenses increased \$13.2 million as a result of our marketing campaigns aimed at POPS in our expanded wireless network coverage area. Integration costs classified as selling, general and administrative, associated with our acquisition of nTelos decreased approximately \$3.8 million as a result of the 2017 completion of our migration and integration efforts. Customer service costs also decreased by approximately \$1.1 million compared to 2016.

Acquisition, integration and migration expenses

Acquisition, integration and migration expenses decreased approximately \$15.1 million as we completed the migration of subscribers from the nTelos billing platform to the Sprint network and billing platform.

Depreciation and amortization

Depreciation and amortization increased \$32.0 million, or 29.7%, in 2017 over 2016, reflecting the amortization of tangible and intangible assets acquired in the nTelos acquisition.

Cable

Cable provides video, broadband and voice services in franchise areas in portions of Virginia, West Virginia and western Maryland, and leases fiber optic facilities throughout its service area. It does not include video, broadband and voice services provided to customers in Shenandoah County, Virginia, which are included in Wireline. The following table indicates selected operating statistics of Cable:

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	December 31, 2018	December 31, 2017	December 31, 2016		
Homes passed (1)	185,133	184,910	184,710		
Customer relationships (2)					
Video users	41,269	44,269	48,512		
Non-video customers	38,845	33,559	28,854		
Total customer relationships	80,114	77,828	77,366		
Video					
Customers (3)	43,600	46,613	50,618		
Penetration (4)	23.6	% 25.2	% 27.4	%	
Digital video penetration (5)	78.8	% 76.2	% 77.4	%	
Broadband					
Available homes (6)	185,133	184,910	183,826		
Users (3)	68,179	63,918	60,495		
Penetration (4)	36.8	% 34.6	% 32.9	%	
Voice					
Available homes (6)	185,133	182,379	181,089		
Users (3)	23,366	22,555	21,352		
Penetration (4)	12.6	% 12.4	% 11.8	%	
Total revenue generating units (7)	135,145	133,086	132,465		
Fiber route miles	3,514	3,356	3,137		
Total fiber miles (8)	138,648	122,011	92,615		
Average revenue generating units	133,109	132,759	131,218		

Homes and businesses are considered passed (“homes passed”) if we can connect them to our distribution system (1) without further extending the transmission lines. Homes passed is an estimate based upon the best available information.

(2) Customer relationships represent the number of billed customers who receive at least one of our services.

Generally, a dwelling or commercial unit with one or more television sets connected to our distribution system counts as one video customer. Where services are provided on a bulk basis, such as to hotels and some (3) multi-dwelling units, the revenue charged to the customer is divided by the rate for comparable service in the local market to determine the number of customer equivalents included in the customer counts shown above.

(4) Penetration is calculated by dividing the number of users by the number of homes passed or available homes, as appropriate.

Digital video penetration is calculated by dividing the number of digital video users by total video users. Digital (5) video users are video customers who receive any level of video service via digital transmission. A dwelling with one or more digital set-top boxes or digital adapters counts as one digital video user.

(6) Homes and businesses are considered available (“available homes”) if we can connect them to our distribution system without further extending the transmission lines and if we offer the service in that area.

(7) Revenue generating units are the sum of video, voice and high-speed internet users.

(8) Total fiber miles are measured by taking the number of fiber strands in a cable and multiplying that number by the route distance. For example, a 10 mile route with 144 fiber strands would equal 1,440 fiber miles.

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2018 Compared with 2017

Cable results from operations are summarized as follows:

(\$ in thousands)	Year Ended December 31,				Change	
	2018	% of Revenue	2017	% of Revenue	\$	%
Cable operating revenue						
Service revenue	\$ 114,917	89.1	\$ 107,338	90.1	7,579	7.1
Equipment revenue	695	0.5	724	0.6	(29)	(4.0)
Other revenue	13,291	10.4	11,100	9.3	2,191	19.7
Total cable operating revenue	128,903	100.0	119,162	100.0	9,741	8.2
Cable operating expenses						
Cost of services	59,935	46.5	59,335	49.8	600	1.0
Cost of goods sold	295	0.2	14	—	281	2,007.1
Selling, general, and administrative	20,274	15.7	19,999	16.8	275	1.4
Depreciation and amortization	24,644	19.1	23,968	20.1	676	2.8
Total cable operating expenses	105,148	81.6	103,316	86.7	1,832	1.8
Cable operating income (loss)	\$ 23,755	18.4	\$ 15,846	13.3	7,909	49.9

Service revenue

Service revenue increased approximately \$7.6 million, or 7.1%, in 2018 compared with 2017, primarily due to growth in our broadband and voice subscribers, video rate increases, and our customers selecting or upgrading to higher-speed data access packages.

Other revenue

Other revenue increased approximately \$2.2 million, or 19.7%, in 2018 compared with 2017, primarily due to new fiber contracts and installation services that were driven by growth in our customer base.

Operating expenses

Operating expenses increased approximately \$1.8 million, or 1.8%, in 2018 compared with 2017 due primarily to our investment in infrastructure necessary to support the growth of the cable and fiber networks.

The impact of the adoption of Topic 606, which deferred incremental commission and installation costs over the life of the customer, did not have a significant impact on operating expenses.

2017 Compared with 2016

Cable results from operations are summarized as follows:

(\$ in thousands)	Year Ended December 31,				Change	
	2017	% of Revenue	2016	% of Revenue	\$	%
Cable operating revenue						
Service revenue	\$ 107,338	90.1	\$ 99,070	91.1	8,268	8.3
Other revenue	11,824	9.9	9,664	8.9	2,160	22.4
Total cable operating revenue	119,162	100.0	108,734	100.0	10,428	9.6
Cable operating expenses						
Cost of goods and services	59,349	49.8	58,581	53.9	768	1.3
Selling, general, and administrative	19,999	16.8	19,248	17.7	751	3.9
Depreciation and amortization	23,968	20.1	23,908	22.0	60	0.3
Total cable operating expenses	103,316	86.7	101,737	93.6	1,579	1.6
Cable operating income (loss)	\$ 15,846	13.3	\$ 6,997	6.4	8,849	126.5

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Operating revenue

Cable service revenue increased \$8.3 million, or 8.3% in 2017 compared with 2016. Internet service revenue increased approximately \$6.3 million, or 13.8%, due to a 5.7% increase in internet subscribers, along with an improved product mix as new and existing customers increasingly move to higher-speed plans with higher monthly recurring charges. Video revenue, including retransmission consent fee surcharges, decreased approximately \$0.3 million primarily related to a reduction in our video customers that was driven by video rate increases in 2017 required to offset higher programming costs. Voice revenue increased approximately \$0.4 million due to 5.6% growth in voice revenue customers. A reduction of promotional discounts offered during 2017 also resulted in an increase in Cable operating revenues of approximately \$2.0 million.

Other revenue grew approximately \$2.2 million, primarily due to the addition of new fiber contracts in 2017.

Operating expenses

Cable cost of goods and services increased \$0.8 million, or 1.3%, in 2017 compared with 2016 primarily as a result of growth in our network costs as a result of increases in line costs and pole rents.

Wireline

The following table includes selected operating statistics of the Wireline operations as of the dates shown:

	December 31, 2018	December 31, 2017	December 31, 2016
Long distance subscribers	9,452	9,078	9,149
Video customers (1)	4,742	5,019	5,264
Broadband customers	14,464	14,353	14,314
Fiber route miles	2,127	2,073	1,971
Total fiber miles (2)	161,552	154,165	142,230

1) Wireline's video service passes approximately 16,500 homes.

2) Fiber Miles are measured by taking the number of fiber strands in a cable and multiplying that number by the route distance. For example, a 10 mile route with 144 fiber strands would equal 1,440 fiber miles.

2018 Compared with 2017

Wireline results from operations are summarized as follows:

(\$ in thousands)	Year Ended December 31,				Change	
	2018	% of Revenue	2017	% of Revenue	\$	%
Wireline operating revenue						
Service revenue	\$23,274	30.2	\$22,645	28.6	629	2.8
Carrier access and fiber revenue	50,438	65.4	53,078	67.0	(2,640)	(5.0)
Equipment revenue	193	0.3	127	0.2	66	52.0
Other revenue	3,237	4.1	3,403	4.2	(166)	(4.9)
Total wireline operating revenue	77,142	100.0	79,253	100.0	(2,111)	(2.7)
Wireline operating expenses						
Cost of services	38,056	49.3	38,417	48.5	(361)	(0.9)
Costs of goods sold	81	0.1	119	0.2	(38)	(31.9)
Selling, general, and administrative	7,467	9.7	6,923	8.7	544	7.9
Depreciation and amortization	13,673	17.7	12,829	16.2	844	6.6

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Total wireline operating expenses	59,277 76.8	58,288 73.5	989 1.7
Wireline operating income (loss)	\$17,865 23.2	\$20,965 26.5	(3,100) (14.8)

Operating revenue

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Wireline operating revenue decreased approximately \$2.1 million, or 2.7%, in 2018 compared with 2017. The decline in operating revenue was primarily attributable to repricing Wireless backhaul circuits to market rates and migrating Wireless voice traffic from traditional circuit-switched facilities to more cost effective VoIP facilities.

Operating expenses

Total Wireline operating expenses increased approximately \$1.0 million, or 1.7%, in 2018, compared with 2017. The increase in total Wireline operating expenses was primarily attributable to the expansion of the underlying network assets and investments in infrastructure necessary to support the growth in our fiber network.

2017 Compared with 2016

Wireline results from operations are summarized as follows:

(\$ in thousands)	Year Ended December 31,				Change	
	2017	% of Revenue	2016	% of Revenue	\$	%
Wireline operating revenue						
Service revenue	\$22,645	28.6	\$21,917	29.2	728	3.3
Carrier access and fiber revenue	53,078	67.0	49,532	66.1	3,546	7.2
Other revenue	3,530	4.4	3,525	4.7	5	0.1
Total wireline operating revenue	79,253	100.0	74,974	100.0	4,279	5.7
Wireline operating expenses						
Costs of goods and services	38,536	48.6	36,259	48.4	2,277	6.3
Selling, general, and administrative	6,923	8.7	6,474	8.6	449	6.9
Depreciation and amortization	12,829	16.2	11,717	15.6	1,112	9.5
Total wireline operating expenses	58,288	73.5	54,450	72.6	3,838	7.0
Wireline operating income (loss)	\$20,965	26.5	\$20,524	27.4	441	2.1

Operating revenue

Total Wireline operating revenue in 2017 increased approximately \$4.3 million, or 5.7%, compared with 2016. New carrier access and fiber revenue contracts became effective during 2017 for third party and affiliate fiber contracts resulting in growth of \$3.5 million or 7.2% in 2017. Internet service revenue grew approximately \$0.8 million as customers upgraded to higher-speed plans, while voice revenues declined approximately \$0.4 million as customers discontinue landline telephone services.

Operating expenses

Total Wireline operating expenses increased approximately \$3.8 million, or 7.0%, in 2017, compared with 2016 and included increases of approximately \$2.3 million cost of goods and services related to higher network costs required to support our expanding affiliate fiber routes, \$0.4 million increase in selling, general and administrative to support our investment in customer service personnel and infrastructure required to support our growth, and \$1.1 million in additional depreciation related to our network assets.

Non-GAAP Financial Measures

In managing our business and assessing our financial performance, management supplements the information provided by the financial statement measures prepared in accordance with GAAP with Adjusted OIBDA and Continuing OIBDA, which are considered “non-GAAP financial measures” under SEC rules.

Adjusted OIBDA is defined as operating income (loss) before depreciation and amortization, adjusted to exclude the effects of: certain non-recurring transactions; impairment of assets; gains and losses on asset sales; actuarial gains and losses on pension and other post-retirement benefit plans; and share-based compensation expense, amortization of deferred costs related to the impacts of the adoption of Topic 606, and adjusted to include the benefit received from

the waived management fee by Sprint. Continuing OIBDA is defined as Adjusted OIBDA, less the benefit received from the waived management fee by Sprint. Adjusted OIBDA and Continuing OIBDA should not be construed as an alternative to operating income as determined in accordance with GAAP as a measure of operating performance.

In a capital-intensive industry such as telecommunications, management believes that Adjusted OIBDA and Continuing OIBDA and the associated percentage margin calculations are meaningful measures of our operating performance. We use Adjusted

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OIBDA and Continuing OIBDA as supplemental performance measures because management believes these measures facilitate comparisons of our operating performance from period to period and comparisons of our operating performance to that of our peers and other companies by excluding potential differences caused by the age and book depreciation of fixed assets (affecting relative depreciation expenses) as well as the other items described above for which additional adjustments were made. In the future, management expects that the Company may again report Adjusted OIBDA and Continuing OIBDA excluding these items and may incur expenses similar to these excluded items. Accordingly, the exclusion of these and other similar items from our non-GAAP presentation should not be interpreted as implying these items are non-recurring, infrequent or unusual.

While depreciation and amortization are considered operating costs under generally accepted accounting principles, these expenses primarily represent the current period allocation of costs associated with long-lived assets acquired or constructed in prior periods, and accordingly may obscure underlying operating trends for some purposes. By isolating the effects of these expenses and other items that vary from period to period without any correlation to our underlying performance, or that vary widely among similar companies, management believes Adjusted OIBDA and Continuing OIBDA facilitates internal comparisons of our historical operating performance, which are used by management for business planning purposes, and also facilitates comparisons of our performance relative to that of our competitors. In addition, we believe that Adjusted OIBDA and Continuing OIBDA and similar measures are widely used by investors and financial analysts as measures of our financial performance over time, and to compare our financial performance with that of other companies in our industry.

Adjusted OIBDA and Continuing OIBDA have limitations as an analytical tool, and should not be considered in isolation or as a substitute for analysis of our results as reported under GAAP. These limitations include, but are not limited to, the following:

- they do not reflect capital expenditures;
- they do not reflect the impacts of adoption of Topic 606;
 - many of the assets being depreciated and amortized will have to be replaced in the future and Adjusted OIBDA and Continuing OIBDA do not reflect cash requirements for such replacements;
- they do not reflect costs associated with share-based awards exchanged for employee services;
- they do not reflect interest expense necessary to service interest or principal payments on indebtedness;
- they do not reflect gains, losses or dividends on investments;
- they do not reflect expenses incurred for the payment of income taxes; and
- other companies, including companies in our industry, may calculate Adjusted OIBDA and Continuing OIBDA differently than we do, limiting its usefulness as a comparative measure.

In light of these limitations, management considers Adjusted OIBDA and Continuing OIBDA as a financial performance measure that supplements but does not replace the information reflected in our GAAP results.

The adoption of the new revenue standard did not impact Adjusted OIBDA.

The following tables reconcile Adjusted OIBDA and Continuing OIBDA to operating income, which we consider to be the most directly comparable GAAP financial measure:

Year Ended December 31, 2018 (in thousands)	Wireless	Cable	Wireline	Other	Consolidated
Operating income	\$92,847	\$23,755	\$17,865	\$(41,221)	\$93,246
Impact of ASC topic 606	(15,048)	(74)	(197)	—	(15,319)
Depreciation and amortization	127,521	24,644	13,673	567	166,405
Share-based compensation expense	—	—	—	4,959	4,959
Benefit received from the waived management fee (1)	37,763	—	—	—	37,763

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Amortization of intangibles netted in rent expense	342	—	—	—	342
Actuarial (gains) losses on pension plans	—	—	—	(1,688)	(1,688)
Adjusted OIBDA	243,425	48,325	31,341	(37,383)	285,708
Waived management fee	(37,763)	—	—	—	(37,763)
Continuing OIBDA	\$205,662	\$48,325	\$31,341	\$(37,383)	\$247,945

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Year Ended December 31, 2017 (in thousands)	Wireless	Cable	Wireline	Other	Consolidated
Operating income	\$34,139	\$15,846	\$20,965	\$(24,440)	\$ 46,510
Depreciation and amortization	139,610	23,968	12,829	600	177,007
(Gain) loss on asset sales	214	(243)	79	68	118
Share-based compensation expense	1,579	916	384	701	3,580
Benefit received from the waived management fee (1)	36,056	—	—	—	36,056
Amortization of intangibles netted in rent expense	1,528	—	—	—	1,528
Temporary back-office costs to support the billing operations through migration (2)	6,459	—	—	1	6,460
Actuarial gains on pension plans	—	—	—	(1,387)	(1,387)
Integration and acquisition related expenses, and other	10,793	—	—	237	11,030
Adjusted OIBDA	230,378	40,487	34,257	(24,220)	280,902
Waived management fee	(36,056)	—	—	—	(36,056)
Continuing OIBDA	\$194,322	\$40,487	\$34,257	\$(24,220)	\$244,846
Year Ended December 31, 2016 (in thousands)	Wireless	Cable	Wireline	Other	Consolidated
Operating income	\$26,241	\$6,997	\$20,524	\$(31,236)	\$ 22,526
Depreciation and amortization	107,621	23,908	11,717	439	143,685
(Gain) loss on asset sales	(131)	156	(27)	(47)	(49)
Share-based compensation expense	1,309	756	347	609	3,021
Benefit received from the waived management fee (1)	24,596	—	—	—	24,596
Amortization of intangibles netted in rent expense	728	—	—	—	728
Temporary back-office costs to support the billing operations through migration (2)	13,843	—	—	—	13,843
Actuarial gains on pension plans	—	—	—	(4,460)	(4,460)
Integration and acquisition related expenses, and other	25,927	—	—	16,305	42,232
Adjusted OIBDA	200,134	31,817	32,561	(18,390)	246,122
Waived management fee	(24,596)	—	—	—	(24,596)
Continuing OIBDA	\$175,538	\$31,817	\$32,561	\$(18,390)	\$221,526

Under our amended affiliate agreement, Sprint agreed to waive the Management Fees charged on both postpaid and

1) prepaid revenues, up to \$4.2 million per month, until the total amount waived reaches approximately \$255.6 million, which is expected to occur in 2022.

2) Represents back-office expenses required to support former nTelos subscribers that migrated to Sprint back-office systems.

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Financial Condition, Liquidity and Capital Resources

Sources and Uses of Cash: Primary sources of cash include existing balances of cash and cash equivalents, cash flows from operations, and borrowings from our credit facility. Cash generated from such sources has been sufficient to fund our growth and strategic initiatives, fund our capital projects, service our debt and issue our annual dividend. As of December 31, 2018, our cash and cash equivalents totaled approximately \$85.1 million, compared with approximately \$78.6 million as of December 31, 2017. All cash held by the Company is domiciled in the United States.

The Company generated \$265.6 million of net cash from operations in 2018, a 19.2% increase over the prior year. In 2017, the Company generated \$222.9 million of net cash from operations, representing an approximate 38% improvement from the \$161.5 million provided in 2016. The increases were primarily due to the continued expansion of our wireless network coverage area consistent with the growth of the wireless subscriber base and corresponding revenue.

During 2018, the Company utilized \$187.8 million in net investing activities. Plant and equipment purchases in 2018, 2017 and 2016 totaled \$136.6 million, \$146.5 million and \$173.2 million, respectively. Over the past three years, capital expenditures were primarily focused on supporting and upgrading the expansion of our wireless and fiber networks. Additionally, capital expenditures supported cell site upgrades, cable network expansion and upgrades, Wireline fiber builds and retail store remodels.

Financing activities utilized approximately \$71.3 million in 2018 as the Company repaid debt totaling \$51.3 million, paid dividends of \$12.9 million, and provided cash payments for taxes related to equity awards of \$3.2 million in 2018. In 2017, financing activities utilized approximately \$29.0 million as the Company repaid debt totaling \$36.4 million, borrowed \$25.0 million to fund strategic expansion initiatives, paid cash dividends of \$12.3 million, and provided cash payments for taxes related to equity awards of \$5.4 million. Financing activities provided \$617.9 million in 2016 as the Company borrowed \$860.0 million to fund the nTelos acquisition and related activities, repaid debt totaling \$213.8 million (including \$12.1 million of principal on the new debt financing agreement), and paid \$14.9 million to enter into the new debt financing arrangement to acquire nTelos. The Company also paid cash dividends totaling \$11.7 million.

Indebtedness: As of December 31, 2018, the Company's gross indebtedness totaled \$785.2 million, with an estimated annualized effective interest rate of 3.97% after considering the impact of the interest rate swap contracts and unamortized loan costs. The balance consisted of Term Loan A-1 at a variable rate (4.27% as of December 31, 2018) that resets monthly based on one month LIBOR plus a margin of 1.75% currently, and Term Loan A-2 at a variable rate (4.52% as of December 31, 2018) that resets monthly based on one month LIBOR plus a margin of 2.00% currently. The Company amended its 2016 credit agreement effective November 9, 2018 and this credit facility modification reduced near term principal payments, extended the maturity of both Term Loan A-1 and A-2, allowed access to the Revolver for an extended period of time, and reduced the applicable base interest rate by 75 basis points. It also shifted \$108.8 million in principal from Term Loan A-1 to Term Loan A-2. The amended Term Loan A-1 requires quarterly principal repayments of approximately \$3.6 million, which began on December 31, 2018 through September 30, 2019, increasing to \$7.3 million quarterly from December 31, 2019 through September 30, 2022; then increasing to \$10.9 million quarterly from December 31, 2022 through September 30, 2023, with the remaining balance due November 8, 2023. The amended Term Loan A-2 requires quarterly principal repayments of approximately \$1.2 million beginning on December 31, 2018 through September 30, 2025, with the remaining balance due November 8, 2025. At December 31, 2018, \$75 million was available under the Revolver Facility. Under the amended 2016 credit agreement, the Company has access to the Revolver through 2023.

The Company is subject to certain financial covenants measured on a trailing twelve month basis each calendar quarter unless otherwise specified. These covenants include:

a limitation on the Company's total leverage ratio, defined as indebtedness divided by earnings before interest, taxes, depreciation and amortization, or EBITDA, of less than or equal to 3.50 to 1.00 from December 31, 2018 through December 31, 2019, then 3.25 to 1.00 through December 31, 2021, and 3.00 to 1.00 thereafter;

a minimum debt service coverage ratio, defined as EBITDA minus certain cash taxes divided by the sum of all scheduled principal payments on the Term Loans and other indebtedness plus cash interest expense, greater than or equal to 2.00 to 1.00;

the Company must maintain a minimum liquidity balance, defined as availability under the revolver facility plus unrestricted cash and cash equivalents on deposit in a deposit account for which a control agreement has been delivered to the administrative agent under the 2016 credit agreement, of greater than \$25 million at all times.

As of December 31, 2018, the Company was in compliance with the financial covenants in its credit agreements and ratios were as follows:

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	Actual	Covenant Requirement
Total leverage ratio	2.54	3.50 or Lower
Debt service coverage ratio	3.63	2.00 or Higher
Minimum liquidity balance (in millions)	\$ 159.0	\$25.0 or Higher

Contractual Commitments: The Company is obligated to make future payments under various contracts it has entered into, primarily amounts pursuant to its long-term debt facility, and non-cancelable operating lease agreements for retail space, tower space and cell sites. Expected future minimum contractual cash payments, excluding the effects of time value, on contractual obligations, by period are summarized as follows:

Payments due by periods:

(in thousands)	Total	Less than 1 year	1-3 years	4-5 years	More than 5 years
Long-term debt principal (1)	\$785,236	\$23,197	\$68,244	\$221,198	\$472,597
Interest on long-term debt (1)	198,295	34,474	65,004	58,215	40,602
"Pay-fixed" obligations (2)	12,695	4,312	6,300	2,083	—
Operating leases (3)	425,544	55,050	104,423	97,573	168,498
Purchase obligations (4)	38,252	24,463	13,789	—	—
Total	\$1,460,022	\$141,496	\$257,760	\$379,069	\$681,697

(1) Includes principal payments and estimated interest payments on the Term Loan Facility based upon outstanding balances and rates in effect at December 31, 2018.

(2) Represents the maximum interest payments we are obligated to make under our derivative agreements. Assumes no receipts from the counterparty to our derivative agreements.

(3) Our existing operating lease agreements may provide us with the option to renew. Our future operating lease obligations would change if we entered into additional operating lease agreements and if we exercised renewal options.

(4) Represents open purchase orders at December 31, 2018.

Contractual commitments represent future cash payments and liabilities that are required under contractual agreements with third parties, and exclude purchase orders for goods and services. The contractual commitment amounts in the table above are associated with agreements that are legally binding and enforceable, and that specify all significant terms, including fixed or minimum services to be used, fixed, minimum or variable price provisions and the approximate timing of the transaction.

Other long-term liabilities have been omitted from the table above due to uncertainty of the timing of payments, refer to Note 12, Other Assets and Accrued Liabilities, included with the notes to our consolidated financial statements for additional information. The Company has no other off-balance sheet arrangements and has not entered into any transactions involving unconsolidated, limited purpose entities or commodity contracts.

Capital Commitments: The Company spent \$136.6 million on capital projects in 2018, down from \$146.5 million in 2017 and down from \$173.2 million in 2016. Capital expenditures in 2018 were primarily for upgrades to the recently acquired expansion areas, continued expansion of coverage in the former nTelos territory, network and cable market expansion, and for fiber builds and increased Wireline capacity projects. Capital expenditures in 2017 were primarily related to upgrades of the former nTelos sites and additional cell sites to expand coverage in that territory, network and cable market expansion, fiber builds and information technology projects. Capital expenditures in 2016 primarily supported cell site upgrades and coverage and capacity expansions in the wireless segment following the nTelos

acquisition, as well as cable network expansion and upgrades and wireline segment fiber builds.

Capital expenditures budgeted for 2019 are expected to be approximately \$147.4 million, including \$64.1 million in the Wireless segment primarily for wireless network capacity improvements. In addition, \$52.9 million is budgeted primarily for cable network expansion including new fiber routes and cable market expansion, \$20.5 million in Wireline projects including expansion of the fiber network, and \$9.9 million primarily for IT projects and other.

We believe that cash on hand, cash flow from operations and borrowings expected to be available under our existing credit facilities will provide sufficient cash to enable us to fund planned capital expenditures, make scheduled principal and interest payments, meet our other cash requirements and maintain compliance with the terms of our financing agreements for at least the next twelve months. There can be no assurance that we will continue to generate cash flows at or above current levels or that we will be able to maintain our ability to borrow under our credit facilities. Thereafter, capital expenditures will likely be required to continue

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planned capital upgrades to the acquired wireless network and provide increased capacity to meet our expected growth in demand for our products and services. The actual amount and timing of our future capital requirements may differ materially from our estimate depending on the demand for our products, new market developments and expansion opportunities.

Our cash flows from operations could be adversely affected by events outside our control, including, without limitation, changes in overall economic conditions, regulatory requirements, changes in technologies, demand for our products, availability of labor resources and capital, changes in our relationship with Sprint, and other conditions. The Wireless segment's operations are dependent upon Sprint's ability to execute certain functions such as billing, customer care, and collections; our ability to develop and implement successful marketing programs and new products and services; and our ability to effectively and economically manage other operating activities under our agreements with Sprint. Our ability to attract and maintain a sufficient customer base, particularly in the acquired cable markets, is also critical to our ability to maintain a positive cash flow from operations. The foregoing events individually or collectively could affect our results.

Critical Accounting Policies

We prepare our consolidated financial statements in accordance with U.S. generally accepted accounting principles ("GAAP"). The preparation of these consolidated financial statements requires us to make estimates and assumptions that affect our reported amounts of assets, liabilities, revenue and expenses, as well as related disclosures. To the extent that there are material differences between these estimates and actual results, our financial condition or operating results would be affected. We base our estimates on past experience and other assumptions that we believe are reasonable under the circumstances, and we evaluate these estimates on an ongoing basis. We refer to accounting estimates of this type as critical accounting policies and estimates, which we discuss further below.

Our significant accounting policies are described in Note 2, Summary of Significant Accounting Policies, in our consolidated financial statements. The following are the accounting policies that we believe involve a greater degree of judgment and complexity and are the most critical to aid in fully understanding and evaluating our consolidated financial condition and results of operations.

Revenue Recognition

Refer to Note 3, Revenue from Contracts with Customers for details of the Company's 2018 revenue recognition policy.

For the years ended December 31, 2017 and 2016, the Company recognized revenue when persuasive evidence of an arrangement existed, services were rendered or products were delivered, the price to the buyer was fixed and determinable and collectability was reasonably assured. Revenue was recognized based on the various types of transactions generating the revenue. For services, revenue was recognized as the services were performed. For equipment sales, revenue was recognized when the sales transaction was complete.

Income Taxes

We account for income taxes under the asset and liability method. Deferred tax assets and liabilities are recognized for the future tax consequences attributable to differences between financial statement carrying amounts of existing assets and liabilities and their respective tax bases. Deferred tax assets and liabilities are measured using enacted tax rates expected to apply to taxable income in the years in which those temporary differences are expected to be recovered or settled. The effect on deferred tax assets and liabilities of a change in tax rates is recognized in income in the period that includes the enactment date. We make estimates, assumptions and judgments to determine our

provision for income taxes and also for deferred tax assets and liabilities and any valuation allowances recorded against our deferred tax assets. We evaluate the recoverability of deferred tax assets and liabilities and, to the extent we believe that recovery is not likely, we establish a valuation allowance. We evaluate the effective rate of taxes based on apportionment factors, actual operating results, and the various applicable state income tax rates.

ASC 740-10, Accounting for Uncertainty in Income Taxes, prescribes a recognition threshold of more-likely-than-not, and a measurement attribute for all tax positions taken or expected to be taken on a tax return, in order for those positions to be recognized in the financial statements. We continually review tax laws, regulations and related guidance in order to properly record any uncertain tax liability positions. We adjust these reserves in light of changing facts and circumstances. We have adopted ASU 2016-09, Compensation - Stock Compensation, which modified income tax consequences for several aspects of share-based payment awards. Excess tax benefits and tax shortfalls for share-based payments are now included in our tax provision expense rather than additional-paid-in-capital. Variability of tax consequences arising from excess tax benefits and tax shortfalls may result due to fluctuations in our stock price and the volume of our employees' equity awards that are exercised or vest. Refer to Note 16, Income Taxes, included with the notes to our consolidated financial statements for additional information concerning income taxes.

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Goodwill and Indefinite-lived Intangible Assets

Goodwill represents the excess of acquisition costs over the fair value of tangible net assets and identifiable intangible assets of the businesses acquired. Cable franchise rights, included in indefinite-lived intangible assets provide us with the non-exclusive right to provide video services in a specified area. While some cable franchises are issued for a fixed time (generally 10 years), renewals of cable franchises have occurred routinely and at nominal cost. Moreover, we have determined that there are currently no legal, regulatory, contractual, competitive, economic or other factors that limit the useful lives of our cable franchises and as a result we account for cable franchise rights as an indefinite lived intangible asset.

Goodwill and indefinite-lived intangible assets are not amortized, but rather, are subject to impairment testing annually, in the fourth quarter, or whenever events or changes in circumstances indicate that the carrying amount may not be fully recoverable. A qualitative evaluation of our reporting units is utilized to determine whether it is necessary to perform a quantitative two-step impairment test. If it is more likely than not that the fair value of a reporting unit is less than its carrying amount, we would be required to perform a two-step quantitative test. If the carrying value of the reporting unit's net assets exceeds the fair value of the reporting unit, then an impairment loss is recorded.

Our 2018 impairment tests were based on the operating segment structure, where each operating segment was also considered a reporting unit. During the fourth quarter of 2018 we performed a qualitative assessment for our reporting units that were assigned goodwill. During this assessment, qualitative factors were first assessed to determine whether it was more likely than not that the fair value of the reporting units were less than their carrying amounts. Qualitative factors that were considered included, but were not limited to, macroeconomic conditions, industry and market conditions, company specific events, changes in circumstances, after tax cash flows and market capitalization trends.

Based on our annual qualitative impairment evaluations performed during 2018 and 2017, we concluded that there were no indicators of impairment and therefore it was more likely than not that the fair value of the goodwill exceeded its carrying amount, for each reporting unit, and cable franchise rights exceeded its fair value.

Refer to Note 2, Summary of Significant Accounting Policies, and Note 10, Goodwill and Intangible Assets, included in our consolidated financial statements for additional information concerning goodwill.

Finite-lived Intangible Assets

On an annual basis, or whenever events or changes in circumstances require otherwise, we review our finite-lived intangible assets for impairment. Intangible assets are included in our annual impairment testing and in the event we identify impairment, the intangible assets are written down to their fair values.

Intangible assets typically have finite useful lives that are amortized over their useful lives and primarily consist of affiliate contract expansion, acquired subscribers-cable, and off market leases. Affiliate contract expansion and acquired subscribers-cable intangibles are amortized over the period in which those relationships are expected to contribute to our future cash flows and are also reduced by management fee waiver credits received from Sprint in connection with the 2017 non-monetary exchange. Other finite-lived intangible assets, are generally amortized using the straight-line method of amortization. Such finite-lived intangible assets are subject to the impairment provisions of ASC 360, Property, Plant and Equipment, where impairment is recognized and measured only if there are events and circumstances that indicate that the carrying amount may not be recoverable. The carrying amount is not recoverable if it exceeds the sum of the undiscounted cash flows expected to result from the use of the asset group. An impairment loss is recorded if after determining that it is not recoverable, the carrying amount exceeds the fair value of the asset.

Finite-lived intangible assets and liabilities are being amortized over the following estimated useful lives that were established on the dates acquired:

	Estimated Useful Life
Affiliate contract expansion	4 - 14 years
Favorable and unfavorable leases - wireless	1 - 28 years
Acquired subscribers - cable	3 - 10 years
Other intangibles	15 - 20 years

There were no impairment charges on intangible assets for the years ended December 31, 2018, 2017 or 2016.

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Business Combinations

Business combinations, including purchased intangible assets, are accounted for at fair value. Acquisition costs are expensed as incurred and recorded in acquisition, integration and migration expenses. The fair value amount assigned to assets acquired and liabilities assumed is based on an exit price from a market participant's viewpoint, and utilizes data such as discounted cash flow analysis and replacement cost models.

Recently Issued Accounting Standards

Recently issued accounting standards and their expected impact, if any, are discussed in Note 2, Summary of Significant Accounting Policies, of the notes to our consolidated financial statements.

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ITEM 7A. QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK

The Company's market risks relate primarily to changes in interest rates on instruments held for other than trading purposes. The Company's interest rate risk generally involves two components. The first component is outstanding debt with variable rates. As of December 31, 2018, the Company had \$785.2 million of variable rate debt outstanding (excluding unamortized loan fees and costs of \$15.0 million), bearing interest at a weighted average rate of 3.97% as determined on a monthly basis. An increase in market interest rates of 1.00% would add approximately \$7.8 million to annual interest expense, excluding the effect of the interest rate swap. In May 2016, the Company entered into a pay-fixed, receive-variable interest rate swap with three counterparties totaling \$256.6 million of notional principal (subject to change based upon expected draws under the delayed draw term loan and principal payments due under our debt agreements). These swaps, combined with the swap purchased in 2012, cover notional principal equal to approximately 50% of the outstanding variable rate debt through maturity in 2023. The Company is required to pay a combined fixed rate of approximately 1.16% and receive a variable rate based on one month LIBOR (2.5% as of December 31, 2018), to manage a portion of its interest rate risk. Changes in the net interest paid or received under the swaps would offset approximately 50% of the change in interest expense on the variable rate debt outstanding. The swap agreements currently reduce annual interest expense by approximately \$4.9 million, based on the spread between the fixed rate and the variable rate currently in effect on our debt.

The second component of interest rate risk is marked increases in interest rates that may adversely affect the rate at which the Company may borrow funds for growth in the future. If the Company should borrow additional funds under any Incremental Term Loan Facility to fund its capital investment needs, repayment provisions would be agreed to at the time of each draw under the Incremental Term Loan Facility. If the interest rate margin on any draw exceeds by more than 0.25% the applicable interest rate margin on the Term Loan Facility, the applicable interest rate margin on the Term Loan Facility shall be increased to equal the interest rate margin on the Incremental Term Loan Facility. If interest rates increase generally, or if the rate applied under the Company's Incremental Term Loan Facility causes the Company's outstanding debt to be repriced, the Company's future interest costs could increase.

Management views market risk as having a potentially significant impact on the Company's results of operations, as future results could be adversely affected if interest rates were to increase significantly for an extended period, or if the Company's need for additional external financing resulted in increases to the interest rates applied to all of its new and existing debt. As of December 31, 2018, the Company has \$401.2 million of variable rate debt with no interest rate protection. The Company's investments in publicly traded stock and bond mutual funds under the rabbi trust, which are subject to market risks and could experience significant swings in market values, are offset by corresponding changes in the liabilities owed to participants in the Supplemental Executive Retirement Plan. General economic conditions affected by regulatory changes, competition or other external influences may pose a higher risk to the Company's overall results.

ITEM 8. FINANCIAL STATEMENTS AND
SUPPLEMENTARY DATA

Our consolidated financial statements and supplementary data are included as a separate section of this Annual Report on Form 10-K commencing on page F-1 and are incorporated herein by reference.

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ITEM CHANGES IN AND DISAGREEMENTS WITH ACCOUNTANTS ON ACCOUNTING AND
9. FINANCIAL DISCLOSURE

None

ITEM 9A. CONTROLS AND PROCEDURES

(a) Evaluation of Disclosure Controls and Procedures

Our management, including our Chief Executive Officer and Chief Financial Officer, have conducted an evaluation of the effectiveness of the design and operation of our disclosure controls and procedures (as defined in Rule 13a-15(e) under the Securities Exchange Act of 1934, as amended (the Exchange Act)) as of December 31, 2018. Our Chief Executive Officer and Chief Financial Officer concluded that, as a result of the material weaknesses in internal control over financial reporting as described below, our disclosure controls and procedures were not effective as of December 31, 2018.

Per Rule 13a-15(e), the term disclosure controls and procedures means controls and other procedures of an issuer that are designed to ensure that information required to be disclosed by the issuer in the reports that it files or submits under the Exchange Act (15 U.S.C. 78a et seq.) is recorded, processed, summarized and reported within the time periods specified in the SEC's rules and forms. Disclosure controls and procedures include, without limitation, controls and procedures designed to ensure that information required to be disclosed by an issuer in the reports that it files or submits under the Exchange Act is accumulated and communicated to the issuer's management, including its Chief Executive Officer and Chief Financial Officer, or persons performing similar functions, as appropriate to allow timely decisions regarding required disclosure.

(b) Management's Report on Internal Control Over Financial Reporting

Our management is responsible for establishing and maintaining adequate internal control over financial reporting, as such term is defined in Exchange Act Rules 13a-15(f) and 15d-15(f). A company's internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles. A company's internal control over financial reporting includes those policies and procedures that:

- i. Pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the company;
- ii. Provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that receipts and expenditures of the company are being made only in accordance with authorizations of management and directors of the company; and
- iii. Provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use or disposition of the company's assets that could have a material effect on the financial statements.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

A material weakness is a deficiency, or combination of deficiencies, in internal control over financial reporting such that there is a reasonable possibility that a material misstatement of our annual or interim financial statements will not be prevented or detected on a timely basis.

Under the supervision and with the participation of our management, including our Chief Executive Officer and our Chief Financial Officer, we conducted an assessment of our internal control over financial reporting as of December 31, 2018, based on the framework in Internal Control - Integrated Framework (2013), issued by the Committee of Sponsoring Organizations of the Treadway Commission.

Last year-end, based on our assessment of the effectiveness of internal control over financial reporting as of December 31, 2017 as previously disclosed under "Item 9A. Controls and Procedures" in our Annual Report on Form 10-K for the year ended December 31, 2017, management identified the following material weaknesses in internal control, which continue to exist as of December 31, 2018:

The Company did not have a sufficient number of trained resources with assigned responsibility and accountability for the design, operation and documentation of internal control over financial reporting.

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The Company did not have an effective risk assessment process that identified and assessed necessary changes in the application of U.S. generally accepted accounting principles, financial reporting processes and the design and effective operation of internal controls.

The Company did not have an effective information and communication process that identified and assessed the source of reliable information necessary for financial accounting and reporting.

The Company did not have effective monitoring activities to assess the operation of internal control.

As a consequence, the Company did not have effective control activities related to the design and operation of process-level controls across all processes.

These control deficiencies resulted in immaterial misstatements, some of which were corrected, in the consolidated financial statements in this Annual Report on Form 10-K for the year ended December 31, 2018 and several immaterial review misstatements, some of which were corrected, in the condensed consolidated financial statements in the Quarterly Reports on Form 10-Q for the three-, six- and nine-month periods ended March 31, 2018, June 30, 2018 and September 30, 2018, respectively. The control deficiencies described above created a reasonable possibility that a material misstatement to the consolidated financial statements would not be prevented or detected on a timely basis and therefore we concluded that the deficiencies represent material weaknesses in the Company's internal control over financial reporting and our internal control over financial reporting was not effective as of December 31, 2018.

Our independent registered public accounting firm, KPMG LLP, who audited the consolidated financial statements included in this Annual Report on Form 10-K, issued an adverse report on the effectiveness of the Company's internal control over financial reporting. KPMG LLP's report appears on page F-3 of this Annual Report on Form 10-K.

(c) Management's Remediation Plan

During the fourth quarter of 2018, management implemented new and revised controls resulting from the culmination of a project designed to achieve an effective and robust system of internal control over financial reporting. Throughout 2018, with assistance from external consultants, management reviewed in detail all business processes impacting financial results. Financial reporting risks were identified for each process and controls were newly designed, updated or modified as necessary to address those risks. New and enhanced internal controls were implemented throughout 2018, with the majority of the key controls being implemented in the third and fourth quarter. However, management is unable to conclude that internal control over financial reporting is effective as of December 31, 2018 as a result of the material weaknesses described above.

The Company will execute the following steps in 2019 to remediate the aforementioned material weaknesses in internal control over financial reporting:

Continue to seek, train and retain individuals that have the appropriate skills and experience related to designing, operating and documenting internal control over financial reporting.

Monitor compliance and continue to enhance policies and procedures developed and implemented during 2018 to ensure that effective risk assessments are performed to identify and assess necessary changes in the application of U.S. generally accepted accounting principles, financial reporting processes and the design and effective operation of internal controls.

Monitor compliance and continue to enhance policies and procedures developed and implemented during 2018 to ensure that information needed for financial accounting and reporting purposes and to support the performance of key controls is accurate, complete, relevant and reliable, and communicated in a timely manner.

Continue to evaluate and enhance the Company's monitoring activities to ensure the components of internal control are present and functioning related to all business processes.

Continue to report regularly to the audit committee on the progress and results of the remediation plan, including the identification, status and resolution of internal control deficiencies.

(d) Changes in Internal Control Over Financial Reporting

Other than the activities described above under "Management's Remediation Plan", there were no changes in internal control over financial reporting during the fourth quarter of 2018 that have materially affected, or are reasonably likely to materially affect, our internal control over financial reporting.

ITEM 9B. OTHER INFORMATION

None

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PART III

ITEM 10. DIRECTORS, EXECUTIVE OFFICERS AND CORPORATE GOVERNANCE

See “Executive Officers of the Registrant” in Part 1, Item 1 of this report for information about our executive officers, which is incorporated by reference in this Item 10. Other information required by this Item 10 is incorporated by reference to the Company's definitive proxy statement for its 2019 Annual Meeting of Shareholders, referred to as the “2019 proxy statement,” which we will file with the SEC on or before 120 days after our 2018 fiscal year end, and which appears in the 2019 proxy statement under the captions “Election of Directors” and “Section 16(a) Beneficial Ownership Reporting Compliance.”

We have adopted a code of ethics applicable to our chief executive officer and all senior financial officers, who include our principal financial officer, principal accounting officer or controller, and persons performing similar functions. The code of ethics, which is part of our Code of Business Conduct and Ethics, is available on our website at www.shentel.com. To the extent required by SEC rules, we intend to disclose any amendments to our code of conduct and ethics, and any waiver of a provision of the code with respect to the Company's directors, principal executive officer, principal financial officer, principal accounting officer or controller, or persons performing similar functions, on our website referred to above within four business days following such amendment or waiver, or within any other period that may be required under SEC rules from time to time.

ITEM 11. EXECUTIVE
COMPENSATION

Information required by this Item 11 is incorporated herein by reference to the 2019 proxy statement, including the information in the 2019 proxy statement appearing under the captions “Election of Directors-Director Compensation” and “Executive Compensation.”

ITEM 12. SECURITY OWNERSHIP OF CERTAIN BENEFICIAL OWNERS AND MANAGEMENT AND
RELATED STOCKHOLDER MATTERS

Information required by Item 12 is incorporated herein by reference to the 2019 proxy statement appearing under the caption “Security Ownership.”

The Company awards stock options to its employees meeting certain eligibility requirements under two shareholder-approved Company Stock Incentive Plans, referred to as the 2005 Stock Incentive Plan and 2014 Equity Incentive Plan. The 2014 Equity Incentive Plan authorizes grants of up to an addition 3.0 million shares over a ten-year period beginning in 2014. As a result of the adoption of the 2014 Equity Incentive Plan, additional grants will not be made under the 2005 Stock Incentive Plan, but outstanding awards will continue to vest and options may continue to be exercised. Outstanding options and the number of shares available for future issuance as of December 31, 2018 were as follows:

	Number of securities to be issued upon exercise of outstanding options	Weighted average exercise price of outstanding options	Number of securities remaining available for future issuance
2005 Stock Incentive Plan	47,970	\$ 6.65	—

2014 Equity Incentive Plan 13,388 \$ 33.02 2,204,820

ITEM 13. CERTAIN RELATIONSHIPS, RELATED TRANSACTIONS AND DIRECTOR INDEPENDENCE

Information required by Item 13 is incorporated herein by reference to the 2019 proxy statement, including the information in the 2019 proxy statement appearing under the caption “Executive Compensation-Certain Relationships and Related Transactions.”

ITEM 14. PRINCIPAL ACCOUNTANT FEES AND SERVICES

Information required by Item 14 is incorporated herein by reference to the 2019 proxy statement, including the information in the 2019 proxy statement appearing under the caption “Shareholder Ratification of Independent Registered Public Accounting Firm.”

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PART IV

ITEM 15. EXHIBITS AND FINANCIAL STATEMENT SCHEDULES

The following is a list of documents filed as a part of this report:

- (1) Financial Statements
- (2) Financial Statement Schedule
- (3) Exhibits

The exhibits required to be filed by Item 601 of Regulation S-K are listed in the Exhibit Index contained within this Annual Report on Form 10-K.

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Exhibits Index

Exhibit
Number Exhibit Description

- 2.1 Agreement and Plan of Merger, dated as of August 10, 2015, by and among Shenandoah Telecommunications Company, Gridiron Merger Sub, Inc. and NTELOS Holdings Corp., filed as Exhibit 2.1 to the Company's Current Report on Form 8-K, dated August 11, 2015.
- 3.1 Amended and Restated Articles of Incorporation of Shenandoah Telecommunications Company filed as Exhibit 3.1 to the Company's Quarterly Report on Form 10-Q for the period ending June 30, 2007, as amended by the Articles of Amendment of Shenandoah Telecommunications Company filed as Exhibit 3.3 to the Company's Current Report on Form 8-K, filed January 5, 2016.
- 3.2 Amended and Restated Bylaws of Shenandoah Telecommunications Company, effective July 18, 2016, filed as Exhibit 3.1 to the Company's Current Report on Form 8-K dated July 16, 2016.
- 4.1 Rights Agreement, dated as of February 8, 2008 between the Company and American Stock Transfer & Trust Company filed as Exhibit 4.1 to the Company's Current Report on Form 8-K, dated January 25, 2008.
- 4.2 Specimen representing the Common Stock, no par value, of Shenandoah Telecommunications Company, filed as Exhibit 4.3 to the Company's Report on Form 10-K for the year ended December 31, 2007.
- 10.1 Shenandoah Telecommunications Company Dividend Reinvestment Plan filed as Exhibit 4.4 to the Company's Registration Statement on Form S-3D (No. 333-74297).
- 10.2 Settlement Agreement and Mutual Release dated as of January 30, 2004 by and among Sprint Spectrum L.P., Sprint Communications Company L.P., WirelessCo, L.P., APC PCS, LLC, PhillieCo, L.P. and Shenandoah Personal Communications Company and Shenandoah Telecommunications Company, dated January 30, 2004; filed as Exhibit 10.3 to the Company's Report on Form 10-K for the year ended December 31, 2003.
- 10.3 Sprint PCS Management Agreement dated as of November 5, 1999 by and among Sprint Spectrum L.P., WirelessCo, L.P., APC PCS, LLC, PhillieCo, L.P., and Shenandoah Personal Communications Company filed as Exhibit 10.4 to the Company's Report on Form 10-K for the year ended December 31, 2003.
- 10.4 Sprint PCS Services Agreement dated as of November 5, 1999 by and between Sprint Spectrum L.P. and Shenandoah Personal Communications Company filed as Exhibit 10.5 to the Company's Report on Form 10-K for the year ended December 31, 2003.
- 10.5 Sprint Trademark and Service Mark License Agreement dated as of November 5, 1999 by and between Sprint Communications Company, L.P. and Shenandoah Personal Communications Company filed as Exhibit 10.6 to the Company's Report on Form 10-K for the year ended December 31, 2003.

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- 10.6 Sprint Spectrum Trademark and Service Mark License Agreement dated as of November 5, 1999 by and between Sprint Spectrum L.P. and Shenandoah Personal Communications Company filed as Exhibit 10.7 to the Company's Report on Form 10-K for the year ended December 31, 2003.
- 10.7 Addendum I to Sprint PCS Management Agreement by and among Sprint Spectrum L.P., WirelessCo, L.P., APC PCS, LLC, PhillieCo, L.P., and Shenandoah Personal Communications Company filed as Exhibit 10.8 to the Company's Report on Form 10-K for the year ended December 31, 2003.
- 10.8 Asset Purchase Agreement dated November 5, 1999 by and among Sprint Spectrum L.P., Sprint Spectrum Equipment Company, L. P., Sprint Spectrum Realty Company, L.P., and Shenandoah Personal Communications Company, serving as Exhibit A to Addendum I to the Sprint PCS Management Agreement and as Exhibit 2.6 to the Sprint PCS Management Agreement filed as Exhibit 10.9 to the Company's Report on Form 10-K for the year ended December 31, 2003.
- 10.9 Addendum II dated August 31, 2000 to Sprint PCS Management Agreement by and among Sprint Spectrum L.P., WirelessCo, L.P., APC PCS, LLC, PhillieCo, L.P., and Shenandoah Personal Communications Company filed as Exhibit 10.10 to the Company's Report on Form 10-K for the year ended December 31, 2003.
- 10.10 Addendum III dated September 26, 2001 to Sprint PCS Management Agreement by and among Sprint Spectrum L.P., WirelessCo, L.P., APC PCS, LLC, PhillieCo, L.P., and Shenandoah Personal Communications Company filed as Exhibit 10.11 to the Company's Report on Form 10-K for the year ended December 31, 2003.
- 10.11 Addendum IV dated May 22, 2003 to Sprint PCS Management Agreement by and among Sprint Spectrum L.P., WirelessCo, L.P., APC PCS, LLC, PhillieCo, L.P., and Shenandoah Personal Communications Company filed as Exhibit 10.12 to the Company's Report on Form 10-K for the year ended December 31, 2003.
- 10.12 Addendum V dated January 30, 2004 to Sprint PCS Management Agreement by and among Sprint Spectrum L.P., WirelessCo, L.P., APC PCS, LLC, PhillieCo, L.P., and Shenandoah Personal Communications Company filed as Exhibit 10.13 to the Company's Report on Form 10-K for the year ended December 31, 2003.
- 10.13 Supplemental Executive Retirement Plan as amended and restated, filed as Exhibit 10.14 to the Company's Current Report on Form 8-K dated March 23, 2007.
- 10.14 Addendum VI dated May 24, 2004 to Sprint PCS Management Agreement by and among Sprint Spectrum L.P., WirelessCo, L.P., APC PCS, LLC, PhillieCo, L.P., and Shenandoah Personal Communications Company filed as Exhibit 10.15 to the Company's Report on Form 10-Q for the quarterly period ended June 30, 2004.
- 10.15 Description of the Shenandoah Telecommunications Company Incentive Plan filed as Exhibit 10.25 to the Company's Current Report on Form 8-K dated January 21, 2005.
- 10.16 Description of Compensation of Non-Employee Directors. Filed as Exhibit 10.26 to the Company's Current Report on Form 8-K dated May 4, 2005.

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- 10.17 Description of Management Compensatory Plans and Arrangements. Filed as Exhibit 10.27 to the Company's current report on Form 8-K dated April 20, 2005.
- 10.18 2005 Stock Incentive Plan filed as Exhibit 10.1 to the Company's Registration Statement on Form S-8 (No. 333-127342).
- 10.19 Addendum VII dated March 13, 2007 to Sprint PCS Management Agreement by and among Sprint Spectrum L.P., Wireless Co., L.P., APC PCS, LLC, Phillieco, L.P., and Shenandoah Personal Communications Company, filed as Exhibit 10.31 to the Company's Report on Form 10-K for the year ended December 31, 2006.
- 10.20 Settlement Agreement and Mutual Release dated March 13, 2007 by and among Sprint Corporation, Sprint Spectrum L.P., Wireless Co., L.P., Sprint Communications Company L.P., APC PCS, LLC, Phillieco, L.P., and Shenandoah Personal Communications Company and Shenandoah Telecommunications, filed as Exhibit 10.32 to the Company's Report on Form 10-K for the year ended December 31, 2006.
- 10.21 Addendum VIII to the Sprint Management Agreement dated November 19, 2007, filed as Exhibit 10.36 to the Company's Current Report on Form 8-K dated November 20, 2007.
- 10.22 Asset Purchase Agreement dated August 6, 2008, between Rapid Communications, LLC, Rapid Acquisition Company, LLC, and Shentel Cable Company, filed as Exhibit 10.37 to the Company's Report on Form 10-Q for the period ended June 30, 2008.
- 10.23 Amendment Number 1 to the Asset Purchase Agreement dated August 6, 2008, between Rapid Communications, LLC, Rapid Acquisition Company, LLC, and Shentel Cable Company, filed as Exhibit 10.40 to the Company's Current Report on Form 8-K dated November 7, 2008.
- 10.24 Addendum IX to the Sprint Management Agreement dated as of April 14, 2009, and filed as Exhibit 10.42 to the Company's Annual Report on Form 10-K dated March 8, 2010.
- 10.25 Asset Purchase Agreement dated as of April 16, 2010, between JetBroadband VA, LLC, Helicon Cable Communications, LLC, JetBroadband WV, LLC, JetBroadband Holdings, LLC, Helicon Cable Holdings, LLC, Shentel Cable Company and Shenandoah Telecommunications Company, filed as Exhibit 10.43 to the Company's Current Report on Form 8-K, dated April 16, 2010.
- 10.26 Addendum X dated March 15, 2010 to Sprint PCS Management Agreement by and among Sprint Spectrum L.P., WirelessCo, L.P., APC PCS, LLC, PhillieCo, L.P., Sprint Communications Company L.P. and Shenandoah Personal Communications Company, filed as Exhibit 10.44 to the Company's Current Report on Form 10-Q, dated May 7, 2010.

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- 10.27 Addendum XI dated July 7, 2010 to Sprint PCS Management Agreement by and among Sprint Spectrum L.P., WirelessCo, L.P., APC PCS, LLC, PhillieCo, L.P., Sprint Communications Company L.P. and Shenandoah Personal Communications Company, filed as Exhibit 10.45 to the Company's Current Report on Form 8-K dated July 8, 2010.
- 10.28 Credit Agreement dated as of July 30, 2010, among Shenandoah Telecommunications Company, CoBank, ACB, Branch Banking and Trust Company, Wells Fargo Bank, N.A., and other Lenders, filed as Exhibit 10.46 to the Company's Current Report on Form 8-K dated July 30, 2010.
- 10.29 Second Amendment to the Credit Agreement dated as of July 30, 2010, among Shenandoah Telecommunications Company, CoBank, ACB, Branch Banking and Trust Company, Wells Fargo Bank, N.A., and other Lenders, filed as Exhibit 10.47 to the Company's Current Report on Form 8-K dated April 29, 2011.
- 10.30 Third Amendment to the Credit Agreement dated as of July 30, 2010, among Shenandoah Telecommunications Company, CoBank, ACB, Branch Banking and Trust Company, Wells Fargo Bank, N.A., and other Lenders, filed as Exhibit 10.48 to the Company's Quarterly Report on Form 10-Q dated August 8, 2011.
- 10.31 Letter Agreement modifying section 10.2.7.2 of Addendum X dated March 15, 2010 to Sprint PCS Management Agreement by and among Sprint Spectrum L.P., WirelessCo, L.P., APC PCS, LLC, PhillieCo, L.P., Sprint Communications Company L.P. and Shenandoah Personal Communications Company, filed as Exhibit 10.49 to the Company's Quarterly Report on Form 10-Q dated August 8, 2011.
- 10.32 Fourth Amendment to the Credit Agreement dated as of July 30, 2010, among Shenandoah Telecommunications Company, CoBank, ACB, Branch Banking and Trust Company, Wells Fargo Bank, N.A., and other Lenders, filed as Exhibit 10.50 to the Company's Quarterly Report on Form 10-Q dated August 8, 2011.
- 10.33 Addendum XII dated February 1, 2012 to Sprint PCS Management Agreement by and among Sprint Spectrum L.P., WirelessCo, L.P., APC PCS, LLC, PhillieCo, L.P., Sprint Communications Company L.P. and Shenandoah Personal Communications Company, filed as Exhibit 10.51 to the Company's Current Report on Form 8-K dated February 2, 2012.
- 10.34 Fifth Amendment to the Credit Agreement dated as of July 30, 2010, among Shenandoah Telecommunications Company, CoBank, ACB, Branch Banking and Trust Company, Wells Fargo Bank, N.A., and other Lenders, filed as Exhibit 10.52 to the Company's Current Report on Form 8-K dated February 2, 2012.
- 10.35 Addendum XIII dated September 14, 2012 to Sprint PCS Management Agreement by and among Sprint Spectrum L.P., WirelessCo, L.P., APC PCS, LLC, PhillieCo, L.P., Sprint Communications Company L.P. and Shenandoah Personal Communications, LLC, filed as Exhibit 10.53 to the Company's Current Report on Form 8-K dated September 17, 2012.
- 10.36 Consent and Agreement dated September 14, 2012 related to Sprint PCS Management Agreement by and among Sprint Spectrum L.P., WirelessCo, L.P., APC PCS, LLC, PhillieCo, L.P., Sprint Communications Company L.P. and Shenandoah Personal Communications, LLC, filed as Exhibit 10.54 to the Company's Current Report on Form 8-K dated September 17, 2012.

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- Amended and Restated Credit Agreement dated as of September 14, 2012, among Shenandoah Telecommunications Company, CoBank, ACB, and other Lenders, filed as Exhibit 10.55 to the Company's Current Report on Form 8-K dated September 17, 2012.
- 10.37
- Addendum XIV dated as of November 19, 2012, to Sprint PCS Management Agreement by and among Sprint Spectrum L.P., WirelessCo, L.P., APC PCS, LLC, PhillieCo, L.P., Sprint Communications Company L.P. and Shenandoah Personal Communications, LLC, filed as Exhibit 10.42 to the Company's Annual Report on Form 10-K dated March 5, 2013.
- 10.38
- Addendum XV dated as of March 11, 2013, to Sprint PCS Management Agreement by and among Sprint Spectrum, L.P., WirelessCo, L.P., APC PCS, LLC, PhillieCo, L.P., Sprint Communications Company L.P. and Shenandoah Personal communications, LLC, filed as Exhibit 10.43 to the Company's Quarterly Report on Form 10-Q dated May 3, 2013.
- 10.39
- First Amendment dated January 30, 2014, to the Amended and Restated Credit Agreement among Shenandoah Telecommunications Company, CoBank, ACB, and other Lenders, filed as Exhibit 10.43 to the Company's Quarterly Report on Form 10-Q dated May 2, 2014.
- 10.40
- Joinder Agreement dated January 30, 2014, to the Amended and Restated Credit Agreement among Shenandoah Telecommunications Company, CoBank, ACB, and other Lenders, filed as Exhibit 10.44 to the Company's Quarterly Report on Form 10-Q dated May 2, 2014.
- 10.41
- Addendum XVI dated as of December 9, 2013 to Sprint PCS Management Agreement by and among Sprint Spectrum, L.P., WirelessCo, L.P., APC PCS, LLC, PhillieCo, L.P., Sprint Communications Company L.P. and Shenandoah Personal Communications, LLC, filed as Exhibit 10.45 to the Company's Quarterly Report on Form 10-Q dated May 2, 2014.
- 10.42
- Addendum XVII dated as of April 11, 2014, to Sprint PCS Management Agreement by and among Sprint Spectrum, L.P., WirelessCo, L.P., APC PCS, LLC, PhillieCo, L.P., Sprint Communications Company L.P. and Shenandoah Personal Communications, LLC, filed as Exhibit 10.46 to the Company's Quarterly Report on Form 10-Q dated May 2, 2014.
- 10.43
- 2014 Equity Incentive Plan filed as Appendix A to the Company's Definitive Proxy Statement filed on March 13, 2014 (No. 333-196990).
- 10.44
- Master Agreement dated as of August 10, 2015, by and among SprintCom, Inc. and Shenandoah Personal Communications, LLC, filed as Exhibit 10.1 to the Company's Current Report on Form 8-K dated August 11, 2015.
- 10.45
- Addendum XVIII dated as of August 10, 2015, to Sprint PCS Management Agreement by and among SprintCom, Inc., PhillieCo, L.P., and Shenandoah Personal Communications, LLC, filed as Exhibit 10.2 to the Company's Current Report on Form 8-K, dated August 11, 2015.
- 10.46
- Credit Agreement dated as of December 18, 2015, by and among Shenandoah Telecommunications Company, as Borrower, the guarantors party thereto from time to time, CoBank, ACB, as Administrative Agent, and various other agents and lenders named therein, filed as Exhibit 10.1 to the Company's Current Report on Form 8-K, dated December 24, 2015.
- 10.47
- 10.48

First amendment to Credit Agreement, dated as of March 29, 2016, by and among Shenandoah Telecommunications Company, as Borrower, CoBank, ACB, as Administrative Agent, and various other lenders named therein, filed as Exhibit 10.1 to the Company's Current Report on Form 8-K, dated March 29, 2016.
Amended and Restated Master Agreement, dated as of May 6, 2016, by and between Shenandoah Personal
10.49 Communications, LLC and SprintCom, Inc. filed as Exhibit 10.1 to the Company's Current Report on Form 8-K, dated May 6, 2016.

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- 10.50 Addendum XIX to Sprint PCS Management Agreement, dated as of May 6, 2016, by and among Sprint Spectrum L.P., WirelessCo, LLC, APC PCS, LLC, PhillieCo, LLC, Sprint Communications Company L.P., Shenandoah Personal Communications, LLC and SprintCom, Inc. filed as Exhibit 10.2 to the Company's Current Report on Form 8-K, dated May 6, 2016.
- 10.51 Consent and Agreement, dated as of May 6, 2016, by and among Sprint Spectrum L.P., WirelessCo, LLC, APC PCS, LLC, PhillieCo, LLC, Sprint Communications Company L.P., Shenandoah Personal Communications, LLC and SprintCom, Inc. and CoBank, ACB, filed as Exhibit 10.3 to the Company's Current Report on Form 8-K, dated May 6, 2016.
- 10.52 Addendum XX to Sprint PCS Management Agreement dated as of March 9, 2017 by and among Sprint Spectrum L.P.; Sprint Communications Company, L.P.; SprintCom, Inc.; Horizon Personal Communications, LLC; and Shenandoah Personal Communications, LLC filed as Exhibit 10. 1 to the Company's Current Report on Form 8-K filed on March 15, 2017.
- 10.53 Addendum XXI to Sprint PCS Management Agreement dated as of February 1, 2018 by and among Sprint Spectrum L.P.; Sprint Communications Company, L.P.; SprintCom, Inc.; and Shenandoah Personal Communications, LLC filed as Exhibit 10.1to the Company's Current Report on Form 8-K filed on February 5, 2018.
- 10.54 Expansion Agreement dated as of February 1, 2018 by and among Sprint Spectrum L.P.; SprintCom, Inc.; and Shenandoah Personal Communications, LLC filed as Exhibit 10.2 to the Company's Current Report on Form 8-K filed on February 5, 2018.
- 10.55 Second Amendment to Credit Agreement, dated as of February 16, 2018, by and among Shenandoah Telecommunications Company, as Borrower, CoBank, ACB, as Administrative Agent, and various other lenders named therein filed as Exhibit 10.50 to the Company's Current Report on Form 8-K, dated February 16, 2018.
- 10.56 Consulting Agreement by and among Shenandoah Telecommunications Company and Earle A. McKenzie dated as of July 1, 2018 filed as an Exhibit to the Company's Quarterly Report on Form 10-Q dated August 7, 2018.
- 10.57 Credit Agreement dated as of November 9, 2018, by and among Shenandoah Telecommunications Company, certain of its subsidiaries, CoBank, ACB, as administrative agent, and the other lenders party thereto filed as Exhibit 10.1 to the Company's Current Report on Form 8-K, dated November 9, 2018.
- *10.58 Form of Stock Option Award for Executives under the 2014 Equity Incentive Plan.
- *10.59 Form of Restricted Stock Unit Award for Executives under the 2014 Equity Incentive Plan.
- *10.60 Form of Performance Share Unit Award for Executives under the 2014 Equity Incentive Plan.
- *21 List of Subsidiaries.
- *23.1 Consent of KPMG LLP, Independent Registered Public Accounting Firm.
- *31.1 Certification of President and Chief Executive Officer of Shenandoah Telecommunications Company pursuant to Rule 13a-14(a)under the Securities Exchange Act of 1934.

*31.2 Certification of Vice President and Chief Financial Officer of Shenandoah Telecommunications Company pursuant to Rule 13a-14(a) under the Securities Exchange Act of 1934.

**32 Certifications pursuant to Rule 13a-14(b) under the Securities Exchange Act of 1934 and 18 U.S.C. § 1350.

(101) Formatted in XBRL (Extensible Business Reporting Language)

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101.INS XBRL Instance Document

101.SCH XBRL Taxonomy Extension Schema Document

101.CALXBRL Taxonomy Extension Calculation Linkbase Document

101.DEF XBRL Taxonomy Extension Definition Linkbase Document

101.LAB XBRL Taxonomy Extension Label Linkbase Document

101.PRE XBRL Taxonomy Extension Presentation Linkbase Document

* Filed herewith

** This certification is deemed not filed for purposes of Section 18 of the Securities Exchange Act of 1934, as amended (Exchange Act), or otherwise subject to the liability of that section, nor shall it be deemed incorporated by reference into any filing under the Securities Act of 1933, as amended (Securities Act), or the Exchange Act.

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SIGNATURES

Pursuant to the requirements of Sections 13 or 15(d) of the Securities Exchange Act of 1934, the Registrant has duly caused this report to be signed on its behalf by the undersigned, thereunto duly authorized.

SHENANDOAH TELECOMMUNICATIONS COMPANY

February 28, 2019 /S/ CHRISTOPHER E. FRENCH

Christopher E. French, President & Chief Executive Officer
(Principal Executive Officer)

Pursuant to the requirements of the Securities Exchange Act of 1934, this report has been signed by the following persons on behalf of the Registrant and in the capacities and on the dates indicated.

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/s/CHRISTOPHER E. FRENCH President & Chief Executive Officer,
February 28, 2019 Director (Principal Executive Officer)
Christopher E. French

/s/JAMES F. WOODWARD Senior Vice President – Finance and Chief Financial Officer
February 28, 2019 (Principal Financial Officer and
James F. Woodward Principal Accounting Officer)

/s/THOMAS A. BECKETT Director
February 28, 2019
Thomas A. Beckett

/s/TRACY FITZSIMMONS Director
February 28, 2019
Tracy Fitzsimmons

/s/JOHN W. FLORA Director
February 28, 2019
John W. Flora

/s/ RICHARD L. KOONTZ, JR. Director
February 28, 2019
Richard L. Koontz, Jr.

/s/DALE S. LAM Director
February 28, 2019
Dale S. Lam

/s/KENNETH L. QUAGLIO Director
February 28, 2019
Kenneth L. Quaglio

/s/LEIGH ANN SCHULTZ Director
February 28, 2019
Leigh Ann Schultz

/s/JAMES E. ZERKEL II Director
February 28, 2019
James E. Zerkel II

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SHENANDOAH TELECOMMUNICATIONS COMPANY
AND SUBSIDIARIES

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Report of Independent Registered Public Accounting Firm

To the Shareholders and Board of Directors
Shenandoah Telecommunications Company:

Opinion on the Consolidated Financial Statements

We have audited the accompanying consolidated balance sheets of Shenandoah Telecommunications Company and subsidiaries (the Company) as of December 31, 2018 and 2017, the related consolidated statements of operations and comprehensive income, shareholders' equity, and cash flows for each of the years in the three year period ended December 31, 2018, and the related notes and financial statement Schedule II - Valuation and Qualifying Accounts (collectively, the consolidated financial statements). In our opinion, the consolidated financial statements present fairly, in all material respects, the financial position of the Company as of December 31, 2018 and 2017, and the results of its operations and its cash flows for each of the years in the three year period ended December 31, 2018, in conformity with U.S. generally accepted accounting principles.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (PCAOB), the Company's internal control over financial reporting as of December 31, 2018, based on criteria established in Internal Control - Integrated Framework (2013) issued by the Committee of Sponsoring Organizations of the Treadway Commission, and our report dated February 28, 2019 expressed an adverse opinion on the effectiveness of the Company's internal control over financial reporting.

Change in Accounting Principle

As discussed in Note 2 to the consolidated financial statements, the Company has changed its method of accounting for revenue from contracts with customers in 2018 due to the adoption of Accounting Standards Update 2014-09, Revenue from Contracts with Customers, and several related amendments.

Basis for Opinion

These consolidated financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on these consolidated financial statements based on our audits. We are a public accounting firm registered with the PCAOB and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audits in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the consolidated financial statements are free of material misstatement, whether due to error or fraud. Our audits included performing procedures to assess the risks of material misstatement of the consolidated financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the consolidated financial statements. Our audits also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the consolidated financial statements. We believe that our audits provide a reasonable basis for our opinion.

/s/ KPMG LLP

We have served as the Company's auditor since 2001.
McLean, VA
February 28, 2019

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Report of Independent Registered Public Accounting Firm

To the Shareholders and Board of Directors
Shenandoah Telecommunications Company:

Opinion on Internal Control Over Financial Reporting

We have audited Shenandoah Telecommunications Company and subsidiaries' (the Company) internal control over financial reporting as of December 31, 2018, based on criteria established in Internal Control - Integrated Framework (2013) issued by the Committee of Sponsoring Organizations of the Treadway Commission. In our opinion, because of the effect of the material weaknesses, described below, on the achievement of the objectives of the control criteria, the Company has not maintained effective internal control over financial reporting as of December 31, 2018, based on criteria established in Internal Control - Integrated Framework (2013) issued by the Committee of Sponsoring Organizations of the Treadway Commission.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (PCAOB), the consolidated balance sheets of the Company as of December 31, 2018 and 2017, the related consolidated statements of operations and comprehensive income, shareholders' equity, and cash flows for each of the years in the three-year period ended December 31, 2018, and the related notes and financial statement Schedule II - Valuation and Qualifying Accounts (collectively, the consolidated financial statements), and our report dated February 28, 2019 expressed an unqualified opinion on those consolidated financial statements.

A material weakness is a deficiency, or a combination of deficiencies, in internal control over financial reporting, such that there is a reasonable possibility that a material misstatement of the company's annual or interim financial statements will not be prevented or detected on a timely basis. The following material weaknesses have been identified and included in management's assessment:

• The Company did not have a sufficient number of trained resources with assigned responsibility and accountability for the design, operation, and documentation of internal control over financial reporting.

The Company did not have an effective risk assessment process that identified and assessed necessary changes in the application of U.S. generally accepted accounting principles, financial reporting processes, and the design and effective operation of internal controls.

• The Company did not have an effective information and communication process that identified and assessed the source of reliable information necessary for financial accounting and reporting.

• The Company did not have effective monitoring activities to assess the operation of internal control.

As a consequence, the Company did not have effective control activities related to the design and operation of process-level controls across all processes. The material weaknesses were considered in determining the nature, timing, and extent of audit tests applied in our audit of the 2018 consolidated financial statements, and this report does not affect our report on those consolidated financial statements.

Basis for Opinion

The Company's management is responsible for maintaining effective internal control over financial reporting and for its assessment of the effectiveness of internal control over financial reporting, included in the accompanying Management's Report on Internal Control Over Financial Reporting. Our responsibility is to express an opinion on the Company's internal control over financial reporting based on our audit. We are a public accounting firm registered with the PCAOB and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB. We conducted our audit in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether effective internal control over financial reporting was maintained in all material respects. Our audit of internal control over financial reporting included obtaining an understanding of internal control over financial reporting, assessing the risk that a material weakness exists, and testing and evaluating the design and operating effectiveness of internal control based on the assessed risk. Our audit also included performing such other procedures as we considered necessary in the circumstances. We believe that our audit provides a reasonable basis for our opinion.

Definition and Limitations of Internal Control Over Financial Reporting

A company's internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles. A company's internal control over financial reporting includes those policies and procedures that (1) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the company; (2) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial

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statements in accordance with generally accepted accounting principles, and that receipts and expenditures of the company are being made only in accordance with authorizations of management and directors of the company; and (3) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of the company's assets that could have a material effect on the financial statements.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

/s/ KPMG LLP

McLean, VA
February 28, 2019

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CONSOLIDATED BALANCE SHEETS

December 31, 2018 and 2017

(in thousands)

	2018	2017
ASSETS		
Current assets:		
Cash and cash equivalents	\$85,086	\$78,585
Accounts receivable, net	54,407	54,184
Income taxes receivable	5,282	17,311
Inventory, net	5,265	5,704
Prepaid expenses and other	60,162	17,111
Total current assets	210,202	172,895
Investments	10,788	11,472
Property, plant and equipment, net	701,359	686,327
Other assets:		
Intangible assets, net	366,029	380,979
Goodwill	146,497	146,497
Deferred charges and other assets, net	49,891	13,690
Total assets	\$1,484,766	\$1,411,860
LIABILITIES AND SHAREHOLDERS' EQUITY		
Current liabilities:		
Current maturities of long-term debt, net of unamortized loan fees	\$20,618	\$64,397
Accounts payable	35,987	28,953
Advanced billings and customer deposits	7,919	21,153
Accrued compensation	9,452	9,167
Accrued liabilities and other	14,563	13,914
Total current liabilities	88,539	137,584
Long-term debt, less current maturities, net of unamortized loan fees	749,624	757,561
Other long-term liabilities:		
Deferred income taxes	127,453	100,879
Deferred lease	22,436	15,782
Asset retirement obligations	28,584	21,211
Retirement plan obligations	11,519	13,328
Other liabilities	14,364	15,293
Total other long-term liabilities	204,356	166,493
Commitments and contingencies (Note 13)		
Shareholders' equity:		
Common stock, no par value, authorized 96,000; 49,630 and 49,328 issued and outstanding at December 31, 2018 and 2017, respectively	—	—
Additional paid in capital	47,456	44,787
Retained earnings	386,511	297,205
Accumulated other comprehensive income (loss), net of taxes	8,280	8,230
Total shareholders' equity	442,247	350,222
Total liabilities and shareholders' equity	\$1,484,766	\$1,411,860

See accompanying notes to consolidated financial statements.

Table of ContentsSHENANDOAH TELECOMMUNICATIONS COMPANY AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF OPERATIONS AND COMPREHENSIVE INCOME

Years Ended December 31, 2018, 2017 and 2016

(in thousands, except per share amounts)

	2018	2017	2016
Operating revenue:			
Service revenue and other	\$562,456	\$601,673	\$523,748
Equipment revenue	68,398	10,318	11,540
Total operating revenue	630,854	611,991	535,288
Operating expenses:			
Cost of services	194,022	188,721	163,969
Cost of goods sold	63,959	22,786	29,551
Selling, general and administrative	113,222	165,937	133,325
Acquisition, integration and migration expenses	—	11,030	42,232
Depreciation and amortization	166,405	177,007	143,685
Total operating expenses	537,608	565,481	512,762
Operating income (loss)	93,246	46,510	22,526
Other income (expense):			
Interest expense	(34,847)	(38,237)	(25,102)
Gain (loss) on investments, net	(275)	564	271
Non-operating income (loss), net	3,988	4,420	4,250
Income (loss) before income taxes	62,112	13,257	1,945
Income tax expense (benefit)	15,517	(53,133)	2,840
Net income (loss)	46,595	66,390	(895)
Other comprehensive income (loss):			
Unrealized gain (loss) on interest rate hedge, net of tax	50	1,442	6,373
Comprehensive income (loss)	\$46,645	\$67,832	\$5,478
Net income (loss) per share, basic and diluted:			
Basic net income (loss) per share	\$0.94	\$1.35	\$(0.02)
Diluted net income (loss) per share	\$0.93	\$1.33	\$(0.02)
Weighted average shares outstanding, basic	49,542	49,150	48,807
Weighted average shares outstanding, diluted	50,063	50,026	48,807
Cash dividend declared per share	\$0.27	\$0.26	\$0.25

See accompanying notes to consolidated financial statements.

Table of ContentsSHENANDOAH TELECOMMUNICATIONS COMPANY AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF SHAREHOLDERS' EQUITY

Years Ended December 31, 2018, 2017 and 2016

(in thousands, except per share amounts)

	Shares of Common Stock (no par value)	Additional Paid in Capital	Retained Earnings	Accumulated Other Comprehensive Income (Loss)	Total
Balance, December 31, 2015	48,475	\$ 32,776	\$ 256,747	\$ 415	\$ 289,938
Net income (loss)	—	—	(895)	—	(895)
Other comprehensive gain (loss), net of tax	—	—	—	6,373	6,373
Dividends declared (\$0.25 per share)	—	—	(12,228)	—	(12,228)
Dividends reinvested in common stock	19	524	—	—	524
Stock based compensation	—	3,506	—	—	3,506
Common stock issued through exercise of incentive stock options	371	3,359	—	—	3,359
Common stock issued for share awards	190	—	—	—	—
Common stock issued	2	14	—	—	14
Common stock issued to acquire non-controlling interest in nTelos	76	10,400	—	—	10,400
Shares retired for settlement of employee taxes upon issuance of vested equity awards	(198)	(5,097)	—	—	(5,097)
Balance, December 31, 2016	48,935	45,482	243,624	6,788	295,894
Net income (loss)	—	—	66,390	—	66,390
Other comprehensive gain (loss), net of tax	—	—	—	1,442	1,442
Dividends declared (\$0.26 per share)	—	—	(12,809)	—	(12,809)
Dividends reinvested in common stock	15	552	—	—	552
Stock based compensation	154	4,184	—	—	4,184
Stock options exercised	363	2,394	—	—	2,394
Common stock issued	1	21	—	—	21
Shares retired for settlement of employee taxes upon issuance of vested equity awards	(216)	(7,846)	—	—	(7,846)
Common stock issued to acquire non-controlling interest in nTelos	76	—	—	—	—
Balance, December 31, 2017	49,328	44,787	297,205	8,230	350,222
Change in accounting principle - adoption of accounting standard (Note 3)	—	—	56,097	—	56,097
Net income (loss)	—	—	46,595	—	46,595
Other comprehensive gain (loss), net of tax	—	—	—	50	50
Dividends declared (\$0.27 per share)	—	—	(13,386)	—	(13,386)
Dividends reinvested in common stock	11	520	—	—	520
Stock based compensation	206	5,367	—	—	5,367
Stock options exercised	113	787	—	—	787
Common stock issued	1	26	—	—	26
	(105)	(4,031)	—	—	(4,031)

Shares retired for settlement of employee taxes upon issuance
of vested equity awards

Common stock issued to acquire non-controlling interest in nTelos	76	—	—	—	—
Balance, December 31, 2018	49,630	\$ 47,456	\$ 386,511	\$ 8,280	\$ 442,247
See accompanying notes to consolidated financial statements.					

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SHENANDOAH TELECOMMUNICATIONS COMPANY AND SUBSIDIARIES

CONSOLIDATED STATEMENTS OF CASH FLOWS

Years Ended December 31, 2018, 2017 and 2016

(in thousands)

	2018	2017	2016
Cash flows from operating activities:			
Net income (loss)	\$46,595	\$66,390	\$(895)
Adjustments to reconcile net income (loss) to net cash provided by operating activities:			
Depreciation	142,111	151,063	123,995
Amortization	24,294	25,944	19,690
Amortization reflected as rent expense in cost of services	342	1,528	728
Bad debt expense	1,983	2,179	2,456
Stock based compensation expense, net of amount capitalized	4,959	3,580	3,021
Waived management fee	37,763	36,056	24,596
Deferred income taxes	6,208	(54,055)	(52,875)
(Gain) loss on investments	275	(450)	(143)
Net (gain) loss from patronage and equity investments	(3,388)	(3,008)	(795)
Amortization of long-term debt issuance costs	3,666	4,741	3,914
Net benefit from retirement plans	(1,688)	(1,388)	(4,396)
Accrued interest and other	—	416	1,414
Changes in assets and liabilities:			
Accounts receivable	239	16,451	14,581
Inventory, net	439	33,339	(30,288)
Income taxes receivable	12,029	(19,138)	7,694
Other assets	(16,246)	1,439	5,273
Accounts payable	(1,377)	(36,725)	42,496
Income taxes payable	—	—	435
Deferred lease	4,723	327	4,273
Other deferrals and accruals	2,720	(5,759)	(3,648)
Net cash provided by (used in) operating activities	\$265,647	\$222,930	\$161,526
Cash flows from investing activities:			
Acquisition of property, plant and equipment	\$(136,641)	\$(146,489)	\$(173,231)
Proceeds from sale of assets	840	980	5,510
Cash disbursed for acquisition, net of cash acquired	(52,000)	(6,000)	(657,354)
Release of restricted cash	—	—	2,167
Cash distributions (contributions) from investments and other	1	14	2,895
Net cash provided by (used in) investing activities	\$(187,800)	\$(151,495)	\$(820,013)

(Continued)

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	2018	2017	2016
Cash flows from financing activities:			
Principal payments on long-term debt	\$(51,264)	\$(36,375)	\$(213,793)
Proceeds from revolving credit facility borrowings	15,000	—	—
Proceeds from credit facility borrowings	—	25,000	860,000
Principal payments on revolving credit facility	(15,000)	—	—
Payments for debt issuance costs	(3,971)	—	(14,910)
Dividends paid, net of dividends reinvested	(12,866)	(12,257)	(11,705)
Taxes paid for equity award issuances	(3,245)	(5,411)	(5,097)
Proceeds from issuance of common stock	—	—	3,373
Net cash provided by (used in) financing activities	\$(71,346)	\$(29,043)	\$617,868
Net increase (decrease) in cash and cash equivalents	\$6,501	\$42,392	\$(40,619)
Cash and cash equivalents, beginning of period	78,585	36,193	76,812
Cash and cash equivalents, end of period	\$85,086	\$78,585	\$36,193

Supplemental Disclosures of Cash Flow Information

Cash payments for:

Interest, net of capitalized interest of \$1,556; \$1,559 and \$1,374 in 2018, 2017 and 2016, respectively	\$33,034	\$33,495	\$21,187
Income tax (refunds received) paid, net	\$(2,721)	\$20,066	\$44,983
Capital expenditures payable	\$23,501	\$7,254	\$14,386

Non-cash investing and financing activities:

In conjunction with the 2016 acquisition of nTelos, the Company issued common stock to acquire non-controlling interests held by third parties in a subsidiary of nTelos. The transaction was valued at \$10.4 million.

During the year ended December 31, 2016, the Company reclassified \$5.2 million of unamortized loan fees and costs included in deferred charges and other assets to long term debt in connection with the new Term loan A-1 and A-2 borrowing related to the acquisition of nTelos.

During the year ended December 31, 2017, the Company recorded an increase in the fair value of interest rate swaps of \$2.0 million, a decrease in deferred tax liabilities of \$0.5 million, and an increase to accumulated other comprehensive income of approximately \$1.4 million.

See accompanying notes to consolidated financial statements.

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SHENANDOAH TELECOMMUNICATIONS COMPANY AND SUBSIDIARIES
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

Note 1. Nature of Operations

Description of business: Shenandoah Telecommunications Company and its subsidiaries (collectively, the “Company”) provide wireless personal communications service (“PCS”) under the Sprint brands, and telephone service, cable television, unregulated communications equipment sales and services, and internet access under the Shentel brand. In addition, the Company leases towers and operates and maintains an interstate fiber optic network. Pursuant to a management agreement with Sprint and its related parties (collectively, “Sprint”), the Company has been the exclusive Sprint PCS Affiliate providing wireless mobility communications network products and services on the 800 MHz, 1900 MHz and 2.5 GHz spectrum ranges in a multi-state area covering large portions of central and western Virginia, south-central Pennsylvania, West Virginia, and portions of Maryland, North Carolina, Kentucky, and Ohio. The Company is licensed to use the Sprint brand names in this territory, and operates its network under the Sprint radio spectrum license. The Company also owns cell site towers built on leased land, throughout this region, and leases space on the owned towers to both affiliates and non-affiliated third-party wireless service providers.

The 2016 acquisition of nTelos and the subsequent Sprint expansions (see Note 4, Acquisitions) expanded the Company's wireless network coverage area to include south-central and western Virginia, West Virginia, and small portions of Kentucky, and Ohio.

Note 2. Summary of Significant Accounting Policies

Principles of consolidation: The accompanying consolidated financial statements include the accounts of Shenandoah Telecommunications Company and all of its wholly owned subsidiaries. All intercompany accounts and transactions have been eliminated in consolidation.

Use of estimates: The Company has made a number of estimates and assumptions related to the reporting of assets and liabilities, the disclosure of contingent assets and liabilities at the date of the consolidated financial statements and the reported amounts of revenues and expenses during the reporting periods. Significant estimates made by the Company include, but are not limited to: revenue recognition; estimates of the fair value of stock-based awards; fair value of intangibles and goodwill; depreciable lives of property, plant and equipment; and useful lives of intangible assets. Management reviews its estimates, including those related to recoverability and useful lives of assets as well as liabilities for income taxes and pension benefits. Changes in facts and circumstances may result in revised estimates, and actual results could differ from those reported estimates and such differences could be material to the Company's consolidated financial position and results of operations.

Cash and cash equivalents: The Company considers all temporary cash investments purchased with a maturity of three months or less to be cash equivalents. The Company places its temporary cash investments with high credit quality financial institutions. Generally, such investments are in excess of FDIC or SIPC insurance limits.

Inventories: The Company's inventories consist primarily of items held for resale such as devices and accessories. The Company values its inventory at the lower of cost or net realizable value. Inventory cost is computed on an average cost basis. Net realizable value is determined by reviewing current replacement cost, marketability and obsolescence.

Property, plant and equipment: Property, plant and equipment are stated at cost less accumulated depreciation and amortization. The Company capitalizes all costs associated with the purchase, deployment and installation of property, plant and equipment, including interest costs on major capital projects during the period of their

construction. Maintenance expense is recognized as incurred when repairs are performed that do not extend the life of property, plant and equipment. Expenses for major renewals and improvements, which significantly extend the useful lives of existing property and equipment, are capitalized and depreciated. Depreciable lives are assigned to assets based on their estimated useful lives. Depreciation is calculated on the straight-line method over the estimated useful lives of the assets. Leasehold improvements are depreciated over the lesser of their useful lives or respective lease terms. The Company takes technology changes into consideration as it assigns the estimated useful lives, and monitors the remaining useful lives of asset groups to reasonably match the remaining economic life with the useful life and makes adjustments when necessary. Upon retirement or disposition of property and equipment, the cost and related accumulated depreciation are removed from the accounts and any resulting gain or loss is recognized. See Note 9, Property, Plant and Equipment, for additional information.

Goodwill and Indefinite-lived Intangible Assets: Goodwill represents the excess of acquisition costs over the fair value of tangible net assets and identifiable intangible assets of the businesses acquired. Cable franchise rights, included in indefinite-lived intangible assets provide us with the non-exclusive right to provide video services in a specified area. While some cable franchises are issued

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for a fixed time (generally 10 years), renewals of cable franchises have occurred routinely and at nominal cost. Moreover, we have determined that there are currently no legal, regulatory, contractual, competitive, economic or other factors that limit the useful lives of our cable franchises and as a result we account for cable franchise rights as an indefinite lived intangible asset.

Goodwill and indefinite-lived intangible assets are not amortized, but rather, are subject to impairment testing annually, in the fourth quarter, or whenever events or changes in circumstances indicate that the carrying amount may not be fully recoverable. A qualitative evaluation of our reporting units is utilized to determine whether it is necessary to perform a quantitative two-step impairment test. If it is more likely than not that the fair value of a reporting unit is less than its carrying amount, we would be required to perform a two-step quantitative test. If the carrying value of the reporting unit's net assets exceeds the fair value of the reporting unit, then an impairment loss is recorded.

The Company's 2018 impairment tests were based on the operating segment structure, where each operating segment was also considered a reporting unit. During the fourth quarter of 2018 we performed a qualitative assessment for our reporting units that were assigned goodwill. During this assessment, qualitative factors were first assessed to determine whether it was more likely than not that the fair value of the reporting units were less than their carrying amounts. Qualitative factors that were considered included, but were not limited to, macroeconomic conditions, industry and market conditions, company specific events, changes in circumstances, after tax cash flows and market capitalization trends.

Based on our Company's annual qualitative impairment evaluations performed during 2018 and 2017, we concluded that there were no indicators of impairment and therefore it was more likely than not that the fair value of the goodwill exceeded its carrying amount, for each reporting unit.

Finite-lived Intangible Assets: On an annual basis and whenever events or changes in circumstances require, the Company reviews its finite-lived intangible assets for impairment. Intangible assets are included in the Company's impairment testing and in the event the Company identifies impairment, the intangible assets are written down to their fair values.

Intangible assets typically have finite useful lives that are amortized over their useful lives and primarily consist of affiliate contract expansion, acquired cable subscribers, and off-market leases. Affiliate contract expansion and acquired cable subscribers are amortized over the period in which those relationships are expected to contribute to our future cash flows and are also reduced by management fee waiver credits received from Sprint in connection with the 2017 non-monetary exchange. Other finite-lived intangible assets, are generally amortized using the straight-line method of amortization. Such finite-lived intangible assets are subject to the impairment provisions of ASC 360, Property, Plant and Equipment, where impairment is recognized and measured only if there are events and circumstances that indicate that the carrying amount may not be recoverable. The carrying amount is not recoverable if it exceeds the sum of the undiscounted cash flows expected to result from the use of the asset group. An impairment loss is recorded if after determining that it is not recoverable, the carrying amount exceeds the fair value of the asset.

Finite-lived intangible assets and liabilities are being amortized over the following estimated useful lives that were established on the dates acquired:

	Estimated Useful Life
Affiliate contract expansion	4 - 14 years
Favorable and unfavorable leases - wireless	1 - 28 years
Acquired subscribers - cable	3 - 10 years
Other intangibles	15 - 20 years

There were no impairment charges on intangible assets for the years ended December 31, 2018, 2017 or 2016.

Valuation of long-lived assets: Long lived assets, such as property, plant, and equipment, are reviewed for impairment whenever events or changes in circumstances indicate that the carrying amount of an asset group may not be recoverable. If the Company determines that an asset group may not be recoverable, an impairment charge is recorded. There were no impairment charges on long-lived assets for the years ended December 31, 2018, 2017 or 2016.

Business combinations: Business combinations, including purchased intangible assets, are accounted for at fair value. Acquisition costs are expensed as incurred and recorded in selling, general and administrative expenses. The fair value amount assigned to intangible assets is based on an exit price from a market participant's viewpoint, and utilizes data such as discounted cash flow analysis and replacement cost models. The Company's best estimates are employed in determining the assumptions used to derive acquisition date fair value.

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Revenue recognition: Refer to Note 3, Revenue from Contracts with Customers for details of the Company's 2018 revenue recognition policy.

For the years ended December 31, 2017 and 2016, the Company recognized revenue when persuasive evidence of an arrangement existed, services had been rendered or products had been delivered, the price to the buyer was fixed and determinable and collectability was reasonably assured. Revenues were recognized by the Company based on the various types of transactions generating the revenue. For services, revenue was recognized as the services are performed.

Advertising Costs: The Company expenses advertising costs and marketing production costs as incurred and includes such costs within selling, general and administrative expenses in the consolidated statements of operations. Advertising expense for the years ended December 31, 2018, 2017 and 2016 was \$15.2 million, \$15.5 million and \$12.2 million, respectively.

Income taxes: Income taxes are accounted for under the asset and liability method. Deferred tax assets and liabilities are recognized for the future tax consequences attributable to differences between financial statement carrying amounts of existing assets and liabilities and their respective tax bases. Deferred tax assets and liabilities are measured using enacted tax rates expected to apply to taxable income in the years in which those temporary differences are expected to be recovered or settled. The effect on deferred tax assets and liabilities of a change in tax rates is recognized in income in the period that includes the enactment date. The Company evaluates the recoverability of deferred tax assets generated from net operating losses. The Company uses a more likely than not threshold to make that determination and has concluded that at December 31, 2018 and 2017, a valuation allowance against certain state deferred tax assets is necessary, as discussed in Note 16, Income Taxes. The Company recognizes the effect of income tax positions only if those positions are more likely than not of being sustained. Recognized income tax positions are measured at the largest amount that is greater than 50% likely of being realized. Changes in recognition or measurement are reflected in the period in which the change in judgment occurs. The Company's policy is to record interest related to unrecognized tax benefits in interest expense and penalties in selling, general, and administrative expenses.

Retirement Plans: Through the Company's acquisition of nTelos, the Company assumed nTelos' non-contributory defined benefit pension plan ("Pension Plan") covering all employees who met eligibility requirements and were employed by nTelos prior to October 1, 2003 ("participants"). The Pension Plan was closed to nTelos employees hired on or after October 1, 2003. Pension benefits vested after five years of plan service and were based on years of service and an average of the five highest consecutive years of compensation subject to certain reductions if the employee retires before reaching age 65 and elects to receive the benefit prior to age 65. Effective December 31, 2012, nTelos amended the Pension Plan to freeze future benefit plan accruals for participants.

As of December 31, 2018 and 2017, the fair value of our pension plan assets and certain other postretirement benefits in aggregate was \$20.7 million and \$22.6 million, respectively, and the fair value of our projected benefit obligations in aggregate was \$25.8 million and \$28.2 million, respectively. As a result, the plans were underfunded by approximately \$5.1 million and \$5.6 million at December 31, 2018 and 2017, respectively, and were recorded as a net liability in our consolidated balance sheets.

The Company intends to make future cash contributions to the pension plan in amounts necessary to meet minimum funding requirements according to applicable benefit plan regulations.

Stock Compensation: The Company maintains two shareholder-approved Company Stock Incentive Plans allowing for the grant of equity based incentive compensation to essentially all employees. The 2005 Plan authorized grants of

up to 2,880,000 shares over a ten-year period beginning in 2005. The term of the 2005 Plan expired in February 2014; outstanding awards will continue to vest and options may continue to be exercised, but no additional awards will be granted under the 2005 Plan. The 2014 Plan authorizes grants of up to an additional 3,000,000 shares over a ten-year period beginning in 2014. Under these Plans, grants may take the form of stock awards, awards of options to acquire stock, stock appreciation rights, and other forms of equity based compensation; both options to acquire stock and stock awards were granted.

The fair value of each option award is estimated on the grant date using the Black-Scholes option valuation model, based on several assumptions including the risk-free interest rate, volatility, expected dividend yield and expected term.

The fair value of each restricted stock unit award is calculated using the share price at the date of grant. Restricted stock units generally have service requirements only or performance and service requirements with vesting periods ranging from one to four years. Employees and directors who are granted restricted stock units are not required to pay for the shares but generally must remain employed with the Company, or continue to serve as a member of the Company's board of directors, until the restrictions lapse, which is typically four years for employees and one year for directors.

Compensation Costs

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The cost of employee services received in exchange for share-based awards classified as equity is measured using the estimated fair value of the award on the date of the grant, and the cost is recognized over the period that the award recipient is required to provide service in exchange for the award. Share-based compensation cost related to awards with graded vesting is recognized using the straight-line method.

Pre-tax share and stock-based compensation charges from our incentive plans included in net income (loss) were as follows:

(in thousands)	2018	2017	2016
Stock compensation expense	\$5,367	\$4,184	\$3,506
Capitalized stock compensation	408	604	485
Stock compensation expense, net	4,959	3,580	3,021

Excess tax benefits, net of deficiencies \$1,523 \$3,314 \$1,709

As of December 31, 2018 and 2017, there was \$2.7 million and \$2.5 million, respectively, of total unrecognized compensation cost related to non-vested incentive awards that are expected to be recognized over a weighted average period of 2.8 years.

Adoption of New Accounting Principles

The Company routinely assesses recently issued accounting standards. Disclosure guidance applies to all accounting standards which have been issued but not yet adopted, unless the impact on the Company's balance sheet and statement of operations is not expected to be material. There have been no developments to recently issued accounting standards, including the expected dates of adoption and estimated effects on the Company's consolidated financial statements, that would be expected to impact the Company except for the following:

The Company adopted ASU No. 2014-09, Revenue from Contracts with Customers ("Topic 606", or "the new revenue recognition standard"), and all related amendments, effective January 1, 2018, using the modified retrospective method as discussed in Note 3, Revenue from Contracts with Customers. The Company recognized the cumulative effect of applying the new revenue recognition standard as an adjustment to the opening balance of retained earnings. The comparative information has not been retrospectively modified and continues to be reported under the accounting standards in effect for those periods.

In February 2016, the FASB issued ASU No. 2016-02, Leases ("Topic 842"), which requires lessees to recognize a right-of-use asset and a lease liability on the balance sheet for all leases with terms greater than 12 months. The standard also requires disclosures regarding the amount, timing and uncertainty of cash flows arising from leases.

Other effects may occur depending on the types of leases and on the specific terms that are utilized by particular lessees. Effects such as changes in the categorization of rental costs, from rent expense to interest and depreciation expense are also required. Leases will be classified as either finance or operating leases which will affect the pattern of expense recognition in the consolidated statements of operations.

The Company will adopt the standard on January 1, 2019. The modified retrospective application will be used to implement the adoption of the new standard, which requires the Company to apply the principles of the standard prospectively and to record an adjustment to retained earnings for impacts related to prior periods as of the effective date.

The Company will elect the package of practical expedients permitted under the transition guidance within the new standard, which among other things, allows us to carryforward the historical lease classification. The Company will also elect the practical expedient related to land easements, allowing the carry forward of current accounting treatment for land easements on existing agreements. As a lessee, the Company will make an accounting policy election to account for leases with an initial term of 12 months or less similar to existing guidance for operating leases today. The Company will recognize those lease payments in the consolidated statements of operations on a straight-line basis over the lease term.

The Company expects that the most notable impacts to its financial statements upon the adoption of these ASU's will be the recognition of a material right-of-use asset, recognition of a material lease liability and additional disclosures related to qualitative and quantitative information concerning its portfolio of leases.

The Company is in the process of calculating the right-of-use lease assets and additional lease liabilities that are required to be recognized under Topic 842. A reasonable estimate of the right-of-use lease assets and liabilities that will be required to be

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recognized will be available once the necessary software has been successfully implemented. Any difference between the right-of-use assets and lease liabilities amounts that are required to be recognized will be recorded as an adjustment to retained earnings upon adoption. While the Company has not yet completed its implementation, it believes that the adoption of this standard will have a significant impact on its consolidated balance sheets, specifically for the right-of-use assets and liabilities.

The Company does not believe that adoption of the standard will materially affect consolidated net earnings. The standard will have no impact on debt-covenant compliance under current agreements. Refer to Note 13, Commitments and Contingencies, for additional information regarding future expected undiscounted lease payments.

Note 3. Revenue from Contracts with Customers

The Company earns revenue primarily through the sale of our wireless telecommunications services, wireless equipment, and business, residential, and enterprise cable and wireline services that include video, internet, voice, and data services. Revenue earned for the year ended December 31, 2018 was as follows:

(in thousands)	Wireless	Cable	Wireline	Consolidated
Wireless service	\$380,818	\$—	\$—	\$ 380,818
Equipment	67,510	695	193	68,398
Business, residential and enterprise	—	117,836	42,445	160,281
Tower and other	14,327	10,372	34,504	59,203
Total revenue	462,655	128,903	77,142	668,700
Internal revenue	(5,016)	(4,706)	(28,124)	(37,846)
Total operating revenue	\$457,639	\$ 124,197	\$ 49,018	\$ 630,854

Wireless service

The majority of the Company's revenue is earned through providing network access to Sprint under the affiliate agreement. Wireless service revenue is variable based on billed revenue to Sprint's subscribers in the Company's affiliate area, less applicable fees retained by Sprint.

The Company's revenue related to Sprint's postpaid customers is the amount that Sprint bills its postpaid subscribers, reduced by customer credits, write-offs of receivables, and 8% management and 8.6% service fees. The Company is also charged for the costs of subsidized handsets sold through Sprint's national channels as well as commissions paid by Sprint to third-party resellers in the Company's service territory.

The Company's revenue related to Sprint's prepaid customers is the amount that Sprint bills its prepaid subscribers, reduced by costs to acquire and support the customers, based on national averages for Sprint's prepaid programs, and a 6% management fee.

The Company considers Sprint, rather than Sprint's subscribers, to be the customer under the new revenue recognition standard and the Company's performance obligation is to provide Sprint a series of continuous network access services. The reimbursement to Sprint for the costs of handsets sold through Sprint's national channels, as well as commissions paid by Sprint to third-party resellers in our service territory represent consideration payable to a customer. These reimbursements are initially recorded as a contract asset and are subsequently recognized as a reduction of revenue over the expected benefit period between 21 and 53 months. Historically, under ASC 605, Revenue Recognition, the customer was considered the subscriber rather than Sprint and as a result, reimbursement payments to Sprint for costs of handsets and commissions were recorded as operating expenses in the period incurred. During 2017, these costs totaled \$63.5 million recorded in cost of goods and services, and \$16.9 million recorded in selling, general and administrative costs.

On January 1, 2018, the Company recorded a wireless contract asset of approximately \$51.1 million. During the year ended December 31, 2018, payments that increased the wireless contract asset balance totaled \$61.2 million and amortization reflected as a reduction of revenue totaled approximately \$46.6 million. The wireless contract asset balance as of December 31, 2018 was approximately \$65.7 million.

Wireless equipment

The Company owns and operates Sprint-branded retail stores within their geographic territory from which the Company sells equipment, primarily wireless handsets, and service to Sprint subscribers. The Company's equipment is predominantly sold to subscribers through Sprint's equipment financing plans. Under the equipment financing plans, Sprint purchases the equipment from the Company and resells the equipment to their subscribers. Historically, under ASC 605, Revenue Recognition, the Company

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concluded that it was the agent in these equipment financing transactions and recorded revenues net of related handset costs which were approximately \$63.8 million in 2017. Under Topic 606 the Company concluded that it is the principal in these equipment financing transactions, as the Company controls and bears the risk of ownership of the inventory prior to sale, and accordingly, revenues and handset costs are recorded on a gross basis, the corresponding cost of the equipment is recorded separately to cost of goods sold.

Business, residential and enterprise

The Company earns revenue in the Cable and Wireline segments from business, residential, and enterprise customers where the performance obligations are to provide cable and telephone network services, sell and lease equipment and wiring services, and lease fiber-optic cable capacity. The Company's arrangements are generally composed of contracts that are cancellable at the customer's discretion without penalty at any time. As there are multiple performance obligations in these arrangements, the Company recognizes revenue based on the standalone selling price of each distinct good or service. The Company generally recognizes these revenues over time as customers simultaneously receive and consume the benefits of the service, with the exception of equipment sales and home wiring which are recognized as revenue at a point in time when control transfers and when installation is complete, respectively.

Under the new revenue recognition standard, the Company concluded that installation services do not represent a separate performance obligation. Accordingly, installation fees are allocated to services and are recognized ratably over the longer of the contract term or the period the unrecognized portion of the fee remains material to the contract, typically 10 and 11 months for cable and wireline customers, respectively. Historically, the Company deferred these fees over the estimated customer life of 42 months. Additionally, the Company incurs commission and installation costs related to in-house and third-party vendors that were previously expensed as incurred. Under Topic 606, the Company capitalizes and amortizes these commission and installation costs over the expected benefit period which is approximately 44 months, 72 months, and 46 months, for cable, wireline, and enterprise business, respectively.

Tower / Other

Tower revenue consists primarily of tower space leases accounted for under Topic 840, Leases, and Other revenue includes network access-related charges for service provided to customers across the segments.

The cumulative effect of the changes made to the consolidated January 1, 2018 balance sheet for the adoption of the new revenue recognition standard were as follows:

(in thousands)	Balance at December 31, 2017	Adjustments due to Topic 606	Balance at January 1, 2018
Assets			
Prepaid expenses and other	\$ 17,111	\$ 29,876	\$ 46,987
Deferred charges and other assets, net	13,690	31,071	44,761
Liabilities			
Advanced billing and customer deposits	21,153	(14,302)	) 6,851
Deferred income taxes	100,879	20,352	121,231
Other long-term liabilities	15,293	(1,200)	) 14,093
Retained earnings	297,205	56,097	353,302

The impact of the adoption of the new revenue recognition standard on the consolidated statements of operations and comprehensive income and consolidated balance sheets was as follows:

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Year Ended December, 31 2018			
(in thousands)	As Reported	Balances	
		without Adoption of Topic 606	Effect of Change Higher/(Lower)
Operating revenue:			
Service revenue and other	\$562,456	\$ 632,340	\$ (69,884)
Equipment revenue	68,398	8,298	60,100
Operating expenses:			
Cost of services	194,022	193,860	162
Cost of goods sold	63,959	28,377	35,582
Selling, general and administrative	113,222	175,753	(62,531)
As of December 31, 2018			
(in thousands)	As Reported	Balances	
		without Adoption of Topic 606	Effect of Change Higher/(Lower)
Assets			
Prepaid expenses and other	\$60,162	\$ 22,204	\$ 37,958
Deferred charges and other assets, net	49,891	12,083	37,808
Liabilities			
Advanced billing and customer deposits	7,919	24,414	(16,495)
Deferred income taxes	127,453	103,404	24,049
Other long-term liabilities	14,364	15,550	(1,186)
Retained earnings	386,511	319,926	66,585

Future performance obligations

On December 31, 2018, the Company had approximately \$3.3 million allocated to unsatisfied performance obligations, which is exclusive of contracts with original expected duration of one year or less. The Company expects to recognize approximately \$0.7 million of this amount as revenue during 2019, \$0.7 million in 2020, an additional \$0.6 million by 2021, and the balance thereafter.

Contract acquisition costs and costs to fulfill contracts

Capitalized contract costs represent contract fulfillment costs and contract acquisition costs which include commissions and installation costs in our Cable and Wireline segments. Capitalized contract costs are amortized on a straight line basis over the contract term plus expected renewals or expected period of benefit. The Company elected to apply the practical expedient to expense contract acquisition costs when incurred, if the amortization period would be twelve months or less. The amortization of these costs is included in cost of services, and selling, general and administrative expenses. Amounts capitalized were approximately \$10.1 million as of December 31, 2018 of which \$4.6 million is presented as prepaid expenses and other and \$5.5 million is presented as deferred charges and other assets, net. Amortization recognized during the year ended December 31, 2018 was approximately \$5.5 million.

Note 4. Acquisitions

Sprint Territory Expansion

Effective February 1, 2018, the Company signed an expansion agreement with Sprint to expand its wireless service coverage area to include certain areas in Kentucky, Pennsylvania, Virginia and West Virginia, (the “Expansion Area”). The agreement includes certain network build out requirements in the Expansion Area, and the ability to utilize Sprint’s spectrum in the Expansion Area. Pursuant to the expansion agreement, Sprint agreed to, among other things, transition the provision of network coverage in the Expansion Area from Sprint to the Company. The expansion agreement required a payment of \$52.0 million for the right to service the Expansion Area pursuant to the Affiliate Agreements plus an additional payment of up to \$5.0 million after acceptance of certain equipment at the Sprint cell sites in the Expansion Area. The transaction was accounted for as an asset acquisition.

The Company recorded the following in the wireless segment:

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(\$ in thousands)	Estimated Useful Life (in years)	February 1, 2018
Affiliate contract expansion	12	\$ 45,148
Prepayment of tangible assets	N/A	6,497
Off-market leases - favorable	16.5	3,665
Off-market leases - unfavorable	4.2	(3,310)
Total		\$ 52,000

Estimated useful lives are approximate and represent the average of the remaining useful lives as of the acquisition date. Prepayment of tangible assets will be depreciated over the asset life when the underlying assets are placed in service.

The Company allocated the purchase price to the components identified in the table above based on the relative fair value of each component. The fair value of the components was determined using an income and cost approach.

Acquisition of "Parkersburg" Expansion Area

On April 6, 2017, the Company expanded its affiliate service territory, under its agreements with Sprint, to include certain areas in North Carolina, Kentucky, Maryland, Ohio and West Virginia, for total consideration of \$6.0 million. The expanded territory includes the Parkersburg, WV, Huntington, WV, and Cumberland, MD, basic trading areas. Approximately 25,000 Sprint retail and former nTelos postpaid and prepaid subscribers in the new basic trading areas became Sprint-branded affiliate customers managed by the Company.

Acquisition of NTELOS Holdings Corp. and Exchange with Sprint

On May 6, 2016, (the "acquisition date"), the Company completed its acquisition of NTELOS Holdings Corp. nTelos, was a regional provider of wireless telecommunications solutions and was acquired to expand the Company's wireless service area and subscriber base, thus strengthening the Company's relationship with Sprint.

Pursuant to the terms of the Agreement and Plan of Merger between the Company and nTelos (the "Merger Agreement"), nTelos became a direct wholly owned subsidiary of the Company. Pursuant to the terms of the Merger Agreement, the Company acquired all of the issued and outstanding capital stock of nTelos for an aggregate purchase price of \$667.8 million. The purchase price was financed by a credit facility arranged by CoBank, ACB, Royal Bank of Canada, Fifth Third Bank, Bank of America, N.A., Capital One, National Association, Citizens Bank N.A., and Toronto Dominion (Texas) LLC.

Transaction costs in connection with the acquisition were expensed as incurred and are included in acquisition, integration and migration expenses in the consolidated statement of operations. The results of operations related to nTelos are included in our consolidated statements of operations beginning from the acquisition date.

The Company accounted for the acquisition of nTelos under the acquisition method of accounting, in accordance with FASB's ASC 805, Business Combinations, and has accounted for measurement period adjustments under ASU 2015-16, Simplifying the Accounting for Measurement Period Adjustments. Estimates of fair value included in the consolidated financial statements, in conformity with ASC 820, Fair Value Measurements and Disclosures, represent the Company's best estimates and valuations. In accordance with ASC 805, Business Combinations, the allocation of the consideration value was subject to adjustment until the Company completed its analysis, in a period of time, but not to exceed one year after the date of acquisition, or May 6, 2017, in order to provide the Company with the time to complete the valuation of its assets and liabilities. The Company's allocation of the consideration value to assets acquired and liabilities assumed incorporated all measurement period adjustments.

The following table summarizes the final purchase price allocation to assets acquired and liabilities assumed, including measurement period adjustments:

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(in thousands)	Purchase Price Allocation
Accounts receivable	\$ 47,234
Inventory	4,572
Restricted cash	2,167
Investments	1,501
Prepaid expenses and other assets	14,835
Building held for sale	4,950
Property, plant and equipment	227,247
Spectrum licenses	198,200
Acquired subscribers - wireless	205,946
Favorable lease intangible assets	17,029
Goodwill	146,383
Other long term assets	10,843
Total assets acquired	\$ 880,907
Accounts payable	8,543
Advanced billings and customer deposits	12,477
Accrued expenses	23,141
Capital lease liability	418
Deferred tax liabilities	129,291
Retirement benefits	19,198
Other long-term liabilities	20,085
Total liabilities assumed	\$ 213,153
Net assets acquired	\$ 667,754

Concurrently with acquiring nTelos, the Company completed its previously announced transaction with SprintCom, Inc., a subsidiary of Sprint. Pursuant to this transaction, among other things, the Company exchanged spectrum licenses, valued at \$198.2 million and wireless subscribers, valued at \$205.9 million, acquired from nTelos with Sprint, and received an expansion of its affiliate service territory valued at approximately \$405.0 million. These exchanges were accounted for in accordance with ASC 845, Nonmonetary Transactions. The expansion intangible was measured at fair value using an income based model, the Excess Earnings Method, and considered cash flows to be generated from current and future Sprint subscribers. Further, as the value of assets provided to Sprint exceeded the value of assets received in the non-monetary exchange, the Company and Sprint agreed to waive management fees in an amount of approximately \$255.6 million. The cash flow savings associated with the management fee waiver is incorporated in the fair value estimate.

Goodwill is the excess of the consideration transferred over the net assets recognized and represents the future economic benefits, primarily as a result of other assets acquired that could not be individually identified and separately recognized. The Company has recorded goodwill in its Wireless segment as a result of the nTelos acquisition. Goodwill is not amortized. The goodwill that arose from the acquisition of nTelos is not deductible for tax purposes.

Since the acquisition of nTelos occurred, the Company incurred a total of approximately \$75.7 million of acquisition, integration and migration expenses associated with this transaction, excluding approximately \$23.0 million of debt issuance costs. Such costs included support of back office staff and support functions required while the nTelos legacy

customers were migrated to the Sprint billing platform; cost of the handsets that were provided to nTelos legacy customers as they migrated to the Sprint billing platform; severance costs for back office and other former nTelos employees who were not retained permanently; and transaction related fees. The Company incurred \$17.5 million and \$54.7 million of these costs during the years ended December 31, 2017 and 2016, respectively. These costs include \$1.8 million and \$1.3 million reflected in cost of goods and services and \$4.7 million and \$11.1 million reflected in selling, general and administrative costs in the years ended December 31, 2017 and 2016, respectively.

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The amounts of operating revenue and income or loss before income taxes related to the former nTelos entity are not readily determinable due to intercompany transactions, allocations and integration activities that have occurred in connection with the operations of the combined company.

The following table presents the unaudited pro forma information, based on estimates and assumptions that the Company believes to be reasonable, for the Company as if the acquisition of nTelos had occurred at the beginning of the period presented:

	Year Ended December 31, 2016
(in thousands)	
Operating revenues	\$646,769
Income (loss) before income taxes	\$2,989

The pro forma information provided in the table above is not necessarily indicative of the consolidated results of operations for future periods or the results that actually would have been realized had the acquisition been completed at the beginning of the period presented.

The pro forma information provided in the table above is based upon estimated valuations of the assets acquired and liabilities assumed as well as estimates of depreciation and amortization charges thereon. Other estimated pro forma adjustments include the following:

- changes in nTelos' reported revenues from cancelling nTelos' wholesale contract with Sprint;
- the incorporation of the Sprint-homed customers formerly serviced under the wholesale agreement into the Company's affiliate service territory under the Company's affiliate agreement with Sprint;
- the effect of other changes to revenues and expenses due to various provisions of the affiliate agreement and the elimination of non-recurring transaction related expenses incurred by the Company and nTelos;
- the elimination of certain nTelos operating costs associated with billing and care that are covered under the fees charged by Sprint under the affiliate agreement;
- historical depreciation expense was reduced for the fair value adjustment decreasing the basis of property, plant and equipment; this decrease was offset by a shorter estimated useful life to conform to the Company's standard policy and the acceleration of depreciation on certain equipment; and
- incremental amortization due to the affiliate contract expansion intangible asset.

The value of the affiliate agreement expansion discussed above is based on changes to the amended affiliate agreement that include:

- an increase in the price to be paid by Sprint from 80% to 90% of the entire business value if the affiliate agreement is not renewed;
- extension of the affiliate agreement with Sprint by five years to 2029;
- expanded territory in the nTelos service area;
- rights to serve all future Sprint customers in the affiliate service territory;
- the Company's commitment to upgrade certain coverage and capacity in its newly acquired service area; and
- a reduction of the management fee charged by Sprint under the amended affiliate agreement; not to exceed \$4.2 million in an individual month until the total waived fee equals approximately \$255.6 million.

Note 5. Customer Concentration

Significant Contractual Relationship

In 1999, the Company executed a Management Agreement (the “Agreement”) with Sprint whereby the Company committed to construct and operate a PCS network using CDMA air interface technology. The Agreement has been amended numerous times. Under the amended Agreement, the Company is the exclusive PCS Affiliate of Sprint providing wireless mobility communications network products and services on the 800 MHz, 1900 MHz and 2.5 GHz spectrum ranges in its territory across a multi-state area covering large portions of central and western Virginia, south-central Pennsylvania, West Virginia, and portions of Maryland, North Carolina, Kentucky, and Ohio. Effective February 1, 2018, the Company amended its Agreement with Sprint to expand its wireless service area to include certain areas in Kentucky, Pennsylvania, Virginia and West Virginia. See Note 4 for further information about this expansion agreement. As an exclusive PCS Affiliate of Sprint, the Company has the exclusive right to build, own and maintain its portion of Sprint’s nationwide PCS network, in the aforementioned areas, to Sprint’s specifications. The initial term of the Agreement extends through November 2029, with two successive 10-year renewal periods, unless terminated by either party under provisions outlined in the Agreement. Upon non-renewal by either party, the Company may cause Sprint to buy or Sprint may cause the Company to sell the business at 90% of Entire Business Value (“EBV”) as defined in the Agreement. EBV in the Agreement is defined as i) the fair market value of a going concern paid by a willing buyer to a willing seller; ii) valued

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as if the business will continue to utilize existing brands and operate under existing agreements; and, iii) valued as if Manager (Shentel) owns the spectrum. Determination of EBV is made by an independent appraisal process.

Accounts Receivable

Accounts receivable are recorded at the invoiced amount and generally do not bear interest. Accounts receivable are concentrated among customers within the Company's geographic service area and large telecommunications companies.

The Company has one major customer relationship with Sprint that is a significant source of revenue.

Accounts receivable from significant clients, those representing 10% or more of total accounts receivable for the dates noted, are summarized below:

	December 31,	
(\$ in thousands)	2018	2017
Sprint	\$43,227	\$43,405
% of total accounts receivable	79%	80%

Correspondingly, revenue from significant clients, those representing 10% or more of total revenue for the respective periods, is summarized as follows:

	Year Ended December 31,		
	2018	2017	2016
Sprint	68%	72%	69%

Note 6. Earnings (Loss) Per Share ("EPS")

Basic EPS was computed by dividing net income or loss by the weighted average number of shares of common stock outstanding during the period. Diluted EPS was computed under the treasury stock method, assuming the conversion as of the beginning of the period, for all dilutive stock options. Diluted EPS was computed by dividing net income (loss) by the sum of the weighted average number of shares of common stock outstanding and potentially dilutive securities outstanding during the period under the treasury stock method. Potentially dilutive securities include stock options and restricted stock units and shares that the Company is contractually obligated to issue in the future.

The following table indicates the computation of basic and diluted earnings per share:

	Years Ended December 31,		
(in thousands, except per share amounts)	2018	2017	2016
Calculation of net income (loss) per share:			
Net income (loss)	\$46,595	\$66,390	\$(895)
Basic weighted average shares outstanding	49,542	49,150	48,807
Basic net income (loss) per share	\$0.94	\$1.35	\$(0.02)
Effect of stock options outstanding:			
Basic weighted average shares outstanding	49,542	49,150	48,807
Effect from dilutive shares and options outstanding	521	876	—
Diluted weighted average shares outstanding	50,063	50,026	48,807
Diluted net income (loss) per share	\$0.93	\$1.33	\$(0.02)

Due to the net loss for the year ended December 31, 2016, no adjustment was made to basic shares for potentially dilutive securities, as such an adjustment would have been anti-dilutive.

The computation of diluted EPS does not include certain unvested awards, on a weighted average basis, because their inclusion would have an anti-dilutive effect on EPS. The awards excluded because of their anti-dilutive effect are as follows:

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	Years Ended December 31,		
(in thousands)	2018	2017	2016
Awards excluded from the computation of diluted net income (loss) per share because their inclusion would have been anti-dilutive	33	21	800

Note 7. Investments

Investments consist of the following:

(in thousands)	December 31, 2018	December 31, 2017
Domestic equity funds	\$ 1,409	\$ 2,856
International equity funds	370	423
Total investments carried at fair value	1,779	3,279
CoBank	7,705	6,818
Equity in other telecommunications partners	782	811
Total investments carried at cost	8,487	7,629
Other	522	564
Total equity method investments	522	564
Total investments	\$ 10,788	\$ 11,472

The classifications of debt and equity securities are determined by the Company at the date individual investments are acquired. The appropriateness of such classification is periodically reassessed. The Company monitors the fair value of all investments, and based on factors such as market conditions, financial information and industry conditions, the Company reflects impairments in values when warranted. The classification of those securities and the related accounting policies are as follows:

Investments Carried at Fair Value: Investments in equity and bond mutual funds and investment trusts held within the Company's rabbi trust, which is related to the Company's unfunded Supplemental Executive Retirement Plan, ("SERP"), are reported at fair value using net asset value per share. The Company has elected to recognize unrealized gains and losses on investments carried at fair value in earnings, pursuant to the fair value option in ASC 820, Fair Value Measurement. Investments carried at fair value were acquired under a rabbi trust arrangement related to the Company's SERP. The Company purchases investments in the trust to mirror the investment elections of participants in the SERP. The Company recorded a loss of \$0.2 million, gain of \$0.5 million and gain of \$0.1 million in 2018, 2017 and 2016, respectively. Fair values for these investments are determined by quoted market prices for the underlying mutual funds, which may be based upon net asset value. Gains and losses on the investments in the trust are reflected as increases or decreases in the liability owed to the participants and are recorded as pension expense included within "Non-operating income (loss), net" in our consolidated statements of operations.

Investments Carried at Cost: Investments in common stock in which the Company does not have a significant ownership (less than 20%) and for which there is no ready market, are carried at cost. Information regarding investments carried at cost is reviewed for evidence of impairment. Impairments, if any, are charged to earnings and a new cost basis for the investment is established. The Company's investment in CoBank increased \$0.9 million and \$0.7 million in the years ended December 31, 2018 and 2017, respectively, due to the ongoing equity-based patronage earned from the outstanding investment and loan balances the Company has with CoBank.

Equity Method Investments: Investments in the equity of partnerships and in unconsolidated corporations where the Company's ownership is 20% or more, but less than 50%, or where the Company otherwise has the ability to exercise significant influence, are reported under the equity method. Under this method, the Company's equity in earnings or losses of investees is reflected in earnings. Distributions received reduce the carrying value of these investments. The Company recognizes a loss when there is a decline in value of the investment which is other than a temporary decline. At December 31, 2018, the Company had a 23% ownership interest in Virginia Independent Telephone Alliance and a 20% ownership interest in Valley Network Partnership.

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Note 8. Fair Value Measurements

The Company applies ASC 820-10, Fair Value Measurements and Disclosures, which defines fair value, establishes a fair value hierarchy for assets and liabilities measured at fair value, and expands required disclosures about fair value measurements. The guidance defines fair value as the exchange price that would be received for an asset or paid to transfer a liability in the principal or most advantageous market for the asset or liability in an orderly transaction between market participants on the measurement date. Valuation techniques used to measure fair value must maximize the use of observable inputs and minimize the use of unobservable inputs. The guidance requires the Company to classify and disclose assets and liabilities measured at fair value on a recurring basis, as well as fair value measurements of assets and liabilities measured on a nonrecurring basis in periods subsequent to initial measurement, in a three-tier fair value hierarchy as described below:

Level 1-Financial assets and liabilities whose values are based on unadjusted quoted prices in active markets for identical assets or liabilities that the reporting entity can access at the measurement date.

Level 2-Financial assets and liabilities whose values are based on inputs other than quoted prices included within Level 1 that are observable for the asset or liability, either directly or indirectly.

Level 3-Financial assets and liabilities whose values are based on unobservable inputs for the asset or liability.

Financial instruments are defined as cash, or other financial instruments to a third party. The carrying amounts of cash and cash equivalents, accounts receivable, other current assets, investments, accounts payable and accrued liabilities approximate fair value due to their short-term nature. The Company's Credit Facility (as defined in Note 14, Long-Term Debt) approximates fair value because of its floating rate structure.

Derivative financial instruments are recognized as assets or liabilities in the financial statements and measured at fair value on a recurring basis. See Note 11, Derivatives and Hedging, for additional information. The Company measures its interest rate swaps at fair value and recognizes such derivative instruments as either assets or liabilities on the Company's consolidated balance sheet. Changes in the fair value of swaps are recognized in other comprehensive income, as the Company has designated these swaps as cash flow hedges for accounting purposes. The Company entered into these swaps to manage a portion of its exposure to interest rate movements by converting a portion of its variable rate long-term debt to fixed rate debt.

The following tables present the fair value hierarchy for financial assets and liabilities measured at fair value on a recurring basis:

(in thousands)	For the year ended			
	December, 31 2018			
Balance sheet location:	Level 1	Level 2	Level 3	Total
Prepaid expenses and other				
Interest rate swaps	\$—	\$4,930	\$—	\$4,930
Deferred charges and other assets, net:				
Interest rate swaps	\$8,323	\$—	\$—	\$8,323
Total	\$8,323	\$4,930	\$—	\$13,253
(in thousands)	For the year ended December,			
	31 2017			
Balance sheet location:	Level 1	Level 2	Level 3	Total
Cash and cash equivalents				
Money market funds	\$150	\$—	\$—	\$150

Prepaid expenses and other				
Interest rate swaps	—	2,411	—	2,411
Deferred charges and other assets, net:				
Interest rate swaps	—	10,776	—	10,776
Total	\$ 150	\$ 13,187	\$	—\$ 13,337

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The Company determines the fair value of its security holdings based on pricing from its vendors. The valuation techniques used to measure the fair value of financial instruments having Level 2 inputs were derived from non-binding consensus prices that are corroborated by observable market data or quoted market prices for similar instruments. Such market prices may be quoted prices in active markets for identical assets (Level 1 inputs) or pricing determined using inputs other than quoted prices that are observable either directly or indirectly (Level 2 inputs).

The Company has certain non-marketable long-term investments for which it is not practicable to estimate fair value with a total carrying value of \$9.0 million and \$8.2 million as of December 31, 2018 and 2017, respectively, of which \$7.7 million and \$6.8 million, respectively, represents the Company's investment in CoBank. This investment is primarily related to patronage distributions of restricted equity and is a required investment related to the portion of the Credit Facility held by CoBank. This investment is carried under the cost method. See Note 7, Investments, for additional information.

Note 9. Property, Plant and Equipment

Property, plant and equipment consisted of the following:

(\$ in thousands)	Estimated Useful Lives	December 31, 2018	December 31, 2017
Land		\$ 6,723	\$ 6,418
Buildings and structures	10 - 40 years	213,657	195,540
Cable and wire	4 - 40 years	309,928	286,999
Equipment and software	2 - 17 years	791,401	730,228
Plant in service		1,321,709	1,219,185
Plant under construction		81,409	62,202
Total property, plant and equipment		1,403,118	1,281,387
Less accumulated amortization and depreciation		701,759	595,060
Property, plant and equipment, net		\$ 701,359	\$ 686,327

Depreciation expense for the years ended December 31, 2018, 2017, and 2016, was \$142.1 million, \$151.1 million, and 124.0 million, respectively. The Company leases fiber under indefeasible right of use agreements (IRUs). IRU's totaled \$5.6 million and \$5.9 million at December 31, 2018 and 2017 and were classified as capital lease agreements within property, plant and equipment.

At December 31, 2018 and 2017, the Company had unamortized capitalized software costs for software in service of \$27.8 million and \$28.0 million, respectively.

At December 31, 2018 and 2017, plant under construction consisted primarily of equipment and software, which was not placed into service.

Note 10. Goodwill and Intangible Assets

Goodwill by segment consisted of the following:

(in thousands)	December 31, 2018	December 31, 2017
Wireless	\$ 146,383	\$ 146,383
Cable	104	104
Wireline	10	10
Total Goodwill	\$ 146,497	\$ 146,497

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Intangible assets consisted of the following:

(in thousands)	December 31, 2018			December 31, 2017		
	Gross Carrying Amount	Accumulated Amortization and Other	Net	Gross Carrying Amount	Accumulated Amortization and Other	Net
Non-amortizing intangibles:						
Cable franchise rights	\$64,334	\$ —	\$64,334	\$64,334	\$ —	\$64,334
Railroad crossing rights	141	—	141	141	—	141
Total non-amortizing intangibles	64,475	—	64,475	64,475	—	64,475
Finite-lived intangibles:						
Affiliate contract expansion - Wireless	455,305	(167,830)	287,475	410,157	(105,964)	304,193
Favorable leases - Wireless	15,743	(1,919)	13,824	13,103	(1,222)	11,881
Acquired subscribers - Cable	25,265	(25,250)	15	25,265	(25,100)	165
Other intangibles	463	(223)	240	463	(198)	265
Total finite-lived intangibles	496,776	(195,222)	301,554	448,988	(132,484)	316,504
Total intangible assets	\$561,251	\$ (195,222)	\$366,029	\$513,463	\$ (132,484)	\$380,979

For the years ended December 31, 2018, 2017 and 2016, amortization expense, related to intangible assets was approximately \$24.6 million, \$27.5 million and \$34.9 million, respectively. Affiliate contract expansion was amortized over the expected benefit period and was further reduced by the amount of waived management fees received from Sprint which were \$37.8 million, \$36.1 million and \$24.6 million for the years ended December 31, 2018, 2017 and 2016, respectively. Since May 6, 2016, the date of the non-monetary exchange, waived management fees received from Sprint totaled \$98.4 million.

The gross carrying amount of certain intangibles was affected by the expansion of the Company's wireless service coverage area with Sprint. See Note 4, Acquisitions for additional information.

Aggregate amortization expense, including amortization classified as a rent expense, for intangible assets for the periods shown is expected to be as follows:

Year Ending December 31,	Total	Amount Reflected as Rent Expense	Amount Reflected as Amortization Expense
(in thousands)			
2019	\$21,094	\$ 991	\$ 20,103
2020	18,193	965	17,228
2021	15,477	953	14,524
2022	14,015	935	13,080
2023	13,794	924	12,870
thereafter	61,816	9,056	52,760
Total	\$144,389	\$ 13,824	\$ 130,565

Affiliate contract expansion will be further reduced by approximately \$157.2 million for waived management fees as such are received from Sprint. Aggregate amortization of the unfavorable lease liability in the Wireless segment, to be classified as rent expense, is expected to be \$5.1 million.

Note 11. Derivatives and Hedging

The Company uses derivative financial instruments to manage its exposure to interest rate risk for its long-term variable-rate debt through interest rate swaps. The Company's interest rate swaps are all designated as cash flow hedges, and involve the receipt of variable-rate amounts from counterparties in exchange for the Company making fixed-rate payments over the life of the agreements without exchange of the underlying notional amount. The Company does not use derivative financial instruments for trading or

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speculative purposes. Credit risk related to derivative financial instruments is considered minimal and is managed through the use of four counterparties with high credit standards and periodic settlements of positions.

The Company entered into a pay-fixed, receive-variable interest rate swap of \$174.6 million of notional principal in September 2012. The outstanding notional amount of this cash flow hedge was \$100.4 million and \$117.9 million as of December 31, 2018 and 2017, respectively. The outstanding notional amount decreases based upon scheduled principal payments on the 2012 debt.

In May 2016, the Company entered into a pay-fixed, receive-variable interest rate swap of \$256.6 million of notional principal with three counterparties. The outstanding notional amount of this cash flow hedge was \$283.6 million and \$300.4 million as of December 31, 2018 and 2017, respectively. The outstanding notional amount increases based upon draws made under a portion of the Company's Term Loan A-2 debt and as the 2012 interest rate swap's notional principal decreases; the outstanding notional amount decreases as the Company makes scheduled principal payments on the 2016 debt.

The Company is hedging approximately 50% of its outstanding debt through its use of interest rate swaps with outstanding notional amounts totaling \$384.0 million and \$418.3 million at December 31, 2018 and 2017, respectively. The effective portion of changes in the fair value of interest rate swaps designated and that qualify as cash flow hedges is recorded in accumulated other comprehensive income and is subsequently reclassified into earnings in the period that the hedged forecasted transaction affects earnings. The ineffective portion of the change in fair value of the derivative is recognized directly in earnings through interest expense. No hedge ineffectiveness was recognized during any of the periods presented.

Interest payments made on the Company's variable-rate debt reported in accumulated other comprehensive income related to the interest rate swaps designated as cash flow hedges are reclassified to interest expense. As of December 31, 2018, the Company estimates that \$4.9 million will be reclassified as a reduction of interest expense during the next twelve months.

The table below presents the fair value of the Company's derivative financial instruments as well as its classification on the consolidated balance sheet:

(in thousands)	December 31, 2018	December 31, 2017
Balance sheet location of derivative financial instruments:		
Prepaid expenses and other	\$ 4,930	\$ 2,411
Deferred charges and other assets, net	8,323	10,776
Total derivatives designated as hedging instruments	\$ 13,253	\$ 13,187

The table below summarizes changes in accumulated other comprehensive income (loss) by component:

(in thousands)	Gains (Losses) on Cash Flow Hedges	Income Tax (Expense) Benefit	Accumulated Other Comprehensive Income (Loss), net of taxes
Balance as of December 31, 2017	\$ 13,187	\$ (4,957)	\$ 8,230
Net change in unrealized gain (loss)	3,384	(804)	2,580
Amounts reclassified from accumulated other comprehensive income (loss) to interest expense	(3,318)	788	(2,530)
Net current period other comprehensive income (loss)	66	(16)	50

Balance as of December 31, 2018

\$13,253 \$(4,973) \$ 8,280

Note 12. Other Assets and Accrued Liabilities

Prepaid expenses and other, classified as current assets, included the following:

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(in thousands)	December 31, 2018	December 31, 2017
Prepaid rent	\$ 11,245	\$ 10,519
Prepaid maintenance expenses	3,981	3,062
Interest rate swaps	4,930	2,411
Deferred contract costs	37,957	—
Other	2,049	1,119
Prepaid expenses and other	\$ 60,162	\$ 17,111

Deferred contract costs and other include amounts reimbursed to Sprint for commissions and device costs, and commissions and installation costs in the Company's Cable and Wireline segments. The deferred contract costs increased due to the adoption of Topic 606. Refer to Note 3, Revenue from Contracts with Customers, for additional information.

Accrued liabilities and other, classified as current liabilities, included the following:

(in thousands)	December 31, 2018	December 31, 2017
Sales and property taxes payable	\$ 4,281	\$ 3,872
Severance	—	1,028
Asset retirement obligations	582	492
Accrued programming costs	2,886	2,805
Other current liabilities	6,814	5,717
Accrued liabilities and other	\$ 14,563	\$ 13,914

The Company's asset retirement obligations (ARO) are included in the balance sheet caption "Asset retirement obligations" and "Accrued liabilities and other". The Company records the fair value of an asset retirement obligation as a liability in the period in which it incurs a legal obligation associated with the retirement and removal of leasehold improvements or equipment. The Company also records a corresponding asset, which is depreciated over the lease term. Subsequent to the initial measurement of the asset retirement obligation, the obligation is adjusted at the end of each period to reflect the passage of time and changes in the estimated future cash flows underlying the obligation. The terms associated with its operating leases, and applicable zoning ordinances of certain jurisdictions, define the Company's obligations which are estimated and vary based on the size of the towers.

Changes in the liability for asset retirement obligations for the years ended December 31, 2018, 2017 and 2016 are summarized below:

(in thousands)	Years Ended December 31,		
	2018	2017	2016
Balance at beginning of year	\$21,703	\$21,507	\$7,266
Liabilities acquired in acquisition	—	—	14,056
Additional liabilities accrued	3,357	2,404	157
Changes to prior estimates	3,504	(1,695)	—
Payments	(443)	(1,296)	(609)
Accretion expense	1,045	783	637
Balance at end of year	\$29,166	\$21,703	\$21,507

Note 13. Commitments and Contingencies

The Company leases land, buildings and tower space under various non-cancelable agreements, which expire between the years 2019 and 2043 and require various minimum annual rental payments. These leases typically include

renewal options and escalation clauses. In general, tower leases have five or ten year initial terms with four renewal terms of five years each. The other leases generally contain certain renewal options for periods ranging from five to twenty years.

Future minimum lease payments under non-cancelable operating leases, including renewals that are reasonably assured at the inception of the lease, with initial variable lease terms in excess of one year as of December 31, 2018, are as follows:

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Year Ending (in thousands)	Amount
2019	\$55,050
2020	53,100
2021	51,323
2022	49,573
2023	48,000
2024 and after	168,498
	\$425,544

The Company's total rent expense under operating leases was \$59.6 million, \$53.1 million, and \$43.8 million for the years ended December 31, 2018, 2017 and 2016, respectively. Certain operating leases contain rent escalation clauses, which are recorded on a straight-line basis over the lease term which includes renewals that are reasonably assured at lease inception, with the difference between the rent paid and the straight-line rent recorded as a deferred rent liability. Lease incentives received from landlords are recorded as deferred rent liabilities and are amortized on a straight-line basis over the lease term as a reduction to rent expense.

As lessor, the Company has leased buildings, tower space and telecommunications equipment to other entities under various non-cancelable agreements, which require various minimum annual payments.

The total minimum rental receipts under lease agreements at December 31, 2018 are as follows:

Year Ending (in thousands)	Amount
2019	\$7,067
2020	6,109
2021	4,042
2022	2,914
2023	1,345
2024 and after	4,400
	\$25,877

Legal Proceedings

From time to time the Company is involved in various litigation matters arising out of the normal course of business. The Company consults with legal counsel on those issues related to litigation and seeks input from other experts and advisers with respect to such matters. Estimating the probable losses or a range of probable losses resulting from litigation, government actions and other legal proceedings is inherently difficult and requires an extensive degree of judgment, particularly where the matters involve indeterminate claims for monetary damages, may involve discretionary amounts, present novel legal theories, are in the early stages of the proceedings, or are subject to appeal. Whether any losses, damages or remedies ultimately resulting from such matters could reasonably have a material effect on the Company's business, financial condition, results of operations, or cash flows will depend on a number of variables, including, for example, the timing and amount of such losses or damages (if any) and the structure and type of any such remedies. The Company's management does not presently expect any litigation matters to have a material adverse impact on the consolidated financial statements of the Company. Legal fees are expensed as incurred.

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Note 14. Long-Term Debt

Total debt consists of the following:

(in thousands)	December 31, 2018	December 31, 2017
Term loan A-1	287,699	436,500
Term loan A-2	497,537	400,000
	785,236	836,500
Less: unamortized loan fees	14,994	14,542
Total debt, net of unamortized loan fees	\$ 770,242	\$ 821,958
Current maturities of long-term debt, net of current unamortized loan fees	\$ 20,618	\$ 64,397
Long-term debt, less current maturities, net of unamortized loan fees	\$ 749,624	\$ 757,561

On December 18, 2015, the Company entered into a Credit Agreement (as amended, the "2016 credit agreement") with various banks and other financial institutions party thereto and CoBank, ACB, as administrative agent for the lenders, providing for three facilities: (i) a five-year revolving credit facility of up to \$75 million; (ii) a five-year term loan facility of up to \$485 million (Term Loan A-1"); and (iii) a seven-year term loan facility of up to \$400 million ("Term Loan A-2"), (collectively our "Credit Facility").

In connection with the closing of the nTelos acquisition, the Company borrowed (i) \$485 million under Term Loan A-1 and (ii) \$325 million under Term Loan A-2, which amounts were used to, among other things, fund the payment of the nTelos merger consideration, to refinance, in full, all indebtedness under the Company's existing credit agreement, to repay existing long-term indebtedness of nTelos and to pay fees and expenses in connection with the foregoing. In connection with the consummation of the nTelos acquisition, nTelos and its subsidiaries became guarantors and pledged their assets as security for the obligations under the 2016 credit agreement. The 2016 credit agreement also included \$75 million available under the Term Loan A-2 as a delayed draw term loan, and as of December 2016, the Company drew \$50 million under this portion of the agreement and in January 2017 the Company drew the remaining \$25 million. Additionally, the 2016 credit agreement included a \$75 million Revolver Facility and permitted the Company to enter into one or more Incremental Term Loan Facilities not to exceed \$150 million in the aggregate.

During 2018, the 2016 credit agreement was amended (the "amended 2016 credit agreement") to: (i) shift \$108.8 million in principal from Term Loan A-1 to Term Loan A-2; (ii) reduce near term principal payments; (iii) extend the maturity of Term Loan A-1 to 2023, Term Loan A-2 to 2025 and allow access to the Revolver through 2023; and (iv) reduce the applicable base interest rate by 75 basis points, (collectively our "Amended Credit Facility").

At December 31, 2018, the full \$75 million was available under the Revolver Facility and the Company had not entered into any Incremental Loan Facilities. The debt issuance costs associated with the Revolver Facility are included in deferred charges and other assets, net on the consolidated balance sheets, and are amortized on a straight-line basis over the life of the Revolver Facility.

As of December 31, 2018, the Company's indebtedness totaled approximately \$770.2 million, net of unamortized loan fees of \$15.0 million, with an annualized overall weighted average interest rate of approximately 3.97%. As of December 31, 2018, the Term Loan A-1 bears interest at one-month LIBOR plus a margin of 1.75%, while the Term Loan A-2 bears interest at one-month LIBOR plus a margin of 2.00%. LIBOR resets monthly.

The amended Term Loan A-1 requires quarterly principal repayments of \$3.6 million, which began on December 31, 2018 through September 30, 2019, increasing to \$7.3 million quarterly from December 31, 2019 through September

30, 2022; then increasing to \$10.9 million quarterly from December 31, 2022 through September 30, 2023, with the remaining balance due November 8, 2023. The amended Term Loan A-2 requires quarterly principal repayments of \$1.2 million which began on December 31, 2018 through September 30, 2025, with the remaining balance due November 8, 2025.

The 2016 credit agreement required the Company to enter into one or more hedge agreements to manage its exposure to interest rate movements. The amended 2016 credit agreement does not include this requirement; however, the Company made no changes to its existing pay-fixed, receive-variable swaps that were already in place. The Company will receive one month LIBOR and pay a fixed rate of 1.16%, in addition to the 2.75% initial spread on Term Loan A-1 and the 3.00% initial spread on Term Loan A-2.

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The amended 2016 credit agreement contains affirmative and negative covenants customary to secured credit facilities, including covenants restricting the ability of the Company and its subsidiaries, subject to negotiated exceptions, to incur additional indebtedness and additional liens on their assets, engage in mergers or acquisitions or dispose of assets, pay dividends or make other distributions, voluntarily prepay other indebtedness, enter into transactions with affiliated persons, make investments, and change the nature of the Company's and its subsidiaries' businesses. In aggregate, dividends paid, distributions and redemptions of capital stock made cannot exceed the sum of \$25 million plus 60% of the Company's consolidated net income (excluding non-cash extraordinary items such as write-downs or write-ups of assets) from January 1, 2016 to the date of declaration of such dividends, distributions or redemptions.

Indebtedness outstanding under any of the facilities may be accelerated by an Event of Default, as defined in the amended 2016 credit agreement.

The Amended Credit Facility is secured by a pledge by the Company of its stock and membership interests in its subsidiaries, a guarantee by the Company's subsidiaries other than Shenandoah Telephone Company, and a security interest in substantially all of the assets of the Company and the guarantors.

The Company is subject to certain financial covenants to be measured on a trailing twelve month basis each calendar quarter unless otherwise specified. These covenants include:

a limitation on the Company's total leverage ratio, defined as indebtedness divided by earnings before interest, taxes, depreciation and amortization, or EBITDA, of less than or equal to 3.50 to 1.00 from December 31, 2018 through December 31, 2019, then 3.25 to 1.00 through December 31, 2021, and 3.00 to 1.00 thereafter;

a minimum debt service coverage ratio, defined as EBITDA minus certain cash taxes divided by the sum of all scheduled principal payments on the Term Loans and other indebtedness plus cash interest expense, greater than or equal to 2.00 to 1.00;

the Company must maintain a minimum liquidity balance, defined as availability under the Revolver Facility plus unrestricted cash and cash equivalents on deposit in a deposit account for which a control agreement has been delivered to the administrative agent under the 2016 credit agreement, of greater than \$25 million at all times.

As shown below, as of December 31, 2018, the Company was in compliance with the financial covenants in its credit agreements.

	Actual	Covenant Requirement
Total leverage ratio	2.54	3.50 or Lower
Debt service coverage ratio	3.63	2.00 or Higher
Minimum liquidity balance (in millions)	\$159.0	\$25.0 or Higher

Future maturities of long-term debt principal are as follows:

Year Ending	Amount
(in thousands)	
2019	\$23,197
2020	34,122
2021	34,122
2022	37,764
2023	183,434
2024 and after	472,597
Total	\$785,236

The Company has no fixed-rate debt instruments as of December 31, 2018. The estimated fair value of the variable-rate debt approximates its carrying value due to its floating interest rate structure.

The Company receives patronage credits from CoBank and certain of its affiliated Farm Credit institutions, which are not reflected in the stated rates shown above. Patronage credits are a distribution of profits of CoBank as approved by its Board of Directors. During the first quarter of the year, the Company receives patronage credits on its average outstanding CoBank debt balance during the prior fiscal year. The Company accrued \$2.8 million in non-operating income in the year ended December 31, 2018, in anticipation of the early 2019 distribution of the credits by CoBank. Patronage credits have historically been paid in a mix of cash and shares of CoBank stock. The 2018 payout mix was 75% cash and 25% shares. CoBank also provided a one-time cash

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distribution of \$0.2 million in September 2018 in an effort to share the benefits of federal tax reform legislation with its eligible customer-owners.

Note 15. Related Party Transactions

ValleyNet, an equity method investee of the Company, resells capacity on the Company's fiber network under an operating lease agreement. Additionally, the Company's Wireless operations leases capacity through ValleyNet. The following tables summarize the historical transactions that occurred with ValleyNet:

(in thousands)	Years Ended December 31,		
	2018	2017	2016
Consolidated Statements of Operations and Comprehensive Income			
Facility lease revenue	\$1,677	\$ 2,201	\$2,384
Cost of goods and services	3,362	3,673	3,067

(in thousands)	December 31,	
	2018	2017
Consolidated Balance Sheet		
Account receivable related to ValleyNet	\$253	\$ 180
Accounts payable related to ValleyNet	173	303

Note 16. Income Taxes

On December 22, 2017, the Tax Cuts and Jobs Act (the "2017 Tax Act") was enacted, substantially changing the U.S. tax system. The 2017 Tax Act includes a number of changes to existing U.S. tax laws that impact the Company, most notably a reduction of the U.S. corporate income tax rate from 35 percent to 21 percent for tax years beginning after December 31, 2017. The 2017 Tax Act also provides immediate expensing for certain qualified assets acquired and placed into service after September 27, 2017 as well as prospective changes beginning in 2018, including acceleration of tax revenue recognition, additional limitations on deductibility of executive compensation and limitations on the deductibility of interest.

On December 22, 2017, the SEC staff issued Staff Accounting Bulletin No. 118 (SAB 118) to address the application of U.S. GAAP in situations when a registrant does not have the necessary information available, prepared, or analyzed in reasonable detail to complete the accounting for certain income tax effects of the 2017 Tax Act. The Company recognized a provisional benefit on the income tax effects of the 2017 Tax Act in its 2017 financial statements in accordance with SAB No. 118.

The Company measures deferred tax assets and liabilities using enacted tax rates that will apply in the years in which the temporary differences are expected to be recovered or paid. Accordingly, the Company's deferred tax assets and liabilities were remeasured to reflect the reduction in the U.S. corporate income tax rate from 35 percent to 21 percent, resulting in a \$53.4 million income tax benefit for the year ended December 31, 2017 and a corresponding \$53.4 million decrease in net deferred tax liabilities as of December 31, 2017. The Company completed the accounting for the effects of the 2017 Tax Act during the one-year measurement period prescribed by SAB No. 118. As of December 31, 2018, the Company adjusted the provisional amounts recorded at December 31, 2017 by recording an additional \$0.8 million of income tax benefit and a corresponding \$0.8 million decrease in net deferred tax liabilities upon completing the analysis of the 2017 Tax Act and the filing of the 2017 federal income tax return.

Total income taxes were as follows:

(in thousands)	Years Ended December 31,		
	2018	2017	2016

Income tax (benefit) expense	\$15,517	\$(53,133)	\$2,840
Other comprehensive income for changes in cash flow hedge	16	522	4,162
	\$15,533	\$(52,611)	\$7,002

The Company and its subsidiaries file income tax returns in several jurisdictions. The provision for the federal and state income taxes attributable to income (loss) consists of the following components:

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	Years Ended December 31,		
(in thousands)	2018	2017	2016
Current expense			
Federal taxes	\$2,875	\$1,552	\$44,779
State taxes	6,434	(630)	10,936
Total current provision	9,309	922	55,715
Deferred expense (benefit)			
Federal taxes	6,708	(52,886)	(47,056)
State taxes	(500)	(1,169)	(5,819)
Total deferred provision	6,208	(54,055)	(52,875)
Income tax expense (benefit)	\$15,517	\$(53,133)	\$2,840
Effective tax rate	25.0 %	(400.8)%	146.0 %

A reconciliation of income taxes determined by applying the federal and state tax rates to income (loss) is as follows:

	Years Ended December 31,		
(in thousands)	2018	2017	2016
Computed "expected" tax expense	\$13,044	\$4,640	\$681
State income taxes, net of federal tax effect	4,748	(1,129)	6
Changes in state DTL for mergers	—	—	3,320
Excess share based compensation	(1,254)	(3,314)	(1,709)
Nondeductible merger expenses	—	—	801
Revaluation of U.S. deferred income taxes	(760)	(53,449)	—
Other, net	(261)	119	(259)
Income tax expense (benefit)	\$15,517	\$(53,133)	\$2,840

The effective tax rate increased in 2018 primarily due to the recognition of a one-time non-cash tax benefit of \$53.4 million in 2017 related to the revaluation of deferred tax assets and liabilities as a result of the 2017 Tax Act.

Deferred income taxes reflect the net tax effects of temporary differences between the carrying amounts of assets and liabilities for financial reporting purposes and tax purposes. Net deferred tax assets and liabilities are classified as non-current in the consolidated balance sheets.

Net deferred tax assets and liabilities consist of the following temporary differences:

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(in thousands)	December 31, 2018	December 31, 2017
Deferred tax assets:		
Deferred revenue	\$ —	\$ 3,907
Net operating loss carry-forwards	12,612	14,983
Accruals and reserves	6,545	5,189
Pension benefits	2,873	3,556
Asset retirement obligations	7,797	4,608
Total gross deferred tax assets	29,827	32,243
Less valuation allowance	(862)	(862)
Net deferred tax assets	28,965	31,381
Deferred tax liabilities:		
Deferred revenue	19,554	—
Plant-in-service	99,666	89,494
Intangible assets	32,963	37,682
Interest rate swaps	3,339	3,511
Other, net	896	1,573
Total gross deferred tax liabilities	156,418	132,260
Net deferred tax liabilities	\$ 127,453	\$ 100,879

In assessing the ability to realize deferred tax assets, management considers whether it is more likely than not that some portion or all of the deferred tax assets will not be realized. The ultimate realization of deferred tax assets is dependent upon generating future taxable income during the periods in which those temporary differences become deductible. Management considers the scheduled reversal of deferred tax liabilities, projected future taxable income, taxable income in prior carryback years if available and tax planning strategies in making this assessment. Based upon the level of historical taxable income and projections for future taxable income over the periods for which the deferred tax assets are deductible, the Company believes it more likely than not that the net deferred tax assets will be realized with the exception of certain state net operating losses in jurisdictions where the Company no longer operates. The Company has a deferred tax asset of \$12.6 million related to federal and various state net operating losses, of which \$0.9 million is associated with a valuation allowance. As of December 31, 2018, the Company had approximately \$54.4 million of federal net operating losses expiring through 2035. The Company also had approximately \$39.9 million of state net operating losses expiring through 2036.

As of December 31, 2018 and 2017, the Company had no unrecognized tax benefits. It is the Company's policy to record interest and penalties related to unrecognized tax benefits in selling, general, and administrative expenses.

The Company files U.S. federal income tax returns and various state and local income tax returns. The Company is not currently subject to state or federal income tax audits as of December 31, 2018. The Company's returns are generally open to examination from 2015 forward and the net operating losses acquired in the acquisition of nTelos are open to examination from 2002 forward.

Note 17. Segment Reporting

Operating segments are defined as components of an enterprise about which separate financial information is available that is evaluated regularly by the chief operating decision maker ("CODM"). The Company's reportable segments, which the Company operates and manages as strategic business units that are organized according to major product and service offerings, include: Wireless, Cable, Wireline and Other. A general description of the products and services offered and the customers served by each of these segments is as follows:

Wireless provides digital wireless service as a Sprint PCS Affiliate to a portion of a multi-state area covering large portions of central and western Virginia, south-central Pennsylvania, West Virginia, and portions of Maryland, North Carolina, Kentucky, and Ohio. In these areas, we are the exclusive provider of Sprint-branded wireless mobility communications network products and services on the 800 MHz, 1900 MHz and 2.5 GHz spectrum bands. Wireless also owns 208 cell site towers built on leased and owned land, and leases space on these towers to both affiliates and non-affiliated third party wireless service providers.

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Cable provides video, broadband and voice services in franchise areas in portions of Virginia, West Virginia and western Maryland, and leases fiber optic facilities throughout its service area. It does not include video, broadband and voice services provided to customers in Shenandoah County, Virginia.

Wireline provides regulated and unregulated voice services, internet broadband, long distance access services, and leases fiber optic facilities throughout portions of Virginia, West Virginia, Maryland and Pennsylvania.

Other operations are represented by Shenandoah Telecommunications Company, the parent holding company that provides investing and management services to its subsidiaries.

Year ended December 31, 2018:

(in thousands)	Wireless	Cable	Wireline	Other	Eliminations	Consolidated
External revenue						
Service revenue	\$380,818	\$114,917	\$21,521	—	—	\$ 517,256
Equipment revenue	67,510	695	193	—	—	68,398
Other	9,311	8,585	27,304	—	—	45,200
Total external revenue	457,639	124,197	49,018	—	—	630,854
Internal revenue	5,016	4,706	28,124	—	(37,846)	—
Total operating revenue	462,655	128,903	77,142	—	(37,846)	630,854
Operating expenses						
Cost of services	131,166	59,935	38,056	—	(35,135)	194,022
Cost of goods sold	63,583	295	81	—	—	63,959
Selling, general and administrative	47,538	20,274	7,467	40,654	(2,711)	113,222
Depreciation and amortization	127,521	24,644	13,673	567	—	166,405
Total operating expenses	369,808	105,148	59,277	41,221	(37,846)	537,608
Operating income (loss)	\$92,847	\$23,755	\$17,865	\$(41,221)	\$ —	\$ 93,246
Capital Expenditures	\$86,146	\$26,640	\$16,566	\$7,289	\$ —	\$ 136,641

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Year ended December 31, 2017:

(in thousands)	Wireless	Cable	Wireline	Other	Eliminations	Consolidated
External revenue						
Service revenue	\$431,184	\$107,338	\$20,388	—	—	\$ 558,910
Equipment revenue	9,467	724	127	—	—	10,318
Other	9,478	7,855	25,430	—	—	42,763
Total external revenue	450,129	115,917	45,945	—	—	611,991
Internal revenue	4,949	3,245	33,308	—	(41,502)	—
Total operating revenue	455,078	119,162	79,253	—	(41,502)	611,991
Operating expenses						
Cost of services	129,626	59,335	38,417	39	(38,696)	188,721
Cost of goods sold	22,653	14	119	—	—	22,786
Selling, general and administrative	118,257	19,999	6,923	23,564	(2,806)	165,937
Integration and acquisition expenses	10,793	—	—	237	—	11,030
Depreciation and amortization	139,610	23,968	12,829	600	—	177,007
Total operating expenses	420,939	103,316	58,288	24,440	(41,502)	565,481
Operating income (loss)	\$34,139	\$15,846	\$20,965	\$(24,440)	\$ —	\$ 46,510
Capital Expenditures	\$82,620	\$34,487	\$22,581	\$6,801	\$ —	\$ 146,489

Year ended December 31, 2016:

(in thousands)	Wireless	Cable	Wireline	Other	Eliminations	Consolidated
External revenue						
Service revenue	\$359,769	\$99,070	\$19,646	—	—	\$ 478,485
Equipment revenue	10,674	736	130	—	—	11,540
Other	13,690	7,191	24,382	—	—	45,263
Total external revenue	384,133	106,997	44,158	—	—	535,288
Internal revenue	4,620	1,737	30,816	—	(37,173)	—
Total operating revenue	388,753	108,734	74,974	—	(37,173)	535,288
Operating expenses						
Cost of services	103,840	58,290	36,272	—	(34,433)	163,969
Cost of goods sold	29,273	291	(13)	—	—	29,551
Selling, general and administrative	95,851	19,248	6,474	14,492	(2,740)	133,325
Integration and acquisition expenses	25,927	—	—	16,305	—	42,232
Depreciation and amortization	107,621	23,908	11,717	439	—	143,685
Total operating expenses	362,512	101,737	54,450	31,236	(37,173)	512,762
Operating income (loss)	\$26,241	\$6,997	\$20,524	\$(31,236)	\$ —	\$ 22,526
Capital Expenditures	\$123,400	\$32,400	\$20,200	\$(2,769)	\$ —	\$ 173,231

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A reconciliation of the total of the reportable segments' operating income (loss) to consolidated income (loss) before taxes is as follows:

	Years Ended December 31,		
(in thousands)	2018	2017	2016
Total consolidated operating income (loss)	\$93,246	\$46,510	\$22,526
Interest expense	(34,847)	(38,237)	(25,102)
Gain (loss) on investments, net	(275)	564	271
Non-operating income (loss), net	3,988	4,420	4,250
Income (loss) before income taxes	\$62,112	\$13,257	\$1,945

The Company's CODM does not currently review total assets by segment since the assets are centrally managed and some of the assets are shared by the segments. As of January 1, 2018, the Company records stock compensation expense to Other. Previously recorded stock compensation expense was allocated among all segments.

Note 18. Quarterly Results (unaudited)

The following table reflects selected quarterly results for the Company.

	Three Months Ended			
(in thousands, except per share data)	March 31, 2018	June 30, 2018	September 30, 2018	December 31, 2018
Operating revenue	\$154,138	\$156,501	\$158,731	\$161,484
Operating income (loss)	16,754	21,169	28,329	26,994
Net income (loss)	6,583	9,626	15,534	14,852
Net income (loss) per share - basic	\$0.13	\$0.19	\$0.31	\$0.31
Net income (loss) per share - diluted	\$0.13	\$0.19	\$0.31	\$0.30

	Three Months Ended			
(in thousands except per share data)	March 31, 2017	June 30, 2017	September 30, 2017	December 31, 2017
Operating revenue	\$154,125	\$153,867	\$152,382	\$151,617
Operating income (loss)	10,673	8,252	9,475	18,110
Net income (loss)	2,341	(80)	3,534	60,595
Net income (loss) per share - basic	\$0.05	\$—	\$0.07	\$1.23
Net income (loss) per share - diluted	\$0.05	\$—	\$0.07	\$1.21

Immaterial Prior Period Adjustment.

During the three months ended September 30, 2018, the Company determined that the unaudited condensed consolidated financial statements for the three months ended March 31, 2018, and the three and six months ended June 30, 2018, contained an immaterial misstatement. Excess amortization of deferred contract costs that are recognized as a reduction of revenue, as described in Note 3, resulted in an understatement of revenue for the three months ended March 31, 2018, and the three and six months ended June 30, 2018. Additionally, amounts recorded upon the adoption of Topic 606 on January 1, 2018 were misstated. The Company evaluated the materiality of the prior period adjustment quantitatively and qualitatively, under the SEC's authoritative guidance on materiality, and concluded that the prior period adjustment was not material to the financial statements of any of the impacted unaudited 2018 periods. The Company elected to correct the prior period adjustment by revising the prior period

financial statements.

The cumulative effect of the adjustment made to the consolidated January 1, 2018 balance sheet for the adoption of the new revenue recognition standard was as follows:

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As of January 1, 2018			
(in thousands)	As Reported	Correction of Error	As Adjusted
Prepaid expenses and other	\$53,688	\$ (6,701)	\$ 46,987
Deferred charges and other assets, net	29,797	14,964	44,761
Deferred income taxes	119,030	2,201	121,231
Retained earnings	347,240	6,062	353,302

The following table presents the effects of the immaterial prior period adjustment on the unaudited condensed consolidated balance sheet as of March 31, 2018 and June 30, 2018:

As of March 31, 2018			
(in thousands)	As Reported	Correction of Error	As Adjusted
Prepaid expenses and other	\$64,200	\$ (5,741)	\$ 58,459
Deferred charges and other assets, net	33,934	16,410	50,344
Deferred income taxes	115,809	2,853	118,662
Retained earnings	352,069	7,816	359,885

As of June 30, 2018			
(in thousands)	As Reported	Correction of Error	As Adjusted
Prepaid expenses and other	\$64,163	\$ (4,756)	\$ 59,407
Deferred charges and other assets, net	34,021	17,896	51,917
Deferred income taxes	111,125	3,522	114,647
Retained earnings	359,893	9,618	369,511

The following tables present the effects of the immaterial prior period adjustment on the unaudited condensed consolidated statements of operations and comprehensive income (loss) for the three months ended March 31, 2018 and the three and six months ended June 30, 2018:

For the Three Months Ended March 31, 2018			
(in thousands)	As Reported	Correction of Error	As Adjusted
Service revenue and other	\$134,153	\$ 2,406	\$136,559
Income tax expense (benefit)	1,176	652	1,828
Net income (loss)	4,829	1,754	6,583
Earnings per share - basic	\$0.10	\$ 0.03	\$0.13
Earnings per share - diluted	\$0.10	\$ 0.03	\$0.13

For the Three Months Ended June 30, 2018			
(in thousands)	As Reported	Correction of Error	As Adjusted
Service revenue and other	\$138,021	\$ 2,471	\$140,492
Income tax expense (benefit)	2,862	669	3,531
Net income (loss)	7,824	1,802	9,626
Earnings per share - basic	\$0.16	\$ 0.03	\$0.19
Earnings per share - diluted	\$0.16	\$ 0.03	\$0.19

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(in thousands)	For the Six Months Ended June 30, 2018		
	As Reported	Correction of Error	As Adjusted
Service revenue and other	\$272,174	\$ 4,877	\$277,051
Income tax expense (benefit)	4,038	1,321	5,359
Net income (loss)	12,653	3,556	16,209
Earnings per share - basic	\$0.26	\$ 0.07	\$0.33
Earnings per share - diluted	\$0.25	\$ 0.07	\$0.32

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Schedule II

Valuation and Qualifying Accounts

Changes in the Company's allowance for doubtful accounts for accounts receivable for the years ended December 31, 2018, 2017 and 2016 are summarized below:

(in thousands)	Balance at Beginning of Year	Recoveries added to allowance	Bad debt expense	Losses charged to allowance	Balance at End of Year
Year Ended December, 31 2018					
Allowance for doubtful accounts	\$466	\$ 631	\$ 1,983	\$ (2,546)	\$ 534
Year Ended December, 31 2017					
Allowance for doubtful accounts	\$759	\$ 616	\$ 2,179	\$ (3,088)	\$ 466
Year Ended December, 31 2016					
Allowance for doubtful accounts	\$418	\$ 628	\$ 2,456	\$ (2,743)	\$ 759

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Exhibits Index

Exhibit
Number Exhibit Description

- 2.1 Agreement and Plan of Merger, dated as of August 10, 2015, by and among Shenandoah Telecommunications Company, Gridiron Merger Sub, Inc. and NTELOS Holdings Corp., filed as Exhibit 2.1 to the Company's Current Report on Form 8-K, dated August 11, 2015.
- 3.1 Amended and Restated Articles of Incorporation of Shenandoah Telecommunications Company filed as Exhibit 3.1 to the Company's Quarterly Report on Form 10-Q for the period ending June 30, 2007, as amended by the Articles of Amendment of Shenandoah Telecommunications Company filed as Exhibit 3.3 to the Company's Current Report on Form 8-K, filed January 5, 2016.
- 3.2 Amended and Restated Bylaws of Shenandoah Telecommunications Company, effective July 18, 2016, filed as Exhibit 3.1 to the Company's Current Report on Form 8-K dated July 16, 2016.
- 4.1 Rights Agreement, dated as of February 8, 2008 between the Company and American Stock Transfer & Trust Company filed as Exhibit 4.1 to the Company's Current Report on Form 8-K, dated January 25, 2008.
- 4.2 Specimen representing the Common Stock, no par value, of Shenandoah Telecommunications Company, filed as Exhibit 4.3 to the Company's Report on Form 10-K for the year ended December 31, 2007.
- 10.1 Shenandoah Telecommunications Company Dividend Reinvestment Plan filed as Exhibit 4.4 to the Company's Registration Statement on Form S-3D (No. 333-74297).
- 10.2 Settlement Agreement and Mutual Release dated as of January 30, 2004 by and among Sprint Spectrum L.P., Sprint Communications Company L.P., WirelessCo, L.P., APC PCS, LLC, PhillieCo, L.P. and Shenandoah Personal Communications Company and Shenandoah Telecommunications Company, dated January 30, 2004; filed as Exhibit 10.3 to the Company's Report on Form 10-K for the year ended December 31, 2003.
- 10.3 Sprint PCS Management Agreement dated as of November 5, 1999 by and among Sprint Spectrum L.P., WirelessCo, L.P., APC PCS, LLC, PhillieCo, L.P., and Shenandoah Personal Communications Company filed as Exhibit 10.4 to the Company's Report on Form 10-K for the year ended December 31, 2003.
- 10.4 Sprint PCS Services Agreement dated as of November 5, 1999 by and between Sprint Spectrum L.P. and Shenandoah Personal Communications Company filed as Exhibit 10.5 to the Company's Report on Form 10-K for the year ended December 31, 2003.
- 10.5 Sprint Trademark and Service Mark License Agreement dated as of November 5, 1999 by and between Sprint Communications Company, L.P. and Shenandoah Personal Communications Company filed as Exhibit 10.6 to the Company's Report on Form 10-K for the year ended December 31, 2003.

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- 10.6 Sprint Spectrum Trademark and Service Mark License Agreement dated as of November 5, 1999 by and between Sprint Spectrum L.P. and Shenandoah Personal Communications Company filed as Exhibit 10.7 to the Company's Report on Form 10-K for the year ended December 31, 2003.
- 10.7 Addendum I to Sprint PCS Management Agreement by and among Sprint Spectrum L.P., WirelessCo, L.P., APC PCS, LLC, PhillieCo, L.P., and Shenandoah Personal Communications Company filed as Exhibit 10.8 to the Company's Report on Form 10-K for the year ended December 31, 2003.
- 10.8 Asset Purchase Agreement dated November 5, 1999 by and among Sprint Spectrum L.P., Sprint Spectrum Equipment Company, L. P., Sprint Spectrum Realty Company, L.P., and Shenandoah Personal Communications Company, serving as Exhibit A to Addendum I to the Sprint PCS Management Agreement and as Exhibit 2.6 to the Sprint PCS Management Agreement filed as Exhibit 10.9 to the Company's Report on Form 10-K for the year ended December 31, 2003.
- 10.9 Addendum II dated August 31, 2000 to Sprint PCS Management Agreement by and among Sprint Spectrum L.P., WirelessCo, L.P., APC PCS, LLC, PhillieCo, L.P., and Shenandoah Personal Communications Company filed as Exhibit 10.10 to the Company's Report on Form 10-K for the year ended December 31, 2003.
- 10.10 Addendum III dated September 26, 2001 to Sprint PCS Management Agreement by and among Sprint Spectrum L.P., WirelessCo, L.P., APC PCS, LLC, PhillieCo, L.P., and Shenandoah Personal Communications Company filed as Exhibit 10.11 to the Company's Report on Form 10-K for the year ended December 31, 2003.
- 10.11 Addendum IV dated May 22, 2003 to Sprint PCS Management Agreement by and among Sprint Spectrum L.P., WirelessCo, L.P., APC PCS, LLC, PhillieCo, L.P., and Shenandoah Personal Communications Company filed as Exhibit 10.12 to the Company's Report on Form 10-K for the year ended December 31, 2003.
- 10.12 Addendum V dated January 30, 2004 to Sprint PCS Management Agreement by and among Sprint Spectrum L.P., WirelessCo, L.P., APC PCS, LLC, PhillieCo, L.P., and Shenandoah Personal Communications Company filed as Exhibit 10.13 to the Company's Report on Form 10-K for the year ended December 31, 2003.
- 10.13 Supplemental Executive Retirement Plan as amended and restated, filed as Exhibit 10.14 to the Company's Current Report on Form 8-K dated March 23, 2007.
- 10.14 Addendum VI dated May 24, 2004 to Sprint PCS Management Agreement by and among Sprint Spectrum L.P., WirelessCo, L.P., APC PCS, LLC, PhillieCo, L.P., and Shenandoah Personal Communications Company filed as Exhibit 10.15 to the Company's Report on Form 10-Q for the quarterly period ended June 30, 2004.
- 10.15 Description of the Shenandoah Telecommunications Company Incentive Plan filed as Exhibit 10.25 to the Company's Current Report on Form 8-K dated January 21, 2005.
- 10.16 Description of Compensation of Non-Employee Directors. Filed as Exhibit 10.26 to the Company's Current Report on Form 8-K dated May 4, 2005.
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- 10.17 Description of Management Compensatory Plans and Arrangements. Filed as Exhibit 10.27 to the Company's current report on Form 8-K dated April 20, 2005.
- 10.18 2005 Stock Incentive Plan filed as Exhibit 10.1 to the Company's Registration Statement on Form S-8 (No. 333-127342).
- 10.19 Addendum VII dated March 13, 2007 to Sprint PCS Management Agreement by and among Sprint Spectrum L.P., Wireless Co., L.P., APC PCS, LLC, Phillieco, L.P., and Shenandoah Personal Communications Company, filed as Exhibit 10.31 to the Company's Report on Form 10-K for the year ended December 31, 2006.
- 10.20 Settlement Agreement and Mutual Release dated March 13, 2007 by and among Sprint Corporation, Sprint Spectrum L.P., Wireless Co., L.P., Sprint Communications Company L.P., APC PCS, LLC, Phillieco, L.P., and Shenandoah Personal Communications Company and Shenandoah Telecommunications, filed as Exhibit 10.32 to the Company's Report on Form 10-K for the year ended December 31, 2006.
- 10.21 Addendum VIII to the Sprint Management Agreement dated November 19, 2007, filed as Exhibit 10.36 to the Company's Current Report on Form 8-K dated November 20, 2007.
- 10.22 Asset Purchase Agreement dated August 6, 2008, between Rapid Communications, LLC, Rapid Acquisition Company, LLC, and Shentel Cable Company, filed as Exhibit 10.37 to the Company's Report on Form 10-Q for the period ended June 30, 2008.
- 10.23 Amendment Number 1 to the Asset Purchase Agreement dated August 6, 2008, between Rapid Communications, LLC, Rapid Acquisition Company, LLC, and Shentel Cable Company, filed as Exhibit 10.40 to the Company's Current Report on Form 8-K dated November 7, 2008.
- 10.24 Addendum IX to the Sprint Management Agreement dated as of April 14, 2009, and filed as Exhibit 10.42 to the Company's Annual Report on Form 10-K dated March 8, 2010.
- 10.25 Asset Purchase Agreement dated as of April 16, 2010, between JetBroadband VA, LLC, Helicon Cable Communications, LLC, JetBroadband WV, LLC, JetBroadband Holdings, LLC, Helicon Cable Holdings, LLC, Shentel Cable Company and Shenandoah Telecommunications Company, filed as Exhibit 10.43 to the Company's Current Report on Form 8-K, dated April 16, 2010.
- 10.26 Addendum X dated March 15, 2010 to Sprint PCS Management Agreement by and among Sprint Spectrum L.P., WirelessCo, L.P., APC PCS, LLC, PhillieCo, L.P., Sprint Communications Company L.P. and Shenandoah Personal Communications Company, filed as Exhibit 10.44 to the Company's Current Report on Form 10-Q, dated May 7, 2010.
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- 10.27 Addendum XI dated July 7, 2010 to Sprint PCS Management Agreement by and among Sprint Spectrum L.P., WirelessCo, L.P., APC PCS, LLC, PhillieCo, L.P., Sprint Communications Company L.P. and Shenandoah Personal Communications Company, filed as Exhibit 10.45 to the Company's Current Report on Form 8-K dated July 8, 2010.
- 10.28 Credit Agreement dated as of July 30, 2010, among Shenandoah Telecommunications Company, CoBank, ACB, Branch Banking and Trust Company, Wells Fargo Bank, N.A., and other Lenders, filed as Exhibit 10.46 to the Company's Current Report on Form 8-K dated July 30, 2010.
- 10.29 Second Amendment to the Credit Agreement dated as of July 30, 2010, among Shenandoah Telecommunications Company, CoBank, ACB, Branch Banking and Trust Company, Wells Fargo Bank, N.A., and other Lenders, filed as Exhibit 10.47 to the Company's Current Report on Form 8-K dated April 29, 2011.
- 10.30 Third Amendment to the Credit Agreement dated as of July 30, 2010, among Shenandoah Telecommunications Company, CoBank, ACB, Branch Banking and Trust Company, Wells Fargo Bank, N.A., and other Lenders, filed as Exhibit 10.48 to the Company's Quarterly Report on Form 10-Q dated August 8, 2011.
- 10.31 Letter Agreement modifying section 10.2.7.2 of Addendum X dated March 15, 2010 to Sprint PCS Management Agreement by and among Sprint Spectrum L.P., WirelessCo, L.P., APC PCS, LLC, PhillieCo, L.P., Sprint Communications Company L.P. and Shenandoah Personal Communications Company, filed as Exhibit 10.49 to the Company's Quarterly Report on Form 10-Q dated August 8, 2011.
- 10.32 Fourth Amendment to the Credit Agreement dated as of July 30, 2010, among Shenandoah Telecommunications Company, CoBank, ACB, Branch Banking and Trust Company, Wells Fargo Bank, N.A., and other Lenders, filed as Exhibit 10.50 to the Company's Quarterly Report on Form 10-Q dated August 8, 2011.
- 10.33 Addendum XII dated February 1, 2012 to Sprint PCS Management Agreement by and among Sprint Spectrum L.P., WirelessCo, L.P., APC PCS, LLC, PhillieCo, L.P., Sprint Communications Company L.P. and Shenandoah Personal Communications Company, filed as Exhibit 10.51 to the Company's Current Report on Form 8-K dated February 2, 2012.
- 10.34 Fifth Amendment to the Credit Agreement dated as of July 30, 2010, among Shenandoah Telecommunications Company, CoBank, ACB, Branch Banking and Trust Company, Wells Fargo Bank, N.A., and other Lenders, filed as Exhibit 10.52 to the Company's Current Report on Form 8-K dated February 2, 2012.
- 10.35 Addendum XIII dated September 14, 2012 to Sprint PCS Management Agreement by and among Sprint Spectrum L.P., WirelessCo, L.P., APC PCS, LLC, PhillieCo, L.P., Sprint Communications Company L.P. and Shenandoah Personal Communications, LLC, filed as Exhibit 10.53 to the Company's Current Report on Form 8-K dated September 17, 2012.
- 10.36 Consent and Agreement dated September 14, 2012 related to Sprint PCS Management Agreement by and among Sprint Spectrum L.P., WirelessCo, L.P., APC PCS, LLC, PhillieCo, L.P., Sprint Communications Company L.P. and Shenandoah Personal Communications, LLC, filed as Exhibit 10.54 to the Company's Current Report on Form 8-K dated September 17, 2012.
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- Amended and Restated Credit Agreement dated as of September 14, 2012, among Shenandoah Telecommunications Company, CoBank, ACB, and other Lenders, filed as Exhibit 10.55 to the Company's Current Report on Form 8-K dated September 17, 2012.
- 10.37
- Addendum XIV dated as of November 19, 2012, to Sprint PCS Management Agreement by and among Sprint Spectrum L.P., WirelessCo, L.P., APC PCS, LLC, PhillieCo, L.P., Sprint Communications Company L.P. and Shenandoah Personal Communications, LLC, filed as Exhibit 10.42 to the Company's Annual Report on Form 10-K dated March 5, 2013.
- 10.38
- Addendum XV dated as of March 11, 2013, to Sprint PCS Management Agreement by and among Sprint Spectrum, L.P., WirelessCo, L.P., APC PCS, LLC, PhillieCo, L.P., Sprint Communications Company L.P. and Shenandoah Personal communications, LLC, filed as Exhibit 10.43 to the Company's Quarterly Report on Form 10-Q dated May 3, 2013.
- 10.39
- First Amendment dated January 30, 2014, to the Amended and Restated Credit Agreement among Shenandoah Telecommunications Company, CoBank, ACB, and other Lenders, filed as Exhibit 10.43 to the Company's Quarterly Report on Form 10-Q dated May 2, 2014.
- 10.40
- Joinder Agreement dated January 30, 2014, to the Amended and Restated Credit Agreement among Shenandoah Telecommunications Company, CoBank, ACB, and other Lenders, filed as Exhibit 10.44 to the Company's Quarterly Report on Form 10-Q dated May 2, 2014.
- 10.41
- Addendum XVI dated as of December 9, 2013 to Sprint PCS Management Agreement by and among Sprint Spectrum, L.P., WirelessCo, L.P., APC PCS, LLC, PhillieCo, L.P., Sprint Communications Company L.P. and Shenandoah Personal Communications, LLC, filed as Exhibit 10.45 to the Company's Quarterly Report on Form 10-Q dated May 2, 2014.
- 10.42
- Addendum XVII dated as of April 11, 2014, to Sprint PCS Management Agreement by and among Sprint Spectrum, L.P., WirelessCo, L.P., APC PCS, LLC, PhillieCo, L.P., Sprint Communications Company L.P. and Shenandoah Personal Communications, LLC, filed as Exhibit 10.46 to the Company's Quarterly Report on Form 10-Q dated May 2, 2014.
- 10.43
- 2014 Equity Incentive Plan filed as Appendix A to the Company's Definitive Proxy Statement filed on March 13, 2014 (No. 333-196990).
- 10.44
- Master Agreement dated as of August 10, 2015, by and among SprintCom, Inc. and Shenandoah Personal Communications, LLC, filed as Exhibit 10.1 to the Company's Current Report on Form 8-K dated August 11, 2015.
- 10.45
- Addendum XVIII dated as of August 10, 2015, to Sprint PCS Management Agreement by and among SprintCom, Inc., PhillieCo, L.P., and Shenandoah Personal Communications, LLC, filed as Exhibit 10.2 to the Company's Current Report on Form 8-K, dated August 11, 2015.
- 10.46
- Credit Agreement dated as of December 18, 2015, by and among Shenandoah Telecommunications Company, as Borrower, the guarantors party thereto from time to time, CoBank, ACB, as Administrative Agent, and various other agents and lenders named therein, filed as Exhibit 10.1 to the Company's Current Report on Form 8-K, dated December 24, 2015.
- 10.47
- 10.48

First amendment to Credit Agreement, dated as of March 29, 2016, by and among Shenandoah Telecommunications Company, as Borrower, CoBank, ACB, as Administrative Agent, and various other lenders named therein, filed as Exhibit 10.1 to the Company's Current Report on Form 8-K, dated March 29, 2016.
Amended and Restated Master Agreement, dated as of May 6, 2016, by and between Shenandoah Personal
10.49 Communications, LLC and SprintCom, Inc. filed as Exhibit 10.1 to the Company's Current Report on Form 8-K, dated May 6, 2016.

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- 10.50 Addendum XIX to Sprint PCS Management Agreement, dated as of May 6, 2016, by and among Sprint Spectrum L.P., WirelessCo, LLC, APC PCS, LLC, PhillieCo, LLC, Sprint Communications Company L.P., Shenandoah Personal Communications, LLC and SprintCom, Inc. filed as Exhibit 10.2 to the Company's Current Report on Form 8-K, dated May 6, 2016.
- 10.51 Consent and Agreement, dated as of May 6, 2016, by and among Sprint Spectrum L.P., WirelessCo, LLC, APC PCS, LLC, PhillieCo, LLC, Sprint Communications Company L.P., Shenandoah Personal Communications, LLC and SprintCom, Inc. and CoBank, ACB, filed as Exhibit 10.3 to the Company's Current Report on Form 8-K, dated May 6, 2016.
- 10.52 Addendum XX to Sprint PCS Management Agreement dated as of March 9, 2017 by and among Sprint Spectrum L.P.; Sprint Communications Company, L.P.; SprintCom, Inc.; Horizon Personal Communications, LLC; and Shenandoah Personal Communications, LLC filed as Exhibit 10. 1 to the Company's Current Report on Form 8-K filed on March 15, 2017.
- 10.53 Addendum XXI to Sprint PCS Management Agreement dated as of February 1, 2018 by and among Sprint Spectrum L.P.; Sprint Communications Company, L.P.; SprintCom, Inc.; and Shenandoah Personal Communications, LLC filed as Exhibit 10.1to the Company's Current Report on Form 8-K filed on February 5, 2018.
- 10.54 Expansion Agreement dated as of February 1, 2018 by and among Sprint Spectrum L.P.; SprintCom, Inc.; and Shenandoah Personal Communications, LLC filed as Exhibit 10.2 to the Company's Current Report on Form 8-K filed on February 5, 2018.
- 10.55 Second Amendment to Credit Agreement, dated as of February 16, 2018, by and among Shenandoah Telecommunications Company, as Borrower, CoBank, ACB, as Administrative Agent, and various other lenders named therein filed as Exhibit 10.50 to the Company's Current Report on Form 8-K, dated February 16, 2018.
- 10.56 Consulting Agreement by and among Shenandoah Telecommunications Company and Earle A. McKenzie dated as of July 1, 2018 filed as an Exhibit to the Company's Quarterly Report on Form 10-Q dated August 7, 2018.
- 10.57 Credit Agreement dated as of November 9, 2018, by and among Shenandoah Telecommunications Company, certain of its subsidiaries, CoBank, ACB, as administrative agent, and the other lenders party thereto filed as Exhibit 10.1 to the Company's Current Report on Form 8-K, dated November 9, 2018.
- *10.58 Form of Stock Option Awards for Executives under the 2014 Equity Incentive Plan.
- *10.59 Form of Restricted Stock Unit Award for Executives under the 2014 Equity Incentive Plan.
- *10.60 Form of Performance Share Unit Award for Executives under the 2014 Equity Incentive Plan.
- *21 List of Subsidiaries.
- *23.1 Consent of KPMG LLP, Independent Registered Public Accounting Firm.
- *31.1 Certification of President and Chief Executive Officer of Shenandoah Telecommunications Company pursuant to Rule 13a-14(a) under the Securities Exchange Act of 1934.

*31.2 Certification of Vice President and Chief Financial Officer of Shenandoah Telecommunications Company pursuant to Rule 13a-14(a) under the Securities Exchange Act of 1934.

**32 Certifications pursuant to Rule 13a-14(b) under the Securities Exchange Act of 1934 and 18 U.S.C. § 1350.

(101) Formatted in XBRL (Extensible Business Reporting Language)

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101.INS XBRL Instance Document

101.SCH XBRL Taxonomy Extension Schema Document

101.CALXBRL Taxonomy Extension Calculation Linkbase Document

101.DEF XBRL Taxonomy Extension Definition Linkbase Document

101.LAB XBRL Taxonomy Extension Label Linkbase Document

101.PRE XBRL Taxonomy Extension Presentation Linkbase Document

* Filed herewith

** This certification is deemed not filed for purposes of Section 18 of the Securities Exchange Act of 1934, as amended (Exchange Act), or otherwise subject to the liability of that section, nor shall it be deemed incorporated by reference into any filing under the Securities Act of 1933, as amended (Securities Act), or the Exchange Act.