

UNITED STATES
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, 2019
or

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

For the Transition Period From to

Commission File Number: 001-37789

333-112593-01

CCO Holdings, LLC
CCO Holdings Capital Corp.
(Exact name of registrant as specified in its charter)

Delaware

86-1067239

Delaware

20-0257904

(State or other jurisdiction of incorporation or organization)

(I.R.S. Employer Identification No.)

400 Atlantic Street

Stamford Connecticut

06901

(Address of Principal Executive Offices)

(Zip Code)

(203) 905-7801

(Registrant's telephone number, including area code)

Securities registered pursuant to section 12(b) of the Act: None

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 o No x

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

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 x No o

Indicate by check mark whether the registrants have submitted electronically and posted on their corporate website, 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 registrants were required to submit and post such files). Yes x No o

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 definition of "large accelerated filer," "accelerated filer," and "smaller reporting company" in Rule 12b-2 of the Exchange Act.:

Large accelerated filer o Accelerated filer o Non-accelerated filer x Smaller reporting company Emerging growth company

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. o

Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Act). Yes No x

All of the issued and outstanding shares of capital stock of CCO Holdings Capital Corp. are held by CCO Holdings, LLC. All of the limited liability company membership interests of CCO Holdings, LLC are held by CCH I Holdings, LLC (a subsidiary of Charter Communications, Inc., a reporting company under the Exchange Act). There is no public trading market for any of the aforementioned limited liability company membership interests or shares of capital stock.

CCO Holdings, LLC and CCO Holdings Capital Corp. meet the conditions set forth in General Instruction I(1)(a) and (b) to Form 10-K and are therefore filing with the reduced disclosure format.

Number of shares of common stock of CCO Holdings Capital Corporation outstanding as of December 31, 2019: 1

Documents Incorporated By Reference: None

CCO HOLDINGS, LLC
CCO HOLDINGS CAPITAL CORP.
FORM 10-K — FOR THE YEAR ENDED DECEMBER 31, 2019

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This annual report on Form 10-K is for the year ended December 31, 2019. The United States Securities and Exchange Commission (“SEC”) allows us to “incorporate by reference” information that we file with the SEC, which means that we can disclose important information to you by referring you directly to those documents. Information incorporated by reference is considered to be part of this annual report. In addition, information that we file with the SEC in the future will automatically update and supersede information contained in this annual report. In this annual report, “CCO Holdings,” “we,” “us” and “our” refer to CCO Holdings, LLC and its subsidiaries.

CAUTIONARY STATEMENT REGARDING FORWARD-LOOKING STATEMENTS:

This annual report includes forward-looking statements within the meaning of Section 27A of the Securities Act of 1933, as amended (the “Securities Act”), and Section 21E of the Securities Exchange Act of 1934, as amended (the “Exchange Act”), regarding, among other things, our plans, strategies and prospects, both business and financial including, without limitation, the forward-looking statements set forth in Part I. Item 1. under the heading “Business” and in Part II. Item 7. under the heading “Management’s Discussion and Analysis of Financial Condition and Results of Operations” in this annual report. Although we believe that our plans, intentions and expectations reflected in or suggested by these forward-looking statements are reasonable, we cannot assure you that we will achieve or realize these plans, intentions or expectations. Forward-looking statements are inherently subject to risks, uncertainties and assumptions, including, without limitation, the factors described in Part I. Item 1A. under “Risk Factors” and in Part II. Item 7. under the heading, “Management’s Discussion and Analysis of Financial Condition and Results of Operations” in this annual report. Many of the forward-looking statements contained in this annual report may be identified by the use of forward-looking words such as “believe,” “expect,” “anticipate,” “should,” “planned,” “will,” “may,” “intend,” “estimated,” “aim,” “on track,” “target,” “opportunity,” “tentative,” “positioning,” “designed,” “create,” “predict,” “project,” “initiatives,” “seek,” “would,” “could,” “continue,” “ongoing,” “upside,” “increases,” “focused on” and “potential,” among others. Important factors that could cause actual results to differ materially from the forward-looking statements we make in this annual report are set forth in this annual report and in other reports or documents that we file from time to time with the SEC, and include, but are not limited to:

- our ability to sustain and grow revenues and cash flow from operations by offering video, Internet, voice, mobile, advertising and other services to residential and commercial customers, to adequately meet the customer experience demands in our service areas and to maintain and grow our customer base, particularly in the face of increasingly aggressive competition, the need for innovation and the related capital expenditures;
- the impact of competition from other market participants, including but not limited to incumbent telephone companies, direct broadcast satellite (“DBS”) operators, wireless broadband and telephone providers, digital subscriber line (“DSL”) providers, fiber to the home providers and providers of video content over broadband Internet connections;
- our ability to obtain programming at reasonable prices or to raise prices to offset, in whole or in part, the effects of higher programming costs (including retransmission consents);
- our ability to develop and deploy new products and technologies including mobile products and any other consumer services and service platforms;
- any events that disrupt our networks, information systems or properties and impair our operating activities or our reputation;
- the effects of governmental regulation on our business including costs, disruptions and possible limitations on operating flexibility related to, and our ability to comply with, regulatory conditions applicable to us as a result of the Time Warner Cable Inc. and Bright House Networks, LLC transactions;
- general business conditions, economic uncertainty or downturn, unemployment levels and the level of activity in the housing sector;
- the ability to retain and hire key personnel;
- the availability and access, in general, of funds to meet our debt obligations prior to or when they become due and to fund our operations and necessary capital expenditures, either through (i) cash on hand, (ii) free cash flow, or (iii) access to the capital or credit markets; and
- our ability to comply with all covenants in our indentures and credit facilities, any violation of which, if not cured in a timely manner, could trigger a default of our other obligations under cross-default provisions.

All forward-looking statements attributable to us or any person acting on our behalf are expressly qualified in their entirety by this cautionary statement. We are under no duty or obligation to update any of the forward-looking statements after the date of this annual report.

PART I

Item 1. Business.

Introduction

We are the second largest cable operator in the United States and a leading broadband communications services company providing video, Internet and voice services to approximately 29.2 million residential and small and medium business customers at December 31, 2019. We also offer mobile service to residential customers and recently launched mobile service to small and medium business customers. In addition, we sell video and online advertising inventory to local, regional and national advertising customers and tailored communications and managed solutions to larger enterprise customers. We also own and operate regional sports networks and local sports, news and community channels.

CCO Holdings is a holding company whose principal assets are the equity interests in its operating subsidiaries. CCO Holdings is a direct subsidiary of CCH I Holdings, LLC, which is an indirect subsidiary of Charter Communications, Inc. ("Charter"), Charter Communications Holdings, LLC ("Charter Holdings") and Spectrum Management Holding Company, LLC.

We own and operate a high-capacity, two-way telecommunications network which passes over 52 million households and small and medium businesses across the United States. Our core strategy is to use our network to deliver high quality products at competitive prices, combined with outstanding service. This strategy, combined with simple, easy to understand pricing and packaging, is central to our goal of growing our customer base while selling more of our core connectivity services, which include both fixed and mobile Internet, video and voice services, to each individual customer. We execute this strategy by managing our operations in a consumer-friendly, efficient and cost-effective manner. Our operating strategy includes insourcing nearly all of our customer care and field operations workforces, which results in higher quality service delivery. While an insourced operating model can increase the field operations and customer care costs associated with individual service transactions, the higher quality nature of insourced labor service transactions significantly reduces the volume of service transactions per customer, more than offsetting the higher investment made in each insourced service transaction. As we reduce the number of service transactions and recurring costs per customer relationship, we continue to provide our customers with products and prices that we believe provide more value than what our competitors offer. The combination of offering high quality, competitively priced products and outstanding service, allows us to both increase the number of customers we serve over our fully deployed network, and to increase the number of products we sell to each customer. This combination also reduces the number of service transactions we perform per relationship, yielding higher customer satisfaction and lower customer churn, resulting in lower costs to acquire and serve customers.

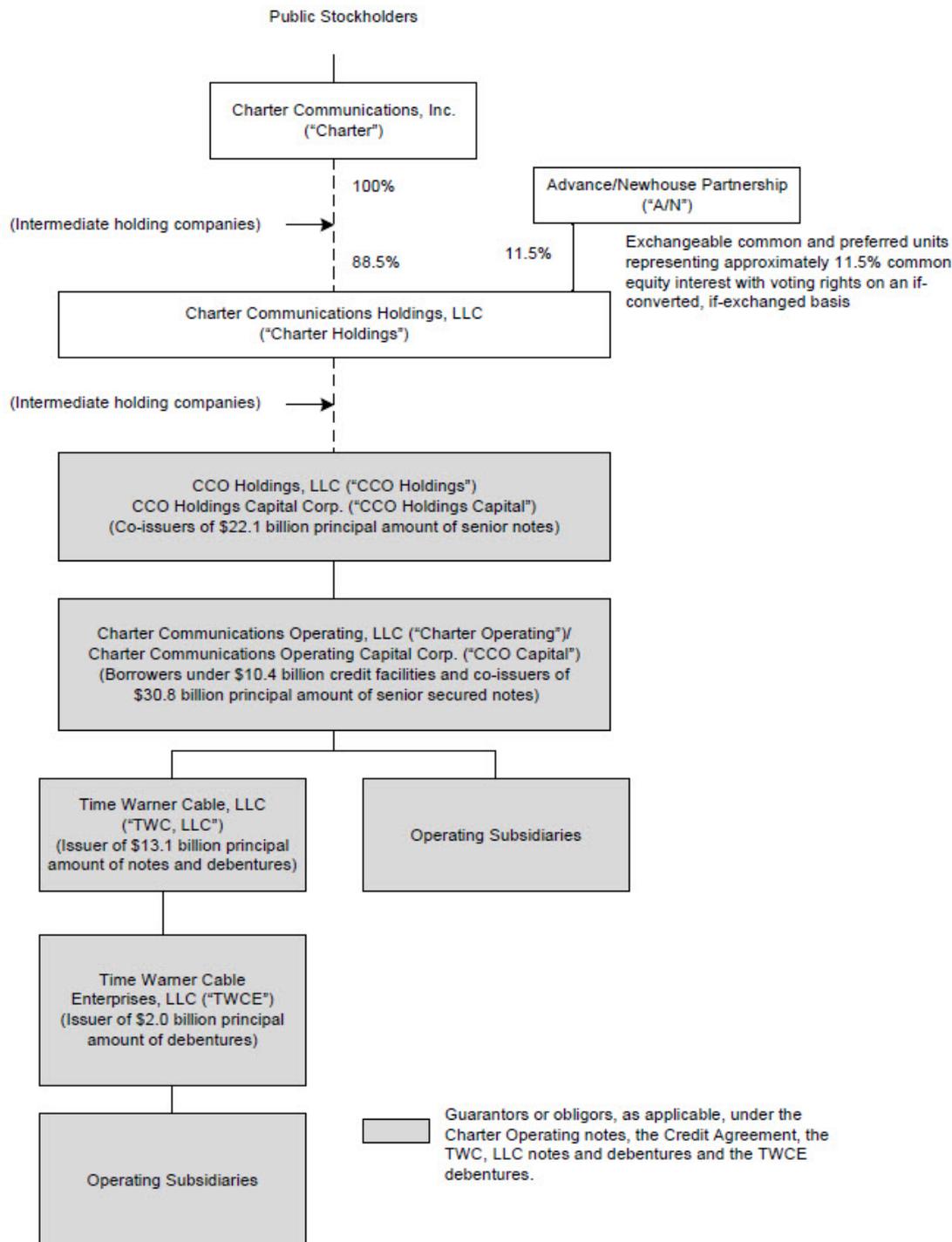
We have enhanced our service operations to allow our customers to (1) more frequently interact with us through our customer website and Spectrum TV application, online chat and social media, (2) have their services installed at the time and in the manner of their own choosing, including self-installation, and (3) receive a variety of video packages on an increasing number of connected devices including those owned by us and those owned by the customer. By offering our customers growing levels of choices in how they receive and install their services and how they interact with us, we are driving higher overall levels of customer satisfaction and reducing our operating costs and capital expenditures per customer relationship. Ultimately, our operating strategy enables us to offer high quality, competitively priced services profitably, while continuing to invest in new products and services.

The capability and functionality of our two-way network continues to grow in a number of areas, especially with respect to wireless connectivity. Our Internet service offers consumers the ability to wirelessly connect to our network using WiFi technology. We estimate that over 300 million devices are wirelessly connected to our network through WiFi. Initially, our wireless strategy focused on offering wireless connectivity solutions inside the home and business using WiFi. Through our mobile virtual network operator ("MVNO") reseller agreement with Verizon Communications Inc. ("Verizon"), we are now able to offer Internet connectivity to our customers beyond the home via our Spectrum Mobile product. We are also actively testing and evaluating opportunities for our customers to wirelessly connect to our network using a combination of licensed and unlicensed radio spectrum to deliver fixed and mobile service directly from our distributed, high capacity network.

Our principal executive offices are located at 400 Atlantic Street, Stamford, Connecticut 06901. Our telephone number is (203) 905-7801, and Charter has a website accessible at www.charter.com. Our Annual Reports on Form 10-K, Quarterly Reports on Form 10-Q and Current Reports on Form 8-K, and all amendments thereto, are available on Charter's website free of charge as soon as reasonably practicable after they have been filed. The information posted on Charter's website is not incorporated into this annual report.

Corporate Entity Structure

The chart below sets forth our entity structure and that of our direct and indirect parents and subsidiaries. The chart does not include all of our affiliates and subsidiaries and, in some cases, we have combined separate entities for presentation purposes. The equity ownership percentages shown below are approximations. Indebtedness amounts shown below are principal amounts as of December 31, 2019. See Note 9 to the accompanying consolidated financial statements contained in “Part II. Item 8. Financial Statements and Supplementary Data,” which also includes the accreted values of the indebtedness described below.



Products and Services

We offer our customers subscription-based video services, Internet services, and voice and mobile services. Our services are offered to residential and commercial customers on a subscription basis, with prices and related charges based on the types of service selected, whether the services are sold as a “bundle” or on an individual basis, and based on the equipment necessary to receive our services. Bundled services are available to substantially all of our passings, and approximately 57% of our residential customers subscribe to a bundle of services including some combination of our video, Internet and/or voice products.

The following table summarizes our customer statistics for video, Internet, mobile and voice as of December 31, 2019 and 2018 (in thousands except per customer data and footnotes).

	Approximate as of December 31,	
	2019 ^(a)	2018 ^(a)
Customer Relationships ^(b)		
Residential	27,277	26,270
Small and Medium Business	1,958	1,833
Total Customer Relationships	29,235	28,103
Residential Primary Service Units ("PSUs")		
Video	15,620	16,104
Internet	24,908	23,625
Voice	9,443	10,135
Monthly Residential Revenue per Residential Customer ^(c)	\$ 112.63	\$ 111.56
Small and Medium Business PSUs		
Video	524	502
Internet	1,756	1,634
Voice	1,144	1,051
Monthly Small and Medium Business Revenue per Customer ^(d)	\$ 169.90	\$ 174.88
Mobile Lines	1,082	134
Enterprise PSUs ^(e)	267	248

(a) We calculate the aging of customer accounts based on the monthly billing cycle for each account. On that basis, as of December 31, 2019 and 2018, customers include approximately 154,200 and 217,600 customers, respectively, whose accounts were over 60 days past due, approximately 13,500 and 24,000 customers, respectively, whose accounts were over 90 days past due, and approximately 10,000 and 19,200 customers, respectively, whose accounts were over 120 days past due.

(b) Customer relationships include the number of customers that receive one or more levels of service, encompassing video, Internet and voice services, without regard to which service(s) such customers receive. Customers who reside in residential multiple dwelling units (“MDUs”) and that are billed under bulk contracts are counted based on the number of billed units within each bulk MDU. Total customer relationships exclude enterprise and mobile-only customer relationships.

(c) Monthly residential revenue per residential customer is calculated as total residential video, Internet and voice annual revenue divided by twelve divided by average residential customer relationships during the respective year. Monthly residential revenue per residential customers excludes mobile revenue and customers.

(d) Monthly small and medium business revenue per customer is calculated as total small and medium business annual revenue divided by twelve divided by average small and medium business customer relationships during the respective year. Monthly small and medium business revenue per small and medium customer excludes mobile revenue and customers.

(e) Enterprise PSUs represent the aggregate number of fiber service offerings counting each separate service offering at each customer location as an individual PSU.

Residential Services

Video Services

Our video customers receive a package of programming which generally includes a digital set-top box that provides an interactive electronic programming guide with parental controls, access to pay-per-view services, including video on demand (“VOD”) (available to nearly all of our passings) and the ability to view certain video services on third-party devices inside and outside the residence. Customers have the option to purchase additional tiers of services including premium channels which provide original programming, commercial-free movies, sports, and other special event entertainment programming. Substantially all of our video programming is available in high definition. We also offer certain video packages containing a limited number of channels via our cable television systems.

In the vast majority of our footprint, we offer VOD service which allows customers to select from over 60,000 titles at any time. VOD programming options may be accessed for free if the content is associated with a customer’s linear subscription, or for a fee on a transactional basis. VOD services are also offered on a subscription basis included in a digital tier premium channel subscription or for a monthly fee. Pay-per-view channels allow customers to pay on a per-event basis to view a single showing of a one-time special sporting event, music concert, or similar event on a commercial-free basis.

Our goal is to provide our video customers with the programming they want, when they want it, on any device. Digital video recorder (“DVR”) service enables customers to digitally record programming and to pause and rewind live programming. Customers can also use our Spectrum TV application on Internet Protocol (“IP”) devices to watch over 375 channels of cable TV in home and approximately 275 channels out of home and view VOD programming. Customers are increasingly accessing their subscription video content through connected IP devices via our IP network. In 2019, we launched cloud DVR service which allows customers to schedule, record and watch their favorite programming anytime from connected IP devices as well as SpectrumTV.com. Our video customers also have access to programmer authenticated applications and websites (known as TV Everywhere services) such as HBO Go, Fox Now, Discovery Go and ESPN. We deploy Spectrum Guide®, our network or “cloud-based” user interface, to new video customers in the majority of our service areas. Spectrum Guide runs on traditional set-top boxes but offers a look and feel similar to that of our Spectrum TV application. Spectrum Guide also provides access to third-party video applications such as Netflix.

Internet Services

Our Spectrum pricing and packaging (“SPP”) offers an entry level Internet download speed of at least 200 megabits per second (“Mbps”) in approximately 60% of our footprint and 100 Mbps across approximately 40% of our footprint, which among other things, allows several people within a single household to stream high definition (“HD”) television video content while simultaneously using our Internet service for other purposes. Additionally, leveraging DOCSIS 3.1 technology, we offer 940 Mbps speed service (“Spectrum Internet Gig”) in nearly all of our footprint. Finally, we offer a security suite with our Internet services which, upon installation by customers, provides protection against computer viruses and spyware and includes parental control features.

We offer an in-home WiFi product that provides customers with high performance wireless routers to maximize their in-home wireless Internet experience. At the end of 2019, we launched our advanced in-home WiFi product in select service areas and we plan to continue to roll this product out to our entire footprint throughout 2020 and 2021. Advanced in-home WiFi provides connected device visibility, management and control to customers in a single application and to customer service agents to help support our customers. Advanced in-home WiFi is built on a software platform that will allow us to integrate and launch additional network based security and control features.

Voice Services

We provide voice communications services using voice over Internet protocol (“VoIP”) technology to transmit digital voice signals over our network. Our voice services include unlimited local and long distance calling to the United States, Canada, Mexico and Puerto Rico, voicemail, call waiting, caller ID, call forwarding and other features and offers international calling either by the minute, or through packages of minutes per month. For customers that subscribe to both our voice and video offerings, caller ID on TV is also available in most areas.

Mobile Services

At the end of the second quarter of 2018, we launched our mobile product, Spectrum Mobile, to residential customers under our MVNO reseller agreement with Verizon. We currently offer our Spectrum Mobile service to residential customers subscribing to

our Internet service and recently launched mobile service to small and medium business customers. In the second quarter of 2019, we expanded our Spectrum Mobile bring-your-own-device ("BYOD") program across all sales channels to include a broader set of devices which we believe lowers the cost for consumers of switching mobile carriers, and reduces the short-term working capital impact of selling new mobile devices on installment plans. We believe Spectrum-branded mobile services will drive more sales of our core products, create longer customer lives and increase profitability and cash flow over time. As we continue to grow our mobile services, including 5G in 2020, we expect that Spectrum Mobile will require an initial funding period to grow the product as well as negative working capital impacts from the timing of device-related cash flows when we sell the handset or tablet to customers pursuant to equipment installment plans.

We plan to use our WiFi network in conjunction with additional unlicensed, and potentially licensed, spectrum to improve network performance and expand capacity to offer consumers a superior mobile service at a lower total cost to us. Further, we have experimental wireless licenses from the Federal Communications Commission ("FCC") that we are utilizing to test next generation mobile services in several service areas around the country. We intend to consider and pursue opportunities in the mobile space which may include the acquisition of licensed spectrum and may include entering into or expanding joint ventures or partnerships with wireless or cable providers which may require significant investment.

Commercial Services

We offer scalable broadband communications solutions for businesses and carrier organizations of all sizes, selling Internet access, data networking, fiber connectivity to cellular towers and office buildings, video entertainment services and business telephone services.

Small and Medium Business

Spectrum Business[®] offers Internet, voice and video services to small and medium businesses over our hybrid fiber coaxial network. In addition, in 2019, we began offering our Spectrum Mobile service to small and medium business customers. Spectrum Business includes a full range of video programming and entry-level Internet speeds of 200 Mbps downstream and 10 Mbps upstream in virtually all of our markets. Additionally, customers can upgrade their Internet speeds by purchasing Internet Ultra (400 Mbps downstream) or Internet Gig (940 Mbps downstream). Spectrum Business also includes a set of business services including static IP and business WiFi, e-mail and security, and multi-line telephone services with more than 30 business features including web-based service management, that are generally not available to residential customers.

Enterprise

Spectrum Enterprise offers more tailored communications products and managed service solutions to larger businesses, as well as high-capacity last-mile data connectivity services to mobile and wireline carriers on a wholesale basis. Spectrum Enterprise's product portfolio includes fiber Internet access, voice trunking services, unified messaging/unified communications ("UM/UC"), Ethernet services that privately and securely connect geographically dispersed client locations, and video solutions designed to meet the needs of hospitality, education, and healthcare clients. In addition, in 2019, Spectrum Enterprise launched an innovative Hybrid Software-Defined Wide Area Network ("SD-WAN") that enables businesses to leverage the performance of Ethernet, the ubiquity of Internet connectivity and the flexibility of a software-defined solution to solve a wide array of business communications and networking challenges. Spectrum Enterprise combines its large, serviceable footprint and robust portfolio of fiber lit buildings with a sizeable partner network to effectively serve enterprise customers nationally. These customers can benefit from obtaining advanced services from a single provider, receiving a consistent solution while simplifying procurement and potentially reducing their costs.

Advertising Services

Our advertising sales division, Spectrum Reach[®], offers local, regional and national businesses the opportunity to advertise in individual and multiple service areas on cable television networks and digital outlets. We receive revenues from the sale of local advertising across various platforms for networks such as MTV, CNN and ESPN. In any particular service area, we typically insert local advertising on 40 to 90 channels. Our large footprint provides opportunities for advertising customers to address broader regional audiences from a single provider and thus reach more customers with a single transaction. Our size also provides scale to invest in new technology to create more targeted and addressable advertising capabilities.

Available advertising time is generally sold by our advertising sales force. In some service areas, we have formed advertising interconnects or entered into representation agreements with other video distributors, including, among others, Verizon, AT&T Inc. ("AT&T") and Comcast Corporation, under which we sell advertising on behalf of those operators. In other service areas, we enter into representation agreements under which another operator in the area will sell advertising on our behalf. These

arrangements enable us and our partners to deliver linear commercials across wider geographic areas, replicating the reach of local broadcast television stations to the extent possible. In addition, we enter into interconnect agreements from time to time with other cable operators, which, on behalf of a number of video operators, sells advertising time to national and regional advertisers in individual or multiple service areas.

Additionally, we sell the advertising inventory of our owned and operated local sports and news channels, of our regional sports networks that carry Los Angeles Lakers' basketball games and other sports programming and of SportsNet LA, a regional sports network that carries Los Angeles Dodgers' baseball games and other sports programming.

In 2019, we began expanding our deployment of household addressability, which allows for more precise targeting within various parts of our footprint. We also began the roll-out of our Ad Portal, which allows small businesses to purchase local cable advertising and/or creative services via our web portal with no sales personnel interaction at a fee within their budgets. Both products will be more widely deployed in 2020. They join our fully deployed Audience App, which uses our proprietary set-top box viewership data (all anonymized and aggregated) to optimize linear inventory, in our suite of advanced advertising products available to the marketplace.

Other Services

Regional Sports and News Networks

We have an agreement with the Los Angeles Lakers for rights to distribute all locally available Los Angeles Lakers' games through 2033. We broadcast those games on our regional sports network, Spectrum SportsNet. American Media Productions, LLC ("American Media Productions"), an unaffiliated third party, owns SportsNet LA, a regional sports network carrying the Los Angeles Dodgers' baseball games and other sports programming. In accordance with agreements with American Media Productions, we act as the network's exclusive affiliate and advertising sales representative and have certain branding and programming rights with respect to the network. In addition, we provide certain production and technical services to American Media Productions. The affiliate, advertising, production and programming agreements continue through 2038. We also own 26.8% of Sterling Entertainment Enterprises, LLC (doing business as SportsNet New York), a New York City-based regional sports network that carries New York Mets' baseball games as well as other regional sports programming.

We manage 28 local news channels, including Spectrum News NY1[®] and LA1, 24-hour news channels focused on New York City and Los Angeles. Our local news channels provide 24/7 hyperlocal content, focusing on news, programming and storytelling that addresses the deeper needs and interests of the diverse communities and neighborhoods we serve.

Pricing of Our Products and Services

Our revenues are principally derived from the monthly fees customers pay for the services we provide. We typically charge a one-time installation fee which is sometimes waived or discounted in certain sales channels during certain promotional periods.

Our Spectrum pricing and packaging ("SPP") generally offers a standardized price for each tier of service, bundle of services, and add-on service in a service area. We believe SPP:

- offers a higher quality and more value-based set of services relative to our competitors, including faster Internet speeds, more HD channels, lower equipment fees and a more transparent pricing structure;
- offers simplicity for customers to understand our offers, and for our employees in service delivery;
- drives our ability to package more services at the time of sale, thus increasing revenue per customer;
- drives higher customer satisfaction, lower service calls and churn; and
- allows for gradual price increases at the end of promotional periods.

We sell video and Internet packages with the option to add on voice and mobile services at attractive pricing. Our mobile customers can choose one of two simple ways to pay for data. Customers can choose an unlimited data plan or a by-the-gig data usage plan. Both plans include free nationwide talk and text and customers can easily switch between mobile data plans during the month. Customers can also purchase mobile devices and accessory products and have the option to pay for devices under interest-free monthly installment plans.

Our Network Technology

Our network includes three key components: a national backbone, regional/metro networks and a "last-mile" network. Both our national backbone and regional/metro network components utilize a redundant IP ring/mesh architecture. The national backbone

component provides connectivity from regional demarcation points to nationally centralized content, connectivity and services. The regional/metro network components provide connectivity between the regional demarcation points and headends within a specific geographic area and enable the delivery of content and services between these network components.

Our last-mile network utilizes a hybrid fiber coaxial cable ("HFC") architecture, which combines the use of fiber optic cable with coaxial cable. In most systems, we deliver our signals via fiber optic cable from the headend to a group of nodes, and use coaxial cable to deliver the signal from individual nodes to the homes served by that node. For our fiber Internet, Ethernet, carrier wholesale, Session Initiation Protocol ("SIP") and Primary Rate Interface ("PRI") Spectrum Enterprise customers, fiber optic cable is extended from individual nodes to the customer's site. For certain new build and MDU sites, we increasingly bring fiber to the customer site. Our design standard allows spare fiber strands to each node to be utilized for additional residential traffic capacity, and enterprise customer needs as they arise. We believe that this hybrid network design provides high capacity and signal quality.

HFC architecture benefits include:

- bandwidth capacity to enable traditional and two-way video and broadband services;
- dedicated bandwidth for two-way services; and
- signal quality and high service reliability.

Our systems provide an all-digital platform, leveraging DOCSIS 3.1 technology and bandwidth of 750 megahertz or greater to approximately 100% of our estimated passings. This bandwidth capacity enables us to offer two-way signal capabilities necessary to provide HD television, interactive video services such as VOD, high-speed Internet and voice services. An all-digital platform leveraging DOCSIS 3.1 technology enables us to offer a larger selection of HD channels, Spectrum Internet Gig and better picture quality while providing greater plant security and enabling lower installation and disconnect service truck rolls. We believe this architecture also allows us to continue to enhance our network to enable multi-gigabit services with low latency at a lower incremental capital cost relative to our competitors.

Management, Customer Operations and Marketing

Our operations are centralized, with senior executives located at several key corporate offices, responsible for coordinating and overseeing operations, including establishing company-wide strategies, policies and procedures. Sales and marketing, network operations, field operations, customer operations, engineering, advertising sales, human resources, legal, government relations, information technology and finance are all directed at the corporate level. Regional and local field operations are responsible for customer premise service transactions and maintaining and constructing that portion of our network which is located outdoors.

We continue to focus on improving the customer experience through enhanced product offerings, reliability of services, and delivery of quality customer service. As part of our operating strategy, we insource most of our customer operations workload. Our in-house call centers handle over 90% of our total customer service calls. We manage our customer service call centers centrally to ensure a consistent, high quality customer experience. In addition, we route calls by call type to specific agents that only handle such call types, enabling agents to become experts in addressing specific customer needs, creating a better customer experience. We implemented a new call center agent desktop interface tool in 2019 which enables virtualization of all call centers thereby better serving our customers. Virtualization allows calls to be routed across our call centers regardless of the location origin of the call, reducing call wait times, and saving costs. We continue to migrate our call centers to full virtualization and expect all our call centers to be fully virtualized by 2020.

We also provide customers with the opportunity to interact with us through a variety of forums in addition to telephonic communications, including through our customer website, mobile device applications, online chat and social media. Our customer websites and mobile applications enable customers to pay their bills, manage their accounts, order new services and utilize self-service help and support.

We sell our residential and commercial services using a national brand platform known as Spectrum, Spectrum Business and Spectrum Enterprise. These brands reflect our comprehensive approach to industry-leading products, driven by speed, performance and innovation. Our marketing strategy emphasizes the sale of our bundled services through targeted direct response marketing programs to existing and potential customers, and increases awareness and the value of the Spectrum brand. Our marketing organization creates and executes marketing programs intended to grow customer relationships, increase the number of services we sell per relationship, retain existing customers and cross-sell additional products to current customers. We monitor the effectiveness of our marketing efforts, customer perception, competition, pricing, and service preferences, among other factors, in order to increase our responsiveness to our customers and to improve our sales and customer retention. The marketing organization manages all sales channels including inbound, direct sales, on-line, outbound telemarketing and stores.

Programming

We believe that offering a wide variety of video programming choices influences a customer's decision to subscribe and retain our cable video services. We obtain basic and premium programming, usually pursuant to written contracts from a number of suppliers. Media corporation consolidation has, however, resulted in fewer suppliers and additional selling power on the part of programming suppliers. Although an insignificant amount of our programming budget, recently we have begun entering into agreements to co-produce or exclusively license original content which give us the right to provide our customers with certain exclusive content for a period of time.

Programming is usually made available to us for a license fee, which is generally paid based on the number of customers to whom we make that programming available. Programming license fees may include "volume" discounts and financial incentives to support the launch of a channel and/or ongoing marketing support, as well as discounts for channel placement or service penetration. For home shopping channels, we typically receive a percentage of the revenue attributable to our customers' purchases. We also offer VOD and pay-per-view channels of movies and events that are subject to a revenue split with the content provider.

Our programming costs have increased in excess of customary inflationary and cost-of-living type increases. We expect programming costs per customer to continue to increase due to a variety of factors including, annual increases pursuant to our programming contracts, contract renewals with programmers and the carriage of incremental programming, including new services and VOD programming. Increases in the cost of sports programming and the amounts paid for broadcast station retransmission consent have been the largest contributors to the growth in our programming costs over the last few years. Additionally, the demands of large media companies who link carriage of their most popular networks to carriage and cost increases of their less popular networks and who require us to carry their most popular networks to a large percentage of our video subscribers, has limited our flexibility in creating more tailored and cost-sensitive programming packages for consumers.

Federal law allows commercial television broadcast stations to make an election between "must-carry" rights and an alternative "retransmission-consent" regime. When a station opts for retransmission-consent, we are not allowed to carry the station's signal without that station's permission. Continuing demands by owners of broadcast stations for cash payments at substantial increases over amounts paid in prior years in exchange for retransmission consent will increase our programming costs or require us to cease carriage of popular programming, potentially leading to a loss of customers in affected service areas.

Over the past several years, increases in our video service rates have not fully offset the increases in our programming costs, and with the impact of increasing competition and other marketplace factors, we do not expect the increases in our video service rates to fully offset the increase in our programming costs for the foreseeable future. Although we pass along a portion of amounts paid for retransmission consent to the majority of our customers, our inability to fully pass programming cost increases on to our video customers has had, and is expected in the future to have, an adverse impact on our cash flow and operating margins associated with our video product. In order to mitigate reductions of our operating margins due to rapidly increasing programming costs, we continue to review our pricing and programming packaging strategies.

Our programming contracts are generally for a fixed period of time, usually for multiple years, and are subject to negotiated renewal. The contracts set to expire in any particular year vary. We will seek to renew these agreements on terms that we believe are favorable. There can be no assurance, however, that these agreements will be renewed on favorable or comparable terms. To the extent that we are unable to reach agreements with certain programmers on terms that we believe are reasonable, we have been, and may in the future be, forced to remove such programming channels from our line-up, which may result in a loss of customers.

Regions

We operate in geographically diverse areas which are organized in regional clusters. These regions are managed centrally on a consolidated level. Our eleven regions and the customer relationships within each region as of December 31, 2019 are as follows (in thousands):

Regions	Total Customer Relationships
Carolinas	3,020
Central	3,058
Florida	2,619
Great Lakes	2,270
Northeast	3,068
Northwest	1,626
New York City	1,381
South	2,094
Southern Ohio	2,313
Texas	3,070
West	4,716

Competition

Residential Services

We face intense competition for residential customers, both from existing competitors and, as a result of the rapid development of new technologies, services and products, from new entrants. We face triple play competition, consisting of wireline multichannel video, wireline Internet, and wireline voice service, from three primary competitors, AT&T, Frontier Communications Corporation ("Frontier") and Verizon. As of December 31, 2019, AT&T, Frontier and Verizon offered these triple play packages in approximately 33%, 7% and 5% of our operating areas, respectively. AT&T also owns DIRECTV, and as a combined company provides video service (via IP or satellite) and voice service (via fixed or wireless) across our entire footprint.

Video Competition

Our residential video service faces competition from DBS service providers, which have a national footprint and compete in all of our operating areas. DBS providers offer satellite-delivered pre-packaged programming services that can be received by relatively small and inexpensive receiving dishes. DBS providers offer aggressive promotional pricing, exclusive programming (e.g., NFL Sunday Ticket) and video services that are comparable in many respects to our residential video service. Our residential video service also faces competition from large telecommunications companies, primarily AT&T U-verse, Frontier fiber optic service ("FiOS" or "Fios") and Verizon Fios, which offer wireline video services in significant portions of our operating areas.

Our residential video service also faces growing competition from a number of other sources, including companies that deliver linear network programming, movies and television shows on demand and other video content over broadband Internet connections to televisions, computers, tablets and mobile devices. These competitors include virtual multichannel video programming distributors ("V-MVPDs") such as AT&T TV NOW, Sling TV, YouTube TV and Hulu Live. Other online video business models and products have also developed, some offered by programmers that have not traditionally sold programming directly to consumers, including, (i) subscription video on demand ("SVOD") services such as Netflix, Apple TV+, Amazon Prime, Hulu Plus, Disney+, HBO Now, CBS All Access, Starz and Showtime Anytime, (ii) ad-supported free online video products, including YouTube and Pluto TV, some of which offer programming for free to consumers that we currently purchase for a fee, (iii) pay-per-view products, such as iTunes and Amazon Instant, and (iv) additional offerings from mobile providers which continue to integrate and bundle video services and mobile products. Historically, we have generally viewed SVOD online video services as complementary to our own video offering, and we have developed a cloud-based guide that is capable of incorporating video from online video services currently offered in the marketplace. As the proliferation of online video services grows, however, services from V-MVPDs and new direct to consumer offerings, as well as piracy and password sharing, negatively impact the number of customers purchasing our video product.

Internet Competition

Our residential Internet service faces competition from fiber-to-the-home ("FTTH"), fiber-to-the-node ("FTTN"), DSL and wireless broadband offerings, as well as from a variety of companies that offer other forms of online services, including fixed wireless and satellite-based broadband services. AT&T, Frontier FiOS and Verizon's Fios are our primary FTTH competitors. Given the FTTH deployments of our competitors, launches of broadband services offering 1 gigabit per second ("Gbps") speed have recently grown. Several competitors, including AT&T, Frontier FiOS, Verizon's Fios, WideOpenWest Finance, LLC ("WOW") and Google Fiber, deliver 1 Gbps broadband speed in at least a portion of their footprints which overlap our footprint. DSL service is often offered at prices lower than our Internet services, although typically at speeds much lower than the minimum speeds we offer as part of SPP. Various mobile phone companies offer wireless Internet services delivered over networks which they continue to enhance to deliver faster speeds. AT&T, Verizon, Sprint Corporation ("Sprint") and T-Mobile US, Inc. ("T-Mobile") all began deploying fifth generation (5G) mobile services in 2019, although generally in limited geographies, with plans to expand 5G more broadly in 2020. In April 2018, Sprint and T-Mobile announced their intent to merge. If the transaction closes, the resulting company would be one of the nation's largest mobile carriers bringing increased competition with a stated intent of pursuing broad 5G network deployment and offering fixed wireless broadband service. Some mobile phone companies offer unlimited data packages to customers. In addition, a growing number of commercial areas, such as retail malls, restaurants and airports, offer WiFi Internet service. Numerous local governments are also considering or actively pursuing publicly subsidized WiFi Internet access networks. These options offer alternatives to cable-based Internet access.

Voice Competition

Our residential voice service competes with wireless and wireline phone providers, as well as other forms of communication, such as text messaging on cellular phones, instant messaging, social networking services, video conferencing and email. We also compete with "over-the-top" phone providers, such as Vonage, Skype, magicJack, Google Voice and Ooma, Inc., as well as companies that sell phone cards at a cost per minute for both national and international service. The increase in the number of different technologies capable of carrying voice services and the number of alternative communication options available to customers as well as the replacement of wireline services by wireless have intensified the competitive environment in which we operate our residential voice service. Our mobile service competes with other mobile providers such as Verizon, AT&T, T-Mobile and Sprint, as well as various regional wireless service providers. We also compete for retail activations with other resellers that buy bulk wholesale service from wireless service providers for resale.

Regional Competitors

In some of our operating areas, other competitors have built networks that offer video, Internet and voice services that compete with our services. For example, in certain service areas, our residential video, Internet and voice services compete with Google Fiber, Cincinnati Bell Inc., Hawaiian Telcom (owned by Cincinnati Bell Inc.), RCN Telecom Services, LLC, Grande Communications Networks, LLC and WOW.

Additional Competition

In addition to multi-channel video providers, cable systems compete with other sources of news, information and entertainment, including over-the-air television broadcast reception, live events, movie theaters and the Internet. Competition is also posed by fixed wireless and satellite master antenna television systems, or SMATV systems, serving MDUs, such as condominiums, apartment complexes, and private residential communities.

Business Services

We face intense competition across each of our business services product offerings. Our small and medium business video, Internet, networking and voice services face competition from a variety of providers as described above. Our enterprise solutions also face competition from the competitors described above as well as application-service providers and other telecommunications carriers, such as metro and regional fiber-based carriers.

Advertising

We face intense competition for advertising revenue across many different platforms and from a wide range of local and national competitors. Advertising competition has increased and will likely continue to increase as new advertising avenues seek to attract the same advertisers. We compete for advertising revenue against, among others, local broadcast stations, national cable and broadcast networks, radio stations, print media and online advertising companies and content providers.

Seasonality and Cyclicity

Our business is subject to seasonal and cyclical variations. Our results are impacted by the seasonal nature of customers receiving our cable services in college and vacation service areas. Our revenue is subject to cyclical advertising patterns and changes in viewership levels. Our advertising revenue is generally higher in the second and fourth calendar quarters of each year, due in part to increases in consumer advertising in the spring and in the period leading up to and including the holiday season. U.S. advertising revenue is also cyclical, benefiting in even-numbered years from advertising related to candidates running for political office and issue-oriented advertising. Our capital expenditures and trade working capital are also subject to significant seasonality based on the timing of subscriber growth, network programs, specific projects and construction.

Regulation and Legislation

The following summary addresses the key regulatory and legislative developments affecting the cable industry and our services for both residential and commercial customers. Cable system operations are extensively regulated by the federal government (primarily the FCC), certain state governments and many local governments. A failure to comply with these regulations could subject us to substantial penalties. Our business can be dramatically impacted by changes to the existing regulatory framework, whether triggered by legislative, administrative, or judicial rulings. Congress and the FCC have frequently revisited the subject of communications regulation and they are likely to do so again in the future. We could be materially disadvantaged in the future if we are subject to new laws, regulations or regulatory actions that do not equally impact our key competitors. We cannot provide assurance that the already extensive regulation of our business will not be expanded in the future. In addition, we are already subject to Charter-specific conditions regarding certain business practices as a result of the FCC's approval of the merger in 2016 with Time Warner Cable Inc. ("TWC") and acquisition of Bright House Networks, LLC ("Bright House").

Video Service

Must Carry/Retransmission Consent

There are two alternative legal methods for carriage of local broadcast television stations on cable systems. Federal "must carry" regulations require cable systems to carry local broadcast television stations upon the request of the local broadcaster. Alternatively, federal law includes "retransmission consent" regulations, by which popular commercial television stations can prohibit cable carriage unless the cable operator first negotiates for "retransmission consent," which may be conditioned on significant payments or other concessions. Popular stations invoking "retransmission consent" have been demanding substantial compensation increases in their recent negotiations with cable operators, thereby significantly increasing our operating costs.

Pole Attachments

The Communications Act of 1934, as amended (the "Communications Act") requires most utilities owning utility poles to provide cable systems with access to poles and conduits and also subjects the rates charged for this access to either federal or state regulation. The federally regulated rates now applicable to pole attachments used for cable, Internet, and telecommunications services are substantially similar. The FCC's approach does not directly affect the rate in states that self-regulate, but many of those states have substantially the same rate for all communications attachments.

Some municipalities have enacted "one-touch" make-ready pole attachment ordinances, which permit third parties to alter components of our network attached to utility poles in ways that could adversely affect our businesses. Some of these ordinances have been challenged with differing results. In 2018, the FCC adopted "one-touch" make-ready ("OTMR") rules that will apply in states where pole attachments are FCC regulated, and they may impact many of our existing pole attachments. Various utilities have sought review of the OTMR rules in federal court.

Cable Rate Regulation

Pursuant to federal law, a cable system's video offerings are universally exempt from rate regulation, except for a cable system's minimum level of video programming service, referred to as "basic service," and associated equipment. FCC regulations require a local franchise authority interested in regulating rates for basic service and associated equipment to first make an affirmative showing that there is no "effective competition" (as defined under federal law) in the community. Given the competitive nature of our markets, the FCC recently rescinded certifications for the relatively few communities where we had been subject to rate regulation. It is possible that the competitive situation could change, and that some local franchising authorities may be certified to regulate rates in the future, and existing and potential laws and regulations may affect our marketing practices (including our disclosure and itemization of subscriber fees).

Other FCC Regulatory Matters

The Communications Act and FCC regulations cover a variety of additional areas, including, among other things: (1) licensing of systems and facilities; (2) equal employment opportunity obligations; (3) customer service standards; (4) technical service standards; (5) mandatory blackouts of certain network and syndicated programming; (6) restrictions on political advertising; (7) restrictions on advertising in children's programming; (8) ownership restrictions; (9) maintenance of public files; (10) emergency alert systems; (11) inside wiring and exclusive contracts for MDU complexes; (12) disability access, including requirements governing video-description and closed-captioning; (13) competitive availability of cable equipment; (14) the provision of up to 15% of video channel capacity for commercial leased access by unaffiliated third parties; and (15) public, education and government entity access requirements. Each of these regulations restricts our business practices to varying degrees and may impose additional costs on our operations. Further, the FCC regulates spectrum usage and other communications enterprises in ways that could impact our operations. For example, the FCC is currently considering proposals to reallocate certain spectrum for new wireless communications purposes, which could be disruptive to the satellite platform we rely upon to provide our video services. The FCC is also preparing to make additional spectrum available for commercial services, which we might use to deliver services in the future. Our ability to access and use such spectrum is uncertain and may be limited by further FCC auction or allocation decisions.

It is possible that Congress or the FCC will expand or modify its regulation of cable systems in the future, and we cannot predict at this time how that might impact our business.

Copyright

Cable systems are subject to a federal compulsory copyright license covering carriage of television and radio broadcast signals. The copyright law provides copyright owners the right to audit our payments under the compulsory license, and the Copyright Office is currently considering modifications to the license's royalty calculations and reporting obligations. The possible modification or elimination of this license is the subject of continuing legislative proposals and administrative review and could adversely affect our ability to obtain desired broadcast programming.

Franchise Matters

Our cable systems generally are operated pursuant to nonexclusive franchises, permits, and similar authorizations granted by a municipality or other state or local government entity in order to utilize and cross public rights-of-way.

Cable franchises generally are granted for fixed terms and in many cases include monetary penalties for noncompliance and may be terminable if the franchisee fails to comply with material provisions. The specific terms and conditions of cable franchises vary significantly between jurisdictions. They generally contain provisions governing cable operations, franchise fees, system construction, maintenance, technical performance, customer service standards, supporting and carrying public access channels, and changes in the ownership of the franchisee. Although local franchising authorities have considerable discretion in establishing franchise terms, certain federal protections benefit cable operators. For example, federal law imposes a 5% cap on franchise fees. In August 2019, the FCC clarified that in-kind contribution requirements set forth in cable franchises are subject to the statutory cap on franchise fees, and it reaffirmed that state and local authorities are barred from imposing duplicative franchise and/or fee requirements on franchised cable systems providing non-cable services. An appeal of the FCC's order is pending in federal court.

A number of states have adopted franchising laws that provide for statewide franchising. Generally, state-wide cable franchises are issued for a fixed term, but streamline many of the traditional local cable franchise requirements and eliminate local negotiation.

The Communications Act provides for an orderly franchise renewal process in which granting authorities may not unreasonably deny renewals. If we fail to obtain renewals of franchises representing a significant number of our customers, it could have a material adverse effect on our consolidated financial condition, results of operations, or our liquidity. Similarly, if a franchising authority's consent is required for the purchase or sale of a cable system, the franchising authority may attempt to impose more burdensome requirements as a condition for providing its consent.

Internet Service

The FCC originally classified broadband Internet access services, such as those we offer, as an "information service," which exempted the service from traditional communications common carrier laws and regulations. In 2015, the FCC reclassified broadband Internet access services as "telecommunications service" and, on that basis, imposed a number of "net neutrality" rules governing the provision of broadband service. In 2017, the FCC reversed its 2015 decision. The Commission's 2017 Order restored the "information service" classification and eliminated the 2015 rules, other than a transparency requirement, which

created an obligation to disclose performance statistics and other service information to consumers. The 2017 FCC decision also ruled that state regulators may not impose obligations similar to federal network neutrality obligations that the FCC eliminated.

In 2019, the U.S. Court of Appeals for the District of Columbia upheld the FCC's information service reclassification, but vacated the FCC's blanket prohibition of state utility regulation of broadband services. The court left open the possibility that individual state laws could be deemed preempted on a case by case basis if it is shown that they conflict with federal law. We understand that this decision may be subject to further judicial review. Several states (including California) have already adopted state obligations, and additional states may consider the imposition of new regulations on our Internet services, such as rules similar to the network neutrality requirements that were eliminated by the FCC. California's legislation has been challenged in court, and we cannot predict how the challenge to California's legislation or challenges to any future state legislation will be resolved. As recent history has shown, 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. The application of new legal requirements to our Internet services could adversely affect our business.

In recent years, the FCC has demonstrated an interest in accelerating advancements in, and deployment of, wired and wireless broadband infrastructure, including advanced 5G wireless service. For example, the FCC and some state regulatory commissions direct certain subsidies to telephone and other companies deploying broadband to areas deemed to be "unserved" or "underserved." We have opposed such subsidies when directed to areas that we serve. However, continued regulatory efforts to accelerate competitive wireline and wireless broadband deployment, including reforms that create regulatory imbalances, could adversely affect our business.

Aside from the FCC's generally applicable regulations, we have made certain commitments to comply with the FCC's order in connection with the FCC's approval of the merger with TWC and acquisition of Bright House (discussed below).

Wireline Voice Service

The FCC has never classified the VoIP telephone services we offer as "telecommunications services" that are subject to traditional federal common carrier regulation, but instead has imposed some of these requirements on a case-by-case basis, such as requirements relating to 911 emergency services ("E911"), Communications Assistance for Law Enforcement Act ("CALEA") (the statute governing law enforcement access to and surveillance of communications), Universal Service Fund contributions, customer privacy and Customer Proprietary Network Information protections, number portability, network outage reporting, rural call completion, disability access, regulatory fees, back-up power obligations, and discontinuance of service. It is possible that the FCC or Congress will impose additional requirements on our VoIP telephone services in the future.

Although we believe that VoIP telephone services should be governed only by federal regulation, some states have attempted to subject cable VoIP services to state level regulation, and at least one state has asserted jurisdiction over our VoIP services. We prevailed on a legal challenge to that state's assertion of jurisdiction, which was affirmed by a federal appellate court, but that ruling is limited to the seven states in that circuit. Although 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, it is unclear whether and how these and other ongoing regulatory matters ultimately will be resolved. State regulatory commissions and legislatures in other jurisdictions may continue to consider imposing regulatory requirements on our fixed telephone services.

Mobile Service

Our Spectrum Mobile service offers mobile Internet access and telephone service. We provide this service as an MVNO using Verizon's network and our network of Spectrum Wi-Fi hotspots. As an MVNO, we are subject to many of the same FCC regulations that apply to facilities-based wireless carriers, as well as certain state or local regulations, including (but not limited to): E911, local number portability, customer privacy, CALEA, universal service fund contribution, and hearing aid compatibility and safety and emission requirements for mobile devices. Spectrum Mobile's broadband Internet access service is also subject to the FCC's transparency rule. The FCC or other regulatory authorities may adopt new or different regulations for MVNOs and/or mobile service providers in the future, or impose new taxes or fees applicable to Spectrum Mobile, which could adversely affect the service offering or our business generally.

Privacy and Information Security Regulation

The Communications Act limits our ability to collect, use, and disclose customers' personally identifiable information for our video, voice, and Internet services. We are subject to additional federal, state, and local laws and regulations that impose additional restrictions on the collection, use and disclosure of consumer information. All broadband providers are also obliged by CALEA

to configure their networks in a manner that facilitates the ability of state and federal law enforcement, with proper legal process authorized under the Electronic Communications Privacy Act, to obtain records and information concerning our customers, including the content of their communications. Further, the FCC, Federal Trade Commission ("FTC"), and many states regulate and restrict the marketing practices of communications service providers, including telemarketing and sending unsolicited commercial emails. The FTC currently has the authority, pursuant to its general 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.

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. The FCC, the FTC and state attorneys general regularly bring enforcement actions against companies related to information security breaches and privacy violations.

Various security standards provide guidance to telecommunications companies in order to help identify and mitigate cybersecurity risks. One such standard is the voluntary framework released by the National Institute for Standards and Technologies ("NIST") in 2014 and updated in 2018, in cooperation with other federal agencies and owners and operators of U.S. critical infrastructure. The NIST cybersecurity framework provides a prioritized and flexible model for organizations to identify and manage cyber risks inherent to their business. It was designed to supplement, not supersede, existing cybersecurity regulations and requirements. Several government agencies have encouraged compliance with the NIST cybersecurity framework, including the FCC, which is also considering expansion of its cybersecurity guidelines or the adoption of cybersecurity requirements.

Many states and local authorities have considered legislative or other actions that would impose restrictions on our ability to collect, use and disclose, and safeguard certain consumer information, particularly with regard to our broadband Internet business. For example, the California Consumer Privacy Act and Maine's Act to Protect Privacy of Online Customer Information are both scheduled go into effect in 2020. The California law will, under certain circumstances, regulate companies' use and disclosure of the personal information of California residents and authorizes enforcement actions by the California Attorney General and private class actions for data breaches. The Maine law regulates how Internet service providers use and disclose customers' personal information and requires Internet service providers to take reasonable measures to protect customers' personal information. We expect state and local efforts to regulate consumer privacy to continue in 2020. 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. We expect such state activity to increase as a result of the recent U.S. Court of Appeals decision that, while affirming the FCC's reclassification of Internet access as an "information service," vacated the FCC's blanket prohibition of state regulation of broadband service and instead left open the possibility that individual state laws could be deemed preempted on a case by case basis if it is shown that they conflict with federal law. 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 any of these efforts will be successful or preempted, or how new legislation and regulations, if any, would affect our business.

Commitments Related to the 2016 Merger with TWC and Acquisition of Bright House

In connection with approval of the 2016 merger with TWC and acquisition of Bright House (the "Transactions"), federal and state regulators imposed a number of post-transaction conditions on us including but not limited to the following.

FCC Conditions

- Offer settlement-free Internet interconnection to any party that meets the requirements of our Interconnection Policy (available on Charter's website) on terms generally consistent with the policy for seven years (with a possible reduction to five years from FCC approval in 2016);
- Deploy and offer high-speed broadband Internet access service to an additional two million locations over five years;
- Refrain from charging usage-based prices or imposing data caps on any fixed mass market broadband Internet access service plans for seven years (with a possible reduction to five);
- Offer 30/4 Mbps discounted broadband where technically feasible to eligible customers throughout our service area for four years from the offer's commencement; and
- Continue to provide CableCARDS to any new or existing customer upon request for use in third-party retail devices for four years and continue to support such CableCARDS for seven years (in each case, unless the FCC changes the relevant rules).

The FCC conditions also contain a number of compliance reporting requirements.

DOJ Conditions

The Department of Justice (“DOJ”) Order prohibits us from entering into or enforcing any agreement with a video programmer that forbids, limits or creates incentives to limit the video programmer’s provision of content to online video distributors (“OVDs”). We will not be able to avail ourselves of other distributors’ most favored nation (“MFN”) provisions if they are inconsistent with this prohibition. The DOJ’s conditions are effective for seven years after entry of the final judgment in 2016, although we may petition the DOJ to eliminate the conditions after five years.

State Conditions

Certain state regulators, including California, New York, Hawaii and New Jersey also imposed conditions in connection with the approval of the Transactions. These conditions include requirements related to:

- Building out our network to certain households and business locations that are not currently served by cable within the designated states;
- Offering LifeLine service discounts and low-income broadband to eligible households served within the applicable states;
- Investing in service improvement programs and customer service enhancements and maintaining customer-facing jobs within the designated state; and
- Complying with reporting requirements.

Employees

As of December 31, 2019, we had approximately 95,100 active full-time equivalent employees.

Item 1A. Risk Factors.

Risks Related to Our Business

We operate in a very competitive business environment, which affects our ability to attract and retain customers and can adversely affect our business, operations and financial results.

The industry in which we operate is highly competitive and has become more so in recent years. In some instances, we compete against companies with fewer regulatory burdens, access to better financing, greater personnel resources, greater resources for marketing, greater and more favorable brand name recognition, and long-established relationships with regulatory authorities and customers. Increasing consolidation in the telecommunications and content industries have provided additional benefits to certain of our competitors, either through access to financing, resources, or efficiencies of scale including the ability to launch new video services.

Our video service faces competition from a number of sources, including DBS services, as well as other companies that deliver linear network programming, movies and television shows on demand and other video content over broadband Internet connections to televisions, computers, tablets and mobile devices often with password sharing among multiple users and security that makes content susceptible to piracy. Newer products and services, particularly alternative methods for the distribution, sale and viewing of content will likely continue to be developed, further increasing the number of competitors that we face.

The increasing number of choices available to audiences, including low-cost or free choices, could negatively impact not only consumer demand for our products and services, but also advertisers’ willingness to purchase advertising from us. We compete for the sale of advertising revenue with television networks and stations, as well as other advertising platforms, such as radio, print and, increasingly, online media.

Our Internet service faces competition from the phone companies’ FTTH, FTTN, DSL and wireless broadband offerings as well as from a variety of companies that offer other forms of online services, including fixed wireless and satellite-based broadband services. Various mobile phone companies offer wireless Internet services delivered over networks which they continue to enhance to deliver faster speeds and some began deploying 5G mobile services in 2019 with plans to expand 5G more broadly in the 2020. Our voice and mobile services compete with wireless and wireline phone providers, as well as other forms of communication, such as text messaging on cellular phones, instant messaging, social networking services, video conferencing and email. Competition from these companies, including intensive marketing efforts with aggressive pricing, exclusive programming and increased HD broadcasting may have an adverse impact on our ability to attract and retain customers.

Wireline and wireless overbuilds could also adversely affect our growth, financial condition, and results of operations, by creating or increasing competition. We are aware of traditional overbuild situations impacting certain of our service areas, however, we are unable to predict the extent to which additional overbuild situations may occur.

Our services may not allow us to compete effectively. Our failure to effectively anticipate or adapt to new technologies and changes in consumer expectations and behavior could significantly adversely affect our competitive position with respect to the leisure time and discretionary spending of our customers and, as a result, affect our business and results of operations. Competition may also reduce our expected growth of future cash flows which may contribute to future impairments of our franchises and goodwill and our ability to meet cash flow requirements, including debt service requirements. For additional information regarding the competition we face, see “Item 1. Business -Competition” and “-Regulation and Legislation.”

We face risks inherent in our commercial business.

We may encounter unforeseen difficulties as we increase the scale of our service offerings to businesses. We sell Internet access, data networking and fiber connectivity to office buildings and cellular towers, and video and business voice services to businesses. In order to grow our commercial business, we expect to continue to invest in technology, equipment and personnel focused on the commercial business. Commercial business customers often require service level agreements and generally have heightened customer expectations for reliability of services. If our efforts to build the infrastructure to scale the commercial business are not successful, the growth of our commercial services business would be limited. We depend on interconnection and related services provided by certain third parties for the growth of our commercial business. As a result, our ability to implement changes as the services grow may be limited. If we are unable to meet these service level requirements or expectations, our commercial business could be adversely affected. Competition continues to increase as well, as more companies deploy more fiber to more buildings, which may negatively impact our growth and/or put pressure on margins. Finally, we expect advances in communications technology, as well as changes in the marketplace and the regulatory and legislative environment. Consequently, we are unable to predict the effect that ongoing or future developments in these areas might have on our commercial businesses and operations.

Programming costs per video customer are rising at a much faster rate than wages or inflation, and we may not have the ability to reduce or moderate the growth rates of, or pass on to our customers, our increasing programming costs, which would adversely affect our cash flow and operating margins.

Video programming has been, and is expected to continue to be, our largest operating expense item. In recent years, the cable industry has experienced a rapid escalation in programming rates. Media corporation consolidation has resulted in fewer suppliers and additional selling power on the part of programming suppliers. We expect programming rates will continue to increase due to a variety of factors, including annual increases imposed by programmers with additional selling power as a result of media consolidation, increased demands by owners of broadcast stations for payment for retransmission consent or linking carriage of other services to retransmission consent, and additional programming, particularly new services. The inability to fully pass programming cost increases on to our customers has had, and is expected in the future to have, an adverse impact on our cash flow and operating margins associated with the video product. The contracts set to expire in any particular year vary. There can be no assurance that these agreements will be renewed on favorable or comparable terms. In addition, a number of programmers have begun to sell their services through alternative distribution channels, including IP-based platforms, which are less secure than our own video distribution platforms. There is growing evidence that these less secure video distribution platforms are leading to video product theft via password sharing among consumers. Password sharing may drive down the number of customers who pay for certain programming, putting programmer revenues at risk, and which in turn may cause certain programmers to seek even higher programming fees from us. The ability for consumers to receive the same content for free through such unauthorized channels has devalued our video product which could impact sales, customer retention and our ability to pass through programming costs to consumers, which increases the risk of non-renewal when programmers seek increases. To the extent that we are unable to reach agreement with certain programmers on terms that we believe are reasonable, we have been, and may be in the future, forced to remove such programming channels from our line-up, which may result in a loss of customers. Our failure to carry programming that is attractive to our customers could adversely impact our customer levels, operations and financial results. In addition, if our Internet customers are unable to access desirable content online because content providers block or limit access by our customers as a class, our ability to gain and retain customers, especially Internet customers, may be negatively impacted.

Increased demands by owners of some broadcast stations for carriage of other services or payments to those broadcasters for retransmission consent are likely to further increase our programming costs. Federal law allows commercial television broadcast stations to make an election between “must-carry” rights and an alternative “retransmission-consent” regime. When a station opts for the retransmission consent regime, we are not allowed to carry the station’s signal without that station’s permission. In some cases, we carry stations under short-term arrangements while we attempt to negotiate new long-term retransmission agreements. If negotiations with these programmers prove unsuccessful, they could require us to cease carrying their signals, possibly for an indefinite period. Any loss of stations could make our video service less attractive to customers, which could result in less

subscription and advertising revenue. In retransmission-consent negotiations, broadcasters often condition consent with respect to one station on carriage of one or more other stations or programming services in which they or their affiliates have an interest. Carriage of these other services, as well as increased fees for retransmission rights, may increase our programming expenses and diminish the amount of capacity we have available to introduce new services, which could have an adverse effect on our business and financial results.

Our inability to respond to technological developments and meet customer demand for new products and services could adversely affect our ability to compete effectively.

We operate in a highly competitive, consumer-driven and rapidly changing environment. From time to time, we may pursue strategic initiatives, including, for example, our wireless strategy which includes the launch of our mobile product through an MVNO and testing the deployment of unlicensed and licensed spectrum for fixed and mobile wireless services. Our success is, to a large extent, dependent on our ability to acquire, develop, adopt, upgrade and exploit new and existing technologies to address consumers' changing demands and distinguish our services from those of our competitors. We may not be able to accurately predict technological trends or the success of new products and services. If we choose technologies or equipment that are less effective, cost-efficient or attractive to customers than those chosen by our competitors, if we offer services that fail to appeal to consumers, are not available at competitive prices or that do not function as expected, or we are not able to fund the expenditures necessary to keep pace with technological developments, our competitive position could deteriorate, and our business and financial results could suffer.

The ability of some of our competitors to introduce new technologies, products and services more quickly than we do may adversely affect our competitive position. Furthermore, advances in technology, decreases in the cost of existing technologies or changes in competitors' product and service offerings may require us in the future to make additional research and development expenditures or to offer, at no additional charge or at a lower price, certain products and services that we currently offer to customers separately or at a premium. In addition, the uncertainty of our ability, and the costs, to obtain intellectual property rights from third parties could impact our ability to respond to technological advances in a timely and effective manner.

Our inability to maintain and expand our upgraded systems and provide advanced services such as a state of the art user interface in a timely manner, or to anticipate the demands of the marketplace, could materially adversely affect our ability to attract and retain customers. In addition, as we launch our new mobile services using virtual network operator rights from a third party, we expect an initial funding period to grow a new product as well as negative working capital impacts from the timing of device-related cash flows when we provide the handset or tablet pursuant to equipment installation plans. Consequently, our growth, financial condition and results of operations could suffer materially.

We depend on third-party service providers, suppliers and licensors; thus, if we are unable to procure the necessary services, equipment, software or licenses on reasonable terms and on a timely basis, our ability to offer services could be impaired, and our growth, operations, business, financial results and financial condition could be materially adversely affected.

We depend on a limited number of third-party service providers, suppliers and licensors to supply some of the services, hardware, software and operational support necessary to provide some of our services. Some of our hardware, software and operational support vendors, and service providers represent our sole source of supply or have, either through contract or as a result of intellectual property rights, a position of some exclusivity. If any of these parties breaches or terminates its agreement with us or otherwise fails to perform its obligations in a timely manner, demand exceeds these vendors' capacity, tariffs are imposed that impact vendors' ability to perform their obligations or significantly increase the amount we pay, they experience operating or financial difficulties, they significantly increase the amount we pay for necessary products or services, or they cease production of any necessary product due to lack of demand, profitability or a change in ownership or are otherwise unable to provide the equipment or services we need in a timely manner, at our specifications and at reasonable prices, our ability to provide some services might be materially adversely affected, or the need to procure or develop alternative sources of the affected materials or services might delay our ability to serve our customers. In addition, the existence of only a limited number of vendors of key technologies can lead to less product innovation and higher costs. These events could materially and adversely affect our ability to retain and attract customers and our operations, business, financial results and financial condition.

Our business may be adversely affected if we cannot continue to license or enforce the intellectual property rights on which our business depends.

We rely on patent, copyright, trademark and trade secret laws and licenses and other agreements with our employees, customers, suppliers and other parties to establish and maintain our intellectual property rights in technology and the products and services used in our operations. Also, because of the rapid pace of technological change, we both develop our own technologies, products and services and rely on technologies developed or licensed by third parties. However, any of our intellectual property rights, or

the rights of our suppliers, could be challenged or invalidated, or such intellectual property rights may not be sufficient to permit us to take advantage of current industry trends or otherwise to provide competitive advantages, which could result in costly redesign efforts, discontinuance of certain product or service offerings or other competitive harm. We may not be able to obtain or continue to obtain licenses from these third parties on reasonable terms, if at all. In addition, claims of intellectual property infringement could require us to enter into royalty or licensing agreements on unfavorable terms, incur substantial monetary liability or be enjoined preliminarily or permanently from further use of the intellectual property in question, which could require us to change our business practices or offerings and limit our ability to compete effectively. Even unsuccessful claims can be time-consuming and costly to defend and may divert management's attention and resources away from our business. Infringement claims continue to be brought frequently in the communications and entertainment industries, and we are also often a party to such litigation alleging that certain of our services or technologies infringe the intellectual property rights of others.

Various events could disrupt or result in unauthorized access to our networks, information systems or properties and could impair our operating activities and negatively impact our reputation and financial results.

Network and information systems technologies are critical to our operating activities, both for our internal uses, such as network management and supplying services to our customers, including customer service operations and programming delivery. Network or information system shutdowns or other service disruptions caused by events such as computer hacking, phishing, dissemination of computer viruses, worms and other destructive or disruptive software, "cyber attacks," process breakdowns, denial of service attacks and other malicious activity pose increasing risks. Both unsuccessful and successful "cyber attacks" on companies have continued to increase in frequency, scope and potential harm in recent years. While we develop and maintain systems seeking to prevent systems-related events and security breaches from occurring, the development and maintenance of these systems is costly and requires ongoing monitoring and updating as techniques used in such attacks become more sophisticated and change frequently. We, and the third parties on which we rely, may be unable to anticipate these techniques or implement adequate preventive measures. While from time to time attempts have been made to access our network, these attempts have not as yet resulted in any material release of information, degradation or disruption to our network and information systems.

Our network and information systems are also vulnerable to damage or interruption from power outages, telecommunications failures, accidents, natural disasters (including extreme weather arising from short-term or any long-term changes in weather patterns), terrorist attacks and similar events. Our system redundancy may be ineffective or inadequate, and our disaster recovery planning may not be sufficient for all eventualities.

Any of these events, if directed at, or experienced by, us or technologies upon which we depend, could have adverse consequences on our network, our customers and our business, including degradation of service, service disruption, excessive call volume to call centers, and damage to our or our customers' equipment and data. Large expenditures may be necessary to repair or replace damaged property, networks or information systems or to protect them from similar events in the future. Moreover, the amount and scope of insurance that we maintain against losses resulting from any such events or security breaches may not be sufficient to cover our losses or otherwise adequately compensate us for any disruptions to our business that may result. Any such significant service disruption could result in damage to our reputation and credibility, customer dissatisfaction and ultimately a loss of customers or revenue. Any significant loss of customers or revenue, or significant increase in costs of serving those customers, could adversely affect our growth, financial condition and results of operations.

Furthermore, our operating activities could be subject to risks caused by misappropriation, misuse, leakage, falsification or accidental release or loss of information maintained in our information technology systems and networks and those of our third-party vendors, including customer, personnel and vendor data. We provide certain confidential, proprietary and personal information to third parties in connection with our business, and there is a risk that this information may be compromised.

We process, store, and transmit large amounts of data, including the personal information of our customers. Ongoing increases in the potential for mis-use of personal information, the public's awareness of the importance of safeguarding personal information, and the volume of legislation that has been adopted or is being considered regarding the protection, privacy, and security of personal information have resulted in increases to our information-related risks. We could be exposed to significant costs if such risks were to materialize, and such events could damage our reputation, credibility and business and have a negative impact on our revenue. We could be subject to regulatory actions and claims made by consumers in private litigations involving privacy issues related to consumer data collection and use practices. We also could be required to expend significant capital and other resources to remedy any such security breach.

Our exposure to the economic conditions of our current and potential customers, vendors and third parties could adversely affect our cash flow, results of operations and financial condition.

We are exposed to risks associated with the economic conditions of our current and potential customers, the potential financial instability of our customers and their financial ability to purchase our products. If there were a general economic downturn, we may experience increased cancellations or non-payment by our customers or unfavorable changes in the mix of products purchased. This may include an increase in the number of homes that replace their video service with Internet-delivered and/or over-air content, as well as an increase in the number of Internet and voice customers substituting mobile data and voice products for wireline services, which would negatively impact our ability to attract customers, increase rates and maintain or increase revenue. In addition, our ability to gain new customers is dependent to some extent on growth in occupied housing in our service areas, which is influenced by both national and local economic conditions. Weak economic conditions may also have a negative impact on our advertising revenue. These events have adversely affected us in the past, and may adversely affect our cash flow, results of operations and financial condition if a downturn were to occur.

In addition, we are susceptible to risks associated with the potential financial instability of the vendors and third parties on which we rely to provide products and services or to which we outsource certain functions. The same economic conditions that may affect our customers, as well as volatility and disruption in the capital and credit markets, also could adversely affect vendors and third parties and lead to significant increases in prices, reduction in output or the bankruptcy of our vendors or third parties upon which we rely. Any interruption in the services provided by our vendors or by third parties could adversely affect our cash flow, results of operation and financial condition.

For tax purposes, Charter could experience a deemed ownership change in the future that could limit its ability to use its tax loss carryforwards.

Charter had approximately \$7.5 billion of federal tax net operating loss carryforwards resulting in a gross deferred tax asset of approximately \$1.6 billion as of December 31, 2019. These losses resulted from the operations of Charter Communications Holding Company, LLC ("Charter Holdco") and its subsidiaries and from loss carryforwards received as a result of the merger with TWC. Federal tax net operating loss carryforwards expire in the years 2020 through 2035. In addition, Charter had state tax net operating loss carryforwards resulting in a gross deferred tax asset (net of federal tax benefit) of approximately \$257 million as of December 31, 2019. State tax net operating loss carryforwards generally expire in the years 2020 through 2039.

In the past, Charter has experienced ownership changes as defined in Section 382 of the Internal Revenue Code of 1986, as amended (the "Code"). In general, an ownership change occurs whenever the percentage of the stock of a corporation owned, directly or indirectly, by 5-percent stockholders (within the meaning of Section 382 of the Code) increases by more than 50 percentage points over the lowest percentage of the stock of such corporation owned, directly or indirectly, by such 5-percent stockholders at any time over the preceding three years. As a result, Charter is subject to an annual limitation on the use of its loss carryforwards which existed at November 30, 2009 for the first ownership change, those that existed at May 1, 2013 for the second ownership change, and those created at May 18, 2016 for the third ownership change. The limitation on Charter's ability to use its loss carryforwards, in conjunction with the loss carryforward expiration provisions, could reduce Charter's ability to use a portion of its loss carryforwards to offset future taxable income, which could result in Charter being required to make material cash tax payments. Charter's ability to make such income tax payments, if any, will depend at such time on its liquidity or its ability to raise additional capital, and/or on receipt of payments or distributions from Charter Holdco and its subsidiaries, including us.

If Charter were to experience additional ownership changes in the future (as a result of purchases and sales of stock by its 5-percent stockholders, new issuances or redemptions of our stock, certain acquisitions of its stock and issuances, redemptions, sales or other dispositions or acquisitions of interests in its 5-percent stockholders), Charter's ability to use its loss carryforwards could become subject to further limitations.

If we are unable to retain key employees, our ability to manage our business could be adversely affected.

Our operational results have depended, and our future results will depend, upon the retention and continued performance of our management team. Our ability to retain and hire new key employees for management positions could be impacted adversely by the competitive environment for management talent in the broadband communications industry. The loss of the services of key members of management and the inability or delay in hiring new key employees could adversely affect our ability to manage our business and our future operational and financial results.

Risks Related to Our Indebtedness

We have a significant amount of debt and expect to incur significant additional debt, including secured debt, in the future, which could adversely affect our financial health and our ability to react to changes in our business.

We have a significant amount of debt and expect to (subject to applicable restrictions in our debt instruments) incur additional debt in the future as Charter maintains its stated objective of 4.0 to 4.5 times Adjusted EBITDA leverage (net debt divided by the last twelve months Adjusted EBITDA). As of December 31, 2019, our total principal amount of debt was approximately \$78.4 billion and Charter's leverage ratio was 4.5 times Adjusted EBITDA.

Our significant amount of debt could have consequences, such as:

- impact our ability to raise additional capital at reasonable rates, or at all;
- make us vulnerable to interest rate increases, in part because approximately 14% of our borrowings as of December 31, 2019 were, and may continue to be, subject to variable rates of interest;
- expose us to increased interest expense to the extent we refinance existing debt with higher cost debt;
- require us to dedicate a significant portion of our cash flow from operating activities to make payments on our debt, reducing our funds available for working capital, capital expenditures, and other general corporate expenses;
- limit our flexibility in planning for, or reacting to, changes in our business, the cable and telecommunications industries, and the economy at large;
- place us at a disadvantage compared to our competitors that have proportionately less debt; and
- adversely affect our relationship with customers and suppliers.

To the extent our current debt amounts increase more than expected, our business results are lower than expected, or credit rating agencies downgrade our debt limiting our access to investment grade markets, the related risks that we now face will intensify. In addition, our variable rate indebtedness may use London Interbank Offering Rate ("LIBOR") as a benchmark for establishing the rate. The United Kingdom's Financial Conduct Authority, which regulates LIBOR, has announced that it intends to stop encouraging or compelling banks to submit rates for the calculation of LIBOR rates after 2021 (the "FCA Announcement"). The FCA Announcement indicates that the continuation of LIBOR on the current basis is not guaranteed after 2021 and, based on the foregoing, it appears likely that LIBOR will be discontinued or modified by 2021. The effects of the FCA Announcement cannot be entirely predicted, but could include an increase in the cost of our variable rate indebtedness.

The agreements and instruments governing our debt contain restrictions and limitations that could significantly affect our ability to operate our business, as well as significantly affect our liquidity.

Our credit facilities and the indentures governing our debt contain a number of significant covenants that could adversely affect our ability to operate our business, our liquidity, and our results of operations. These covenants restrict, among other things, our and our subsidiaries' ability to:

- incur additional debt;
- repurchase or redeem equity interests and debt;
- issue equity;
- make certain investments or acquisitions;
- pay dividends or make other distributions;
- dispose of assets or merge;
- enter into related party transactions; and
- grant liens and pledge assets.

Additionally, the Charter Communications Operating, LLC ("Charter Operating") credit facilities require Charter Operating to comply with a maximum total leverage covenant and a maximum first lien leverage covenant. The breach of any covenants or obligations in our indentures or credit facilities, not otherwise waived or amended, could result in a default under the applicable debt obligations and could trigger acceleration of those obligations, which in turn could trigger cross defaults under other agreements governing our long-term indebtedness. In addition, the secured lenders under our notes and the Charter Operating credit facilities could foreclose on their collateral, which includes equity interests in our subsidiaries, and exercise other rights of secured creditors.

Risks Related to Ownership Position of Liberty Broadband Corporation and Advance/Newhouse Partnership

Liberty Broadband and Advance/Newhouse Partnership (“A/N”) have governance rights that give them influence over corporate transactions and other matters.

Liberty Broadband currently owns a significant amount of Charter Class A common stock and is entitled to certain governance rights with respect to Charter and us. A/N currently owns Charter Class A common stock and a significant amount of membership interests in our indirect parent company, Charter Holdings, that are convertible into Charter Class A common stock and is entitled to certain governance rights with respect to Charter. Members of the Charter board of directors include a director who is also an officer and director of Liberty Broadband and directors who are current or former officers and directors of A/N. Mr. Greg Maffei is the President and Chief Executive Officer of Liberty Broadband. Steven Miron is the Chief Executive Officer of A/N and Michael Newhouse is an officer or director of several of A/N's affiliates. As of December 31, 2019, Liberty Broadband beneficially held approximately 25% of Charter's voting stock (including shares owned by GCI Liberty, Inc. ("GCI Liberty," formerly known as Liberty Interactive Corporation) over which Liberty Broadband holds an irrevocable voting proxy) and A/N beneficially held approximately 13% of Charter's voting stock. Pursuant to the stockholders agreement between Liberty Broadband, A/N and Charter, Liberty Broadband currently has the right to designate up to three directors as nominees for Charter's board of directors and A/N currently has the right to designate up to two directors as nominees for Charter's board of directors. Each of A/N and Liberty Broadband is entitled to nominate at least one director to each of the committees of Charter's board of directors, subject to applicable stock exchange listing rules and certain specified voting or equity ownership thresholds for each of A/N and Liberty Broadband, and provided that the Nominating and Corporate Governance Committee and the Compensation and Benefit Committee each have at least a majority of directors independent from A/N, Liberty Broadband and Charter (referred to as the “unaffiliated directors”).

In connection with the merger with TWC, Liberty Broadband and GCI Liberty entered into a proxy and right of first refusal agreement, pursuant to which GCI Liberty granted Liberty Broadband an irrevocable proxy to vote all Charter Class A common stock owned beneficially or of record by GCI Liberty, with certain exceptions. In addition, at the closing of the acquisition of Bright House, A/N and Liberty Broadband entered into a proxy agreement pursuant to which A/N granted to Liberty Broadband a 5-year irrevocable proxy (which we refer to as the “A/N proxy”) to vote, subject to certain exceptions, that number of shares of Charter Class A common stock and Charter Class B common stock, in each case held by A/N (such shares are referred to as the “proxy shares”), that will result in Liberty Broadband having voting power in Charter equal to 25.01% of the outstanding voting power of Charter, provided, that the voting power of the proxy shares is capped at 7.0% of the outstanding voting power of Charter. In December of 2019, Liberty Broadband's voting power in Charter exceeded 25.01% and, therefore, as of December 31, 2019, the A/N proxy had no impact on Liberty Broadband's voting power. The stockholders agreement and Charter's amended and restated certificate of incorporation fixes the size of the board at 13 directors. Liberty Broadband and A/N are required to vote (subject to the applicable voting cap) their respective shares of Charter Class A common stock and Charter Class B common stock for the director nominees nominated by the nominating and corporate governance committee of the board of directors, including the respective designees of Liberty Broadband and A/N, and against any other nominees, except that, with respect to the unaffiliated directors, Liberty Broadband and A/N must instead vote in the same proportion as the voting securities are voted by stockholders other than A/N and Liberty Broadband or any group which includes any of them are voted, if doing so would cause a different outcome with respect to the unaffiliated directors. In addition, because Liberty Broadband's voting power exceeds its voting cap of 25.01%, Liberty Broadband must vote and exercise rights to consent with respect to voting securities held in excess of the voting cap in the same proportion as all other votes cast by stockholders other than A/N and Liberty Broadband with respect to the applicable matter. As a result of their rights under the stockholders agreement and their significant equity and voting stakes in Charter, Liberty Broadband and/or A/N, who may have interests different from those of other stockholders, will be able to exercise substantial influence over certain matters relating to the governance of Charter, including the approval of significant corporate actions, such as mergers and other business combination transactions.

Risks Related to Regulatory and Legislative Matters

Our business is subject to extensive governmental legislation and regulation, which could adversely affect our business.

Regulation of the cable industry has increased cable operators' operational and administrative expenses and limited their revenues. Cable operators are subject to numerous laws and regulations including those covering the following:

- the provision of high-speed Internet service, including net neutrality and transparency rules;
- the provision of voice communications;
- cable franchise renewals and transfers;
- the provisioning and marketing of cable equipment;
- customer and employee privacy and data security;
- copyright royalties for retransmitting broadcast signals;

- when a cable system must carry a particular broadcast station and when it must first obtain retransmission consent to carry a broadcast station;
- the provision of video channel capacity to unaffiliated commercial leased access programmers;
- limitations on our ability to enter into exclusive agreements with multiple dwelling unit complexes and control our inside wiring;
- equal employment opportunity;
- emergency alert systems, disability access, pole attachments, and technical standards;
- marketing practices, customer service, and consumer protection; and
- approval for mergers and acquisitions often accompanied by the imposition of restrictions and requirements on an applicant's business in order to secure approval of the proposed transaction.

Legislators and regulators at all levels of government frequently consider changing, and sometimes do change, existing statutes, rules, regulations, or interpretations thereof, or prescribe new ones. Any future legislative, judicial, regulatory or administrative actions may increase our costs or impose additional restrictions on our businesses.

As a result of the closing of the 2016 merger with TWC and acquisition of Bright House, our businesses are subject to the conditions set forth in the FCC Order and the DOJ Consent Decree and those imposed by state utility commissions and local franchise authorities, and there can be no assurance that these conditions will not have an adverse effect on our businesses and results of operations.

In connection with the Transactions, the FCC Order, the DOJ Consent Decree, and the approvals from state utility commissions and local franchise authorities incorporated numerous commitments and voluntary conditions made by the parties and imposed numerous conditions on our businesses relating to the operation of our business and other matters. Under federal approvals, among other things, (i) we are not permitted to charge usage-based prices or impose data caps and are prohibited from charging interconnection fees for qualifying parties; (ii) we are prohibited from entering into or enforcing any agreement with a programmer that forbids, limits or creates incentives to limit the programmer's provision of content to OVD and cannot retaliate against programmers for licensing to OVDs; (iii) we are not able to avail ourselves of other distributors' MFN provisions if they are inconsistent with this prohibition; (iv) we appointed an independent compliance monitor and comply with a broad array of reporting requirements; and (v) we must satisfy various other conditions relating to our Internet services, including building out an additional two million locations with access to a high-speed connection of at least 60 megabits per second, and implementing a reduced price high-speed Internet program for low income families. These and other conditions and commitments relating to the transactions are of varying duration, ranging from three to seven years. In light of the breadth and duration of the conditions and potential changes in market conditions during the time the conditions and commitments are in effect, there can be no assurance that our compliance, and ability to comply, with the conditions will not have a material adverse effect on our business or results of operations.

Changes to existing statutes, rules, regulations, or interpretations thereof, or adoption of new ones, could have an adverse effect on our business.

There are ongoing efforts to amend or expand the federal, state, and local regulation of some of the services offered over our cable systems, which may compound the regulatory risks we already face. For example, with respect to our retail broadband Internet access service, the FCC has reclassified the service twice in the last few years, with the first change adding federal regulatory obligations and the second change largely removing those new regulatory obligations. These changes reflect a lack of regulatory certainty in this business area, which may continue as a result of litigation, as well as future legislative or administrative changes.

Other potential legislative and regulatory changes could adversely impact our business by increasing our costs and competition and limiting our ability to offer services in a manner that that would maximize our revenue potential. These changes could include, for example, the adoption of new privacy restrictions on our collection, use and disclosure of certain customer information, new data security and cybersecurity mandates that could result in additional network and information security requirements for our business, new restraints on our discretion over programming decisions, including commercial leased access programming, new restrictions on the rates we charge for video programming and the marketing and packaging of that video programming and other services to consumers, changes to the cable industry's compulsory copyright license to carry broadcast signals, new requirements to assure the availability of navigation devices (such as set-top boxes) from third-party providers, new Universal Service Fund obligations on our provision of Internet service that would add to the cost of that service; increases in government-administered broadband subsidies to rural areas that could result in subsidized overbuilding of our more rural facilities, changes to the FCC's administration of spectrum, and changes in the regulatory framework for VoIP phone service, including the scope of regulatory obligations associated with our VoIP service and our ability to interconnect our VoIP service with incumbent providers of traditional telecommunications service.

If any of these such laws or regulations are enacted, they could affect our operations and require significant expenditures. We cannot predict future developments in these areas, and we are already subject to Charter-specific conditions regarding certain Internet practices as a result of the FCC's approval in 2016 of the merger with TWC and acquisition of Bright House, but any changes to the regulatory framework for our video, Internet or VoIP services could have a negative impact on our business and results of operations.

It remains uncertain what rule changes, if any, will ultimately be adopted by Congress and the FCC and what operating or financial impact any such rules might have on us, including on our programming agreements, customer privacy and the user experience. In addition, the FCC, the FTC, and various state agencies and attorney generals actively investigate industry practices and could impose substantial forfeitures for alleged regulatory violations.

Our cable system franchises are subject to non-renewal or termination and are non-exclusive. The failure to renew a franchise or the grant of additional franchises in one or more service areas could adversely affect our business.

Our cable systems generally operate pursuant to franchises, permits, and similar authorizations issued by a state or local governmental authority controlling the public rights-of-way. 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. In some instances, local franchises have not been renewed at expiration, and we have operated and are operating under either temporary operating agreements or without a franchise while negotiating renewal terms with the local franchising authorities.

We cannot assure you that we will be able to comply with all significant provisions of our franchise agreements and certain of our franchisers have from time to time alleged that we have not complied with these agreements. Additionally, although historically we have renewed our franchises without incurring significant costs, we cannot assure you 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 service areas could adversely affect our business in the affected geographic area.

Our cable system franchises are non-exclusive. Consequently, local and state franchising authorities can grant additional franchises to competitors in the same geographic area or operate their own cable systems. In some cases, local government entities and municipal utilities may legally compete with us on more favorable terms.

Tax legislation and administrative initiatives or challenges to our tax and fee positions could adversely affect our results of operations and financial condition.

We operate cable systems in locations throughout the United States and, as a result, we are subject to the tax laws and regulations of federal, state and local governments. From time to time, various legislative and/or administrative initiatives may be proposed that could adversely affect our tax positions. There can be no assurance that our effective tax rate or tax payments will not be adversely affected by these initiatives. Certain states and localities have imposed or are considering imposing new or additional taxes or fees on our services or changing the methodologies or base on which certain fees and taxes are computed. Potential changes include additional taxes or fees on our services which could impact our customers, changes to income tax sourcing rules and other changes to general business taxes, central/unit-level assessment of property taxes and other matters that could increase our income, franchise, sales, use and/or property tax liabilities. For example, some local franchising authorities are seeking to impose franchise fee assessments on our broadband Internet access service (in addition to our video service), and more may do so in the future. If they do so, and challenges to such assessments are unsuccessful, it could adversely impact our costs. Although the FCC recently issued a decision precluding the imposition of such duplicative fees, that favorable decision is currently subject to judicial review. In addition, federal, state and local tax laws and regulations are extremely complex and subject to varying interpretations. There can be no assurance that our tax positions will not be challenged by relevant tax authorities or that we would be successful in any such challenge.

Item 1B. Unresolved Staff Comments.

None.

Item 2. Properties.

Our principal physical assets consist of cable distribution plant and equipment, including signal receiving, encoding and decoding devices, headend reception facilities, distribution systems, and customer premise equipment for each of our cable systems.

Our cable plant and related equipment are generally attached to utility poles under pole rental agreements with local public utilities and telephone companies, and in certain locations are buried in underground ducts or trenches. We own or lease real property for signal reception sites, and own our service vehicles.

We generally lease space for business offices. Our headend and tower locations are located on owned or leased parcels of land, and we generally own the towers on which our equipment is located.

The physical components of our cable systems require maintenance as well as periodic upgrades to support the new services and products we introduce. See “Item 1. Business – Our Network Technology and Customer Premise Equipment.” We believe that our properties are generally in good operating condition and are suitable for our business operations.

Item 3. Legal Proceedings.

The legal proceedings information set forth in Note 19 to the accompanying consolidated financial statements contained in “Part II. Item 8. Financial Statements and Supplementary Data” in this Annual Report on Form 10-K is incorporated herein by reference.

Item 4. Mine Safety Disclosures.

Not applicable.

PART II

Item 5. Market for Registrant's Common Equity, Related Stockholder Matters and Issuer Purchases of Equity Securities.

Our membership interests are not publicly traded. All of the membership interests of CCO Holdings are owned by CCH I Holdings, LLC. All of the outstanding capital stock of CCO Holdings Capital Corp. is owned by CCO Holdings.

Securities Authorized for Issuance Under Equity Compensation Plans

The following information is provided as of December 31, 2019 with respect to Charter's equity compensation plans:

Plan Category	Number of Securities to be Issued Upon Exercise of Outstanding Options, Warrants and Rights	Weighted Average Exercise Price of Outstanding Warrants and Rights	Number of Securities Remaining Available for Future Issuance Under Equity Compensation Plans
Equity compensation plans approved by security holders	12,608,020 (1)	\$ 242.50	15,882,887 (1)
Equity compensation plans not approved by security holders	—	\$ —	—
TOTAL	12,608,020 (1)		15,882,887 (1)

(1) This total does not include 8,284 shares issued pursuant to restricted stock grants made under Charter's 2019 Stock Incentive Plan, which are subject to vesting based on continued service.

For information regarding securities issued under Charter's equity compensation plans, see Note 15 to our accompanying consolidated financial statements contained in "Part II. Item 8. Financial Statements and Supplementary Data."

Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations.

Reference is made to "Part I. Item 1A. Risk Factors" and "Cautionary Statement Regarding Forward-Looking Statements," which describe important factors that could cause actual results to differ from expectations and non-historical information contained herein. In addition, the following discussion should be read in conjunction with the audited consolidated financial statements and accompanying notes thereto of CCO Holdings included in "Part II. Item 8. Financial Statements and Supplementary Data."

Overview

We are the second largest cable operator in the United States and a leading broadband communications services company providing video, Internet and voice services to approximately 29.2 million residential and small and medium business customers at December 31, 2019. We also offer mobile service to residential customers and recently launched mobile service to small and medium business customers. In addition, we sell video and online advertising inventory to local, regional and national advertising customers and tailored communications and managed solutions to larger enterprise customers. We also own and operate regional sports networks and local sports, news and community channels. See "Part I. Item 1. Business — Products and Services" for further description of these services, including customer statistics for different services.

In 2019, with the integration of TWC and Bright House substantially behind us, we are realizing the benefits of operating as one company, with a unified product, marketing and service infrastructure. We remain focused on driving customer relationship growth by deploying superior products and services packaged with attractive pricing. We expect our insourced, high quality workforce will continue to drive an improved customer experience which will result in lower customer churn, longer customer lifetimes and, combined with our continued ramping of our self-installation program, improved productivity with fewer customer calls and truck rolls per customer relationship. With approximately 85% of our residential customer base now in SPP packages, we expect additional benefits from lower legacy package migration activity, combined with SPP customers rolling off introductory pricing and price increases. Further, we expect to continue to drive customer relationship growth through sales of bundled services and improving customer retention despite the expectation for continued losses of video and wireline voice customers. With the completion of our all-digital conversion, roll-out of DOCSIS 3.1 technology across our footprint, and the integration of TWC and

Bright House substantially complete, we have experienced a meaningful reduction in cable capital expenditures as a percent of revenue in 2019 and expect continued lower cable capital intensity in 2020.

We launched our mobile product, Spectrum Mobile, in the second half of 2018 under our MVNO reseller agreement with Verizon. Our Spectrum Mobile service is offered to customers subscribing to our Internet service and runs on Verizon's mobile network combined with Spectrum WiFi. In the second quarter of 2019, we expanded our Spectrum Mobile bring-your-own-device program across all sales channels to include a broader set of devices which we believe lowers the cost for consumers of switching mobile carriers, and reduces the short-term working capital impact of selling new mobile devices on installment plans. We expect these developments, along with the launch of 5G service offerings in 2020, to contribute to the growth of our mobile business. We also continue to explore ways to drive even more mobile traffic to our network. We plan to use our WiFi network in conjunction with additional unlicensed, and potentially licensed, spectrum to improve network performance and expand capacity to offer consumers a superior mobile service at a lower total cost to us. Further, we have experimental wireless licenses from the FCC that we are utilizing to test next generation mobile services in several service areas around the country.

We believe Spectrum-branded mobile services will drive higher sales of our core products, create longer customer lives and increase profitability and cash flow over time. As a result of growth costs associated with our new mobile product line, we cannot be certain that we will be able to grow revenues or maintain our margins at recent historical rates. During the years ended December 31, 2019 and 2018, our mobile product line increased revenues by \$726 million and \$106 million, respectively, reduced Adjusted EBITDA by approximately \$520 million and \$240 million, respectively, and reduced free cash flow by approximately \$1.2 billion and \$594 million, respectively. As we continue to grow our mobile service and scale the business, we expect continued negative impacts to Adjusted EBITDA, as well as negative working capital impacts from the timing of device-related cash flows when we sell the handset or tablet to customers pursuant to equipment installment plans.

We realized revenue, Adjusted EBITDA and income from operations during the periods presented as follows (in millions; all percentages are calculated using whole numbers. Minor differences may exist due to rounding).

	Years ended December 31,		
	2019	2018	2019 vs. 2018 Growth
Revenues	\$ 45,756	\$ 43,620	4.9%
Adjusted EBITDA	\$ 16,796	\$ 16,014	4.9%
Income from operations	\$ 6,459	\$ 5,192	24.4%

Adjusted EBITDA is defined as net income attributable to CCO Holdings member plus net income attributable to noncontrolling interest, net interest expense, income taxes, depreciation and amortization, stock compensation expense, loss on extinguishment of debt, (gain) loss on financial instruments, net, other pension (benefits) costs, net, other (income) expense, net and other operating (income) expenses, net, such as merger and restructuring costs, special charges and (gain) loss on sale or retirement of assets. See “—Use of Adjusted EBITDA and Free Cash Flow” for further information on Adjusted EBITDA and free cash flow.

Growth in total revenue was primarily due to growth in our residential Internet, mobile and commercial business customers. Adjusted EBITDA and income from operations growth was impacted by growth in revenue and increases in operating costs and expenses, primarily mobile, programming and regulatory, connectivity and produced content. Income from operations was also affected by a decrease in depreciation and amortization expense.

Approximately 91% of our revenues for each of the years ended December 31, 2019 and 2018 are attributable to monthly subscription fees charged to customers for our video, Internet, voice, mobile and commercial services. Generally, these customer subscriptions may be discontinued by the customer at any time subject to a fee for certain commercial customers. The remaining 9% of revenue is derived primarily from advertising revenues, franchise and other regulatory fee revenues (which are collected by us but then paid to local authorities), VOD and pay-per-view programming, installation, processing fees or reconnection fees charged to customers to commence or reinstate service, revenue from regional sports and news channels and commissions related to the sale of merchandise by home shopping services.

Critical Accounting Policies and Estimates

Certain of our accounting policies require our management to make difficult, subjective and/or complex judgments. Management has discussed these policies with the Audit Committee of Charter’s board of directors, and the Audit Committee has reviewed the

following disclosure. We consider the following policies to be the most critical in understanding the estimates, assumptions and judgments that are involved in preparing our financial statements, and the uncertainties that could affect our results of operations, financial condition and cash flows:

- Capitalization of labor and overhead costs
- Valuation and impairment of franchises and goodwill
- Income taxes
- Defined benefit pension plans

Capitalization of labor and overhead costs

Costs associated with network construction or upgrades, placement of the customer drop to the dwelling and the placement of outlets within a dwelling along with the costs associated with the deployment of new customer premise equipment necessary to provide video, Internet or voice services, are capitalized. Costs capitalized include materials, direct labor and certain indirect costs. These indirect costs are associated with the activities of personnel who assist in installation activities, and consist of compensation and overhead costs associated with these support functions. While our capitalization is based on specific activities, once capitalized, we track these costs on a composite basis by fixed asset category at the cable system level, and not on a specific asset basis. For assets that are sold or retired, we remove the estimated applicable cost and accumulated depreciation. The costs of disconnecting service and removing customer premise equipment from a dwelling and the costs to reconnect a customer drop or to redeploy previously installed customer premise equipment are charged to operating expense as incurred. Costs for repairs and maintenance are charged to operating expense as incurred, while plant and equipment replacement, including replacement of certain components, betterments, and replacement of cable drops and outlets, are capitalized.

We make judgments regarding the installation and construction activities to be capitalized. We capitalized direct labor and overhead of \$1.6 billion and \$1.8 billion, respectively, for the years ended December 31, 2019 and 2018. We capitalize direct labor and overhead using standards developed from actual costs and applicable operational data. We calculate standards annually (or more frequently if circumstances dictate) for items such as the labor rates, overhead rates, and the actual amount of time required to perform a capitalizable activity. For example, the standard amounts of time required to perform capitalizable activities are based on studies of the time required to perform such activities. Overhead rates are established based on an analysis of the nature of costs incurred in support of capitalizable activities, and a determination of the portion of costs that is directly attributable to capitalizable activities. The impact of changes that resulted from these studies were not material in the periods presented.

Labor costs directly associated with capital projects are capitalized. Capitalizable activities performed in connection with installations include such activities as:

- dispatching a “truck roll” to the customer’s dwelling or business for service connection or placement of new equipment;
- verification of serviceability to the customer’s dwelling or business (i.e., determining whether the customer’s dwelling is capable of receiving service by our cable network);
- customer premise activities performed by in-house field technicians and third-party contractors in connection with the installation, replacement and betterment of equipment and materials to enable video, Internet or voice services; and
- verifying the integrity of the customer’s network connection by initiating test signals downstream from the headend to the customer premise equipment, as well as testing signal levels at the utility pole or pedestal.

Judgment is required to determine the extent to which overhead costs incurred result from specific capital activities, and therefore should be capitalized. The primary costs that are included in the determination of the overhead rate are (i) employee benefits and payroll taxes associated with capitalized direct labor, (ii) direct variable costs associated with capitalizable activities, (iii) the cost of support personnel, such as care personnel and dispatchers, who assist with capitalizable installation activities, and (iv) indirect costs directly attributable to capitalizable activities.

While we believe our existing capitalization policies are appropriate, a significant change in the nature or extent of our operating practices could affect management’s judgment about the extent to which we should capitalize direct labor or overhead in the future. We monitor the appropriateness of our capitalization policies, and perform updates to our internal studies on an ongoing basis to determine whether facts or circumstances warrant a change to our capitalization policies.

Valuation and impairment of franchises

The net carrying value of franchises as of both December 31, 2019 and 2018 was approximately \$67.3 billion (representing 46% of total assets). For more information and a complete discussion of how we value and test franchise assets for impairment, see

Note 5 to the accompanying consolidated financial statements contained in “Part II. Item 8. Financial Statements and Supplementary Data.”

We perform an impairment assessment of franchise assets annually or more frequently as warranted by events or changes in circumstances. We performed a qualitative assessment in 2019. Our assessment included consideration of a fair value appraisal performed for tax purposes in the beginning of 2019 as of a December 31, 2018 valuation date (the "Appraisal") along with a multitude of factors that affect the fair value of our franchise assets. Examples of such factors include environmental and competitive changes within our operating footprint, actual and projected operating performance, the consistency of our operating margins, equity and debt market trends, including changes in our market capitalization, and changes in our regulatory and political landscape, among other factors. Based on our assessment, we concluded that it was more likely than not that the estimated fair values of our franchise assets equals or exceeds their carrying values and that a quantitative impairment test is not required.

Valuation and impairment of goodwill

The net carrying value of goodwill as of both December 31, 2019 and 2018 was approximately \$29.6 billion (representing 20% of total assets). We have determined that we have one reporting unit for purposes of the assessment of goodwill impairment. For more information and a complete discussion on how we test goodwill for impairment, see Note 5 to the accompanying consolidated financial statements contained in “Part II. Item 8. Financial Statements and Supplementary Data.” We perform our impairment assessment of goodwill annually as of November 30. As with our franchise impairment testing, we elected to perform a qualitative assessment of goodwill in 2019 which included the Appraisal and other factors described above. Based on the Appraisal, we determined that the fair value of the reporting unit significantly exceeded the net asset carrying value of the reporting unit. Given the completion of the assessment and absence of significant adverse changes in factors impacting our fair value estimates, we concluded that it is more likely than not that our goodwill is not impaired.

Income taxes

In determining our tax provision for financial reporting purposes, we establish a reserve for uncertain tax positions unless such positions are determined to be “more likely than not” of being sustained upon examination, based on their technical merits. In evaluating whether a tax position has met the more-likely-than-not recognition threshold, we presume the position will be examined by the appropriate taxing authority that has full knowledge of all relevant information. A tax position that meets the more-likely-than-not recognition threshold is measured to determine the amount of benefit to be recognized in our financial statements. The tax position is measured as the largest amount of benefit that has a greater than 50% likelihood of being realized when the position is ultimately resolved. There is considerable judgment involved in determining whether positions taken on the tax return are “more likely than not” of being sustained. We adjust our uncertain tax reserve estimates periodically because of ongoing examinations by, and settlements with, the various taxing authorities, as well as changes in tax laws, regulations and interpretations.

No tax years for Charter are currently under examination by the IRS for income tax purposes. Charter's 2016 through 2019 tax years remain open for examination and assessment. Charter's short period return dated May 17, 2016 (prior to the merger with TWC and acquisition of Bright House) remain subject to examination and assessment. Years prior to 2016 remain open solely for purposes of examination of Charter's loss and credit carryforwards. The IRS is currently examining Charter Holdings' income tax return for 2016. Charter Holdings' 2017 through 2019 tax years remain open for examination and assessment. The IRS is currently examining TWC's income tax returns for 2011 through 2014. TWC's tax year 2015 remains subject to examination and assessment. Prior to TWC's separation from Time Warner Inc. (“Time Warner”) in March 2009, TWC was included in the consolidated U.S. federal and certain state income tax returns of Time Warner. The IRS has examined Time Warner's 2008 through 2010 income tax returns and the results are under appeal. We do not anticipate that these examinations will have a material impact on our consolidated financial position or results of operations. In addition, we are also subject to ongoing examinations of our tax returns by state and local tax authorities for various periods. Activity related to these state and local examinations did not have a material impact on our consolidated financial position or results of operations during the year ended December 31, 2019, nor do we anticipate a material impact in the future.

Defined benefit pension plans

We sponsor three qualified defined benefit pension plans and one nonqualified defined benefit pension plan that provide pension benefits to a majority of employees who were employed by TWC before the merger with TWC. As of December 31, 2019, the accumulated benefit obligation and fair value of plan assets was \$3.4 billion and \$3.2 billion, respectively, and the net underfunded liability was recorded as a \$1 million noncurrent asset, \$4 million current liability and \$160 million long-term liability. As of December 31, 2018, the accumulated benefit obligation and fair value of plan assets was \$3.0 billion and \$2.9 billion, respectively, and the net underfunded liability was recorded as a \$1 million noncurrent asset, \$4 million current liability and \$95 million long-term liability.

Pension benefits are based on formulas that reflect the employees' years of service and compensation during their employment period. Actuarial gains or losses are changes in the amount of either the benefit obligation or the fair value of plan assets resulting from experience different from that assumed or from changes in assumptions. We have elected to follow a mark-to-market pension accounting policy for recording the actuarial gains or losses annually during the fourth quarter, or earlier if a remeasurement event occurs during an interim period. We use a December 31 measurement date for our pension plans.

We recognized net periodic pension costs of \$69 million and net periodic pension benefits of \$192 million in 2019 and 2018, respectively. Net periodic pension benefit or expense is determined using certain assumptions, including the expected long-term rate of return on plan assets, discount rate and mortality assumptions. We determined the discount rate used to compute pension expense based on the yield of a large population of high-quality corporate bonds with cash flows sufficient in timing and amount to settle projected future defined benefit payments. In developing the expected long-term rate of return on assets, we considered the current pension portfolio's composition, past average rate of earnings, and our asset allocation targets. We used a discount rate of 3.48% to determine the December 31, 2019 pension plan benefit obligation. A decrease in the discount rate of 25 basis points would result in a \$157 million increase in our pension plan benefit obligation as of December 31, 2019 and net periodic pension expense recognized in 2019 under our mark-to-market accounting policy. The expected long-term rate of return on plan assets used to determine net periodic pension benefit for the year ended December 31, 2020 is expected to be 5.00%. A decrease in the expected long-term rate of return of 25 basis points to 4.75%, while holding all other assumptions constant, would result in an increase in our 2020 net periodic pension expense of approximately \$7 million. See Note 20 to the accompanying consolidated financial statements contained in "Part II. Item 8. Financial Statements and Supplementary Data" for additional discussion on these assumptions.

Results of Operations

A discussion of changes in our results of operations during the year ended December 31, 2018 compared to the year ended December 31, 2017 has been omitted from this Annual Report on Form 10-K, but may be found in “Item 7. Management’s Discussion and Analysis of Financial Condition and Results of Operations” in our Annual Report on Form 10-K for the year ended December 31, 2018, filed with the SEC on February 8, 2019, which is available free of charge on the SECs website at www.sec.gov and on Charter’s investor relations website at ir.charter.com.

The following table sets forth the consolidated statements of operations for the periods presented (dollars in millions, except per share data):

	Year Ended December 31,	
	2019	2018
Revenues	\$ 45,756	\$ 43,620
Costs and Expenses:		
Operating costs and expenses (exclusive of items shown separately below)	29,275	27,891
Depreciation and amortization	9,911	10,307
Other operating expenses, net	111	230
	<u>39,297</u>	<u>38,428</u>
Income from operations	6,459	5,192
Other Expenses:		
Interest expense, net	(3,839)	(3,579)
Loss on extinguishment of debt	(25)	—
Loss on financial instruments, net	(54)	(110)
Other pension benefits (costs), net	(69)	192
Other expense, net	(131)	(46)
	<u>(4,118)</u>	<u>(3,543)</u>
Income before income taxes	2,341	1,649
Income tax expense	(89)	(16)
Consolidated net income	2,252	1,633
Less: Net income attributable to noncontrolling interests	(1)	(1)
Net income attributable to CCO Holdings member	<u>\$ 2,251</u>	<u>\$ 1,632</u>

Revenues. Total revenues grew \$2.1 billion or 4.9% during the year ended December 31, 2019 as compared to 2018 primarily due to increases in the number of residential Internet and commercial business customers, price adjustments as well as the launch of our mobile service in the second half of 2018 offset by a decrease in video customers.

Revenues by service offering were as follows (dollars in millions; all percentages are calculated using whole numbers. Minor differences may exist due to rounding):

	Years ended December 31,		
	2019	2018	% Growth
Video	\$ 17,607	\$ 17,348	1.5 %
Internet	16,667	15,181	9.8 %
Voice	1,920	2,114	(9.1)%
Residential revenue	36,194	34,643	4.5 %
Small and medium business	3,868	3,665	5.6 %
Enterprise	2,556	2,528	1.1 %
Commercial revenue	6,424	6,193	3.7 %
Advertising sales	1,568	1,785	(12.1)%
Mobile	726	106	NM
Other	844	893	(5.5)%
	<u>\$ 45,756</u>	<u>\$ 43,620</u>	4.9 %

Video revenues consist primarily of revenues from basic and digital video services provided to our residential customers, as well as franchise fees, equipment service fees and video installation revenue. The increase in video revenues was attributable to the following (dollars in millions):

	2019 compared to 2018
Increase related to rate changes	\$ 758
Decrease in average residential video customers	(412)
Decrease in VOD and pay-per-view	(87)
	<u>\$ 259</u>

The increase related to rate changes was primarily due to price adjustments including annual increases and promotional roll-off. Residential video customers decreased by 484,000 in 2019 compared to 2018.

The increase in Internet revenues from our residential customers was attributable to the following (dollars in millions):

	2019 compared to 2018
Increase in average residential Internet customers	\$ 790
Increase related to rate changes	696
	<u>\$ 1,486</u>

Residential Internet customers grew by 1,283,000 in 2019 compared to 2018. The increase related to rate changes was primarily due to price adjustments including promotional roll-off.

The decrease in voice revenues from our residential customers was attributable to the following (dollars in millions):

	2019 compared to 2018
Decrease in average residential voice customers	\$ (102)
Decrease related to rate changes	(92)
	<u>\$ (194)</u>

The decrease related to rate changes was primarily due to value-based pricing. Residential wireline voice customers decreased by 692,000 in 2019 compared to 2018.

The increase in small and medium business commercial revenues was attributable to the following (dollars in millions):

	2019 compared to 2018
Increase in small and medium business customers	\$ 317
Decrease related to rate changes	(114)
	<u>\$ 203</u>

Small and medium business PSUs increased by 237,000 in 2019 compared to 2018. The decrease related to rate changes was primarily due to value-based pricing related to SPP, net of promotional roll-off and price adjustments.

Enterprise revenues increased \$28 million during the year ended December 31, 2019 as compared to the corresponding period in 2018 primarily due to growth in customers offset by the sale of non-strategic assets. Enterprise PSUs increased by 19,000 in 2019 compared to 2018.

Advertising sales revenues consist primarily of revenues from commercial advertising customers, programmers and other vendors, as well as local cable and advertising on regional sports and news channels. Advertising sales revenues decreased \$217 million during the year ended December 31, 2019 as compared to the corresponding period in 2018 primarily due to a decrease in political revenue.

During the year ended December 31, 2019, mobile revenues included approximately \$488 million of device revenues and approximately \$238 million of service revenues. During the year ended December 31, 2018, mobile revenues included approximately \$97 million of device revenues and approximately \$9 million of service revenues. As of December 31, 2019, we had 1,082,000 mobile lines compared to 134,000 mobile as of December 31, 2018.

Other revenues consist of revenue from regional sports and news channels (excluding intercompany charges or advertising sales on those channels), home shopping, late payment fees, wire maintenance fees and other miscellaneous revenues. The decrease during the year ended December 31, 2019 as compared to the corresponding period in 2018 was primarily due to a decrease in late payment fees and home shopping revenue offset by the sale of video devices.

Operating costs and expenses. The increase in our operating costs and expenses, exclusive of items shown separately in the consolidated statements of operations, was attributable to the following (dollars in millions):

	2019 compared to 2018
Programming	\$ 166
Regulatory, connectivity and produced content	156
Costs to service customers	(50)
Marketing	2
Mobile	900
Other	210
	<u>\$ 1,384</u>

Programming costs were approximately \$11.3 billion and \$11.1 billion, representing 39% and 40% of operating costs and expenses for the years ended December 31, 2019 and 2018, respectively. Programming costs consist primarily of costs paid to programmers for basic, digital, premium, VOD, and pay-per-view programming. The increase in programming costs is primarily a result of contractual rate adjustments, including renewals and increases in amounts paid for retransmission consents partly offset by lower video customers and pay-per-view. We expect programming rates will continue to increase due to a variety of factors, including annual increases imposed by programmers with additional selling power as a result of media consolidation, increased demands by owners of broadcast stations for payment for retransmission consent or linking carriage of other services to retransmission consent, and additional programming, particularly new services. We have been unable to fully pass these increases on to our customers and do not expect to be able to do so in the future without a potential loss of customers.

Regulatory, connectivity and produced content increased \$156 million during the year ended December 31, 2019 compared to the corresponding period in 2018 primarily due to higher costs of video devices sold to customers, regulatory pass-through fees and original programming costs.

Costs to service customers decreased \$50 million during the year ended December 31, 2019 compared to the corresponding period in 2018 primarily due to lower maintenance and labor costs driven by fewer customer calls and truck rolls with improved productivity and a higher number of self-installations.

Mobile costs of \$1.2 billion and \$346 million for the years ended December 31, 2019 and 2018, respectively, were comprised of mobile device costs and mobile service and operating costs.

The increase in other expense was attributable to the following (dollars in millions):

	2019 compared to 2018
Corporate costs	\$ 80
Property tax and insurance	54
Stock compensation expense	30
Sports and news	26
Advertising sales expense	(32)
Other	52
	<u>\$ 210</u>

Depreciation and amortization. Depreciation and amortization expense decreased by \$396 million during the year ended December 31, 2019 compared to the corresponding period in 2018 primarily due to certain assets acquired from TWC and Bright House becoming fully depreciated offset by an increase in depreciation as a result of more recent capital expenditures.

Other operating expenses, net. The decrease in other operating expenses, net was attributable to the following (dollars in millions):

	2019 compared to 2018
Merger and restructuring costs	\$ (87)
Loss on sale of assets, net	(43)
Special charges, net	11
	<u>\$ (119)</u>

The decrease in merger and restructuring costs is primarily due to lower employee retention and employee termination costs incurred during 2019 as compared to 2018.

The decrease in loss on sale of assets, net for the year ended December 31, 2019 as compared to the year ended December 31, 2018 is primarily due to a \$42 million impairment of non-strategic assets incurred during 2019 compared to a \$75 million impairment of non-strategic assets incurred during 2018. For more information, see Note 14 to the accompanying consolidated financial statements contained in "Part II. Item 8. Financial Statements and Supplementary Data."

Interest expense, net. Net interest expense increased by \$260 million in 2019 from 2018 primarily due to an increase in weighted average debt outstanding of approximately \$3.0 billion primarily as a result of the issuance of notes in 2019 and 2018 for general corporate purposes including distributions to parent companies for stock buybacks and debt repayments offset by a decrease in weighted average interest rates.

Loss on extinguishment of debt. Loss on extinguishment of debt of \$25 million for the year ended December 31, 2019 primarily represents losses recognized as a result of the repurchase of CCO Holdings notes and amendments to Charter Operating's credit facilities. For more information, see Note 9 to the accompanying consolidated financial statements contained in "Part II. Item 8. Financial Statements and Supplementary Data."

Loss on financial instruments, net. Gains and losses on financial instruments are recognized due to changes in the fair value of our interest rate and our cross currency derivative instruments, and the foreign currency remeasurement of the fixed-rate British pound sterling denominated notes (the “Sterling Notes”) into U.S. dollars. For more information, see Note 11 to the accompanying consolidated financial statements contained in “Part II. Item 8. Financial Statements and Supplementary Data.”

Other pension benefits (costs), net. Other pension benefits (costs), net increased by \$261 million during the year ended December 31, 2019 compared to the corresponding period in 2018 primarily due to a remeasurement loss recorded in 2019 versus a remeasurement gain in 2018. For more information, see Note 20 to the accompanying consolidated financial statements contained in “Part II. Item 8. Financial Statements and Supplementary Data.”

Other expense, net. Other expense, net includes impairments on equity investments of approximately \$121 million and \$38 million for the years ended December 31, 2019 and 2018, respectively. For more information, see Note 6 to the accompanying consolidated financial statements contained in “Part II. Item 8. Financial Statements and Supplementary Data.”

Income tax expense. We recognized income tax expense of \$89 million and \$16 million for the years ended December 31, 2019 and 2018, respectively. Income tax expense increased during the year ended December 31, 2019 compared to the corresponding period in 2018 primarily as a result of an internal entity simplification and higher pretax income in 2019. For more information, see Note 16 to the accompanying consolidated financial statements contained in “Part II. Item 8. Financial Statements and Supplementary Data.”

Net income attributable to noncontrolling interest. Net income attributable to noncontrolling interest relates to our third-party interest in CV of Viera, LLP, a consolidated joint venture in a small cable system in Florida.

Net income attributable to CCO Holdings member. Net income attributable to CCO Holdings member was \$2.3 billion and \$1.6 billion for the years ended December 31, 2019 and 2018, respectively, primarily as a result of the factors described above.

Use of Adjusted EBITDA and Free Cash Flow

We use certain measures that are not defined by U.S. generally accepted accounting principles (“GAAP”) to evaluate various aspects of our business. Adjusted EBITDA and free cash flow are non-GAAP financial measures and should be considered in addition to, not as a substitute for, net income attributable to CCO Holdings member and net cash flows from operating activities reported in accordance with GAAP. These terms, as defined by us, may not be comparable to similarly titled measures used by other companies. Adjusted EBITDA and free cash flow are reconciled to net income attributable to CCO Holdings member and net cash flows from operating activities, respectively, below.

Adjusted EBITDA eliminates the significant non-cash depreciation and amortization expense that results from the capital-intensive nature of our businesses as well as other non-cash or special items, and is unaffected by our capital structure or investment activities. However, this measure is limited in that it does not reflect the periodic costs of certain capitalized tangible and intangible assets used in generating revenues and our cash cost of financing. These costs are evaluated through other financial measures.

Free cash flow is defined as net cash flows from operating activities, less capital expenditures and changes in accrued expenses related to capital expenditures.

Management and Charter’s board of directors use Adjusted EBITDA and free cash flow to assess our performance and our ability to service our debt, fund operations and make additional investments with internally generated funds. In addition, Adjusted EBITDA generally correlates to the leverage ratio calculation under our credit facilities or outstanding notes to determine compliance with the covenants contained in the facilities and notes (all such documents have been previously filed with the SEC). For the purpose of calculating compliance with leverage covenants, we use Adjusted EBITDA, as presented, excluding certain expenses paid by our operating subsidiaries to other Charter entities. Our debt covenants refer to these expenses as management fees, which fees were in the amount of \$1.2 billion and \$1.1 billion for the years ended December 31, 2019 and 2018, respectively.

	Years ended December 31,	
	2019	2018
Net income attributable to CCO Holdings member	\$ 2,251	\$ 1,632
Plus: Net income attributable to noncontrolling interest	1	1
Interest expense, net	3,839	3,579
Income tax expense	89	16
Depreciation and amortization	9,911	10,307
Stock compensation expense	315	285
Loss on extinguishment of debt	25	—
Loss on financial instruments, net	54	110
Other pension (benefits) costs, net	69	(192)
Other, net	242	276
Adjusted EBITDA	<u>\$ 16,796</u>	<u>\$ 16,014</u>
Net cash flows from operating activities	\$ 11,708	\$ 11,657
Less: Purchases of property, plant and equipment	(7,195)	(9,109)
Change in accrued expenses related to capital expenditures	55	(470)
Free cash flow	<u>\$ 4,568</u>	<u>\$ 2,078</u>

Liquidity and Capital Resources

Overview

We have significant amounts of debt. The principal amount of our debt as of December 31, 2019 was \$78.4 billion, consisting of \$10.4 billion of credit facility debt, \$45.9 billion of investment grade senior secured notes and \$22.1 billion of high-yield senior unsecured notes. Our business requires significant cash to fund principal and interest payments on our debt.

Our projected cash needs and projected sources of liquidity depend upon, among other things, our actual results, and the timing and amount of our expenditures. As we continue to grow our new mobile services, we expect an initial funding period to grow a new product as well as negative working capital impacts from the timing of device-related cash flows when we provide the handset or tablet to customers pursuant to equipment installment plans. Free cash flow was \$4.6 billion and \$2.1 billion for the years ended December 31, 2019 and 2018, respectively. See table below for factors impacting free cash flow during the year ended December 31, 2019 compared to 2018. As of December 31, 2019, the amount available under our credit facilities was approximately \$4.7 billion and cash on hand was approximately \$3.2 billion. We expect to utilize free cash flow, cash on hand and availability under our credit facilities as well as future refinancing transactions to further extend the maturities of our obligations. The timing and terms of any refinancing transactions will be subject to market conditions among other considerations. Additionally, we may, from time to time, and depending on market conditions and other factors, use cash on hand and the proceeds from securities offerings or other borrowings to retire our debt through open market purchases, privately negotiated purchases, tender offers or redemption provisions. We believe we have sufficient liquidity from cash on hand, free cash flow and Charter Operating's revolving credit facility as well as access to the capital markets to fund our projected cash needs.

We continue to evaluate the deployment of our cash on hand and anticipated future free cash flow including to invest in our business growth and other strategic opportunities, including mergers and acquisitions as well as distributions to parent companies for stock repurchases and dividends. Charter's target leverage of net debt to the last twelve months Adjusted EBITDA remains at 4 to 4.5 times Adjusted EBITDA, and up to 3.5 times Adjusted EBITDA at the Charter Operating level. Charter's leverage ratio was 4.5 times Adjusted EBITDA as of December 31, 2019. As Adjusted EBITDA grows, we expect to increase the total amount of our indebtedness to maintain leverage within Charter's target leverage range. During the years ended December 31, 2019 and 2018, Charter purchased approximately 16.7 million and 14.1 million shares, respectively, of Charter Class A common stock for approximately \$6.7 billion and \$4.3 billion, respectively.

In December 2017, Charter and A/N entered into an amendment to the letter agreement (the "Letter Agreement") that requires A/N to sell to Charter or to Charter Holdings, on a monthly basis, a number of shares of Charter Class A common stock or Charter Holdings common units that represents a pro rata participation by A/N and its affiliates in any repurchases of shares of Charter Class A common stock from persons other than A/N effected by Charter during the immediately preceding calendar month, at a purchase price equal to the average price paid by Charter for the shares repurchased from persons other than A/N during such immediately preceding calendar month. A/N and Charter both have the right to terminate or suspend the pro rata repurchase

arrangement on a prospective basis. Charter Holdings purchased from A/N 2.3 million and 2.1 million Charter Holdings common units at an average price per unit of \$388.72 and \$308.90, or \$885 million and \$656 million, during the years ended December 31, 2019 and 2018, respectively.

As of December 31, 2019, Charter had remaining board authority to purchase an additional \$1.4 billion of Charter's Class A common stock and/or Charter Holdings common units. Although Charter expects to continue to buy back its common stock consistent with its leverage target range, Charter is not obligated to acquire any particular amount of common stock, and the timing of any purchases that may occur cannot be predicted and will largely depend on market conditions and other potential uses of capital. Purchases may include open market purchases, tender offers or negotiated transactions. To the extent such purchases occur, CCO Holdings and its subsidiaries are the primary source for funding such purchases through distributions to their parent companies.

As possible acquisitions, swaps or dispositions arise, we actively review them against our objectives including, among other considerations, improving the operational efficiency, geographic clustering of assets, product development or technology capabilities of our business and achieving appropriate return targets, and we may participate to the extent we believe these possibilities present attractive opportunities. However, there can be no assurance that we will actually complete any acquisitions, dispositions or system swaps, or that any such transactions will be material to our operations or results.

Recent Events

In December 2019, CCO Holdings and CCO Holdings Capital Corp. jointly issued an additional \$1.2 billion aggregate principal amount of 4.750% senior unsecured notes due 2030 at a price of 101.125% of the aggregate principal amount. The net proceeds were or will be used to pay related fees and expenses and for general corporate purposes, including distributions to our parent companies to fund buybacks of Charter Class A common stock and Charter Holdings common units as well as repaying certain indebtedness.

In December 2019, Charter Operating and Charter Communications Operating Capital Corp. jointly issued an additional \$1.3 billion aggregate principal amount of 4.800% senior secured notes due 2050 at a price of 101.964% of the aggregate principal amount. The net proceeds were or will be used to pay related fees and expenses and for general corporate purposes, including distributions to our parent companies to fund buybacks of Charter Class A common stock and Charter Holdings common units as well as repaying certain indebtedness.

In addition to the debt issued in December 2019 as described above, CCO Holdings and CCO Holdings Capital Corp. jointly issued \$3.35 billion aggregate principal amount of senior unsecured notes at varying rates, prices and maturity dates in 2019, and Charter Operating and Charter Communications Operating Capital Corp. jointly issued \$4.75 billion aggregate principal amount of senior secured notes at varying rates, prices and maturity dates in 2019. The net proceeds were used to pay related fees and expenses and for general corporate purposes, including distributions to our parent companies to fund buybacks of Charter Class A common stock and Charter Holdings common units as well as repaying certain indebtedness.

In 2019, Charter Operating also entered into an amendment to its Credit Agreement repricing \$4.5 billion of its revolving loan and \$4.0 billion of term loan A to LIBOR plus 1.25% and its existing term loan B to LIBOR plus 1.75%. In addition, \$4.5 billion of the revolving loan and \$4.0 billion of term loan A maturities were extended to 2025 and \$3.8 billion of term loan B maturities were extended to 2027.

In February 2020, CCO Holdings and CCO Holding Capital Corp. announced an offering of \$1.65 billion aggregate principal amount of 4.500% senior notes due 2030. The Company expects to close the offering in February 2020 and the net proceeds will be used to pay related fees and expenses and for general corporate purposes, including repaying certain indebtedness, including repayment of all of CCO Holdings' 5.125% senior notes due 2023, 5.750% senior notes due 2023 and 5.750% senior notes due 2024, as well as to fund potential buybacks of Charter Class A common stock and Charter Holdings common units.

Free Cash Flow

Free cash flow increased \$2.5 billion during the year ended December 31, 2019 compared to the corresponding prior period due to the following.

	2019 compared to 2018
Decrease in capital expenditures	\$ 1,914
Increase in Adjusted EBITDA	782
Change in working capital, excluding change in accrued interest	(183)
Increase in cash paid for interest, net	(77)
Other, net	54
	<u>\$ 2,490</u>

Free cash flow was reduced by \$567 million during the year ended December 31, 2019 compared to the corresponding prior period due to mobile with impacts negatively affecting working capital, capital expenditures and Adjusted EBITDA.

Contractual Obligations

The following table summarizes our payment obligations as of December 31, 2019 under our long-term debt and certain other contractual obligations and commitments inclusive of parent company obligations and commitments, the expense of which are pushed down to us (dollars in millions).

	Payments by Period				
	Total	Less than 1 year	1-3 years	3-5 years	More than 5 years
Long-Term Debt Principal Payments ^(a)	\$ 78,416	\$ 3,777	\$ 6,504	\$ 8,701	\$ 59,434
Long-Term Debt Interest Payments ^(b)	50,577	3,924	7,551	6,635	32,467
Finance and Operating Lease Obligations ^(c)	1,594	272	492	360	470
Programming Minimum Commitments ^(d)	276	216	49	11	—
Other ^(e)	12,658	2,536	3,034	892	6,196
	<u>\$ 143,521</u>	<u>\$ 10,725</u>	<u>\$ 17,630</u>	<u>\$ 16,599</u>	<u>\$ 98,567</u>

^(a) The table presents maturities of long-term debt outstanding as of December 31, 2019. Refer to Notes 9 and 19 to our accompanying consolidated financial statements contained in "Part II. Item 8. Financial Statements and Supplementary Data" for a description of our long-term debt and other contractual obligations and commitments.

^(b) Interest payments on variable debt are estimated using amounts outstanding at December 31, 2019 and the average implied forward LIBOR rates applicable for the quarter during the interest rate reset based on the yield curve in effect at December 31, 2019. Actual interest payments will differ based on actual LIBOR rates and actual amounts outstanding for applicable periods.

^(c) We lease certain facilities and equipment under noncancelable finance and operating leases. Finance lease obligations represented \$95 million of total finance and operating lease obligations as of December 31, 2019. Lease and rental costs charged to expense for the years ended December 31, 2019 and 2018 were \$445 million and \$382 million, respectively.

^(d) We pay programming fees under multi-year contracts typically based on a flat fee per customer, which may be fixed for the term, or may in some cases escalate over the term. Programming costs included in the accompanying statement of operations were approximately \$11.3 billion and \$11.1 billion for the years ended December 31, 2019 and 2018, respectively. Certain of our programming agreements are based on a flat fee per month or have guaranteed minimum payments. The table sets forth the aggregate guaranteed minimum commitments under our programming contracts.

^(e) "Other" represents other guaranteed minimum commitments, including rights negotiated directly with content owners for distribution on company-owned channels or networks, commitments related to our role as an advertising and distribution sales agent for third party-owned channels or networks, commitments to our customer premise equipment and device vendors and contractual obligations related to third-party network augmentation.

The following items are not included in the contractual obligations table because the obligations are not fixed and/or determinable due to various factors discussed below. However, we incur these costs as part of our operations:

- We rent utility poles used in our operations. Generally, pole rentals are cancelable on short notice, but we anticipate that such rentals will recur. Rent expense incurred for pole rental attachments for the years ended December 31, 2019 and 2018 was \$180 million and \$171 million, respectively.
- We pay franchise fees under multi-year franchise agreements based on a percentage of revenues generated from video service per year. We also pay other franchise related costs, such as public education grants, under multi-year agreements. Franchise fees and other franchise-related costs included in the accompanying statement of operations were \$750 million and \$747 million for the years ended December 31, 2019 and 2018, respectively.
- We have \$363 million in letters of credit, of which \$36 million is secured under the Charter Operating credit facility, primarily to our various casualty carriers as collateral for reimbursement of workers' compensation, auto liability and general liability claims.
- Minimum pension funding requirements have not been presented in the table above as such amounts have not been determined beyond 2019. We made no cash contributions to the qualified pension plans in 2019; however, we are permitted to make discretionary cash contributions to the qualified pension plans in 2020. For the nonqualified pension plan, we contributed \$4 million during 2019 and will continue to make contributions in 2020 to the extent benefits are paid.

See "Part I. Item 1. Business — Commitments Related to the 2016 Merger with TWC and Acquisition of Bright House" for a listing of commitments as a result of the merger with TWC and acquisition of Bright House in 2016.

Historical Operating, Investing, and Financing Activities

Cash and Cash Equivalents. We held \$3.2 billion and \$300 million in cash and cash equivalents as of December 31, 2019 and 2018, respectively.

Operating Activities. Net cash provided by operating activities increased \$51 million during the year ended December 31, 2019 compared to the year ended December 31, 2018, primarily due to an increase in Adjusted EBITDA of \$782 million offset by changes in working capital, excluding the change in accrued interest and accrued expenses related to capital expenditures, that used \$708 million more cash.

Investing Activities. Net cash used in investing activities for the years ended December 31, 2019 and 2018 was \$7.1 billion and \$9.7 billion, respectively. The decrease in cash used was primarily due to a decrease in capital expenditures and increase in accrued expenses related to capital expenditures.

Financing Activities. Net cash used in financing activities decreased \$335 million during the year ended December 31, 2019 compared to the year ended December 31, 2018 primarily due to an increase in the amount by which borrowings of long-term debt exceeded repayments offset by an increase in distributions to parent companies.

Capital Expenditures

We have significant ongoing capital expenditure requirements. Capital expenditures were \$7.2 billion and \$9.1 billion for the years ended December 31, 2019 and 2018, respectively. The decrease was primarily due to lower customer premise equipment expenditures as a result of the completion of our all-digital conversion and fewer SPP migrations, lower scalable infrastructure as a result of the completion of the roll-out of DOCSIS 3.1 technology across our footprint and lower support spending with the substantial completion of the integration of TWC and Bright House. See the table below for more details.

We currently expect 2020 cable capital expenditures to decline as a percentage of cable revenue versus 2019. The actual amount of our capital expenditures in 2020 will depend on a number of factors including further spend related to product development and growth rates of both our residential and commercial businesses.

Our capital expenditures are funded primarily from cash flows from operating activities and borrowings on our credit facility. In addition, our accrued liabilities related to capital expenditures increased \$55 million and decreased \$470 million for the years ended December 31, 2019 and 2018, respectively.

The following tables present our major capital expenditures categories in accordance with National Cable and Telecommunications Association (“NCTA”) disclosure guidelines for the years ended December 31, 2019 and 2018. These disclosure guidelines are not required disclosures under GAAP, nor do they impact our accounting for capital expenditures under GAAP (dollars in millions):

	Year ended December 31,	
	2019	2018
Customer premise equipment ^(a)	\$ 2,070	\$ 3,124
Scalable infrastructure ^(b)	1,439	2,227
Line extensions ^(c)	1,444	1,373
Upgrade/rebuild ^(d)	634	704
Support capital ^(e)	1,608	1,681
Total capital expenditures	\$ 7,195	\$ 9,109
Capital expenditures included in total related to:		
Commercial services	\$ 1,314	\$ 1,313
All-digital transition	\$ —	\$ 344
Mobile	\$ 432	\$ 242

^(a) Customer premise equipment includes costs incurred at the customer residence to secure new customers and revenue generating units, including customer installation costs and customer premise equipment (e.g., set-top boxes and cable modems).

^(b) Scalable infrastructure includes costs not related to customer premise equipment, to secure growth of new customers and revenue generating units, or provide service enhancements (e.g., headend equipment).

^(c) Line extensions include network costs associated with entering new service areas (e.g., fiber/coaxial cable, amplifiers, electronic equipment, make-ready and design engineering).

^(d) Upgrade/rebuild includes costs to modify or replace existing fiber/coaxial cable networks, including betterments.

^(e) Support capital includes costs associated with the replacement or enhancement of non-network assets due to technological and physical obsolescence (e.g., non-network equipment, land, buildings and vehicles).

Debt

As of December 31, 2019, the accreted value of our total debt was approximately \$79.1 billion, as summarized below (dollars in millions):

	December 31, 2019		Interest Payment Dates	Maturity Date ^(b)
	Principal Amount	Accreted Value ^(a)		
CCO Holdings, LLC:				
5.250% senior notes due 2022	\$ 1,250	\$ 1,241	3/30 & 9/30	9/30/2022
5.125% senior notes due 2023	1,000	995	2/15 & 8/15	2/15/2023
4.000% senior notes due 2023	500	497	3/1 & 9/1	3/1/2023
5.125% senior notes due 2023	1,150	1,145	5/1 & 11/1	5/1/2023
5.750% senior notes due 2023	500	497	3/1 & 9/1	9/1/2023
5.750% senior notes due 2024	150	149	1/15 & 7/15	1/15/2024
5.875% senior notes due 2024	1,700	1,690	4/1 & 10/1	4/1/2024
5.375% senior notes due 2025	750	746	5/1 & 11/1	5/1/2025
5.750% senior notes due 2026	2,500	2,471	2/15 & 8/15	2/15/2026
5.500% senior notes due 2026	1,500	1,491	5/1 & 11/1	5/1/2026
5.875% senior notes due 2027	800	796	5/1 & 11/1	5/1/2027
5.125% senior notes due 2027	3,250	3,222	5/1 & 11/1	5/1/2027
5.000% senior notes due 2028	2,500	2,469	2/1 & 8/1	2/1/2028
5.375% senior notes due 2029	1,500	1,501	6/1 & 12/1	6/1/2029
4.750% senior notes due 2030	3,050	3,041	3/1 & 9/1	3/1/2030
Charter Communications Operating, LLC:				
3.579% senior notes due 2020	2,000	1,997	1/23 & 7/23	7/23/2020

4.464% senior notes due 2022	3,000	2,987	1/23 & 7/23	7/23/2022
Senior floating rate notes due 2024	900	902	2/1, 5/1, 8/1 & 11/1	2/1/2024
4.500% senior notes due 2024	1,100	1,093	2/1 & 8/1	2/1/2024
4.908% senior notes due 2025	4,500	4,471	1/23 & 7/23	7/23/2025
3.750% senior notes due 2028	1,000	987	2/15 & 8/15	2/15/2028
4.200% senior notes due 2028	1,250	1,240	3/15 & 9/15	3/15/2028
5.050% senior notes due 2029	1,250	1,241	3/30 & 9/30	3/30/2029
6.384% senior notes due 2035	2,000	1,982	4/23 & 10/23	10/23/2035
5.375% senior notes due 2038	800	786	4/1 & 10/1	4/1/2038
6.484% senior notes due 2045	3,500	3,467	4/23 & 10/23	10/23/2045
5.375% senior notes due 2047	2,500	2,506	5/1 & 11/1	5/1/2047
5.750% senior notes due 2048	2,450	2,391	4/1 & 10/1	4/1/2048
5.125% senior notes due 2049	1,250	1,240	1/1 & 7/1	7/1/2049
4.800% senior notes due 2050	2,800	2,798	3/1 & 9/1	3/1/2050
6.834% senior notes due 2055	500	495	4/23 & 10/23	10/23/2055
Credit facilities	10,427	10,345		Varies
Time Warner Cable, LLC:				
5.000% senior notes due 2020	1,500	1,503	2/1 & 8/1	2/1/2020
4.125% senior notes due 2021	700	711	2/15 & 8/15	2/15/2021
4.000% senior notes due 2021	1,000	1,021	3/1 & 9/1	9/1/2021
5.750% sterling senior notes due 2031 ^(c)	828	886	6/2	6/2/2031
6.550% senior debentures due 2037	1,500	1,675	5/1 & 11/1	5/1/2037
7.300% senior debentures due 2038	1,500	1,772	1/1 & 7/1	7/1/2038
6.750% senior debentures due 2039	1,500	1,713	6/15 & 12/15	6/15/2039
5.875% senior debentures due 2040	1,200	1,255	5/15 & 11/15	11/15/2040
5.500% senior debentures due 2041	1,250	1,258	3/1 & 9/1	9/1/2041
5.250% sterling senior notes due 2042 ^(d)	861	831	7/15	7/15/2042
4.500% senior debentures due 2042	1,250	1,142	3/15 & 9/15	9/15/2042
Time Warner Cable Enterprises LLC:				
8.375% senior debentures due 2023	1,000	1,148	3/15 & 9/15	3/15/2023
8.375% senior debentures due 2033	1,000	1,284	7/15 & 1/15	7/15/2033
	<u>\$ 78,416</u>	<u>\$ 79,078</u>		

(a) The accreted values presented in the table above represent the principal amount of the debt adjusted for original issue discount or premium at the time of sale, deferred financing costs, and, in regards to the TWC debt assumed, fair value premium adjustments as a result of applying acquisition accounting plus the accretion of those amounts to the balance sheet date. However, the amount that is currently payable if the debt becomes immediately due is equal to the principal amount of the debt. In regards to the Sterling Notes, the principal amount of the debt and any premium or discount is remeasured into US dollars as of each balance sheet date. We have availability under our credit facilities of approximately \$4.7 billion as of December 31, 2019.

(b) In general, the obligors have the right to redeem all of the notes set forth in the above table in whole or in part at their option, beginning at various times prior to their stated maturity dates, subject to certain conditions, upon the payment of the outstanding principal amount (plus a specified redemption premium) and all accrued and unpaid interest.

(c) Principal amount includes £625 million valued at \$828 million as of December 31, 2019 using the exchange rate as of December 31, 2019.

(d) Principal amount includes £650 million valued at \$861 million as of December 31, 2019 using the exchange rate as of December 31, 2019.

See Note 9 to the accompanying consolidated financial statements contained in “Part II. Item 8. Financial Statements and Supplementary Data” for further details regarding our outstanding debt and other financing arrangements, including certain information about maturities, covenants and restrictions related to such debt and financing arrangements. The agreements and instruments governing our debt and financing arrangements are complicated and you should consult such agreements and instruments which are filed with the SEC for more detailed information.

At December 31, 2019, Charter Operating had a consolidated leverage ratio of approximately 2.9 to 1.0 and a consolidated first lien leverage ratio of 2.8 to 1.0. Both ratios are in compliance with the ratios required by the Charter Operating credit facilities of 5.0 to 1.0 consolidated leverage ratio and 4.0 to 1.0 consolidated first lien leverage ratio. A failure by Charter Operating to maintain the financial covenants would result in an event of default under the Charter Operating credit facilities and the debt of CCO Holdings. See “Part I. Item 1A. Risk Factors — The agreements and instruments governing our debt contain restrictions and limitations that could significantly affect our ability to operate our business, as well as significantly affect our liquidity.”

Recently Issued Accounting Standards

See Note 21 to the accompanying consolidated financial statements contained in “Part II. Item 8. Financial Statements and Supplementary Data” for a discussion of recently issued accounting standards.

Item 7A. Quantitative and Qualitative Disclosures About Market Risk.

We use derivative instruments to manage foreign exchange risk on the Sterling Notes, and do not hold or issue derivative instruments for speculative trading purposes.

Cross-currency derivative instruments are used to effectively convert £1.275 billion aggregate principal amount of fixed-rate British pound sterling denominated debt, including annual interest payments and the payment of principal at maturity, to fixed-rate U.S. dollar denominated debt. The cross-currency derivative instruments have maturities of June 2031 and July 2042. We are required to post collateral on the cross-currency derivative instruments when such instruments are in a liability position. In April 2019, we entered into a collateral holiday agreement for 60% of both the 2031 and 2042 cross-currency swaps, which eliminates the requirement to post collateral for three years, as well as a ten year collateral cap on the remaining 40% of the cross-currency swaps which limits the required collateral posting on that 40% of the cross-currency swaps to \$150 million. The fair value of our cross-currency derivatives included in other long-term liabilities on our consolidated balance sheets was \$224 million and \$237 million as of December 31, 2019 and 2018, respectively. For more information, see Note 11 to the accompanying consolidated financial statements contained in “Part II. Item 8. Financial Statements and Supplementary Data.”

As of December 31, 2019 and 2018, the weighted average interest rate on the credit facility debt was approximately 3.3% and 4.3%, respectively, and the weighted average interest rate on the senior notes was approximately 5.4% and 5.6%, respectively, resulting in a blended weighted average interest rate of 5.1% and 5.4%, respectively. The interest rate on approximately 86% and 85% of the total principal amount of our debt was effectively fixed as of December 31, 2019 and 2018, respectively.

The table set forth below summarizes the fair values and contract terms of financial instruments subject to interest rate risk maintained by us as of December 31, 2019 (dollars in millions):

	2020	2021	2022	2023	2024	Thereafter	Total	Fair Value
Debt:								
Fixed Rate	\$ 3,500	\$ 1,700	\$ 4,250	\$ 4,150	\$ 2,950	\$ 50,539	\$ 67,089	\$ 74,011
Average Interest Rate	4.19%	4.05%	4.70%	5.85%	5.36%	5.53%	5.38%	
Variable Rate	\$ 277	\$ 277	\$ 277	\$ 436	\$ 1,165	\$ 8,895	\$ 11,327	\$ 11,375
Average Interest Rate	2.94%	2.75%	2.78%	2.90%	3.16%	3.28%	3.22%	

Interest rates on variable-rate debt are estimated using the average implied forward LIBOR for the year of maturity based on the yield curve in effect at December 31, 2019 including applicable bank spread.

Item 8. Financial Statements and Supplementary Data.

Our consolidated financial statements, the related notes thereto, and the reports of independent accountants are included in this annual report beginning on page F-1.

Item 9. Changes in and Disagreements with Accountants on Accounting and Financial Disclosure.

None.

Item 9A. Controls and Procedures.

Conclusion Regarding the Effectiveness of Disclosure Controls and Procedures

As of the end of the period covered by this report, under the supervision and with the participation of our management, including our Chief Executive Officer and Chief Financial Officer, we have evaluated the effectiveness of the design and operation of disclosure controls and procedures with respect to the information generated for use in this annual report. The evaluation was based upon reports and certifications provided by a number of executives. Based on, and as of the date of that evaluation, our Chief Executive Officer and Chief Financial Officer concluded that the disclosure controls and procedures were effective to provide reasonable assurances that information required to be disclosed in the reports we file or submit under the Securities Exchange Act of 1934 is recorded, processed, summarized and reported within the time periods specified in the SEC's rules and forms.

In designing and evaluating the disclosure controls and procedures, our management recognized that any controls and procedures, no matter how well designed and operated, can provide only reasonable, not absolute, assurance of achieving the desired control objectives, and management necessarily was required to apply its judgment in evaluating the cost-benefit relationship of possible controls and procedures. Based upon the above evaluation, we believe that our controls provide such reasonable assurances.

During the quarter ended December 31, 2019, there was no change in our internal control over financial reporting that has materially affected, or is reasonably likely to materially affect, our internal control over financial reporting.

Management's Report on Internal Control Over Financial Reporting

Our management is responsible for establishing and maintaining adequate internal control over financial reporting (as defined in Rule 13a-15(f) under the Exchange Act) for the Company. Our internal control system was designed to provide reasonable assurance to our management and board of directors regarding the preparation and fair presentation of published financial statements.

Management has assessed the effectiveness of our internal control over financial reporting as of December 31, 2019. In making this assessment, we used the criteria set forth by the Committee of Sponsoring Organizations of the Treadway Commission ("COSO") in *Internal Control — Integrated Framework* (2013). Based on management's assessment utilizing these criteria we believe that, as of December 31, 2019, our internal control over financial reporting was effective.

Item 9B. Other Information.

On January 28, 2020, Charter's board of directors approved an amendment to Charter's 2019 Stock Incentive Plan (the "Stock Plan") to remove the ability under the Stock Plan for Charter to effect a repricing of stock options without stockholder approval.

The foregoing summary of the amendment to the Stock Plan does not purport to be complete and is qualified in its entirety by reference to the full text of such amendment, which is included as Exhibit 10.152 hereto.

PART III

Item 14. *Principal Accounting Fees and Services.*

Principal Accounting Firm

KPMG acted as Charter and its subsidiaries' independent registered public accounting firm since 2002, and, subject to ratification by stockholders at Charter's annual meeting, KPMG is expected to serve as our independent registered public accounting firm for 2020.

Services of Independent Registered Public Accounting Firm

Charter's Audit Committee has adopted policies and procedures requiring the pre-approval of non-audit services that may be provided by our independent registered public accounting firm. We have also complied and will continue to comply with the provisions of the Sarbanes-Oxley Act of 2002 and the related SEC rules pertaining to auditor independence and audit committee pre-approval of audit and non-audit services.

Audit Fees

During each of the years ended December 31, 2019 and 2018, we incurred fees and related expenses for professional services rendered by KPMG for the audits of Charter and its subsidiaries' financial statements (including CCO Holdings), for the review of Charter and its subsidiaries' interim financial statements (including CCO Holdings), registration statement filings and offering memoranda filings totaling approximately \$8 million.

Audit-Related Fees

Charter incurred audit-related fees to KPMG of approximately \$0.2 million during each of the years ended December 31, 2019 and 2018. These services were primarily related to diligence services.

Tax Fees

Charter incurred tax fees to KPMG of approximately \$2 million and \$1 million during the years ended December 31, 2019 and 2018, respectively.

All Other Fees

None.

Charter's Audit Committee appoints, retains, compensates and oversees the independent registered public accounting firm (subject, if applicable, to board of director and/or stockholder ratification), and approves in advance all fees and terms for the audit engagement and non-audit engagements where non-audit services are not prohibited by Section 10A of the Securities Exchange Act of 1934, as amended with respect to independent registered public accounting firms. Pre-approvals of non-audit services are sometimes delegated to a single member of Charter's Audit Committee. However, any pre-approvals made by Charter's Audit Committee's designee are presented at Charter's Audit Committee's next regularly scheduled meeting. Charter's Audit Committee has an obligation to consult with management on these matters. Charter's Audit Committee approved 100% of the KPMG fees for the years ended December 31, 2019 and 2018. Each year, including 2019, with respect to the audit engagement, Charter's Audit Committee reviews the risk assessment process in establishing the scope of examination and the reports to be rendered.

In its capacity as a committee of the board, Charter's Audit Committee oversees the work of the independent registered public accounting firm (including resolution of disagreements between management and the public accounting firm regarding financial reporting) for the purpose of preparing or issuing an audit report or performing other audit, review or attest services. The independent registered public accounting firm reports directly to Charter's Audit Committee. In performing its functions, Charter's Audit Committee undertakes those tasks and responsibilities that, in its judgment, most effectively contribute to and implement the purposes of Charter's Audit Committee charter. For more detail of Charter's Audit Committee's authority and responsibilities, see Charter's Audit Committee charter on Charter's website, www.charter.com.

PART IV

Item 15. Exhibits and Financial Statement Schedules.

(a) The following documents are filed as part of this annual report:

(1) Financial Statements.

A listing of the financial statements, notes and reports of independent public accountants required by "Part II. Item 8. Financial Statements and Supplementary Data" begins on page F-1 of this annual report.

(2) Financial Statement Schedules.

No financial statement schedules are required to be filed by Items 8 and 15(c) because they are not required or are not applicable, or the required information is set forth in the applicable financial statements or notes thereto.

(3) The index to the exhibits begins on page E-1 of this annual report.

SIGNATURES

Pursuant to the requirements of Section 13 or 15(d) of the Securities Exchange Act of 1934, CCO Holdings, LLC and CCO Holdings Capital Corp. have duly caused this annual report to be signed on their behalf by the undersigned, thereunto duly authorized.

CCO HOLDINGS, LLC

Registrant

By: /s/ Kevin D. Howard

Kevin D. Howard

Executive Vice President, Chief Accounting Officer and Controller

Date: February 7, 2020

CCO HOLDINGS CAPITAL CORP.

Registrant

By: /s/ Kevin D. Howard

Kevin D. Howard

Executive Vice President, Chief Accounting Officer and Controller

Date: February 7, 2020

Pursuant to the requirements of the Securities Exchange Act of 1934, this report has been signed below by the following persons on behalf of CCO Holdings, LLC and CCO Holdings Capital Corp. and in the capacities and on the dates indicated.

Signature

Title

Date

/s/ Thomas M. Rutledge
Thomas M. Rutledge

Chairman, Chief Executive Officer, Director
(Principal Executive Officer)

February 7, 2020

/s/ Christopher L. Winfrey
Christopher L. Winfrey

Chief Financial Officer (Principal Financial Officer)

February 7, 2020

/s/ Kevin D. Howard
Kevin D. Howard

Executive Vice President, Chief Accounting Officer and Controller
(Principal Accounting Officer)

February 7, 2020

CHARTER COMMUNICATIONS, INC., in its sole capacity as
manager of CCO Holdings, LLC

By: /s/ Kevin D. Howard

Kevin D. Howard

Executive Vice President, Chief Accounting Officer and Controller

Date: February 7, 2020

Exhibit Index

Exhibits are listed by numbers corresponding to the Exhibit Table of Item 601 in Regulation S-K.

Exhibit	Description
2.1	<u>Agreement and Plan of Mergers, dated as of May 23, 2015, among Time Warner Cable Inc., Charter Communications, Inc., CCH I, LLC, Nina Corporation I, Inc., Nina Company II, LLC and Nina Company III, LLC (incorporated by reference to Exhibit 2.1 to the current report on Form 8-K filed by Charter Communications, Inc. on May 29, 2015 (File No. 001-33664)).</u>
2.2	<u>Contribution Agreement, dated March 31, 2015, by and among Advance/Newhouse Partnership, A/NPC Holdings LLC, Charter Communications, Inc., CCH I, LLC, and Charter Communications Holding Company, LLC (incorporated by reference to Exhibit 2.1 to the current report on Form 8-K filed by Charter Communications, Inc. on April 1, 2015 (File No. 001-33664)).</u>
3.1	<u>Certificate of Formation of CCO Holdings, LLC (incorporated by reference to Exhibit 3.1 to the registration statement on Form S-4 of CCO Holdings, LLC and CCO Holdings Capital Corporation filed on February 6, 2004 (File No. 333-112593)).</u>
3.2	<u>By-laws of CCO Holdings Capital Corp. (incorporated by reference to Exhibit 3.6 to the registration statement on Form S-4 of CCO Holdings, LLC and CCO Holdings Capital Corporation filed on February 6, 2004 (File No. 333-112593)).</u>
3.3	<u>Amended and Restated Limited Liability Company Agreement of CCO Holdings, LLC (incorporated by reference to Exhibit 3.3 to the quarterly report on Form 10-Q of CCO Holdings, LLC and CCO Holdings Capital Corporation filed on August 15, 2016 (File No. 001-37789)).</u>
4.1(a)	<u>Amended and Restated Stockholders Agreement, dated March 31, 2015, by and among Charter Communications, Inc., Liberty Broadband Corporation and Advance/Newhouse Partnership (incorporated by reference to Exhibit 4.1 to the current report on Form 8-K filed by Charter Communications, Inc. on April 1, 2015 (File No. 001-33664)).</u>
4.1(b)	<u>Second Amended and Restated Stockholders Agreement, dated May 23, 2015, by and among Charter Communications, Inc., CCH I, LLC, Liberty Broadband Corporation and Advance/Newhouse Partnership (incorporated by reference to Annex C to the registration statement on Form S-4 filed by CCH I, LLC on June 26, 2015 (File No. 333-205240)).</u>
10.1	<u>Indenture dated as of May 10, 2011, by and among CCO Holdings, LLC, and CCO Holdings Capital Corp., as Issuers, Charter Communications, Inc., as Parent Guarantor, and The Bank of New York Mellon Trust Company, N.A., as Trustee (incorporated by reference to Exhibit 4.1 to the current report on Form 8-K of Charter Communications, Inc. filed on May 16, 2011 (File No. 001-33664)).</u>
10.2	<u>Third Supplemental Indenture dated as of January 26, 2012 by and among CCO Holdings, LLC, and CCO Holdings Capital Corp., as Issuers, Charter Communications, Inc., as Parent Guarantor, and The Bank of New York Mellon Trust Company, N.A., as Trustee (incorporated by reference to Exhibit 4.2 to the current report on Form 8-K of Charter Communications, Inc. filed on February 1, 2012 (File No. 001-33664)).</u>
10.3	<u>Fourth Supplemental Indenture dated August 22, 2012 relating to the 5.25% Senior Notes due 2022 by and among CCO Holdings, LLC, CCO Holdings Capital Corp. and The Bank of New York Mellon Trust Company, N.A., as trustee (incorporated by reference to Exhibit 10.1 to the quarterly report on Form 10-Q of Charter Communications, Inc. filed on November 6, 2012 (File No. 001-33664)).</u>
10.4	<u>Fifth Supplemental Indenture dated December 17, 2012 relating to the 5.125% Senior Notes due 2023 by and among CCO Holdings, LLC, CCO Holdings Capital Corp. and The Bank of New York Mellon Trust Company, N.A., as trustee (incorporated by reference to Exhibit 10.9 to the annual report on Form 10-K of Charter Communications, Inc. filed February 22, 2013 (File No. 001-33664)).</u>
10.5	<u>Sixth Supplemental Indenture relating to the 5.25% senior notes due 2021, dated as of March 14, 2013, by and among CCO Holdings, LLC, and CCO Holdings Capital Corp., as Issuers, Charter Communications, Inc., as Parent Guarantor, and The Bank of New York Mellon Trust Company, N.A., as Trustee (incorporated by reference to Exhibit 10.1 to the current report on Form 8-K of Charter Communications, Inc. filed March 15, 2013 (File No. 001-33664)).</u>
10.6	<u>Seventh Supplemental Indenture relating to the 5.75% senior notes due 2023, dated as of March 14, 2013, by and among CCO Holdings, LLC, and CCO Holdings Capital Corp., as Issuers, Charter Communications, Inc., as Parent Guarantor, and The Bank of New York Mellon Trust Company, N.A., as Trustee (incorporated by reference to Exhibit 10.2 to the current report on Form 8-K of Charter Communications, Inc. filed March 15, 2013 (File No. 001-33664)).</u>
10.7	<u>Eighth Supplemental Indenture relating to the 5.75% senior notes due 2024, dated as of May 3, 2013, by and among CCO Holdings, LLC and CCO Holdings Capital Corp., as Issuers, Charter Communications, Inc., as Parent Guarantor, and The Bank of New York Mellon Trust Company, N.A., as Trustee (incorporated by reference to Exhibit 10.7 to the quarterly report on Form 10-Q of Charter Communications, Inc. filed on May 7, 2013 (File No. 001-33664)).</u>

- 10.8 [Indenture dated as of November 5, 2014, by and among CCO Holdings, LLC, CCO Holdings Capital Corp. and CCOH Safari, LLC, as Issuers, Charter Communications, Inc., as Parent Guarantor, and The Bank of New York Mellon Trust Company, N.A., as Trustee \(incorporated by reference to Exhibit 4.1 to the current report on Form 8-K of Charter Communications, Inc. filed on November 10, 2014 \(File No. 001-33664\)\).](#)
- 10.9 [Third Supplemental Indenture, dated as of April 21, 2015, among CCO Holdings, LLC, CCO Holdings Capital Corp., Charter Communications, Inc., as guarantor, and The Bank of New York Mellon Trust Company, N.A., as trustee \(incorporated by reference to Exhibit 4.1 to the current report on Form 8-K filed by Charter Communications, Inc. on April 22, 2015 \(File No. 001-33664\)\).](#)
- 10.10 [Fourth Supplemental Indenture, dated as of April 21, 2015, among CCO Holdings, LLC, CCO Holdings Capital Corp., Charter Communications, Inc., as guarantor, and The Bank of New York Mellon Trust Company, N.A., as trustee \(incorporated by reference to Exhibit 4.2 to the current report on Form 8-K filed by Charter Communications, Inc. on April 22, 2015 \(File No. 001-33664\)\).](#)
- 10.11 [Fifth Supplemental Indenture, dated as of April 21, 2015, among CCO Holdings, LLC, CCO Holdings Capital Corp., Charter Communications, Inc., as guarantor, and The Bank of New York Mellon Trust Company, N.A., as trustee \(incorporated by reference to Exhibit 4.3 to the current report on Form 8-K filed by Charter Communications, Inc. on April 22, 2015 \(File No. 001-33664\)\).](#)
- 10.12 [Exchange and Registration Rights Agreement, dated as of April 21, 2015 relating to the 5.125% Senior Notes due 2023, among CCO Holdings, LLC, CCO Holdings Capital Corp., Charter Communications, Inc., as guarantor, and Credit Suisse Securities \(USA\) LLC, Deutsche Bank Securities Inc., Goldman, Sachs & Co. and Merrill Lynch, Pierce, Fenner & Smith Incorporated, as representatives of the several Purchasers \(as defined therein\) \(incorporated by reference to Exhibit 10.1 to the current report on Form 8-K filed by Charter Communications, Inc. on April 22, 2015 \(File No. 001-33664\)\).](#)
- 10.13 [Exchange and Registration Rights Agreement relating to the 5.375% Senior Notes due 2025, dated as of April 21, 2015, among CCO Holdings, LLC, CCO Holdings Capital Corp., Charter Communications, Inc., as guarantor, and Credit Suisse Securities \(USA\) LLC, Deutsche Bank Securities Inc., Goldman, Sachs & Co. and Merrill Lynch, Pierce, Fenner & Smith Incorporated, as representatives of the several Purchasers \(as defined therein\) \(incorporated by reference to Exhibit 10.2 to the current report on Form 8-K filed by Charter Communications, Inc. on April 22, 2015 \(File No. 001-33664\)\).](#)
- 10.14 [Exchange and Registration Rights Agreement relating to the 5.875% Senior Notes due 2027, dated as of April 21, 2015, among CCO Holdings, LLC, CCO Holdings Capital Corp., Charter Communications, Inc., as guarantor, and Credit Suisse Securities \(USA\) LLC, Deutsche Bank Securities Inc., Goldman, Sachs & Co. and Merrill Lynch, Pierce, Fenner & Smith Incorporated, as representatives of the several Purchasers \(as defined therein\) \(incorporated by reference to Exhibit 10.3 to the current report on Form 8-K filed by Charter Communications, Inc. on April 22, 2015 \(File No. 001-33664\)\).](#)
- 10.15 [Indenture, dated as of July 23, 2015, among Charter Communications Operating, LLC, Charter Communications Operating Capital Corp. and CCO Safari II, LLC, as issuers, and The Bank of New York Mellon Trust Company, N.A., as trustee and collateral agent \(incorporated by reference to Exhibit 4.1 to the current report on Form 8-K filed by Charter Communications, Inc. on July 27, 2015 \(File No. 001-33664\)\).](#)
- 10.16 [First Supplemental Indenture, dated as of July 23, 2015, among CCO Safari II, LLC, as escrow issuer, CCH II, LLC, as limited guarantor, and The Bank of New York Mellon Trust Company, N.A., as trustee and collateral agent \(incorporated by reference to Exhibit 4.2 to the current report on Form 8-K filed by Charter Communications, Inc. on July 27, 2015 \(File No. 001-33664\)\).](#)
- 10.17 [Exchange and Registration Rights Agreement, dated July 23, 2015 relating to the 3.579% Senior Secured Notes due 2020, 4.464% Senior Secured Notes due 2022, 4.908% Senior Secured Notes due 2025, 6.384% Senior Secured Notes due 2035, 6.484% Senior Secured Notes due 2045 and 6.834% Senior Secured Notes due 2055, between CCO Safari II, LLC and Goldman, Sachs & Co., Credit Suisse Securities \(USA\) LLC, Merrill Lynch, Pierce, Fenner & Smith Incorporated, Deutsche Bank Securities Inc. and UBS Securities LLC, as representatives of the several Purchasers \(as defined therein\) \(incorporated by reference to Exhibit 10.1 to the current report on Form 8-K filed by Charter Communications, Inc. on July 27, 2015 \(File No. 001-33664\)\).](#)
- 10.18 [Indenture, dated as of November 20, 2015, among CCO Holdings, LLC, CCO Holdings Capital Corp. and CCOH Safari, LLC, as issuers, and The Bank of New York Mellon Trust Company, N.A., as trustee \(incorporated by reference to Exhibit 4.1 to the current report on Form 8-K filed by Charter Communications, Inc. on November 25, 2015 \(File No. 001-33664\)\).](#)
- 10.19 [First Supplemental Indenture, dated as of November 20, 2015, between CCOH Safari, LLC, as escrow issuer, and The Bank of New York Mellon Trust Company, N.A., as trustee \(incorporated by reference to Exhibit 4.2 to the current report on Form 8-K filed by Charter Communications, Inc. on November 25, 2015 \(File No. 001-33664\)\).](#)
- 10.20 [Exchange and Registration Rights Agreement, dated November 20, 2015 relating to the 5.750% Senior Notes due 2026, between CCOH Safari, LLC and Credit Suisse Securities \(USA\) LLC, Goldman, Sachs & Co., Merrill Lynch, Pierce, Fenner & Smith Incorporated, UBS Securities LLC and Deutsche Bank Securities Inc., as representatives of the several Purchasers \(as defined therein\) \(incorporated by reference to Exhibit 10.1 to the current report on Form 8-K filed by Charter Communications, Inc. on November 25, 2015 \(File No. 001-33664\)\).](#)

- 10.21 [Sixth Supplemental Indenture, dated as of February 19, 2016, among CCO Holdings, LLC, CCO Holdings Capital Corp., Charter Communications, Inc., as guarantor, and The Bank of New York Mellon Trust Company, N.A., as trustee \(incorporated by reference to Exhibit 4.1 to the current report on Form 8-K filed by Charter Communications, Inc. on February 22, 2016 \(File No. 001-33664\)\).](#)
- 10.22 [Exchange and Registration Rights Agreement, dated February 19, 2016, relating to the 5.875% Senior Notes due 2024, among CCO Holdings, LLC, CCO Holdings Capital Corp., Charter Communications, Inc., as guarantor, and Deutsche Bank Securities Inc., Credit Suisse Securities \(USA\) LLC, Goldman, Sachs & Co., Merrill Lynch, Pierce, Fenner & Smith Incorporated, UBS Securities LLC, Citigroup Global Markets Inc. and Wells Fargo Securities, LLC, as representatives of the several Purchasers \(as defined therein\) \(incorporated by reference to Exhibit 10.1 to the current report on Form 8-K filed by Charter Communications, Inc. on February 22, 2016 \(File No. 001-33664\)\).](#)
- 10.23 [Seventh Supplemental Indenture, dated as of April 21, 2016, among CCO Holdings, LLC, CCO Holdings Capital Corp., Charter Communications, Inc., as guarantor, and The Bank of New York Mellon Trust Company, N.A., as trustee \(incorporated by reference to Exhibit 4.1 to the current report on Form 8-K filed by Charter Communications, Inc. on April 27, 2016 \(File No. 001-33664\)\).](#)
- 10.24 [Exchange and Registration Rights Agreement, dated April 21, 2016, relating to the 5.500% Senior Notes due 2026, among CCO Holdings, LLC, CCO Holdings Capital Corp., Charter Communications, Inc., as guarantor, and Merrill Lynch, Pierce, Fenner & Smith Incorporated, Citigroup Global Markets Inc., Credit Suisse Securities \(USA\) LLC, Deutsche Bank Securities Inc., Goldman, Sachs & Co., UBS Securities LLC and Wells Fargo Securities, LLC, as representatives of the several Purchasers \(as defined therein\) \(incorporated by reference to Exhibit 10.1 to the current report on Form 8-K filed by Charter Communications, Inc. on April 27, 2016 \(File No. 001-33664\)\).](#)
- 10.25 [Second Supplemental Indenture, dated as of May 18, 2016, by and among Charter Communications Operating, LLC, Charter Communications Operating Capital Corp., CCO Safari II, LLC and The Bank of New York Mellon Trust Company, N.A., as trustee and collateral agent \(incorporated by reference to Exhibit 4.1 to the current report on Form 8-K filed by Charter Communications, Inc. on May 24, 2016 \(File No. 001-33664\)\).](#)
- 10.26 [Third Supplemental Indenture, dated as of May 18, 2016, by and among CCO Holdings, LLC, the subsidiary guarantors party thereto and The Bank of New York Mellon Trust Company, N.A., as trustee and collateral agent \(incorporated by reference to Exhibit 4.2 to the current report on Form 8-K filed by Charter Communications, Inc. on May 24, 2016 \(File No. 001-33664\)\).](#)
- 10.27 [Second Supplemental Indenture, dated as of May 18, 2016, by and among CCO Holdings, LLC, CCO Holdings Capital Corp., CCOH Safari, LLC and The Bank of New York Mellon Trust Company, N.A., as trustee \(incorporated by reference to Exhibit 4.3 to the current report on Form 8-K filed by Charter Communications, Inc. on May 24, 2016 \(File No. 001-33664\)\).](#)
- 10.28 [Third Supplemental Indenture, dated as of February 6, 2017, among CCO Holdings, LLC, CCO Holdings Capital Corp., and The Bank of New York Mellon Trust Company, N.A., as trustee \(incorporated herein by reference to Exhibit 4.1 to the current report on Form 8-K filed by Charter Communications, Inc. on February 6, 2017 \(File No. 001-33664\)\).](#)
- 10.29 [Exchange and Registration Rights Agreement, dated February 6, 2017, relating to the 5.125% Senior Notes due 2027, among CCO Holdings, LLC, CCO Holdings Capital Corp., and Merrill Lynch, Pierce, Fenner & Smith Incorporated, Citigroup Global Markets Inc., Credit Suisse Securities \(USA\) LLC, Deutsche Bank Securities Inc., Goldman, Sachs & Co., UBS Securities LLC, and Wells Fargo Securities, LLC, as representatives of the several Purchasers \(as defined therein\) \(incorporated by reference to Exhibit 10.1 to the current report on Form 8-K filed by Charter Communications, Inc. on February 6, 2017 \(File No. 001-33664\)\).](#)
- 10.30 [Exchange and Registration Rights Agreement, dated March 29, 2017, relating to the 5.125% Senior Notes due 2027, among CCO Holdings, LLC, CCO Holdings Capital Corp., and Deutsche Bank Securities Inc., Merrill Lynch, Pierce, Fenner & Smith Incorporated, Citigroup Global Markets Inc., Credit Suisse Securities \(USA\) LLC, Goldman, Sachs & Co., UBS Securities LLC, and Wells Fargo Securities, LLC, as representatives of the several Purchasers \(as defined therein\) \(incorporated by reference to Exhibit 10.1 to the current report on Form 8-K filed by Charter Communications, Inc. on March 31, 2017 \(File No. 001-33664\)\).](#)
- 10.31 [Fifth Supplemental Indenture, dated as of April 20, 2017, among Charter Communications Operating, LLC, Charter Communications Operating Capital Corp., the guarantors party thereto and The Bank of New York Mellon Trust Company, N.A., as trustee and collateral agent \(incorporated by reference to Exhibit 4.3 to the current report on Form 8-K filed by Charter Communications, Inc. on April 26, 2017 \(File No. 001-33664\)\).](#)
- 10.32 [Exchange and Registration Rights Agreement, dated April 20, 2017, relating to the 5.125% Senior Notes due 2027, among CCO Holdings, LLC, CCO Holdings Capital Corp. and Citigroup Global Markets Inc., as a representative of the several Purchasers \(as defined therein\) \(incorporated by reference to Exhibit 10.1 to the current report on Form 8-K filed by Charter Communications, Inc. on April 26, 2017 \(File No. 001-33664\)\).](#)
- 10.33 [Exchange and Registration Rights Agreement, dated April 20, 2017, relating to the 5.375% Senior Notes due 2047, among Charter Communications Operating, LLC, Charter Communications Operating Capital Corp., the guarantors party thereto and Citigroup Global Markets Inc., as representative of the several Purchasers \(as defined therein\) \(incorporated by reference to Exhibit 10.2 to the current report on Form 8-K filed by Charter Communications, Inc. on April 26, 2017 \(File No. 001-33664\)\).](#)

- 10.34 [Sixth Supplemental Indenture, dated as of July 6, 2017, among Charter Communications Operating, LLC, Charter Communications Operating Capital Corp., the guarantors party thereto and The Bank of New York Mellon Trust Company, N.A., as trustee and collateral agent \(incorporated by reference to Exhibit 4.3 to the current report on Form 8-K filed by Charter Communications, Inc. on July 12, 2017 \(File No. 001-33664\)\).](#)
- 10.35 [Exchange and Registration Rights Agreement, dated July 6, 2017, relating to the 3.750% Senior Notes due 2028, among Charter Communications Operating, LLC, Charter Communications Operating Capital Corp., the guarantors party thereto and Merrill Lynch, Pierce, Fenner & Smith Incorporated, as representative of the several Purchasers \(as defined therein\) \(incorporated by reference to Exhibit 10.1 to the current report on Form 8-K filed by Charter Communications, Inc. on July 12, 2017 \(File No. 001-33664\)\).](#)
- 10.36 [Exchange and Registration Rights Agreement, dated July 6, 2017, relating to the 5.375% Senior Notes due 2047, among Charter Communications Operating, LLC, Charter Communications Operating Capital Corp., the guarantors party thereto and Merrill Lynch, Pierce, Fenner & Smith Incorporated, as representative of the several Purchasers \(as defined therein\) \(incorporated by reference to Exhibit 10.2 to the current report on Form 8-K filed by Charter Communications, Inc. on July 12, 2017 \(File No. 001-33664\)\).](#)
- 10.37 [Fourth Supplemental Indenture, dated as of August 8, 2017, among CCO Holdings, LLC, CCO Holdings Capital Corp. and The Bank of New York Mellon Trust Company, N.A., as trustee \(incorporated by reference to Exhibit 4.1 to the current report on Form 8-K filed by Charter Communications, Inc. on August 14, 2017 \(File No. 001-33664\)\).](#)
- 10.38 [Exchange and Registration Rights Agreement, dated August 8, 2017, relating to the 5.000% Senior Notes due 2028, among CCO Holdings, LLC, CCO Holdings Capital Corp. and Merrill Lynch, Pierce, Fenner & Smith Incorporated, as representative of the several Purchasers \(as defined therein\) \(incorporated by reference to Exhibit 10.1 to the current report on Form 8-K filed by Charter Communications, Inc. on August 14, 2017 \(File No. 001-33664\)\).](#)
- 10.39 [Seventh Supplemental Indenture, dated as of September 18, 2017, among Charter Communications Operating, LLC, Charter Communications Operating Capital Corp., the guarantors party thereto and The Bank of New York Mellon Trust Company, N.A., as trustee and collateral agent \(incorporated by reference to Exhibit 4.3 to the current report on Form 8-K filed by Charter Communications, Inc. on September 21, 2017 \(File No. 001-33664\)\).](#)
- 10.40 [Exchange and Registration Rights Agreement, dated September 18, 2017, relating to the 4.200% Senior Secured Notes due 2028, among Charter Communications Operating, LLC, Charter Communications Operating Capital Corp., the guarantors party thereto and Merrill Lynch, Pierce, Fenner & Smith Incorporated and Citigroup Global Markets Inc., as representatives of the several Purchasers \(as defined therein\) \(incorporated by reference to Exhibit 10.1 to the current report on Form 8-K filed by Charter Communications, Inc. on September 21, 2017 \(File No. 001-33664\)\).](#)
- 10.41 [Exchange and Registration Rights Agreement, dated September 18, 2017, relating to the 5.375% Senior Secured Notes due 2047, among Charter Communications Operating, LLC, Charter Communications Operating Capital Corp., the guarantors party thereto and Merrill Lynch, Pierce, Fenner & Smith Incorporated and Citigroup Global Markets Inc., as representatives of the several Purchasers \(as defined therein\) \(incorporated by reference to Exhibit 10.2 to the current report on Form 8-K filed by Charter Communications, Inc. on September 21, 2017 \(File No. 001-33664\)\).](#)
- 10.42 [Fifth Supplemental Indenture, dated as of October 17, 2017, among CCO Holdings, LLC, CCO Holdings Capital Corp. and The Bank of New York Mellon Trust Company, N.A., as trustee \(incorporated by reference to Exhibit 4.3 to the current report on Form 8-K filed by Charter Communications, Inc. on October 20, 2017 \(File No. 001-33664\)\).](#)
- 10.43 [Exchange and Registration Rights Agreement, dated October 17, 2017, relating to the 5.000% Senior Notes due 2028, among CCO Holdings, LLC, CCO Holdings Capital Corp. and Merrill Lynch, Pierce, Fenner & Smith Incorporated, as representative of the several Purchasers \(as defined therein\) \(incorporated by reference to Exhibit 10.1 to the current report on Form 8-K filed by Charter Communications, Inc. on October 20, 2017 \(File No. 001-33664\)\).](#)
- 10.44 [Exchange and Registration Rights Agreement, dated October 17, 2017, relating to the 4.000% Senior Notes due 2023, among CCO Holdings, LLC, CCO Holdings Capital Corp. and Merrill Lynch, Pierce, Fenner & Smith Incorporated, as representative of the several Purchasers \(as defined therein\) \(incorporated by reference to Exhibit 10.2 to the current report on Form 8-K filed by Charter Communications, Inc. on October 20, 2017 \(File No. 001-33664\)\).](#)
- 10.45 [Eighth Supplemental Indenture, dated as of December 21, 2017, among Charter Communications Operating, LLC, Charter Communications Operating Capital Corp., CCO Holdings, LLC, the subsidiary guarantor parties thereto and The Bank of New York Mellon Trust Company, N.A., as trustee \(incorporated by reference to Exhibit 4.5 to the current report on Form S-3 filed by Charter Communications, Inc. on December 22, 2017 \(File No. 333-222241\)\).](#)
- 10.46 [Underwriting Agreement, dated as of April 3, 2018, among Charter Communications Operating, LLC, Charter Communications Operating Capital Corp., CCO Holdings, LLC, as parent guarantor, the subsidiary guarantors party thereto and Citigroup Global Markets Inc. and Deutsche Bank Securities Inc., as representatives of the several underwriters named therein \(incorporated by reference to Exhibit 99.1 to the current report on Form 8-K filed by Charter Communications, Inc. on April 6, 2018 \(File No. 001-33664\)\).](#)

- 10.47 [Ninth Supplemental Indenture, dated as of April 17, 2018, among Charter Communications Operating, LLC, Charter Communications Operating Capital Corp., as issuers, CCO Holdings, LLC, the subsidiary guarantors party thereto and The Bank of New York Mellon Trust Company, N.A., as trustee and collateral agent \(incorporated by reference to Exhibit 4.2 to the current report on Form 8-K filed by Charter Communications, Inc. on April 20, 2018 \(File No. 001-33664\)\).](#)
- 10.48 [Underwriting Agreement, dated as of June 28, 2018, among Charter Communications Operating, LLC, Charter Communications Operating Capital Corp., CCO Holdings, LLC, as parent guarantor, the subsidiary guarantors party thereto and Citigroup Global Markets Inc. and Morgan Stanley & Co. LLC, as representatives of the several underwriters named therein \(incorporated by reference to Exhibit 99.1 to the current report on Form 8-K filed by Charter Communications, Inc. on July 3, 2018 \(File No. 001-33664\)\).](#)
- 10.49 [Tenth Supplemental Indenture, dated as of July 3, 2018, among Charter Communications Operating, LLC, Charter Communications Operating Capital Corp., as issuers, CCO Holdings, LLC, the subsidiary guarantors party thereto and The Bank of New York Mellon Trust Company, N.A., as trustee and collateral agent \(incorporated by reference to Exhibit 4.2 to the current report on Form 8-K filed by Charter Communications, Inc. on July 9, 2018 \(File No. 001-33664\)\).](#)
- 10.50 [Underwriting Agreement, dated as of August 9, 2018, among Charter Communications Operating, LLC, Charter Communications Operating Capital Corp., CCO Holdings, LLC, as parent guarantor, the subsidiary guarantors party thereto and Morgan Stanley & Co. LLC, as underwriter \(incorporated by reference to Exhibit 99.1 to the current report on Form 8-K filed by Charter Communications, Inc. on August 15, 2018 \(File No. 001-33664\)\).](#)
- 10.51 [Underwriting Agreement, dated as of January 14, 2019, among Charter Communications Operating, LLC, Charter Communications Operating Capital Corp., CCO Holdings, LLC, as parent guarantor, the subsidiary guarantors party thereto and Citigroup Global Markets Inc. and Deutsche Bank Securities Inc., as representatives of the several underwriters named therein \(incorporated by reference to Exhibit 99.1 to the current report on Form 8-K filed by Charter Communications, Inc. on January 17, 2019 \(File No. 001-33664\)\).](#)
- 10.52 [Twelfth Supplemental Indenture, dated as of January 17, 2019, among Charter Communications Operating, LLC, Charter Communications Operating Capital Corp., as issuers, CCO Holdings, LLC, the subsidiary guarantors party thereto and The Bank of New York Mellon Trust Company, N.A., as trustee and collateral agent \(incorporated by reference to Exhibit 4.4 to the current report on Form 8-K filed by Charter Communications, Inc. on January 24, 2019 \(File No. 001-33664\)\).](#)
- 10.53 [Indenture, dated as of May 23, 2019, among CCO Holdings, LLC, CCO Holdings Capital Corp. and The Bank of New York Mellon Trust Company, N.A., as trustee \(incorporated by reference to Exhibit 4.1 to the current report on Form 8-K filed by Charter Communications, Inc. on May 30, 2019 \(File No. 001-33664\)\).](#)
- 10.54 [First Supplemental Indenture, dated as of May 23, 2019, among CCO Holdings, LLC, CCO Holdings Capital Corp. and The Bank of New York Mellon Trust Company, N.A., as trustee \(incorporated by reference to Exhibit 4.2 to the current report on Form 8-K filed by Charter Communications, Inc. on May 30, 2019 \(File No. 001-33664\)\).](#)
- 10.55 [Form of 5.375% Senior Notes due 2029 \(incorporated by reference to Exhibit 4.3 to the current report on Form 8-K filed by Charter Communications, Inc. on May 30, 2019 \(File No. 001-33664\)\).](#)
- 10.56 [Exchange and Registration Rights Agreement, dated May 23, 2019, relating to the 5.375% Senior Notes due 2029, among CCO Holdings, LLC, CCO Holdings Capital Corp. and Deutsche Bank Securities Inc., as representative of the several Purchasers \(as defined therein\) \(incorporated by reference to Exhibit 10.1 to the current report on Form 8-K filed by Charter Communications, Inc. on May 30, 2019 \(File No. 001-33664\)\).](#)
- 10.57 [Underwriting Agreement, dated as of June 25, 2019, among Charter Communications Operating, LLC, Charter Communications Operating Capital Corp., CCO Holdings, LLC, as parent guarantor, the subsidiary guarantors party thereto and Citigroup Global Markets Inc., J.P. Morgan Securities LLC and Morgan Stanley & Co. LLC, as representatives of the several underwriters named in Schedule I thereto \(incorporated by reference to Exhibit 99.1 to the current report on Form 8-K filed by Charter Communications, Inc. on July 1, 2019 \(File No. 001-33664\)\).](#)
- 10.58 [Fourteenth Supplemental Indenture, dated as of July 10, 2019, among Charter Communications Operating, LLC, Charter Communications Operating Capital Corp., as issuers, CCO Holdings, LLC, the subsidiary guarantors party thereto and The Bank of New York Mellon Trust Company, N.A., as trustee and collateral agent \(incorporated by reference to Exhibit 4.5 to the current report on Form 8-K filed by Charter Communications, Inc. on July 10, 2019 \(File No. 001-33664\)\).](#)
- 10.59 [Form of 5.125% Senior Secured Notes due 2049 \(incorporated by reference to Exhibit 4.6 to the current report on Form 8-K filed by Charter Communications, Inc. on July 10, 2019 \(File No. 001-33664\)\).](#)
- 10.60 [Exchange and Registration Rights Agreement, dated July 10, 2019, relating to the 5.375% Senior Notes due 2029, among CCO Holdings, LLC, CCO Holdings Capital Corp. and Deutsche Bank Securities Inc., as representative of the several Purchasers \(as defined therein\) \(incorporated by reference to Exhibit 10.1 to the current report on Form 8-K filed by Charter Communications, Inc. on July 10, 2019 \(File No. 001-33664\)\).](#)
- 10.61 [Second Supplemental Indenture, dated as of October 1, 2019, among CCO Holdings, LLC, CCO Holdings Capital Corp. and The Bank of New York Mellon Trust Company, N.A., as trustee \(incorporated by reference to Exhibit 4.2 to the Current Report on Form 8-K filed by Charter Communications, Inc. on October 7, 2019\).](#)

- 10.62 [Form of 4.750% Senior Notes due 2030 \(incorporated by reference to Exhibit 4.3 to the Current Report on Form 8-K filed by Charter Communications, Inc. on October 7, 2019 \(File No. 001-33664\)\).](#)
- 10.63 [Exchange and Registration Rights Agreement, dated October 1, 2019, relating to the 4.750% Senior Notes due 2030, among CCO Holdings, LLC, CCO Holdings Capital Corp. and BofA Securities, Inc., as representative of the several Purchasers \(as defined therein\) \(incorporated by reference to Exhibit 10.1 to the Current Report on Form 8-K filed by Charter Communications, Inc. on October 7, 2019 \(File No. 001-33664\)\).](#)
- 10.64 [Form of 4.750% Senior Notes due 2030 \(incorporated by reference to Exhibit 4.3 to the Current Report on Form 8-K filed by Charter Communications, Inc. on October 30, 2019 \(File No. 001-33664\)\).](#)
- 10.65 [Fifteenth Supplemental Indenture, dated as of October 24, 2019, among Charter Communications Operating, LLC, Charter Communications Operating Capital Corp., as issuers, CCO Holdings, LLC, the subsidiary guarantors party thereto and The Bank of New York Mellon Trust Company, N.A., as trustee and collateral agent \(incorporated by reference to Exhibit 4.5 to the Current Report on Form 8-K filed by Charter Communications, Inc. on October 30, 2019 \(File No. 001-33664\)\).](#)
- 10.66 [Form of 4.800% Senior Secured Notes due 2050 \(incorporated by reference to Exhibit 4.6 to the Current Report on Form 8-K filed by Charter Communications, Inc. on October 30, 2019 \(File No. 001-33664\)\).](#)
- 10.67 [Exchange and Registration Rights Agreement, dated October 24, 2019, relating to the 4.750% Senior Notes due 2030, among CCO Holdings, LLC, CCO Holdings Capital Corp. and BofA Securities, Inc., as representative of the several Purchasers \(as defined therein\) \(incorporated by reference to Exhibit 10.1 to the Current Report on Form 8-K filed by Charter Communications, Inc. on October 30, 2019 \(File No. 001-33664\)\).](#)
- 10.68 [Underwriting Agreement, dated as of December 2, 2019, among Charter Communications Operating, LLC, Charter Communications Operating Capital Corp., CCO Holdings, LLC, as parent guarantor, the subsidiary guarantors party thereto and Deutsche Bank Securities Inc., Mizuho Securities USA LLC and Morgan Stanley & Co. LLC, as representatives of the several underwriters named in Schedule I thereto \(incorporated by reference to Exhibit 99.1 to the current report on Form 8-K filed by Charter Communications, Inc. on December 5, 2019 \(File No. 001-33664\)\).](#)
- 10.69 [Form of 4.750% Senior Notes due 2030 \(incorporated by reference to Exhibit 4.3 to the Current Report on Form 8-K filed by Charter Communications, Inc. on December 16, 2019 \(File No. 001-33664\)\).](#)
- 10.70 [Form of 4.800% Senior Secured Notes due 2050 \(incorporated by reference to Exhibit 4.6 to the Current Report on Form 8-K filed by Charter Communications, Inc. on December 16, 2019 \(File No. 001-33664\)\).](#)
- 10.71 [Exchange and Registration Rights Agreement, dated December 16, 2019, relating to the 4.750% Senior Notes due 2030, among CCO Holdings, LLC, CCO Holdings Capital Corp. and Citigroup Global Markets, Inc., as representative of the several Purchasers \(as defined therein\) \(incorporated by reference to Exhibit 10.1 to the Current Report on Form 8-K filed by Charter Communications, Inc. on December 16, 2019 \(File No. 001-33664\)\).](#)
- 10.72 Indenture, dated as of April 30, 1992 (the “TWCE Indenture”), as amended by the First Supplemental Indenture, dated as of June 30, 1992, among Time Warner Entertainment Company, L.P. (“TWE”), Time Warner Companies, Inc. (“TWCI”), certain of TWCI’s subsidiaries that are parties thereto and The Bank of New York, as Trustee (incorporated herein by reference to Exhibits 10(g) and 10(h) to TWCI’s current report on Form 8-K dated June 26, 1992 and filed with the SEC on July 15, 1992 (File No. 1-8637)). (P)
- 10.73 Second Supplemental Indenture to the TWCE Indenture, dated as of December 9, 1992, among TWE, TWCI, certain of TWCI’s subsidiaries that are parties thereto and The Bank of New York, as Trustee (incorporated herein by reference to Exhibit 4.2 to Amendment No. 1 to TWE’s Registration Statement on Form S-4 dated and filed with the SEC on October 25, 1993 (Registration No. 33-67688) (the “TWE October 25, 1993 Registration Statement”)). (P)
- 10.74 Third Supplemental Indenture to the TWCE Indenture, dated as of October 12, 1993, among TWE, TWCI, certain of TWCI’s subsidiaries that are parties thereto and The Bank of New York, as Trustee (incorporated herein by reference to Exhibit 4.3 to the TWE October 25, 1993 Registration Statement). (P)
- 10.75 Fourth Supplemental Indenture to the TWCE Indenture, dated as of March 29, 1994, among TWE, TWCI, certain of TWCI’s subsidiaries that are parties thereto and The Bank of New York, as Trustee (incorporated herein by reference to Exhibit 4.4 to TWE’s Annual Report on Form 10-K for the year ended December 31, 1993 and filed with the SEC on March 30, 1994 (File No. 1-12878)). (P)
- 10.76 Fifth Supplemental Indenture to the TWCE Indenture, dated as of December 28, 1994, among TWE, TWCI, certain of TWCI’s subsidiaries that are parties thereto and The Bank of New York, as Trustee (incorporated herein by reference to Exhibit 4.5 to TWE’s Annual Report on Form 10-K for the year ended December 31, 1994 and filed with the SEC on March 30, 1995 (File No. 1-12878)). (P)
- 10.77 [Sixth Supplemental Indenture to the TWCE Indenture, dated as of September 29, 1997, among TWE, TWCI, certain of TWCI’s subsidiaries that are parties thereto and The Bank of New York, as Trustee \(incorporated herein by reference to Exhibit 4.7 to Historic TW Inc.’s \(“Historic TW”\) Annual Report on Form 10-K for the year ended December 31, 1997 and filed with the SEC on March 25, 1998 \(File No. 1-12259\) \(the “Time Warner 1997 Form 10-K”\)\).](#)

- 10.78 [Seventh Supplemental Indenture to the TWCE Indenture, dated as of December 29, 1997, among TWE, TWCI, certain of TWCI's subsidiaries that are parties thereto and The Bank of New York, as Trustee \(incorporated herein by reference to Exhibit 4.8 to the Time Warner 1997 Form 10-K\).](#)
- 10.79 [Eighth Supplemental Indenture to the TWCE Indenture, dated as of December 9, 2003, among Historic TW, TWE, Warner Communications Inc. \("WCI"\), American Television and Communications Corporation \("ATC"\), TWC and The Bank of New York, as Trustee \(incorporated herein by reference to Exhibit 4.10 to Time Warner Inc.'s \("Time Warner"\) Annual Report on Form 10-K for the year ended December 31, 2003 \(File No. 1-15062\)\).](#)
- 10.80 [Ninth Supplemental Indenture to the TWCE Indenture, dated as of November 1, 2004, among Historic TW, TWE, Time Warner NY Cable Inc., WCI, ATC, TWC and The Bank of New York, as Trustee \(incorporated herein by reference to Exhibit 4.1 to Time Warner's Quarterly Report on Form 10-Q for the quarter ended September 30, 2004 \(File No. 1-15062\)\).](#)
- 10.81 [Tenth Supplemental Indenture to the TWCE Indenture, dated as of October 18, 2006, among Historic TW, TWE, TW NY Cable Holding Inc. \("TW NY"\), Time Warner NY Cable LLC \("TW NY Cable"\), TWC, WCI, ATC and The Bank of New York, as Trustee \(incorporated herein by reference to Exhibit 4.1 to Time Warner's current report on Form 8-K dated and filed October 18, 2006 \(File No. 1-15062\)\).](#)
- 10.82 [Eleventh Supplemental Indenture to the TWCE Indenture, dated as of November 2, 2006, among TWE, TW NY, TWC and The Bank of New York, as Trustee \(incorporated herein by reference to Exhibit 99.1 to Time Warner's current report on Form 8-K dated and filed November 2, 2006 \(File No. 1-15062\)\).](#)
- 10.83 [Twelfth Supplemental Indenture to the TWCE Indenture, dated as of September 30, 2012, among Time Warner Cable Enterprises LLC \("TWCE"\), TWC, TW NY, Time Warner Cable Internet Holdings II LLC \("TWC Internet Holdings II"\) and The Bank of New York Mellon, as trustee, supplementing the Indenture dated April 30, 1992, as amended \(incorporated herein by reference to Exhibit 4.2 to TWC's current report on Form 8-K dated September 30, 2012 and filed with the SEC on October 1, 2012 \(File No. 1-33335\) \(the "TWC September 30, 2012 Form 8-K"\)\)\).](#)
- 10.84 [Thirteenth Supplemental Indenture, dated as of May 18, 2016, by and among Time Warner Cable Enterprises LLC, the guarantors party thereto and The Bank of New York Mellon \(formerly known as The Bank of New York\), as trustee \(incorporated by reference to Exhibit 4.4 to the current report on Form 8-K filed by Charter Communications, Inc. on May 24, 2016 \(File No. 001-33664\)\).](#)
- 10.85 [Indenture, dated as of April 9, 2007 \(the "TWC Indenture"\), among TWC, TW NY, TWE and The Bank of New York, as trustee \(incorporated herein by reference to Exhibit 4.1 to TWC's current report on Form 8-K dated April 4, 2007 and filed with the SEC on April 9, 2007 \(File No. 1-33335\) \(the "TWC April 4, 2007 Form 8-K"\)\)\).](#)
- 10.86 [First Supplemental Indenture to the TWC Indenture, dated as of April 9, 2007, among TWC, TW NY, TWE and The Bank of New York, as trustee \(incorporated herein by reference to Exhibit 4.2 to the TWC April 4, 2007 Form 8-K\).](#)
- 10.87 [Second Supplemental Indenture to the TWC Indenture, dated as of September 30, 2012, among TWC, TW NY, TWCE, TWC Internet Holdings II and The Bank of New York Mellon, as trustee, supplementing the Indenture dated April 9, 2007, as amended \(incorporated herein by reference to Exhibit 4.1 to the TWC September 30, 2012 Form 8-K\).](#)
- 10.88 [Third Supplemental Indenture, dated as of May 18, 2016, by and among Time Warner Cable Inc., TWC NewCo LLC and The Bank of New York Mellon \(formerly known as The Bank of New York\), as trustee \(incorporated by reference to Exhibit 4.5 to the current report on Form 8-K filed by Charter Communications, Inc. on May 24, 2016 \(File No. 001-33664\)\).](#)
- 10.89 [Fourth Supplemental Indenture, dated as of May 18, 2016, by and among TWC NewCo LLC, the guarantors party thereto and The Bank of New York Mellon \(formerly known as The Bank of New York\), as trustee \(incorporated by reference to Exhibit 4.6 to the current report on Form 8-K filed by Charter Communications, Inc. on May 24, 2016 \(File No. 001-33664\)\).](#)
- 10.90 [Form of TWC 6.55% Exchange Debentures due 2037 \(included as Exhibit C to the First Supplemental Indenture incorporated herein by reference to Exhibit 4.2 to the TWC April 4, 2007 Form 8-K\).](#)
- 10.91 [Form of TWC 7.30% Debentures due 2038 \(incorporated herein by reference to Exhibit 4.3 to the TWC June 16, 2008 Form 8-K\).](#)
- 10.92 [Form of TWC 8.75% Notes due 2019 \(incorporated herein by reference to Exhibit 4.2 to TWC's current report on Form 8-K dated November 13, 2008 and filed with the SEC on November 18, 2008\) \(File No. 1-33335\).](#)
- 10.93 [Form of TWC 8.25% Notes due 2019 \(incorporated herein by reference to Exhibit 4.2 to TWC's current report on Form 8-K dated March 23, 2009 and filed with the SEC on March 26, 2009 \(File No. 1-33335\)\).](#)
- 10.94 [Form of TWC 6.75% Debentures due 2039 \(incorporated herein by reference to Exhibit 4.1 to TWC's current report on Form 8-K dated June 24, 2009 and filed with the SEC on June 29, 2009 \(File No. 1-33335\)\).](#)
- 10.95 [Form of TWC 5.0% Notes due 2020 \(incorporated herein by reference to Exhibit 4.2 to the TWC December 8, 2009 Form 8-K\).](#)

- 10.96 [Form of TWC 4.125% Notes due 2021 \(incorporated herein by reference to Exhibit 4.1 to TWC's current report on Form 8-K dated November 9, 2010 and filed with the SEC on November 15, 2010 \(File No. 1-33335\) \(the "TWC November 9, 2010 Form 8-K"\)](#)).
- 10.97 [Form of TWC 5.875% Debentures due 2040 \(incorporated herein by reference to Exhibit 4.2 to the TWC November 9, 2010 Form 8-K\)](#).
- 10.98 [Form of TWC 5.75% Note due 2031 \(incorporated herein by reference to Exhibit 4.1 to TWC's current report on Form 8-K dated and filed with the SEC on May 26, 2011 \(File No. 1-33335\)\)](#).
- 10.99 [Form of TWC 4% Note due 2021 \(incorporated herein by reference to Exhibit 4.1 to TWC's current report on Form 8-K dated September 7, 2011 and filed with the SEC on September 12, 2011 \(File No. 1-33335\) \(the "TWC September 7, 2011 Form 8-K"\)](#)).
- 10.100 [Form of TWC 5.5% Debenture due 2041 \(incorporated herein by reference to Exhibit 4.2 to the TWC September 7, 2011 Form 8-K\)](#).
- 10.101 [Form of TWC 4.5% Debenture due 2042 \(incorporated herein by reference to Exhibit 4.1 to TWC's current report on Form 8-K dated August 7, 2012 and filed with the SEC on August 10, 2012 \(File No. 1-33335\)\)](#).
- 10.102 [Form of TWC 5.25% Note due 2042 \(incorporated herein by reference to Exhibit 4.1 to TWC's current report on Form 8-K dated and filed with the SEC on June 27, 2012 \(File No. 1-33335\)\)](#).
- 10.103 [Form of 5.500% Senior Notes due 2026 \(incorporated herein by reference to Exhibit 10.1 to the current report on Form 8-K of Charter Communications, Inc. filed April 27, 2016\)](#).
- 10.104 [Amendment No. 5, dated as of August 24, 2015, to the Amended and Restated Credit Agreement dated as of April 11, 2012 between Charter Communications Operating, LLC, as borrower, CCO Holdings, LLC, as guarantor, and Bank of America, N.A., as administrative agent \(incorporated by reference to Exhibit 10.2 to the current report on Form 8-K of Charter Communications, Inc. filed on August 28, 2015 \(File No. 001-33664\)\)](#).
- 10.105 [Incremental Activation Notice, dated as of August 24, 2015 delivered by Charter Communications Operating, LLC, CCO Holdings, LLC, the subsidiary guarantors party thereto, each Term H Lender party thereto to, each Term I Lender party thereto and Bank of America, N.A., as Administrative Agent under the Amended and Restated Credit Agreement, dated as of April 11, 2012 \(incorporated by reference to Exhibit 10.1 to the current report on Form 8-K of Charter Communications, Inc. filed on August 28, 2015 \(File No. 001-33664\)\)](#).
- 10.106 [Escrow Credit Agreement, dated as of August 24, 2015, between CCO Safari III, LLC, as borrower, and Bank of America, N.A., as administrative agent, and the lenders party thereto \(incorporated by reference to Exhibit 10.3 to the current report on Form 8-K of Charter Communications, Inc. filed on August 28, 2015 \(File No. 001-33664\)\)](#).
- 10.107(a) [Restatement Agreement dated as of May 18, 2016, by and among Charter Communications Operating, LLC, CCO Holdings, LLC, the subsidiary guarantors party thereto, Bank of America, N.A., as administrative agent and the lenders party thereto \(incorporated by reference to Exhibit 10.5 to the current report on Form 8-K of Charter Communications, Inc. filed on May 24, 2016 \(File No. 001-33664\)\)](#).
- 10.107(b) [Amendment No. 1 dated as of December 23, 2016, to the Amended and Restated Credit Agreement dated as of March 18, 1999, as amended and restated on May 18, 2016, by and among Charter Communications Operating, LLC, CCO Holdings, LLC, the Lenders Party thereto and Bank of America, N.A., as Administrative Agent \(incorporated by reference to Exhibit 10.1 to the current report on Form 8-K of Charter Communications, Inc. filed on December 30, 2016 \(File No. 001-33664\)\)](#).
- 10.107(c) [Restatement Agreement dated as of December 21, 2017 to the Amended and Restated Credit Agreement dated as of March 18, 1999, as amended and restated on May 18, 2016, as amended by Amendment No. 1, dated as of December 23, 2016 and as further amended by that certain Incremental Activation Notice No. 1, dated as of January 19, 2017, by and among Charter Communications Operating, LLC, CCO Holdings, LLC, the Lenders Party thereto and Bank of America, N.A., as Administrative Agent \(incorporated by reference to Exhibit 10.1 to the current report on Form 8-K of Charter Communications, Inc. filed on December 28, 2017 \(File No. 001-33664\)\)](#).
- 10.107(d) [Incremental Activation Notice, dated as of May 18, 2016, by and among Charter Communications Operating, LLC, CCO Holdings, LLC, the subsidiary guarantors party thereto, Bank of America, N.A., as administrative agent and the lenders party thereto \(incorporated by reference to Exhibit 10.4 to the current report on Form 8-K of Charter Communications, Inc. filed on May 24, 2016 \(File No. 001-33664\)\)](#).
- 10.108 [Amendment No. 1, dated as of January 24, 2019, to \(i\) the Amended and Restated Credit Agreement, dated as of March 18, 1999, as amended and restated on December 21, 2017, by and among Charter Communications Operating, LLC, CCO Holdings, LLC, certain subsidiaries of Charter Communications Operating, LLC, the lenders party thereto and Bank of America, N.A., as Administrative Agent and \(ii\) the Guarantee and Collateral Agreement, dated as of March 18, 1999, as amended and restated as of March 31, 2010, as further amended and restated on May 18, 2016, by and among Charter Communications Operating, LLC, CCO Holdings, LLC, certain subsidiaries of Charter Communications Operating, LLC and Bank of America, N.A., as Administrative Agent \(incorporated by reference to Exhibit 10.1 to the current report on Form 8-K filed by Charter Communications, Inc. on January 30, 2019 \(File No. 001-33664\)\)](#).

- 10.109 [Restatement Agreement, dated as of April 26 2019, to the Amended and Restated Credit Agreement, dated as of March 18, 1999, as amended and restated on December 21, 2017 and as amended by Amendment No. 1 as of January 24, 2019, by and among Charter Communications Operating, LLC, CCO Holdings, LLC, certain subsidiaries of Charter Communications Operating, LLC, the lenders party thereto and Bank of America, N.A., as Administrative Agent \(incorporated by reference to Exhibit 10.4 to the quarterly report on Form 10-Q of Charter Communications, Inc. filed April 30, 2019 \(File No. 001-33664\)\).](#)
- 10.110 [Amendment No. 1, dated as of October 24, 2019, to the Amended and Restated Credit Agreement, dated as of March 18, 1999, as amended and restated on April 26, 2019, by and among Charter Communications Operating, LLC, CCO Holdings, LLC, certain subsidiaries of Charter Communications Operating, LLC, the lenders party thereto and Bank of America, N.A., as administrative agent \(incorporated by reference to Exhibit 10.2 to the Current Report on Form 8-K filed by Charter Communications, Inc. on October 30, 2019 \(File No. 001-33664\)\).](#)
- 10.111 [Collateral Agreement, dated as of May 18, 2016, by Charter Communications Operating, LLC, Charter Communications Operating Capital Corp. and the other grantors party thereto in favor of The Bank of New York Mellon Trust Company, N.A., as collateral agent \(incorporated by reference to Exhibit 10.6 to the current report on Form 8-K of Charter Communications, Inc. filed on May 24, 2016 \(File No. 001-33664\)\).](#)
- 10.112 [First Lien Intercreditor Agreement, dated as of May 18, 2016, by and among Charter Communications Operating, LLC, the other grantors party thereto, Bank of America, N.A., as credit agreement collateral agent for the credit agreement secured parties, The Bank of New York Mellon Trust Company, N.A., as notes collateral agent for the indenture secured parties, and each additional agent from time to time party thereto \(incorporated by reference to Exhibit 10.7 to the current report on Form 8-K of Charter Communications, Inc. filed on May 24, 2016 \(File No. 001-33664\)\).](#)
- 10.113 [Joinder Agreement to Registration Rights Agreement, dated as of May 18, 2016, by and among CCO Safari II, LLC, CCH II, LLC, Charter Communications Operating, LLC, Charter Communications Operating Capital Corp., CCO Holdings, LLC and the other guarantors party thereto \(incorporated herein by reference to Exhibit 10.1 to the current report on Form 8-K of Charter Communications, Inc. filed May 24, 2016\).](#)
- 10.114 [Joinder Agreement to Registration Rights Agreement, dated as of May 18, 2016, by CCO Holdings, LLC and CCO Holdings Capital Corp \(incorporated herein by reference to Exhibit 10.2 to the current report on Form 8-K of Charter Communications, Inc. filed May 24, 2016\).](#)
- 10.115 [Escrow Assumption Agreement, dated as of May 18, 2016, by and among CCO Safari III, LLC, Charter Communications Operating, LLC, Bank of America, N.A., as escrow administrative agent and Bank of America, N.A., as administrative agent \(incorporated herein by reference to Exhibit 10.3 to the current report on Form 8-K of Charter Communications, Inc. filed May 24, 2016\).](#)
- 10.116 [Amended and Restated Limited Liability Company Agreement of Charter Communications Holdings, LLC, dated as of May 18, 2016, by and among Charter Holdings, Charter, CCH II, LLC, Advance/Newhouse Partnership and the other party or parties thereto \(incorporated by reference to Exhibit 10.1 to the current report on Form 8-K of Charter Communications, Inc. filed on May 19, 2016 \(File No. 001-33664\)\).](#)
- 10.117 [Exchange Agreement, dated as of May 18, 2016, by and among Charter Holdings, Charter, Advance/Newhouse Partnership and the other party or parties thereto \(incorporated by reference to Exhibit 10.2 to the current report on Form 8-K of Charter Communications, Inc. filed on May 19, 2016 \(File No. 001-33664\)\).](#)
- 10.118 [Registration Rights Agreement, dated as of May 18, 2016, by and among Charter, Advance/Newhouse Partnership and Liberty Broadband \(incorporated by reference to Exhibit 10.3 to the current report on Form 8-K of Charter Communications, Inc. filed on May 19, 2016 \(File No. 001-33664\)\).](#)
- 10.119 [Tax Receivables Agreement, dated as of May 18, 2016, by and among Charter, Advance/Newhouse Partnership and the other party or parties thereto \(incorporated by reference to Exhibit 10.4 to the current report on Form 8-K of Charter Communications, Inc. filed on May 19, 2016 \(File No. 001-33664\)\).](#)
- 10.120 [Wireless Operational Cooperation Agreement dated as of May 5, 2017 between Charter Communications, Inc. and Comcast Corporation \(incorporated by reference to Exhibit 10.1 to the current report on Form 8-K filed by Charter Communications, Inc. on May 8, 2017 \(File No. 001-33664\)\).](#)
- 10.121+ [Charter Communications, Inc. Executive Bonus Plan \(incorporated by reference to Exhibit 10.1 to the Quarterly Report on Form 10-Q of Charter Communications, Inc. filed on May 8, 2012 \(File No. 001-33664\)\).](#)
- 10.122+ [Charter Communications, Inc. 2016 Executive Incentive Performance Plan \(incorporated by reference to Appendix A to the proxy statement for the Charter Communications, Inc. 2016 Annual Meeting of Stockholders filed March 17, 2016 \(File No. 001-33664\)\).](#)
- 10.123+ [Charter Communications, Inc. Amended and Restated 2009 Stock Incentive Plan \(incorporated by reference to Exhibit 10.6 to the Current Report on Form 8-K of Charter Communications, Inc. filed on May 19, 2016 \(File No. 001-33664\)\).](#)
- 10.124+ [Amendment to the Charter Communications, Inc. Amended and Restated 2009 Stock Incentive Plan, dated as of October 25, 2016 \(incorporated by reference to Exhibit 10.1 to the Current Report on Form 8-K of Charter Communications, Inc. filed on October 28, 2016 \(File No. 001-33664\)\).](#)

- 10.125+ [Charter Communications, Inc.'s Amended and Restated Supplemental Deferred Compensation Plan, dated as of September 1, 2011](#)(incorporated by reference to Exhibit 10.1 to the current report on Form 8-K filed by Charter Communications, Inc. on September 2, 2011 (File No. 001-33664)).
- 10.126+ [Form of Non-Qualified Time Vesting Stock Option Agreement dated April 26, 2011](#)(incorporated by reference to Exhibit 10.3 to the quarterly report on Form 10-Q filed by Charter Communications, Inc. on August 2, 2011 (File No. 001-33664)).
- 10.127+ [Form of Non-Qualified Price Vesting Stock Option Agreement dated April 26, 2011](#)(incorporated by reference to Exhibit 10.2 to the quarterly report on Form 10-Q filed by Charter Communications, Inc. on August 2, 2011 (File No. 001-33664)).
- 10.128+ [Form of Notice of LTIP Award Agreement Changes \(RSU Awards\)](#)(incorporated by reference to Exhibit 10.3 to the current report on Form 8-K filed by Charter Communications, inc. on January 22, 2014 (File No. 001-33664)).
- 10.129+ [Form of Notice of LTIP Award Agreement Changes \(Time-Vesting Option Awards\)](#)(incorporated by reference to Exhibit 10.4 to the current report on Form 8-K filed by Charter Communications, Inc. on January 22, 2014 (File No. 001-33664)).
- 10.130+ [Form of Notice of LTIP Award Agreement Changes \(Restricted Stock Awards\)](#)(incorporated by reference to Exhibit 10.5 to the current report on Form 8-K filed by Charter Communications, inc. on January 22, 2014 (File No. 001-33664)).
- 10.131+ [Form of Notice of LTIP Award Agreement Changes \(Performance-Vesting Option Awards\)](#)(incorporated by reference to Exhibit 10.6 to the current report on Form 8-K filed by Charter Communications, Inc. on January 22, 2014 (File No. 001-33664)).
- 10.132+ [Form of Stock Option Agreement dated January 15, 2014](#) (incorporated by reference to Exhibit 10.1 to the current report on Form 8-K filed by Charter Communications, Inc. on January 22, 2014 (File No. 001-33664)).
- 10.133+ [Form of Restricted Stock Unit Agreement dated January 15, 2014](#) (incorporated by reference to Exhibit 10.2 to the current report on Form 8-K filed by Charter Communications, Inc. on January 22, 2014 (File No. 001-33664)).
- 10.134+ [Charter Communications, Inc. 2019 Stock Incentive Plan](#) (incorporated by reference to Annex A to the proxy statement for the Charter Communications, Inc. 2019 Annual Meeting of Stockholders filed March 14, 2019 (File No. 001-33664)).
- 10.135+ [Form of Nonqualified Stock Option Agreement under the Charter Communications, Inc. 2019 Stock Incentive Plan](#) (incorporated by reference to Exhibit 10.2 to the quarterly report on Form 10-Q of Charter Communications, Inc. filed July 26, 2019 (File No. 001-33664)).
- 10.136+ [Form of Restricted Stock Unit Agreement under the Charter Communications, Inc. 2019 Stock Incentive Plan](#) (incorporated by reference to Exhibit 10.3 to the quarterly report on Form 10-Q of Charter Communications, Inc. filed July 26, 2019 (File No. 001-33664)).
- 10.137+ [Form of Restricted Stock Agreement under the Charter Communications, Inc. 2019 Stock Incentive Plan](#) (incorporated by reference to Exhibit 10.4 to the quarterly report on Form 10-Q of Charter Communications, Inc. filed July 26, 2019 (File No. 001-33664)).
- 10.138(a)+ [Employment Agreement between Thomas Rutledge and Charter Communications, Inc., dated as of May 17, 2016](#) (incorporated by reference to Exhibit 10.5 to the current report on Form 8-K of Charter Communications, Inc. filed on May 19, 2016 (File No. 001-33664)).
- 10.138(b)+ [Time-Vesting Stock Option Agreement dated as of December 19, 2011 by and between Charter Communications, Inc. and Thomas M. Rutledge](#) (incorporated by reference to Exhibit 10.2 to the current report on Form 8-K filed by Charter Communications, Inc. on December 19, 2011 (File No. 001-33664)).
- 10.138(c)+ [Performance-Vesting Stock Option Agreement dated as of December 19, 2011 by and between Charter Communications, Inc. and Thomas M. Rutledge](#) (incorporated by reference to Exhibit 10.4 to the current report on Form 8-K filed by Charter Communications, Inc. on December 19, 2011 (File No. 001-33664)).
- 10.139(a)+ [Employment Agreement dated effective as of November 2, 2016 by and between Charter Communications, Inc. and John Bickham](#) (incorporated by reference to Exhibit 10.1 to the Quarterly Report on Form 10-Q of Charter Communications, Inc. filed on November 3, 2016 (File No. 001-33664)).
- 10.139(b)+ [Time-Vesting Stock Option Agreement dated as of April 30, 2012 by and between Charter Communications, Inc. and John Bickham](#) (incorporated by reference to Exhibit 10.2 to the current report on Form 8-K filed by Charter Communications, Inc. on May 1, 2012 (File No. 001-33664)).
- 10.139(c)+ [Performance-Vesting Stock Option Agreement dated as of April 30, 2012 by and between Charter Communications, Inc. and John Bickham](#) (incorporated by reference to Exhibit 10.4 to the current report on Form 8-K filed by Charter Communications, Inc. on May 1, 2012 (File No. 001-33664)).
- 10.140+ [Form of First Amended and Restated Indemnification Agreement](#) (incorporated by reference to Exhibit 10.3 to the quarterly report on Form 10-Q of Charter Communications, Inc. filed on August 6, 2013 (File No. 001-33664)).
- 10.141+ [Time Warner Cable Inc. 2006 Stock Incentive Plan](#) (incorporated herein by reference to Exhibit 10.45 to TWC's current report on Form 8-K dated February 13, 2007 and filed with the SEC on February 13, 2007).

- 10.142+ [Time Warner Cable Inc. 2006 Stock Incentive Plan, as amended, effective March 12, 2009 \(incorporated herein by reference to Exhibit 10.1 to TWC's Quarterly Report on Form 10-Q for the quarter ended March 31, 2009\).](#)
- 10.143+ [Time Warner Cable Inc. 2011 Stock Incentive Plan \(incorporated herein by reference to Annex A to TWC's definitive Proxy Statement dated April 6, 2011 and filed with the SEC on April 6, 2011\).](#)
- 10.144+ [Form of Amendment to Nonqualified Stock Option Agreements Granted Under the Charter Communications, Inc. Amended and Restated 2009 Stock Incentive Plan, dated as of October 25, 2016 \(incorporated by reference to Exhibit 10.2 to the Current Report on Form 8-K of Charter Communications, Inc. filed on October 28, 2016 \(File No. 001-33664\)\).](#)
- 10.145+ [Employment Agreement dated effective as of November 2, 2016 by and between Charter Communications, Inc. and Christopher L. Winfrey \(incorporated by reference to Exhibit 10.2 to the Quarterly Report on Form 10-Q of Charter Communications, Inc. filed on November 3, 2016 \(File No. 001-33664\)\).](#)
- 10.146+ [Employment Agreement dated as of November 10, 2016 by and between Charter Communications, Inc. and David Ellen \(incorporated by reference to Exhibit 10.101 to the Annual Report on Form 10-K of Charter Communications, Inc. filed on February 16, 2017 \(File No. 001-33664\)\).](#)
- 10.147+ [Form of Performance-Vesting Stock Option Agreement granted to certain executive officers in 2016 under the Charter Communications, Inc. Amended and Restated 2009 Stock Incentive Plan \(incorporated by reference to Exhibit 10.102 to the Annual Report on Form 10-K of Charter Communications, Inc. filed on February 16, 2017 \(File No. 001-33664\)\).](#)
- 10.148+ [Form of Performance-Vesting Restricted Stock Unit Agreement granted to certain executive officers in 2016 under the Charter Communications, Inc. Amended and Restated 2009 Stock Incentive Plan \(incorporated by reference to Exhibit 10.103 to the Annual Report on Form 10-K of Charter Communications, Inc. filed on February 16, 2017 \(File No. 001-33664\)\).](#)
- 10.149+ [Employment Agreement between Charter Communications, Inc. and Kevin D. Howard, dated August 2, 2019 \(incorporated by reference to Exhibit 10.1 to the Current Report on Form 8-K filed by Charter Communications, Inc. on August 7, 2019 \(File No. 001-33664\)\).](#)
- 10.150 [Letter Agreement, dated as of December 23, 2016, between Charter Communications, Inc. and Advance/Newhouse Partnership \(incorporated by reference to Exhibit 99.1 to the Current Report on Form 8-K of Charter Communications, Inc. filed on December 28, 2016 \(File No. 001-33664\)\).](#)
- 10.151 [Amendment to Letter Agreement, dated as of December 21, 2017, between Charter Communications, Inc. and Advance/Newhouse Partnership \(incorporated by reference to Exhibit 99.1 to the Current Report on Form 8-K of Charter Communications, Inc. filed on December 22, 2017 \(File No. 001-33664\)\).](#)
- 10.152 [Amendment to the Charter Communications, Inc. 2019 Stock Incentive Plan, dated as of January 28, 2020 \(incorporated by reference to Exhibit 10.152 to the Annual Report on Form 10-K of Charter Communications, Inc. filed on January 31, 2020 \(File No. 001-33664\)\).](#)
- 23.1* [Consent of KPMG LLP.](#)
- 31.1* [Certificate of Chief Executive Officer pursuant to Rule 13a-14\(a\)/Rule 15d-14\(a\) under the Securities Exchange Act of 1934.](#)
- 31.2* [Certificate of Chief Financial Officer pursuant to Rule 13a-14\(a\)/Rule 15d-14\(a\) under the Securities Exchange Act of 1934.](#)
- 32.1* [Certification pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002 \(Chief Executive Officer\).](#)
- 32.2* [Certification pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002 \(Chief Financial Officer\).](#)
- 101 The following financial information from CCO Holdings, LLC and CCO Holdings Capital Corp.'s Annual Report on Form 10-K for the year ended December 31, 2019, filed with the Securities and Exchange Commission on February 7, 2020, formatted in iXBRL (inline eXtensible Business Reporting Language) includes: (i) the Consolidated Balance Sheets; (ii) the Consolidated Statements of Operations; (iii) the Consolidated Statements of Changes in Member's Equity; (iv) the Consolidated Statements of Cash Flows; and (vi) the Notes to the Consolidated Financial Statements.
- 104 Cover page, formatted in iXBRL and contained in Exhibit 101.

* Filed herewith

+ Management compensatory plan or arrangement

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Report of Independent Registered Public Accounting Firm

To the Manager and the Member of
CCO Holdings, LLC and CCO Holdings Capital Corp.:

Opinion on the Consolidated Financial Statements

We have audited the accompanying consolidated balance sheets of CCO Holdings, LLC and subsidiaries (the Company) as of December 31, 2019 and 2018, the related consolidated statements of operations, changes in member's equity, and cash flows for each of the years in the three-year period ended December 31, 2019, and the related notes (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, 2019 and 2018, and the results of its operations and its cash flows for each of the years in the three-year period ended December 31, 2019, in conformity with U.S. generally accepted accounting principles.

Change in Accounting Principle

As discussed in Note 21 to the consolidated financial statements, the Company has changed its method of accounting for leases as of January 1, 2019 due to the adoption of Accounting Standard Codification Topic 842, *Leases*.

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 Public Company Accounting Oversight Board (United States) (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. The Company is not required to have, nor were we engaged to perform, an audit of its internal control over financial reporting. As part of our audits, we are required to obtain an understanding of internal control over financial reporting but not for the purpose of expressing an opinion on the effectiveness of the Company's internal control over financial reporting. Accordingly, we express no such opinion.

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.

(signed) KPMG LLP

We have served as the Company's auditor since 2003.

St. Louis, Missouri
February 7, 2020

CCO HOLDINGS, LLC AND SUBSIDIARIES
CONSOLIDATED BALANCE SHEETS
(dollars in million)

ASSETS	December 31,	
	2019	2018
CURRENT ASSETS:		
Cash and cash equivalents	\$ 3,249	\$ 300
Accounts receivable, less allowance for doubtful accounts of \$151 and \$129, respectively	2,195	1,699
Prepaid expenses and other current assets	711	400
Total current assets	6,155	2,399
INVESTMENT IN CABLE PROPERTIES:		
Property, plant and equipment, net of accumulated depreciation of \$27,595 and \$23,038, respectively	33,908	34,658
Customer relationships, net	7,453	9,565
Franchises	67,322	67,319
Goodwill	29,554	29,554
Total investment in cable properties, net	138,237	141,096
OPERATING LEASE RIGHT-OF-USE ASSETS	925	—
OTHER NONCURRENT ASSETS	1,426	1,403
Total assets	\$ 146,743	\$ 144,898
LIABILITIES AND MEMBER'S EQUITY		
CURRENT LIABILITIES:		
Accounts payable and accrued liabilities	\$ 7,958	\$ 7,903
Payables to related party	298	545
Operating lease liabilities	184	—
Current portion of long-term debt	3,500	3,290
Total current liabilities	11,940	11,738
LONG-TERM DEBT	75,578	69,537
LOANS PAYABLE - RELATED PARTY	959	925
DEFERRED INCOME TAXES	55	—
LONG-TERM OPERATING LEASE LIABILITIES	788	—
OTHER LONG-TERM LIABILITIES	2,134	2,144
MEMBER'S EQUITY:		
Member's equity	55,266	60,532
Accumulated other comprehensive loss	—	(2)
Total CCO Holdings member's equity	55,266	60,530
Noncontrolling interests	23	24
Total member's equity	55,289	60,554
Total liabilities and member's equity	\$ 146,743	\$ 144,898

The accompanying notes are an integral part of these consolidated financial statements.

CCO HOLDINGS, LLC AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF OPERATIONS
(dollars in millions)

	Year Ended December 31,		
	2019	2018	2017
REVENUES	\$ 45,756	\$ 43,620	\$ 41,578
COSTS AND EXPENSES:			
Operating costs and expenses (exclusive of items shown separately below)	29,275	27,891	26,560
Depreciation and amortization	9,911	10,307	10,579
Other operating expenses, net	111	230	444
	39,297	38,428	37,583
Income from operations	6,459	5,192	3,995
OTHER INCOME (EXPENSES):			
Interest expense, net	(3,839)	(3,579)	(3,115)
Loss on extinguishment of debt	(25)	—	(40)
Gain (loss) on financial instruments, net	(54)	(110)	69
Other pension benefits (costs), net	(69)	192	1
Other expense, net	(131)	(46)	(4)
	(4,118)	(3,543)	(3,089)
Income before income taxes	2,341	1,649	906
Income tax expense	(89)	(16)	(23)
Consolidated net income	2,252	1,633	883
Less: Net income attributable to noncontrolling interests	(1)	(1)	(1)
Net income attributable to CCO Holdings member	\$ 2,251	\$ 1,632	\$ 882

The accompanying notes are an integral part of these consolidated financial statements.

CCO HOLDINGS, LLC AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF CHANGES IN MEMBER'S EQUITY
(dollars in millions)

	Member's Equity	Accumulated Other Comprehensive Loss	Total CCO Holdings Member's Equity	Noncontrolling Interests	Total Member's Equity
BALANCE, December 31, 2016	\$ 75,845	\$ (7)	\$ 75,838	\$ 25	\$ 75,863
Consolidated net income	882	—	882	1	883
Stock compensation expense	261	—	261	—	261
Accelerated vesting of equity awards	49	—	49	—	49
Contributions from parent	10	—	10	—	10
Distributions to parent	(13,488)	—	(13,488)	—	(13,488)
Changes in accumulated other comprehensive loss, net	—	6	6	—	6
Distributions to noncontrolling interest	—	—	—	(2)	(2)
BALANCE, December 31, 2017	63,559	(1)	63,558	24	63,582
Consolidated net income	1,632	—	1,632	1	1,633
Stock compensation expense	285	—	285	—	285
Accelerated vesting of equity awards	5	—	5	—	5
Contributions from parent	142	—	142	—	142
Distributions to parent	(5,178)	—	(5,178)	—	(5,178)
Cumulative effect of accounting changes	87	—	87	—	87
Changes in accumulated other comprehensive loss, net	—	(1)	(1)	—	(1)
Distributions to noncontrolling interest	—	—	—	(1)	(1)
BALANCE, December 31, 2018	\$ 60,532	\$ (2)	\$ 60,530	\$ 24	\$ 60,554
Consolidated net income	2,251	—	2,251	1	2,252
Stock compensation expense	315	—	315	—	315
Contributions from parent	59	—	59	—	59
Distributions to parent	(7,891)	—	(7,891)	—	(7,891)
Changes in accumulated other comprehensive loss, net	—	2	2	—	2
Distributions to noncontrolling interest	—	—	—	(2)	(2)
BALANCE, December 31, 2019	\$ 55,266	\$ —	\$ 55,266	\$ 23	\$ 55,289

The accompanying notes are an integral part of these consolidated financial statements.

CCO HOLDINGS, LLC AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF CASH FLOWS
(dollars in millions)

	Year Ended December 31,		
	2019	2018	2017
CASH FLOWS FROM OPERATING ACTIVITIES:			
Consolidated net income	\$ 2,252	\$ 1,633	\$ 883
Adjustments to reconcile consolidated net income to net cash flows from operating activities:			
Depreciation and amortization	9,911	10,307	10,579
Stock compensation expense	315	285	261
Accelerated vesting of equity awards	—	5	49
Noncash interest income, net	(107)	(308)	(371)
Other pension (benefits) costs, net	69	(192)	(1)
Loss on extinguishment of debt	25	—	40
(Gain) loss on financial instruments, net	54	110	(69)
Deferred income taxes	57	4	7
Other, net	164	144	105
Changes in operating assets and liabilities, net of effects from acquisitions and dispositions:			
Accounts receivable	(508)	(88)	(115)
Prepaid expenses and other assets	(374)	(274)	118
Accounts payable, accrued liabilities and other	(133)	98	77
Receivables from and payables to related party	(17)	(67)	45
Net cash flows from operating activities	<u>11,708</u>	<u>11,657</u>	<u>11,608</u>
CASH FLOWS FROM INVESTING ACTIVITIES:			
Purchases of property, plant and equipment	(7,195)	(9,109)	(8,681)
Change in accrued expenses related to capital expenditures	55	(470)	820
Other, net	54	(100)	(132)
Net cash flows from investing activities	<u>(7,086)</u>	<u>(9,679)</u>	<u>(7,993)</u>
CASH FLOWS FROM FINANCING ACTIVITIES:			
Borrowings of long-term debt	19,685	13,820	25,276
Repayments of long-term debt	(13,309)	(10,769)	(16,507)
Borrowings of loans payable - related parties	—	12	234
Payments for debt issuance costs	(103)	(29)	(111)
Contributions from parent	59	142	—
Distributions to parent	(7,891)	(5,178)	(13,488)
Distributions to noncontrolling interest	(2)	(1)	(2)
Other, net	(112)	(5)	(11)
Net cash flows from financing activities	<u>(1,673)</u>	<u>(2,008)</u>	<u>(4,609)</u>
NET INCREASE (DECREASE) IN CASH AND CASH EQUIVALENTS	2,949	(30)	(994)
CASH AND CASH EQUIVALENTS, beginning of period	300	330	1,324
CASH AND CASH EQUIVALENTS, end of period	<u>\$ 3,249</u>	<u>\$ 300</u>	<u>\$ 330</u>
CASH PAID FOR INTEREST	\$ 3,962	\$ 3,865	\$ 3,421
CASH PAID FOR TAXES	\$ 29	\$ 19	\$ 22

The accompanying notes are an integral part of these consolidated financial statements.

CCO HOLDINGS, LLC AND SUBSIDIARIES
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS
DECEMBER 31, 2019, 2018 AND 2017
(dollars in millions, except where indicated)

1. Organization and Basis of Presentation

Organization

CCO Holdings, LLC (together with its subsidiaries, "CCO Holdings," or the "Company") is the second largest cable operator in the United States and a leading broadband communications services company providing video, Internet and voice services to residential and small and medium business customers. The Company also offers mobile service to residential customers and recently launched mobile service to small and medium business customers. In addition, the Company sells video and online advertising inventory to local, regional and national advertising customers and tailored communications and managed solutions to larger enterprise customers. The Company also owns and operates regional sports networks and local sports, news and community channels.

CCO Holdings is a holding company whose principal assets are the equity interests in its operating subsidiaries. CCO Holdings is a direct subsidiary of CCH I Holdings, LLC, which is an indirect subsidiary of Charter Communications, Inc. ("Charter"), Charter Communications Holdings, LLC ("Charter Holdings") and Spectrum Management Holding Company, LLC ("Spectrum Management"). All of the outstanding capital stock of CCO Holdings Capital Corp. ("CCO Holdings Capital") is owned by CCO Holdings. The consolidated financial statements include the accounts of CCO Holdings and all of its subsidiaries where the underlying operations reside. All significant intercompany accounts and transactions among consolidated entities have been eliminated. Charter, Charter Holdings and Spectrum Management have performed financing, cash management, treasury and other services for CCO Holdings on a centralized basis. Changes in member's equity in the consolidated balance sheets related to these activities have been considered cash receipts (contributions) and payments (distributions) for purposes of the consolidated statements of cash flows and are reflected in financing activities.

Basis of Presentation

The accompanying consolidated financial statements have been prepared in accordance with U.S. generally accepted accounting principles ("GAAP") and the rules and regulations of the Securities and Exchange Commission (the "SEC").

The preparation of financial statements in conformity with GAAP requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities at the date of the financial statements and the reported amounts of revenues and expenses during the reporting period. Areas involving significant judgments and estimates include capitalization of labor and overhead costs, impairments of franchises and goodwill, pension benefits and income taxes. Actual results could differ from those estimates.

Certain prior period amounts have been reclassified to conform with the 2019 presentation.

2. Summary of Significant Accounting Policies

Consolidation

The accompanying consolidated financial statements include the accounts of CCO Holdings and all entities in which CCO Holdings has a controlling interest. The noncontrolling interest on the Company's balance sheet represents the third-party interest in CV of Viera, LLP, the Company's consolidated joint venture in a small cable system in Florida. All significant intercompany accounts and transactions among consolidated entities have been eliminated in consolidation.

Cash and Cash Equivalents

The Company considers all highly liquid investments with original maturities of three months or less to be cash equivalents. These investments are carried at cost, which approximates market value.

Property, Plant and Equipment

Additions to property, plant and equipment are recorded at cost, including all material, labor and certain indirect costs associated with the construction of cable transmission and distribution facilities. While the Company's capitalization is based on specific

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activities, once capitalized, costs are tracked on a composite basis by fixed asset category at the cable system level and not on a specific asset basis. For assets that are sold or retired, the estimated historical cost and related accumulated depreciation is removed. Costs associated with the placement of the customer drop to the dwelling and the placement of outlets within a dwelling along with the costs associated with the deployment of new customer premise equipment necessary to provide video, Internet or voice services are capitalized. Costs capitalized include materials, direct labor and overhead costs. The Company capitalizes direct labor and overhead using standards developed from actual costs and applicable operational data. The Company calculates standards annually (or more frequently if circumstances dictate) for items such as the labor rates, overhead rates, and the actual amount of time required to perform a capitalizable activity. Overhead costs are associated with the activities of the Company's personnel who assist in installation activities and consist of compensation and other indirect costs associated with these support functions. Indirect costs primarily include employee benefits and payroll taxes, and vehicle and occupancy costs. The costs of disconnecting service and removing customer premise equipment from a dwelling and the costs to reconnect a customer drop or to redeploy previously installed customer premise equipment are charged to operating expense as incurred. Costs for repairs and maintenance are charged to operating expense as incurred, while plant and equipment replacement, including replacement of certain components, betterments, including replacement of cable drops and outlets, are capitalized.

Depreciation is recorded using the straight-line composite method over management's estimate of the useful lives of the related assets as follows:

Cable distribution systems	8-20 years
Customer premise equipment and installations	3-8 years
Vehicles and equipment	6-21 years
Buildings and improvements	10-40 years
Furniture, fixtures and equipment	2-10 years

Asset Retirement Obligations

Certain of the Company's franchise agreements and leases contain provisions requiring the Company to restore facilities or remove equipment in the event that the franchise or lease agreement is not renewed. The Company expects to continually renew its franchise agreements and therefore cannot reasonably estimate any liabilities associated with such agreements. A remote possibility exists that franchise agreements could be terminated unexpectedly, which could result in the Company incurring significant expense in complying with restoration or removal provisions. The Company does not have any significant liabilities related to asset retirements recorded in its consolidated financial statements.

Valuation of Long-Lived Assets

The Company evaluates the recoverability of long-lived assets (e.g., property, plant and equipment and finite-lived intangible assets) to be held and used when events or changes in circumstances indicate that the carrying amount of an asset may not be recoverable. Such events or changes in circumstances could include such factors as impairment of the Company's indefinite life assets, changes in technological advances, fluctuations in the fair value of such assets, adverse changes in relationships with local franchise authorities, adverse changes in market conditions or a deterioration of current or expected future operating results. If a review indicates that the carrying value of such asset is not recoverable from estimated undiscounted cash flows, the carrying value of such asset is reduced to its estimated fair value. While the Company believes that its estimates of future cash flows are reasonable, different assumptions regarding such cash flows could materially affect its evaluations of asset recoverability. No impairments of long-lived assets held for use were recorded in 2019, 2018 and 2017. For non-strategic long-lived assets held for sale and ultimately sold, the Company recorded impairments of approximately \$41 million and \$75 million during the years ended December 31, 2019 and 2018, respectively, to other operating expenses, net.

Leases

The primary leased asset classes of the Company include real estate, dark fiber, colocation facilities and other equipment. The lease agreements include both lease and non-lease components, which the Company accounts for separately depending on the election made for each leased asset class. For real estate and dark fiber leased asset classes, the Company accounts for lease and non-lease components as a single lease component and includes all fixed payments in the measurement of lease liabilities and

CCO HOLDINGS, LLC AND SUBSIDIARIES
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS
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(dollars in millions, except where indicated)

lease assets. For colocation facilities leased asset class, the Company accounts for lease and non-lease components separately including only the fixed lease payment component in the measurement of lease liabilities and lease assets.

In addition to fixed lease payments, certain of the Company's lease agreements include variable lease payments which are tied to an index or rate such as the change in the Consumer Price Index. These variable payments are not included in the measurement of the lease liabilities and lease assets.

Lease assets and lease liabilities are initially recognized based on the present value of the future lease payments over the expected lease term. As for most leases the implicit rate is not readily determinable, the Company uses a discount rate in determining the present value of future payments based on the yield-to-maturity of the Company's secured publicly traded United States dollars denominated debt instruments interpolating the duration of the debt to the term of the executed lease.

The Company's leases have base rent periods and some with optional renewal periods. Leases with base rent periods of less than 12 months are not recorded on the balance sheet. For purposes of measurement of lease liabilities, the expected lease terms may include renewal options when it is reasonably certain that the Company will exercise such options. Based on conditions of the Company's existing leases and its overall business strategies, the majority of the Company's renewal options are not reasonably certain in determining the expected lease term. The Company will periodically reassess expected lease terms (and purchase options, if applicable) based on significant triggering events or compelling economic reasons to exercise such options.

The Company's primary lease income represents sublease income on certain real estate leases. Sublease income is included in other revenue and presented gross from rent expense. For customer premise equipment ("CPE") where such CPE would qualify as a lease, the Company applies the practical expedient to combine the operating lease with the subscription service revenue as a single performance obligation in accordance with revenue recognition accounting guidance as the subscription service is the predominant component.

Other Noncurrent Assets

Other noncurrent assets primarily include investments, customer contract costs and other intangible assets. The Company accounts for its investments in less than majority owned investees under either the equity method or as equity securities. The Company applies the equity method to investments when it has the ability to exercise significant influence over the operating and financial policies of the investee. The Company's share of the investee's earnings (losses) is included in other expense, net in the consolidated statements of operations. The Company monitors its investments for indicators that a decrease in investment value has occurred that is other than temporary. If it has been determined that an investment has sustained an other than temporary decline in value, the investment is written down to fair value with a charge to earnings. Investments acquired are measured at fair value utilizing the acquisition method of accounting. The difference between the fair value and the amount of underlying equity in net assets for most equity method investments is due to previously unrecognized intangible assets at the investee. These amounts are amortized as a component of equity earnings (losses), recorded within other expense, net over the estimated useful life of the asset. Customer contract costs are deferred in other noncurrent assets for upfront costs incurred to obtain a customer contract and upfront costs to fulfill a customer contract, as further discussed below under the *Customer Contract Costs* accounting policy.

Revenue Recognition

Nature of Services

Residential Services

Residential customers are offered video, Internet, and voice services primarily on a subscription basis. Residential customers may generally cancel their subscriptions at the end of their monthly service period without penalty. Each subscription service provided is accounted for as a distinct performance obligation and revenue is recognized ratably over the monthly service period as the subscription services are delivered. Each optional service purchased is generally accounted for as a distinct performance obligation when purchased and revenue is recognized when the service is provided.

Residential video customers have the option to purchase additional tiers of services, as well as video-on-demand ("VOD") programming and pay-per-view programming on a per-event basis. Video revenues consist primarily of revenues from the selected

CCO HOLDINGS, LLC AND SUBSIDIARIES
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programming service tier, as well as VOD fees, pay-per-view fees, retransmission fees, regulatory fees, equipment service fees and video installation fees.

Residential Internet customers receive data download and upload services with speeds dependent on the selected tier of service. Customers are also offered a security suite, an in-home WiFi product, and an out-of-home WiFi service. Internet revenues consist primarily of data services, WiFi service fees and Internet installation fees.

Residential voice customers receive unlimited local and long distance calling to United States, Canada, Mexico, and Puerto Rico, voicemail, call waiting, caller ID, call forward and other features. Customers may also purchase international calling either by the minute, or through packages of minutes per month. Voice revenues consist primarily of voice services and regulatory fees.

Small and Medium Business

Small and medium business customers are offered video, Internet and voice services similar to those provided to residential customers. Small and medium business customers may generally cancel their subscriptions at the end of their monthly service period without penalty. Each subscription service provided is accounted for as a distinct performance obligation and revenue is recognized ratably over the monthly service period as the subscription services are delivered.

Enterprise

Services to enterprise clients include more tailored communications products and managed service solutions to larger businesses, as well as high-capacity last-mile data connectivity services to mobile and wireline carriers on a wholesale basis. Services are primarily offered on a subscription basis with a contractually specified and non-cancelable service period. Each subscription service provided is accounted for as a distinct performance obligation and revenue is recognized ratably over the contract period as the subscription services are delivered. Enterprise subscription services are billed as monthly recurring charges to customers and related installation services, if applicable, are billed upon completion of the customer installation. Installation services are not accounted for as distinct performance obligations, but rather a component of the connectivity services, and therefore upfront installation fees are deferred and recognized as revenue over the related contract period.

Advertising Services

The Company offers local, regional and national businesses the opportunity to advertise in individual and multiple service areas on cable television networks and digital outlets. Placement of advertising is accounted for as a distinct performance obligation and revenue is recognized at the point in time when the advertising is distributed. In some service areas, the Company has formed advertising interconnects or entered into representation agreements with other video distributors, under which the Company sells advertising on behalf of those distributors. In other service areas, the Company has entered into representation agreements under which another operator in the area will sell advertising on the Company's behalf. For representation arrangements in which the Company controls the sale of advertising and acts as the principal to the transaction, the Company recognizes revenue earned from the advertising customer on a gross basis and the amount remitted to the distributor as an operating expense. For other representation arrangements in which the Company does not control the sale of advertising and acts as an agent to the transaction, the Company recognizes revenue net of any fee remitted to the distributor.

Mobile

We also offer mobile service to residential customers and recently launched mobile service to small and medium business customers. Mobile services are sold under an unlimited data plan or a by-the-gig data usage plan and revenue is recognized ratably over the monthly service period as the services are delivered. Customers can purchase mobile equipment, including devices and accessory products, and have the option to pay for devices under interest-free monthly installment plans. The sale of equipment is a separate performance obligation. Revenue is recognized from the sale of equipment upon delivery and acceptance by the customer, as this is when control passes to the customer.

CCO HOLDINGS, LLC AND SUBSIDIARIES
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS
DECEMBER 31, 2019, 2018 AND 2017
(dollars in millions, except where indicated)

The Company's revenues by product line are as follows:

	Year Ended December 31,		
	2019	2018	2017
Video	\$ 17,607	\$ 17,348	\$ 16,621
Internet	16,667	15,181	14,101
Voice	1,920	2,114	2,542
Residential revenue	36,194	34,643	33,264
Small and medium business	3,868	3,665	3,547
Enterprise	2,556	2,528	2,373
Commercial revenue	6,424	6,193	5,920
Advertising sales	1,568	1,785	1,510
Mobile	726	106	—
Other	844	893	884
	<u>\$ 45,756</u>	<u>\$ 43,620</u>	<u>\$ 41,578</u>

Fees imposed on the Company by various governmental authorities are passed through on a monthly basis to the Company's customers and are periodically remitted to authorities. Fees of \$1.1 billion, \$1.0 billion and \$961 million for the years ended December 31, 2019, 2018 and 2017, respectively, are reported in video, voice, mobile and commercial revenues, on a gross basis with a corresponding operating expense because the Company is acting as a principal. Certain taxes, such as sales taxes imposed on the Company's customers, collected and remitted to state and local authorities, are recorded on a net basis because the Company is acting as an agent in such situations.

A significant portion of our revenue is derived from customers who may generally cancel their monthly subscriptions at any time without penalty. As such, the amount of revenue related to unsatisfied performance obligations is not necessarily indicative of the future revenue to be recognized from our existing customer base. Revenue from customers with a contractually specified term and non-cancelable service period will be recognized over the term of such contracts, which is generally two to seven years for our enterprise contracts with a weighted average term of approximately three years.

Significant Judgments in Evaluating Revenue Recognition

The Company often provides multiple services to a customer. Provision of customer premise equipment, installation services, and additional service tiers may have a significant level of integration and interdependency with the subscription video, Internet, voice, or connectivity services provided. Judgment is required to determine whether provision of customer premise equipment, installation services, and additional service tiers are considered distinct and accounted for separately, or not distinct and accounted for together with the subscription services.

Allocation of the transaction price to the distinct performance obligations in bundled residential service subscriptions requires judgment. The transaction price for a bundle of residential services is frequently less than the sum of the standalone selling prices of each individual service. The Company allocates the residential services bundle discount among the services to which the discount relates based on the relative standalone selling prices of those services. Standalone selling prices for the Company's residential video and Internet services are directly observable, while standalone selling price for the Company's residential voice service is estimated using the adjusted market assessment approach which relies upon information from peers and competitors who sell residential voice services individually.

The Company believes residential and small and medium business non-refundable upfront installation fees charged to customers result in a material right to renew the contract as such fees are not required to be paid upon subsequent renewals. The residential and small and medium business upfront fee is deferred over the period the fee remains material to the customer, which the Company has estimated to be approximately six months. Estimation of the period the fee remains material to the customer requires consideration of both quantitative and qualitative factors including average installation fee, average revenue per customer, and customer behavior, among others.

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Deferred Revenue Contract Liabilities

Timing of revenue recognition may differ from the timing of invoicing to customers. Residential, small and medium business, and enterprise customers are invoiced for subscription services in advance of the service period. Deferred revenue liabilities, or contract liabilities, are recorded when the Company collects payments in advance of performing the services. Deferred revenue liabilities, or contract liabilities, are also recorded when the Company invoices customers upfront for installation services that are recognized as revenue over time. Residential and small and medium business installation revenues are deferred over the period the fee remains material to the customer. Enterprise installation revenues are deferred using a portfolio approach over the average contract life of each enterprise service category. As of December 31, 2019 and 2018, current deferred revenue liabilities consisting of customer prepayments of \$366 million and \$410 million, respectively, and upfront installation fees of \$94 million and \$84 million, respectively, were included in accounts payable and accrued liabilities. As of December 31, 2019 and 2018, long-term deferred revenue liabilities consisting of enterprise upfront installation fees of \$34 million were included in other long-term liabilities.

Customer Contract Costs

The Company recognizes an asset for incremental costs of obtaining a contract with a customer if the amortization period of those costs is expected to be longer than one year and the costs are expected to be recovered. Enterprise sales commission costs meet the requirements to be deferred and, as a result, are recognized using a portfolio approach over a commission expense weighted-average enterprise contract period. Deferred enterprise commission costs are included in other noncurrent assets in the consolidated balance sheet and totaled \$143 million and \$142 million as of December 31, 2019 and 2018, respectively. As the amortization period of residential and small and medium business commissions costs is less than one year, the Company applies the practical expedient that allows such costs to be expensed as incurred. The Company has determined that the amortization period associated with residential and small and medium business commission costs is less than one year based on qualitative and quantitative factors.

The Company recognizes an asset for costs incurred to fulfill a contract when those costs are directly related to services provided under the contract, generate or enhance resources of the entity that will be used in performing service obligations under the contract, and are expected to be recovered. Right-of-entry costs represent upfront costs incurred related to agreements entered into with multiple dwelling units (“MDUs”) including landlords, real estate companies or owners to gain access to a building in order to market and service customers who reside in the building. Right-of-entry costs meet the requirements to be deferred and, as a result, are recognized over the term of the contracts. Deferred right-of-entry costs are included in other noncurrent assets in the consolidated balance sheet and totaled \$284 million and \$273 million as of December 31, 2019 and 2018, respectively. Amortization expense of \$67 million and \$62 million was included in regulatory, connectivity and produced content within operating costs and expenses in the consolidated statements of operations for the year ended December 31, 2019 and 2018, respectively. Residential and small and medium business installation costs not capitalized into property, plant and equipment are expensed as incurred under cable industry-specific guidance.

Programming Costs

The Company has various contracts to obtain video programming from vendors whose compensation is typically based on a flat fee per customer. The cost of the right to exhibit network programming under such arrangements is recorded in operating expenses in the month the programming is available for exhibition. Programming costs are paid each month based on calculations performed by the Company and are subject to periodic audits performed by the programmers. Certain programming contracts contain cash and non-cash consideration from the programmers. If consideration received does not relate to a separate product or service, the Company recognizes the consideration on a straight-line basis over the life of the programming agreement as a reduction of programming expense. Programming costs included in the statements of operations were \$11.3 billion, \$11.1 billion and \$10.6 billion for the years ended December 31, 2019, 2018 and 2017, respectively.

Advertising Costs

Advertising costs associated with marketing the Company’s products and services are generally expensed as costs are incurred.

Multiple-Element Transactions

In the normal course of business, the Company enters into multiple-element transactions where it is simultaneously both a customer and a vendor with the same counterparty or in which it purchases multiple products and/or services, or settles outstanding items

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contemporaneous with the purchase of a product or service from a single counterparty. Transactions, although negotiated contemporaneously, may be documented in one or more contracts. The Company's policy for accounting for each transaction negotiated contemporaneously is to record each element of the transaction based on the respective estimated fair values of the products or services purchased and the products or services sold. In determining the fair value of the respective elements, the Company refers to quoted market prices (where available), historical transactions or comparable cash transactions. Cash consideration received from a vendor is recorded as a reduction in the price of the vendor's product unless (i) the consideration is for the reimbursement of a specific, incremental, identifiable cost incurred, in which case the cash consideration received would be recorded as a reduction in such cost (e.g., marketing costs), or (ii) an identifiable benefit in exchange for the consideration is provided, in which case revenue would be recognized for this element.

Stock-Based Compensation

Restricted stock, restricted stock units, stock options as well as equity awards with market conditions are measured at the grant date fair value and amortized to stock compensation expense over the requisite service period. The fair value of options is estimated on the date of grant using the Black-Scholes option-pricing model and the fair value of equity awards with market conditions is estimated on the date of grant using Monte Carlo simulations. The grant date weighted average assumptions used during the years ended December 31, 2019, 2018 and 2017, respectively, were: risk-free interest rate of 2.5%, 2.4% and 1.8%; expected volatility of 27%, 25% and 25%; and expected lives of 4.9 years, 5.1 years and 4.6 years. The Company's volatility assumptions represent management's best estimate and were based on historical volatility of Charter. Expected lives were estimated using historical exercise data. The valuations assume no dividends are paid. The Company has elected an accounting policy to assume zero forfeitures for stock awards grants and account for forfeitures when they occur.

Defined Benefit Pension Plans

The Company sponsors three qualified defined benefit pension plans and one nonqualified defined benefit pension plan that provide pension benefits to a majority of employees who were employed by Time Warner Cable Inc. ("TWC") before the merger with TWC. Pension benefits are based on formulas that reflect the employees' years of service and compensation during their employment period. Actuarial gains or losses are changes in the amount of either the benefit obligation or the fair value of plan assets resulting from experience different from that assumed or from changes in assumptions. The Company has elected to follow a mark-to-market pension accounting policy for recording the actuarial gains or losses annually during the fourth quarter, or earlier if a remeasurement event occurs during an interim period.

Income Taxes

CCO Holdings is a single member limited liability company not subject to income tax. CCO Holdings holds all operations through indirect subsidiaries. The majority of these indirect subsidiaries are limited liability companies that are not subject to income tax. Certain indirect subsidiaries that are required to file separate returns are subject to federal and state tax. CCO Holdings' tax provision reflects the tax provision of the entities required to file separate returns. The Company recognizes deferred tax assets and liabilities for temporary differences between the financial reporting basis and the tax basis of these indirect subsidiaries' assets and liabilities and expected benefits of utilizing loss carryforwards. The impact on deferred taxes of changes in tax rates and tax law, if any, applied to the years during which temporary differences are expected to be settled, are reflected in the consolidated financial statements in the period of enactment. See Note 16.

Charter is subject to income taxes. Accordingly, in addition to the Company's deferred tax liabilities, Charter has recorded net deferred tax liabilities of approximately \$17.7 billion and \$17.4 billion as December 31, 2019 and 2018, respectively, related to their investment in Charter Holdings, net of loss carryforwards, which is not reflected at the Company.

Segments

The Company's operations are managed and reported to its Chief Executive Officer ("CEO"), the Company's chief operating decision maker, on a consolidated basis. The CEO assesses performance and allocates resources based on the consolidated results of operations. Under this organizational and reporting structure, the Company has one reportable segment, cable services.

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3. Allowance for Doubtful Accounts

Activity in the allowance for doubtful accounts is summarized as follows for the years presented:

	Year Ended December 31,		
	2019	2018	2017
Balance, beginning of period	\$ 129	\$ 113	\$ 124
Charged to expense	659	570	469
Uncollected balances written off, net of recoveries	(637)	(554)	(480)
Balance, end of period	<u>\$ 151</u>	<u>\$ 129</u>	<u>\$ 113</u>

4. Property, Plant and Equipment

Property, plant and equipment consists of the following as of December 31, 2019 and 2018:

	December 31,	
	2019	2018
Cable distribution systems	\$ 31,542	\$ 29,249
Customer premise equipment and installations	17,492	17,241
Vehicles and equipment	1,843	1,688
Buildings and improvements	4,135	3,893
Furniture, fixtures and equipment	6,491	5,625
	<u>61,503</u>	<u>57,696</u>
Less: accumulated depreciation	(27,595)	(23,038)
	<u>\$ 33,908</u>	<u>\$ 34,658</u>

The Company periodically evaluates the estimated useful lives used to depreciate its assets and the estimated amount of assets that will be abandoned or have minimal use in the future. A significant change in assumptions about the extent or timing of future asset retirements, or in the Company's use of new technology and upgrade programs, could materially affect future depreciation expense.

Depreciation expense for the years ended December 31, 2019, 2018 and 2017 was \$7.8 billion, \$7.9 billion, and \$7.8 billion, respectively.

5. Franchises, Goodwill and Other Intangible Assets

Franchise rights represent the value attributed to agreements or authorizations with local and state authorities that allow access to homes in cable service areas. For valuation purposes, they are defined as the future economic benefits of the right to solicit and service potential customers (customer marketing rights), and the right to deploy and market new services to potential customers (service marketing rights).

Management estimates the fair value of franchise rights at the date of acquisition and determines if the franchise has a finite life or an indefinite life. The Company has concluded that all of its franchises qualify for indefinite life treatment given that there are no legal, regulatory, contractual, competitive, economic or other factors which limit the period over which these rights will contribute to the Company's cash flows. The Company reassesses this determination periodically or whenever events or substantive changes in circumstances occur.

All franchises are tested for impairment annually or more frequently as warranted by events or changes in circumstances. Franchise assets are aggregated into essentially inseparable units of accounting to conduct valuations. The units of accounting generally represent geographical clustering of the Company's cable systems into groups. The Company assesses qualitative factors to determine whether the existence of events or circumstances leads to a determination that it is more likely than not that an indefinite

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lived intangible asset has been impaired. If, after this optional qualitative assessment, the Company determines that it is not more likely than not that an indefinite lived intangible asset has been impaired, then no further quantitative testing is necessary. In completing the qualitative impairment testing, the Company evaluates a multitude of factors that affect the fair value of our franchise assets. Examples of such factors include environmental and competitive changes within our operating footprint, actual and projected operating performance, the consistency of our operating margins, equity and debt market trends, including changes in our market capitalization, and changes in our regulatory and political landscape, among other factors. The Company performed a qualitative assessment in 2019, which also included consideration of a fair value appraisal performed for tax purposes in the beginning of 2019 as of a December 31, 2018 valuation date (the "Appraisal"). After consideration of the qualitative factors in 2019, including the results of the Appraisal, the Company concluded that it is more likely than not that the fair value of the franchise assets in each unit of accounting exceeds the carrying value of such assets and therefore did not perform a quantitative analysis at the assessment date. Periodically, the Company will elect to perform a quantitative analysis for impairment testing. If the Company elects or is required to perform a quantitative analysis to test its franchise assets for impairment, the methodology described below is utilized.

If a quantitative analysis is performed, the estimated fair value of franchises is determined utilizing an income approach model based on the present value of the estimated discrete future cash flows attributable to each of the intangible assets identified assuming a discount rate. The fair value of franchises is determined based on estimated discrete discounted future cash flows using assumptions consistent with internal forecasts. The franchise after-tax cash flow is calculated as the after-tax cash flow generated by the potential customers obtained. The sum of the present value of the franchises' after-tax cash flow in years 1 through 10 and the continuing value of the after-tax cash flow beyond year 10 yields the fair value of the franchises.

This approach makes use of unobservable factors such as projected revenues, expenses, capital expenditures, customer trends, and a discount rate applied to the estimated cash flows. The determination of the franchise discount rate is derived from the Company's weighted average cost of capital, which uses a market participant's cost of equity and after-tax cost of debt and reflects the risks inherent in the cash flows. The Company estimates discounted future cash flows using reasonable and appropriate assumptions including among others, penetration rates; revenue growth rates; operating margins; and capital expenditures. The assumptions are based on the Company's and its peers' historical operating performance adjusted for current and expected competitive and economic factors surrounding the cable industry. The estimates and assumptions made in the Company's valuations are inherently subject to significant uncertainties, many of which are beyond its control, and there is no assurance that these results can be achieved. The primary assumptions for which there is a reasonable possibility of the occurrence of a variation that would significantly affect the measurement value include the assumptions regarding revenue growth, programming expense growth rates, the amount and timing of capital expenditures, actual customer trends and the discount rate utilized.

The Company has determined that it has one reporting unit for purposes of the assessment of goodwill impairment. The fair value of the reporting unit is determined using both an income approach and market approach. The Company's income approach model used for its reporting unit valuation is consistent with that used for its franchise valuation noted above except that cash flows from the entire business enterprise are used for the reporting unit valuation. The Company's market approach model estimates the fair value of the reporting unit based on market prices in actual precedent transactions of similar businesses and market valuations of guideline public companies. Goodwill is tested for impairment as of November 30 of each year, or more frequently as warranted by events or changes in circumstances. Accounting guidance also permits an optional qualitative assessment for goodwill to determine whether it is more likely than not that the carrying value of a reporting unit exceeds its fair value. If, after this qualitative assessment, the Company determines that it is not more likely than not that the fair value of a reporting unit is less than its carrying amount then no further quantitative testing would be necessary. A quantitative assessment is performed if the qualitative assessment results in a more likely than not determination or if a qualitative assessment is not performed. The quantitative assessment considers whether the carrying amount of a reporting unit exceeds its fair value, in which case an impairment charge is recorded to the extent the reporting unit's carrying value exceeds its fair value. As with the Company's franchise impairment testing, in 2019 the Company elected to perform a qualitative goodwill impairment assessment, which incorporated the results of the Appraisal and consideration of the same qualitative factors relevant to the Company's franchise impairment testing. As a result of that assessment, the Company concluded that goodwill is not impaired.

Customer relationships are recorded at fair value as of the date acquired less accumulated amortization. Customer relationships, for valuation purposes, represent the value of the business relationship with existing customers, and are calculated by projecting the discrete future after-tax cash flows from these customers, including the right to deploy and market additional services to these customers. The present value of these after-tax cash flows yields the fair value of the customer relationships. The use of different valuation assumptions or definitions of franchises or customer relationships, such as our inclusion of the value of selling additional services to our current customers within customer relationships versus franchises, could significantly impact our valuations and

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any resulting impairment. Customer relationships are amortized on an accelerated sum of years' digits method over useful lives of 8-15 years based on the period over which current customers are expected to generate cash flows. The Company periodically evaluates the remaining useful lives of its customer relationships to determine whether events or circumstances warrant revision to the remaining periods of amortization. Customer relationships are evaluated for impairment upon the occurrence of events or changes in circumstances indicating that the carrying amount of an asset may not be recoverable. Customer relationships are deemed impaired when the carrying value exceeds the projected undiscounted future cash flows associated with the customer relationships. No impairment of customer relationships was recorded in the years ended December 31, 2019, 2018 or 2017.

As of December 31, 2019 and 2018, indefinite-lived and finite-lived intangible assets are presented in the following table:

	December 31,					
	2019			2018		
	Gross Carrying Amount	Accumulated Amortization	Net Carrying Amount	Gross Carrying Amount	Accumulated Amortization	Net Carrying Amount
Indefinite-lived intangible assets:						
Franchises	\$ 67,322	\$ —	\$ 67,322	\$ 67,319	\$ —	\$ 67,319
Goodwill	29,554	—	29,554	29,554	—	29,554
	<u>\$ 96,876</u>	<u>\$ —</u>	<u>\$ 96,876</u>	<u>\$ 96,873</u>	<u>\$ —</u>	<u>\$ 96,873</u>
Finite-lived intangible assets:						
Customer relationships	\$ 18,230	\$ (10,777)	\$ 7,453	\$ 18,229	\$ (8,664)	\$ 9,565
Other intangible assets	405	(122)	283	409	(92)	317
	<u>\$ 18,635</u>	<u>\$ (10,899)</u>	<u>\$ 7,736</u>	<u>\$ 18,638</u>	<u>\$ (8,756)</u>	<u>\$ 9,882</u>

Amortization expense related to customer relationships and other intangible assets for the years ended December 31, 2019, 2018 and 2017 was \$2.2 billion, \$2.4 billion and \$2.7 billion, respectively.

The Company expects amortization expense on its finite-lived intangible assets will be as follows.

2020	\$ 1,874
2021	1,599
2022	1,329
2023	1,072
2024	821
Thereafter	1,041
	<u>\$ 7,736</u>

Actual amortization expense in future periods could differ from these estimates as a result of new intangible asset acquisitions or divestitures, changes in useful lives, impairments, adoption of new accounting standards and other relevant factors.

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6. Investments

Investments consisted of the following as of December 31, 2019 and 2018:

	December 31,	
	2019	2018
Equity-method investments	\$ 280	\$ 436
Other investments	4	6
Total investments	\$ 284	\$ 442

The Company's equity-method investments consist of investments in companies that develop sports programming services, develop applications to improve the security, control and privacy of connected devices in homes and businesses for broadband network operators, distribute multi-video programs to national advertisers and provide programming on a video on demand, pay-per-view and subscription basis.

The Company's equity-method investments balances reflected in the table above includes differences between the acquisition date fair value of certain investments acquired and the underlying equity in the net assets of the investee, referred to as a basis difference. This basis difference is amortized as a component of equity earnings. The remaining unamortized basis difference was \$183 million and \$387 million as of December 31, 2019 and 2018, respectively.

The Company applies the equity method of accounting to these and other less significant equity-method investments, all of which are recorded in other noncurrent assets in the consolidated balance sheets as of December 31, 2019 and 2018. For the years ended December 31, 2019, 2018 and 2017, net losses from equity-method investments were \$131 million, \$46 million and \$4 million, respectively, which were recorded in other expense, net in the consolidated statements of operations. Net losses from equity-method investments for the years ended December 31, 2019 and 2018 included impairments on equity investments of approximately \$121 million and \$38 million, respectively.

7. Accounts Payable and Accrued Liabilities

Accounts payable and accrued liabilities consist of the following as of December 31, 2019 and 2018:

	December 31,	
	2019	2018
Accounts payable – trade	\$ 727	\$ 702
Deferred revenue	460	494
Accrued liabilities:		
Programming costs	2,042	2,044
Labor	939	705
Capital expenditures	1,441	1,472
Interest	1,052	1,045
Taxes and regulatory fees	501	508
Other	796	933
	\$ 7,958	\$ 7,903

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8. Leases

The components of lease related expenses, net are as follows.

	Year Ended December 31, 2019
Operating lease expense ^(a)	\$ 374
Finance lease expense:	
Amortization of right-of-use assets	12
Interest on lease liabilities	5
Total finance lease expense	17
Sublease income	(19)
Total lease related expenses, net	\$ 372

^(a) Includes short-term leases and variable leases costs of \$120 million for the year ended December 31, 2019.

Supplemental cash flow information related to leases is as follows.

	Year Ended December 31, 2019
Cash paid for amounts included in the measurement of lease liabilities:	
Operating cash flows from operating leases	\$ 242
Operating cash flows from finance leases	\$ 4
Financing cash flows from finance leases	\$ 6
Right-of-use assets obtained in exchange for lease obligations:	
Operating leases	\$ 218
Finance leases	\$ 35

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Supplemental balance sheet information related to leases is as follows.

	December 31, 2019	
Operating leases:		
Operating lease right-of-use assets	\$	925
Current operating lease liabilities	\$	184
Long-term operating lease liabilities		788
Total operating lease liabilities	\$	972
Finance leases:		
Finance lease right-of-use assets (included within property, plant and equipment, net)	\$	172
Current finance lease liabilities (included within accounts payable and accrued liabilities)	\$	4
Long-term finance lease liabilities (included within other long-term liabilities)		58
Total finance lease liabilities	\$	62
Weighted average remaining lease term		
Operating leases		6.6 years
Finance leases		16.6 years
Weighted average discount rate		
Operating leases		4.4%
Finance leases		5.7%

Maturities of lease liabilities are as follows.

	Operating leases		Finance leases	
2020	\$	226	\$	7
2021		218		6
2022		184		6
2023		159		6
2024		122		6
Thereafter		322		64
Undiscounted lease cash flow commitments		1,231		95
Reconciling impact from discounting		(259)		(33)
Lease liabilities on consolidated balance sheet as of December 31, 2019	\$	972	\$	62

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The following table presents the Company's unadjusted lease commitments as of December 31, 2018 as a required disclosure for companies adopting the lease standard prospectively without revising comparative period information.

	Operating leases	Capital leases
2019	\$ 233	\$ 10
2020	215	9
2021	176	9
2022	142	9
2023	119	10
Thereafter	342	64
	\$ 1,227	\$ 111

9. Long-Term Debt

Long-term debt consists of the following as of December 31, 2019 and 2018:

	December 31,			
	2019		2018	
	Principal Amount	Accreted Value	Principal Amount	Accreted Value
CCO Holdings, LLC:				
5.250% senior notes due March 15, 2021	\$ —	\$ —	\$ 500	\$ 498
5.250% senior notes due September 30, 2022	1,250	1,241	1,250	1,238
5.125% senior notes due February 15, 2023	1,000	995	1,000	994
4.000% senior notes due March 1, 2023	500	497	500	496
5.125% senior notes due May 1, 2023	1,150	1,145	1,150	1,144
5.750% senior notes due September 1, 2023	500	497	500	497
5.750% senior notes due January 15, 2024	150	149	1,000	993
5.875% senior notes due April 1, 2024	1,700	1,690	1,700	1,688
5.375% senior notes due May 1, 2025	750	746	750	745
5.750% senior notes due February 15, 2026	2,500	2,471	2,500	2,467
5.500% senior notes due May 1, 2026	1,500	1,491	1,500	1,490
5.875% senior notes due May 1, 2027	800	796	800	795
5.125% senior notes due May 1, 2027	3,250	3,222	3,250	3,219
5.000% senior notes due February 1, 2028	2,500	2,469	2,500	2,466
5.375% senior notes due June 1, 2029	1,500	1,501	—	—
4.750% senior notes due March 1, 2030	3,050	3,041	—	—
Charter Communications Operating, LLC:				
3.579% senior notes due July 23, 2020	2,000	1,997	2,000	1,992
4.464% senior notes due July 23, 2022	3,000	2,987	3,000	2,982
Senior floating rate notes due February 1, 2024	900	902	900	903
4.500% senior notes due February 1, 2024	1,100	1,093	1,100	1,091
4.908% senior notes due July 23, 2025	4,500	4,471	4,500	4,466
3.750% senior notes due February 15, 2028	1,000	987	1,000	986
4.200% senior notes due March 15, 2028	1,250	1,240	1,250	1,240
5.050% senior notes due March 30 2029	1,250	1,241	—	—
6.384% senior notes due October 23, 2035	2,000	1,982	2,000	1,982

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5.375% senior notes due April 1, 2038	800	786	800	785
6.484% senior notes due October 23, 2045	3,500	3,467	3,500	3,467
5.375% senior notes due May 1, 2047	2,500	2,506	2,500	2,506
5.750% senior notes due April 1, 2048	2,450	2,391	1,700	1,683
5.125% senior notes due July 1, 2049	1,250	1,240	—	—
4.800% senior notes due March 1, 2050	2,800	2,798	—	—
6.834% senior notes due October 23, 2055	500	495	500	495
Credit facilities	10,427	10,345	10,038	9,959
Time Warner Cable, LLC:				
8.750% senior notes due February 14, 2019	—	—	1,250	1,260
8.250% senior notes due April 1, 2019	—	—	2,000	2,030
5.000% senior notes due February 1, 2020	1,500	1,503	1,500	1,541
4.125% senior notes due February 15, 2021	700	711	700	721
4.000% senior notes due September 1, 2021	1,000	1,021	1,000	1,033
5.750% sterling senior notes due June 2, 2031 ^(a)	828	886	796	855
6.550% senior debentures due May 1, 2037	1,500	1,675	1,500	1,680
7.300% senior debentures due July 1, 2038	1,500	1,772	1,500	1,780
6.750% senior debentures due June 15, 2039	1,500	1,713	1,500	1,719
5.875% senior debentures due November 15, 2040	1,200	1,255	1,200	1,256
5.500% senior debentures due September 1, 2041	1,250	1,258	1,250	1,258
5.250% sterling senior notes due July 15, 2042 ^(b)	861	831	827	798
4.500% senior debentures due September 15, 2042	1,250	1,142	1,250	1,140
Time Warner Cable Enterprises LLC:				
8.375% senior debentures due March 15, 2023	1,000	1,148	1,000	1,191
8.375% senior debentures due July 15, 2033	1,000	1,284	1,000	1,298
Total debt	78,416	79,078	71,961	72,827
Less current portion:				
8.750% senior notes due February 14, 2019	—	—	(1,250)	(1,260)
8.250% senior notes due April 1, 2019	—	—	(2,000)	(2,030)
5.000% senior notes due February 1, 2020	(1,500)	(1,503)	—	—
3.579% senior notes due July 23, 2020	(2,000)	(1,997)	—	—
Long-term debt	\$ 74,916	\$ 75,578	\$ 68,711	\$ 69,537

^(a) Principal amount includes £625 million valued at \$828 million and \$796 million as of December 31, 2019 and 2018, respectively, using the exchange rate at that date.

^(b) Principal amount includes £650 million valued at \$861 million and \$827 million as of December 31, 2019 and 2018, respectively, using the exchange rate at that date.

The accreted values presented in the table above represent the principal amount of the debt adjusted for original issue discount or premium at the time of sale, deferred financing costs, and, in regards to the debt assumed in acquisitions, fair value premium adjustments as a result of applying acquisition accounting plus the accretion of those amounts to the balance sheet date. However, the amount that is currently payable if the debt becomes immediately due is equal to the principal amount of the debt. In regards to the fixed-rate British pound sterling denominated notes (the "Sterling Notes"), the principal amount of the debt and any premium or discount is remeasured into US dollars as of each balance sheet date. See Note 11. The Company has availability under the Charter Communications Operating, LLC ("Charter Operating") credit facilities of approximately \$4.7 billion as of December 31, 2019.

In 2019, CCO Holdings and CCO Holdings Capital jointly issued \$4.55 billion aggregate principal amount of senior unsecured notes at varying rates, prices and maturity dates, and Charter Operating and Charter Communications Operating Capital Corp.

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jointly issued \$6.05 billion aggregate principal amount of senior secured notes at varying rates, prices and maturity dates. The net proceeds were used to pay related fees and expenses and for general corporate purposes, including distributions to the Company's parent companies to fund buybacks of Charter Class A common stock and Charter Holdings common units as well as repaying certain indebtedness.

During the years ended December 31, 2019 and 2017, the Company repurchased \$1.35 billion and \$2.8 billion, respectively, of various series of senior notes. Loss on extinguishment of debt consisted of the following for the years ended December 31, 2019 and 2017.

	Year Ended December 31,	
	2019	2017
CCO Holdings notes redemption	\$ (22)	\$ (33)
Time Warner Cable, LLC notes redemption	—	(1)
Charter Operating credit facility refinancing	(3)	(6)
	\$ (25)	\$ (40)

CCO Holdings Notes

The CCO Holdings notes are senior debt obligations of CCO Holdings and CCO Holdings Capital and rank equally with all other current and future unsecured, unsubordinated obligations of CCO Holdings and CCO Holdings Capital. They are structurally subordinated to all obligations of subsidiaries of CCO Holdings.

CCO Holdings may redeem some or all of the CCO Holdings notes at any time at a premium. The optional redemption price declines to 100% of the respective series' principal amount, plus accrued and unpaid interest, if any, on or after varying dates in 2020 through 2027.

In addition, at any time prior to varying dates in 2020 through 2022, CCO Holdings may redeem up to 40% of the aggregate principal amount of certain notes at a premium plus accrued and unpaid interest to the redemption date, with the net cash proceeds of one or more equity offerings (as defined in the indenture); provided that certain conditions are met. In the event of specified change of control events, CCO Holdings must offer to purchase the outstanding CCO Holdings notes from the holders at a purchase price equal to 101% of the total principal amount of the notes, plus any accrued and unpaid interest.

High-Yield Restrictive Covenants; Limitation on Indebtedness.

The indentures governing the CCO Holdings notes contain certain covenants that restrict the ability of CCO Holdings, CCO Holdings Capital and all of their restricted subsidiaries to:

- incur additional debt;
- pay dividends on equity or repurchase equity;
- make investments;
- sell all or substantially all of their assets or merge with or into other companies;
- sell assets;
- in the case of restricted subsidiaries, create or permit to exist dividend or payment restrictions with respect to CCO Holdings, guarantee their parent companies debt, or issue specified equity interests;
- engage in certain transactions with affiliates; and
- grant liens.

The above limitations in certain circumstances regarding incurrence of debt, payment of dividends and making investments contained in the indentures of CCO Holdings permit CCO Holdings and its restricted subsidiaries to perform the above, so long as, after giving pro forma effect to the above, the leverage ratio would be below a specified level for the issuer. The leverage ratio under the indentures is 6.0 to 1.0. The leverage ratio was 4.2 as of December 31, 2019.

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Charter Operating Notes

The Charter Operating notes are guaranteed by CCO Holdings and substantially all of the operating subsidiaries of Charter Operating. In addition, the Charter Operating notes are secured by a perfected first priority security interest in substantially all of the assets of Charter Operating to the extent such liens can be perfected under the Uniform Commercial Code by the filing of a financing statement and the liens rank equally with the liens on the collateral securing obligations under the Charter Operating credit facilities. Charter Operating may redeem some or all of the Charter Operating notes at any time at a premium.

The Charter Operating notes are subject to the terms and conditions of the indenture governing the Charter Operating notes. The Charter Operating notes contain customary representations and warranties and affirmative covenants with limited negative covenants. The Charter Operating indenture also contains customary events of default.

Charter Operating Credit Facilities

The Charter Operating credit facilities have an outstanding principal amount of \$10.4 billion at December 31, 2019 as follows:

- term loan A-2 with a remaining principal amount of approximately \$205 million, which is repayable in quarterly installments and aggregating \$11 million in each loan year, with the remaining balance due at final maturity on March 31, 2023. Pricing on term loan A-2 is LIBOR plus 1.50%;
- term loan A-4 with a remaining principal amount of approximately \$4.0 billion, which is repayable in quarterly installments and aggregating \$202 million in each loan year, with the remaining balance due at final maturity on February 1, 2025. Pricing on term loan A-4 is LIBOR plus 1.25%;
- term loan B-1 with a remaining principal amount of approximately \$2.4 billion, which is repayable in equal quarterly installments and aggregating \$25 million in each loan year, with the remaining balance due at final maturity on April 30, 2025. Pricing on term loan B-1 is LIBOR plus 1.75%;
- term loan B-2 with a remaining principal amount of approximately \$3.8 billion, which is repayable in equal quarterly installments and aggregating \$38 million in each loan year, with the remaining balance due at final maturity on February 1, 2027. Pricing on term loan B-2 is LIBOR plus 1.75%; and
- a revolving loan allowing for borrowings of up to \$4.75 billion, \$249 million maturing on March 31, 2023 and \$4.5 billion maturing on February 1, 2025. Pricing on the revolving loan is LIBOR plus 1.50% with a commitment fee of 0.30% on the portion maturing in 2023 and LIBOR plus 1.25% with a commitment fee of 0.20% on the portion maturing in 2025. As of December 31, 2019, \$36 million of the revolving loan was utilized to collateralize a like principal amount of letters of credit out of \$363 million of letters of credit issued on the Company's behalf.

Amounts outstanding under the Charter Operating credit facilities bear interest, at Charter Operating's election, at a base rate or LIBOR (1.73% and 2.50% as of December 31, 2019 and 2018, respectively), as defined, plus an applicable margin.

The Charter Operating credit facilities also allow us to enter into incremental term loans in the future, with amortization as set forth in the notices establishing such term loans. Although the Charter Operating credit facilities allow for the incurrence of a certain amount of incremental term loans subject to pro forma compliance with its financial maintenance covenants, no assurance can be given that the Company could obtain additional incremental term loans in the future if Charter Operating sought to do so or what amount of incremental term loans would be allowable at any given time under the terms of the Charter Operating credit facilities.

The obligations of Charter Operating under the Charter Operating credit facilities are guaranteed by CCO Holdings and substantially all of the operating subsidiaries of Charter Operating. The obligations are also secured by (i) a lien on substantially all of the assets of Charter Operating and its subsidiaries, to the extent such lien can be perfected under the Uniform Commercial Code by the filing of a financing statement, and (ii) a pledge by CCO Holdings of the equity interests owned by it in any of Charter Operating's subsidiaries, as well as intercompany obligations owing to it by any of such entities.

Restrictive Covenants

The Charter Operating credit facilities contain representations and warranties, and affirmative and negative covenants customary for financings of this type. The financial covenants measure performance against standards set for leverage to be tested as of the end of each quarter. The Charter Operating credit facilities contain provisions requiring mandatory loan prepayments under specific

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circumstances, including in connection with certain sales of assets, so long as the proceeds have not been reinvested in the business. Additionally, the Charter Operating credit facilities provisions contain an allowance for restricted payments with certain limitations. The Charter Operating credit facilities permit Charter Operating and its subsidiaries to make distributions to pay interest on the currently outstanding subordinated and parent company indebtedness, provided that, among other things, no default has occurred and is continuing under the Charter Operating credit facilities. The Charter Operating credit facilities also contain customary events of default.

Time Warner Cable, LLC Notes and Debentures

The Time Warner Cable, LLC ("TWC, LLC") senior notes and debentures are guaranteed by CCO Holdings and substantially all of the operating subsidiaries of Charter Operating and rank equally with the liens on the collateral securing obligations under the Charter Operating notes and credit facilities. Interest on each series of TWC, LLC senior notes and debentures is payable semi-annually (with the exception of the Sterling Notes, which is payable annually) in arrears.

The TWC, LLC indenture contains customary covenants relating to restrictions on the ability of TWC, LLC or any material subsidiary to create liens and on the ability of TWC, LLC and Time Warner Cable Enterprises LLC ("TWCE") to consolidate, merge or convey or transfer substantially all of their assets. The TWC, LLC indenture also contains customary events of default.

The TWC, LLC senior notes and debentures may be redeemed in whole or in part at any time at TWC, LLC's option at a redemption price equal to the greater of (i) all of the applicable principal amount being redeemed and (ii) the sum of the present values of the remaining scheduled payments on the applicable TWC, LLC senior notes and debentures discounted to the redemption date on a semi-annual basis (with the exception of the Sterling Notes, which are on an annual basis), at a comparable government bond rate plus a designated number of basis points as further described in the indenture and the applicable note or debenture, plus, in each case, accrued but unpaid interest to, but not including, the redemption date.

The Company may offer to redeem all, but not less than all, of the Sterling Notes in the event of certain changes in the tax laws of the U.S. (or any taxing authority in the U.S.). This redemption would be at a redemption price equal to 100% of the principal amount, together with accrued and unpaid interest on the Sterling Notes to, but not including, the redemption date.

TWCE Debentures

The TWCE senior debentures are guaranteed by CCO Holdings, substantially all of the operating subsidiaries of Charter Operating and TWC, LLC and rank equally with the liens on the collateral securing obligations under the Charter Operating notes and credit facilities. Interest on each series of TWCE senior debentures is payable semi-annually in arrears. The TWCE senior debentures are not redeemable before maturity.

The TWCE indenture contains customary covenants relating to restrictions on the ability of TWCE or any material subsidiary to create liens and on the ability of TWC, LLC and TWCE to consolidate, merge or convey or transfer substantially all of their assets. The TWCE indenture also contains customary events of default.

Limitations on Distributions

Distributions by the Company's subsidiaries to a parent company for payment of principal on parent company notes are restricted under the indentures and credit facilities discussed above, unless there is no default under the applicable indenture and credit facilities, and unless each applicable subsidiary's leverage ratio test is met at the time of such distribution. As of December 31, 2019, there was no default under any of these indentures or credit facilities and each subsidiary met its applicable leverage ratio tests based on December 31, 2019 financial results. There can be no assurance that they will satisfy these tests at the time of the contemplated distribution. Distributions by Charter Operating for payment of principal on parent company (CCO Holdings) notes are further restricted by the covenants in its credit facilities.

However, without regard to leverage, during any calendar year or any portion thereof during which the borrower is a flow-through entity for tax purposes, and so long as no event of default exists, the borrower may make distributions to the equity interests of the borrower in an amount sufficient to make permitted tax payments.

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In addition to the limitation on distributions under the various indentures, distributions by the Company's subsidiaries may be limited by applicable law, including the Delaware Limited Liability Company Act, under which the Company's subsidiaries may make distributions if they have "surplus" as defined in the act.

Liquidity and Future Principal Payments

The Company continues to have significant amounts of debt, and its business requires significant cash to fund principal and interest payments on its debt, capital expenditures and ongoing operations. As set forth below, the Company has significant future principal payments. The Company continues to monitor the capital markets, and it expects to undertake refinancing transactions and utilize free cash flow and cash on hand to further extend or reduce the maturities of its principal obligations. The timing and terms of any refinancing transactions will be subject to market conditions.

Based upon outstanding indebtedness as of December 31, 2019, the amortization of term loans, and the maturity dates for all senior and subordinated notes, total future principal payments on the total borrowings under all debt agreements are as follows:

Year	Amount
2020	\$ 3,777
2021	1,977
2022	4,527
2023	4,586
2024	4,115
Thereafter	59,434
	<u>\$ 78,416</u>

10. Loans Payable - Related Party

Loans payable - related party as of December 31, 2019 and 2018 consists of loans from Charter Communications Holding Company, LLC ("Charter Holdco") to the Company of \$699 million and \$674 million, respectively, and loans from Charter to the Company of \$260 million and \$251 million, respectively. Interest accrued on loans payable - related party at LIBOR plus 1.50% during the periods ending December 31, 2019 and 2018.

11. Accounting for Derivative Instruments and Hedging Activities

The Company uses derivative instruments to manage foreign exchange risk on the Sterling Notes, and does not hold or issue derivative instruments for speculative trading purposes.

Cross-currency derivative instruments are used to effectively convert £1.275 billion aggregate principal amount of fixed-rate British pound sterling denominated debt, including annual interest payments and the payment of principal at maturity, to fixed-rate U.S. dollar denominated debt. The cross-currency swaps have maturities of June 2031 and July 2042. The Company is required to post collateral on the cross-currency derivative instruments when the derivative contracts are in a liability position. In April 2019, the Company entered into a collateral holiday agreement for 60% of both the 2031 and 2042 cross-currency swaps, which eliminates the requirement to post collateral for three years, as well as a ten year collateral cap on the remaining 40% of the cross-currency swaps which limits the required collateral posting on that 40% of the cross-currency swaps to \$150 million. The fair value of the Company's cross-currency derivatives included in other long-term liabilities on the Company's consolidated balance sheets was \$224 million and \$237 million as of December 31, 2019 and 2018, respectively.

The Company's derivative instruments are not designated as hedges and are marked to fair value each period, with the impact recorded as a gain or loss on financial instruments, net in the consolidated statements of operations. While these derivative instruments are not designated as hedges for accounting purposes, management continues to believe such instruments are closely correlated with the respective debt, thus managing associated risk.

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The effect of financial instruments on the consolidated statements of operations is presented in the table below.

	Year Ended December 31,		
	2019	2018	2017
Gain (Loss) on Financial Instruments, Net:			
Change in fair value of cross-currency derivative instruments	\$ 13	\$ (212)	\$ 226
Foreign currency remeasurement of Sterling Notes to U.S. dollars	(67)	102	(157)
	<u>\$ (54)</u>	<u>\$ (110)</u>	<u>\$ 69</u>

12. Fair Value Measurements

Accounting guidance establishes a three-level hierarchy for disclosure of fair value measurements, based on the transparency of inputs to the valuation of an asset or liability as of the measurement date, as follows:

- Level 1 – inputs to the valuation methodology are quoted prices (unadjusted) for identical assets or liabilities in active markets.
- Level 2 – inputs to the valuation methodology include quoted prices for similar assets and liabilities in active markets, and inputs that are observable for the asset or liability, either directly or indirectly, for substantially the full term of the financial instrument.
- Level 3 – inputs to the valuation methodology are unobservable and significant to the fair value measurement.

Financial Assets and Liabilities

The Company has estimated the fair value of its financial instruments as of December 31, 2019 and 2018 using available market information or other appropriate valuation methodologies. Considerable judgment, however, is required in interpreting market data to develop the estimates of fair value. Accordingly, the estimates presented in the accompanying consolidated financial statements are not necessarily indicative of the amounts the Company would realize in a current market exchange.

The carrying amounts of cash and cash equivalents, receivables, payables and other current assets and liabilities approximate fair value because of the short maturity of those instruments.

Financial instruments accounted for at fair value on a recurring basis and classified within Level 2 of the valuation hierarchy include the Company's cross-currency derivative instruments and were valued at \$224 million and \$237 million as of December 31, 2019 and 2018, respectively.

The estimated fair value of the Company's senior notes and debentures as of December 31, 2019 and 2018 is based on quoted market prices in active markets and is classified within Level 1 of the valuation hierarchy, while the estimated fair value of the Company's credit facilities is based on quoted market prices in inactive markets and is classified within Level 2.

A summary of the carrying value and fair value of the Company's debt at December 31, 2019 and 2018 is as follows:

	December 31,			
	2019		2018	
	Carrying Value	Fair Value	Carrying Value	Fair Value
Debt				
Senior notes and debentures	\$ 68,733	\$ 74,938	\$ 62,868	\$ 61,087
Credit facilities	\$ 10,345	\$ 10,448	\$ 9,959	\$ 9,608

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Non-financial Assets and Liabilities

The Company's nonfinancial assets such as equity-method investments, franchises, property, plant, and equipment, and other intangible assets are not measured at fair value on a recurring basis; however, they are subject to fair value adjustments in certain circumstances, such as when there is evidence that an impairment may exist. When such impairments are recorded, fair values are generally classified within Level 3 of the valuation hierarchy.

13. Operating Costs and Expenses

Operating costs and expenses, exclusive of items shown separately in the consolidated statements of operations, consist of the following for the periods presented:

	Year Ended December 31,		
	2019	2018	2017
Programming	\$ 11,290	\$ 11,124	\$ 10,596
Regulatory, connectivity and produced content	2,366	2,210	2,064
Costs to service customers	7,277	7,327	7,235
Marketing	3,044	3,042	3,036
Mobile	1,246	346	—
Other	4,052	3,842	3,629
	<u>\$ 29,275</u>	<u>\$ 27,891</u>	<u>\$ 26,560</u>

Programming costs consist primarily of costs paid to programmers for basic, premium, digital, video on demand and pay-per-view programming. Regulatory, connectivity and produced content costs represent payments to franchise and regulatory authorities, costs directly related to providing video, Internet and voice services as well as payments for sports, local and news content produced by the Company. Included in regulatory, connectivity and produced content costs is content acquisition costs for the Los Angeles Lakers' basketball games and Los Angeles Dodgers' baseball games, which are recorded as games are exhibited over the applicable season. Costs to service customers include costs related to field operations, network operations and customer care for the Company's residential and small and medium business customers, including internal and third-party labor for the non-capitalizable portion of installations, service and repairs, maintenance, bad debt expense, billing and collection, occupancy and vehicle costs. Marketing costs represent the costs of marketing to current and potential commercial and residential customers including labor costs. Mobile costs represent costs associated with the Company's mobile service such as device and service costs, marketing, sales and commissions, retail stores, personnel costs, taxes, among others. Other includes corporate overhead, advertising sales expenses, indirect costs associated with the Company's enterprise business customers and regional sports and news networks, property tax and insurance expense and stock compensation expense, among others.

14. Other Operating Expenses, Net

Other operating expenses, net consist of the following for the years presented:

	Year Ended December 31,		
	2019	2018	2017
Merger and restructuring costs	\$ 10	\$ 97	\$ 351
Special charges, net	59	48	77
Loss on sale of assets, net	42	85	16
	<u>\$ 111</u>	<u>\$ 230</u>	<u>\$ 444</u>

Merger and restructuring costs

Merger and restructuring costs represent costs incurred in connection with merger and acquisition transactions and related restructuring, such as advisory, legal and accounting fees, employee retention costs and employee termination costs related to

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acquisitions. Changes in accruals for merger and restructuring costs from January 1, 2017 through December 31, 2019 are presented below:

	Employee Retention Costs	Employee Termination Costs	Transaction and Advisory Costs	Other Costs	Total
Liability, December 31, 2016	\$ 7	\$ 244	\$ 25	\$ —	\$ 276
Costs incurred	4	226	4	68	302
Cash paid	(10)	(298)	(12)	(60)	(380)
Liability, December 31, 2017	1	172	17	8	198
Costs incurred	1	64	2	25	92
Cash paid	(1)	(179)	(8)	(27)	(215)
Liability, December 31, 2018	1	57	11	6	75
Costs incurred	—	1	8	1	10
Cash paid	(1)	(51)	(12)	(4)	(68)
Remaining liability, December 31, 2019	\$ —	\$ 7	\$ 7	\$ 3	\$ 17

In addition to the costs indicated above, the Company recorded \$5 million and \$49 million of expense related to accelerated vesting of equity awards of terminated employees for the years ended December 31, 2018 and 2017, respectively.

Special charges, net

Special charges, net primarily includes employee termination costs not related to acquisitions and net amounts of litigation settlements. During 2018 and 2017, special charges, net also includes a \$22 million and \$83 million charge related to the Company's withdrawal liability from a multiemployer pension plan, respectively.

Loss on sale of assets, net

Loss on sale of assets, net represents the net loss recognized on the sales and disposals of fixed assets including a \$42 million and \$75 million impairment of non-strategic assets during the years ended December 31, 2019 and 2018, respectively.

15. Stock Compensation Plans

Charter's stock incentive plan provides for grants of nonqualified stock options, incentive stock options, stock appreciation rights, dividend equivalent rights, performance units and performance shares, share awards, phantom stock, restricted stock units and restricted stock. Directors, officers and other employees of the Company and its subsidiaries, as well as others performing consulting services for the Company, are eligible for grants under the stock incentive plan. The stock incentive plan allows for the issuance of up to 16 million shares of Charter Class A common stock (or units convertible into Charter Class A common stock).

Charter Stock options and restricted stock units generally cliff vest upon the three year anniversary of each grant. Certain stock options and restricted stock units vest based on achievement of stock price hurdles. Stock options generally expire ten years from the grant date and restricted stock units have no voting rights. Restricted stock generally vests one year from the date of grant. TWC restricted stock units that were converted into Charter restricted stock units in 2016 generally vest 50% on each of the third and fourth anniversary of the grant date.

As of December 31, 2019, total unrecognized compensation remaining to be recognized in future periods totaled \$175 million for stock options, \$0.9 million for restricted stock and \$205 million for restricted stock units and the weighted average period over which they are expected to be recognized is 2 years for stock options, 4 months for restricted stock and 2 years for restricted stock units. The Company recorded \$315 million, \$285 million and \$261 million of stock compensation expense for the years ended December 31, 2019, 2018 and 2017, respectively, which is included in operating costs and expenses. The Company also recorded \$5 million and \$49 million of expense for the years ended December 31, 2018 and 2017, respectively, related to accelerated vesting of equity awards of terminated employees which is recorded in merger and restructuring costs in other operating expenses, net in the consolidated statements of operations.

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A summary of the activity for Charter's stock options for the years ended December 31, 2019, 2018 and 2017, is as follows (shares in thousands, except per share data):

	Year Ended December 31,								
	2019			2018			2017		
	Shares	Weighted Average Exercise Price	Aggregate Intrinsic Value	Shares	Weighted Average Exercise Price	Aggregate Intrinsic Value	Shares	Weighted Average Exercise Price	Aggregate Intrinsic Value
Outstanding, beginning of period	10,410	\$ 225.53		9,649	\$ 201.83		9,592	\$ 181.39	
Granted	1,847	\$ 298.84		1,507	\$ 350.40		1,175	\$ 302.87	
Exercised	(1,271)	\$ 186.90	\$ 247	(577)	\$ 133.35	\$ 114	(1,044)	\$ 124.32	\$ 219
Canceled	(437)	\$ 270.94		(169)	\$ 300.46		(74)	\$ 251.63	
Outstanding, end of period	<u>10,549</u>	<u>\$ 241.14</u>	<u>\$ 2,573</u>	<u>10,410</u>	<u>\$ 225.53</u>		<u>9,649</u>	<u>\$ 201.83</u>	
Weighted average remaining contractual life	<u>7</u> years			<u>7</u> years			<u>8</u> years		
Options exercisable, end of period	<u>3,119</u>	\$ 161.13	\$ 1,011	<u>2,194</u>	\$ 122.19		<u>1,734</u>	\$ 90.56	
Options expected to vest, end of period	<u>7,430</u>	\$ 274.74	\$ 1,563						
Weighted average fair value of options granted	<u>\$ 84.39</u>			<u>\$ 94.70</u>			<u>\$ 73.67</u>		

A summary of the activity for Charter's restricted stock for the years ended December 31, 2019, 2018 and 2017, is as follows (shares in thousands, except per share data):

	Year Ended December 31,					
	2019		2018		2017	
	Shares	Weighted Average Grant Price	Shares	Weighted Average Grant Price	Shares	Weighted Average Grant Price
Outstanding, beginning of period	10	\$ 297.86	10	\$ 343.10	10	\$ 231.81
Granted	8	\$ 359.33	10	\$ 297.86	10	\$ 343.10
Vested	(10)	\$ 297.86	(10)	\$ 343.10	(10)	\$ 231.81
Canceled	—	\$ —	—	\$ —	—	\$ —
Outstanding, end of period	<u>8</u>	<u>\$ 359.33</u>	<u>10</u>	<u>\$ 297.86</u>	<u>10</u>	<u>\$ 343.10</u>

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A summary of the activity for Charter's restricted stock units for the years ended December 31, 2019, 2018 and 2017, is as follows (shares in thousands, except per share data):

	Year Ended December 31,					
	2019		2018		2017	
	Shares	Weighted Average Grant Price	Shares	Weighted Average Grant Price	Shares	Weighted Average Grant Price
Outstanding, beginning of period	2,211	\$ 219.61	2,391	\$ 192.96	3,313	\$ 192.41
Granted	704	\$ 298.22	526	\$ 348.75	285	\$ 302.76
Vested	(729)	\$ 206.88	(619)	\$ 216.27	(1,159)	\$ 216.21
Canceled	(127)	\$ 250.85	(87)	\$ 286.41	(48)	\$ 234.99
Outstanding, end of period	<u>2,059</u>	<u>\$ 249.45</u>	<u>2,211</u>	<u>\$ 219.61</u>	<u>2,391</u>	<u>\$ 192.96</u>

16. Income Taxes

CCO Holdings is a single member limited liability company not subject to income tax. CCO Holdings holds all operations through indirect subsidiaries. The majority of these indirect subsidiaries are limited liability companies that are not subject to income tax. Certain indirect subsidiaries that are required to file separate returns are subject to federal and state tax. CCO Holdings' tax provision reflects the tax provision of the entities required to file separate returns.

Generally, the taxable income, gains, losses, deductions and credits of CCO Holdings are passed through to its indirect members, Charter and Advance/Newhouse Partnership ("A/N"). Charter is responsible for its share of taxable income or loss of CCO Holdings allocated to it in accordance with the Charter Holdings Limited Liability Company Agreement and partnership tax rules and regulations. Charter also records financial statement deferred tax assets and liabilities related to its investment, and its underlying net assets, in CCO Holdings.

Income Tax Expense

For the years ended December 31, 2019, 2018, and 2017, the Company recorded deferred income tax expense as shown below. The tax provision in future periods will vary based on current and future temporary differences, as well as future operating results.

	Year Ended December 31,		
	2019	2018	2017
Current expense:			
Federal income taxes	\$ (4)	\$ —	\$ (1)
State income taxes	(28)	(12)	(15)
Current income tax expense	<u>(32)</u>	<u>(12)</u>	<u>(16)</u>
Deferred expense:			
State income taxes	(57)	(4)	(7)
Deferred income tax expense	<u>(57)</u>	<u>(4)</u>	<u>(7)</u>
Income tax expense	<u>\$ (89)</u>	<u>\$ (16)</u>	<u>\$ (23)</u>

Income tax is recognized primarily through decreases (increases) in deferred tax liabilities, as well as through current state income tax expense and in 2019, an internal entity simplification. The tax provision in future periods will vary based on future operating results, as well as future book versus tax differences.

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The Company's effective tax rate differs from that derived by applying the applicable federal income tax rate of 21% for the years ended December 31, 2019 and 2018 and 35% for the year ended December 31, 2017, respectively, as follows:

	Year Ended December 31,		
	2019	2018	2017
Statutory federal income taxes	\$ (491)	\$ (346)	\$ (317)
Statutory state income taxes, net	(85)	(16)	(23)
Income allocated to limited liability companies not subject to income taxes	487	346	317
Income tax expense	<u>\$ (89)</u>	<u>\$ (16)</u>	<u>\$ (23)</u>

Deferred Tax Assets (Liabilities)

The tax effects of these temporary differences that give rise to significant portions of the deferred tax assets at December 31, 2019 and 2018 are presented below.

	December 31,	
	2019	2018
Deferred tax assets:		
Loss carryforwards	\$ —	\$ 7
Indefinite-lived intangibles	—	3
Accrued and other	5	5
Total gross deferred tax assets	<u>5</u>	<u>15</u>
Deferred tax liabilities:		
Indefinite-lived intangibles	\$ (39)	\$ —
Property, plant and equipment	(17)	(11)
Other intangibles	(4)	(1)
Deferred tax liabilities	<u>(60)</u>	<u>(12)</u>
Net deferred tax assets (liabilities)	<u>\$ (55)</u>	<u>\$ 3</u>

Uncertain Tax Positions

The net amount of the unrecognized tax benefits recorded as of December 31, 2019 that could impact the effective tax rate is \$134 million. The Company has determined that it is reasonably possible that its existing reserve for uncertain tax positions as of December 31, 2019 could decrease by approximately \$31 million during the year ended December 31, 2020 related to various ongoing audits, settlement discussions and expiration of statute of limitations with various state and local agencies; however, various events could cause the Company's current expectations to change in the future. These uncertain tax positions, if ever recognized in the financial statements, would be recorded in the consolidated statements of operations as part of the income tax provision. A reconciliation of the beginning and ending amount of unrecognized tax benefits, exclusive of interest and penalties, included in other long-term liabilities on the accompanying consolidated balance sheets of the Company is as follows:

BALANCE, December 31, 2017	\$ 134
Reductions on settlements and expirations with taxing authorities	(15)
BALANCE, December 31, 2018	\$ 119
Reductions on settlements and expirations with taxing authorities	(9)
BALANCE, December 31, 2019	<u>\$ 110</u>

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The Company recognizes interest and penalties accrued on uncertain income tax positions as part of the income tax provision. Interest and penalties included in other long-term liabilities on the accompanying consolidated balance sheets of the Company were \$51 million and \$43 million as of December 31, 2019 and 2018, respectively.

No tax years for Charter are currently under examination by the Internal Revenue Service ("IRS") for income tax purposes. Charter's 2016 through 2019 tax years remain open for examination and assessment. Charter's short period return dated May 17, 2016 (prior to the TWC and Bright House Networks, LLC transactions) remain subject to examination and assessment. Years prior to 2016 remain open solely for purposes of examination of Charter's loss and credit carryforwards. The IRS is currently examining Charter Holdings' income tax return for 2016. Charter Holdings' 2017 through 2019 tax years remain open for examination and assessment. The IRS is currently examining TWC's income tax returns for 2011 through 2014. TWC's tax year 2015 remains subject to examination and assessment. Prior to TWC's separation from Time Warner Inc. ("Time Warner") in March 2009, TWC was included in the consolidated U.S. federal and certain state income tax returns of Time Warner. The IRS has examined Time Warner's 2008 through 2010 income tax returns and the results are under appeal. The Company does not anticipate that these examinations will have a material impact on the Company's consolidated financial position or results of operations. In addition, the Company is also subject to ongoing examinations of the Company's tax returns by state and local tax authorities for various periods. Activity related to these state and local examinations did not have a material impact on the Company's consolidated financial position or results of operations during the year ended December 31, 2019, nor does the Company anticipate a material impact in the future.

17. Comprehensive Income

The following table sets forth the consolidated statements of comprehensive income for the years ended December 31, 2019, 2018 and 2017.

	Year Ended December 31,		
	2019	2018	2017
Consolidated net income	\$ 2,252	\$ 1,633	\$ 883
Net impact of interest rate derivative instruments	—	—	5
Foreign currency translation adjustment	2	(1)	1
Consolidated comprehensive income	2,254	1,632	889
Less: Comprehensive income attributable to noncontrolling interests	(1)	(1)	(1)
Comprehensive income attributable to CCO Holdings member	<u>\$ 2,253</u>	<u>\$ 1,631</u>	<u>\$ 888</u>

18. Related Party Transactions

The following sets forth certain transactions in which the Company and the directors, executive officers, and affiliates of the Company are involved or, in the case of the management arrangements, subsidiaries that are debt issuers that pay certain of their parent companies for services.

Charter is a party to management arrangements with one of its subsidiaries, Spectrum Management and certain of their subsidiaries. Under these agreements, Charter, Spectrum Management and Charter Holdco provide management services for the cable systems owned or operated by their subsidiaries. Costs associated with providing these services are charged directly to the Company's operating subsidiaries. All other costs incurred on behalf of Charter's operating subsidiaries are considered a part of the management fee. These costs are recorded as a component of operating costs and expenses, in the accompanying consolidated financial statements. The management fee charged to the Company's operating subsidiaries approximated the expenses incurred by Spectrum Management, Charter Holdco and Charter on behalf of the Company's operating subsidiaries in 2019, 2018 and 2017.

Liberty Broadband and A/N

Under the terms of the Amended and Restated Stockholders Agreement with Liberty Broadband, A/N and Legacy Charter, dated May 23, 2015, (the "Stockholders Agreement"), the number of Charter's directors is fixed at 13, and includes its CEO. Two designees selected by A/N are members of the board of directors of Charter and three designees selected by Liberty Broadband are members of the board of directors of Charter. The remaining eight directors are not affiliated with either A/N or Liberty Broadband. Each of A/N and Liberty Broadband is entitled to nominate at least one director to each of the committees of Charter's

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board of directors, subject to applicable stock exchange listing rules and certain specified voting or equity ownership thresholds for each of A/N and Liberty Broadband, and provided that the Nominating and Corporate Governance Committee and the Compensation and Benefit Committee each have at least a majority of directors independent from A/N, Liberty Broadband and Charter (referred to as the “unaffiliated directors”). Each of the Nominating and Corporate Governance Committee and the Compensation and Benefits Committee is currently comprised of three unaffiliated directors and one designee of each of A/N and Liberty Broadband. A/N and Liberty Broadband also have certain other committee designation and other governance rights. Mr. Thomas Rutledge, the Company’s CEO, is the chairman of the board of Charter.

In December 2017, Charter and A/N entered into an amendment to the letter agreement (the “Letter Agreement”) that requires A/N to sell to Charter or to Charter Holdings, on a monthly basis, a number of shares of Charter Class A common stock or Charter Holdings common units that represents a pro rata participation by A/N and its affiliates in any repurchases of shares of Charter Class A common stock from persons other than A/N effected by Charter during the immediately preceding calendar month, at a purchase price equal to the average price paid by Charter for the shares repurchased from persons other than A/N during such immediately preceding calendar month. A/N and Charter both have the right to terminate or suspend the pro rata repurchase arrangement on a prospective basis. Pursuant to the TRA between Charter and A/N, Charter must pay to A/N 50% of the tax benefit when realized by Charter from the step-up in tax basis resulting from any future exchange or sale of the preferred and common units.

The Company is aware that Dr. John Malone, a director emeritus of Charter and Chairman of the board of directors and holder of 49.0% of voting interest in Liberty Broadband, may be deemed to have a 39.9% voting interest in Qurate Retail, Inc. (“Qurate”) and is on the board of directors of Qurate. Qurate wholly owns HSN, Inc. (“HSN”) and QVC, Inc. (“QVC”). The Company has programming relationships with HSN and QVC. For the years ended December 31, 2019, 2018 and 2017, the Company recorded revenue in aggregate of approximately \$50 million, \$73 million and \$77 million, respectively, from HSN and QVC as part of channel carriage fees and revenue sharing arrangements for home shopping sales made to customers in the Company’s footprint.

Dr. Malone and Mr. Steven Miron, a member of Charter’s board of directors, also serve on the board of directors of Discovery Communications, Inc., (“Discovery”). The Company is aware that Dr. Malone owns 1.2% of the series A common stock, 93.6% of the series B common stock and 2.6% of the series C common stock of Discovery and has a 28.2% voting interest in Discovery for the election of directors. The Company is aware that Advance/Newhouse Programming Partnership (“A/N PP”), an affiliate of A/N and in which Mr. Miron is the CEO, owns 100% of the Series A-1 preferred stock of Discovery and 100% of the Series C-1 preferred stock of Discovery and has a 24.1% voting interest for matters other than the election of directors. A/N PP also has the right to appoint three directors out of a total of twelve directors to Discovery’s board. The Company purchases programming from Discovery pursuant to agreements entered into prior to Dr. Malone and Mr. Miron joining Charter’s board of directors. Based on publicly available information, the Company does not believe that Discovery would currently be considered a related party. The amount paid to Discovery represents less than 3% of total operating costs and expenses for the years ended December 31, 2019, 2018 and 2017.

Equity Investments

The Company and its parent companies have agreements with certain equity investees (see Note 6) pursuant to which the Company has made or received related party transaction payments. The Company and its parent companies recorded payments to equity investees totaling \$314 million, \$361 million and \$317 million during the years ended December 31, 2019, 2018 and 2017, respectively.

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19. Commitments and Contingencies

Commitments

The following table summarizes the Company's and its parent companies' payment obligations as of December 31, 2019 for its contractual obligations.

	<u>Total</u>	<u>2020</u>	<u>2021</u>	<u>2022</u>	<u>2023</u>	<u>2024</u>	<u>Thereafter</u>
Programming Minimum Commitments ^(a)	\$ 276	\$ 216	\$ 37	\$ 12	\$ 11	\$ —	\$ —
Other ^(b)	12,658	2,536	2,598	436	366	526	6,196
	<u>\$ 12,934</u>	<u>\$ 2,752</u>	<u>\$ 2,635</u>	<u>\$ 448</u>	<u>\$ 377</u>	<u>\$ 526</u>	<u>\$ 6,196</u>

^(a) The Company pays programming fees under multi-year contracts ranging from three to ten years, typically based on a flat fee per customer, which may be fixed for the term, or may in some cases escalate over the term. Programming costs included in the statement of operations were 11.3 billion, 11.1 billion and 10.6 billion for the years ended December 31, 2019, 2018 and 2017 respectively. Certain of the Company's programming agreements are based on a flat fee per month or have guaranteed minimum payments. The table sets forth the aggregate guaranteed minimum commitments under the Company's programming contracts.

^(b) "Other" represents other guaranteed minimum commitments, including rights negotiated directly with content owners for distribution on company-owned channels or networks, commitments related to our role as an advertising and distribution sales agent for third party-owned channels or networks, commitments to our customer premise equipment and device vendors and contractual obligations related to third-party network augmentation.

The following items are not included in the contractual obligation table due to various factors discussed below. However, the Company incurs these costs as part of its operations:

- The Company rents utility poles used in its operations. Generally, pole rentals are cancelable on short notice, but the Company anticipates that such rentals will recur. Rent expense incurred for pole rental attachments for the years ended December 31, 2019, 2018 and 2017 was \$180 million, \$171 million and \$167 million, respectively.
- The Company pays franchise fees under multi-year franchise agreements based on a percentage of revenues generated from video service per year. The Company also pays other franchise related costs, such as public education grants, under multi-year agreements. Franchise fees and other franchise-related costs included in the accompanying statement of operations were \$750 million, \$747 million and \$705 million for the years ended December 31, 2019, 2018 and 2017 respectively.
- The Company has \$363 million in letters of credit, of which \$36 million is secured under the Charter Operating credit facility, primarily to its various casualty carriers as collateral for reimbursement of workers' compensation, auto liability and general liability claims.
- Minimum pension funding requirements have not been presented in the table above as such amounts have not been determined beyond 2019. The Company made no cash contributions to the qualified pension plans in 2019; however, the Company is permitted to make discretionary cash contributions to the qualified pension plans in 2020. For the nonqualified pension plan, the Company contributed \$4 million during 2019 and will continue to make contributions in 2020 to the extent benefits are paid.

Legal Proceedings

In August 2015, a purported stockholder of Charter, Matthew Sciacacchi, filed a lawsuit in the Delaware Court of Chancery, on behalf of a putative class of Charter stockholders, challenging the transactions involving Charter, TWC, A/N, and Liberty Broadband announced by Charter on May 26, 2015. The lawsuit, which named as defendants Charter and its board of directors, alleged that the transactions resulted from breaches of fiduciary duty by Charter's directors and that Liberty Broadband improperly benefited from the challenged transactions at the expense of other Charter stockholders. The lawsuit has proceeded to the discovery phase. Charter denies any liability, believes that it has substantial defenses, and is vigorously defending this lawsuit. Although Charter is unable to predict the outcome of this lawsuit, it does not expect the outcome will have a material effect on its operations, financial condition or cash flows.

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The California Attorney General and the Alameda County, California District Attorney are investigating whether certain of Charter's waste disposal policies, procedures and practices are in violation of the California Business and Professions Code and the California Health and Safety Code. That investigation was commenced in January 2014. A similar investigation involving TWC was initiated in February 2012. Charter is cooperating with these investigations. While the Company is unable to predict the outcome of these investigations, it does not expect that the outcome will have a material effect on its operations, financial condition, or cash flows.

On December 19, 2011, Sprint Communications Company L.P. ("Sprint") filed a complaint in the U.S. District Court for the District of Kansas alleging that TWC infringed certain U.S. patents purportedly relating to Voice over Internet Protocol ("VoIP") services. At the trial, the jury returned a verdict of \$140 million against TWC and further concluded that TWC had willfully infringed Sprint's patents. The court subsequently declined to enhance the damage award as a result of the purported willful infringement and awarded Sprint an additional \$6 million, representing pre-judgment interest on the damages award. The Company appealed the case to the United States Court of Appeals for the Federal Circuit where the Company lost the appeal. The Company filed a petition for writ of certiorari with the United States Supreme Court which was denied on November 4, 2019. The Company has now paid the verdict, interest and costs in full. The Company continues to pursue indemnity from one of its vendors and has brought a patent suit against Sprint (TC Tech, LLC v. Sprint) in the U.S. District Court for the District of Delaware implicating Sprint's LTE technology. The ultimate outcomes of the pursuit of indemnity against the Company's vendor and the TC Tech litigation cannot be predicted. The Company does not expect the outcome of its indemnity claim nor the outcome of the TC Tech litigation will have a material adverse effect on its operations or financial condition.

Sprint filed a second suit against Charter and Bright House Networks, LLC on December 2, 2017 in the United States District Court for the District of Delaware. This suit alleges infringement of 15 patents related to the Company's provision of Voice over Internet Protocol ("VoIP") services (ten of which were asserted against Legacy TWC in the matter described above). Charter is vigorously defending this case. While the Company is unable to predict the outcome of this Sprint suit, it does not expect that this litigation will have a material effect on its operations, financial condition, or cash flows.

Sprint filed a third suit against Charter on May 17, 2018 in the United States District Court for the Eastern District of Virginia. This suit alleges infringement of three patents related to the Company's video on demand services. The Company is vigorously defending this case. The court transferred this case to the United States District Court for the District of Delaware on December 20, 2018 pursuant to an agreement between the parties. While the Company is unable to predict the outcome of this litigation, it does not expect that this litigation will have a material effect on its operations, financial condition, or cash flows.

In addition to the Sprint litigation described above, the Company and its parent companies are defendants or co-defendants in several additional lawsuits involving alleged infringement of various intellectual property relating to various aspects of their businesses. Other industry participants are also defendants in certain of these cases. In the event that a court ultimately determines that the Company infringes on any intellectual property, the Company may be subject to substantial damages and/or an injunction that could require the Company or its vendors to modify certain products and services the Company offers to its subscribers, as well as negotiate royalty or license agreements with respect to the intellectual property at issue. While the Company believes the lawsuits are without merit and intends to defend the actions vigorously, no assurance can be given that any adverse outcome would not be material to the Company's consolidated financial condition, results of operations, or liquidity. The Company cannot predict the outcome of any such claims nor can it reasonably estimate a range of possible loss.

The Company and its parent companies are party to other lawsuits, claims and regulatory inquiries that arise in the ordinary course of conducting their business. The ultimate outcome of these other legal matters pending against the Company cannot be predicted, and although such lawsuits and claims are not expected individually to have a material adverse effect on the Company's consolidated financial condition, results of operations or liquidity, such lawsuits could have, in the aggregate, a material adverse effect on the Company's consolidated financial condition, results of operations or liquidity. Whether or not the Company ultimately prevails in any particular lawsuit or claim, litigation can be time consuming and costly and injure the Company's reputation.

20. Employee Benefit Plans

Pension Plans

The Company sponsors three qualified defined benefit pension plans and one nonqualified defined benefit pension plan that provide pension benefits to a majority of employees who were employed by TWC before the merger with TWC.

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Changes in the projected benefit obligation, fair value of plan assets and funded status of the pension plans from January 1 through December 31 are presented below:

	2019	2018
Projected benefit obligation at beginning of year	\$ 3,041	\$ 3,569
Interest cost	129	128
Actuarial (gain) loss	499	(438)
Settlement	(257)	(169)
Benefits paid	(51)	(49)
Projected benefit obligation at end of year ^(a)	<u>\$ 3,361</u>	<u>\$ 3,041</u>
Accumulated benefit obligation at end of year ^(a)	<u>\$ 3,361</u>	<u>\$ 3,041</u>
Fair value of plan assets at beginning of year	\$ 2,943	\$ 3,273
Actual return on plan assets	559	(118)
Employer contributions	4	6
Settlement	(257)	(169)
Benefits paid	(51)	(49)
Fair value of plan assets at end of year ^(b)	<u>\$ 3,198</u>	<u>\$ 2,943</u>
Funded status	<u>\$ (163)</u>	<u>\$ (98)</u>

^(a) As of December 31, 2019 and 2018, qualified pension plans represented \$3.3 billion and \$3.0 billion, respectively, of both the projected benefit obligation and accumulated benefit obligation while the Company's nonqualified pension plan represented \$35 million and \$34 million, respectively.

^(b) The fair value of plan assets consists entirely of the Company's qualified pension plans.

Pretax amounts recognized in the consolidated balance sheet as of December 31, 2019 and 2018 consisted of the following:

	December 31,	
	2019	2018
Noncurrent asset	\$ 1	\$ 1
Current liability	(4)	(4)
Long-term liability	(160)	(95)
Net amounts recognized in consolidated balance sheet	<u>\$ (163)</u>	<u>\$ (98)</u>

The components of net periodic benefit (cost) for the years ended December 31, 2019, 2018 and 2017 consisted of the following:

	Year Ended December 31,		
	2019	2018	2017
Interest cost	\$ (129)	\$ (128)	\$ (133)
Expected return on plan assets	164	198	189
Remeasurement gain (loss)	(104)	122	(55)
Net periodic pension benefit (cost)	<u>\$ (69)</u>	<u>\$ 192</u>	<u>\$ 1</u>

The remeasurement gains (losses) recorded during the years ended December 31, 2019, 2018 and 2017 were primarily driven by changes in the discount rate as well as gains or losses to record pension assets to fair value. The remeasurement loss recorded

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during the year ended December 31, 2017 was also impacted by the adoption of the revised lump sum conversion mortality tables published by the IRS effective January 1, 2018.

The discount rates used to determine benefit obligations as of December 31, 2019 and 2018 were 3.48% and 4.37%, respectively. The Company utilized the RP 2015/MP2015 mortality tables published by the Society of Actuaries to measure the benefit obligations as of December 31, 2019 and 2018.

Weighted average assumptions used to determine net periodic benefit costs consisted of the following:

	Year ended December 31,		
	2019	2018	2017
Expected long-term rate of return on plan assets	5.75%	5.75%	6.50%
Discount rate	4.37%	4.24%	3.88%

In developing the expected long-term rate of return on plan assets, the Company considered the pension portfolio's composition, past average rate of earnings and the Company's future asset allocation targets. The weighted average expected long-term rate of return on plan assets and discount rate used to determine net periodic pension benefit for the year ended December 31, 2020 are expected to be 5.00% and 3.48%, respectively. The Company determined the discount rates used to determine benefit obligations and net periodic pension benefit based on the yield of a large population of high quality corporate bonds with cash flows sufficient in timing and amount to settle projected future defined benefit payments.

Pension Plan Assets

The assets of the qualified pension plans are held in a master trust in which the qualified pension plans are the only participating plans (the "Master Trust"). The investment policy for the qualified pension plans is to manage the assets of the Master Trust with the objective to provide for pension liabilities to be met, maintaining retirement income security for the participants of the plans and their beneficiaries. The investment portfolio is a mix of pooled funds invested in fixed income securities, equity securities and certain alternative investments with the objective of matching plan liability performance, diversifying risk and achieving a target investment return. Pension assets are managed in a balanced portfolio comprised of two major components: a return-seeking portion and a liability-matching portion.

The Company uses an investment strategy designed to increase the fixed income allocation as the funded status of the qualified pension plans improves. As the qualified pension plans reach set funded status milestones, the assets will be rebalanced to shift more assets from equity to fixed income. Based on the progress with this strategy, the target investment allocation for pension fund assets is permitted to vary within specified ranges subject to Investment Committee approval for return-seeking securities and liability-matching securities. The target and actual investment allocation of the qualified pension plans by asset category consisted of the following:

	December 31, 2019		December 31, 2018	
	Target Allocation	Actual Allocation	Target Allocation	Actual Allocation
Return-seeking securities	60.0%	56.2%	60.0%	54.6%
Liability-matching securities	40.0%	43.7%	40.0%	45.1%
Other investments	—%	0.1%	—%	0.3%

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The following tables set forth the investment assets of the qualified pension plans by level within the fair value hierarchy as of December 31, 2019 and 2018:

	December 31, 2019			December 31, 2018		
	Fair Value	Level 1	Level 2	Fair Value	Level 1	Level 2
Cash	\$ 4	\$ 4	\$ —	\$ 4	\$ 4	\$ —
Commingled bond funds ^(a)	1,335	—	1,335	1,270	—	1,270
Commingled equity funds ^(a)	1,135	—	1,135	952	—	952
Collective trust funds ^(b)	139	—	139	113	—	113
Total investment assets	2,613	\$ 4	\$ 2,609	2,339	\$ 4	\$ 2,335
Accrued investment income and other receivables	1			11		
Investments measured at net asset value ^(c)	584			593		
Fair value of plan assets	\$ 3,198			\$ 2,943		

^(a) Commingled funds include bond funds with corporate and U.S. treasury debt securities and equity funds with global equity index, infrastructure and real estate securities that have a readily determinable fair value and are valued using the net assets provided by the administrator of the fund. The value of each fund is based on the fair value of underlying securities in the portfolio, which represents the amount that the fund might reasonably expect to receive for the securities upon a sale, less liabilities, and then divided by the number of units outstanding. Equity securities within the funds are valued using observable inputs on either a daily or weekly basis and the resulting per share value serves as a basis for current redemption value. Debt securities within the funds are valued based on observable prices from the new issue market, benchmark quotes, secondary trading and dealer quotes.

^(b) Collective trust funds consist of short-term investment strategies comprised of instruments issued or fully guaranteed by the U.S. government and/or its agencies and multi-strategy funds, which are valued using the net assets provided by the administrator of the fund. The value of each fund is based on the readily determinable fair value of the underlying assets owned by the fund, less liabilities, and then divided by the number of units outstanding.

^(c) As a practical expedient, certain investment classes which hold securities that are not readily available for redemption and are measured at fair value using the net asset value ("NAV") per share (or its equivalent) have not been classified in the fair value hierarchy.

Investments Measured at Net Asset Value per Share Practical Expedient

The following table summarizes the investment classes for which fair value is measured using the NAV per share (or its equivalent) practical expedient as of December 31, 2019 and 2018. These investment classes are not readily available for redemption. The NAV of each fund is based on the fair value of underlying assets in the portfolio. Certain investments report NAV per share on a month or quarter lag. There are no material unfunded commitments with respect to these investment classes.

	Fair Value		Redemption Frequency (if currently eligible)	Redemption Notice Period
	December 31, 2019	December 31, 2018		
Alternative funds ^(a)	\$ 271	\$ 301	weekly, monthly, quarterly	1-180 days
Fixed income funds ^(b)	177	164	daily, monthly	10-40 days
Real estate funds ^(c)	136	128	quarterly	45-90 days
Investments measured at NAV	\$ 584	\$ 593		

^(a) The alternative fund investment class includes funds with various securities selected to provide complimentary sources of return with our equity and bond portfolios that better manage risk. The Company's alternative fund investments include

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holdings such as public equities, exchange traded derivatives, and corporate bonds, among others. A portion of the alternative funds cannot be redeemed until the one year anniversary of the purchase date.

- (b) Fixed income funds invest in residential and commercial mortgages, as well as global sovereign securities.
- (c) Real estate funds are not publicly traded and invest primarily in unlisted direct core real estate, including super-regional malls, shopping centers, and commercial real estate (e.g. education, healthcare and storage).

Pension Plan Contributions

The Company made no cash contributions to the qualified pension plans during the years ended December 31, 2019, 2018 and 2017; however, the Company may make discretionary cash contributions to the qualified pension plans in the future. Such contributions will be dependent on a variety of factors, including current and expected interest rates, asset performance, the funded status of the qualified pension plans and management's judgment. For the nonqualified unfunded pension plan, the Company will continue to make contributions during 2020 to the extent benefits are paid.

Benefit payments for the pension plans are expected to be \$183 million in 2020, \$186 million in 2021, \$188 million in 2022, \$190 million in 2023, \$190 million in 2024 and \$929 million in 2025 to 2029.

Multiemployer Plans

The Company contributes to multiemployer plans under the terms of collective-bargaining agreements that cover its union-represented employees. Such multiemployer plans provide medical, pension and retirement savings benefits to active employees and retirees. The Company made contributions to multiemployer plans of \$9 million, \$9 million and \$18 million for the years ended December 31, 2019, 2018 and 2017, respectively. As of December 31, 2019 and 2018, other long-term liabilities includes approximately \$101 million and \$104 million, respectively, related to the Company's withdrawal from a multiemployer pension plan.

Defined Contribution Benefit Plans

The Company's employees may participate in the Charter Communications, Inc. 401(k) Savings Plan (the "401(k) Plan"). Employees that qualify for participation can contribute up to 50% of their salary, on a pre-tax basis, subject to a maximum contribution limit as determined by the Internal Revenue Service. The Company's matching contribution is discretionary and is equal to 100% of the amount of the salary reduction the participant elects to defer (up to 6% of the participant's eligible compensation), excluding any catch-up contributions and is paid by the Company on a per pay period basis. The Company made contributions to the 401(k) plan totaling \$303 million, \$290 million and \$274 million for the years ended December 31, 2019, 2018 and 2017, respectively.

For employees who are not eligible to participate in the Company's long-term incentive plan and who are not covered by a collective bargaining agreement, the Company offers a contribution to the Retirement Accumulation Plan ("RAP"), equal to 3% of eligible pay. The Company made contributions to the RAP totaling \$152 million, \$151 million and \$139 million for the years ended December 31, 2019, 2018 and 2017, respectively.

21. Recently Issued Accounting Standards

Accounting Standards Adopted in Prior Periods

ASU No. 2014-09, Revenue from Contracts with Customers ("ASU 2014-09")

Upon adoption of ASU 2014-09, the Company recorded a cumulative-effect adjustment which included an increase to total member's equity of \$49 million as of January 1, 2018.

ASU No. 2016-16, Income Taxes (Topic 740): Intra-Entity Transfers of Assets Other Than Inventory ("ASU 2016-16")

The Company identified a \$38 million increase to total member's equity and corresponding increase to deferred tax assets related to the adoption of ASU 2016-16, which was recorded during the year ended December 31, 2018.

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ASU No. 2016-02, Leases (“ASU 2016-02”)

In February 2016, the FASB issued ASU 2016-02 which requires lessees to recognize almost all leases on their balance sheet as a lease asset and a lease liability. For income statement purposes, the FASB retained a dual model, requiring leases to be classified as either operating or finance. Classification is based on criteria largely similar to the criteria applied under legacy lease accounting, but without explicit bright lines.

The Company adopted ASU 2016-02 using the modified retrospective approach with a cumulative-effect adjustment recorded at the beginning of the period of adoption (January 1, 2019). Therefore, the Company recognized and measured operating leases on the consolidated balance sheet without revising comparative period information or disclosure. At transition, the Company elected the package of practical expedients permitted under the transition guidance within the standard, which eliminates the reassessment of past leases, classification and initial direct costs. The Company did not elect to use hindsight to reassess lease terms or impairment at the adoption date. The Company elected the land easements practical expedient which allows the Company not to retrospectively treat land easements as leases; however, must apply lease accounting prospectively to land easements if they meet the definition of a lease.

The Company implemented internal controls and key system functionality to enable the preparation of financial information on adoption. The new standard resulted in the recording of leased assets and lease liabilities for the Company’s operating leases of approximately \$963 million and \$990 million, respectively, as of January 1, 2019. The difference between the leased assets and lease liabilities primarily represents the prior year end deferred rent liabilities balance, resulting from historical straight-lining of operating leases, which was effectively reclassified upon adoption to reduce the measurement of the leased assets. The adoption of the standard did not have an impact on the Company’s member’s equity, results from operations and cash flows. The adoption of the new standard resulted in additional interim and annual lease disclosures. See Note 8.

ASU No. 2018-13, Changes to the Disclosure Requirements for Fair Value Measurement (“ASU 2018-13”)

In August 2018, the FASB issued ASU 2018-13 which amends fair value measurement disclosure requirements to eliminate, add and modify certain disclosures to improve the effectiveness of such disclosure in the notes to the financial statements. ASU 2018-13 will be effective for interim and annual periods beginning after December 15, 2019. Early adoption is permitted. The Company early adopted ASU 2018-13 on January 1, 2019. The adoption of ASU 2018-13 did not have a material impact to the Company’s consolidated financial statements.

ASU No. 2018-14, Changes to the Disclosure Requirements for Defined Benefit Plans (“ASU 2018-14”)

In August 2018, the FASB issued ASU 2018-14 which amends defined benefit plan disclosure requirements to eliminate, add and modify certain disclosures to improve the effectiveness of such disclosure in the notes to the financial statements. ASU 2018-14 will be effective for interim and annual periods beginning after December 15, 2021. Early adoption is permitted. The Company early adopted ASU 2018-14 on January 1, 2019. The adoption of ASU 2018-14 did not have a material impact to the Company’s consolidated financial statements.

ASU No. 2017-04, Simplifying the Test for Goodwill Impairment (“ASU 2017-04”)

In January 2017, the FASB issued ASU 2017-04 which eliminates step two from the goodwill impairment test. Under the new standard, to the extent the carrying amount of a reporting unit exceeds the fair value, the Company will record an impairment charge equal to the difference. ASU 2017-04 will be effective for interim and annual periods beginning after December 15, 2019. The Company elected to early adopt ASU 2017-04 in connection with the completion of its November 30, 2019 annual impairment assessment. The adoption of ASU 2017-04 did not have a material impact to the Company’s consolidated financial statements.

CCO HOLDINGS, LLC AND SUBSIDIARIES
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS
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(dollars in millions, except where indicated)

Accounting Standards Adopted January 1, 2020

ASU No. 2016-13, Measurement of Credit Losses on Financial Instruments (“ASU 2016-13”)

In June 2016, the FASB issued ASU 2016-13, which requires a financial asset (or a group of financial assets) measured at amortized cost basis to be assessed for impairment under the current expected credit loss model rather than an incurred loss model. The measurement of expected credit losses is based on relevant information about past events, including historical experience, current conditions and reasonable and supportable forecasts that affect the collectability of the reported amount. The primary financial assets of the Company in scope of ASU 2016-13 include accounts receivables and equipment installment plan notes receivables. The Company adopted ASU 2016-13 on January 1, 2020. The adoption of ASU 2016-13 did not have a material impact to the Company's consolidated financial statements.

ASU No. 2018-15, Customer’s Accounting for Implementation Costs in a Cloud Computing Arrangement That Is a Service Contract (“ASU 2018-15”)

In August 2018, the FASB issued ASU 2018-15 which requires upfront implementation costs incurred in a cloud computing arrangement (or hosting arrangement) that is a service contract to be amortized to hosting expense over the term of the arrangement, beginning when the module or component of the hosting arrangement is ready for its intended use. The Company adopted ASU 2018-15 on January 1, 2020. The adoption of ASU 2018-15 did not have a material impact to the Company's consolidated financial statements.

ASU No. 2019-02, Improvements to Accounting for Costs of Films and License Agreements for Program Materials (“ASU 2019-02”)

In March 2019, the FASB issued ASU 2019-02 which aligns the accounting for production costs of an episodic television series with the accounting for production costs of films regarding cost capitalization, amortization, impairment, presentation and disclosure. The Company adopted ASU 2019-02 on January 1, 2020. The adoption of ASU 2019-02 did not have a material impact to the Company's consolidated financial statements.

Accounting Standards Not Yet Adopted

ASU No. 2019-12, Income Taxes (Topic 740): Simplifying the Accounting for Income Taxes (“ASU 2019-12”)

In December 2019, the FASB issued ASU 2019-12, which is intended to simplify various aspects related to accounting for income taxes. ASU 2019-12 removes certain exceptions to the general principles in Topic 740 and also clarifies and amends existing guidance to improve consistent application. ASU 2019-12 will be effective for interim and annual periods beginning after December 15, 2020 (January 1, 2021 for the Company). Early adoption is permitted. The Company is currently evaluating the impact the adoption of ASU 2019-12 will have on its consolidated financial statements.

22. Consolidating Schedules

Each of Charter Operating, TWC, LLC, TWCE, CCO Holdings and certain subsidiaries jointly, severally, fully and unconditionally guarantee the outstanding debt securities of the others (other than the CCO Holdings notes) on an unsecured senior basis and the condensed consolidating financial information has been prepared and presented pursuant to SEC Regulation S-X Rule 3-10, *Financial Statements of Guarantors and Issuers of Guaranteed Securities Registered or Being Registered*. Certain Charter Operating subsidiaries that are regulated telephone entities only become guarantor subsidiaries upon approval by regulators. This information is not intended to present the financial position, results of operations and cash flows of the individual companies or groups of companies in accordance with generally accepted accounting principles.

The “Charter Operating and Restricted Subsidiaries” column is presented to comply with the terms of the Credit Agreement.

Condensed consolidating financial statements as of December 31, 2019 and 2018 and for the years ended December 31, 2019, 2018 and 2017 follow.

CCO HOLDINGS, LLC AND SUBSIDIARIES
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(dollars in millions, except where indicated)

CCO Holdings, LLC and Subsidiaries
Condensed Consolidating Balance Sheet
As of December 31, 2019

ASSETS	Guarantor Subsidiaries			CCO Holdings Consolidated
	CCO Holdings	Charter Operating and Restricted Subsidiaries	Eliminations	
CURRENT ASSETS:				
Cash and cash equivalents	\$ 500	\$ 2,749	\$ —	\$ 3,249
Accounts receivable, net	—	2,195	—	2,195
Receivables from related party	59	—	(59)	—
Prepaid expenses and other current assets	—	711	—	711
Total current assets	<u>559</u>	<u>5,655</u>	<u>(59)</u>	<u>6,155</u>
INVESTMENT IN CABLE PROPERTIES:				
Property, plant and equipment, net	—	33,908	—	33,908
Customer relationships, net	—	7,453	—	7,453
Franchises	—	67,322	—	67,322
Goodwill	—	29,554	—	29,554
Total investment in cable properties, net	<u>—</u>	<u>138,237</u>	<u>—</u>	<u>138,237</u>
INVESTMENT IN SUBSIDIARIES	76,409	—	(76,409)	—
OPERATING LEASE RIGHT-OF-USE ASSETS	—	925	—	925
LOANS RECEIVABLE – RELATED PARTY	545	—	(545)	—
OTHER NONCURRENT ASSETS	—	1,426	—	1,426
Total assets	<u>\$ 77,513</u>	<u>\$ 146,243</u>	<u>\$ (77,013)</u>	<u>\$ 146,743</u>
LIABILITIES AND MEMBER'S EQUITY				
CURRENT LIABILITIES:				
Accounts payable and accrued liabilities	\$ 296	\$ 7,662	\$ —	\$ 7,958
Operating lease liabilities	—	184	—	184
Payables to related party	—	357	(59)	298
Current portion of long-term debt	—	3,500	—	3,500
Total current liabilities	<u>296</u>	<u>11,703</u>	<u>(59)</u>	<u>11,940</u>
LONG-TERM DEBT	21,951	53,627	—	75,578
LOANS PAYABLE – RELATED PARTY	—	1,504	(545)	959
DEFERRED INCOME TAXES	—	55	—	55
LONG-TERM OPERATING LEASE LIABILITIES	—	788	—	788
OTHER LONG-TERM LIABILITIES	—	2,134	—	2,134
MEMBER'S EQUITY				
Controlling interest	55,266	76,409	(76,409)	55,266
Noncontrolling interests	—	23	—	23
Total member's equity	<u>55,266</u>	<u>76,432</u>	<u>(76,409)</u>	<u>55,289</u>
Total liabilities and member's equity	<u>\$ 77,513</u>	<u>\$ 146,243</u>	<u>\$ (77,013)</u>	<u>\$ 146,743</u>

CCO HOLDINGS, LLC AND SUBSIDIARIES
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS
DECEMBER 31, 2019, 2018 AND 2017
(dollars in millions, except where indicated)

CCO Holdings, LLC and Subsidiaries
Condensed Consolidating Balance Sheet
As of December 31, 2018

ASSETS	Guarantor Subsidiaries			CCO Holdings Consolidated
	CCO Holdings	Charter Operating and Restricted Subsidiaries	Eliminations	
CURRENT ASSETS:				
Cash and cash equivalents	\$ —	\$ 300	\$ —	\$ 300
Accounts receivable, net	—	1,699	—	1,699
Receivables from related party	57	—	(57)	—
Prepaid expenses and other current assets	—	400	—	400
Total current assets	<u>57</u>	<u>2,399</u>	<u>(57)</u>	<u>2,399</u>
INVESTMENT IN CABLE PROPERTIES:				
Property, plant and equipment, net	—	34,658	—	34,658
Customer relationships, net	—	9,565	—	9,565
Franchises	—	67,319	—	67,319
Goodwill	—	29,554	—	29,554
Total investment in cable properties, net	<u>—</u>	<u>141,096</u>	<u>—</u>	<u>141,096</u>
INVESTMENT IN SUBSIDIARIES	78,960	—	(78,960)	—
LOANS RECEIVABLE – RELATED PARTY	526	—	(526)	—
OTHER NONCURRENT ASSETS	—	1,403	—	1,403
Total assets	<u>\$ 79,543</u>	<u>\$ 144,898</u>	<u>\$ (79,543)</u>	<u>\$ 144,898</u>
LIABILITIES AND MEMBER'S EQUITY				
CURRENT LIABILITIES:				
Accounts payable and accrued liabilities	\$ 283	\$ 7,620	\$ —	\$ 7,903
Payables to related party	—	602	(57)	545
Current portion of long-term debt	—	3,290	—	3,290
Total current liabilities	<u>283</u>	<u>11,512</u>	<u>(57)</u>	<u>11,738</u>
LONG-TERM DEBT	18,730	50,807	—	69,537
LOANS PAYABLE – RELATED PARTY	—	1,451	(526)	925
OTHER LONG-TERM LIABILITIES	—	2,144	—	2,144
MEMBER'S EQUITY				
Controlling interest	60,530	78,960	(78,960)	60,530
Noncontrolling interests	—	24	—	24
Total member's equity	<u>60,530</u>	<u>78,984</u>	<u>(78,960)</u>	<u>60,554</u>
Total liabilities and member's equity	<u>\$ 79,543</u>	<u>\$ 144,898</u>	<u>\$ (79,543)</u>	<u>\$ 144,898</u>

CCO HOLDINGS, LLC AND SUBSIDIARIES
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS
DECEMBER 31, 2019, 2018 AND 2017
(dollars in millions, except where indicated)

CCO Holdings, LLC and Subsidiaries
Condensed Consolidating Statement of Operations
For the year ended December 31, 2019

	Guarantor Subsidiaries			CCO Holdings Consolidated
	CCO Holdings	Charter Operating and Restricted Subsidiaries	Eliminations	
REVENUES	\$ —	\$ 45,756	\$ —	\$ 45,756
COSTS AND EXPENSES:				
Operating costs and expenses (exclusive of items shown separately below)	—	29,275	—	29,275
Depreciation and amortization	—	9,911	—	9,911
Other operating expenses, net	—	111	—	111
	—	39,297	—	39,297
Income from operations	—	6,459	—	6,459
OTHER INCOME (EXPENSES):				
Interest expense, net	(1,067)	(2,772)	—	(3,839)
Loss on extinguishment of debt	(22)	(3)	—	(25)
Loss on financial instruments, net	—	(54)	—	(54)
Other pension costs, net	—	(69)	—	(69)
Other expense, net	—	(131)	—	(131)
Equity in income of subsidiaries	3,340	—	(3,340)	—
	2,251	(3,029)	(3,340)	(4,118)
Income before income taxes	2,251	3,430	(3,340)	2,341
Income tax expense	—	(89)	—	(89)
Consolidated net income	2,251	3,341	(3,340)	2,252
Less: Net income attributable to noncontrolling interests	—	(1)	—	(1)
Net income	\$ 2,251	\$ 3,340	\$ (3,340)	\$ 2,251

CCO HOLDINGS, LLC AND SUBSIDIARIES
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS
DECEMBER 31, 2019, 2018 AND 2017
(dollars in millions, except where indicated)

CCO Holdings, LLC and Subsidiaries
Condensed Consolidating Statement of Operations
For the year ended December 31, 2018

	Guarantor Subsidiaries			CCO Holdings Consolidated
	CCO Holdings	Charter Operating and Restricted Subsidiaries	Eliminations	
REVENUES	\$ —	\$ 43,620	\$ —	\$ 43,620
COSTS AND EXPENSES:				
Operating costs and expenses (exclusive of items shown separately below)	—	27,891	—	27,891
Depreciation and amortization	—	10,307	—	10,307
Other operating expenses, net	—	230	—	230
	—	38,428	—	38,428
Income from operations	—	5,192	—	5,192
OTHER INCOME (EXPENSES):				
Interest expense, net	(1,016)	(2,563)	—	(3,579)
Loss on financial instruments, net	—	(110)	—	(110)
Other pension benefits, net	—	192	—	192
Other expense, net	—	(46)	—	(46)
Equity in income of subsidiaries	2,648	—	(2,648)	—
	1,632	(2,527)	(2,648)	(3,543)
Income before income taxes	1,632	2,665	(2,648)	1,649
Income tax expense	—	(16)	—	(16)
Consolidated net income	1,632	2,649	(2,648)	1,633
Less: Net income attributable to noncontrolling interests	—	(1)	—	(1)
Net income	\$ 1,632	\$ 2,648	\$ (2,648)	\$ 1,632

CCO HOLDINGS, LLC AND SUBSIDIARIES
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS
DECEMBER 31, 2019, 2018 AND 2017
(dollars in millions, except where indicated)

CCO Holdings, LLC and Subsidiaries
Condensed Consolidating Statement of Operations
For the year ended December 31, 2017

	Guarantor Subsidiaries			CCO Holdings Consolidated
	CCO Holdings	Charter Operating and Restricted Subsidiaries	Eliminations	
REVENUES	\$ —	\$ 41,578	\$ —	\$ 41,578
COSTS AND EXPENSES:				
Operating costs and expenses (exclusive of items shown separately below)	—	26,560	—	26,560
Depreciation and amortization	—	10,579	—	10,579
Other operating expenses, net	—	444	—	444
	—	37,583	—	37,583
Income from operations	—	3,995	—	3,995
OTHER INCOME (EXPENSES):				
Interest expense, net	(883)	(2,232)	—	(3,115)
Loss on extinguishment of debt	(34)	(6)	—	(40)
Gain on financial instruments, net	—	69	—	69
Other pension benefits	—	1	—	1
Other expense, net	—	(4)	—	(4)
Equity in income of subsidiaries	1,799	—	(1,799)	—
	882	(2,172)	(1,799)	(3,089)
Income before income taxes	882	1,823	(1,799)	906
Income tax expense	—	(23)	—	(23)
Consolidated net income	882	1,800	(1,799)	883
Less: Net income attributable to noncontrolling interests	—	(1)	—	(1)
Net income	\$ 882	\$ 1,799	\$ (1,799)	\$ 882

CCO HOLDINGS, LLC AND SUBSIDIARIES
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS
DECEMBER 31, 2019, 2018 AND 2017
(dollars in millions, except where indicated)

CCO Holdings, LLC and Subsidiaries
Condensed Consolidating Statement of Comprehensive Income
For the year ended December 31, 2019

	Guarantor Subsidiaries			CCO Holdings Consolidated
	CCO Holdings	Charter Operating and Restricted Subsidiaries	Eliminations	
Consolidated net income	\$ 2,251	\$ 3,341	\$ (3,340)	\$ 2,252
Foreign currency translation adjustment	2	2	(2)	2
Consolidated comprehensive income	2,253	3,343	(3,342)	2,254
Less: Comprehensive income attributable to noncontrolling interests	—	(1)	—	(1)
Comprehensive income	\$ 2,253	\$ 3,342	\$ (3,342)	\$ 2,253

CCO Holdings, LLC and Subsidiaries
Condensed Consolidating Statement of Comprehensive Income
For the year ended December 31, 2018

	Guarantor Subsidiaries			CCO Holdings Consolidated
	CCO Holdings	Charter Operating and Restricted Subsidiaries	Eliminations	
Consolidated net income	\$ 1,632	\$ 2,649	\$ (2,648)	\$ 1,633
Foreign currency translation adjustment	(1)	(1)	1	(1)
Consolidated comprehensive income	1,631	2,648	(2,647)	1,632
Less: Comprehensive income attributable to noncontrolling interests	—	(1)	—	(1)
Comprehensive income	\$ 1,631	\$ 2,647	\$ (2,647)	\$ 1,631

CCO Holdings, LLC and Subsidiaries
Condensed Consolidating Statement of Comprehensive Income
For the year ended December 31, 2017

	Guarantor Subsidiaries			CCO Holdings Consolidated
	CCO Holdings	Charter Operating and Restricted Subsidiaries	Eliminations	
Consolidated net income	\$ 882	\$ 1,800	\$ (1,799)	\$ 883
Net impact of interest rate derivative instruments	5	5	(5)	5
Foreign currency translation adjustment	1	1	(1)	1
Consolidated comprehensive income	888	1,806	(1,805)	889
Less: Comprehensive income attributable to noncontrolling interests	—	(1)	—	(1)
Comprehensive income	\$ 888	\$ 1,805	\$ (1,805)	\$ 888

CCO HOLDINGS, LLC AND SUBSIDIARIES
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS
DECEMBER 31, 2019, 2018 AND 2017
(dollars in millions, except where indicated)

CCO Holdings, LLC and Subsidiaries
Condensed Consolidating Statement of Cash Flows
For the year ended December 31, 2019

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	Guarantor Subsidiaries			CCO Holdings Consolidated
	CCO Holdings	Charter Operating and Restricted Subsidiaries	Eliminations	
NET CASH FLOWS FROM OPERATING ACTIVITIES	\$ (1,051)	\$ 12,759	\$ —	\$ 11,708
CASH FLOWS FROM INVESTING ACTIVITIES:				
Purchases of property, plant and equipment	—	(7,195)	—	(7,195)
Change in accrued expenses related to capital expenditures	—	55	—	55
Contribution to subsidiaries	(2,860)	—	2,860	—
Distributions from subsidiaries	9,068	—	(9,068)	—
Other, net	—	54	—	54
Net cash flows from investing activities	6,208	(7,086)	(6,208)	(7,086)
CASH FLOWS FROM FINANCING ACTIVITIES:				
Borrowings of long-term debt	4,584	15,101	—	19,685
Repayments of long-term debt	(1,366)	(11,943)	—	(13,309)
Payment for debt issuance costs	(43)	(60)	—	(103)
Distributions to noncontrolling interest	—	(2)	—	(2)
Contributions from parent	59	2,860	(2,860)	59
Distributions to parent	(7,891)	(9,068)	9,068	(7,891)
Other, net	—	(112)	—	(112)
Net cash flows from financing activities	(4,657)	(3,224)	6,208	(1,673)
NET INCREASE IN CASH AND CASH EQUIVALENTS	500	2,449	—	2,949
CASH AND CASH EQUIVALENTS, beginning of period	—	300	—	300
CASH AND CASH EQUIVALENTS, end of period	\$ 500	\$ 2,749	\$ —	\$ 3,249

CCO HOLDINGS, LLC AND SUBSIDIARIES
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS
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CCO Holdings, LLC and Subsidiaries
Condensed Consolidating Statement of Cash Flows
For the year ended December 31, 2018

	Guarantor Subsidiaries		Eliminations	CCO Holdings Consolidated
	CCO Holdings	Charter Operating and Restricted Subsidiaries		
NET CASH FLOWS FROM OPERATING ACTIVITIES	\$ (1,009)	\$ 12,666	\$ —	\$ 11,657
CASH FLOWS FROM INVESTING ACTIVITIES:				
Purchases of property, plant and equipment	—	(9,109)	—	(9,109)
Change in accrued expenses related to capital expenditures	—	(470)	—	(470)
Contribution to subsidiaries	(142)	—	142	—
Distributions from subsidiaries	6,187	—	(6,187)	—
Other, net	—	(100)	—	(100)
Net cash flows from investing activities	6,045	(9,679)	(6,045)	(9,679)
CASH FLOWS FROM FINANCING ACTIVITIES:				
Borrowings of long-term debt	—	13,820	—	13,820
Repayments of long-term debt	—	(10,769)	—	(10,769)
Borrowings of loans payable - related parties	—	12	—	12
Payment for debt issuance costs	—	(29)	—	(29)
Distributions to noncontrolling interest	—	(1)	—	(1)
Contributions from parent	142	142	(142)	142
Distributions to parent	(5,178)	(6,187)	6,187	(5,178)
Other, net	—	(5)	—	(5)
Net cash flows from financing activities	(5,036)	(3,017)	6,045	(2,008)
NET DECREASE IN CASH AND CASH EQUIVALENTS	—	(30)	—	(30)
CASH AND CASH EQUIVALENTS, beginning of period	—	330	—	330
CASH AND CASH EQUIVALENTS, end of period	\$ —	\$ 300	\$ —	\$ 300

CCO HOLDINGS, LLC AND SUBSIDIARIES
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS
DECEMBER 31, 2019, 2018 AND 2017
(dollars in millions, except where indicated)

CCO Holdings, LLC and Subsidiaries
Condensed Consolidating Statement of Cash Flows
For the year ended December 31, 2017

	Guarantor Subsidiaries		Eliminations	CCO Holdings Consolidated
	CCO Holdings	Charter Operating and Restricted Subsidiaries		
NET CASH FLOWS FROM OPERATING ACTIVITIES:	\$ (814)	\$ 12,422	\$ —	\$ 11,608
CASH FLOWS FROM INVESTING ACTIVITIES:				
Purchases of property, plant and equipment	—	(8,681)	—	(8,681)
Change in accrued expenses related to capital expenditures	—	820	—	820
Contribution to subsidiaries	(693)	—	693	—
Distributions from subsidiaries	9,598	—	(9,598)	—
Other, net	—	(132)	—	(132)
Net cash flows from investing activities	8,905	(7,993)	(8,905)	(7,993)
CASH FLOWS FROM FINANCING ACTIVITIES:				
Borrowings of long-term debt	6,231	19,045	—	25,276
Repayments of long-term debt	(775)	(15,732)	—	(16,507)
Borrowings of loans payable - related parties	—	234	—	234
Payment for debt issuance costs	(59)	(52)	—	(111)
Distributions to noncontrolling interest	—	(2)	—	(2)
Contributions from parent	—	693	(693)	—
Distributions to parent	(13,488)	(9,598)	9,598	(13,488)
Other, net	—	(11)	—	(11)
Net cash flows from financing activities	(8,091)	(5,423)	8,905	(4,609)
NET DECREASE IN CASH AND CASH EQUIVALENTS	—	(994)	—	(994)
CASH AND CASH EQUIVALENTS, beginning of period	—	1,324	—	1,324
CASH AND CASH EQUIVALENTS, end of period	\$ —	\$ 330	\$ —	\$ 330

Consent of Independent Registered Public Accounting Firm

The Manager and the Member of
CCO Holdings, LLC and CCO Holdings Capital Corp.:

We consent to the incorporation by reference in the registration statement No. 333-222241 on Form S-3 of CCO Holdings, LLC and CCO Holdings Capital Corp. of our report dated February 7, 2020, with respect to the consolidated balance sheets of CCO Holdings, LLC as of December 31, 2019 and 2018, the related consolidated statements of operations, changes in member's equity, and cash flows for each of the years in the three-year period ended December 31, 2019, and the related notes, which report appears in the December 31, 2019 annual report on Form 10-K of CCO Holdings, LLC and CCO Holdings Capital Corp.

Our report refers to a change in the method of accounting for leases as of January 1, 2019 due to the adoption of Accounting Standards Codification Topic 842, *Leases*.

(signed) KPMG LLP

St. Louis, Missouri
February 7, 2020

I, Thomas M. Rutledge, certify that:

1. I have reviewed this Annual Report on Form 10-K of CCO Holdings, LLC and CCO Holdings Capital Corp.;
2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;
3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;
4. The registrant's other certifying officer(s) and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:
 - (a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;
 - (b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, 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;
 - (c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and
 - (d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting.
5. The registrant's other certifying officer(s) and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):
 - (a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and
 - (b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: February 7, 2020

/s/ Thomas M. Rutledge

Thomas M. Rutledge

Chairman and Chief Executive Officer

I, Christopher L. Winfrey, certify that:

1. I have reviewed this Annual Report on Form 10-K of CCO Holdings, LLC and CCO Holdings Capital Corp.;
2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;
3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;
4. The registrant's other certifying officer(s) and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:
 - (a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;
 - (b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, 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;
 - (c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and
 - (d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting.
5. The registrant's other certifying officer(s) and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):
 - (a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and
 - (b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: February 7, 2020

/s/ Christopher L. Winfrey

Christopher L. Winfrey
Chief Financial Officer
(Principal Financial Officer)

**CERTIFICATION OF CHIEF EXECUTIVE
OFFICER REGARDING PERIODIC REPORT CONTAINING
FINANCIAL STATEMENTS**

I, Thomas M. Rutledge, the Chairman and Chief Executive Officer of CCO Holdings, LLC and CCO Holdings Capital Corp. (the "Company") in compliance with 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, hereby certify that, the Company's Annual Report on Form 10-K for the year ended December 31, 2019 (the "Report") filed with the Securities and Exchange Commission:

- fully complies with the requirements of Section 13(a) of the Securities Exchange Act of 1934; and
- the information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

/s/ Thomas M. Rutledge

Thomas M. Rutledge
Chairman and Chief Executive Officer
February 7, 2020

**CERTIFICATION OF CHIEF FINANCIAL
OFFICER REGARDING PERIODIC REPORT CONTAINING
FINANCIAL STATEMENTS**

I, Christopher L. Winfrey, the Chief Financial Officer of CCO Holdings, LLC and CCO Holdings Capital Corp. (the "Company"), in compliance with 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, hereby certify that, the Company's Annual Report on Form 10-K for the year ended December 31, 2019 (the "Report") filed with the Securities and Exchange Commission:

- fully complies with the requirements of Section 13(a) of the Securities Exchange Act of 1934; and
- the information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

/s/ Christopher L. Winfrey

Christopher L. Winfrey
Chief Financial Officer
(Principal Financial Officer)
February 7, 2020