

Application to DHCD Submitted through CAMS

Essex County

Essex County and Atlantic Broadband 2022 VATI

Application ID: 86508262021121921

Application Status: Pending

Program Name: Virginia Telecommunications Initiative 2022

Organization Name: Essex County

Organization Address: P.O. Box 1079
Tappahannock, VA 22560-1079

Profile Manager Name: Michael Lombardo

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Project Name: Essex County and Atlantic Broadband 2022 VATI

Project Contact Name: Robert Hodges

Project Contact Phone: (404) 313-6163

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Project Location: PO Box 1079
Tappahannock, VA 22560-1079

Project Service Area: Essex County

Total Requested Amount: \$25,817,718.35

Required Annual Audit Status: Pending Review

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Budget Information:

Cost/Activity Category	DHCD Request	Other Funding	Total
Telecommunications	\$25,817,718.35	\$8,247,847.00	\$34,065,565.35
Construction	\$25,387,377.05	\$8,120,475.80	\$33,507,852.85
Construction Related Soft Costs	\$430,341.30	\$127,371.20	\$557,712.50
Total:	\$25,817,718.35	\$8,247,847.00	\$34,065,565.35

Budget Narrative:

This application is requesting \$25,817,718.35 in VATI funding to leverage an additional \$8,247,847.00 in non-VATI funding for the construction of an Essex County broadband network, that achieves universal access, and provides gigabit-capable, fiber-to-the-home coverage to over 3500 unserved locations in the county. Detailed cost allocations and budgets are included as attachments with this application. This application is the result of a year-long planning effort by Essex County and Atlantic Broadband (Delmar) LLC ("ABB").

Questions and Responses:

1. Project Description and Need

Describe why and how the project area(s) was selected. Describe the proposed geographic area including specific boundaries of the project area (e.g. street names, local and regional boundaries, etc.). Attach a copy of the map of your project area(s). Label map: Attachment 1 – Project Area Map.

Answer:

Essex County ("Essex") and Atlantic Broadband (Delmar) LLC ("ABB") are pursuing a county-wide broadband expansion effort that achieves universal coverage, in an anticipated three year period from project commencement. In June of 2021, Essex and ABB entered into a verbal agreement to develop a comprehensive strategy to achieve universal broadband coverage throughout the county, to include the over 1,000 long-drops in areas ABB currently provides service. The planning efforts by ABB and Essex are championed by the Essex County Administrator and leadership from ABB. The project and this application, are the result of a dynamic planning exchange, to achieve a common goal that benefits both participants. The three project areas in Essex County were selected because the locations were not eligible for previous federal/state-level broadband expansion programs or Essex had not completed necessary planning steps to pursue the VATI grant in 2021. The project leverages the middle-mile and last-mile infrastructure ABB has deployed or anticipates deploying to 'served' and 'unserved' areas in the county and planned expansion efforts in adjoining counties to synchronize geographic efficiencies with crews and materials.

As part of the Essex and ABB planning effort, every address point in the county was compared to the ABB's existing service footprint to confirm the status of the passing as 'served', 'unserved' or requiring service as a long-drop. ABB is the sole wireline provider in Essex, less a single census block in Tappahannock, where TingFiber provides service, according to FCC data. All of the unserved locations were then mapped, and ABB has undertaken an engineering and design process to develop a middle mile and last-mile fiber-to-the-home network that will extend service to all unserved locations. Long-drop locations will be serviced from existing last-mile infrastructure. Depending upon a long drop customer qualifying as Low to Moderate Income (LMI), will determine if the passing is included as a VATI eligible passing or covered under local funding sources.

The three project areas are best articulated by Census Block Groups (CBG) as depicted in attachment 1.

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Project 1 includes SpaceX and Connect Everyone RDOF awarded areas & Additional Project Areas (long drops + small areas needing last mile installation):

- Connect Everyone areas encompass two CBGs, 510579506001 and 510579506002, in the top third of Essex. These areas were awarded to Connect Everyone by the Rural Digital Opportunity Fund (RDOF). Connect Everyone has elected to NOT participate in the 2022 VATI process and encouraged Essex to pursue other opportunities to achieve universal coverage in this area. ABB currently provides Hybrid Fiber Coaxial (HFC) service to several neighborhoods, on the Rappahannock River, at the southernmost corner of CBG 510579506002. These areas are part of the VATI grant request.
- SpaceX areas cover two CBGs, 510579508002 and 510579508003, that are in the top and middle CBG areas in the lower third of Essex. These areas were awarded to SpaceX by RDOF. Per 2022 VATI Guidance, "Areas with service by satellite providers are not considered served under VATI definitions. Therefore, RDOF areas preliminarily awarded to satellite internet service providers will not be considered as overlap and are allowed to be included in VATI applications." These areas are part of the VATI grant request.
- The Additional Project Areas include long-drops across multiple CBGS. The majority are in central and southern Census tracts, containing over 1000 potential long-drop passings, along existing ABB routes. Approximately 48% of the long drop passings are categorized as Low to Moderate Income (LMI) address points. The LMI portion 'Long Drop' effort is included in the VATI grant request; the portion not covered by LMI is covered by local funds that is included as part of the VATI match for Essex County. Finally, there are 44 small named efforts, containing 417 address points that require last mile fiber installation. The majority are in a 6-mile-wide arc that extends outward from Tappahannock.

Project 2 includes ABB Essex County RDOF CBG 510579506003, located in the most western portion of the middle portion of Essex. This area was awarded to ABB by RDOF. This area is part of the VATI grants request.

Project 3 includes ABB Essex County RDOF 510579508001, located in the lower end of the bottom third of Essex. This area was awarded to ABB by RDOF. This area is part of the VATI grants request.

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2. List existing providers in the proposed project area and the speeds offered. Please do not include satellite. Describe your outreach efforts to identify existing providers and how this information was compiled with source(s).

Answer:

The only broadband fiber or HFC provider in Essex County is ABB, less the capability that TingFiber reports to provide to one census block, in Tappahannock. The table below details the existing providers, in the proposed project areas, and speeds offered.

Information reported in the table below is based on data reported to the FCC, as of June 2020, at census block level aggregated by the ISP. The speeds depicted are the average speeds for the CBG. The BroadbandNow.com website depicts very similar information as the data provided on the FCC website.

A majority of the area in CBGs 510579506001, 510579506002, and 510579506003 only have access to DSL speeds <10/1 Mbps. Fixed wireless speeds > 25/10 Mbps are reportedly available in CBGs 510579508001 and 510579508003. The fixed wireless service in Essex has issues with capacity that is exasperated by weather, terrain, and COVID related capacity demands.

CBG, DBA Name, Technology, Avg Downstream Speed (mbps), Avg Upstream Speed (mbps), # Blocks

6001	Verizon Virginia LLC	Asymmetric xDSL	7.82	0.75	83
6001	Virginia Broadband LLC	Terrestrial Fixed Wireless	25.00	10.00	1
6002	ABB	Cable Modem DOCSIS 3.1	1000.00	51.00	15
6002	Verizon Virginia LLC	Asymmetric xDSL	6.48	0.72	43
6002	Virginia Broadband LLC	Terrestrial Fixed Wireless	25.00	10.00	42
6003	ABB	Cable Modem DOCSIS 3.1	1000.00	51.00	14
6003	RiverStreet Networks	Terrestrial Fixed Wireless	3.00	3.00	1
6003	Verizon Virginia LLC	Asymmetric xDSL	6.86	0.71	46
6003	Virginia Broadband LLC	Terrestrial Fixed Wireless	25.00	10.00	2
7001	ABB	Cable Modem DOCSIS 3.1	1000.00	51.00	42
7001	Verizon Virginia LLC	Asymmetric xDSL	11.21	0.89	56
7001	Virginia Broadband LLC	Terrestrial Fixed Wireless	25.00	10.00	81
7002	ABB	Cable Modem DOCSIS 3.1	1000.00	51.00	47
7002	TingFiber	Fiber	1000.00	1000.00	1
7002	Verizon Virginia LLC	Asymmetric xDSL	11.33	0.91	57
7002	Virginia Broadband LLC	Terrestrial Fixed Wireless	25.00	10.00	106
7003	ABB	Cable Modem DOCSIS 3.1	1000.00	51.00	30
7003	Verizon Virginia LLC	Asymmetric xDSL	13.97	0.99	32
7003	Virginia Broadband LLC	Terrestrial Fixed Wireless	25.00	10.00	46
8001	ABB	Cable Modem DOCSIS 3.1	1000.00	51.00	7
8001	Verizon Virginia LLC	Asymmetric xDSL	5.80	0.73	44
8001	Virginia Broadband LLC	Terrestrial Fixed Wireless	25.00	10.00	82
8002	ABB	Cable Modem DOCSIS 3.1	1000.00	51.00	38
8002	Verizon Virginia LLC	Asymmetric xDSL	10.07	0.86	66
8002	Virginia Broadband LLC	Terrestrial Fixed Wireless	25.00	10.00	60
8003	ABB	Cable Modem DOCSIS 3.1	1000.00	50.96	53
8003	Verizon Virginia LLC	Asymmetric xDSL	9.75	0.85	63
8003	Virginia Broadband LLC	Terrestrial Fixed Wireless	25.00	10.00	98

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3. Describe if any areas near the project have received funding from federal grant programs, including but not limited to Connect America Funds II (CAF II), ACAM, ReConnect, Community Connect, and Rural Digital Opportunity Funds (RDOF). If there have been federal funds awarded near the project area(s), provide a map showing these areas, verifying the proposed project area does not conflict with these areas. Do not include areas awarded to satellite broadband providers. Label Map: Attachment 2 – Documentation on Federal Funding Area.

Answer:

No federal grant funds have been received to any portion of the three proposed project areas. Nor have federal funds been received near the three proposed project areas in Essex County.

Attachment 2 includes a map depicting the RDOF areas awarded in Essex County last December by the FCC. SpaceX and Connect Everyone are waiting on both ETC Designation and long-form approval before funds can be awarded; ABB has received ETC designation and is waiting on long-form approval.

4. Describe if any blocks awarded in Rural Digital Opportunity Fund (RDOF), excluding those awarded to satellite internet service providers, are included in the VATI application area. If RDOF areas awarded to terrestrial internet service providers are included in the VATI application, provide a map of these areas and include information on number of passings in RDOF awarded areas within the VATI application area, and Census Block Group ID number for each block group in the project area. Label Attachment: Attachment 3 – RDOF Awarded Areas Form in VATI Area

Answer:

There are two Census Block Groups that were awarded to ABB in the FCC Auction 904: RDOF that is included in the VATI application area, as shown in the table below.

Details are depicted in Attachment 3 - RDOF Awarded Areas Form in VATI Area, and the attached map as attachment 3.1.

CBG,Provider,# Passings
510579506003,Atlantic Broadband,289
510579508001,Atlantic Broadband,471

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5. Overlap: To be eligible for VATI, applicants must demonstrate that the proposed project area(s) is unserved. An unserved area is defined as an area with speeds below 25/3 mbps and with less than 25% service overlap within the project area for wireless projects and 10% for wireline projects. Describe any anticipated service overlap with current providers within the project area. Provide a detailed explanation as to how you determined the percentage overlap. Label Attachment: Attachment 4 – Documentation Unserved Area VATI Criteria.

Answer:

Essex County does not have any service overlap areas. ABB is the only wire-line service provider in proximity to the areas proposed for the VATI funding, as referenced in questions 1 and 2. Because ABB is also the proposed VATI partner, and they are expanding their network to areas that currently do not have access there is no overlap. Virginia Broadband and Verizon, which report to provide wireless service and high-speed DSL, respectfully, in the areas, are non-consequential providers, as discussed in question 2 above.

Per attachment 4, generated from the FCC Fixed Broadband Deployment Map, the two images reflect the areas of Essex County where a majority of the passing in CBGs 510579506001, 510579506002, and 510579506003 ONLY have access to DSL speeds <10/1 Mbps. Also depicted are the areas where fixed wireless speeds \geq 25/10 Mbps are reportedly available in CBGs 510579508001 and 510579508003. The fixed wireless service in Essex has issues with capacity that is exasperated by weather, terrain, and COVID related capacity issues.

Data from the BroadbandNow website corroborates the FCC data that ABB is the only wireline provider in the area, and subsequently, the only provider of adequate fixed broadband services, with speeds exceeding VATI minimum speed thresholds, that also meet US Department of Treasury Guidance for broadband upload and download speed expectations, if American Rescue Plan funds are used for broadband infrastructure expansion.

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6. Total Passings: Provide the number of total serviceable units in the project area. Applicants are encouraged to prioritize areas lacking 10 Megabits per second download and 1 Megabits per second upload speeds, as they will receive priority in application scoring. For projects with more than one service area, each service area must have delineated passing information. Label Attachment: Attachment 5 – Passings Form.
- Of the total number of VATI passings, provide the number of residential, business, non-residential, and community anchors in the proposed project area. (Up to 10 points for businesses and community anchor institutions)
 - If applicable, of the total number of RDOF passings, provide the number of residential, business, non-residential, and community anchors in the proposed project area.
 - If applicable, provide the number of passings that will require special construction costs, defined as a one-time fee above normal service connection fees required to provide broadband access to a premise. Describe the methodology used for these projections.
 - If applicable, provide the number of passings included in the application that will receive broadband access because special construction costs have been budgeted in the VATI application. Describe the methodology used for determining which passings with special construction costs were budgeted in the application.
 - Provide the number of passings in the project area that have 10/1 mbps or less. Describe the methodology used for these projections. (up to 15 points)

Answer:

There are 3,557 total 'passings' in the Essex County project areas, which include the potential Special Construction locations that qualify for LMI and Non-LMI. To determine total passings, the proposed project areas were cross referenced with the database available through the Virginia Geographic Information Network's Virginia Address Points map service shapefile. The resulting data set was then validated against address data sets available using Census and Texas A&M Geo-location services. To determine the number of businesses and farms, non-residential, and community anchors in the project areas. SCC active business registrations, county license data, county GIS data, USDA Farm Bureau and USGS named places data were cross-referenced with the serviceable locations in the project areas. This analysis indicated that the project areas in Essex County contain 28 non-home based businesses (including large commercial farms), 178 businesses are believed to be home-based (including smaller commercial farms), 2 community anchors, and 24 other non-residential passings (including over a dozen churches). Based on a detailed comparison of address data, FCC data, and other public data, we estimate that 1548 (or 43%) of the locations in the project area lack access to 10/1 service (see Attachment 4). Almost 100% of the passings, over 1100, in the unserved areas of the northern census tract in the county lack access to 10/1 service - this area is the top priority for Essex County.

7. **For wireless projects only:** Please explain the ownership of the proposed wireless infrastructure. Please describe if the private co-applicant will own or lease the radio mast, tower, or other vertical structure onto which the wireless infrastructure will be installed.

Answer:

This is not a wireless project.

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8. Speeds: Describe the internet service offerings, including download and upload speeds, to be provided after completion of the proposed project. Detail whether that speed is based on dedicated or shared bandwidth, and detail the technology that will be used. This description can be illustrated by a map or schematic diagram, as appropriate. List the private co-applicant's tiered price structure for all speed offerings in the proposed project area, including the lowest tiered speed offering at or above 25/3 mbps. (up to 10 points)

Answer:

Essex County is committed to making the best possible use of the public funds that will be invested in broadband infrastructure expansion. It is self-evident that the demand for speed and capacity is growing exponentially. For this reason, ABB and Essex County have expressed their intentions to only invest in a future proof, state-of-the-art technology - fiber. All parties recognize that this will be more costly to install, but when investing public funds, long term outcomes must be considered. Below are the service packages to be offered through this expansion, and an explanation of services:

Internet Assist* (15 Mbps Download / 1 Mbps Upload) - \$9.99*¹

Base Internet: (50 Mbps Download / 2 Mbps Upload) - \$69.99*

Unlimited Fast: (100 Mbps Download / 10 Mbps Upload) - \$89.99*

Unlimited UltraFast: (400 Mbps Download / 50 Mbps Upload) - \$109.99*

Unlimited GigaFast: (1 Gbps Download / 50 Mbps Upload) - \$129.99*

* Rates effective as of September 1, 2021.

¹ In direct response to the COVID-19 situation and the increased need to connect to work and/or school from home, ABB is offering a 15 Mbps downstream / 1 Mbps upstream internet speed tier to those who live in serviceable areas, do not currently have internet service in their home, and meet specific need-based qualifications. Potential customers who are in the following programs can apply: Medicaid, Public Housing Assistance, SNAP, NSLP, LIHEAP and WIC.

ABB also provides broadband connectivity, at discounted prices, for financially struggling households through the Federal Communications Commission's Emergency Broadband Benefit Program. The program provides a discount of up to \$50 per month towards broadband service for eligible households (and up to \$75 per month for households on qualifying Tribal lands) so that they can be connected for distance learning, work from home, telehealth and other critical online destinations during the COVID-19 pandemic.

The above rates are the published ones reported to the FCC and Franchise Authorities. There are multiple discounted offers (door-to-door, call center, online) that are lower than these published rates. As these projects are completed, ABB's intention is to use door-to-door sales and Direct Mail with varying discount offers. A \$10 per month discount is available if the customer signs up for AutoPay on select packages. Additionally, ABB has Enterprise level services via Direct Internet Access (DIA), with symmetrical speeds from 10 Mbps to 100 Gbps (determined by the end user). This service is scalable, and 100% fiber based, and proactively managed and monitored 24/7/ 365 and backed by competitive network and service SLAs.

ABB utilizes fiber connectivity from a minimum of six Internet peering points: Ashburn, VA; Boston, MA; New York City, NY; Atlanta, GA; Pittsburgh, PA and Philadelphia, PA.

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9. Network Design: Provide a description of the network system design used to deliver broadband service from the network's primary internet point(s) of presence to end users, including the network components that already exist and the ones that would be added by the proposed project. Provide a detailed explanation of how this information was determined with sources. Provide information on how capacity for scalability, or expansion, of how the network can adapt to future needs. If using a technology with shared bandwidth, describe how the equipment will handle capacity during peak intervals. For wireless projects, provide a propagation map for the proposed project area with a clearly defined legend for scale of map. Label Map: Attachment 6 – Propagation Map Wireless Project.

Answer:

Essex County's existing network consists of Hybrid Fiber Coaxial (HFC), FTTH (Fiber-To-The-Home), HFC (Hybrid Fiber Coaxial) and RFOG (Radio Frequency Over Glass).

Proposed Network Design: Combination of FTTH (Fiber-To-The-Home), HFC (Hybrid Fiber Coaxial) and RFOG (Radio Frequency Over Glass).

Length: 446.17 Miles (2,355,778')

Passings: 3557*

*Passing count includes the potential Special Construction locations that qualify for LMI and Non-LMI.

ABB has a proven track record of network design and construction that allows for increased data capacity to meet consumer needs. The strength of our network is evidenced by ABB meeting the data transition needs during the ongoing COVID crisis. ABB has accomplished this robust and resilient network through strategic partnerships with contractors and ABB employees. With our strategic partnerships we are able to secure additional contractors as needed. Our advanced network has proven to be readily scalable, reliable and built for growth. This enables us to not only meet but also exceed customer demand.

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10. Explain how the proposed project achieves universal broadband coverage for the locality or fits into a larger plan to achieve universal broadband coverage for the locality. If applicable, explain the remaining areas of need in the locality and a brief description of the plan to achieve universal broadband coverage. (up to 50 points)

Answer:

Universal broadband coverage for Essex County is achieved when broadband service is available to the 3557 passings in the three project areas previously articulated. Additionally, it is desirable that resources are readily available to Low and Moderate Income (LMI) households to ensure equitable digital access and literacy across the county.

Essex County is a majority rural county with 10,500 residents and approximately 7,000 passings that would benefit from a broadband provider that can provide scalable speeds and capacity necessary to thrive in the 21st century. Federal and state grant programs will provide most of the resources needed to deploy scalable fiber throughout the county, in three years from the project start date, based on the 2020 award notification from RDOF and the anticipated grant award from the 2022 VATI grant competition.

The county is divided into nine Census Block Groups (CBG). The CBG taxonomy is used to aggregate and depict the three project areas in the county to achieve universal access. Additionally, the CBGs are prioritized as 'A', 'B', or 'C' to reflect the geographic areas that currently have no or limited broadband to areas that have some HFC or fiber.

Essex County's intent is to encourage fiber deployment efforts initially to areas that have no service over areas that have some service. RDOF and VATI pre-engineering efforts are anticipated to start at approximately the same time. ABB anticipates completing both VATI and RDOF efforts in three years from the project start date. The table below depicts CBGs, funding and priority.

Post VATI 2022 Project efforts will include Essex County's commitment to continue efforts to provide financial support to residents that require financial support to install services that are considered a long drop based on franchise service agreements. Residents that qualify as LMI will be supported by the New Line Extension Customer Assistance Program (LECAP). Additionally, the county will maintain a pool of funds to provide a price offset based on how the county will support offsets for non-LMI long drops during the project - Essex County will provide up to \$1225 for non commercial address points to offset the cost to install a 'long drop' that does not qualify as Low or Moderate Income (LMI), as determined by the Department of Social Services. 'Long Drops' are address points that do NOT require middle-mile or last-mile fiber installation to receive ABB service. For Hybrid Fiber-Coaxial ("HFC") long drops, ABB will install up to 300 feet at no charge. For FTTH long drops, ABB will install the initial 1,000 feet of fiber at no charge. ABB will charge COST + 10% for HFC installation greater than 300 ft and FTTH installations greater than 1,000 ft. Essex County will provide up to \$1225 per residential address point to help offset installation costs. Customers are responsible for installation costs that are not covered by ABB or the county offset. In cases where ABB installation is not a reasonable option, due to installation costs, the \$1225 county offset can be used to cover the cost of a Starlink Kit to receive SpaceX Starlink satellite or similar service.

CBG#,Funding,Priority
510579506001,VATI, A
510579506002,VATI & LD,A
510579508001,VATI/RDOF & LD, A
510579506003,VATI/RDOF & LD,B
510579507002,VATI w/ LD,B
510579508002,VATI w/ LD,B
510579507001,LD,C
510579507003,LD,C
510579508003, VATI w/ LD,C

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11. Project Readiness

Describe the current state of project development, including but not limited to: planning, preliminary engineering, identifying easements/permits, status of MOU or MOA, and final design. Prepare a detailed project timeline or construction schedule, identifying specific tasks, staff, contractor(s) responsible, collection of data, etc., and estimated start and completion dates. Applicants must include Memorandums of Understanding (MOUs) or Memorandums of Agreement (MOAs) between applicants (drafts are allowable). Label Attachments: Attachment 7 – Timeline/Project Management Plan; Attachment 8 – MOU/MOA between Applicant/Co-Applicant; (up to 20 points)

Answer:

Attachment 7 is a project timeline developed by ABB that details the process of implementing the network expansion for Essex County. Once notification of award is received and the contract has been executed, ABB will conduct a walkout of project areas to verify the pre-engineering and make the steps necessary to formulate a full engineering design. Pre-engineering is scheduled to begin in April 2022. ABB is prepared to begin the planning and walkout phase before April 2022 if a Prior Authorization of Project Costs provided from Essex County, is accepted and approved by DHCD. Construction is projected to start March 2023. The Construction Phase end date is estimated to be completed in September 2024. Once Construction is complete in project areas, ABB Direct Sales Representatives will begin visits to homes to review products and pricing and the option to subscribe to a service. All ABB services will be available to residents by project closeout projected date unless ABB encounters any unforeseen issues with pole owners or other third parties beyond its control.

A Memorandum of Agreement has been drafted and will be signed by all parties after all terms of the agreement have been properly vetted by each signer, and a final version has been agreed upon. Included as Attachment 8 is the current draft of this agreement as of application submittal. The finalized, signed version will be sent to DCHD upon completion.

12. Has the applicant or co-applicant received any VATI grants? If so, provide a list of these grants, with a detailed summary of the status of each.

Answer:

Essex County has received no VATI grants.

ABB is the ISP partner of the VATI FY21 award of the Four County ABB Regional 2021 Project Contract #VATI#2021-010. This project is currently in the walkout and design phase.

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13. Matching funds: Complete the funding sources table indicating the cash match and in-kind resources from the applicant, co-applicant, and any other partners investing in the proposed project (VATI funding cannot exceed 80 percent of total project cost). In-kind resources include, but are not limited to: grant management, acquisition of rights of way or easements, waiving permit fees, force account labor, etc. Please note that a minimum 20% match is required to be eligible for VATI, the private sector provider must provide 10% of the required match. If the private co-applicant cash match is below 10% of total project cost, applicants must provide financial details demonstrating appropriate private investment. Label Attachments: Attachment 9 - Funding Sources Table; Attachment 10 – Documentation of Match Funding

Answer:

The Funding Sources Table is included at attachment 9. ABB and Essex County have committed to provide \$1,225 per passing for this project.

ABB and Essex County have also committed to provide \$240.00 per passing for potential locations that qualify for LMI Long Drops “Special Construction Costs” that are located off of ABB’s existing footprint, where the location has an extended setback from the public right of way beyond the maximum distance between a network access point and the location.

Additionally, Essex County has committed \$650,000, in local funds, to help offset long-drops that do NOT qualify as LMI passings, that are included in the VATI application, and also provide funds to support local digital literacy efforts through the Essex County Public Library. Essex County will make every accommodation within its jurisdictional ability to facilitate the project’s completion in addition to keeping the public informed about on-going project performance. Documentation of Matching Funds from the County Administrator and ABB are attached as attachment 10.

14. Leverage: Describe any leverage being provided by the applicant, co-applicant, and partner(s) in support of the proposed project. (up to 10 points)

Answer:

Essex County and ABB have leveraged a number of county government and business activities that facilitate planning for broadband expansion. There are years of developing and maintaining datasets required to submit, manage, and maintain grant funded infrastructure upgrades to the areas identified in Attachment 1. In an effort to support the VATI grant submission, the county Broadband Planning and GIS Departments created and maintained multiple datasets (e.g., building locations, property attributes, state and federal datasets unique to Essex County to support broadband planning and execution. ABB followed similar efforts with supporting fiber/coaxial infrastructure analysis, residents with copper/fiber analysis, long-drop analysis and preliminary designs with costs, etc. that are used in this effort. Previous strategic planning efforts completed by Essex County broadband steering groups and planning commissions provide recommendations, and strategic intent for guiding the best approach and priorities to expand broadband services. An enduring manpower investment, by the county, helps ensure that the project will be completed on time and within budget by utilizing county resources (i.e. administrative, management, and financial) to execute the contract.

As an in-kind contribution, Essex County will provide the services of the EDA and the County Zoning Board to continue throughout the project. Essex County will remain active throughout the project’s construction and implementation phases. The county will also assist ABB with its marketing, as described in the next section. The Department of Social Services (DSS) and Essex Library will provide relevant and timely information to citizens regarding funding sources, such as the FCC’s Lifeline and EBB programs, which may help citizens afford the monthly connection cost. The value of ABB’s efforts to prepare for the work needed by ordering materials and beginning makeready work will be included as leverage in anticipation of grant approval.

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15. Marketing: Describe the broadband adoption plan.

a. Explain how you plan to promote customer take rate, including marketing activities, outreach plan, and other actions to reach the identified serviceable units within the project area. Provide the anticipated take rate and describe the basis for the estimate. (up to 10 points)

b. Describe any digital literacy efforts to ensure residents and businesses in the proposed project area sufficiently utilize broadband. Please list any partnering organizations for digital literacy, such as the local library or cooperative extension office.

Answer:

ABB implements numerous activities to advertise broadband capabilities to residents. During the construction phase, ABB will place a door hanger at each home notifying residents of the construction planned in their area to offer ABB service. They will use various communication activities to notify residents of availability. These can include door hangers, direct mail pieces and visits by an ABB Direct Sales Representative to residents' homes to review products and pricing and the option to subscribe to a service. If a Direct Sales Representative visits and the resident is not home, a door hanger will be left with the contact information of the Direct Sales Representative.

Once service is established, ABB may communicate through many media types such as video, radio, print (press releases, FSI & direct mail) and digital advertising (social media, web banners, landing pages). Because there is currently no service to the project areas this type of outreach should be effective in informing residents of the availability of broadband access. It is estimated by ABB, based on past trends, that there will be a 50-60% take rate in these project areas over two years from activation.

Essex County will rely on print, radio, word-of-mouth, local organization list servers, and social media to optimize community outreach. They will assist in marketing by providing the information needed to make contact with new potential subscribers, and will mount outreach campaigns to inform the public, at-large, of the expanded broadband service in currently unserved areas.

Essex County will base a community outreach strategy on inherent capabilities of three county entities, to help educate those who have limited or no experience with computers and/or no/limited broadband experience. The Essex County Public Library (ECPL), Essex County Public Schools (ECPS) and the Department of Social Services (DSS) are integral in the county's outreach and digital literacy efforts. ECPS currently provides training on school issued hardware, software and both fixed and mobile broadband connectivity. The Essex County Library currently provides individual training and the use of broadband connected computers to residents. The library's efforts will expand to include mobile outreach efforts, per attachment 20. The DSS will qualify residents who qualify as LMI in addition to advising residents on federal programs available to ensure digital equity across the community.

16. Project Management: Identify key individuals who will be responsible for the management of the project and provide a brief description of their role and responsibilities for the project. Present this information in table format. Provide a brief description of the applicant and co applicant's history and experience with managing grants and constructing broadband communication facilities. Please attach any letters of support from stakeholders. If the applicant is not a locality(s) in which the project will occur, please provide a letter of support from that locality. Attachment 11 – Letters of Support.

Answer:

Project Management Team

Name, Organization, Role

William Newborg, Atlantic Broadband, Director of Grants and Funding

Crystal Duke, Atlantic Broadband, Grants and Funding Manager

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Michael Scott, Atlantic Broadband, Construction Supervisor

Robert Hodges, Essex County, County Representative

Bios for everyone listed can be viewed in Attachment 17 - Personnel Bios.

Atlantic Broadband History and Experience in Constructing Broadband Facilities:

ABB has been in operation since 2004, though it can trace its origins back many decades through the companies it has acquired. It is a subsidiary of Cogeco Cable Inc. (TSX: CCA), the 8th largest cable operator in the United States. The company provides TV, Internet, Phone and Enterprise business services to more than 450,000 business and residential customers located in eleven states: Connecticut, Delaware, Florida, Pennsylvania, Maine, Maryland, New Hampshire, New York, South Carolina, Virginia, and West Virginia.

ABB has successfully managed grants in New Hampshire and Maryland systems and is currently managing a Virginia grant for the VATI FY21 award of the Four County Regional Project with Caroline, Mathews, Middlesex and Lancaster. It has extensive experience constructing, operating, and managing state-of-the-art broadband networks.

The company currently provides broadband connectivity in Caroline, Essex, King George, King William, King & Queen, Lancaster, Mathews, Middlesex, Northumberland, Richmond, and Westmoreland Counties. In addition, ABB provides commercial and enterprise services to many of the schools, government entities, as well as many of the small and medium sized businesses in the local Virginia market.

ABB will retain ownership of the network, supply the bandwidth and will be responsible for maintenance, repair and restoration as well as the upgrading of the network. Atlantic Broadband continually monitors and measures performance against our standards.

ABB employees live and work in the communities where ABB operates and conducts business. ABB's customers and business clients are supported locally by their Regional Engineering Team and by their ABB Network Operations Center ("NOC") located in Rochester, NH. They are local with a dedicated team of experienced network professionals that will respond promptly and completely to address network needs. Their local Outside Plant Engineers, Electronic Engineers, Warehouse Personnel, and Maintenance Technicians are trained and focused on managing Broadband and highly complex fiber networks in their day-to-day responsibilities.

ABB will retain ownership of the network, supply the bandwidth and will be responsible for maintenance, repair and restoration as well as the upgrading of the network. ABB continually monitors and measures performance against their standards.

The ABB locally based regional team works diligently with the NOC to support the Network through

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monitoring that includes:

- 24x7x365 network coverage
- 24x7x365 US-based technical support
- Real-time Network elements and facilities monitoring
- Primary and redundant power sources
- Atlantic Broadband engineering support within their facilities
- Local field operations and support
- Alarm management and proactive response
- Key customer proactive notification
- Twice daily networking element and key customer CPE configuration backups to enable rapid recovery in the event of a failure
- Individual account management

The NOC provides critical support for their facilities with continuous provisioning, repair and engineering assistance, including:

- 24x7x365 network monitoring from the backbone to the Customer Premises Equipment (“CPE”)
- Atlantic Broadband’s on-net Disaster Recovery Site provides active real-time services in support of their primary Data Center in Rochester, NH

ABB monitors on a 24x7x365 basis, every CPE device that it provides to their customers. ABB is able to determine when a device loses connectivity to the system through the use of monitoring tools at their Network Operations Center, which is also accessible locally by their Technical Support personnel.

With Technical Support coverage available on a 24x7x365 basis, ABB customers are able to report service issues and interruptions directly to the Company’s call centers on a round-the-clock basis. By combining customer input with network monitoring tools, ABB is able to determine the scope of the service interruption and focus their restoration efforts appropriately.

The Annual Report is included as Attachment 19.

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17. Project Budget and Cost Appropriateness

Budget: Applicants must provide a detailed budget that outlines how the grant funds will be utilized, including an itemization of equipment, construction costs, and a justification of proposed expenses. If designating more than one service area in a single application, each service area must have delineated budget information. For wireless projects, please include delineated budget information by each tower. Expenses should be substantiated by clear cost estimates. Include copies of vendor quotes or documented cost estimates supporting the proposed budget. Label Attachments: Attachment 12 – Derivation of Costs; Attachment 13 - Documentation of Supporting Cost Estimates. (up to 10 points)

Answer:

Derivation of Costs are attached in Attachment 12 - "Derivation of Costs". Included in Attachment 13 is the Documentation of Supporting Cost Estimates. This attachment includes an overview of costs, then costs are broken down by what is required for each individual project area.

18. The cost benefit index is comprised of state cost per unit passed. Individual cost benefit scores are calculated and averaged together to create a point scale for a composite score. Provide the following:
- Total VATI funding request
 - Number of serviceable units (up to 125 points)

Answer:

- \$25,817,718.35
 - 3557
19. **Commonwealth Priorities (Up to 40 points)**

Additional points will be awarded to proposed projects that reflect Commonwealth priorities. If applicable, describe the following:

- Businesses, community anchors, or other passings in the proposed project area that will have a significant impact on the locality or region because of access to broadband.
- Unique partnerships involved in the proposed project. Examples include electric utilities, universities, and federal/state agencies.
- Digital equity efforts to ensure low to moderate income households in the proposed project area will have affordable access to speeds at or above 25/3 mbps.

Answer:

Agriculture and forestry are major components of the economic base in Essex County. Over 80% percent of the land base in Essex County is in agriculture and forestry production. More than 80,000 acres are devoted to the production of pine and hardwood trees, while more than 58,000 acres for crops.

According to the 2017 USDA Census, there are 88 farms in the county. The size of the farms is diverse with about one-third of the farms having 50 or fewer acres, one-third having 50 to 500 acres, and one-third having 500 acres or more. A majority of the farms are located in areas of the county that lack broadband. A map of the 35 largest farms is located at attachment 18. Broadband access is essential for farmers to follow commodity markets, communicate with customers, and access markets around the world. Additionally, farmers require technology that allows their farming businesses to be more efficient, economical and environmentally friendly. Farmers use precision agricultural techniques to make decisions that impact the amount of fertilizer to purchase and apply to the field, the amount of water needed to sustain the crop, and the amount and type of herbicides or pesticides they need to apply. Precision agricultural practices and real-time market awareness requires broadband capacity that this effort will provide.

A compounding factor with rural digital connectivity is that it depends primarily on real estate taxes for

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funding expansion efforts. Essex County is in a continuous conundrum to optimize county services and minimize taxes on a population base that is projected to remain flat with minimal demographic or population changes, over the next twenty years - the county population decreased when comparing the 2020 and 2010 census. With limited and constrained fund sources, all the essential services that the county provides must be taken into consideration and compared to broadband efforts. The problem-set for Essex County is that they must cut services to fund broadband or raise real estate taxes on those who are financially vulnerable to provide viable broadband. A similar dilemma exists for ABB in that the customer base and revenue models are not sufficient enough to justify the very significant investment required to expand broadband infrastructure in low-population areas. The opportunity of VATI support to address the unserved and upgrading overall infrastructure to be suitable for decades to come is crucial to the economic well being of the area. This project completely supports both the Governor's and middle-peninsula's efforts to bring universal broadband access to every county in Virginia and this area, respectfully. The middle-peninsula's broadband plan is included as attachment 19

Essex County completed an outreach survey in 2019 that highlighted the importance of reliable broadband to citizens in the County. The survey is attached as attachment 20 that indicates overwhelming support for expanded and reliable broadband access.

The project also supports three areas surrounding the Town of Tappahannock that are currently or planned to be commercial/industrial areas for future economic development. All three areas, the old airport, the new airport and the LaGrange Industrial Park will all benefit from scalable fiber access to support commercial/industrial expansion.

The application includes a funding request for households that qualify as LMI. If a household qualifies as LMI VATI funds and matching funds from ABB and the county can cover installation costs. The number of potential households that could qualify as LMI was calculated using 2021 HUD data for the median income in Essex County. Census ACS data was used to determine the number of households by income level in each CBG. The number of households that were at 80% or less than the median income are the LMI planning number included in the application

ABB provides broadband connectivity at discounted prices for financially struggling households through the Federal Communications Commission's Emergency Broadband Benefit Program. The program provides a discount of up to \$50 per month towards broadband service for eligible households (and up to \$75 per month for households on qualifying Tribal lands) so that they can be connected for distance learning, work from home, telehealth and other critical online destinations during the COVID-19 pandemic.

New, existing and prior customers that meet financial eligibility requirements may choose from various internet packages with speeds designed to meet a range of household needs. The Emergency Broadband Benefit discount will be applied as a monthly credit against the cost of the internet service selected by each household.

The Emergency Broadband Benefit Program was created in December 2020 when Congress passed the Consolidated Appropriations Act of 2021, which provides \$3.2 billion to fund the program. The program will conclude when the fund is expended or six months after the end of the COVID-19 public health emergency. It is the second major initiative undertaken by the FCC in partnership with U.S. internet service providers to help households during the COVID-19 pandemic. Last spring, Atlantic

Broadband supported customers through the "Keep Americans Connected" program, launching an affordable "Internet Assist" internet package, temporarily suspending disconnects, waiving late fees, and making its WiFi hotspots available to the public during the early months of the pandemic.

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Additional Information

Provide the two most recent Form 477 submitted to the FCC, or equivalent, as well as point, polygon, and, for wireless providers, RSSI shapefiles for the project area **in .zip file form**. With attachments 17 through 20, attach any other information that the applicant desires to include. Applicants are limited to four additional attachments.

Label Additional Attachments as:

- a. Attachment 14 – Two most recent Form 477 submitted to the FCC or equivalent
- b. Attachment 15 - Point and Polygon shapefiles, in.zip file form, showing proposed passings and project area
- c. Attachment 16 - For wireless applicants: shapefiles, in .zip file form, indicating RSSI projections in the application area
- d. Attachment 17 – XXXXXXXX
- e. Attachment 18 – XXXXXXXX
- f. Attachment 19 – XXXXXXXX
- g. Attachment 20 – XXXXXXXX

Answer:

The need for fast reliable broadband has increased to critical levels since the onslaught of COVID-19. People are being encouraged and or directed to work remotely, participate in virtual learning environments, and receive health care via tele-medicine options making quality broadband as equally important as electricity or potable water for everyday living.

A significant player of the healthcare solution for the Northern Neck and Middle Peninsula areas of Virginia is The Ledwith-Lewis Free Clinic (LLFC), in Tappahannock. The clinic is a community-based organization that provides quality primary care, access to specialty providers and free prescription medications to low income, uninsured people and people with health insurance but no medication coverage residing in the region. To qualify individuals must fall between 138% - 250% of the FPL, or have no access to insurance. From July 2020 to July 2021 LLFC provided the following at no cost:

- Over 1550 patient visits
- Over 360 patients supported
- Over 145 specialty visits
- Over 3290 prescriptions provided - valued at over \$1.2 million

LLFC's three primary care suites are outfitted with advanced Telehealth capabilities utilizing state of the art peripheral devices for diagnostic purposes. Also, included on the second level of the facility are three suites for behavioral health and group counseling sessions via telebehavioral health services. Relying on a 100% volunteer provider staff, a reciprocity with VCU Tappahannock Hospital, and a partnership with Bay Rivers Telehealth Alliance LLFC utilizes Telehealth as a tool in providing primary care, specialty care and behavioral health visits.

Additionally, LLFC, through its partnership with Bay Rivers Telehealth Alliance, serves as a resource / treatment center in support of Rural Communities Opioid Response Program. Reliable broadband access is

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critical for area residents to benefit from LLFC remote healthcare options for residents that are homebound or have other complicating issues that make it problematic to travel to the clinic in Tappahannock.

LLFC is currently working on an agreement with Bay Aging to assist with primary care visits for Seniors who are homebound and have Medicare Part A only. Like numerous other patients and hundreds of eligible individuals in the regions, the scope of service is limited due to the lack of broadband.

Lack of broadband radically impacted Essex County Public Schools (ECPS) last year. School officials reported that in the 20/21 school year 40% of Essex County Public School (ECPS) students did not have access to any broadband, and 70% did not have access to adequate broadband. Due to the enduring COVID pandemic ECPS continues to offer the option for virtual learning. Teachers that live in rural areas, without adequate broadband, find it impossible to create and upload learning content, and the same is true for students trying to stream courses.

College students are also negatively impacted. Some are impacted due to COVID decisions at point of matriculation and require virtual learning capabilities. Many return home on school breaks or over the summer are not able to keep connected. In the pre COVID-19 world, this might have been considered an inconvenience. Now, with colleges and universities impacted on short-notice, it is a barrier that can't be breached without assistance.

People in the installation and repair business often carry credit card readers for customers to access to pay their bill. These often do not work in rural areas. In northern Essex County, the project areas have little or no data cell service, so even the use of LTE data is not available for these routine consumer actions .

Finally, approximately ? of the homes in the southern census tract of Essex County are secondary residences. Anecdotal information suggests that many of those owners would move here full-time or spend additional time if they could get reliable broadband. COVID has accentuated the importance of these residences as a safe haven for families. Thus adding significantly to the economy of the county and the support of many nonprofits and local organizations that provide services to the Essex community at large.

Attachments:

Map(s) of project area, including proposed infrastructure

Attachment1ProjectAreaMap9112021122019.pdf

Documentation of Federal Funding (CAF/ACAM/USDA/RDOF, etc...) in and/or near proposed project area.

Attachment2DocumentationofFederalFundingArea9112021122134.pdf

RDOF Awarded Areas included in VATI Application (Use template provided)

Attachment3RDOFAwardedAreasincludedinVATIApplication9112021123846.pdf

Documentation that proposed project area is unserved based on VATI criteria

Attachment4DocumentationUnservedVATICriteria9112021124326.pdf

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Passings Form (Use template provided)

Attachment5PassingsForm9112021124811.pdf

Timeline/Project Management Plan

Attachment7TimelineProjectManagementPlan9112021124520.pdf

MOU/MOA between applicant/co-applicant (can be in draft form)

Attachment8MOUMOAbetweenApplicantandCoApplicant913202194658.pdf

Funding Sources Table (Use template provided)

Attachment9FundingSourcesTable9112021125224.pdf

Documentation of Match Funding

Attachment10DocumentationofMatchFunding9112021125322.pdf

Letters of Support

Attachment11LettersofSupport9112021125527.pdf

Derivation of Cost/Project Budget (Use template provided)

Attachment12DerivationofCosts9112021125605.pdf

Documentation of Supporting Cost Estimates

Attachment13DocumentationofSupportingCostEstimates9112021125651.pdf

Two most recent Form 477 submitted to the FCC or equivalent

Attachment14TwomostrecentForm477submittedtotheFCCCorequivalent9112021125755.pdf

Point and Polygon shapefiles, in.zip file form, showing proposed passings and project area

Attachment15PointandPolygonShapefiles913202175447.zip

Optional

Attachment17PersonnelBios913202195705.pdf

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Optional

Attachment18largeessexcountyfarms9132021100804.pdf

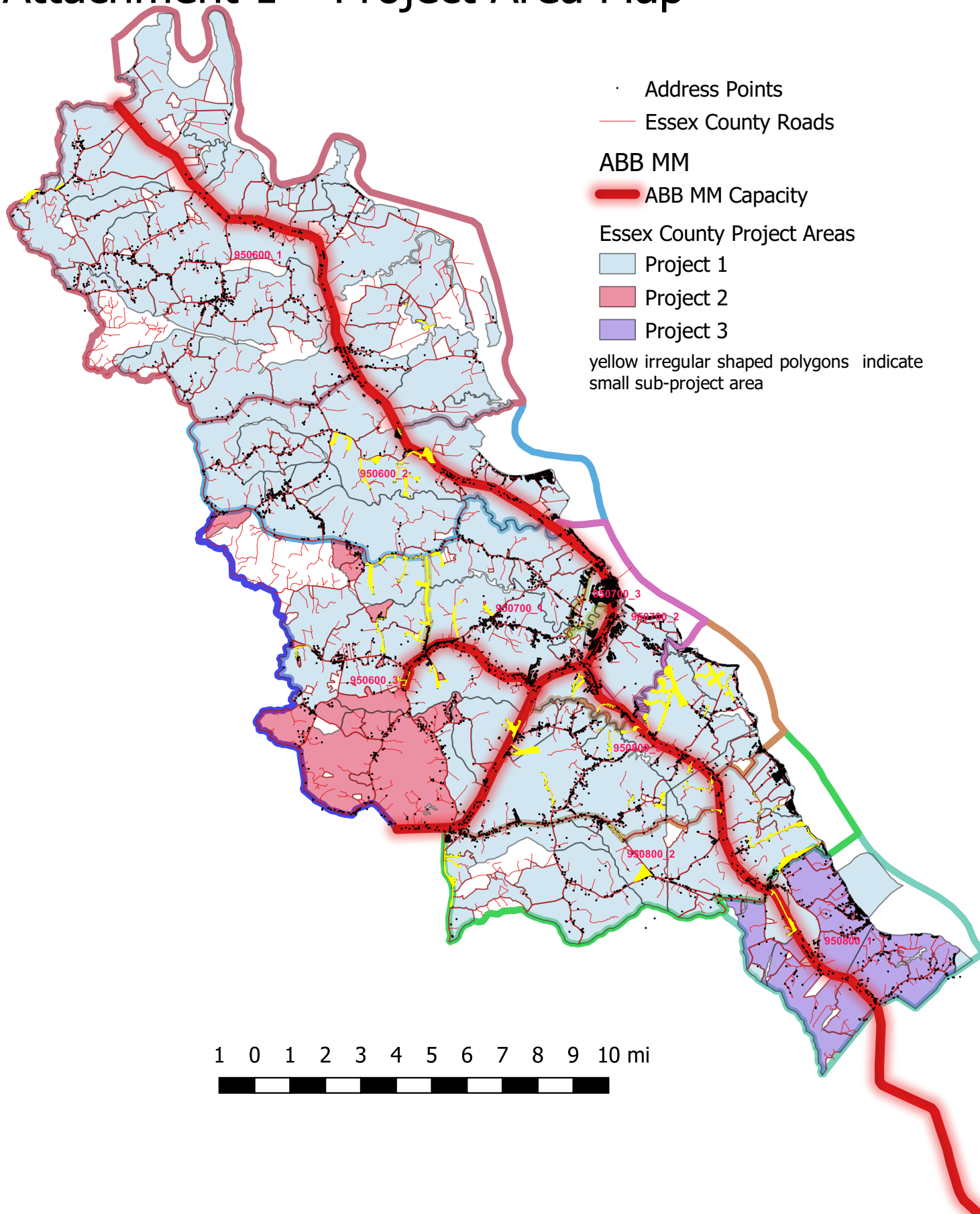
Optional

Attachment19CogecoAnnualReportandMPPCBBPlan9132021103241.pdf

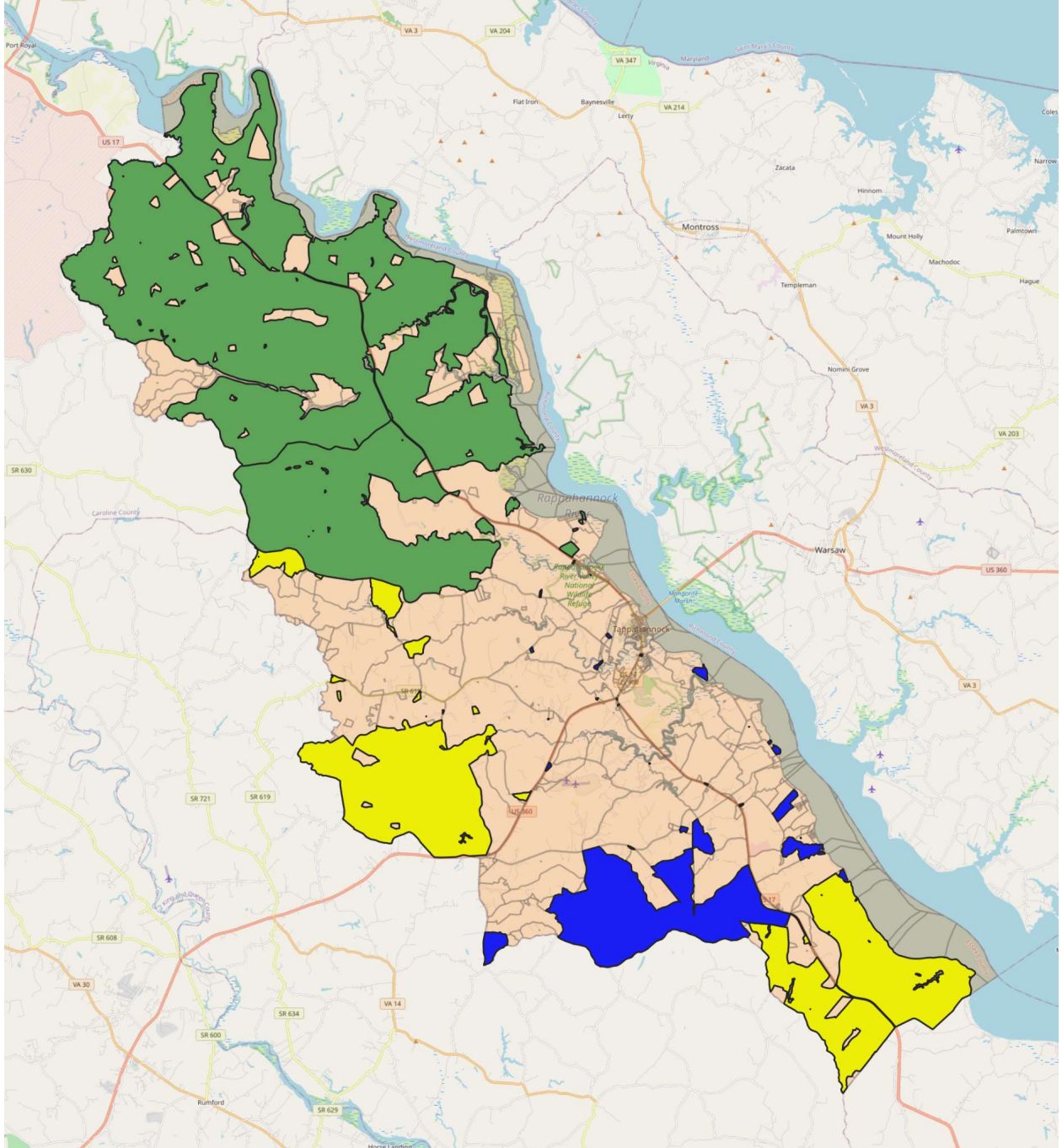
Optional

Attachment20EssexPublicLibraryDigitalLiteracyInitiativeandCommunitySurvey9132021102451.pdf

Attachment 1 – Project Area Map



Attachment 2 – Documentation of Federal Funding Area



Yellow highlighted areas are RDOF awarded areas to ABB

Blue highlighted areas are RDOF awarded areas to SpaceX

Green highlighted areas are RDOF awarded areas to Connect Everyone

Attachment 3 – RDOF Awarded Areas included in VATI Application

- RDOF Form
- RDOF Map

2022 Virginia Telecommunication Initiative (VATI)

RDOF Passings Form

Type of Passings	Total Number of Passings in the Project Area that lie within Preliminarily Awarded RDOF Areas ¹
Residential	703
Businesses (non-home based)	14
Businesses (home-based)	38
Community Anchors	0
Non-residential	5
Total Number of RDOF Passings	760

*Note: The Total Number of RDOF Passings **MUST** be equal to the Residential, Business (non-home based), Non-residential and Community Anchors sum.*

Definitions

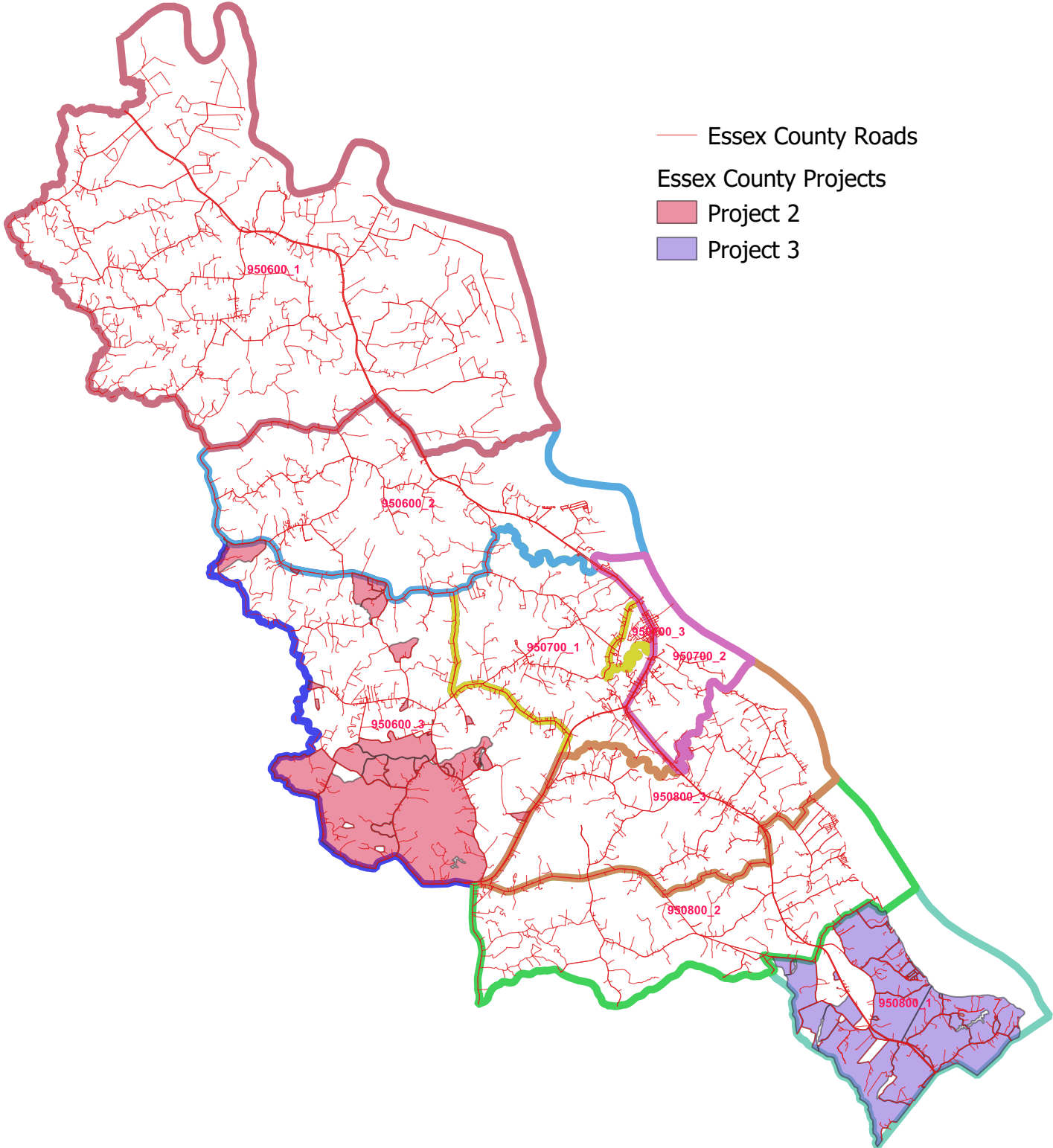
Passing – any structure that can receive service. Multi-unit structures may be counted as more than 1 passing, provided individual connections and account are planned at that structure.

Business – An organization or entity that provides goods or services in order to generate profit. Businesses based in residential homes can count if they are a registered business (BPOL, LLC, etc.).

Community Anchor - schools, libraries, medical and health care providers, public safety entities, community colleges and other institutions of higher education, and other community support organizations and agencies that provide outreach, access, equipment, and support services to facilitate greater use of broadband service by vulnerable populations, including low-income, unemployed, and the aged.

Non-Residential Passing – places of worship, federal, state, or local facilities or other potential customers that are neither a residence, business or a community anchor as defined above.

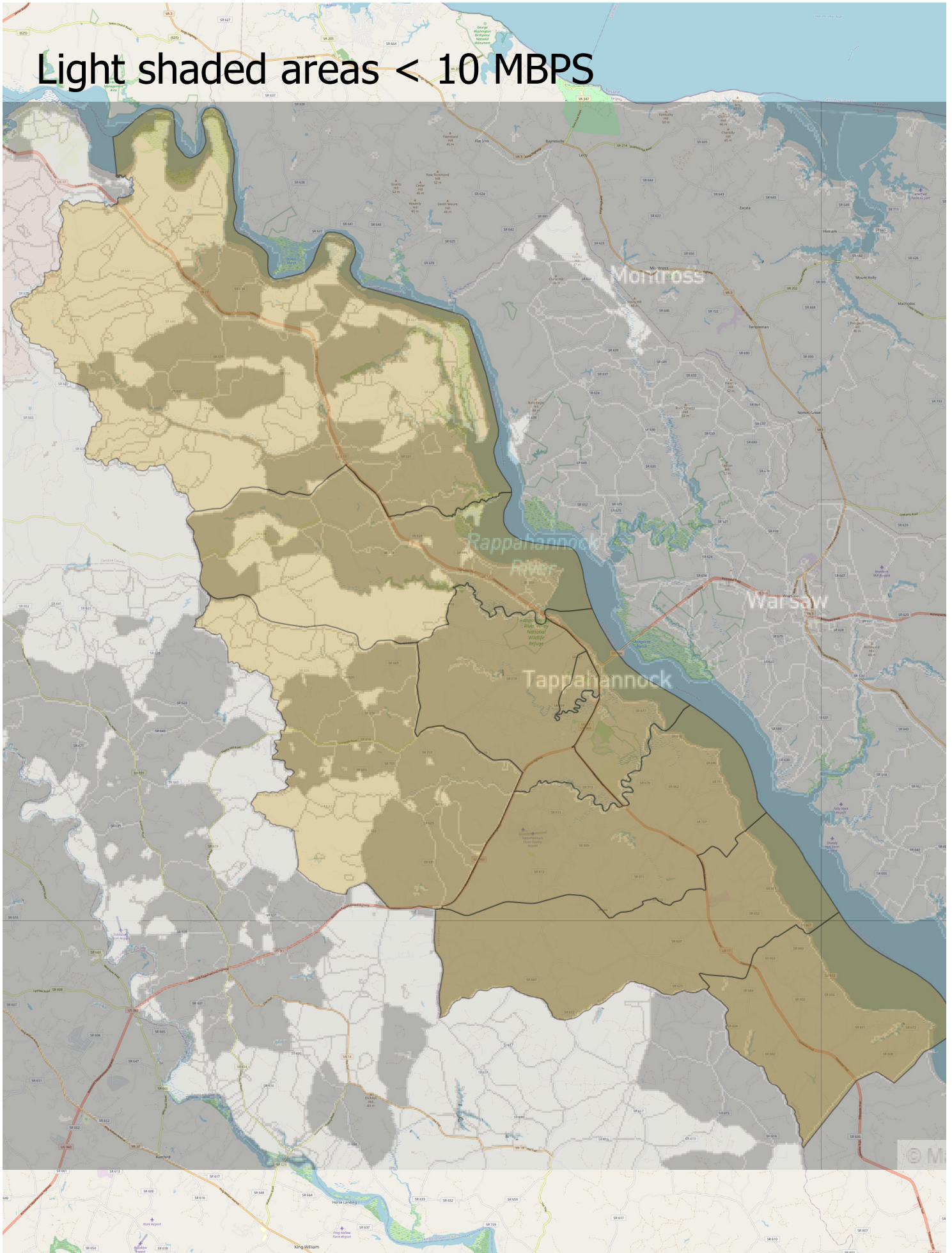
Attachment 3 - RDOF Awarded Areas included in VATI Application



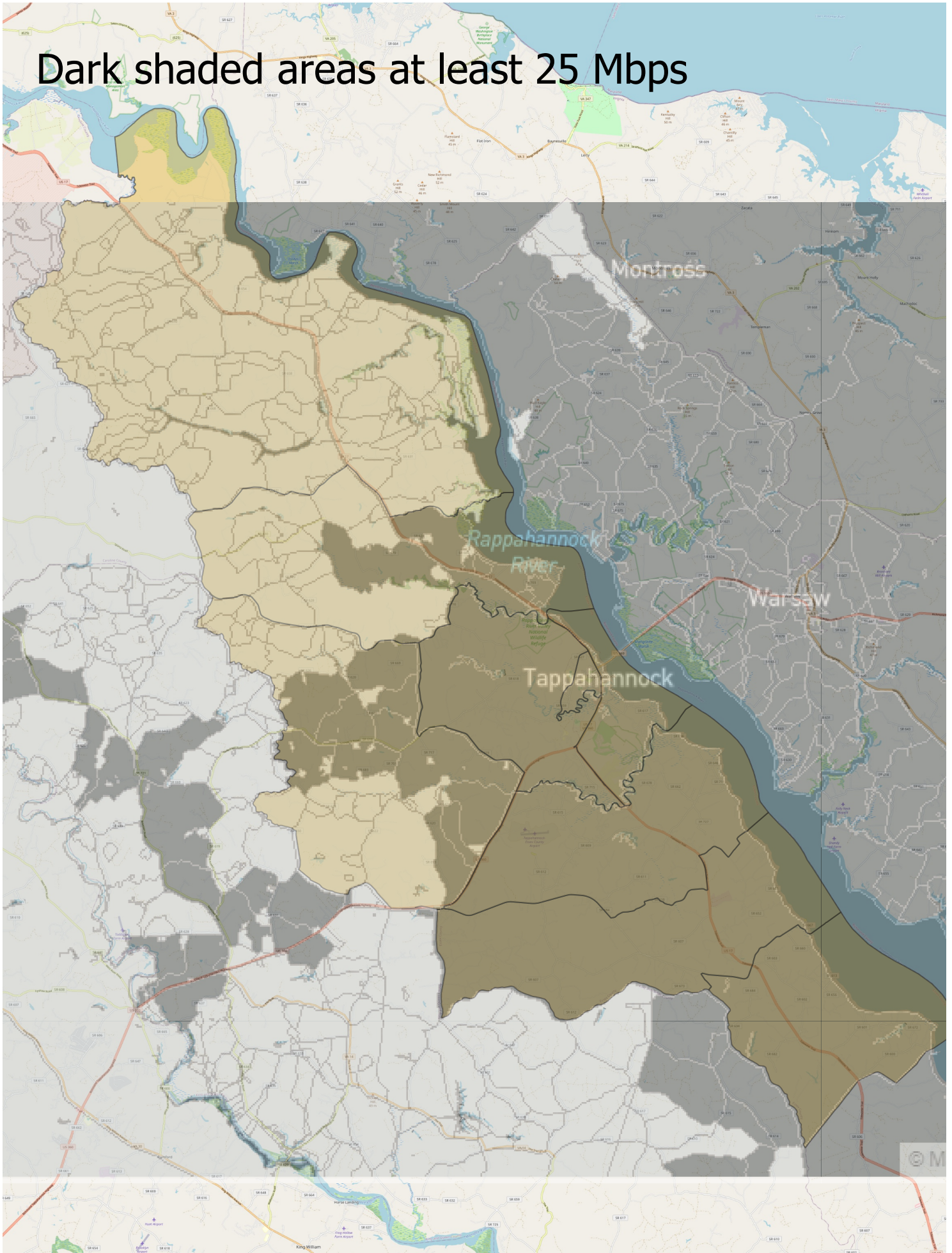
Attachment 4 – Documentation Unserved based on VATI Criteria

- < 10/1 Mbps
- <= 25/3 Mbps

Light shaded areas < 10 MBPS



Dark shaded areas at least 25 Mbps



2022 Virginia Telecommunication Initiative (VATI) Passing Form Service Area

Type of Passings	Total Number of Passings in the Project Area ¹	Total Number of RDOF Passings in the Project Area ⁵	Passings in the Project Area, without Special Construction Costs Required ²	Passings with Special Construction Costs budgeted in the Application ³	Number of Passings with Speeds at 10/1 or below in Project Area ⁴
Residential	2622	703	1644	978	1422
Businesses (non-home based)	14	14	14	0	14
Businesses (home-based)	140	38	88	52	78
Community Anchors	2	0	2	0	1
Non-residential	19	5	19	0	19
Total	2797	760	1767	1030	1534

Note: The Total Number of Passings **MUST** be equal to the Residential, Business (non-home based), Non-residential and Community Anchors sum.

Note: Do not include passings in RDOF awarded areas that were awarded to the co-applicant; these passings should be included in the RDOF Passings Form. Passings included in this application in RDOF awarded areas that were not awarded to the co-applicant, unless successfully challenged, are considered unserved and should be counted as passings in this form.

¹The total number of structures in the project area that can receive service. See definition of passing below for more detail.

²The number of structures in the project area that will not require special construction costs to provide service to. These passings fall within the broadband provider's standard service connection drop length and do not require nonstandard equipment or any additional fees above normal service connection fees required to provide broadband access to a premise.

³The number of structures in the project area with all construction costs budgeted in the application. These passings will not require any additional special construction costs beyond those budgeted for in the VATI application.

⁴The number of structures in the project area that do not have access to internet at speeds of at least 10 mbps download and 1mbps upload.

⁵ Column added to the form based on the VATI question 6 parts.

Definitions

Passing – any structure that can receive service. Multi-unit structures may be counted as more than 1 passing, provided individual connections and account are planned at that structure.

Business – An organization or entity that provides goods or services in order to generate profit. Businesses based in residential homes can count if they are a registered business (BPOL, LLC, etc.).

Community Anchor - schools, libraries, medical and health care providers, public safety entities, community colleges and other institutions of higher education, and other community support organizations and agencies that provide outreach, access, equipment, and support services to facilitate greater use of broadband service by vulnerable populations, including low-income, unemployed, and the aged.

Non-Residential Passing – places of worship, federal, state, or local facilities or other potential customers that are neither a residence, business or a community anchor as defined above.

VATI FY22 Essex County Estimated Project Timeline



Milestone	Begin Date	End Date	2022												2023												2024												2025											
			Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug
All provided estimated dates are based upon a March 28, 2022 contract execution date with DHCD. 36 Months from March 28, 2022 will be a March 28, 2025 deadline.	April 25, 2022	March 24, 2025	All provided estimated dates are based up																																															
Milestone 1 - Design (Design Received)	Date Issued to Walkout	Design Received																																																
Essex County Project Areas (SpaceX & CE CBGs & Additional Project Areas) 323 miles	Apr 25, 2022	Oct 10, 2022	Essex County Project Areas (SpaceX & CE CBGs & Additional Project Areas) 323 miles																																															
ABB Essex County RDOF CBG 510579508001 Project Area - 66 miles	May 9, 2022	Sep 26, 2022	ABB Essex County RDOF CBG 510579508001 Project Area - 66 miles																																															
ABB Essex County RDOF CBG 510579506003 Project Area - 55 miles	May 23, 2022	Oct 24, 2022	ABB Essex County RDOF CBG 510579506003 Project Area - 55 miles																																															
Milestone 2 - Materials Management (Materials Issued to Field)	Materials Ordered	Materials Issued to Field																																																
Essex County Project Areas (SpaceX & CE CBGs & Additional Project Areas) 323 miles	Oct 24, 2022	Mar 13, 2023	Essex County Project Areas (SpaceX & CE CBGs & Additional Project Areas) 323 miles																																															
ABB Essex County RDOF CBG 510579508001 Project Area - 66 miles	Oct 10, 2022	Feb 27, 2023	ABB Essex County RDOF CBG 510579508001 Project Area - 66 miles																																															
ABB Essex County RDOF CBG 510579506003 Project Area - 55 miles	Nov 7, 2022	Mar 27, 2023	ABB Essex County RDOF CBG 510579506003 Project Area - 55 miles																																															
Milestone 3 - Permitting (Notice to Proceed Issued to Contractor)	Begin Permit Application Process	Notice to Proceed Issued to Contractor																																																
Essex County Project Areas (SpaceX & CE CBGs & Additional Project Areas) 323 miles	Nov 14, 2022	Apr 3, 2023	Essex County Project Areas (SpaceX & CE CBGs & Additional Project Areas) 323 miles																																															
ABB Essex County RDOF CBG 510579508001 Project Area - 66 miles	Oct 31, 2022	Mar 20, 2023	ABB Essex County RDOF CBG 510579508001 Project Area - 66 miles																																															
ABB Essex County RDOF CBG 510579506003 Project Area - 55 miles	Nov 28, 2022	Apr 17, 2023	ABB Essex County RDOF CBG 510579506003 Project Area - 55 miles																																															
Milestone 4 - Construction (Splicing Complete)	Notice to Proceed Issued to Contractor	Splicing Completed																																																
Essex County Project Areas (SpaceX & CE CBGs & Additional Project Areas) 323 miles	Apr 3, 2023	Jul 15, 2024	Essex County Project Areas (SpaceX & CE CBGs & Additional Project Areas) 323 miles																																															
ABB Essex County RDOF CBG 510579508001 Project Area - 66 miles	Mar 20, 2023	Jul 8, 2024	ABB Essex County RDOF CBG 510579508001 Project Area - 66 miles																																															
ABB Essex County RDOF CBG 510579506003 Project Area - 55 miles	Apr 17, 2023	Jul 29, 2024	ABB Essex County RDOF CBG 510579506003 Project Area - 55 miles																																															
Milestone 5 - Certification (OTDR / Certification)	Splicing Completed	OTDR / Certification																																																
Essex County Project Areas (SpaceX & CE CBGs & Additional Project Areas) 323 miles	Jul 15, 2024	Aug 5, 2024	Essex County Project Areas (SpaceX & CE CBGs & Additional Project Areas) 323 miles																																															
ABB Essex County RDOF CBG 510579508001 Project Area - 66 miles	Jul 8, 2024	Jul 29, 2024	ABB Essex County RDOF CBG 510579508001 Project Area - 66 miles																																															
ABB Essex County RDOF CBG 510579506003 Project Area - 55 miles	Jul 29, 2024	Aug 19, 2024	ABB Essex County RDOF CBG 510579506003 Project Area - 55 miles																																															
Milestone 6 - Release for Installs (Construction Complete)	OTDR / Certification	Construction Complete																																																
Essex County Project Areas (SpaceX & CE CBGs & Additional Project Areas) 323 miles	Aug 5, 2024	Sep 2, 2024	Essex County Project Areas (SpaceX & CE CBGs & Additional Project Areas) 323 miles																																															
ABB Essex County RDOF CBG 510579508001 Project Area - 66 miles	Jul 29, 2024	Aug 26, 2024	ABB Essex County RDOF CBG 510579508001 Project Area - 66 miles																																															
ABB Essex County RDOF CBG 510579506003 Project Area - 55 miles	Aug 19, 2024	Sep 16, 2024	ABB Essex County RDOF CBG 510579506003 Project Area - 55 miles																																															
Milestone 7 - Direct Sales/Installations	Direct Sales & Installations	Projects Complete																																																
Essex County Project Areas (SpaceX & CE CBGs & Additional Project Areas) 323 miles	Sep 2, 2024	Mar 10, 2025	Essex County Project Areas (SpaceX & CE CBGs & Additional Project Areas) 323 miles																																															
ABB Essex County RDOF CBG 510579508001 Project Area - 66 miles	Aug 26, 2024	Mar 3, 2025	ABB Essex County RDOF CBG 510579508001 Project Area - 66 miles																																															
ABB Essex County RDOF CBG 510579506003 Project Area - 55 miles	Sep 16, 2024	Mar 24, 2025	ABB Essex County RDOF CBG 510579506003 Project Area - 55 miles																																															
Any third party delays will be beyond the control of Atlantic Broadband.																																																		

MEMORANDUM OF AGREEMENT

This Memorandum of Agreement sets forth the principal terms with respect to the intent of the county of Essex within the Commonwealth of Virginia (“**County**”) to partner with Atlantic Broadband (Delmar) LLC (“**ABB**”), to provide turnkey expansion, network management and other network-related services with respect to the proposed fiber network for cable video, high speed data, and other telecommunication services (the “**ABB Network Expansion**”) to be designed and built by ABB with the proceeds of a grant jointly applied for by the County and ABB subject to the FY2022 Virginia Telecommunication Initiative (“**VATI**”) grant managed by Virginia’s Department of Housing and Community Development (the “**DHCD**”).

**Proposed
Engagement:**

Following receipt of a FY 2022 VATI grant (“**VATI Grant**”) and compliance by the County with all applicable grant and legal requirements, the County intends to support ABB in its expansion to unserved areas identified in the VATI Grant application for FY2022 (“**2022 Application**”), and to provide the “**Network Expansion Services**” (as further described below). Such engagement may be structured as a public-private engagement and may be made by the County Broadband Authorities or established advisory group through a Board of Supervisors. If no VATI Grant, issued through the DHCD is awarded to the County, then none of the parties, to this Memorandum of Agreement, and/or to said grant will have any further obligations to the other. In the event that a partial VATI Grant is award to the parties, then the parties shall work together, in good faith, to identify and agree on revisions to the ABB Network Expansions and Network Expansion Services. Additionally, in the event that the County unilaterally removes itself from this Memorandum of Agreement and/or the VATI Grant, said County agrees that it shall not receive any of the funding from VATI and shall not be entitled to the benefits of this Memorandum of Agreement and/or the VATI Grant. It is understood and agreed by the parties that at all times relevant ABB shall own and control 100% of the cable, fiber, conduit, devices, and other equipment related to and as part of the ABB Network Expansion.

**Network Expansion
Services:**

The Network Expansion Services shall include:

Turnkey design and construction plans to all proposed areas submitted set forth in the FY2022 VATI Application that are classified unserved by the county;

1. Turnkey design and construction plans for the following areas as set forth in the 2022 Application: (i) “**Essex County Project Areas**” (as defined in the 2022 Application in relevant part attached hereto as Exhibit A); and (ii) Census Block Groups (“**CBG**”) #510579506003 and #510579508001, of which federal grant funding was awarded to ABB as part of the Federal Communications Commission (“FCC”) auction 904: Rural Digital Opportunity Fund Auction (“RDOF”) (attached hereto as Exhibit B);
2. ABB to operate, maintain, repair and perform other network-related services as are necessary or desirable to properly operate and maintain the ABB Network Expansion; and
3. Providing such other network-related service and support as the County may reasonably require with respect to the ABB Network Expansion and services related thereto.

**County
Obligations and
Financial
Contribution:**

The County’s obligations in connection with the Network Services engagement shall include:

1. A matching commitment of \$1,225.00 per each passed location as set forth in: (i) the Essex County Project Areas; and (ii) CBG #510579506003 and #510579508001, as identified above.
2. A matching commitment of \$240.00 per passed unserved location in ABB’s existing system footprint, which qualifies as a Low to Moderate Income household (“LMI”) pursuant to 2022 VATI Program Guidelines and Criteria, requiring a one-time non-standard installation charge in order to receive ABB’s network services. Moreover, this LMI commitment will be in addition to any standard installation costs assumed by ABB.
3. The County will commit a maximum total of \$650,000.00 for non-LMI qualifying passed unserved locations within ABB’s existing service footprint. This non-LMI commitment will be in addition to any standard installation costs assumed by ABB.
4. Provide ABB and its representatives with: (i) reasonable access to any and all County information and personnel required for ABB to perform any work necessary for the ABB

Network Expansion and its related services; and (ii) instruct such personnel to cooperate fully and timely with ABB and its representatives.

ABB Financial Contribution:

1. A matching commitment of \$1,225.00 per each passed location as set forth in: (i) the Essex County Project Areas; and (ii) CBG #510579506003 and #510579508001, as identified above.
2. A matching commitment of \$240.00 per passed unserved location in ABB's existing system footprint, which qualifies as a Low to Moderate Income household ("LMI") pursuant to 2022 VATI Program Guidelines and Criteria, requiring a one-time non-standard installation charge in order to receive ABB's network services. Moreover, this LMI commitment will be in addition to any standard installation costs assumed by ABB.

Payment and Expenses:

1. Each party shall bear its own expenses in preparing this 2022 Application Memorandum of Agreement and the execution of its relevant obligations therein.
2. As ABB shall bear 100% of the upfront design, installation and other costs, associated with the ABB Network Expansion, County shall pay its share of its relevant financial contributions by reimbursing ABB after its receipt of submitted applicable invoices, within 30 days, for related ABB Network Expansion services (in the interest of clarity, the parties hereto understand and agree that ABB shall be reimbursed by DHCD via payment from the County upon DHCD's receipt of applicable completed remittance and supporting documentation pursuant to the VATI Grant agreement).

Governing Law: The laws of the Commonwealth of Virginia shall govern this Memorandum of Agreement and all disputes between the parties arising with respect to it.

EXECUTED as of September __, 2021.

Essex County

By: _____
[Name/Title]

Address: _____

Attn: _____
Email: _____

Atlantic Broadband (Delmar) LLC

By: _____
[Name/Title]

Address: _____

Attn: _____
Email: _____

DRAFT

Exhibit A - Essex County Project Areas



Exhibit B - CBG



Attachment 9 - Funding Sources Table

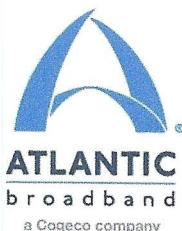
VATI FUNDING SOURCES TABLE

Please fill in the chart below with a description of the project funding source (local, federal, state, private, other), the amount from that source, the percentage of total project funding that source represents, and a description of the current status of the funds (pending, secured, etc.).

SOURCE	AMOUNT	%	STATUS
REQUESTED VATI	\$ 25,817,718	75.79%	Pending
Essex County	\$ 3,864,135	11.34%	Committed
ATLANTIC BROADBAND	\$ 4,383,712	12.87%	Committed
	\$		
	\$		
TOTAL	\$ \$34,065,565	100 %	

Attachment 10 – Documentation of Match Funding

- ABB Letter
- Essex County Letter



September 10, 2021

Tamarah Holmes, Ph.D.
Director, Office of Broadband
Virginia Department of Housing and Community Development
600 East Main Street, Suite #300
Richmond, Virginia 23219

RE: Documentation of Match Funding for Atlantic Broadband's FY 2022 Virginia Telecommunication Initiative ("VATI") Grant Application

Dear Dr. Holmes:

On behalf of Atlantic Broadband (Finance), LLC and its operating subsidiary Atlantic Broadband (Delmar) LLC ("Atlantic Broadband"), please accept this letter as our commitment to contribute approximately 12.87% of the total construction cost upon a successful award of the 2022 VATI Grant Application with Essex County.

Pursuant to a fully executed VATI grant agreement between Atlantic Broadband and the Virginia Department of Housing and Community Development, Atlantic Broadband will design, engineer, construct, operate, maintain and own the respective Hybrid-Fiber Coaxial and/or Fiber-To-The-Home network in the respective service areas.

I am a duly authorized officer of Atlantic Broadband and am authorized to sign on its behalf.

Sincerely,

Patrick Bratton
Chief Financial Officer

Michael A. Lombardo
County Administrator

202 South Church Lane
Post Office Box 1079
Tappahannock, Virginia 22560
(804) 443-4331
(804) 445-8023 – Fax
www.essex-virginia.org



Established 1692

Essex County
Virginia

Board of Supervisors

Sidney N. Johnson, Chairman
North Election District

Rob Akers, Vice-Chairman
Greater Tappahannock Election District

Ronnie Gill
South Election District

John C. Magruder
Central Election District

Edwin E. "Bud" Smith Jr.
At Large Election District

September 8, 2021

Tamarah Holmes, Ph.D.
Director, Office of Broadband
Department of Housing and Community Development
600 East Main Street, Suite 300
Richmond, Virginia 23219

Re: Essex County Board of Supervisors Support for the VATI Application

Dear Dr. Holmes,

On behalf of the Essex County Board of Supervisors, I want to extend the Board's unequivocal support for Essex County's participation in the 2022 Virginia Telecommunications Initiative (VATI) grant application. The partnership and collaboration between Essex County and Atlantic Broadband have generated a broadband project that provides universal fiber coverage to the county in three years from the project start date.

The requirement for high-speed universal broadband coverage throughout the county is recognized as an "imperative" in the Essex County Comprehensive Plan and the Board has listed it as one of the top priorities to improving citizens' lives and enhancing economic development and community vitality within Essex County. The project expands access to 3500+ address points that currently lack sufficient broadband service. Additionally, it will benefit the 70% of county public school students that lack adequate digital access.

The Board has discussed the funding required for the VATI broadband grant match that includes funds provided by American Rescue Plan. The county has the funds available and is fully prepared to provide local funding in the amount of \$3,864,135.

The rural digital divide is tangible and debilitating as experienced by thousands of Essex families during the COVID pandemic. Essex County must overcome this divide to provide a better future for its citizens and economy. Essex County has unrivaled natural resources and an accompanying quality of life to offer residents, tourists, and businesses, but needs access to the opportunities that are only realized by universal broadband coverage to enable our County to provide that clearer future for its citizens.

Michael A. Lombardo
Essex County Administrator

Attachment 11 – Letters of Support

- Honorable Ryan T. McDougle, State Senator
- Honorable Robert J Wittman, U.S. Congress
- Middle Peninsula Planning Commission
- Essex County BOS/ Essex County Administrator
- Essex County Economic Development Authority
- VCU Health
- Rappahannock Community College
- Essex County Public Schools
- Essex County Library

SENATE OF VIRGINIA

RYAN T. McDOUGLE
4TH SENATORIAL DISTRICT
ALL OF CAROLINE, ESSEX, LANCASTER,
MIDDLESEX, NORTHUMBERLAND, AND
RICHMOND COUNTIES; AND PART OF
HANOVER, KING GEORGE, SPOTSYLVANIA,
AND WESTMORELAND COUNTIES
POST OFFICE BOX 187
MECHANICSVILLE, VIRGINIA 23111



COMMITTEE ASSIGNMENTS:
JUDICIARY
PRIVILEGES AND ELECTIONS
REHABILITATION AND SOCIAL SERVICES
RULES

July 19, 2021

Tamarah Holmes, Ph.D.
Director, Office of Broadband
Department of Housing and Community Development
600 East Main Street, Suite 300
Richmond, VA 23219

RE: Essex County 2021 VATI Application

Dear Dr. Holmes:

I would like to express my strong support for Essex County's Virginia Department of Housing and Community Development 2021 VATI (Virginia Telecommunication Initiative) grant application. I commend Essex County for coordinating this application along with Atlantic Broadband.

Approval of this application would help meet a critical and growing need to expand broadband service in the Middle Peninsula. Bringing broadband to unserved areas fosters a myriad of benefits, including commercial growth for businesses, educational opportunities for students, and healthcare improvements via access to telemedicine. Moreover, the COVID-19 pandemic has amplified the need for broadband in rural areas without access to high-speed internet for virtual-only school, work, and doctor's appointments.

Virginia has made progress in the General Assembly over the years to bring broadband to unserved areas. For example, I sponsored legislation three years ago that streamlines the approval process for wireless infrastructure to maximize access in unserved areas. Two years ago, House Bill 2691 was passed to allow our Commonwealth's large electric utilities to work with electric cooperatives to bring broadband infrastructure to rural areas. Approval of the VATI grant application would be a significant step forward in the process to reach our goal of universal broadband coverage.

Thank you in advance for your consideration. If you have any questions or concerns, please do not hesitate to call my office.

Sincerely,

A handwritten signature in black ink that reads "Ryan T. McDougle".

Ryan T. McDougle

ROBERT J. WITTMAN
1ST DISTRICT, VIRGINIA



HOUSE ARMED SERVICES COMMITTEE
RANKING MEMBER, SEAPOWER AND PROJECTION FORCES
TACTICAL AIR AND LAND FORCES

NATURAL RESOURCES COMMITTEE
WATER, OCEANS, AND WILDLIFE

CO-CHAIR, CONGRESSIONAL
SHIPBUILDING CAUCUS

CO-CHAIR, CONGRESSIONAL
CHESAPEAKE BAY WATERSHED TASK FORCE

CO-CHAIR, CONGRESSIONAL
PUBLIC HEALTH CAUCUS

CO-CHAIR, CONGRESSIONAL
RURAL BROADBAND CAUCUS

Congress of the United States
House of Representatives
Washington, DC 20515
September 1, 2021

WASHINGTON OFFICE:
2055 RAYBURN HOUSE OFFICE BUILDING
WASHINGTON, DC 20515
(202) 225-4261

DISTRICT OFFICES:

STAFFORD OFFICE
95 DUNN DRIVE SUITE 201
STAFFORD, VA 22556
(540) 659-2734

MECHANICSVILLE OFFICE
6501 MECHANICSVILLE TURNPIKE SUITE 102
MECHANICSVILLE, VA 23111
(804) 730-6595

MIDDLE PENINSULA OFFICE
508 CHURCH LANE
P.O. BOX 3106
TAPPAHANNOCK, VA 22560
(804) 443-0668

WWW.WITTMAN.HOUSE.GOV

Tamarah Holmes, Ph.D.
Director, Office of Broadband
Department of Housing and Community Development
600 East Main Street, Suite 300
Richmond, VA 23219

Dear Director Holmes:

I am writing in support of the Essex County FY 2022 Virginia Department of Housing and Community Development Virginia Telecommunication Initiative (VATI) grant application to expand high-speed broadband availability in the First Congressional District through a partnership with Atlantic Broadband. Approval of this application would help meet the critical need to buildout high-speed broadband service to residents of Essex County.

Rural residents in Virginia's First Congressional District appreciate the value of high-speed broadband access. Providing reliable broadband access is vital for commercial stability, job creation, distance learning, and telehealth service expansion. Throughout the First Congressional District of Virginia, as in other largely rural areas, economic incentives are needed to expand broadband access, and the VATI program has been a successful vehicle of meeting that need. VATI encourages private telecommunications providers to enlarge their coverage and gives localities the ability to design the expansion that is right for their communities. This eases the financial burden associated with construction costs, broadens service, and creates a successful public-private partnership (P3) for the awardees and for the Commonwealth.

Essex County has collaborated with Atlantic Broadband to utilize state grant funds to amplify local and private funding. This application is resourcefully designed and embodies a first-rate use of state resources with a high rate of private leverage. During the 2020 and 2021 school year 40% of Essex County Public School students did not have access to any internet access, and 70% did not have access to adequate broadband. Moreover, about 48% of households in Essex County can be designated as Low or Moderate income. This proposed application will increase educational opportunities and economic growth in the county.

Thank you for your consideration of the Essex County application. Moreover, if you have any concerns or questions, please do not hesitate to contact my office.

Sincerely,

A handwritten signature in blue ink that reads "Robert J. Wittman". The signature is fluid and cursive, with a long horizontal stroke at the end.

Robert J. Wittman
Member of Congress

Michael A. Lombardo
County Administrator

202 South Church Lane
Post Office Box 1079
Tappahannock, Virginia 22560
(804) 443-4331
(804) 445-8023 – Fax
www.essex-virginia.org



Established 1692

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Sidney N. Johnson, Chairman
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Greater Tappahannock Election District

Ronnie Gill
South Election District

John C. Magruder
Central Election District

Edwin E. "Bud" Smith Jr.
At Large Election District

September 8, 2021

Tamarah Holmes, Ph.D.
Director, Office of Broadband
Department of Housing and Community Development
600 East Main Street, Suite 300
Richmond, Virginia 23219

Re: Essex County Board of Supervisors Support for the VATI Application

Dear Dr. Holmes,

On behalf of the Essex County Board of Supervisors, I want to extend the Board's unequivocal support for Essex County's participation in the 2022 Virginia Telecommunications Initiative (VATI) grant application. The partnership and collaboration between Essex County and Atlantic Broadband have generated a broadband project that provides universal fiber coverage to the county in three years from the project start date.

The requirement for high-speed universal broadband coverage throughout the county is recognized as an "imperative" in the Essex County Comprehensive Plan and the Board has listed it as one of the top priorities to improving citizens' lives and enhancing economic development and community vitality within Essex County. The project expands access to 3500+ address points that currently lack sufficient broadband service. Additionally, it will benefit the 70% of county public school students that lack adequate digital access.

The Board has discussed the funding required for the VATI broadband grant match that includes funds provided by American Rescue Plan. The county has the funds available and is fully prepared to provide local funding in the amount of \$3,864,135.

The rural digital divide is tangible and debilitating as experienced by thousands of Essex families during the COVID pandemic. Essex County must overcome this divide to provide a better future for its citizens and economy. Essex County has unrivaled natural resources and an accompanying quality of life to offer residents, tourists, and businesses, but needs access to the opportunities that are only realized by universal broadband coverage to enable our County to provide that clearer future for its citizens.

Michael A. Lombardo
Essex County Administrator



VCU Health

Tappahannock Hospital

618 Hospital Road
Tappahannock, VA 22560-5000

O 804.443.3311
F 804.443.6150
TDD 800.828.1120

August 24, 2021

Tamarah Holmes, Ph.D.
Director, Office of Broadband
Department of Housing & Community Development
600 East Main Street, Suite 300
Richmond, VA 23219

Dear Dr. Holmes,

I write to you to express VCU Health Tappahannock Hospital's enthusiastic support of Essex County's FY 2022 regional Virginia Telecommunications Initiative (VATI) grant application in partnership with internet service provider Atlantic Broadband. In addition to Essex, the application encompasses Caroline, King George, and King William counties. Like many predominantly rural counties throughout the Commonwealth, significant portions of Essex lack access to broadband, in turn limiting access to virtual health care options. State initiatives such as VATI grants ease the financial burden associated with extending broadband service to sparsely populated areas and are often the make-or-break factor in determining whether such projects are possible to implement in rural areas.

The COVID-19 pandemic has shown how crucial technology, and just as importantly, connectivity, are in ensuring the equitable delivery of health care to communities. Between the months of March through June 2020 alone, VCU Health System supported over 85,000 telehealth visits, representing a 7000+% increase in telehealth visits as compared to the historical baseline. While we have now reinstated in-person appointments, we have retained many virtual appointment options, including a new virtual urgent care option through the VCU Health Emergency Department, based on positive patient feedback. As we move forward, many of the virtual solutions relied on during the pandemic will remain essential to optimal healthcare delivery. As hospitals and health systems continue to design and implement virtual health solutions, it is imperative to universally deploy broadband to all points in the region to optimize future health care delivery choices.

The proposed project achieves universal broadband service in the county. Knowing that Essex and other surrounding counties are less than five years from universal coverage gives VCU Health confidence that current and future virtual health technologies and initiatives can be fully deployed to benefit residents.

As an anchor institution in the region, VCU Health whole-heartedly supports the VATI application.

Sincerely,

Liz Martin
President, VCU Health Tappahannock Hospital



July 13, 2021

Tamarah Holmes, Ph.D
Director, Office of Broadband
Department of Housing and Community Development
600 East Main Street, Suite 300
Richmond, VA 23219

Dear Dr. Holmes:

Essex County, served by Rappahannock Community College is seeking resources to provide broadband services to its resident citizens for telemedicine, distance education, and support of local small business.

Essex County has applied for local government funds, and private sector resources for a Virginia Telecommunication Initiative (VATI) project to extend broadband access to the county's currently unserved residents and businesses.

Before the pandemic, 25% of RCC students took all of their classes online, and another 40% of the student body took at least one course requiring internet access. All students need internet access to fully participate in any course at the College. Last fall 19% of students reported that they had no internet access or only dial-up access to the internet at home.

In the spring of 2020, all RCC courses were moved online using online platforms requiring high speed access. Remote learning continued in Summer 2020, Fall 2020, and Spring 2021. All classes require a remote component. To provide service to students who did not have home access, RCC expanded WIFI power to outside the campus buildings and the Kilmarnock Center into parking lots providing increased access.

Broadband access has become like electricity – one of the fundamental needs in order to prosper. RCC strongly supports the efforts of Essex County and its request for grant funding. I am happy to provide additional information if needed and may be contacted at skennedy@rappahannock.edu.

Sincerely,

A handwritten signature in blue ink that reads "Shannon L. Kennedy".

Shannon L. Kennedy, Ed.D.
President

RAPPAHANNOCK COMMUNITY COLLEGE

12745 College Drive
Glenns, Virginia 23149
804-758-6700

52 Campus Drive
Warsaw, Virginia 22572
804-333-6700



MIDDLE PENINSULA
PLANNING DISTRICT COMMISSION

COMMISSIONERS

Essex County

Hon. Edwin E. Smith, Jr.
Hon. John C. Magruder
Ms. Sarah Pope
Mr. Michael A. Lombardo

Town of Tappahannock

Hon. Roy M. Gladding

Gloucester County

Hon. Ashley C. Chriscoe
(Vice-Chairman)
Hon. Michael R.
Winebarger
Dr. William G. Reay
Mr. J. Brent Fedors

King and Queen County

Hon. Sherrin C. Alsop
Hon. R. F. Bailey
Mr. Thomas J.
Swartzwelder
(Chairman)

King William County

Hon. Ed Moren, Jr.
Hon. Travis J. Moskalski
(Treasurer)
Mr. Otto O. Williams

Town of West Point

Hon. James Pruett
Mr. John Edwards

Mathews County

Hon. Michael C. Rowe
Hon. Melissa Mason
Mr. Thornton Hill

Middlesex County

Hon. Wayne H. Jessie, Sr.
Hon. Reggie Williams, Sr.
Mr. Gordon E. White

Town of Urbanna

Hon. Marjorie Austin

Secretary/Director

Mr. Lewis L. Lawrence

August 16, 2021

Tamarah Holmes, Ph. D

Director

Office of Broadband

Department of Housing and Community Development

600 East Main Street, Suite 300

Richmond, VA 23219

RE: Letter of Support of the Essex County Broadband Project

Dear Dr. Holmes,

The Middle Peninsula Planning District Commission (MPPDC) fully supports Essex County in their proposal to the Virginia Department of Housing and Community Development's Virginia Telecommunication Initiative grant to broaden and strengthen broadband services throughout the County.

This project supports the 2020 Middle Peninsula Comprehensive Economic Development Strategy to improve reliable, fast, and affordable broadband in the Middle Peninsula. Broadband is critical to support virtual learning, working from home, tele-health, and economic development opportunities in the County.

Thank you for your consideration of this proposal. If you have additional questions, please feel free to contact me by phone at 804-758-2311 or by email at llawrence@mppdc.com.

Sincerely,

Lewis Lawrence

Executive Director

ESSEX COUNTY PUBLIC SCHOOLS



Office of the Superintendent

Essex County Public Schools
P.O. Box 756
109 N. Cross Street
Tappahannock, Virginia 22560
804-443-4366

August 13, 2021

Tamarah Holmes, Ph. D.
Director, Office of Broadband
Department of Housing & Community Development
600 East Main Street, Suite 300
Richmond, VA 23219

Dear Dr. Holmes,

I am thrilled to learn that Essex County is part of a regional FY 22 Virginia Telecommunications Initiative (VATI) grant application in partnership with Caroline, King George, and King William counties and internet service provider Atlantic Broadband. The ongoing COVID-19 pandemic continues to emphasize inequity, concerning student and resident access to reliable broadband.

As superintendent of Essex County Public Schools, I am continually reminded of the "digital divide," and the impact of this impediment on economic and residential growth, in addition to the profound effects on student achievement and the greater community.

In our most recent 20-21 survey of our student body, data reveal that approximately 70% of ECPS families do not have adequate broadband in their homes, and 40% had no internet access at all. A recent report from Michigan State University detailed the following repercussions of limited to no broadband access:

- Students who have no home access, slow access, or cell phone only access to the internet have significantly lower overall GPAs.
- Across all subjects, students who rely on a cell phone only for Internet access from home tend to receive lower grades than students who have high-speed access, and even lower than students with no access at all.
- Contrary to the expectation that math and science grades are most likely to be related to the presence or absence of home access, having no access is unrelated to math/science GPAs. Research documented the absence of the internet does however negatively affect overall GPAs and grades in English/language arts and social studies.

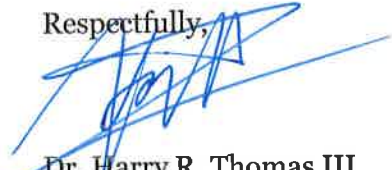
ESSEX COUNTY PUBLIC SCHOOLS

- The magnitude of the deficit in grades experienced by students with inadequate internet access from home is like the difference in grades between white students and those who are racial or ethnic minorities.

As Essex teachers and administrators continue to grapple with ways to deliver quality teaching and learning experiences to our students without high-speed internet access in their homes, I am encouraged by the efforts of Essex County to secure VATI funding to address this enduring barrier. The plan proposed in the application will provide for universal broadband access in Essex County

I believe this project is an excellent use of the VATI resources and I am pleased to offer my full and enthusiastic support for the application..

Respectfully,



Dr. Harry R. Thomas III
Division Superintendent
Essex County Public Schools

August 11, 2021

Tamarah Holmes, Ph.D
Director
Office of Broadband
Department of Housing & Community Development
600 East Main Street, Suite 300
Richmond, VA 23219

Dear Dr. Holmes,

The Board of the Essex County Economic Development Authority unanimously supports Essex County's participation in a multi-county 2022 Virginia Telecommunication Initiative (VATI) application with Atlantic Broadband, Caroline County and King William County. Like other largely rural counties, throughout the Middle Peninsula and Northern Neck, significant portions of Essex lack access to basic broadband service – currently less than 50% of the approximately 4600 households in Essex County can connect to a fixed broadband connection greater than 25/3 Mbps. Broadband is essential for county business and industry, 21st century agriculture practices, tourism, and to diversify and grow Essex County's economy to attract entrepreneurs, remote workers, and new/expanding businesses.

State efforts such as VATI ease the financial burden associated with extending broadband service to sparsely populated areas and are often the essential factor in determining whether such projects are feasible to rural localities.

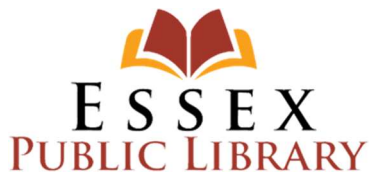
The proposed project will offer broadband service to an estimated 4500+ homes, businesses and community anchors in Essex that currently lack access. Atlantic Broadband and the participating counties have pledged significant matching funds to the project to demonstrate a strong financial commitment to making this a successful grant application.

For these reasons, I believe this project is an excellent use of the VATI resources and I am pleased to offer my enthusiastic support for the application.

Sincerely,



William A. Croxton Jr.
Chairman,
Essex County Economic Development Authority



117 North Church Lane ▪ Tappahannock VA 22560
(804) 443-4945 ▪ EPLVA.org

August 6, 2021

Dr. Tamarah Holmes
Director, Office of Broadband
Virginia Department of Housing and Community Development
600 E Main Street, Suite #300
Richmond, VA 23219

Dear Dr. Holmes:

It is my pleasure to write a letter of support for Essex County's Virginia Telecommunications Initiative (VATI) grant application. Universal access to broadband internet is critical for our residents' quality of life, and this need has grown exponentially over the course of the COVID-19 pandemic. Many of our community members have fallen further behind while others are leading increasingly more digital lives.

Seeing a doctor, attending a meeting, applying for services, attending school—these activities and so many more are now happening virtually. Life without internet access is becoming ever more difficult, and digital services can be a lifeline, especially for those in isolated rural areas.

We at Essex Public Library are dedicated to digital literacy and inclusion efforts. We are committed to helping our residents stay connected to ideas and information. Universal broadband access will help us reach our vision for Essex County as a strong, inclusive community where lifelong learning is celebrated and all residents have access to ideas, information, and technology.

In today's world, broadband access is a fundamental need for people to lead successful lives. I support this VATI grant program application, and we are ready to help connect our community members to new opportunities.

Sincerely,

Dana Smook
Library Director

**Derivation of Costs - VATI FY22 Essex County
Project 1 - Essex County Project Areas
Covering SpaceX & Connect Everyone RDOF & Additional Project Areas**

Product	Total	VATI	Non-VATI	Source of Estimate	Date
OSP Construction Labor, Materials & Pole License Application Fees	\$ 22,549,581.20	\$ 18,365,623.08	\$ 4,183,958.12	ABB Supporting Cost Estimate	9/9/2021
Hubsite and Headend Electronics	\$ 377,541.46	\$ 307,490.60	\$ 70,050.87	ABB Supporting Cost Estimate	9/9/2021
Miscellaneous (Field Engineering, Design and Maps)	\$ 404,975.00	\$ 329,833.98	\$ 75,141.02	ABB Supporting Cost Estimate	9/9/2021
	\$ 1,185,600.00	\$ 948,480.00	\$ 237,120.00	ABB Supporting Cost Estimate	9/9/2021
Low to Moderate Income ("LMI") Potential Long Drops (Special Construction Costs)					
Non LMI Potential Long Drops (Special Construction Costs)	\$ 650,000.00	\$ -	\$ 650,000.00	ABB Supporting Cost Estimate	9/9/2021
	\$ -	\$ -	\$ -		
	\$ -	\$ -	\$ -		
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	\$ -	\$ -	\$ -		
	\$ -	\$ -	\$ -		
TOTALS	\$ 25,167,697.66	\$ 19,951,427.66	\$ 5,216,270.00		

Total Percentage without LMI and Non LMI Special Construction Cost Ask	100.000%
VATI Percentage without LMI and Non LMI Special Construction Cost Ask	81.446%
Non-VATI Percentage (County and ABB) without LMI and non LMI Special Construction Cost	18.554%

Total Percentage with Special Construction Costs	100.000%
VATI Percentage with Special Construction Costs	79.274%
Non-VATI Percentage (County and ABB) with Special Construction Costs	20.726%

VATI Contribution	\$ 19,951,427.66
ABB Contribution	\$ 2,608,135.00
County Contribution	\$ 2,608,135.00
Total	\$ 25,167,697.66

**Derivation of Costs - VATI FY22 Essex County
Project 2 - ABB Essex County RDOF CBG 510579506003**

Product	Total	VATI	Non-VATI	Source of Estimate	Date
OSP Construction Labor, Materials & Pole License Application Fees	\$ 4,625,611.09	\$ 3,476,906.88	\$ 1,148,704.21	ABB Supporting Cost Estimate	9/9/2021
Hubsite and Headend Electronics	\$ 103,570.73	\$ 77,850.43	\$ 25,720.31	ABB Supporting Cost Estimate	9/9/2021
Miscellaneous (Field Engineering, Design and Maps)	\$ 83,075.00	\$ 62,444.51	\$ 20,630.49	ABB Supporting Cost Estimate	9/9/2021
	\$ -	\$ -	\$ -		
	\$ -	\$ -	\$ -		
	\$ -	\$ -	\$ -		
	\$ -	\$ -	\$ -		
	\$ -	\$ -	\$ -		
	\$ -	\$ -	\$ -		
	\$ -	\$ -	\$ -		
	\$ -	\$ -	\$ -		
	\$ -	\$ -	\$ -		
	\$ -	\$ -	\$ -		
	\$ -	\$ -	\$ -		
TOTALS	\$ 4,812,256.82	\$ 3,617,201.82	\$ 1,195,055.00		

Total Percentage	100.000%
VATI Percentage	75.166%
Non-VATI Percentage (County and ABB)	24.834%

VATI Contribution	\$ 3,617,201.82
ABB Contribution	\$ 841,030.00
County Contribution	\$ 354,025.00
Total	\$ 4,812,256.82

Essex County Project Areas - Covering SpaceX & Connect Everyone RDOF & Additional Project Areas-VATI FY22

County, State

Total HP

1767*

*Does not include LMI/Non LMI HP

Construction

Cable Materials	\$	8,958,720.88
Electronics	\$	377,541.46
Permits/Design	\$	557,754.00
Labor	\$	13,438,081.32
LMI and Non LMI Special Construction Long Drop Cost (in Existing ABB Footprint)	\$	1,835,600.00

Total Construction Costs

\$ 25,167,697.66

Total Mileage

323.98



CABLE MATERIALS COST ESTIMATE

Item Description	Quantity	Cost
Aerial Materials - Cable and Hardware	1	\$ 4,186,573.23
OSP Underground Materials - Conduit, Fiber, Materials, Peds, etc.	1	\$ 4,772,147.64
		\$ 8,958,720.88
TOTAL		\$ 8,958,720.88

ELECTRONICS COST ESTIMATE

Item Description	Quantity	Cost
Hubsite	1	\$ 50,000.00
CALIX Units	1	\$ 327,541.46
TOTAL		\$ 377,541.46

PERMITS/DESIGN COST ESTIMATE

Item Description	Cost
Permits	\$ 152,779.00
Design	\$ 404,975.00
Total	\$ 557,754.00

LABOR COST ESTIMATE

Item Description	Quantity	Total
Aerial	1	\$ 6,279,859.85
Trenching Up to 36" >600'	1	\$ 4,529,376.47
Dir Boring up to 2" Prior Approval	1	\$ 2,628,845.00
TOTAL		\$ 13,438,081.32

**ABB Essex County RDOF CBG 510579506003
Project Area VATI FY22**

County, State

Total HP

289

Construction

Cable Materials \$ 1,837,757.24

Electronics \$ 103,570.73

Permits/Design \$ 114,293.00

Labor \$ 2,756,635.86

Total Construction Costs \$ 4,812,256.82

Total Mileage 66.46



CABLE MATERIALS COST ESTIMATE

Item Description	Quantity	Total
Aerial Materials - Cable and Hardware	1	\$ 858,817.39
OSP Underground Materials - Conduit, Fiber, Materials, Peds, etc.	1	\$ 978,939.85
		\$ 1,837,757.24
	Total	\$ 1,837,757.24

ELECTRONICS COST ESTIMATE

Item Description	Quantity	Total
Hubsite	1	\$ 50,000.00
CALIX Units	1	\$ 53,570.73
Total		\$ 103,570.73

PERMITS/DESIGN COST ESTIMATE

Item Description	Total
Permits	\$ 31,218.00
Design	\$ 83,075.00
Total	\$ 114,293.00

LABOR COST ESTIMATE

Item Description	Quantity	Total
Aerial	1	\$ 1,288,226.08
Trenching Up to 36" >600'	1	\$ 929,138.71
Dir Boring up to 2" Prior Approval	1	\$ 539,271.06
	Total	\$ 2,756,635.86

**ABB Essex County RDOF CBG 510579508001
Project Area VATI FY22**

County, State

Total HP

471

Construction

Cable Materials \$ 1,541,050.42

Electronics \$ 137,307.32

Permits/Design \$ 95,677.50

Labor \$ 2,311,575.63

Total Construction Costs \$ 4,085,610.86

Total Mileage 55.73



CABLE MATERIALS COST ESTIMATE

Item Description	Quantity	Total
Aerial Materials - Cable and Hardware	1	\$ 820,889.52
OSP Underground Materials - Conduit, Fiber, Materials, Peds, etc.	1	\$ 720,160.89
		\$ 1,541,050.42
	Total	\$ 1,541,050.42

ELECTRONICS COST ESTIMATE

Item Description	Quantity	Total
Hubsite	1	\$ 50,000.00
CALIX Units	1	\$ 87,307.32
	Total	\$ 137,307.32

PERMITS/DESIGN COST ESTIMATE

Item Description	Total
Permits	\$ 26,015.00
Design	\$ 69,662.50
Total	\$ 95,677.50

LABOR COST ESTIMATE

Item Description	Quantity	Total
Aerial	1	\$ 1,080,241.34
Trenching Up to 36" >600'	1	\$ 779,128.81
Dir Boring up to 2" Prior Approval	1	\$ 452,205.48
Total		\$ 2,311,575.63

Form 477 Filing Summary

FRN:
0015336449

Data as of:
Jun 30, 2021

Operations:
Non-ILEC

Submission Status:
Original - Submitted

Last Updated:
Sep 1, 2021 01:56
PM

Filer Identification

Section	Field	Response
Filer Information	Company Name	Atlantic Broadband Finance, LLC
	Holding Company Name	Acquisitions Cogeco Cable Holdings II Inc.
	Filing Type	Non-ILEC
	SAC ID	N/A
	499 ID	826014
Data Contact Information	Data Contact Name	CONFIDENTIAL
	Data Contact Phone Number	CONFIDENTIAL
	Data Contact E-mail	CONFIDENTIAL
Emergency Operations Contact Information	Emergency Operations Name	CONFIDENTIAL
	Emergency Operations Phone Number	CONFIDENTIAL
	Emergency Operations E-mail	CONFIDENTIAL
Certifying Official Contact Information	Certifying Official Name	CONFIDENTIAL
	Certifying Official Phone Number	CONFIDENTIAL
	Certifying Official E-mail	CONFIDENTIAL

Data Submitted

Form Section	File Name	Date & Time	Number of Rows
Fixed Broadband Deployment	UPLOAD Broadband Deployment File.csv	Sep 1, 2021 12:28 PM	76,774
Fixed Broadband Subscription	UPLOAD Broadband Subscription File.csv	Sep 1, 2021 01:52 PM	14,160
Fixed Voice Subscription	UPLOAD Voice Subscription File.csv	Sep 1, 2021 12:29 PM	659

Fixed Broadband Deployment

Census Block Counts by State, DBA Name and Technology

State	DBA Name	Technology	Blocks
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State	DBA Name	Technology	Blocks
Connecticut	Atlantic Broadband Finance, LLC	Cable Modem – DOCSIS 3.1	3,386
		Optical Carrier/Fiber to the End User	3,386
Delaware	Atlantic Broadband Finance, LLC	Cable Modem – DOCSIS 3.1	556
		Optical Carrier/Fiber to the End User	556
Florida	Atlantic Broadband Finance, LLC	Cable Modem – DOCSIS 3.1	2,389
		Optical Carrier/Fiber to the End User	2,389
Maine	Atlantic Broadband Finance, LLC	Cable Modem – DOCSIS 3.1	857
		Optical Carrier/Fiber to the End User	857
Maryland	Atlantic Broadband Finance, LLC	Cable Modem – DOCSIS 3.1	5,209
		Optical Carrier/Fiber to the End User	5,209
New Hampshire	Atlantic Broadband Finance, LLC	Cable Modem – DOCSIS 3.1	3,982
		Optical Carrier/Fiber to the End User	3,982
New York	Atlantic Broadband Finance, LLC	Cable Modem – DOCSIS 3.1	297
		Optical Carrier/Fiber to the End User	297
Pennsylvania	Atlantic Broadband Finance, LLC	Cable Modem – DOCSIS 3.1	15,340
		Optical Carrier/Fiber to the End User	15,340
South Carolina	Atlantic Broadband Finance, LLC	Cable Modem – DOCSIS 3.1	1,389
		Optical Carrier/Fiber to the End User	1,389
Virginia	Atlantic Broadband Finance, LLC	Cable Modem – DOCSIS 3.1	3,889
		Optical Carrier/Fiber to the End User	3,889
West Virginia	Atlantic Broadband Finance, LLC	Cable Modem – DOCSIS 3.1	1,093
		Optical Carrier/Fiber to the End User	1,093
Total			76,774

Fixed Broadband Subscription

Fixed Broadband Subscriptions by State, Technology and End User Type

State	Technology	Census Tracts	Subscriptions		
			Consumer	Business/Govt.	Total
Connecticut	Cable Modem	1,289	41,229	2,824	44,053
Delaware	Cable Modem	272	3,004	233	3,237
Florida	Cable Modem	2,124	92,657	3,105	95,762
Maine	Cable Modem	187	13,754	626	14,380

State	Technology	Census Tracts	Subscriptions		
			Consumer	Business/Govt.	Total
Maryland	Cable Modem	1,958	77,944	4,594	82,538
	Optical Carrier/Fiber to the End User	16	0	39	39
New Hampshire	Cable Modem	1,051	68,369	3,520	71,889
New York	Cable Modem	183	3,049	190	3,239
Pennsylvania	Cable Modem	5,105	133,237	8,523	141,760
	Optical Carrier/Fiber to the End User	2	0	2	2
South Carolina	Cable Modem	721	29,555	2,217	31,772
Virginia	Cable Modem	624	32,604	1,965	34,569
	Optical Carrier/Fiber to the End User	57	0	297	297
West Virginia	Cable Modem	571	9,009	551	9,560
Total		14,160	504,411	28,686	533,097

Fixed Broadband Subscriptions by Bandwidths and End User Type

Downstream Bandwidth (in Mbps)	Upstream Bandwidth (in Mbps)	Consumer	Business/Govt.	Total
1.000	0.227	0	1	1
1.000	0.517	116	63	179
2.000	0.453	0	2	2
2.000	0.680	0	5	5
2.000	1.000	1,768	3	1,771
3.000	0.517	0	2	2
5.000	0.767	1	67	68
5.000	0.885	24	11	35
5.000	1.000	18	0	18
5.000	2.000	1	0	1
6.000	1.000	14	0	14
7.000	0.680	0	4	4
7.000	1.000	767	1	768
8.000	1.000	5	17	22
10.000	1.000	3,286	610	3,896
10.000	2.000	704	0	704
12.000	1.000	22	0	22
14.000	2.000	23	8	31
15.000	1.000	1,209	192	1,401

Downstream Bandwidth (in Mbps)	Upstream Bandwidth (in Mbps)	Consumer	Business/Govt.	Total
15.000	2.000	62	0	62
16.000	2.000	30	29	59
17.000	1.000	4	0	4
18.000	1.000	22	0	22
19.000	1.000	25	175	200
20.000	2.000	6,729	7	6,736
21.000	2.000	1	10	11
22.000	2.000	127	0	127
25.000	2.000	23	1,243	1,266
25.000	5.000	1,713	2,628	4,341
25.000	6.000	2	1	3
25.000	10.000	15	2,511	2,526
27.000	7.000	5	1	6
28.000	6.000	33	29	62
30.000	2.000	53	87	140
30.000	3.000	293	3	296
30.000	5.000	23,850	30	23,880
30.000	6.000	6	0	6
37.000	5.000	0	2	2
37.000	17.000	21	25	46
40.000	4.000	528	6	534
40.000	5.000	0	5	5
41.000	3.000	0	1	1
45.000	5.000	35	0	35
45.000	6.000	16	0	16
46.000	8.000	0	1	1
48.000	6.000	21	0	21
50.000	2.000	2,913	1	2,914
50.000	3.000	4	316	320
50.000	4.000	20	1,666	1,686
50.000	5.000	1,223	1	1,224
50.000	6.000	32,456	43	32,499
50.000	9.000	14	0	14

Downstream Bandwidth (in Mbps)	Upstream Bandwidth (in Mbps)	Consumer	Business/Govt.	Total
50.000	10.000	24	1,729	1,753
51.000	8.000	1	1	2
53.000	7.000	0	202	202
56.000	4.000	0	5	5
60.000	3.000	15	0	15
60.000	4.000	7	1	8
60.000	5.000	1,340	3	1,343
60.000	6.000	38,804	45	38,849
60.000	8.000	215	0	215
61.000	6.000	55	0	55
64.000	8.000	55	0	55
66.000	8.000	0	2	2
70.000	4.000	0	3	3
70.000	6.000	3	0	3
70.000	10.000	6,689	0	6,689
71.000	4.000	0	1	1
74.000	8.000	12	17	29
74.000	9.000	8	0	8
75.000	5.000	1	109	110
75.000	6.000	4	605	609
75.000	8.000	0	1	1
77.000	8.000	1	0	1
80.000	6.000	1	43	44
81.000	5.000	0	1	1
81.000	6.000	0	1	1
85.000	4.000	0	2	2
85.000	5.000	17	0	17
85.000	10.000	5,687	8	5,695
90.000	4.000	1	0	1
90.000	7.000	15	0	15
95.000	7.000	0	1	1
98.000	20.000	0	1	1
100.000	5.000	35,564	0	35,564

Downstream Bandwidth (in Mbps)	Upstream Bandwidth (in Mbps)	Consumer	Business/Govt.	Total
100.000	10.000	10,577	4,405	14,982
100.000	15.000	44,433	34	44,467
100.000	20.000	24	5,404	5,428
100.000	100.000	49	1	50
104.000	9.000	1	0	1
105.000	5.000	20	0	20
105.000	7.000	7	0	7
110.000	9.000	0	1	1
114.000	10.000	11	0	11
120.000	5.000	20	0	20
120.000	6.000	2,384	6	2,390
120.000	8.000	4,626	3	4,629
120.000	9.000	9	0	9
120.000	10.000	22,027	685	22,712
120.000	11.000	2	0	2
120.000	12.000	18	0	18
120.000	14.000	0	36	36
120.000	15.000	3	481	484
121.000	10.000	23	2	25
124.000	10.000	0	82	82
125.000	10.000	21	0	21
130.000	4.000	4	1	5
130.000	10.000	459	1	460
130.000	17.000	149	0	149
134.000	14.000	1	0	1
136.000	14.000	0	1	1
144.000	11.000	0	1	1
144.000	20.000	7	8	15
150.000	1.000	1	0	1
150.000	5.000	1,196	3	1,199
150.000	10.000	1	0	1
156.000	19.000	0	1	1
158.000	17.000	0	7	7

Downstream Bandwidth (in Mbps)	Upstream Bandwidth (in Mbps)	Consumer	Business/Govt.	Total
160.000	9.000	4	1	5
160.000	17.000	4	0	4
170.000	7.000	21	0	21
180.000	5.000	125	1	126
180.000	14.000	1	2	3
190.000	4.000	4	0	4
200.000	6.000	6	0	6
200.000	10.000	16,412	17	16,429
200.000	14.000	449	1	450
200.000	15.000	10,678	684	11,362
200.000	30.000	7	1,507	1,514
205.000	17.000	32	48	80
215.000	13.000	295	0	295
215.000	17.000	24	0	24
225.000	15.000	1	0	1
235.000	7.000	4	0	4
235.000	8.000	52	0	52
235.000	17.000	15	0	15
240.000	8.000	4	0	4
245.000	20.000	1	0	1
248.000	20.000	14	1	15
250.000	10.000	4,550	3	4,553
250.000	15.000	66	0	66
250.000	20.000	130,276	85	130,361
250.000	23.000	0	18	18
250.000	24.000	292	7	299
250.000	25.000	0	148	148
250.000	26.000	8	0	8
250.000	27.000	149	0	149
250.000	28.000	0	1	1
256.000	20.000	2	0	2
260.000	20.000	1	0	1
260.000	23.000	1	0	1

Downstream Bandwidth (in Mbps)	Upstream Bandwidth (in Mbps)	Consumer	Business/Govt.	Total
270.000	21.000	825	0	825
275.000	15.000	1	0	1
280.000	10.000	182	0	182
300.000	5.000	80	0	80
300.000	20.000	6,321	902	7,223
300.000	25.000	10	0	10
300.000	29.000	6	0	6
300.000	30.000	6	0	6
300.000	300.000	83	0	83
308.000	17.000	8	14	22
316.000	300.000	1	0	1
320.000	7.000	4	0	4
320.000	30.000	2,118	0	2,118
330.000	20.000	3,214	21	3,235
350.000	14.000	8	0	8
350.000	20.000	22	0	22
380.000	22.000	6	0	6
385.000	17.000	2	0	2
398.000	20.000	1	0	1
400.000	20.000	23,243	9	23,252
400.000	25.000	536	0	536
400.000	30.000	1	0	1
400.000	35.000	61	0	61
400.000	40.000	130	0	130
400.000	50.000	21,925	6	21,931
400.000	400.000	168	4	172
440.000	24.000	5	0	5
450.000	25.000	8	0	8
450.000	34.000	397	0	397
470.000	35.000	1,250	0	1,250
500.000	20.000	53	0	53
500.000	40.000	0	771	771
525.000	35.000	1	0	1

Downstream Bandwidth (in Mbps)	Upstream Bandwidth (in Mbps)	Consumer	Business/Govt.	Total
550.000	25.000	114	0	114
550.000	35.000	8	0	8
600.000	30.000	114	0	114
600.000	34.000	14	0	14
616.000	17.000	2	6	8
620.000	35.000	213	0	213
634.000	584.000	2	0	2
700.000	30.000	27	0	27
750.000	30.000	280	0	280
750.000	40.000	10	43	53
790.000	34.000	2	0	2
800.000	36.000	172	0	172
850.000	35.000	5	0	5
850.000	45.000	41	0	41
870.000	36.000	1	0	1
880.000	40.000	182	1	183
900.000	35.000	72	0	72
1,000.000	44.000	12	0	12
1,000.000	45.000	7	0	7
1,000.000	50.000	24,549	608	25,157
1,000.000	51.000	799	0	799
1,000.000	53.000	6	0	6
1,000.000	55.000	442	0	442
1,000.000	59.000	117	0	117
1,000.000	60.000	43	0	43
1,000.000	600.000	26	3	29
1,000.000	884.000	182	0	182
1,000.000	1,000.000	1	23	24
Total		504,411	28,686	533,097

Fixed Broadband Subscriptions by Technology, Bandwidths and End User Type

Technology	Downstream Bandwidth (in Mbps)	Upstream Bandwidth (in Mbps)	Consumer	Business/Govt.	Total
Cable Modem	1.000	0.227	0	1	1

Technology	Downstream Bandwidth (in Mbps)	Upstream Bandwidth (in Mbps)	Consumer	Business/Govt.	Total
	1.000	0.517	116	63	179
	2.000	0.453	0	2	2
	2.000	0.680	0	5	5
	2.000	1.000	1,768	3	1,771
	3.000	0.517	0	2	2
	5.000	0.767	1	67	68
	5.000	0.885	24	11	35
	5.000	1.000	18	0	18
	5.000	2.000	1	0	1
	6.000	1.000	14	0	14
	7.000	0.680	0	4	4
	7.000	1.000	767	1	768
	8.000	1.000	5	17	22
	10.000	1.000	3,286	610	3,896
	10.000	2.000	704	0	704
	12.000	1.000	22	0	22
	14.000	2.000	23	8	31
	15.000	1.000	1,209	192	1,401
	15.000	2.000	62	0	62
	16.000	2.000	30	29	59
	17.000	1.000	4	0	4
	18.000	1.000	22	0	22
	19.000	1.000	25	175	200
	20.000	2.000	6,729	7	6,736
	21.000	2.000	1	10	11
	22.000	2.000	127	0	127
	25.000	2.000	23	1,243	1,266
	25.000	5.000	1,713	2,574	4,287
	25.000	6.000	2	1	3
	25.000	10.000	15	2,474	2,489
	27.000	7.000	5	1	6
	28.000	6.000	33	29	62

Technology	Downstream Bandwidth (in Mbps)	Upstream Bandwidth (in Mbps)	Consumer	Business/Govt.	Total
	30.000	2.000	53	87	140
	30.000	3.000	293	3	296
	30.000	5.000	23,850	30	23,880
	30.000	6.000	6	0	6
	37.000	5.000	0	2	2
	37.000	17.000	21	25	46
	40.000	4.000	528	6	534
	40.000	5.000	0	5	5
	41.000	3.000	0	1	1
	45.000	5.000	35	0	35
	45.000	6.000	16	0	16
	46.000	8.000	0	1	1
	48.000	6.000	21	0	21
	50.000	2.000	2,913	1	2,914
	50.000	3.000	4	316	320
	50.000	4.000	20	1,666	1,686
	50.000	5.000	1,223	1	1,224
	50.000	6.000	32,456	43	32,499
	50.000	9.000	14	0	14
	50.000	10.000	24	1,729	1,753
	51.000	8.000	1	1	2
	53.000	7.000	0	202	202
	56.000	4.000	0	5	5
	60.000	3.000	15	0	15
	60.000	4.000	7	1	8
	60.000	5.000	1,340	3	1,343
	60.000	6.000	38,804	45	38,849
	60.000	8.000	215	0	215
	61.000	6.000	55	0	55
	64.000	8.000	55	0	55
	66.000	8.000	0	2	2
	70.000	4.000	0	3	3

Technology	Downstream Bandwidth (in Mbps)	Upstream Bandwidth (in Mbps)	Consumer	Business/Govt.	Total
	70.000	6.000	3	0	3
	70.000	10.000	6,689	0	6,689
	71.000	4.000	0	1	1
	74.000	8.000	12	17	29
	74.000	9.000	8	0	8
	75.000	5.000	1	109	110
	75.000	6.000	4	605	609
	75.000	8.000	0	1	1
	77.000	8.000	1	0	1
	80.000	6.000	1	43	44
	81.000	5.000	0	1	1
	81.000	6.000	0	1	1
	85.000	4.000	0	2	2
	85.000	5.000	17	0	17
	85.000	10.000	5,687	8	5,695
	90.000	4.000	1	0	1
	90.000	7.000	15	0	15
	95.000	7.000	0	1	1
	98.000	20.000	0	1	1
	100.000	5.000	35,564	0	35,564
	100.000	10.000	10,577	4,294	14,871
	100.000	15.000	44,433	34	44,467
	100.000	20.000	24	5,330	5,354
	100.000	100.000	49	1	50
	104.000	9.000	1	0	1
	105.000	5.000	20	0	20
	105.000	7.000	7	0	7
	110.000	9.000	0	1	1
	114.000	10.000	11	0	11
	120.000	5.000	20	0	20
	120.000	6.000	2,384	6	2,390
	120.000	8.000	4,626	3	4,629

Technology	Downstream Bandwidth (in Mbps)	Upstream Bandwidth (in Mbps)	Consumer	Business/Govt.	Total
	120.000	9.000	9	0	9
	120.000	10.000	22,027	685	22,712
	120.000	11.000	2	0	2
	120.000	12.000	18	0	18
	120.000	14.000	0	36	36
	120.000	15.000	3	481	484
	121.000	10.000	23	2	25
	124.000	10.000	0	82	82
	125.000	10.000	21	0	21
	130.000	4.000	4	1	5
	130.000	10.000	459	1	460
	130.000	17.000	149	0	149
	134.000	14.000	1	0	1
	136.000	14.000	0	1	1
	144.000	11.000	0	1	1
	144.000	20.000	7	8	15
	150.000	1.000	1	0	1
	150.000	5.000	1,196	3	1,199
	150.000	10.000	1	0	1
	156.000	19.000	0	1	1
	158.000	17.000	0	7	7
	160.000	9.000	4	1	5
	160.000	17.000	4	0	4
	170.000	7.000	21	0	21
	180.000	5.000	125	1	126
	180.000	14.000	1	2	3
	190.000	4.000	4	0	4
	200.000	6.000	6	0	6
	200.000	10.000	16,412	17	16,429
	200.000	14.000	449	1	450
	200.000	15.000	10,678	662	11,340
	200.000	30.000	7	1,495	1,502

Technology	Downstream Bandwidth (in Mbps)	Upstream Bandwidth (in Mbps)	Consumer	Business/Govt.	Total
	205.000	17.000	32	48	80
	215.000	13.000	295	0	295
	215.000	17.000	24	0	24
	225.000	15.000	1	0	1
	235.000	7.000	4	0	4
	235.000	8.000	52	0	52
	235.000	17.000	15	0	15
	240.000	8.000	4	0	4
	245.000	20.000	1	0	1
	248.000	20.000	14	1	15
	250.000	10.000	4,550	3	4,553
	250.000	15.000	66	0	66
	250.000	20.000	130,276	85	130,361
	250.000	23.000	0	18	18
	250.000	24.000	292	7	299
	250.000	25.000	0	148	148
	250.000	26.000	8	0	8
	250.000	27.000	149	0	149
	250.000	28.000	0	1	1
	256.000	20.000	2	0	2
	260.000	20.000	1	0	1
	260.000	23.000	1	0	1
	270.000	21.000	825	0	825
	275.000	15.000	1	0	1
	280.000	10.000	182	0	182
	300.000	5.000	80	0	80
	300.000	20.000	6,321	887	7,208
	300.000	25.000	10	0	10
	300.000	29.000	6	0	6
	300.000	30.000	6	0	6
	300.000	300.000	83	0	83
	308.000	17.000	8	14	22

Technology	Downstream Bandwidth (in Mbps)	Upstream Bandwidth (in Mbps)	Consumer	Business/Govt.	Total
	316.000	300.000	1	0	1
	320.000	7.000	4	0	4
	320.000	30.000	2,118	0	2,118
	330.000	20.000	3,214	21	3,235
	350.000	14.000	8	0	8
	350.000	20.000	22	0	22
	380.000	22.000	6	0	6
	385.000	17.000	2	0	2
	398.000	20.000	1	0	1
	400.000	20.000	23,243	9	23,252
	400.000	25.000	536	0	536
	400.000	30.000	1	0	1
	400.000	35.000	61	0	61
	400.000	40.000	130	0	130
	400.000	50.000	21,925	6	21,931
	400.000	400.000	168	4	172
	440.000	24.000	5	0	5
	450.000	25.000	8	0	8
	450.000	34.000	397	0	397
	470.000	35.000	1,250	0	1,250
	500.000	20.000	53	0	53
	500.000	40.000	0	763	763
	525.000	35.000	1	0	1
	550.000	25.000	114	0	114
	550.000	35.000	8	0	8
	600.000	30.000	114	0	114
	600.000	34.000	14	0	14
	616.000	17.000	2	6	8
	620.000	35.000	213	0	213
	634.000	584.000	2	0	2
	700.000	30.000	27	0	27
	750.000	30.000	280	0	280

Technology	Downstream Bandwidth (in Mbps)	Upstream Bandwidth (in Mbps)	Consumer	Business/Govt.	Total
	750.000	40.000	10	43	53
	790.000	34.000	2	0	2
	800.000	36.000	172	0	172
	850.000	35.000	5	0	5
	850.000	45.000	41	0	41
	870.000	36.000	1	0	1
	880.000	40.000	182	1	183
	900.000	35.000	72	0	72
	1,000.000	44.000	12	0	12
	1,000.000	45.000	7	0	7
	1,000.000	50.000	24,549	603	25,152
	1,000.000	51.000	799	0	799
	1,000.000	53.000	6	0	6
	1,000.000	55.000	442	0	442
	1,000.000	59.000	117	0	117
	1,000.000	60.000	43	0	43
	1,000.000	600.000	26	3	29
	1,000.000	884.000	182	0	182
	1,000.000	1,000.000	1	23	24
Optical Carrier/Fiber to the End User	25.000	5.000	0	54	54
	25.000	10.000	0	37	37
	100.000	10.000	0	111	111
	100.000	20.000	0	74	74
	200.000	15.000	0	22	22
	200.000	30.000	0	12	12
	300.000	20.000	0	15	15
	500.000	40.000	0	8	8
	1,000.000	50.000	0	5	5
Total			504,411	28,686	533,097

Fixed Voice Subscription

VGE Lines and VoIP Subscriptions by State and End User Type

State	Total VGE Lines	Consumer VGE Lines	Total VoIP Subscriptions	Consumer VoIP Subscriptions
Connecticut	0	0	11,034	9,520
Delaware	0	0	1,317	1,216
Florida	0	0	16,333	14,656
Maine	0	0	2,798	2,548
Maryland	0	0	20,683	18,515
New Hampshire	0	0	15,786	14,591
New York	0	0	756	671
Pennsylvania	0	0	48,693	44,239
South Carolina	0	0	7,688	6,390
Virginia	0	0	7,578	6,533
West Virginia	0	0	3,804	3,479
Total	0	0	136,470	122,358

Fixed Voice Subscription (iVoIP)

Over-the-Top VoIP Subscriptions by State and End User Type

State	Total	Consumer	Business/Govt.
Connecticut	0	0	0
Delaware	0	0	0
Florida	0	0	0
Maine	0	0	0
Maryland	0	0	0
New Hampshire	0	0	0
New York	0	0	0
Pennsylvania	0	0	0
South Carolina	0	0	0
Virginia	0	0	0
West Virginia	0	0	0
Total	0	0	0

All Other VoIP Subscriptions by State, End User Type, Bundle and Last-Mile Medium

State	Total	by End User Type		by Bundle		by Last-Mile Medium			
		Consumer	Business/Govt.	Sold w/ Internet	Sold w/o Internet	FTTP	Coax	Fixed Wireless	Copper
Connecticut	11,034	9,520	1,514	11,034	0	0	0	11,034	0

State	Total	by End User Type		by Bundle		by Last-Mile Medium			
		Consumer	Business/Govt.	Sold w/ Internet	Sold w/o Internet	FTTP	Coax	Fixed Wireless	Copper
Delaware	1,317	1,216	101	1,317	0	0	1,317	0	0
Florida	16,333	14,656	1,677	16,333	0	0	16,333	0	0
Maine	2,798	2,548	250	2,798	0	0	2,798	0	0
Maryland	20,683	18,515	2,168	20,683	0	0	20,683	0	0
New Hampshire	15,786	14,591	1,195	15,786	0	0	15,786	0	0
New York	756	671	85	756	0	0	756	0	0
Pennsylvania	48,693	44,239	4,454	48,693	0	0	48,693	0	0
South Carolina	7,688	6,390	1,298	7,688	0	0	7,688	0	0
Virginia	7,578	6,533	1,045	7,578	0	0	7,578	0	0
West Virginia	3,804	3,479	325	3,804	0	0	3,804	0	0
Total	136,470	122,358	14,112	136,470	0	0	125,436	11,034	0

Reminder: You must continue to use Census 2010 geographic codes in FCC Form 477.

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Form 477 Filing Summary

FRN:
0015336449

Data as of:
Dec 31, 2020

Operations:
Non-ILEC

Submission Status:
Revised - Submitted

Last Updated:
Apr 21, 2021 07:40
AM

Filer Identification

Section	Field	Response
Filer Information	Company Name	Atlantic Broadband Finance, LLC
	Holding Company Name	Acquisitions Cogeco Cable Holdings II Inc.
	Filing Type	Non-ILEC
	SAC ID	N/A
	499 ID	826014
Data Contact Information	Data Contact Name	CONFIDENTIAL
	Data Contact Phone Number	CONFIDENTIAL
	Data Contact E-mail	CONFIDENTIAL
Emergency Operations Contact Information	Emergency Operations Name	CONFIDENTIAL
	Emergency Operations Phone Number	CONFIDENTIAL
	Emergency Operations E-mail	CONFIDENTIAL
Certifying Official Contact Information	Certifying Official Name	CONFIDENTIAL
	Certifying Official Phone Number	CONFIDENTIAL
	Certifying Official E-mail	CONFIDENTIAL

Data Submitted

Form Section	File Name	Date & Time	Number of Rows
Fixed Broadband Deployment	UPLOAD Broadband Deployment File - Revised.csv	Apr 21, 2021 07:32 AM	74,919
Fixed Broadband Subscription	UPLOAD Broadband Subscription File - Revised 04.21.21.csv	Apr 21, 2021 07:36 AM	11,940
Fixed Voice Subscription	UPLOAD Voice Subscription File.csv	Apr 21, 2021 07:32 AM	654

Fixed Broadband Deployment

Census Block Counts by State, DBA Name and Technology

State	DBA Name	Technology	Blocks
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State	DBA Name	Technology	Blocks
Connecticut	Atlantic Broadband Finance, LLC	Cable Modem – DOCSIS 3.1	3,583
		Optical Carrier/Fiber to the End User	2,644
Delaware	Atlantic Broadband Finance, LLC	Cable Modem – DOCSIS 3.1	548
		Optical Carrier/Fiber to the End User	548
Florida	Atlantic Broadband Finance, LLC	Cable Modem – DOCSIS 3.1	2,355
		Optical Carrier/Fiber to the End User	2,355
Maine	Atlantic Broadband Finance, LLC	Cable Modem – DOCSIS 3.1	857
		Optical Carrier/Fiber to the End User	857
Maryland	Atlantic Broadband Finance, LLC	Cable Modem – DOCSIS 3.1	5,176
		Optical Carrier/Fiber to the End User	5,176
New Hampshire	Atlantic Broadband Finance, LLC	Cable Modem – DOCSIS 3.1	3,978
		Optical Carrier/Fiber to the End User	3,978
New York	Atlantic Broadband Finance, LLC	Cable Modem – DOCSIS 3.1	291
		Optical Carrier/Fiber to the End User	291
Pennsylvania	Atlantic Broadband Finance, LLC	Cable Modem – DOCSIS 3.1	14,983
		Optical Carrier/Fiber to the End User	14,983
South Carolina	Atlantic Broadband Finance, LLC	Cable Modem – DOCSIS 3.1	1,235
		Optical Carrier/Fiber to the End User	1,235
Virginia	Atlantic Broadband Finance, LLC	Cable Modem – DOCSIS 3.1	3,850
		Optical Carrier/Fiber to the End User	3,850
West Virginia	Atlantic Broadband Finance, LLC	Cable Modem – DOCSIS 3.1	1,073
		Optical Carrier/Fiber to the End User	1,073
Total			74,919

Fixed Broadband Subscription

Fixed Broadband Subscriptions by State, Technology and End User Type

State	Technology	Census Tracts	Subscriptions		
			Consumer	Business/Govt.	Total
Connecticut	Cable Modem	1,005	39,041	2,947	41,988
Delaware	Cable Modem	214	3,012	257	3,269
Florida	Cable Modem	1,989	90,286	3,917	94,203
Maine	Cable Modem	162	13,261	599	13,860

State	Technology	Census Tracts	Subscriptions		
			Consumer	Business/Govt.	Total
Maryland	Cable Modem	1,617	75,569	5,064	80,633
	Optical Carrier/Fiber to the End User	16	0	39	39
New Hampshire	Cable Modem	884	61,768	3,319	65,087
New York	Cable Modem	154	2,964	230	3,194
Pennsylvania	Cable Modem	4,274	128,974	9,967	138,941
	Optical Carrier/Fiber to the End User	2	0	2	2
South Carolina	Cable Modem	548	26,842	2,747	29,589
Virginia	Cable Modem	540	31,079	1,881	32,960
	Optical Carrier/Fiber to the End User	53	0	281	281
West Virginia	Cable Modem	482	8,661	688	9,349
Total		11,940	481,457	31,938	513,395

Fixed Broadband Subscriptions by Bandwidths and End User Type

Downstream Bandwidth (in Mbps)	Upstream Bandwidth (in Mbps)	Consumer	Business/Govt.	Total
1.000	0.227	0	1	1
1.000	0.517	125	65	190
2.000	0.453	0	3	3
2.000	0.680	0	6	6
2.000	1.000	1,828	3	1,831
3.000	0.517	0	2	2
5.000	0.767	1	71	72
5.000	1.000	19	0	19
5.000	2.000	1	0	1
6.000	1.000	15	37	52
7.000	0.680	0	4	4
7.000	1.000	792	12	804
8.000	1.000	5	17	22
10.000	1.000	3,545	650	4,195
10.000	2.000	755	0	755
12.000	1.000	25	0	25
15.000	1.000	1,233	202	1,435
15.000	2.000	4	0	4
15.000	3.000	63	0	63

Downstream Bandwidth (in Mbps)	Upstream Bandwidth (in Mbps)	Consumer	Business/Govt.	Total
17.000	1.000	5	0	5
18.000	1.000	22	0	22
18.000	3.000	0	58	58
19.000	1.000	27	187	214
20.000	2.000	7,181	7	7,188
21.000	2.000	1	11	12
22.000	2.000	131	0	131
23.000	4.000	18	14	32
25.000	2.000	24	1,291	1,315
25.000	5.000	1,542	2,687	4,229
25.000	6.000	2	0	2
25.000	10.000	17	2,312	2,329
27.000	5.000	1,522	0	1,522
27.000	7.000	9	40	49
30.000	2.000	52	92	144
30.000	3.000	304	4	308
30.000	5.000	23,603	32	23,635
30.000	6.000	4	0	4
31.000	5.000	2	0	2
37.000	5.000	0	2	2
40.000	4.000	524	6	530
40.000	5.000	0	5	5
41.000	3.000	0	1	1
45.000	5.000	39	0	39
45.000	6.000	17	0	17
46.000	8.000	0	1	1
50.000	2.000	82	1	83
50.000	3.000	5	340	345
50.000	4.000	28	1,730	1,758
50.000	5.000	1,310	2	1,312
50.000	6.000	34,027	45	34,072
50.000	10.000	19	1,864	1,883
53.000	7.000	0	200	200

Downstream Bandwidth (in Mbps)	Upstream Bandwidth (in Mbps)	Consumer	Business/Govt.	Total
55.000	10.000	0	2	2
56.000	4.000	0	5	5
60.000	3.000	16	0	16
60.000	4.000	0	1	1
60.000	5.000	1,420	3	1,423
60.000	6.000	41,884	56	41,940
60.000	8.000	235	0	235
60.000	10.000	0	63	63
61.000	6.000	61	0	61
64.000	8.000	61	0	61
65.000	5.000	1	0	1
66.000	8.000	0	2	2
70.000	4.000	0	3	3
70.000	6.000	3	0	3
70.000	10.000	6,400	0	6,400
71.000	4.000	0	1	1
74.000	9.000	8	0	8
75.000	5.000	1	118	119
75.000	6.000	4	621	625
75.000	8.000	0	1	1
77.000	8.000	1	0	1
80.000	6.000	1	47	48
80.000	10.000	0	32	32
81.000	5.000	0	1	1
81.000	6.000	0	1	1
85.000	4.000	0	2	2
85.000	5.000	17	0	17
85.000	10.000	6,007	8	6,015
95.000	7.000	0	2	2
100.000	5.000	38,139	0	38,139
100.000	10.000	1,092	4,583	5,675
100.000	15.000	46,081	36	46,117
100.000	20.000	16	4,708	4,724

Downstream Bandwidth (in Mbps)	Upstream Bandwidth (in Mbps)	Consumer	Business/Govt.	Total
105.000	5.000	22	0	22
105.000	7.000	12	0	12
105.000	20.000	0	1	1
110.000	9.000	0	1	1
114.000	10.000	11	0	11
120.000	5.000	21	0	21
120.000	6.000	2,726	8	2,734
120.000	8.000	5,290	2	5,292
120.000	9.000	11	0	11
120.000	10.000	21,853	712	22,565
120.000	11.000	3	0	3
120.000	12.000	22	0	22
120.000	14.000	0	44	44
120.000	15.000	5	558	563
121.000	10.000	25	1	26
124.000	10.000	0	91	91
125.000	10.000	22	0	22
134.000	14.000	1	0	1
136.000	14.000	0	208	208
144.000	11.000	0	1	1
150.000	1.000	1	0	1
155.000	20.000	0	14	14
156.000	19.000	0	1	1
158.000	17.000	0	8	8
160.000	9.000	4	1	5
160.000	17.000	3	0	3
180.000	14.000	1	3	4
200.000	10.000	18,319	16	18,335
200.000	15.000	11,606	715	12,321
200.000	30.000	6	1,346	1,352
215.000	13.000	319	0	319
215.000	17.000	28	0	28
235.000	7.000	5	0	5

Downstream Bandwidth (in Mbps)	Upstream Bandwidth (in Mbps)	Consumer	Business/Govt.	Total
235.000	8.000	62	0	62
235.000	17.000	20	0	20
240.000	8.000	4	0	4
245.000	20.000	1	0	1
250.000	10.000	4,716	4	4,720
250.000	20.000	136,160	97	136,257
250.000	23.000	0	22	22
250.000	24.000	309	7	316
250.000	25.000	0	165	165
250.000	26.000	8	0	8
250.000	27.000	161	0	161
250.000	28.000	0	1	1
260.000	20.000	1	0	1
260.000	23.000	1	0	1
270.000	21.000	863	0	863
275.000	15.000	1	0	1
300.000	20.000	6,641	749	7,390
300.000	25.000	10	0	10
300.000	29.000	6	0	6
300.000	30.000	7	0	7
300.000	300.000	2	0	2
320.000	30.000	2,193	0	2,193
330.000	20.000	3,261	10	3,271
350.000	20.000	23	0	23
380.000	22.000	6	0	6
385.000	17.000	3	0	3
400.000	20.000	24,685	10	24,695
400.000	25.000	617	0	617
400.000	30.000	2	0	2
400.000	35.000	70	0	70
400.000	40.000	117	0	117
400.000	50.000	1,525	2	1,527
450.000	25.000	7	0	7

Downstream Bandwidth (in Mbps)	Upstream Bandwidth (in Mbps)	Consumer	Business/Govt.	Total
450.000	34.000	443	0	443
470.000	35.000	1,302	0	1,302
500.000	20.000	57	0	57
500.000	40.000	0	701	701
525.000	35.000	1	0	1
550.000	25.000	128	0	128
550.000	35.000	10	0	10
600.000	30.000	3	0	3
600.000	34.000	12	0	12
620.000	35.000	220	0	220
660.000	20.000	0	3	3
750.000	30.000	3	0	3
750.000	40.000	11	13	24
750.000	50.000	483	0	483
880.000	40.000	34	0	34
900.000	35.000	2	0	2
1,000.000	20.000	422	4	426
1,000.000	45.000	0	1	1
1,000.000	50.000	15,782	3,990	19,772
1,000.000	51.000	51	0	51
1,000.000	53.000	24	0	24
1,000.000	55.000	11	100	111
1,000.000	59.000	103	0	103
1,000.000	884.000	180	0	180
1,000.000	1,000.000	1	27	28
Total		481,457	31,938	513,395

Fixed Broadband Subscriptions by Technology, Bandwidths and End User Type

Technology	Downstream Bandwidth (in Mbps)	Upstream Bandwidth (in Mbps)	Consumer	Business/Govt.	Total
Cable Modem	1.000	0.227	0	1	1
	1.000	0.517	125	65	190
	2.000	0.453	0	3	3
	2.000	0.680	0	6	6

Technology	Downstream Bandwidth (in Mbps)	Upstream Bandwidth (in Mbps)	Consumer	Business/Govt.	Total
	2.000	1.000	1,828	3	1,831
	3.000	0.517	0	2	2
	5.000	0.767	1	71	72
	5.000	1.000	19	0	19
	5.000	2.000	1	0	1
	6.000	1.000	15	37	52
	7.000	0.680	0	4	4
	7.000	1.000	792	12	804
	8.000	1.000	5	17	22
	10.000	1.000	3,545	650	4,195
	10.000	2.000	755	0	755
	12.000	1.000	25	0	25
	15.000	1.000	1,233	202	1,435
	15.000	2.000	4	0	4
	15.000	3.000	63	0	63
	17.000	1.000	5	0	5
	18.000	1.000	22	0	22
	18.000	3.000	0	58	58
	19.000	1.000	27	187	214
	20.000	2.000	7,181	7	7,188
	21.000	2.000	1	11	12
	22.000	2.000	131	0	131
	23.000	4.000	18	14	32
	25.000	2.000	24	1,291	1,315
	25.000	5.000	1,542	2,632	4,174
	25.000	6.000	2	0	2
	25.000	10.000	17	2,281	2,298
	27.000	5.000	1,522	0	1,522
	27.000	7.000	9	40	49
	30.000	2.000	52	92	144
	30.000	3.000	304	4	308
	30.000	5.000	23,603	32	23,635

Technology	Downstream Bandwidth (in Mbps)	Upstream Bandwidth (in Mbps)	Consumer	Business/Govt.	Total
	30.000	6.000	4	0	4
	31.000	5.000	2	0	2
	37.000	5.000	0	2	2
	40.000	4.000	524	6	530
	40.000	5.000	0	5	5
	41.000	3.000	0	1	1
	45.000	5.000	39	0	39
	45.000	6.000	17	0	17
	46.000	8.000	0	1	1
	50.000	2.000	82	1	83
	50.000	3.000	5	340	345
	50.000	4.000	28	1,730	1,758
	50.000	5.000	1,310	2	1,312
	50.000	6.000	34,027	45	34,072
	50.000	10.000	19	1,864	1,883
	53.000	7.000	0	200	200
	55.000	10.000	0	2	2
	56.000	4.000	0	5	5
	60.000	3.000	16	0	16
	60.000	4.000	0	1	1
	60.000	5.000	1,420	3	1,423
	60.000	6.000	41,884	56	41,940
	60.000	8.000	235	0	235
	60.000	10.000	0	63	63
	61.000	6.000	61	0	61
	64.000	8.000	61	0	61
	65.000	5.000	1	0	1
	66.000	8.000	0	2	2
	70.000	4.000	0	3	3
	70.000	6.000	3	0	3
	70.000	10.000	6,400	0	6,400
	71.000	4.000	0	1	1

Technology	Downstream Bandwidth (in Mbps)	Upstream Bandwidth (in Mbps)	Consumer	Business/Govt.	Total
	74.000	9.000	8	0	8
	75.000	5.000	1	118	119
	75.000	6.000	4	621	625
	75.000	8.000	0	1	1
	77.000	8.000	1	0	1
	80.000	6.000	1	47	48
	80.000	10.000	0	32	32
	81.000	5.000	0	1	1
	81.000	6.000	0	1	1
	85.000	4.000	0	2	2
	85.000	5.000	17	0	17
	85.000	10.000	6,007	8	6,015
	95.000	7.000	0	2	2
	100.000	5.000	38,139	0	38,139
	100.000	10.000	1,092	4,467	5,559
	100.000	15.000	46,081	36	46,117
	100.000	20.000	16	4,646	4,662
	105.000	5.000	22	0	22
	105.000	7.000	12	0	12
	105.000	20.000	0	1	1
	110.000	9.000	0	1	1
	114.000	10.000	11	0	11
	120.000	5.000	21	0	21
	120.000	6.000	2,726	8	2,734
	120.000	8.000	5,290	2	5,292
	120.000	9.000	11	0	11
	120.000	10.000	21,853	712	22,565
	120.000	11.000	3	0	3
	120.000	12.000	22	0	22
	120.000	14.000	0	44	44
	120.000	15.000	5	558	563
	121.000	10.000	25	1	26

Technology	Downstream Bandwidth (in Mbps)	Upstream Bandwidth (in Mbps)	Consumer	Business/Govt.	Total
	124.000	10.000	0	91	91
	125.000	10.000	22	0	22
	134.000	14.000	1	0	1
	136.000	14.000	0	208	208
	144.000	11.000	0	1	1
	150.000	1.000	1	0	1
	155.000	20.000	0	14	14
	156.000	19.000	0	1	1
	158.000	17.000	0	8	8
	160.000	9.000	4	1	5
	160.000	17.000	3	0	3
	180.000	14.000	1	3	4
	200.000	10.000	18,319	16	18,335
	200.000	15.000	11,606	693	12,299
	200.000	30.000	6	1,337	1,343
	215.000	13.000	319	0	319
	215.000	17.000	28	0	28
	235.000	7.000	5	0	5
	235.000	8.000	62	0	62
	235.000	17.000	20	0	20
	240.000	8.000	4	0	4
	245.000	20.000	1	0	1
	250.000	10.000	4,716	4	4,720
	250.000	20.000	136,160	97	136,257
	250.000	23.000	0	22	22
	250.000	24.000	309	7	316
	250.000	25.000	0	165	165
	250.000	26.000	8	0	8
	250.000	27.000	161	0	161
	250.000	28.000	0	1	1
	260.000	20.000	1	0	1
	260.000	23.000	1	0	1

Technology	Downstream Bandwidth (in Mbps)	Upstream Bandwidth (in Mbps)	Consumer	Business/Govt.	Total
	270.000	21.000	863	0	863
	275.000	15.000	1	0	1
	300.000	20.000	6,641	736	7,377
	300.000	25.000	10	0	10
	300.000	29.000	6	0	6
	300.000	30.000	7	0	7
	300.000	300.000	2	0	2
	320.000	30.000	2,193	0	2,193
	330.000	20.000	3,261	10	3,271
	350.000	20.000	23	0	23
	380.000	22.000	6	0	6
	385.000	17.000	3	0	3
	400.000	20.000	24,685	10	24,695
	400.000	25.000	617	0	617
	400.000	30.000	2	0	2
	400.000	35.000	70	0	70
	400.000	40.000	117	0	117
	400.000	50.000	1,525	2	1,527
	450.000	25.000	7	0	7
	450.000	34.000	443	0	443
	470.000	35.000	1,302	0	1,302
	500.000	20.000	57	0	57
	500.000	40.000	0	693	693
	525.000	35.000	1	0	1
	550.000	25.000	128	0	128
	550.000	35.000	10	0	10
	600.000	30.000	3	0	3
	600.000	34.000	12	0	12
	620.000	35.000	220	0	220
	660.000	20.000	0	3	3
	750.000	30.000	3	0	3
	750.000	40.000	11	13	24

Technology	Downstream Bandwidth (in Mbps)	Upstream Bandwidth (in Mbps)	Consumer	Business/Govt.	Total
	750.000	50.000	483	0	483
	880.000	40.000	34	0	34
	900.000	35.000	2	0	2
	1,000.000	20.000	422	4	426
	1,000.000	50.000	15,782	3,985	19,767
	1,000.000	51.000	51	0	51
	1,000.000	53.000	24	0	24
	1,000.000	55.000	11	100	111
	1,000.000	59.000	103	0	103
	1,000.000	884.000	180	0	180
	1,000.000	1,000.000	1	27	28
Optical Carrier/Fiber to the End User	25.000	5.000	0	55	55
	25.000	10.000	0	31	31
	100.000	10.000	0	116	116
	100.000	20.000	0	62	62
	200.000	15.000	0	22	22
	200.000	30.000	0	9	9
	300.000	20.000	0	13	13
	500.000	40.000	0	8	8
	1,000.000	45.000	0	1	1
	1,000.000	50.000	0	5	5
Total			481,457	31,938	513,395

Fixed Voice Subscription

VGE Lines and VoIP Subscriptions by State and End User Type

State	Total VGE Lines	Consumer VGE Lines	Total VoIP Subscriptions	Consumer VoIP Subscriptions
Connecticut	0	0	11,579	10,031
Delaware	0	0	1,394	1,291
Florida	0	0	16,783	15,116
Maine	0	0	2,860	2,614
Maryland	0	0	21,089	18,973

State	Total VGE Lines	Consumer VGE Lines	Total VoIP Subscriptions	Consumer VoIP Subscriptions
New Hampshire	0	0	16,188	15,028
New York	0	0	776	692
Pennsylvania	0	0	49,462	45,092
South Carolina	0	0	7,885	6,604
Virginia	0	0	7,567	6,556
West Virginia	0	0	3,848	3,534
Total	0	0	139,431	125,531

Fixed Voice Subscription (iVoIP)

Over-the-Top VoIP Subscriptions by State and End User Type

State	Total	Consumer	Business/Govt.
Connecticut	0	0	0
Delaware	0	0	0
Florida	0	0	0
Maine	0	0	0
Maryland	0	0	0
New Hampshire	0	0	0
New York	0	0	0
Pennsylvania	0	0	0
South Carolina	0	0	0
Virginia	0	0	0
West Virginia	0	0	0
Total	0	0	0

All Other VoIP Subscriptions by State, End User Type, Bundle and Last-Mile Medium

State	Total	by End User Type		by Bundle		by Last-Mile Medium			
		Consumer	Business/Govt.	Sold w/ Internet	Sold w/o Internet	FTTP	Coax	Fixed Wireless	Copper
Connecticut	11,579	10,031	1,548	11,579	0	0	11,579	0	0
Delaware	1,394	1,291	103	1,394	0	0	1,394	0	0
Florida	16,783	15,116	1,667	16,783	0	0	16,783	0	0
Maine	2,860	2,614	246	2,860	0	0	2,860	0	0
Maryland	21,089	18,973	2,116	21,089	0	0	21,089	0	0
New Hampshire	16,188	15,028	1,160	16,188	0	0	16,188	0	0

State	Total	by End User Type		by Bundle		by Last-Mile Medium			
		Consumer	Business/Govt.	Sold w/ Internet	Sold w/o Internet	FTTP	Coax	Fixed Wireless	Copper
New York	776	692	84	776	0	0	776	0	0
Pennsylvania	49,462	45,092	4,370	49,462	0	0	49,462	0	0
South Carolina	7,885	6,604	1,281	7,885	0	0	7,885	0	0
Virginia	7,567	6,556	1,011	7,567	0	0	7,567	0	0
West Virginia	3,848	3,534	314	3,848	0	0	3,848	0	0
Total	139,431	125,531	13,900	139,431	0	0	139,431	0	0

Reminder: You must continue to use Census 2010 geographic codes in FCC Form 477.

For help or assistance, please contact (877) 480-3201 or (717) 338-2834 (TTY) or you may submit an [online e-support ticket](#).

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[TTY: 1-888-835-5322](tel:1-888-835-5322)

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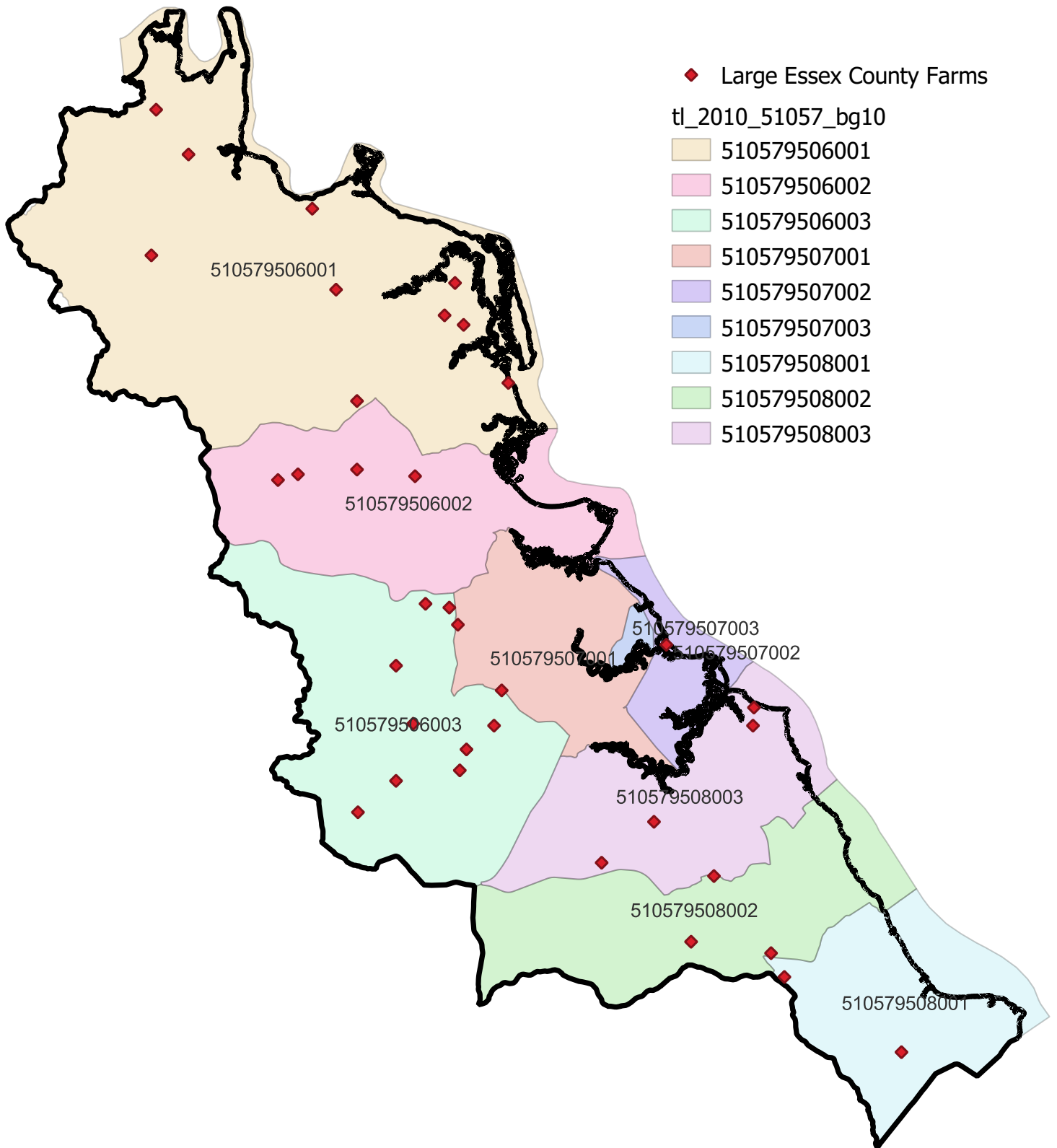
William T. Newborg, Director of Grants and Funding, joined Atlantic Broadband (acquired MetroCast Communications) in January 2018 as General Manager of Virginia Systems. Mr. Newborg was responsible for the day-to-day operations of cable systems serving approximately 22,000 households and businesses in Virginia. Mr. Newborg has over 30 years of experience in the cable television industry having held management positions with both large and small operators in Virginia. In April 2020, Mr. Newborg was promoted to Atlantic Broadband's Director of Grants and Funding covering eleven states. Mr. Newborg has been active in a number of industry organizations including the National Cable Television Association ("NCTA") as a member of the NCTA Operator's Committee. He currently serves as a Board Member of the Broadband Association of Virginia (VCTA). Mr. Newborg graduated from San Diego Mesa College majoring in Aeronautical Sciences and attended San Jose State University pursuing a degree in Business Management.

Crystal Duke, Grants and Funding Manager at Atlantic Broadband, has over 15 years of experience in the cable industry. In this role, she manages the grant planning, preparation and proposal process. Her previous experience in the cable industry includes working in Marketing, Customer Service, Sales and Administrative roles. She has served on the Women in Cable Telecommunications ("WICT") Virginia Chapter Board as Sponsorship Co-Chair and on the Lancaster By the Bay Chamber of Commerce Board. Mrs. Duke is an active member of the WICT Virginia Chapter and Fiber Broadband Association.

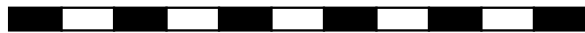
Michael Scott, Construction Supervisor for Virginia Systems, is a 34-year telecommunications veteran experienced in all phases of technical and construction methods for Residential and Commercial telephone, cable and High-speed Internet, including Enterprise level Commercial Services. Currently Mr. Scott is responsible for the day-to-day operations for the Atlantic Broadband residential and commercial construction team in Virginia. Prior to Atlantic Broadband, Mr. Scott served as a Maintenance Technician and Construction Lead for MetroCast during the Rebuild of the Virginia systems. In 2018, Mr. Scott was promoted to Supervisor of Construction for Virginia and Maryland. Mr. Scott started his telecommunications career with Verizon in South Carolina doing underground service drop burials. During his 20-year employment with Verizon, he was promoted to the Local Manager of Operations. During his tenure, he developed and implemented the National Bury Service Wire Group, which is still operating today on a national basis. Mr. Scott is a member of the Society of Cable Television Engineers and is a past member of the Board of Directors of the Palmetto Protection Utility Services in South Carolina.

Robert Hodges, Essex County Broadband Project Manager, is a retired Army officer and DoD contractor with 20+ years experience preparing and facilitating Department of Army level orders and concepts for implementation of force generation models, prioritization efforts for unit modernization, readiness synchronization across Army components and unit training resourcing. Mr. Hodges graduated from the Georgia Institute of Technology with a MSM and a Certificate in the Management of Technology. He is also a member of the Essex County Economic Development Authority.

Attachment 18 - Large Essex County Farms



1 0 1 2 3 4 5 6 7 8 9 10 mi



Attachment 19 – Cogeco Annual Report and MPPC BB Plan

- Cogeco Annual Report
- MPPC BB Plan

The future is ours

2020
ANNUAL REPORT



COGECO
COMMUNICATIONS

A world of your very own

Profile

Cogeco Communications Inc. is a communications corporation. It is the 8th largest cable operator in North America, operating in Canada under the Cogeco Connexion name in Québec and Ontario, and along the East Coast of the United States under the Atlantic Broadband brand (in 11 states from Maine to Florida). The Corporation provides residential and business customers with Internet, video and telephony services through its two-way broadband fibre networks. Cogeco Communications Inc.'s subordinate voting shares are listed on the Toronto Stock Exchange (TSX: CCA).

Cogeco: more than 60 years of history, dedication and growth

Cogeco is the second-largest cable operator in Québec and Ontario and the ninth-largest in the United States. We are profoundly committed to serving our customers locally across more than 1,000 communities.

Our billions of dollars of investments over the years have built a robust and state-of-the-art network to ensure that our customers can depend on reliable connectivity and quality television and telephone services.

We have deep roots in the social and cultural life of our regions, supporting over 700 non-profit organizations annually and providing local programming through our 37 community television stations.

With more than 3,800 employees in Canada and the United States, Cogeco is proud to contribute to the growth of the economy. Because Cogeco is more than just broadband; it is built on connecting communities... **a connection that's here to stay!**

- 
- COGECO CONNEXION
 - ATLANTIC BROADBAND

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2020 financial performance

+2.2%

REVENUE
(in thousands of Canadian dollars)

2020		2,384,283
2019		2,331,820

+3.7%

ADJUSTED EBITDA¹ AND ADJUSTED
EBITDA MARGIN¹
(in thousands of Canadian dollars, except %)

2020		48.2%	1,148,729
2019 ²		47.5%	1,107,940

+11.1%

PROFIT FOR THE YEAR FROM
CONTINUING OPERATIONS
(in thousands of Canadian dollars)

2020		396,591
2019 ²		356,908

+5.7%

CASH FLOWS FROM OPERATING
ACTIVITIES
(in thousands of Canadian dollars)

2020		917,819
2019 ²		868,711

+11.4%

ACQUISITION OF PROPERTY, PLANT AND
EQUIPMENT AND CAPITAL INTENSITY¹
(in thousands of Canadian dollars, except %)

2020		20.3%	483,990
2019 ²		18.6%	434,545

+0.3%

FREE CASH FLOW¹
(in thousands of Canadian dollars)

2020		455,436
2019 ²		454,059

¹ The indicated terms do not have standardized definitions prescribed by International Financial Reporting Standards ("IFRS") and, therefore, may not be comparable to similar measures presented by other companies. For more details, please consult the "Non-IFRS financial measures" section of the Management's Discussion and Analysis ("MD&A"), including reconciliation to the most comparable IFRS financial measures.

² IFRS 16 was adopted by the Corporation on September 1, 2019. Under the transition method chosen, fiscal 2019 was not restated. For further details, please consult the "Accounting policies" section of the MD&A.

Financial highlights

YEARS ENDED AUGUST 31, (in thousands of Canadian dollars, except percentages and per share data)	2020 \$	2019 ¹ \$	Change %	Change in constant currency ² %	Foreign exchange impact ² \$
Operations					
Revenue	2,384,283	2,331,820	2.2	1.5	16,477
Adjusted EBITDA	1,148,729	1,107,940	3.7	3.0	7,176
Adjusted EBITDA margin	48.2%	47.5%			
Integration, restructuring and acquisition costs ³	9,486	11,150	(14.9)		
Profit for the year from continuing operations	396,591	356,908	11.1		
Profit for the year from discontinued operations	—	75,380	(100.0)		
Profit for the year	396,591	432,288	(8.3)		
Profit for the year from continuing operations attributable to owners of the Corporation	375,174	339,973	10.4		
Profit for the year attributable to owners of the Corporation	375,174	415,353	(9.7)		
Cash flow					
Cash flows from operating activities	917,819	868,711	5.7		
Acquisition of property, plant and equipment ⁴	483,990	434,545	11.4	10.2	5,088
Free cash flow	455,436	454,059	0.3	0.2	369
Capital intensity					
	20.3%	18.6%			
Financial condition					
Cash and cash equivalents	366,497	556,504	(34.1)		
Total assets	6,804,197	6,951,079	(2.1)		
Indebtedness ⁵	3,179,926	3,454,923	(8.0)		
Equity attributable to owners of the Corporation	2,268,246	2,199,789	3.1		
Per share data⁶					
Earnings per share					
Basic					
From continuing operations	7.74	6.89	12.3		
From discontinued operations	—	1.53	(100.0)		
From continuing and discontinued operations	7.74	8.41	(8.0)		
Diluted					
From continuing operations	7.67	6.83	12.3		
From discontinued operations	—	1.51	(100.0)		
From continuing and discontinued operations	7.67	8.35	(8.1)		
Dividends	2.32	2.10	10.5		

¹ IFRS 16 was adopted by the Corporation on September 1, 2019. Under the transition method chosen, fiscal 2019 was not restated. For further details, please consult the "Accounting policies" section of the MD&A.

² Key performance indicators presented on a constant currency basis are obtained by translating financial results from the current period denominated in US dollars at the foreign exchange rate of the prior year. For the year ended August 31, 2019, the average foreign exchange rate used for translation was 1.3255 USD/CDN.

³ For the year ended August 31, 2020, integration, restructuring and acquisition costs resulted mostly from organizational changes initiated across the Corporation, as well as costs related to the acquisition and integration of Thames Valley Communications and iTétract. For the year ended August 31, 2019, integration, restructuring and acquisition costs were mostly related to an operational optimization program.

⁴ For the year ended August 31, 2020, acquisition of property, plant and equipment in constant currency amounted to \$478.9 million.

⁵ Indebtedness is defined as the total of bank indebtedness and principal on long-term debt.

⁶ Per multiple and subordinate voting share.



Louis Audet

Message from the Executive Chairman

As I look back on our fiscal year that closed at the end of the summer, I am comforted to see how our company has steadfastly come through uniquely challenging times. Under Philippe Jetté's guidance, Cogeco's leadership team has steered the company through a constantly evolving telecommunications landscape, changes at the head of our business unit teams and of course, a once-in-a-lifetime pandemic. I am incredibly proud of the resilience of our business and the strength the Cogeco team demonstrated in coming together and facing a crisis no one was prepared for.

That said, I am not in the least surprised that our teams in Canada and the United States have allowed us to come through these events stronger than ever. Resilience and determination have been at the heart of Cogeco's growth story for more than 60 years. Remember, we began as a small television station in a town in the middle of the province of Québec. Through perseverance, hard work and conviction, we continued to flourish. Eventually, Cogeco went public in 1985, at which time annual revenues were a respectable \$20 million. Today, they have surpassed \$2.38 billion.

Our customers and our communities know they can rely on us. This has been true for over six decades and we intend to continue building on our strengths.

Cogeco now enjoys a unique and enviable position as the only broadband services company with a significant presence in both Canada and the United States. We invest massively in fibre coaxial cable network infrastructure to the tune of \$450 million a year to improve and increase high-speed Internet connectivity, especially in rural and unserved areas, bringing new services and competitive choice to the communities we serve.

Our customers and our communities know they can rely on us. This has been true for over six decades and we intend to continue building on our strengths and expanding our horizons through strong financial management, innovation and solid partnerships with all our stakeholders. What's more, Cogeco is profitable, with an adjusted EBITDA margin that is among the best in the industry, and dividends that have grown at a compounded annual rate of over ten percent for the last five years.

Cogeco's social, environmental and employment practices are recognized as being among the best in the industry. As a Corporation, we treat our customers with respect and offer the highest quality service possible, and we are committed to being a responsible contributor in the communities in which we operate, as well as in the broader global environment.

Cogeco is very fortunate to have a fantastic management team and Board of Directors composed of highly qualified and experienced individuals who are independent members by a very wide margin. The Board is a model of diversity and balance and its governance practices have been recognized as being among the best of family-owned public companies, as illustrated by the Globe and Mail Board Games report, year after year. On that note, I would like to take this moment to thank Ms. Gibson and Ms. Salomon, who will be retiring as directors at our upcoming Annual Shareholders' Meeting in January. Ms. Gibson has been a director of the Corporation for over five years and Ms. Salomon for over 10 years, and both were active Committee members who contributed tremendously to the Board with their knowledge of the industry, as well as their vast experience on marketing and strategy issues. We wish to express our heartfelt thanks to each of them for their many years of service and significant contribution to the Board of Directors and the Corporation.

This fall, we also appointed two new Board members, Ms. Robin Bienenstock and Ms. Caroline Papadatos, to succeed Ms. Gibson and Ms. Salomon. Ms. Papadatos will contribute

to the Board through her extensive international expertise in customer management, customer loyalty and digital innovation and Ms. Bienenstock, through her in-depth knowledge of all facets of the telecommunications industry. We are delighted to have them on our Board and want to give them a warm welcome.

The North American competitive landscape needs strong regional players like Cogeco, which is playing an increasingly important role in providing consumers with more choice as the telecommunications sector evolves.

Cogeco has a tremendous legacy on which to build. I am proud of our achievements and excited about the future ahead.



LOUIS AUDET
Executive Chairman of the Board

Message from the President & CEO

We began fiscal 2020 with focus and resolve, backed by a solid leadership team, supported by our determined colleagues and members of our Board of Directors. As the year progressed, bringing with it consequential and unforeseen events, we continued to focus on our growth strategy to be the organization that brings the best and most sustainable value to all our stakeholders, be they our customers, communities, employees, suppliers or shareholders.

Consolidated revenue increased by 2.2% in fiscal 2020 to reach \$2.38 billion, while adjusted EBITDA reached \$1.15 billion, up by 3.7%. Profit for the year reached \$396.6 million and the Corporation generated free cash flow of \$455.4 million. Dividends paid to our shareholders increased by 10.5% to \$2.32 per share.

THE FUTURE IS OURS

Our focus at the start of the fiscal year was building on the many transformative projects that we put in place in 2019, and refining our strategy for continued long-term growth. We made changes to our leadership team, welcoming a new President at Atlantic Broadband at the start of the fiscal year, one who brings a fresh perspective, and announcing later in the year the new President of Cogeco Connexion. As we set about ensuring our plans moved forward and our objectives were met, we were suddenly faced with the unexpected and swift arrival of the COVID-19 pandemic.

COLLABORATION AND AGILITY IN THE FACE OF COVID-19

Throughout North America, individuals, families and organizations had to quickly adapt and adjust to the new reality. All across Cogeco, employees rolled up their sleeves and quickly got to work finding solutions, facing the situation

head-on and doing everything possible for our customers and colleagues. As access to Internet, TV and telephony services became increasingly essential, all our teams at Cogeco Connexion across Québec and Ontario, and at Atlantic Broadband on the U.S. East Coast worked tirelessly to ensure we maintained high-quality connectivity services and increased access to information and entertainment. We quickly adapted our services and implemented personalized measures to offer customers more flexibility, including temporarily waiving late fees, removing data-overflow fees and offering free movie channels.

Despite the many challenges of the crisis which still has the world in its grip, we have maintained financial discipline and we are very pleased with how our teams responded.

We ensured the health and safety of our employees by quickly implementing work-from-home measures and guidelines that would also maintain the highest standards of productivity. Our technicians, who were only allowed to travel to a customer's home for work outside the house, found creative ways to provide instructions and support to customers. All these actions enabled our businesses to continue running smoothly and performing well, even in these difficult circumstances.

Despite the many challenges of the crisis which still has the world in its grip, we have maintained financial discipline and we are very pleased with how our teams responded, showing great adaptability and dedication.

Message from the President & CEO (continued)

INITIATIVES

Canadian broadband services

We are excited to begin fiscal 2021 with a new President at the helm of Cogeco Connexion, one whose appointment was announced in the spring. Under Frédéric Perron's leadership, we are confident that our Canadian broadband segment will grow faster, and Cogeco Connexion will remain an efficient operator offering an engaging place to work, a solid player in our highly competitive market, one which brings value to the communities we serve and to our shareholders.

In fiscal 2020, we enhanced our service and product offering to meet and exceed our customers' expectations for distinctive experiences. We continued the expansion of our 1 Gig offering while also enhancing the end-to-end digital experience. The pandemic accelerated the launch of our zero-contact installation enabling consumers to self-install services, with the assistance of a field technician equipped with a visual engagement tool. We also introduced our Internet television (IPTV) entertainment system at the end of the fiscal year. It will be rolled out progressively in fiscal 2021.

We continuously innovate and invest in product enhancements and service improvements.

We began the fiscal year with a brand refresh which included a new tagline and brand value, as well as customer communications, with a greater focus on customer segments at a regional level. We also supported our local communities during the pandemic by donating to local organizations and healthcare personnel and keeping customers up to date on information through local programming on our YourTV stations.

Throughout Cogeco Connexion, we delivered an employee experience that furthers performance and well-being and promotes strong customer service, and this, in spite of the pandemic. We expanded our teleworking capabilities leveraging enterprise collaboration tools and implemented new remote working protocols to ensure employee health and safety. We were pleased to see our efforts result in an increase in our global engagement score.

We continued our investments in our regions. In the spring we signed an agreement to acquire iTétract Inc., a company that operates as a full-telecommunications service provider in southern Québec, using a combination of fixed-wireless and fibre-to-the-home technologies. As part of the transaction, we acquired 15 exclusive 3.5 GHz spectrum

licenses covering a large region of rural southern Québec and serving approximately 2,000 customers.

Finally, Cogeco Connexion won a good share of available government funding dedicated to increasing connectivity to high-speed Internet and addressing the digital divide between urban centres and rural areas. We also submitted targeted regulatory changes designed to increase competition in Canada's mobile wireless market, as part of the Canadian Radio-television and Telecommunications Commission (CRTC)'s consultation. Cogeco's proposed Hybrid Mobile Network Operator (HMNO) model would enable the sustainable entry of new mobile wireless carriers across Canada, with particular benefit to underserved regions. This proposal would allow facilities-based wireline and mobile wireless service providers to access portions of the national incumbents' mobile wireless networks, while also requiring those regional providers to invest in their own telecommunications infrastructure.

American broadband services

At Atlantic Broadband in fiscal 2020, under the new leadership of Frank van der Post, we set the foundation for increased customer satisfaction and long-term customer relationships. We implemented improvements to our Net Promoter Score (NPS) monitoring. We also implemented a new Interactive Voice Response system, put more emphasis on our self-install program and launched a virtual connect tool across our call centres to reduce the number of calls from customers.

We acquired what was formerly Thames Valley Communications in March of this year, adding approximately 10,000 customers to our existing geographic footprint. We continued our expansion in Florida markets and executed targeted edge-outs in all regions.

Our overall product performance and reliability was enhanced, following network investments for Gigabit Internet. We grew our product offering, launching the TV Online app and HBO Max, as well as adding Showtime Anytime, YouTube Kids and Amazon Prime to the TiVo platform. We also committed to local communities and emphasized local presence and, as part of our COVID-19 crisis response, we took part in the federal government's Keep America Connected pledge, to ensure that customers impacted by the COVID-19 outbreak have access to vital services.

On the heels of the pandemic, we seamlessly transitioned our employees to work from home while pursuing continuous improvements such as migrating all employees to a common workflow platform and preparing for the launch of a new enterprise resource planning system. In addition, important organizational changes were made to streamline functions, reinforce centres of expertise, and to achieve efficiencies that will help Atlantic Broadband remain agile in the marketplace. The changes also help advance key strategic priorities including digitalization, customer experience and sales.

CORPORATE SOCIAL RESPONSIBILITY

We have strengthened our corporate social responsibility (CSR) program aimed at operating responsibly and sustainably, while being a good corporate citizen. To support the achievement of our CSR goals, we monitor our performance using established key indicators for environmental, social and governance (ESG) objectives. We also published our fifth Corporate Social Responsibility Report covering fiscal years 2018-2019.

We surpassed our target for Greenhouse gas (GHG) emissions on a per-revenue basis one year early. We donated over \$7.6 million in cash and in-kind donations during fiscal year 2020, representing 1.5% of Cogeco's pre-tax profit. We also offered air time for fundraising purposes to several organizations in our communities and territories. Our principal areas of support are: culture, education and entrepreneurship, health and well-being, environment, connectivity, diversity and inclusion.

In addition, during the process of moving the Montréal head office, our efforts to collect, sort and package surplus office supplies and equipment resulted in the donation of more than three truckloads of material to organizations such as Habitat for Humanity, Regroupement Partage, Computers for Success and Renaissance. In total, more than 95% of all surplus material was diverted from waste disposal sites. As for gender equality, women at Cogeco held 36% of managerial level positions in fiscal 2020, surpassing our goal of reaching 35% by 2021. Among many of the recognitions received this past fiscal year, Cogeco Communications was named to Corporate Knights' Best 50 Corporate Citizens in Canada for a third consecutive year and received the Caring Company certification from Imagine Canada for its philanthropic leadership.

CONCLUDING REMARKS

Cogeco is a growing competitive force in the North American telecommunications sector with a legacy of over 60 years. Today we are the second largest cable operator in Québec and Ontario and the ninth largest cable operator in the United States, where we operate in eleven states and continue to actively pursue new opportunities for growth through acquisition in areas where we are positioned as a consolidator of regional cable operators. In Canada, we are actively investing in our operations and networks to continue to offer ever faster Internet speeds and high performance products.

We are also expanding our network into new areas to help address the digital divide between large urban centres and regional and rural areas. We continuously innovate and invest in product enhancements and service improvements, and have embarked on a digital transformation journey, which was accelerated by the COVID-19 pandemic. As uncertainty lies ahead and short-term planning remains challenging during the pandemic, we will remain agile and disciplined in our management of the business.



Message from the President & CEO (continued)

Despite these challenges, we plan to continue to grow our revenue, adjusted EBITDA and free cash flow. More than ever, we will offer superior personalized services and continue to improve operational efficiencies. We have shown our commitment to delivering great customer experience and developing our communities and will continue to do so. Our strategies, goals and objectives are consistently backed by our prudent approach to financial management and ability to deliver operational excellence.

Fiscal 2020 was certainly a year filled with challenges and unexpected turmoil due to the pandemic and I am incredibly proud of how we at Cogeco faced the situation with strength, agility and courage. This would not have been possible

without the collaboration of the leadership team, the Board of Directors and most of all, our more than 3,800 colleagues. As we have seen in the past, this collaboration and willingness to work as one team is what sets us apart from our competitors and enables us to fulfill our mission of bringing people together through powerful communications and entertainment experiences.

PHILIPPE JETTÉ
President & Chief Executive Officer

Resilience and hope in the face of COVID-19

During this COVID-19 crisis, access to Internet, television and telephone services become of paramount importance. We are proud of our teams who quickly adapted to the new reality and are working hard to ensure the delivery of high-quality services for our customers in the safest manner, while supporting our communities.

"Just wanted to write to express my appreciation to your Atlantic Broadband folks for assisting us during this difficult time. We wanted to pass along a pat on the back during difficult times when your folks are working hard."

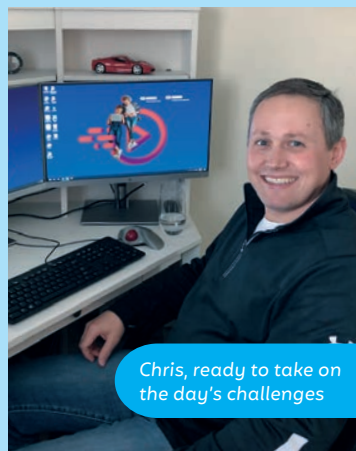
– Suisman,
New London, CT



Our zero-contact installation



Stephanie with her new home-office mate



Chris, ready to take on the day's challenges

"THANK YOU! You are the BEST customer service person I have ever had the privilege of dealing with in any situation. I hope Cogeco knows the value you bring to their business!"

– Tereza, Thorold, Ont.

"I had such fantastic service from Lisa. I've been having a lot of anxiety about the situation with the world right now and she made me feel so much better. Additionally, she shared how Cogeco is taking care of their employees during this time. I am making my purchasing decisions going forwards based on how companies took care of their employees during this outbreak. I was thrilled to hear that Cogeco dispatched their staff to work from home."

– A.H., Belleville, Ont.

MANAGEMENT'S DISCUSSION AND ANALYSIS ("MD&A")

MD&A

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1. FORWARD-LOOKING STATEMENTS

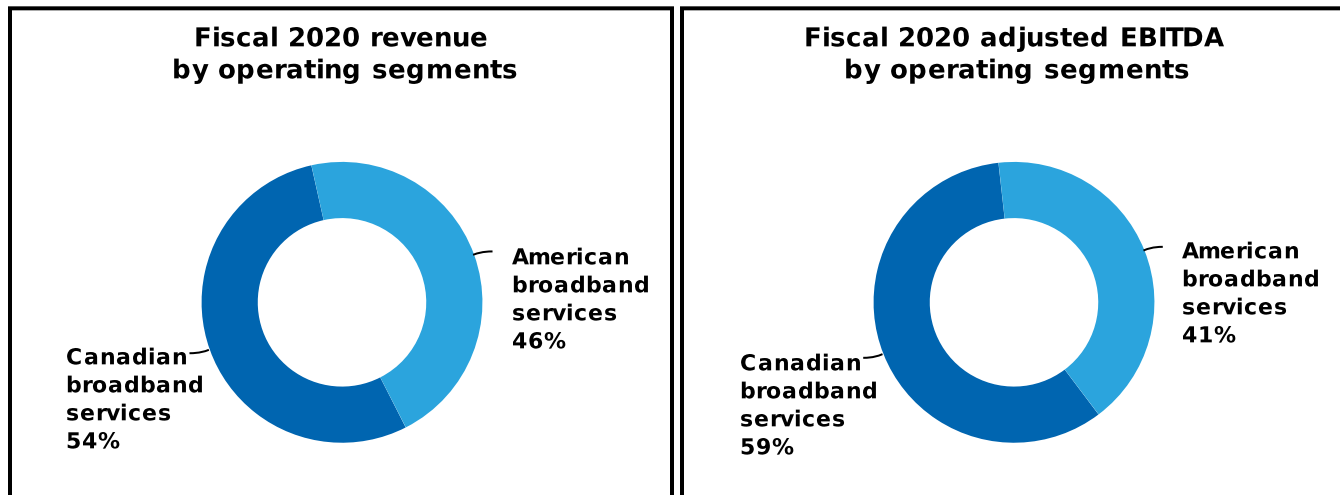
Certain statements contained in this Management's Discussion and Analysis ("MD&A") may constitute forward-looking information within the meaning of securities laws. Forward-looking information may relate to Cogeco Communications Inc.'s ("Cogeco Communications" or the "Corporation") future outlook and anticipated events, business, operations, financial performance, financial condition or results and, in some cases, can be identified by terminology such as "may"; "will"; "should"; "expect"; "plan"; "anticipate"; "believe"; "intend"; "estimate"; "predict"; "potential"; "continue"; "foresee", "ensure" or other similar expressions concerning matters that are not historical facts. Particularly, statements regarding the Corporation's financial guidelines, future operating results and economic performance, objectives and strategies are forward-looking statements. These statements are based on certain factors and assumptions including expected growth, results of operations, performance and business prospects and opportunities, which Cogeco Communications believes are reasonable as of the current date. Refer in particular to the "Corporate Objectives and Strategies" and "Fiscal 2021 Financial Guidelines" sections of the present MD&A for a discussion of certain key economic, market and operational assumptions we have made in preparing forward-looking statements. While Management considers these assumptions to be reasonable based on information currently available to the Corporation, they may prove to be incorrect. Forward-looking information is also subject to certain factors, including risks and uncertainties that could cause actual results to differ materially from what Cogeco Communications currently expects. These factors include risks such as competitive risks, business risks (including potential disruption to our supply chain), regulatory risks, public health crisis and emergencies such as the current COVID-19 pandemic, technology risks, financial risks (including variations in currency and interest rates), economic conditions, human-caused and natural threats to our network, infrastructure and systems, community acceptance risks, ethical behavior risks, ownership risks and litigation risks, many of which are beyond the Corporation's control. For more exhaustive information on these risks and uncertainties, the reader should refer to the "Uncertainties and Main Risk Factors" section of the present MD&A. These factors are not intended to represent a complete list of the factors that could affect Cogeco Communications and future events and results may vary significantly from what Management currently foresees. The reader should not place undue importance on forward-looking information contained in this MD&A which represent Cogeco Communications' expectations as of the date of this MD&A (or as of the date they are otherwise stated to be made) and are subject to change after such date. While Management may elect to do so, the Corporation is under no obligation (and expressly disclaims any such obligation) and does not undertake to update or alter this information at any particular time, whether as a result of new information, future events or otherwise, except as required by law.

All amounts are stated in Canadian dollars unless otherwise indicated. This report should be read in conjunction with the Corporation's consolidated financial statements and the notes thereto prepared in accordance with the International Financial Reporting Standards ("IFRS") for the year ended August 31, 2020.

In preparing this MD&A, the Corporation has taken into account information available up to October 27, 2020, the date of this MD&A, unless otherwise indicated. Additional information relating to the Corporation, including its Annual Information Form, is available on the SEDAR website at www.sedar.com or on the Corporation's website at corpo.cogeco.com.

2. OVERVIEW OF THE BUSINESS

Cogeco Communications is a communications corporation. It is the 8th largest cable operator in North America. In fiscal 2020, the Corporation reported its operating results in two operating segments: Canadian broadband services and American broadband services. The reporting structure reflects how the Corporation manages its business activities, makes decisions about resources to be allocated to the segments and assesses their performance. For the year ended August 31, 2020, the proportion of each segment as a percentage of the Corporation's consolidated revenue and adjusted EBITDA⁽¹⁾ excluding corporate activities and eliminations of intersegment transactions included in each segment's operating results were as follows:



For further details on the Corporation's segmented operating results, please refer to the "Segmented operating and financial results" section.

2.1 CANADIAN AND AMERICAN BROADBAND SERVICES

DESCRIPTION OF SERVICES

The Canadian and American broadband services segments provide a wide range of Internet, video and telephony services primarily to residential customers as well as business services across its coverage areas.

The Canadian broadband services activities are carried out by Cogeco Connexion in the provinces of Québec and Ontario and the American broadband services activities are carried out by Atlantic Broadband in 11 states: Connecticut, Delaware, Florida, Maine, Maryland, New Hampshire, New York, Pennsylvania, South Carolina, Virginia and West Virginia.

The following four services represent our core suite of offerings:

Internet services: We offer a range of Internet packages with top download speeds of up to 1 Gbps in Canada and the United States. Simple and complete security suite and email solutions are available to our Internet customers with automatic updates to protect their devices. As an added benefit, Internet customers can connect wirelessly to the Internet at no extra cost from designated WiFi Internet hotspots in our Canadian and American footprints.

Video services: We offer our customers a full array of digital video services and programming offerings. Our customers have access to a basic service, various digital tier packages, pay-per-view ("PPV") channels, video on demand ("VOD") services, advanced video services such as TiVo and a new Internet protocol television ("IPTV") platform, which was launched at the end of the fiscal year and will be rolled out progressively in Canada in fiscal 2021.

Telephony services: Telephony services use internet protocol ("IP") to transport digitized voice signals over the same private network that brings video and Internet services to customers. Residential customers can subscribe to different packages. All residential telephony service customers have access to direct international calling and can subscribe to various international long distance plans, voicemail and other popular custom calling features.

Business services: We offer to our business customers, depending on the area, a wide range of Internet packages, video services, telephony services and other advanced network connectivity services, such as session initiation protocol ("SIP"), primary rate interface ("PRI") trunk solutions, hosted private branch exchange ("HPBX") solutions and business and software efficiency services.

Furthermore, we actively bundle our services into "double play" and "triple play" offerings at competitive prices to promote cross-selling within our customer base and to attract new customers.

(1) The indicated terms do not have standardized definitions prescribed by IFRS and, therefore, may not be comparable to similar measures presented by other companies. For more details, please consult the "Non-IFRS financial measures" section of the MD&A, including reconciliation to the most comparable IFRS financial measures.

NETWORKS AND INFRASTRUCTURE

Cogeco Connexion and Atlantic Broadband provide residential Internet, video and telephony services and business services through advanced fibre optic and two-way broadband distribution networks. Cogeco Connexion and Atlantic Broadband deliver these services through their own long distance fibre optic systems, advanced hybrid fibre-coaxial ("HFC") broadband distribution networks, point-to-point fibre networks and fibre-to-the-home ("FTTH") network technologies.

Cogeco Connexion's distribution network covers a large territory from Western Ontario to Eastern Québec. Atlantic Broadband's distribution network covers the East Coast of the United States, from the southern part of Maine to southern Virginia, as well as portions of South Carolina and a large footprint in Southern Florida. Each of Cogeco Connexion's and Atlantic Broadband's core transport networks have a broad reach and are designed to easily interconnect, at very high speed, their many local distribution systems to video content providers, other public telephony networks, software application providers and the world-wide Internet.

For residential services, Cogeco Connexion and Atlantic Broadband are deploying optical fibres to nodes serving small clusters of homes passed, with multiple fibres per node in most cases, to rapidly extend the capacity of the system with smaller clusters when necessary. This "just in time" process, known as "node splitting", leads to further improvement in quality and reliability while increasing the "just in time" capacity of two-way services such as Internet, VOD and telephony and optimizing the efficiency of capital investments. The HFC distribution infrastructure is designed with radio frequency ("RF") capacity of up to 1 GHz of bandwidth capacity, depending on the market served and customer needs.

In each market, the signals are carried on their HFC network for delivery to their customers. Fibre optic strands are capable of carrying hundreds of video, data and voice channels over extended distances without signal amplification. Cogeco Connexion and Atlantic Broadband will continue to deploy fibre optic cable as warranted to further improve system reliability and reduce system maintenance cost. This hybrid combination of fibre optic and coaxial cable is the most efficient choice when it comes to delivering high quality networks with judicious capital investments.

Cogeco Connexion and Atlantic Broadband's telephony service uses VoIP technology which makes possible to have a telephone conversation over a dedicated Internet IP network instead of dedicated voice transmission lines. IP networks allow the elimination of circuit switching telephony and the associated waste of bandwidth. Instead, packet switching is used, whereby IP packets with voice data are sent over the network only when data needs to be sent, for example when a caller is talking. VoIP's advantages over traditional telephony include lower costs per call, especially for long-distance calls, and lower infrastructure costs as, once the IP infrastructure is installed, little or no additional telephony infrastructure is needed.

Cogeco Connexion and Atlantic Broadband use CableLabs' DOCSIS technology to deliver Internet and business services over HFC networks. DOCSIS has numerous advanced features to ensure a continuous transmission and high quality of service delivery. In addition, this technology provides a flexible and expandable platform to further increase IP transmission speeds and to provide other products such as symmetrical services, which are particularly well suited for commercial customer applications. Cogeco Connexion offers Internet speeds of up to 1 Gbps in approximately 72% of its footprint and 120 Mbps in virtually all of its footprint. Atlantic Broadband offers up to 1 Gbps Internet speeds to approximately 90% of its footprint of serviceable homes and business. Cogeco Connexion and Atlantic Broadband intend to continue deploying 1 Gbps speeds in the coming years through several technologies depending on the location, with DOCSIS 3.1 being the most cost effective.

Cogeco Connexion and Atlantic Broadband are deploying FTTH technology in all new residential developments which meet specific criteria of size, proximity to the existing plant and service penetration rate. Cogeco Connexion and Atlantic Broadband use a FTTH technology called radio frequency over glass ("RfOG"). The primary benefit of RfOG is its compatibility backward and forward with existing cable modem termination system ("CMTS") investments and back-office systems.

2.2 UPDATE ON THE IMPACT OF THE COVID-19 PANDEMIC ON OPERATIONS AND RESULTS

The COVID-19 pandemic had the following impacts on our business during the second half of the fiscal year:

- Incremental demand for our high speed Internet product (more customers and upgrades in packages);
- More stable customer base for our video and telephony products (fewer connections and disconnections) and increased video-on-demand and phone long-distance usage;
- Lower residential video revenue at our Canadian broadband subsidiary due to credits given to customers on certain sports packages;
- Lower revenue related to the delay in price increases at both our Canadian and American broadband subsidiaries;
- Lower revenue related to the temporary discontinuation of data overage fees at our Canadian broadband subsidiary and the waiving of late fees charged at our American broadband subsidiary;
- Lower commercial revenue, mostly related to the video and telephony products and for specific verticals such as hotels and restaurants;
- Lower advertising revenue, including a reduction in political advertising at our American broadband subsidiary;
- Lower customer service expenses due to more self-installations of new customers, offset by temporary COVID-specific cost increases;
- Lower expenses related to the closure of all of our retail stores during the confinement period; and
- Increase in capital expenditures related to acceleration of certain projects due to increased user data demand on our networks and to avoid potential supply chain disruptions during the early part of the pandemic, partly offset by a lower level of construction activity in some areas.

These COVID-19 related impacts taken in aggregate did not have a material effect on our results. We also took advantage of the changes in customer behaviors and working practices to accelerate the digitization of our operations. We intend to further drive digitization initiatives to better serve our client base, increase employee satisfaction and improve productivity.

2.3 BUSINESS DEVELOPMENTS

Acquisition of DERYtelecom

On October 21, 2020, Cogeco Communications announced that its subsidiary, Cogeco Connexion, had entered into a definitive agreement to purchase DERYtelecom, the third largest cable provider in the province of Québec, for \$405 million. DERYtelecom offers Internet, television and telephony services to approximately 100,000 customers in over 200 municipalities across several regions in Québec.

The purchase price will be financed with a combination of cash on hand and Cogeco Communications' Term Revolving Facility. The transaction, which will be executed essentially through an asset purchase, is subject to regulatory approvals under the Competition Act along with other customary closing conditions and is expected to close no later than the end of the second quarter of the fiscal year 2021.

CRTC's wholesale Internet services 2019 costing decision

On September 10, 2020, the Federal Court of Appeal (the "Court") dismissed the appeal by the Corporation, together with other telecommunications service providers (the "Cable Carriers"), of the costing decision rendered in 2019 by the Canadian Radio-television and Telecommunications Commission ("CRTC") regarding new rates for aggregated wholesale Internet services for resellers (the "Telecom Order 2019-288"). On September 28, 2020, the CRTC approved a request submitted by the Cable Carriers to stay the implementation of Telecom Order 2019-288 regarding final rates for aggregated wholesale high-speed access services until it completes its review of that order. As at August 31, 2020, the total retroactive payments based on the CRTC's final aggregated wholesale service rates' 2019 costing decision, if not otherwise modified, is estimated at approximately \$43 million, of which approximately \$25 million relates to fiscal years from 2016 to 2019, and approximately \$18 million relates to fiscal year 2020. Due to the significant uncertainty surrounding both the outcome of this decision and its financial implications, the Corporation has therefore not recorded the impact of the reduced rates as at August 31, 2020 and 2019. Please refer to the "Commitment, contingencies and guarantees" subsection for further details.

Altice USA, Inc. and Rogers Communications Inc.'s proposal

On September 1, 2020, Cogeco and Cogeco Communications received an unsolicited non-binding proposal from Altice USA, Inc. and Rogers Communications Inc. to acquire all of the issued and outstanding multiple and subordinate voting shares of both companies. On September 2, 2020, following separate deliberations of the independent board members, the Boards of Directors of Cogeco and Cogeco Communications rejected the proposal after Gestion Audem, the Audet family's holding company, had stated that its shares were not for sale. On October 18, 2020, Cogeco and Cogeco Communications received a revised unsolicited non-binding proposal from Altice USA, Inc. and Rogers Communications Inc. That same day, Gestion Audem rejected this revised proposal, stating again that it was not interested in selling its shares. The revised proposal was submitted for review to the Board of Directors of both companies. On October 20, 2020, following separate deliberations of the independent board members, the Boards of Directors of Cogeco and Cogeco Communications announced that they had unanimously rejected the revised proposal.

Other business developments

On July 20, 2020, the Corporation proceeded with the early redemption of the Senior Secured Debentures Series 2 due November 16, 2020. A redemption premium of \$2.8 million was charged to financial expense, in connection with the early redemption.

On May 1, 2020, the Corporation's subsidiary, Cogeco Connexion, completed the acquisition of iTétract Inc., a telecommunications service provider operating in southern Québec using a combination of fixed-wireless and fibre-to-the-home technologies, and owner of 15 spectrum licenses, for \$16 million.

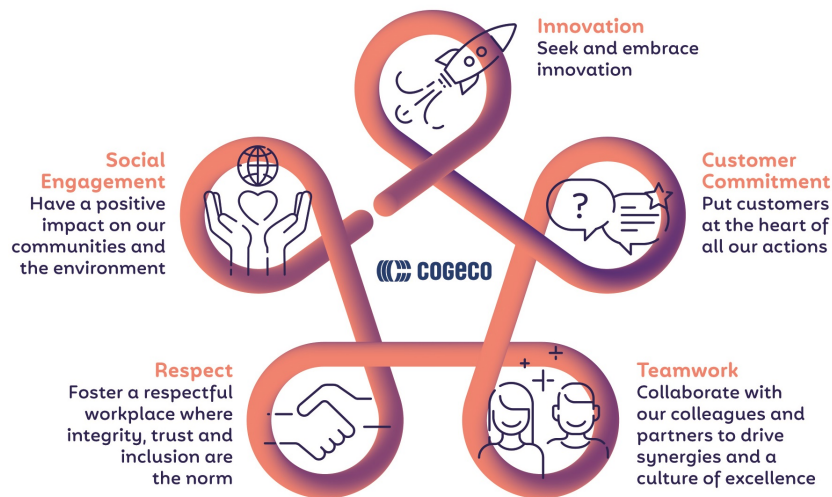
On March 10, 2020, the Corporation's subsidiary, Atlantic Broadband, completed the acquisition of Thames Valley Communications, a broadband services company operating in Southeastern Connecticut, for a net consideration of \$67 million (US\$50 million).

2.4 CORPORATE OBJECTIVES AND STRATEGIES

Our Mission

Bring people together through powerful communications and entertainment experiences

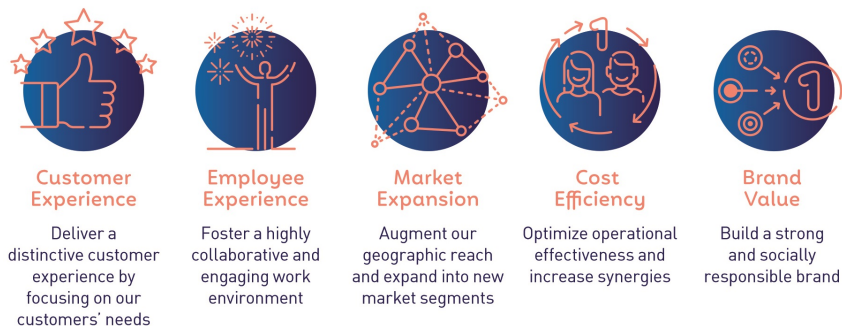
Our Values



Our Vision

Be the organization that delivers the best and most sustainable value to all our stakeholders

Cogeco will fulfill this vision by focusing on the following growth pillars



Each Business Unit of the Corporation has in turn elaborated a strategic plan that is aligned to the growth pillars defined above. The key areas of focus of those strategic plans are as follows:

CANADIAN BROADBAND SERVICES SEGMENT

Our Growth Pillars	Progress in Fiscal 2020	Focus in Fiscal 2021
 <p>Customer Experience</p>	<p>Enhanced our service and product offering to meet customer experience expectations.</p> <p>Expanded our gigabit (1 Gig speed) offering to 72% of our footprint and continued to invest in network reliability and resilience.</p> <p>Enhanced our consumer end to end digital experience with new shopping, buying, on-boarding, account management, TV channel change and on-line self-care features.</p> <p>Launched zero contact installation, enabling consumers to self-install services assisted by a field technician equipped with a visual engagement tool.</p> <p>Implemented a marketing automation system to optimize our communications with our consumers using the channel of their choice (i.e. email, sms, chat, phone call).</p> <p>Introduced our new IPTV entertainment system.</p>	<p>Grow market share by enhancing our service offering to address customer needs.</p> <p>Continue to evolve our self-serve capabilities within our digital evolution program.</p> <p>Progressively roll out our IPTV entertainment system.</p> <p>Enhance our customers' Wi-Fi experience to enable whole home network management.</p> <p>Personalize our customers' experience through tailored marketing.</p> <p>Launch a new Interactive Voice Response (IVR) system to optimize routing of consumer calls to enhance call resolution efficiency and effectiveness.</p>
 <p>Employee Experience</p>	<p>Delivered an employee experience that furthers performance and wellbeing and promotes strong customer service.</p> <p>Implemented new remote working protocols to ensure employee health and safety during the COVID-19 pandemic.</p> <p>Deployed revised health & safety guidelines and procedures and provided required training to all employees.</p> <p>Expanded our Work from Home (WFH) capabilities, leveraging enterprise collaboration tools.</p> <p>Obtained regular input from employees through engagement surveys, increasing our global engagement score.</p> <p>Initiated the launch of a new integrated employee cloud-based platform to enhance employee experience.</p>	<p>Continue to cultivate an employee experience that will drive a distinctive customer experience. Continue to foster collaboration and engagement and promote wellness and safety.</p> <p>Continue the roll-out of the new integrated employee platform.</p> <p>Deploy a new, updated, employee competency model.</p> <p>Enhance the customer experience through a "Front-line-First" approach supported by strong employee engagement.</p> <p>Continue to capitalize on operating model synergies to focus on value-added activities.</p> <p>Deploy the back to the workplace protocol</p>
 <p>Market Expansion</p>	<p>Maintained our market share and were awarded several government sponsored projects to provide high speed internet to unserved and underserved areas, thereby reducing the digital divide.</p> <p>Proactively participated in calls for applications launched by governments to increase connectivity in underserved and unserved areas. Won 19 bids for funding from various programs in Québec and Ontario.</p> <p>Acquired iTéract, a telecommunication service provider in Southern Quebec using a combination of fixed wireless and FTTH technologies and owner of 15 spectrum licences.</p>	<p>Continue to augment our reach and expand into new market segments.</p> <p>Pursue market extension and expansion opportunities, in part through government sponsored programs.</p> <p>Monitor the market for growth opportunities through acquisitions.</p> <p>As part of our intent to offer a mobile wireless service, continue to monitor the evolution of the regulatory situation in Canada and undertake initiatives towards achieving entry into the wireless market space.</p>



Delivered cost efficiencies and savings.

Improved our customer digital platforms.
 Reduced truck rolls through increased adoption of digital self-install and equipment swapping options by customers.
 Explored and implemented new ways of working thereby optimizing efficient use of resources and leveraging collaboration.

Continue to pursue cost efficiency opportunities.

Pursue our digital transformation journey to engage with our customers in a digital world.
 Simplify our ways of working to further increase productivity.
 Further explore opportunities for shared services and automation to reduce cost and unlock value.
 Launch new tools to enhance workforce management.



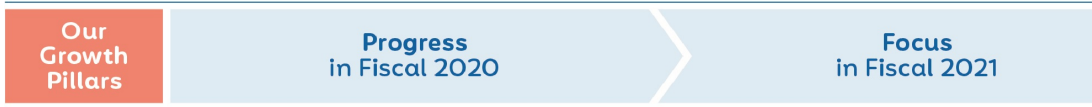
Refreshed our brand image, optimized our investments and supported our communities.

Launched a refreshed brand image and communications tools to further strengthen the brand and focus marketing communications by customer segment at a regional level.
 Supported our local communities during the COVID-19 pandemic by providing free TV previews, temporarily removing Internet overage charges, offering zero contact installation and video support, donating to local organizations and health care personnel and, keeping customers up to date on information related to the pandemic through local programming.
 Optimized our media investments to drive the highest return on investment (ROI) using more targeted tactics.

Continue to leverage media investment, local presence, social media and our ambassador program.

Invest in raising brand awareness by driving visibility of investments we continue to make to provide our customers with access to 1 Gig speeds delivered on Cogeco's superior network.
 Continue to optimize media investments to both acquire and retain customers and continue to leverage our Cogeco Media division's assets in our regions.
 Showcase our local presence with our community teams, local TV stations and brand ambassadors, demonstrating our active commitment to the regions in which we operate.

AMERICAN BROADBAND SERVICES SEGMENT



Set the foundation for increased customer satisfaction and long term customer relationships.

Implemented improvements to our monitoring of Net Promoter Score (NPS).
 Implemented innovation and improvements across product offerings (1 Gbps, 4G LTE back-up service and 10 Gig capability for businesses).
 Increased our focus on First Call Resolution / First Time Right.
 Emphasized our self-install program.
 Reimagined our customer communications by improving interactions with customers through proactive notifications, IVR and sms.
 Launched a virtual connect tool across our call centres to reduce the number of trouble calls from customers.
 Implemented a new Interactive Voice Response (IVR) system.

Address the increasing customer need for services that simply work, independent from location, device or network.

Measure NPS and transaction Pulse surveys on an ongoing basis to drive higher NPS.
 Reduce churn through overall improved product value and customer experience.
 Map customer journeys and processes.
 Continue to focus on First Call Resolution and First Time Right.
 Pursue digital transformation initiatives.
 Continue to refine self-install programs.



Employee Experience

Seamlessly transitioned to Work From Home (WFH) while pursuing continuous improvement actions across all functional areas.

Implemented organizational changes to focus on centralized functions and centres of expertise.

Improved workflow using Workforce Management tools and migrating to a common platform across all regions.

Implemented a new enterprise resource planning system during the fourth quarter of the year.

Took targeted actions to improve engagement in functional disciplines.

Implemented new and improved intranet to enhance the level of internal communications.

Work to create a customer centric culture, strengthening our organization for the future with a team of fully engaged employees.

Align on an internal brand engagement and clear definition of brand purpose and vision.

Capitalize on the new ERP system that will streamline processes for improved efficiency across all functional areas.

Focus on data and analytics capabilities.



Market Expansion

Achieved a successful growth year with targeted build-outs.

Acquired former Thames Valley Communications in March 2020, adding ~10,000 customers.

Continued expansion in Florida markets.

Executed targeted edge-outs in all regions.

Grow the areas of operation, while building and maintaining state-of-the-art networks.

Drive mergers and acquisitions strategy.

Aggressively defend competitive markets.

Continue to focus on edge-outs into underserved areas.

Continue expansion in Florida.

Evaluate opportunities to participate in government programs to provide broadband access in underserved and unserved areas.



Cost Efficiency

Achieved significant operating cost savings.

Drove savings with digitization efforts moving more transactions and service functionality on-line.

Accelerated digital interactions with customers.

Deploy a number of operational excellence and cost efficiency initiatives.

Maintain and continue to evolve the level of digital interactions with customers (self-care, virtual connect tool, reduced calls and truck-rolls).

Control operating expense growth through continued process improvements.



Brand Value

Enhanced overall product performance and reliability following network investments for Gigabit Internet and preparation for future launch of an IPTV service.

Kept America Connected pledge; Internet Assist offer.

Supported work from home and virtual education needs in certain communities in our footprint by providing 1 Gigabit hot spots to large numbers of homes.

Launched TV Online app, HBO Max.

Added Showtime Anytime, YouTube Kids and Amazon Prime to the TiVo platform.

Committed to local communities and emphasized local presence as part of our Corporate Social responsibility program.

Attract customers and maximize the value of existing customers through relevant products, propositions and pricing as part of the new offer strategy. This will be achieved by focusing on the following components:

Brand reputation tracking,

Pricing plan,

Managed Wi-Fi solution,

Home school assist program.

2.5 KEY PERFORMANCE INDICATORS AND PERFORMANCE HIGHLIGHTS

The following key performance indicators are closely monitored to ensure that business strategies and objectives are closely aligned with shareholder value creation. The key performance indicators are not measurements in accordance with IFRS and should not be considered an alternative to other measures of performance in accordance with IFRS. The Corporation's method of calculating key performance indicators may differ from other companies and, accordingly, these key performance indicators may not be comparable to similar measures presented by other companies. The Corporation measures its performance, with regard to these objectives by monitoring revenue, adjusted EBITDA⁽¹⁾, free cash flow⁽¹⁾ and capital intensity⁽¹⁾ on a constant currency basis⁽¹⁾.

	Actual	Original projections (2)	Revised projections (4)	Actual	Achievement of the revised projections
	Fiscal 2019 (1)	Fiscal 2020 (constant currency) (3)	Fiscal 2020 (constant currency) (3)	Fiscal 2020 (constant currency) (3)	Fiscal 2020
(in millions of Canadian dollars, except percentages)	\$	\$		\$ %	
Financial guidelines					
Revenue	2,332	increase of 2% to 4%	low-single digit percentage growth	2,368	1.5 Achieved
Adjusted EBITDA ⁽¹⁾⁽⁵⁾	1,108	increase of 2.5% to 4.5%	low-single digit percentage growth	1,142	3.0 Achieved
Acquisition of property, plant and equipment	435	\$460 to \$480	N/A	479	10.2 N/A
Capital intensity ⁽⁵⁾	18.6 %	19% to 20%	N/A	20.2 %	— N/A
Free cash flow ⁽⁵⁾	454	increase of 5% to 11%	mid-single digit percentage growth	455	0.2 Under-achieved

N/A: non applicable

(1) IFRS 16 was adopted by the Corporation on September 1, 2019. Under the transition method chosen, fiscal 2019 was not restated.

(2) The Corporation withdrew its fiscal 2020 financial guidelines during the second quarter as it was not possible to reliably estimate the impact of the COVID-19 pandemic on the financial results of the Corporation for the remainder of the fiscal year.

(3) Actual results are presented in constant currency based on fiscal 2019 average foreign exchange rates of 1.3255 USD/CDN.

(4) Fiscal 2020 financial guidelines were reinstated and revised at the time of issuing third quarter results based on the experience gained while operating during the pandemic.

(5) The indicated terms do not have standardized definitions prescribed by IFRS and, therefore, may not be comparable to similar measures presented by other companies. For more details, please consult the "Non-IFRS financial measures" section of the MD&A.

For further details on the Corporation's operating results, please refer to the "Operating and financial results", the "Segmented operating and financial results" and the "Cash flow analysis" sections.

REVENUE

Fiscal 2020 revenue in constant currency increased by 1.5%, achieving the Corporation's revised projections as a result of both the Canadian and American broadband services segments being in line with expectations.

ADJUSTED EBITDA⁽¹⁾

Fiscal 2020 adjusted EBITDA in constant currency increased by 3.0%, achieving the Corporation's revised projections mainly due to growth in revenue exceeding growth in operating expenses.

FREE CASH FLOW⁽¹⁾

Fiscal 2020 free cash flow in constant currency increased by 0.2%, under-achieving the Corporation's revised projections mainly as a result of higher than expected capital expenditures in the American broadband services segment mainly due to:

- higher purchases of customer premise equipments and other related costs in order to support the increased number of connections driven by demand for our high speed Internet product, which led to the segment's strong overall primary service units⁽²⁾ performance in the fourth quarter and during fiscal 2020;
- a higher than expected level of construction activity in Florida despite the limitations imposed by the COVID-19 pandemic; and
- accelerated purchases of certain equipment to prevent potential supply chain shortages in the context of the COVID-19 pandemic.

(1) The indicated terms do not have standardized definitions prescribed by IFRS and, therefore, may not be comparable to similar measures presented by other companies. For more details, please consult the "Non-IFRS financial measures" section of the MD&A.

(2) Represents the sum of Internet, video and telephony customers.

2.6 THREE-YEAR ANNUAL FINANCIAL HIGHLIGHTS

Years ended August 31,	2020	2019 (1)	2018 (1)
<i>(in thousands of Canadian dollars, except percentages and per share data)</i>	\$	\$	\$
Operations			
Revenue	2,384,283	2,331,820	2,147,404
Adjusted EBITDA	1,148,729	1,107,940	1,006,818
Adjusted EBITDA margin	48.2 %	47.5 %	46.9 %
Integration, restructuring and acquisition costs	9,486	11,150	20,328
Profit for the year from continuing operations	396,591	356,908	384,578
Profit (loss) for the year from discontinued operations	—	75,380	(24,381)
Profit for the year	396,591	432,288	360,197
Profit for the year from continuing operations attributable to owners of the Corporation	375,174	339,973	375,214
Profit for the year attributable to owners of the Corporation	375,174	415,353	350,833
Cash flow			
Cash flows from operating activities	917,819	868,711	620,748
Acquisition of property, plant and equipment	483,990	434,545	457,808
Free cash flow	455,436	454,059	301,850
Capital intensity			
	20.3 %	18.6 %	21.3 %
Financial condition			
Cash and cash equivalents	366,497	556,504	84,725
Total assets	6,804,197	6,951,079	7,180,043
Indebtedness ⁽²⁾	3,179,926	3,454,923	3,914,711
Long-term financial liabilities ⁽³⁾	3,154,408	3,428,302	3,781,020
Equity attributable to owners of the Corporation	2,268,246	2,199,789	1,997,169
Per share data⁽⁴⁾			
Earnings (loss) per share			
Basic			
From continuing operations	7.74	6.89	7.61
From discontinued operations	—	1.53	(0.49)
From continuing and discontinued operations	7.74	8.41	7.12
Diluted			
From continuing operations	7.67	6.83	7.55
From discontinued operations	—	1.51	(0.49)
From continuing and discontinued operations	7.67	8.35	7.06
Dividends	2.32	2.10	1.90

(1) IFRS 16 was adopted by the Corporation on September 1, 2019. Under the transition method chosen, fiscal 2019 and 2018 were not restated. For further details, please consult the "Accounting policies" section of the MD&A.

(2) Indebtedness is defined as the total of bank indebtedness and principal on long-term debt.

(3) Long-term financial liabilities include long-term debt and derivative financial instruments.

(4) Per multiple and subordinate voting shares.

3. OPERATING AND FINANCIAL RESULTS

3.1 OPERATING RESULTS

Years ended August 31, (in thousands of Canadian dollars, except percentages)	2020 ⁽¹⁾	2019 ⁽²⁾	Change	Change in constant currency ⁽³⁾	Foreign exchange impact ⁽³⁾
	\$	\$	%	%	\$
Revenue	2,384,283	2,331,820	2.2	1.5	16,477
Operating expenses	1,211,422	1,203,980	0.6	(0.2)	9,301
Management fees – Cogeco Inc.	24,132	19,900	21.3	21.3	—
Adjusted EBITDA	1,148,729	1,107,940	3.7	3.0	7,176
Adjusted EBITDA margin	48.2 %	47.5%			

(1) For fiscal 2020, the average foreign exchange rate used for translation was 1.3456 USD/CDN.

(2) IFRS 16 was adopted by the Corporation on September 1, 2019. Under the transition method chosen, fiscal 2019 was not restated.

(3) Fiscal 2020 actuals are translated at the average foreign exchange rate of fiscal 2019, which was 1.3255 USD/CDN.

REVENUE

Years ended August 31, (in thousands of Canadian dollars, except percentages)	2020 ⁽¹⁾	2019	Change	Change in constant currency ⁽²⁾	Foreign exchange impact ⁽²⁾
	\$	\$	%	%	\$
Canadian broadband services	1,287,772	1,294,967	(0.6)	(0.6)	—
American broadband services	1,096,511	1,036,853	5.8	4.2	16,477
	2,384,283	2,331,820	2.2	1.5	16,477

(1) For fiscal 2020, the average foreign exchange rate used for translation was 1.3456 USD/CDN.

(2) Fiscal 2020 actuals are translated at the average foreign exchange rate of fiscal 2019, which was 1.3255 USD/CDN.

Fiscal 2020 revenue increased by 2.2% (1.5% in constant currency) resulting from organic growth combined with the impact of the Thames Valley Communications acquisition completed on March 10, 2020 in the American broadband services segment, partly offset by a decrease in the Canadian broadband services segment.

For further details on the Corporation's revenue, please refer to the "Segmented operating and financial results" section.

OPERATING EXPENSES

Years ended August 31, (in thousands of Canadian dollars, except percentages)	2020 ⁽¹⁾	2019 ⁽²⁾	Change	Change in constant currency ⁽³⁾	Foreign exchange impact ⁽³⁾
	\$	\$	%	%	\$
Canadian broadband services	587,752	606,286	(3.1)	(3.1)	331
American broadband services	600,425	571,208	5.1	3.5	8,969
Other	23,245	26,486	(12.2)	(12.2)	1
	1,211,422	1,203,980	0.6	(0.2)	9,301

(1) For fiscal 2020, the average foreign exchange rate used for translation was 1.3456 USD/CDN.

(2) IFRS 16 was adopted by the Corporation on September 1, 2019. Under the transition method chosen, fiscal 2019 was not restated.

(3) Fiscal 2020 actuals are translated at the average foreign exchange rate of fiscal 2019, which was 1.3255 USD/CDN.

Fiscal 2020 operating expenses increased by 0.6% (decrease of 0.2% in constant currency) resulting from lower operating expenses in the Canadian broadband services segment combined with lower corporate costs, partly offset by higher operating expenses in the American broadband services segment resulting partly from the Thames Valley Communications acquisition.

For further details on the Corporation's operating expenses, please refer to the "Segmented operating and financial results" section.

MANAGEMENT FEES

Fiscal 2020 management fees paid to Cogeco Inc. ("Cogeco") reached \$24.1 million compared to \$19.9 million for fiscal 2019. For further details on the Corporation's management fees, please refer to the "Related party transactions" section.

ADJUSTED EBITDA

Years ended August 31,	2020 (1)	2019 (2)	Change	Change in constant currency (3)	Foreign exchange impact (3)
<i>(in thousands of Canadian dollars, except percentages)</i>	\$	\$	%	%	\$
Canadian broadband services	700,020	688,681	1.6	1.7	(331)
American broadband services	496,086	465,645	6.5	4.9	7,508
Other	(47,377)	(46,386)	2.1	2.1	(1)
	1,148,729	1,107,940	3.7	3.0	7,176

(1) For fiscal 2020, the average foreign exchange rate used for translation was 1.3456 USD/CDN.

(2) IFRS 16 was adopted by the Corporation on September 1, 2019. Under the transition method chosen, fiscal 2019 was not restated.

(3) Fiscal 2020 actuals are translated at the average foreign exchange rate of fiscal 2019, which was 1.3255 USD/CDN.

Fiscal 2020 adjusted EBITDA increased by 3.7% (3.0% in constant currency) as a result of:

- an increase in the American broadband services segment mainly as a result of organic growth and the impact of the Thames Valley Communications acquisition; and
- an increase in the Canadian broadband services segment due to a decline in operating expenses.

For further details on the Corporation's adjusted EBITDA, please refer to the "Segmented operating and financial results" section.

3.2 INTEGRATION, RESTRUCTURING AND ACQUISITION COSTS

Fiscal 2020 integration, restructuring and acquisition costs amounted to \$9.5 million resulting from organizational changes initiated across the Corporation resulting in cost optimization, as well as costs related to the acquisition and integration of Thames Valley Communications and iTérect.

Fiscal 2019 integration, restructuring and acquisition costs amounted to \$11.2 million mostly related to an operational optimization program that included a voluntary departure program as well as acquisition and integration costs.

3.3 DEPRECIATION AND AMORTIZATION

Years ended August 31,	2020	2019 (1)	Change
<i>(in thousands of Canadian dollars, except percentages)</i>	\$	\$	%
Depreciation of property, plant and equipment ⁽²⁾	440,221	423,432	4.0
Amortization of intangible assets	59,017	57,293	3.0
	499,238	480,725	3.9

(1) IFRS 16 was adopted by the Corporation on September 1, 2019. Under the transition method chosen, fiscal 2019 was not restated.

(2) Includes the depreciation of right-of-use assets amounting to \$6.7 million for the year ended August 31, 2020.

Fiscal 2020 depreciation and amortization expense increased by 3.9% due to additional depreciation of property, plant and equipment as a result of higher capital expenditures during the fiscal year combined with the appreciation of the US dollar against the Canadian dollar compared to the prior year and the impact of IFRS 16 adoption.

3.4 FINANCIAL EXPENSE

Years ended August 31, (in thousands of Canadian dollars, except percentages)	2020 \$	2019 (1) \$	Change %
Interest on long-term debt, excluding interest on lease liabilities	156,911	176,798	(11.2)
Interest on lease liabilities	1,520	—	—
Gain on debt modification	(22,898)	—	—
Net foreign exchange loss (gain)	198	(2,744)	—
Amortization of deferred transaction costs	1,106	1,836	(39.8)
Capitalized borrowing costs	(584)	(690)	(15.4)
Other	(5,160)	302	—
	131,093	175,502	(25.3)

(1) IFRS 16 was adopted by the Corporation on September 1, 2019. Under the transition method chosen, fiscal 2019 was not restated.

Fiscal 2020 financial expense decreased by 25.3% mainly due to:

- lower interest rates and lower outstanding debt on the First Lien Credit Facilities;
- a non-cash gain on debt modification related to the amendment made to the Senior Secured Term Loan B Facility on February 3, 2020 resulting from the reduction of the interest rate by 0.25%; and
- interest revenue resulting from investments of excess cash; partly offset by
- the appreciation of the US dollar against the Canadian dollar compared to the prior year.

3.5 INCOME TAXES

Years ended August 31, (in thousands of Canadian dollars, except percentages)	2020 \$	2019 (1) \$	Change %
Current	57,632	53,361	8.0
Deferred	54,689	30,294	80.5
	112,321	83,655	34.3

(1) IFRS 16 was adopted by the Corporation on September 1, 2019. Under the transition method chosen, fiscal 2019 was not restated.

Years ended August 31, (in thousands of Canadian dollars, except percentages)	2020 \$	2019 (1) \$	Change %
Profit before income taxes	508,912	440,563	15.5
Combined Canadian income tax rate	26.50 %	26.50 %	—
Income taxes at combined Canadian income tax rate	134,862	116,749	15.5
Difference in operations' statutory income tax rates	2,167	1,466	47.8
Impact on income taxes arising from non-deductible expenses and non-taxable profit	(443)	(565)	(21.6)
Tax impacts related to foreign operations	(24,135)	(28,633)	(15.7)
Other	(130)	(5,362)	(97.6)
	112,321	83,655	34.3

(1) IFRS 16 was adopted by the Corporation on September 1, 2019. Under the transition method chosen, fiscal 2019 was not restated.

Fiscal 2020 income taxes expense increased by 34.3% mainly due to:

- the increase in profit before income taxes; and
- the effect of a non-recurring reduction in income tax in 2019 related to the disposal of Cogeco Peer 1.

3.6 PROFIT FOR THE YEAR

Years ended August 31, <i>(in thousands of Canadian dollars, except percentages and earnings per share)</i>	2020 \$	2019 (1) \$	Change %
Profit for the year from continuing operations	396,591	356,908	11.1
Profit for the year	396,591	432,288	(8.3)
Profit for the year from continuing operations attributable to owners of the Corporation	375,174	339,973	10.4
Profit for the year attributable to owners of the Corporation	375,174	415,353	(9.7)
Profit for the year from continuing operations attributable to non-controlling interest ⁽²⁾	21,417	16,935	26.5
Basic earnings per share from continuing operations	7.74	6.89	12.3
Basic earnings per share	7.74	8.41	(8.0)

(1) IFRS 16 was adopted by the Corporation on September 1, 2019. Under the transition method chosen, fiscal 2019 was not restated.

(2) The non-controlling interest relates to the 21% ownership of Caisse de dépôt et placement du Québec ("CDPQ") in Atlantic Broadband.

Fiscal 2020 profit for the year from continuing operations and profit for the year from continuing operations attributable to owners of the Corporation increased by 11.1% and 10.4%, respectively, as a result of:

- higher adjusted EBITDA; and
- the decrease in financial expense mainly due to the \$22.9 million non-cash gain on debt modification resulting from the reduction of the interest rate by 0.25% in the second quarter of fiscal 2020; partly offset by
- the increase in income taxes; and
- the increase in depreciation and amortization.

Fiscal 2020 profit for the year and profit for the year attributable to owners of the Corporation decreased by 8.3% and 9.7%, respectively, mainly due to discontinued operations which generated a profit of \$75.4 million resulting from the sale of Cogeco Peer 1 for the prior year in addition to the elements mentioned above.

4. RELATED PARTY TRANSACTIONS

The Corporation is a subsidiary of Cogeco, which as of August 31, 2020 held 32.7% of the Corporation's equity shares, representing 83% of the votes attached to the Corporation's voting shares.

Cogeco provides executive, administrative, financial, strategic planning and additional services to the Corporation under a Management Services Agreement (the "Agreement"). The methodology used to establish the management fees, which was modified on May 1, 2019, is based on the costs incurred by Cogeco plus a reasonable mark-up. Provision is made for future adjustment upon the request of either Cogeco or the Corporation from time to time during the term of the Agreement. For the year ended August 31, 2020, management fees paid to Cogeco amounted to \$24.1 million compared to \$19.9 million for fiscal 2019.

No direct remuneration is payable to Cogeco's executive officers by the Corporation. However, during fiscal years 2020 and 2019, the Corporation granted stock options and performance share units ("PSUs") to these executive officers, as executive officers of Cogeco Communications and issued deferred share units ("DSUs") to Board directors of Cogeco, as shown in the following table:

Years ended August 31, <i>(in number of units)</i>	2020	2019
Stock options	110,875	97,725
PSUs	14,375	14,625
DSUs	1,847	2,469

The following table shows the amounts that the Corporation charged Cogeco with regards to the Corporation's stock options, incentive share units ("ISUs") and PSUs granted to these executive officers, as well as DSUs issued to Board directors of Cogeco:

Years ended August 31, <i>(in thousands of Canadian dollars)</i>	2020 \$	2019 \$
Stock options	1,205	1,046
ISUs	39	61
PSUs	1,386	981
DSUs	217	631
	2,847	2,719

As at August 31, 2020, the Corporation had \$1.8 million receivable from Cogeco (nil in 2019).

5. CASH FLOW ANALYSIS

Years ended August 31, <i>(in thousands of Canadian dollars, except percentages)</i>	2020 \$	2019 (1) \$	Change %
Cash flows from operating activities	917,819	868,711	5.7
Cash flows from investing activities	(557,275)	(471,078)	18.3
Cash flows from financing activities	(547,095)	(659,222)	(17.0)
Effect of exchange rate changes on cash and cash equivalents denominated in a foreign currency	(3,456)	(439)	—
Net change in cash and cash equivalents from continuing operations	(190,007)	(262,028)	(27.5)
Net change in cash and cash equivalents from discontinued operations	—	733,807	(100.0)
Cash and cash equivalents, beginning of the year	556,504	84,725	—
Cash and cash equivalents, end of the year	366,497	556,504	(34.1)

(1) IFRS 16 was adopted by the Corporation on September 1, 2019. Under the transition method chosen, fiscal 2019 was not restated.

5.1 OPERATING ACTIVITIES

Fiscal 2020 cash flows from operating activities increased by 5.7% mainly from:

- higher adjusted EBITDA; and
- the decreases in financial expense paid and in income taxes paid; partly offset by
- the increase in changes in non-cash operating activities primarily due to changes in working capital.

5.2 INVESTING ACTIVITIES

Fiscal 2020 cash flows from investing activities increased by 18.3% mainly due to:

- the acquisitions of Thames Valley Communications and iTétract during the third quarter of fiscal 2020;
- the increase in acquisition of property, plant and equipment in both the Canadian and American broadband services segments; partly offset by
- the acquisition, on October 3, 2018, of a fibre network and corresponding assets in south Florida previously owned by FiberLight, LLC (the "FiberLight acquisition").

BUSINESS COMBINATIONS IN FISCAL 2020

Acquisition of Thames Valley Communications

On March 10, 2020, the Corporation's subsidiary, Atlantic Broadband, completed the acquisition of Thames Valley Communications, a broadband services company operating in Southeastern Connecticut, for a net consideration of \$67 million (US\$50 million).

Acquisition of iTéract

On May 1, 2020, the Corporation's subsidiary, Cogeco Connexion, completed the acquisition of iTéract Inc., a telecommunications service provider operating in southern Québec using a combination of fixed-wireless and fibre-to-the-home technologies, and owner of 15 spectrum licenses, for \$16 million.

ACQUISITION OF PROPERTY, PLANT AND EQUIPMENT

The acquisition of property, plant and equipment as well as the capital intensity per operating segment are as follows:

Years ended August 31,	2020	2019	Change	Change in constant currency
(in thousands of Canadian dollars, except percentages)	\$	\$	%	(1) (2)
Canadian broadband services	248,582	241,940	2.7	2.2
Capital intensity	19.3 %	18.7 %		
American broadband services	231,422	192,605	20.2	18.2
Capital intensity	21.1 %	18.6 %		
Other	3,986	—	—	—
Consolidated	483,990	434,545	11.4	10.2
Capital intensity	20.3 %	18.6 %		

(1) IFRS 16 was adopted by the Corporation on September 1, 2019. Under the transition method chosen, fiscal 2019 was not restated.

(2) Fiscal 2020 actuals are translated at the average foreign exchange rate of fiscal 2019, which was 1.3255 USD/CDN.

Fiscal 2020 acquisition of property, plant and equipment increased by 11.4% (10.2% in constant currency) mainly due to higher capital expenditures in both the Canadian and American broadband services segments resulting from the timing of certain initiatives.

Fiscal 2020 capital intensity reached 20.3% compared to 18.6% for the prior year mainly as a result of growth in capital expenditures exceeding revenue growth.

For further details on the Corporation's acquisition of property, plant and equipment, please refer to the "Segmented operating and financial results" section.

5.3 FINANCING ACTIVITIES

ISSUANCE AND REPAYMENT OF DEBT

Fiscal 2020 changes in cash flows from the issuance and repayment of debt are mainly explained as follows:

Years ended August 31, <i>(in thousands of Canadian dollars)</i>	2020 \$	2019 \$	Explanations
Increase (decrease) in bank indebtedness	7,610	(5,949)	Related to the timing of payments made to suppliers.
Net decrease under the revolving facilities	—	(443,955)	Repayment of the revolving facilities in fiscal 2019 as a result of the sale of Cogeco Peer 1 combined with free cash flow generated.
Repayment of notes, debentures and credit facilities	(269,169)	(77,639)	Redemption of the Senior Secured Debentures Series 2 during the fourth quarter of fiscal 2020 combined with the repayment of US\$35 million during the second quarter of fiscal 2020 both as a result of free cash flow generated and the quarterly repayments on the Senior Secured Term Loan B Facility.
Repayment of lease liabilities	(4,905)	—	Related to the adoption of IFRS 16.
Repayment of balance due on business combinations	(3,228)	(655)	Partial repayment of the balance related to the FiberLight acquisition in the first quarter of fiscal 2020.
	(269,692)	(528,198)	

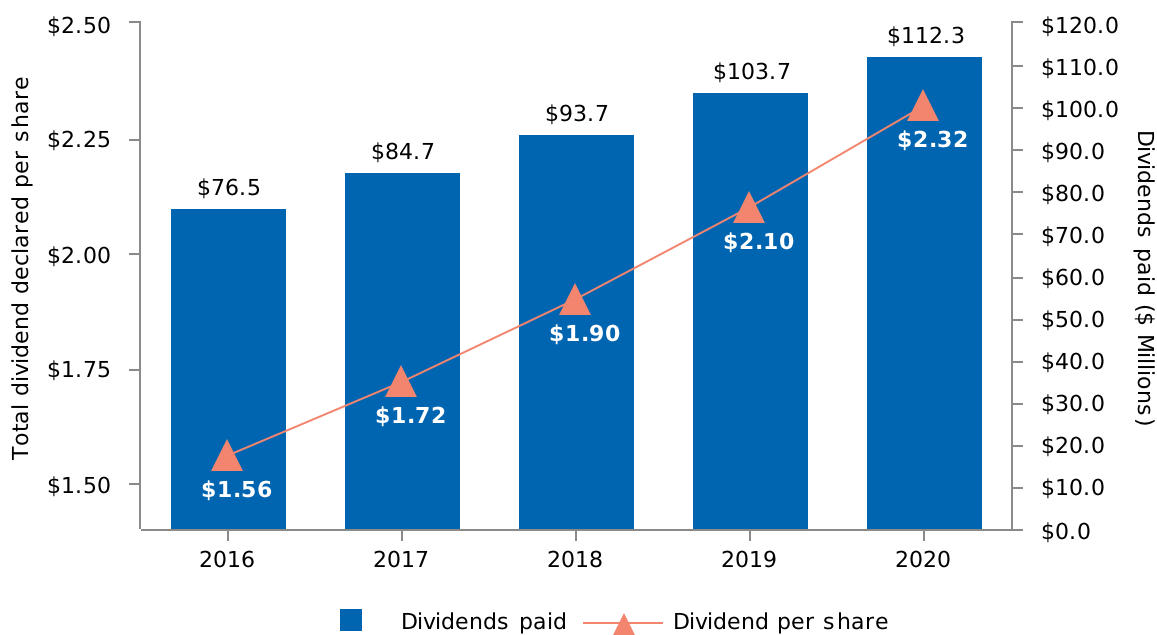
DIVIDENDS

During fiscal 2020, quarterly eligible dividends of \$0.58 per share, totalling \$2.32 per share, were paid to the holders of multiple and subordinate voting shares, for a total paid of \$112.3 million. In fiscal 2019, quarterly eligible dividends of \$0.525 per share, totalling \$2.10 per share, were paid to the holders of multiple and subordinate voting shares, for a total paid of \$103.7 million. During the last five years, dividends paid per share increased by 10.4% on a compounded annual basis.

The dividends declaration dates and payments for multiple and subordinate voting shares are as follows:

Declaration date	Record date	Payment date	Dividend per share (in dollars)
October 30, 2019	November 13, 2019	November 27, 2019	0.58
January 14, 2020	January 28, 2020	February 11, 2020	0.58
April 7, 2020	April 21, 2020	May 5, 2020	0.58
July 15, 2020	July 29, 2020	August 12, 2020	0.58
October 31, 2018	November 14, 2018	November 28, 2018	0.525
January 10, 2019	January 24, 2019	February 7, 2019	0.525
April 9, 2019	April 23, 2019	May 7, 2019	0.525
July 10, 2019	July 24, 2019	August 7, 2019	0.525

Total dividends and dividends per share over the last five years are as follow:



NORMAL COURSE ISSUER BID ("NCIB")

During fiscal 2020, Cogeco Communications purchased and cancelled 1,592,000 subordinate voting shares with a weighted average price per share repurchased of \$103.98 for a total consideration of \$165.5 million. During fiscal 2019, Cogeco Communications purchased and cancelled 327,200 subordinate voting shares with a weighted average price of \$98.97 for consideration of \$32.4 million.

On April 30, 2020, the Corporation announced that the TSX accepted the renewal of its notice of intention for a NCIB, enabling it to acquire for cancellation up to 1,809,000 subordinate voting shares from May 4, 2020 to May 3, 2021.

The Corporation has also entered into an automatic share purchase plan (the "ASPP") with a designated broker to allow for the purchase of subordinate voting shares under the NCIB at times when the Corporation would ordinarily not be permitted to purchase shares due to regulatory restrictions or self-imposed blackout periods. Such purchases are executed by the broker on parameters established by the Corporation prior to the pre-established ASPP period under the ASPP.

The normal course issuer bid purchases were as follows:

Quarters ended	Nov. 30	Feb. 29	May 31	Aug. 31	2020 Total
	<i>(in thousands of Canadian dollars, except number of shares and weighted average purchase price per share)</i>				
	\$	\$	\$	\$	\$
Subordinate voting shares purchased and cancelled	143,100	652,400	601,900	194,600	1,592,000
Weighted average purchase price per share	109.64	108.50	98.73	100.89	103.98
Purchase costs	15,690	70,787	59,425	19,633	165,535

Quarters ended	Nov. 30	Feb. 28	May 31	Aug. 31	2019 Total
	<i>(in thousands of Canadian dollars, except number of shares and weighted average purchase price per share)</i>				
	\$	\$	\$	\$	\$
Subordinate voting shares purchased and cancelled	—	—	157,400	169,800	327,200
Weighted average purchase price per share	—	—	91.87	105.55	98.97
Purchase costs	—	—	14,460	17,922	32,382

5.4 FREE CASH FLOW

Years ended August 31, <i>(in thousands of Canadian dollars, except percentages)</i>	2020 (1)	2019 (2)	Change	Change in constant currency (3)	Foreign exchange impact (3)
	\$	\$	%	%	\$
Adjusted EBITDA ⁽⁴⁾	1,148,729	1,107,940	3.7	3.0	7,176
Amortization of deferred transaction costs and discounts on long-term debt	9,503	9,454	0.5	1.7	116
Share-based payment	8,070	7,226	11.7	11.7	—
(Gain) loss on disposals and write-offs of property, plant and equipment	(515)	2,770	—	—	—
Defined benefit plans contributions, net of expense	(347)	1,227	—	—	—
Integration, restructuring and acquisition costs	(9,486)	(11,150)	(14.9)	(14.8)	(18)
Financial expense ⁽⁵⁾	(153,991)	(175,502)	(12.3)	(11.3)	(1,760)
Current income taxes	(57,632)	(53,361)	8.0	8.0	(5)
Acquisition of property, plant and equipment	(483,990)	(434,545)	11.4	10.2	(5,088)
Repayment of lease liabilities	(4,905)	—	—	—	(52)
Free cash flow ⁽⁴⁾	455,436	454,059	0.3	0.2	369

(1) For fiscal 2020, the average foreign exchange rate used for translation was 1.3456 USD/CDN.

(2) IFRS 16 was adopted by the Corporation on September 1, 2019. Under the transition method chosen, fiscal 2019 was not restated.

(3) Fiscal 2020 actuals are translated at the average foreign exchange rate of fiscal 2019, which was 1.3255 USD/CDN.

(4) The indicated terms do not have standardized definitions prescribed by IFRS and, therefore, may not be comparable to similar measures presented by other companies. For more details, please consult the "Non-IFRS financial measures" section, including reconciliation to the most comparable IFRS financial measures.

(5) Excludes the \$22.9 million non-cash gain on debt modification recognized in the second quarter of fiscal 2020.

Fiscal 2020 free cash flow increased by 0.3% (0.2% in constant currency) mainly due to the following:

- higher adjusted EBITDA; and
- the decrease in financial expense resulting from lower outstanding debt, excluding the \$22.9 million non-cash gain on debt modification resulting from the reduction of the interest rate by 0.25% in the second quarter of fiscal 2020; partly offset by
- the increase in acquisition of property, plant and equipment in both the Canadian and American broadband services segments due to the timing of certain initiatives.

6. SEGMENTED OPERATING AND FINANCIAL RESULTS

The Corporation reports its operating results in two operating segments: Canadian broadband services and American broadband services. The reporting structure reflects how the Corporation manages its business activities, makes decisions about resources to be allocated to the segments and assesses their performance.

6.1 CANADIAN BROADBAND SERVICES

OPERATING AND FINANCIAL RESULTS

Years ended August 31,	2020 ⁽¹⁾	2019 ⁽²⁾	Change	Change in constant currency ⁽³⁾	Foreign exchange impact ⁽³⁾
<i>(in thousands of Canadian dollars, except percentages)</i>	\$	\$	%	%	\$
Revenue	1,287,772	1,294,967	(0.6)	(0.6)	—
Operating expenses	587,752	606,286	(3.1)	(3.1)	331
Adjusted EBITDA	700,020	688,681	1.6	1.7	(331)
Adjusted EBITDA margin	54.4 %	53.2 %			
Acquisition of property, plant and equipment	248,582	241,940	2.7	2.2	1,309
Capital intensity	19.3 %	18.7 %			

(1) For fiscal 2020, the average foreign exchange rate used for translation was 1.3456 USD/CDN.

(2) IFRS 16 was adopted by the Corporation on September 1, 2019. Under the transition method chosen, fiscal 2019 was not restated.

(3) Fiscal 2020 actuals are translated at the average foreign exchange rate of fiscal 2019, which was 1.3255 USD/CDN.

REVENUE

Fiscal 2020 revenue decreased by 0.6% as reported and in constant currency mainly as a result of:

- a decline in video service customers; and
- lower net pricing from consumer sales primarily as a result of product bundles being promoted more actively from the fourth quarter of fiscal 2019 to the second quarter of fiscal 2020; partly offset by
- rate increases implemented during the first and the fourth quarters of fiscal 2020 for certain services;
- customers' transition to higher value offerings;
- continued growth in Internet service customers; and
- growth in commercial revenue.

OPERATING EXPENSES

Fiscal 2020 operating expenses decreased by 3.1% as reported and in constant currency due to:

- lower programming costs resulting from lower video service customers;
- lower installation costs due to the effects of the COVID-19 pandemic, with more self installations and remote repairs;
- additional costs of \$4.5 million incurred in the first quarter of fiscal 2019 to support the stabilization phase of the new customer management system implemented in the third quarter of fiscal 2018;
- retroactive costs of \$3.2 million incurred in the first quarter of fiscal 2019 related to higher than expected rates established by the Copyright Board of Canada for the retransmission of distant Canadian and American television signals in Canada for the period from 2014 to 2018; and
- the impact of IFRS 16 adoption; partly offset by
- higher marketing initiatives; and
- additional expenses related to certain initiatives.

ADJUSTED EBITDA

Fiscal 2020 adjusted EBITDA increased by 1.6% (1.7% in constant currency) due to a decline in operating expenses.

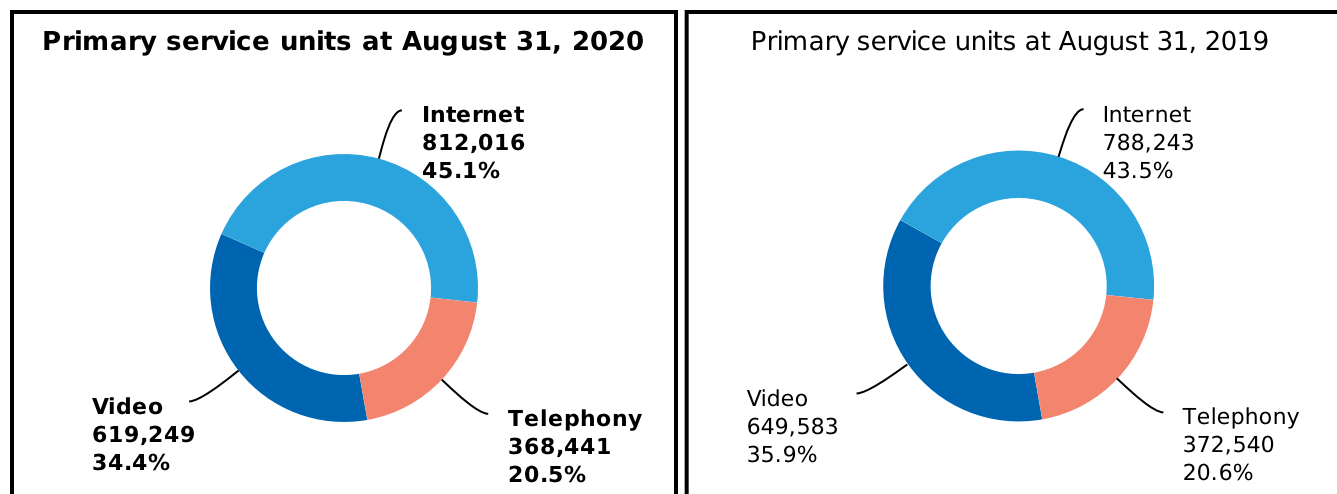
CAPITAL INTENSITY AND ACQUISITION OF PROPERTY, PLANT AND EQUIPMENT

Fiscal 2020 acquisition of property, plant and equipment increased by 2.7% (2.2% in constant currency) resulting from:

- higher costs related to the maintenance, growth and expansion of our network infrastructure; and
- higher purchases of customer premise equipment due to the timing of certain initiatives.

Fiscal 2020 capital intensity reached 19.3% compared to 18.7% for fiscal 2019 mainly as a result of higher capital expenditures combined with lower revenue.

PRIMARY SERVICE UNIT AND CUSTOMER STATISTICS



	August 31, 2020	Net additions (losses)		% of penetration ⁽³⁾	
		Years ended		August 31, 2020	August 31, 2019
		August 31, 2020	August 31, 2019		
Primary service units	1,799,706	(12,887)	(56,552)		
Internet service customers	812,016	21,902	5,966	45.7	44.7
Video service customers	619,249	(30,515)	(39,185)	34.9	36.8
Telephony service customers	368,441	(4,274)	(23,333)	20.7	21.1

(1) Excludes 2,227 primary service units (1,871 Internet services, 181 video services and 175 telephony services) from the acquisition of iTéract Inc. completed in the third quarter of fiscal 2020.

(2) During the third quarter of fiscal 2018, the Canadian broadband services segment implemented a new customer management system, replacing 22 legacy systems. While the customer management system was still in the stabilization phase, contact center congestion resulted in lower services activations during most of the first quarter of 2019. Contact center and marketing operations had returned to normal at the end of the first quarter of 2019.

(3) As a percentage of homes passed.

INTERNET

Fiscal 2020 Internet service customers net additions amounted to 21,902 compared to 5,966 for the prior year. The growth in fiscal 2020 was due to:

- the ongoing interest in high speed offerings especially as more customers were working from home in the context of the COVID-19 pandemic;
- the sustained interest in bundle offers; and
- the continued demand from Internet resellers; partly offset by
- competitive offers in the industry.

VIDEO

Fiscal 2020 video service customers net losses amounted to 30,515 compared to 39,185 for the prior year. The loss in fiscal 2020 was due to:

- highly competitive offers in the industry; and
- a changing video consumption environment; partly offset by
- customers' ongoing interest in digital advanced video services; and
- customers' interest in video services bundled with fast Internet offerings.

TELEPHONY

Fiscal 2020 telephony service customers net losses amounted to 4,274 compared to 23,333 for the prior year. The loss in fiscal 2020 was due to:

- increasing mobile wireless penetration in Canada and various unlimited offers launched by mobile wireless operators causing some customers to cancel their landline telephony services for mobile wireless telephony services only; partly offset by
- more telephony bundles being marketed during the first half of fiscal 2020.

DISTRIBUTION OF CUSTOMERS

At August 31, 2020, 69% of the Canadian broadband services segment's customers subscribed to "double play" or "triple play" bundled services.

6.2 AMERICAN BROADBAND SERVICES

OPERATING AND FINANCIAL RESULTS

Years ended August 31, (in thousands of Canadian dollars, except percentages)	2020 ⁽¹⁾	2019 ⁽²⁾	Change	Change in constant currency ⁽³⁾	Foreign exchange impact ⁽³⁾
	\$	\$	%	%	\$
Revenue	1,096,511	1,036,853	5.8	4.2	16,477
Operating expenses	600,425	571,208	5.1	3.5	8,969
Adjusted EBITDA	496,086	465,645	6.5	4.9	7,508
Adjusted EBITDA margin	45.2 %	44.9 %			
Acquisition of property, plant and equipment	231,422	192,605	20.2	18.2	3,779
Capital intensity	21.1 %	18.6 %			

(1) For fiscal 2020, the average foreign exchange rate used for translation was 1.3456 USD/CDN.

(2) IFRS 16 was adopted by the Corporation on September 1, 2019. Under the transition method chosen, fiscal 2019 was not restated.

(3) Fiscal 2020 actuals are translated at the average foreign exchange rate of fiscal 2019, which was 1.3255 USD/CDN.

REVENUE

Fiscal 2020 revenue increased by 5.8% (4.2% in constant currency). In local currency, revenue amounted to US\$814.8 million compared to US\$782.3 million for fiscal 2019. The increase resulted mainly from:

- growth in both residential and business Internet service customers as more customers work from home in the context of the COVID-19 pandemic;
- rate increases mostly implemented during the fourth quarter of fiscal 2019; and
- the impact of the Thames Valley Communications acquisition completed on March 10, 2020; partly offset by
- the temporary waiving of late fees charged to customers as a relief measure in the context of the COVID-19 pandemic.

Excluding revenue from Thames Valley Communications, revenue in constant currency increased by 3.5% for fiscal 2020.

OPERATING EXPENSES

Fiscal 2020 operating expenses increased by 5.1% (3.5% in constant currency) mainly as a result of:

- higher compensation expenses and costs related to additional headcount to support growth;
- additional operating expenses resulting from the impact of the Thames Valley Communications acquisition; and
- additional costs related to the development and implementation of a new financial and human capital management system; partly offset by
- the impact of IFRS 16 adoption; and
- a non-recurring gain on a disposal of property, plant and equipment amounting to US\$1.7 million.

ADJUSTED EBITDA

Fiscal 2020 adjusted EBITDA increased by 6.5% (4.9% in constant currency). In local currency, adjusted EBITDA amounted to US\$368.6 million compared to US\$351.3 million for fiscal 2019, mainly due to organic growth and the impact of the Thames Valley Communications acquisition.

Excluding adjusted EBITDA from Thames Valley Communications and the non-recurring gain on a disposal of property, plant and equipment of US\$1.7 million, adjusted EBITDA in constant currency increased by 3.8% for fiscal 2020.

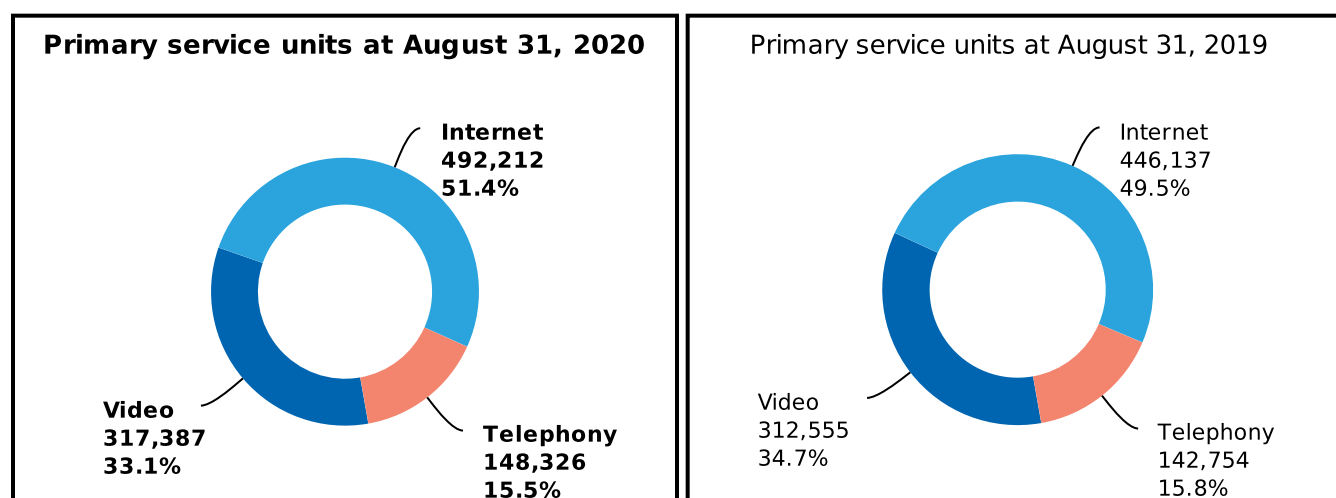
CAPITAL INTENSITY AND ACQUISITION OF PROPERTY, PLANT AND EQUIPMENT

Fiscal 2020 acquisition of property, plant and equipment increased by 20.2% (18.2% in constant currency) resulting mainly from:

- higher purchases of customer premise equipments and other related costs in order to support the increased number of connections driven by demand for high speed Internet product, as well as resulting from equipment upgrades and the timing of certain initiatives;
- additional investments to improve and expand the network infrastructure in Florida;
- accelerated purchases of certain equipment to prevent potential supply chain shortages; and
- costs related to the development and implementation of a new financial and human capital management system.

Fiscal 2020 capital intensity reached 21.1% compared to 18.6% for fiscal 2019 mainly as a result of capital expenditures growth exceeding revenue growth.

PRIMARY SERVICE UNIT AND CUSTOMER STATISTICS



	August 31, 2020 ⁽¹⁾	Net additions (losses)		% of penetration ⁽³⁾	
		Years ended		August 31, 2020	August 31, 2019
	August 31, 2020 ⁽¹⁾	August 31, 2020 ⁽²⁾	August 31, 2019	August 31, 2020	August 31, 2019
Primary service units	957,925	40,502	16,981		
Internet service customers	492,212	36,998	21,189	53.3	50.8
Video service customers	317,387	(279)	(4,697)	34.4	35.6
Telephony service customers	148,326	3,783	489	16.1	16.2

(1) Net of a provision related to non-paying customers who have not been disconnected.

(2) Excludes 15,977 primary service units (9,077 Internet services, 5,111 video services and 1,789 telephony services) from the acquisition of Thames Valley Communications completed in the third quarter of fiscal 2020.

(3) As a percentage of homes passed.

INTERNET

Fiscal 2020 Internet service customers net additions amounted to 36,998 compared to 21,189 for the prior year. The growth in fiscal 2020 was due to:

- the ongoing interest in high speed offerings especially as more customers were working from home in the context of the COVID-19 pandemic; and
- growth in the residential and business sectors.

VIDEO

Fiscal 2020 video service customers net losses amounted to 279 compared to 4,697 for the prior year. The loss in fiscal 2020 was due to:

- a changing video consumption environment; and
- competitive offers in the industry; partly offset by
- our customers' ongoing interest in TiVo's digital advanced video services.

TELEPHONY

Fiscal 2020 telephony service customers net additions amounted to 3,783 compared to 489 for the prior year. The growth in fiscal 2020 was due to:

- growth in the residential and business sectors; partly offset by
- increasing mobile wireless penetration in the United States and various unlimited offers launched by mobile wireless operators causing some customers to cancel their landline telephony services for mobile wireless telephony services only.

DISTRIBUTION OF CUSTOMERS

At August 31, 2020, 50% of the American broadband services segment's customers subscribed to "double play" or "triple play" bundled services.

7. FINANCIAL POSITION

7.1 WORKING CAPITAL

As part of the usual conduct of its business, Cogeco Communications generally maintains a working capital deficiency due to a low level of trade and other receivables since a large proportion of the Corporation's customers pay before their services are rendered, while trade and other payables are usually paid after products are delivered or services are rendered, enabling the Corporation to use the resulting cash and cash equivalents to reduce Indebtedness. However, the Corporation had working capital surpluses at August 31, 2019 and August 31, 2020 due to the increase in cash and cash equivalents resulting from the sale of Cogeco Peer 1 in the third quarter of fiscal 2019.

The variations are as follows:

	August 31, 2020	August 31, 2019 (1)	Change	Explanations
<i>(in thousands of Canadian dollars)</i>	\$	\$	\$	
Current assets				
Cash and cash equivalents	366,497	556,504	(190,007)	Please refer to the "Cash flow analysis" section.
Trade and other receivables	83,013	75,652	7,361	Mainly related to revenue growth, partly offset by the depreciation of the US dollar against the Canadian dollar.
Income taxes receivable	3,283	17,706	(14,423)	Lower tax installments made during fiscal 2020 in the Canadian broadband services segment, some of which were related to the deferral of income tax installments until September 2020 pursuant to governments allowing delays in the context of the COVID-19 pandemic.
Prepaid expenses and other	29,266	22,740	6,526	Mainly related to the increase in prepayments for annual maintenance agreements.
	482,059	672,602	(190,543)	
Current liabilities				
Bank indebtedness	7,610	—	7,610	Timing of payments made to suppliers.
Trade and other payables	211,052	260,481	(49,429)	Timing of payments made to suppliers combined with the depreciation of the US dollar against the Canadian dollar.
Provisions	33,864	36,553	(2,689)	Not significant.
Income tax liabilities	39,897	16,693	23,204	Deferral of income tax installments until September 2020 pursuant to governments allowing delays in the context of the COVID-19 pandemic.
Contract liabilities and other liabilities	47,162	43,395	3,767	Not significant.
Derivative financial instruments	3,834	—	3,834	Related to two derivative financial instruments maturing in January 2021.
Current portion of long-term debt	29,569	27,121	2,448	Mainly from the recognition of the current portion of lease liabilities following the adoption of IFRS 16.
	372,988	384,243	(11,255)	
Working capital surplus	109,071	288,359	(179,288)	

(1) IFRS 16 was adopted by the Corporation on September 1, 2019. Under the transition method chosen, fiscal 2019 was not restated.

7.2 OTHER SIGNIFICANT CHANGES

	August 31, 2020	August 31, 2019 (1)	Change	Explanations
<i>(in thousands of Canadian dollars)</i>	\$	\$	\$	
Non-current assets				
Property, plant and equipment	2,088,930	2,007,610	81,320	Related to the acquisition of Thames Valley Communications in the third quarter of fiscal 2020, the acquisition of property, plant and equipment during fiscal 2020 as well as the recognition of right-of-use assets following the adoption of IFRS 16, partly offset by the depreciation of the US dollar against the Canadian dollar, and the depreciation for the year.
Intangible assets	2,800,401	2,850,844	(50,443)	Depreciation of the US dollar against the Canadian dollar and amortization for the year, partly offset by the acquisition of iTétract which included spectrum licenses and the acquisition of Thames Valley Communications in the third quarter of fiscal 2020.
Non-current liabilities				
Long-term debt	3,087,033	3,382,258	(295,225)	Related to the early redemption of the Senior Secured Debentures Series 2 on July 20, 2020, the repayment of US\$35 million combined with the quarterly repayment on the Senior Secured Term Loan B Facility and the depreciation of the US dollar against the Canadian dollar, partly offset by the recognition of the long-term portion of lease liabilities following the adoption of IFRS 16.

(1) IFRS 16 was adopted by the Corporation on September 1, 2019. Under the transition method chosen, fiscal 2019 was not restated.

8. CAPITAL RESOURCES AND LIQUIDITY

8.1 CAPITAL STRUCTURE

The table below summarizes debt-related financial ratios over the last two fiscal years:

Years ended August 31,	2020	2019
Average cost of indebtedness ⁽¹⁾	3.8 %	4.4 %
Fixed rate indebtedness ⁽²⁾	78 %	78 %
Average term: long-term debt (in years)	4.2	4.9
Net indebtedness ⁽³⁾ / adjusted EBITDA	2.4	2.6
Adjusted EBITDA / financial expense ⁽⁴⁾	7.5	6.3

(1) Excludes amortization of deferred transaction costs and commitment fees but includes the impact of interest rate swaps.

(2) Taking into consideration the interest rate swaps in effect at the end of each fiscal year.

(3) Net indebtedness is defined as the total of bank indebtedness and principal on long-term debt, less cash and cash equivalents.

(4) Financial expense for fiscal 2020 excludes the \$22.9 million gain on debt modification related to the amendment made to the Senior Secured Term Loan B facility.

In fiscal 2020, the financial leverage ratio relating to net indebtedness over adjusted EBITDA has declined as a result of growing adjusted EBITDA and a reduction in net indebtedness from generated free cash flow.

8.2 OUTSTANDING SHARE DATA

A description of Cogeco Communications' share data at September 30, 2020 is presented in the table below. Additional details are provided in note 19 of the consolidated financial statements.

<i>(in thousands of Canadian dollars, except number of shares/options)</i>	Number of shares/options	Amount \$
Common shares		
Multiple voting shares	15,691,100	98,346
Subordinate voting shares	32,217,178	902,525
Options to purchase subordinate voting shares		
Outstanding options	786,154	
Exercisable options	290,649	

8.3 FINANCING

On July 20, 2020, the Corporation proceeded with the early redemption of the Senior Secured Debentures Series 2 due November 16, 2020. A redemption premium of \$2.8 million was charged to financial expense, in connection with the early redemption.

On February 3, 2020, the Corporation amended its Senior Secured Term Loan B Facility, whereby the most significant change consisted in the reduction of the interest rate by 0.25%. Consequently, the Corporation recognized, during the second quarter of fiscal 2020, a \$22.9 million non-cash gain on debt modification. As a result, the interest expense on the Senior Secured Term Loan B Facility will be higher than the interest paid until its maturity date in January 2025 as the Corporation will continue to record the interest expense at the effective interest rate in place prior to the amendment.

On December 6, 2019, the Corporation's Term Revolving Facility was decreased by \$50 million to \$750 million and the maturity date was extended by an additional year until January 24, 2025. Moreover, on the same date, the maturity date of the US\$150 million Senior Secured Revolving Facility, benefiting two subsidiaries related to Atlantic Broadband, was extended by an additional 18 months until July 4, 2024.

At August 31, 2020, the Corporation had used \$0.02 million of its \$750 million Term Revolving Facility for a remaining availability of \$749.98 million. In addition, two subsidiaries related to Atlantic Broadband benefit from a Senior Secured Revolving Facility of \$195.6 million (US\$150 million), of which \$3.2 million (US\$2.4 million) was used at August 31, 2020 for a remaining availability of \$192.5 million (US\$147.6 million).

8.4 CREDIT RATINGS

The table below shows Cogeco Communications' and Atlantic Broadband's credit ratings:

At August 31, 2020	S&P	DBRS	Moody's
Cogeco Communications			
Senior Secured Notes and Debentures	BBB-	BBB (low)	NR
Atlantic Broadband			
First Lien Credit Facilities	BB	NR	B1

NR : Not rated

Our ability to access debt capital markets and bank credit markets and the cost and amount of funding available partly depends on the quality of our credit ratings. Obligations rated in the "BBB" category are considered investment grade and their cost of funding is typically lower relative to the "BB/B" rating category. In addition, obligations with "BBB" ratings generally have greater access to funding than those with "BB/B" ratings.

On January 28, 2020, S&P raised the credit rating of Atlantic Broadband's First Lien Credit Facilities from BB- to BB on the basis that its strategic importance to the Corporation has increased over time.

8.5 FINANCIAL RISK MANAGEMENT

Liquidity risk

The Corporation manages liquidity risk through the management of its capital structure and access to different capital markets. It also manages liquidity risk by continuously monitoring actual and projected cash flows to ensure sufficient liquidity to meet its obligations when due.

The following table summarizes the contractual maturities of the financial liabilities and lease liabilities, and related capital amounts at August 31, 2020:

	Contractual cash flows						
	2021	2022	2023	2024	2025	Thereafter	Total
<i>(In thousands of Canadian dollars)</i>	\$	\$	\$	\$	\$	\$	\$
Bank indebtedness	7,610	—	—	—	—	—	7,610
Trade and other payables ⁽¹⁾	203,633	—	—	—	—	—	203,633
Notes, debentures and credit facilities	22,171	222,171	322,171	22,171	335,179	2,206,382	3,130,245
Lease liabilities	4,115	3,297	3,047	2,851	2,626	23,279	39,215
Balance due on business combinations	2,856	—	—	—	—	—	2,856
	240,385	225,468	325,218	25,022	337,805	2,229,661	3,383,559

(1) Excluding accrued interest on long-term debt.

The following table is a summary of interest payable on long-term debt that is due for each of the next five years and thereafter:

	2021	2022	2023	2024	2025	Thereafter	Total
<i>(in thousands of Canadian dollars)</i>	\$	\$	\$	\$	\$	\$	\$
Interest payments on notes, debentures and credit facilities ⁽¹⁾	89,745	84,342	78,939	65,936	39,371	12,589	370,922
Interest payments on lease liabilities	1,573	1,178	1,070	971	873	4,632	10,297
Interest receipts on derivative financial instruments ⁽¹⁾	(1,851)	(1,570)	(1,297)	(756)	(127)	—	(5,601)
Interest payments on derivative financial instruments ⁽¹⁾	25,270	21,415	17,673	10,212	1,698	—	76,268
	114,737	105,365	96,385	76,363	41,815	17,221	451,886

(1) Based on the principal amounts and interest rates prevailing on the outstanding debt at August 31, 2020 and their respective maturities.

Interest rate risk

The Corporation is exposed to interest rate risks on its floating interest rate instruments. Interest rate fluctuations will have an effect on the repayment of these instruments. At August 31, 2020, all of the Corporation's notes, debentures and credit facilities were at fixed rate, except for the amounts drawn under the First Lien Credit Facilities, which are subject to floating interest rates.

To reduce the risk on the floating interest rate instruments and mitigate the impact of interest rate variations, the Corporation's US subsidiary entered into fixed interest rate swap agreements. The following table shows the interest rate swaps outstanding at August 31, 2020:

Type of hedge	Notional amount	Receive interest rate	Pay interest rate	Maturity	Hedged item
Cash flow	US\$1.1 billion	US LIBOR base rate	2.017% - 2.262%	January 2021 - November 2024	Senior Secured Term Loan B

The sensitivity of the Corporation's annual financial expense to an increase of 1% in the interest rate applicable to the unhedged portion of these facilities would represent an increase of approximately \$6.9 million based on the outstanding debt and swap agreements at August 31, 2020.

Foreign exchange risk

The Corporation is exposed to foreign exchange risk with respect to the interest associated with its notes, debentures and credit facilities denominated in US dollars. The impact of a 10% increase in the exchange rate of the US dollar into Canadian dollars would increase financial expense by approximately \$9.6 million based on the outstanding debt and swap agreements at August 31, 2020.

The Corporation faces exposure to foreign exchange risk on cash and cash equivalents and trade and other payables denominated mainly in US dollars. The Corporation's exposure to foreign currency risk on cash and cash equivalents and trade and other payables is not significant as at August 31, 2020 and 2019.

A foreign currency exposure arises from the Corporation's net investment in its US subsidiary, as a result of the translation of the net investment into the Corporation's functional currency. A portion of the Corporation's net investment in its US subsidiary is hedged by the Corporation's US dollar denominated Senior Secured Notes, which the Corporation has designated as hedges of the net investment, while the remaining portion is economically hedged by its subsidiary's US dollar denominated First Lien Credit Facilities.

The following table shows the aggregate investment in foreign operations attributable to owners of the Corporation and the notional amount of debt borrowed to hedge this investment at August 31, 2020:

Type of hedge	Notional amount of debt	Aggregate investment	Hedged item
Net investment	US\$390 million	US\$1,077 million	Net investment in foreign operations in US dollar

The exchange rate used to translate the US dollar currency into Canadian dollars for the consolidated statement of financial position accounts at August 31, 2020 was \$1.3042 (\$1.3295 at August 31, 2019) per US dollar. A 10% decrease in the exchange rate of the US dollar into Canadian dollars would decrease other comprehensive income by approximately \$89.6 million.

Market risk

The Corporation uses derivative instruments to manage the cash flow exposure to the risk of changes in the price of its subordinate voting shares under the DSU plan. As such, the Corporation uses equity swap agreements to economically hedge the market price appreciation risk of its subordinate voting shares.

The following table shows the equity derivatives contracts outstanding at August 31, 2020:

Type of hedge	Notional	Maturity	Average share price	Hedged item
Economic	48,000 units	January 2021	\$102.61	Equity price exposure

As at August 31, 2020, the fair value of the equity swap was \$0.2 million and recognized as a liability. A 10% increase in the market price of the subordinate voting shares would result in a gain of approximately \$0.5 million due to the equity swap fair value appreciation, offset by a \$0.5 million increase in the DSU plan expense.

8.6 FOREIGN CURRENCY

For the year ended August 31, 2020, the average rates prevailing used to convert the operating results of the American broadband services segment were as follows:

Years ended August 31,	2020	2019	Change	Change
	\$	\$	\$	%
US dollar vs Canadian dollar	1.3456	1.3255	0.02	1.5

The following table highlights in Canadian dollars, the impact of a \$0.02 variation of the Canadian dollar against the US dollar on Cogeco Communications' segmented and consolidated operating results for the year ended August 31, 2020:

	Canadian broadband services	American broadband services	Consolidated ⁽¹⁾
Year ended August 31, 2020	Exchange rate impact	Exchange rate impact	Exchange rate impact
<i>(in thousands of Canadian dollars)</i>	\$	\$	\$
Revenue	—	16,477	16,477
Operating expenses	331	8,969	9,301
Management fees - Cogeco Inc.			—
Adjusted EBITDA	(331)	7,508	7,176
Acquisition of property, plant and equipment	1,309	3,779	5,088
Free cash flow			369

(1) The consolidated results do not correspond to the addition of the operating segment's results as the Other segmented information is not presented.

8.7 CONTRACTUAL OBLIGATIONS, CONTINGENCIES AND GUARANTEES

A) CONTRACTUAL OBLIGATIONS

The following table presents the Corporation's contractual obligations, at August 31, 2020, that are due in each of the next five years and thereafter:

Years ended August 31, (in thousands of Canadian dollars)	2021	2022	2023	2024	2025	Thereafter	Total
	\$	\$	\$	\$	\$	\$	\$
Acquisition of property, plant and equipment ⁽¹⁾	1,800	1,800	1,800	1,800	1,800	1,800	10,800
Other long-term contracts ⁽²⁾	41,902	30,967	24,947	23,579	20,632	36,855	178,882
Financial liabilities and lease liabilities, and related capital amounts	240,385	225,468	325,218	25,022	337,805	2,229,661	3,383,559
Interest payable on long-term debt	114,737	105,365	96,385	76,363	41,815	17,221	451,886
	398,824	363,600	448,350	126,764	402,052	2,285,537	4,025,127

(1) Include minimum spend commitments for acquisition of customer premise equipment.

(2) Include long-term commitments under service and product contracts for operating expenditures, including minimum spend commitments.

B) CONTINGENCIES

CRTC's wholesale Internet services 2019 costing decision

On August 15, 2019, the Canadian Radio-television and Telecommunications Commission ("CRTC") issued a costing decision setting new rates for aggregated wholesale Internet services for resellers, significantly lowering the interim rates it had previously fixed in 2016 and applying the new rates on a retroactive basis. On September 13, 2019, the Corporation, together with other telecommunications service providers (the "Cable Carriers"), jointly filed an application for leave to appeal the CRTC order to the Federal Court of Appeal ("FCA") and to suspend its effect pending the Court decision to hear the matter. On November 22, 2019, the FCA granted leave to appeal the CRTC decision and stayed the order pending final judgement, with the result that operators did not have to implement the new rates nor to make the retroactive payments pending final decision of the Court. A decision dismissing the appeal of the Cable Carriers was rendered by the FCA on September 10, 2020, repealing the stay order of the Court.

In parallel, on December 13, 2019, the Cable Carriers submitted to the CRTC an application for review and variance of the CRTC order, based on substantial doubt as to the correctness of the rate setting methodology relied upon by the CRTC in the order. The application also requested a stay of the Order pending a decision from the CRTC. On September 28, 2020, the CRTC approved the Cable Carriers' request to stay the implementation of Telecom Order 2019-288 regarding final rates for aggregated wholesale high-speed access services until the CRTC completes its review of that order.

In addition to the FCA appeal and the review and variance process, on November 13, 2019, the Cable Carriers filed a petition with the Governor in Council, asking Cabinet to refer the CRTC order back to the CRTC for reconsideration in conjunction with the CRTC's planned review of its regulatory framework for wireline wholesale services and in accordance with specific policy considerations. Interested parties filed comments on February 14, 2020 and a decision was issued on August 15, 2020. The Governor in Council rendered an order confirming that the rates set by the CRTC decision do not in all instances appropriately balance the required policy objectives. However, as a review and variance process is currently pending before the CRTC, the Governor in Council confirmed that any further instructions from Cabinet to the CRTC would be premature.

As at August 31, 2020, the total retroactive payments based on the CRTC's final aggregated wholesale service rates' 2019 costing decision, if not otherwise modified, is estimated at approximately \$43 million, of which approximately \$25 million relates to fiscal years from 2016 to 2019, and approximately \$18 million relates to fiscal year 2020. Due to the significant uncertainty surrounding both the outcome of this decision and its financial implications, the Corporation has therefore not recorded the impact of the reduced rates as at August 31, 2020 and 2019.

Other

The Corporation and its subsidiaries are involved in matters involving litigations, other regulatory decisions or potential claims from customers and suppliers arising out of the ordinary course and conduct of its business. Although such matters cannot be predicted with certainty, management does not consider these exposures to be significant to the consolidated financial statements. At August 31, 2020 and 2019, no liability has been recorded with respect to these litigations, other regulatory decisions and potential claims, except for those disclosed in Note 16. of the consolidated financial statements.

C) GUARANTEES

In the normal course of business, the Corporation provides indemnification in conjunction with certain transactions. While many of the agreements specify a maximum potential exposure, some do not specify a maximum amount. The overall maximum amount of an indemnification obligation will depend on future events and conditions and therefore cannot be reasonably estimated. As a result, the Corporation cannot determine how they could affect its future liquidity, capital resources or credit risk profile. At August 31, 2020 and 2019,

no liability has been recorded with respect to these indemnifications, except for those disclosed in Note 16 of the consolidated financial statements.

SALE OF A BUSINESS

In connection with the sale of a business, the Corporation has agreed to indemnify the purchaser against claims related to events that occurred prior to the date of sale.

LONG-TERM DEBT

Under the terms of the Senior Secured Notes, the Corporation has agreed to indemnify the lenders against changes in regulations relative to withholding taxes and costs incurred due to changes in laws.

SALE OF SERVICES

As part of transactions involving the sale of services, the Corporation and its subsidiaries may be required to make payments to counterparties as a result of breaches of representations and warranties made into the service agreements.

PURCHASE AND DEVELOPMENT OF ASSETS

As part of transactions involving the purchase and development of assets, the Corporation and its subsidiaries may be required to pay counterparties for costs and losses incurred as a result of breaches of representations and warranties contained in the purchase agreements.

9. DISCONTINUED OPERATIONS

Disposal of a subsidiary in fiscal 2019

On April 30, 2019, the Corporation completed the sale of Cogeco Peer 1, its Business ICT services subsidiary. The results and cash flows of Cogeco Peer 1 are presented as discontinued operations separate from the Corporation's continuing operations. As a result of the sale, the Corporation recognized the following gain on disposal in the consolidated statement of profit or loss for the year ended August 31, 2019:

<i>(in thousands of Canadian dollars)</i>	\$
Gross proceeds, net of cash disposed	720,314
Working capital adjustments	691
<i>Transaction costs</i>	(10,903)
Net proceeds from sale, net of cash disposed	710,102
Net assets disposed	(625,738)
Gain on disposal of a subsidiary	84,364

The following table presents the carrying value of the net assets disposed of:

<i>(in thousands of Canadian dollars)</i>	\$
Trade and other receivables	19,988
Income taxes receivable	1,126
Prepaid expenses and other	8,532
Property, plant and equipment	361,774
Intangible assets	49,618
Other assets	9,594
Goodwill	272,591
Deferred tax assets	2,061
Trade and other payables	(22,416)
Provisions	(34)
Contract liabilities and other liabilities	(25,104)
Deferred tax liabilities	(22,183)
Foreign currency translation adjustment	(29,809)
	625,738

The profit of the discontinued operations was as follows:

Year ended August 31, <i>(in thousands of Canadian dollars)</i>	2019 ⁽¹⁾ \$
Revenue	174,990
Operating expenses	132,390
Adjusted EBITDA	42,600
Depreciation and amortization	43,999
Financial expense	(1,304)
Gain on disposal of a subsidiary	(84,364)
Profit before income taxes	84,269
Income taxes	8,889
Profit for the year from discontinued operations	75,380

(1) Fiscal 2019 amounts reflect the eight-month period ended April 30, 2019.

The cash flows of the discontinued operations were as follows:

Year ended August 31, <i>(in thousands of Canadian dollars)</i>	2019 ⁽¹⁾ \$
Cash flows from operating activities	41,962
Cash flows from investing activities	691,729
Effect of exchange rate changes on cash and cash equivalents denominated in foreign currencies	116
Net change in cash and cash equivalents from discontinued operations	733,807

(1) Fiscal 2019 amounts reflect the eight-month period ended April 30, 2019.

10. QUARTERLY OPERATING RESULTS

10.1 QUARTERLY FINANCIAL HIGHLIGHTS

Three months ended	Fiscal 2020				Fiscal 2019 ⁽¹⁾			
	Nov. 30	Feb. 29	May 31	Aug. 31	Nov. 30	Feb. 28	May 31	Aug. 31
<i>(in thousands of Canadian dollars, except percentages and per share data)</i>	\$	\$	\$	\$	\$	\$	\$	\$
Operations								
Revenue	586,827	586,467	605,821	605,168	576,673	584,129	587,345	583,673
Adjusted EBITDA	282,105	277,372	294,717	294,535	267,851	280,552	283,927	275,610
Adjusted EBITDA margin	48.1 %	47.3 %	48.6 %	48.7 %	46.4 %	48.0 %	48.3 %	47.2 %
Integration, restructuring and acquisition costs	61	5,458	12	3,955	5,713	3,722	1,003	712
Profit for the period from continuing operations	89,708	114,011	96,724	96,148	78,806	86,128	99,571	92,403
Profit (loss) for the period from discontinued operations	—	—	—	—	(3,622)	(5,369)	82,451	1,920
Profit for the period	89,708	114,011	96,724	96,148	75,184	80,759	182,022	94,323
Profit for the period from continuing operations attributable to owners of the Corporation	84,178	109,391	90,771	90,834	73,792	81,718	96,613	87,850
Profit for the period attributable to owners of the Corporation	84,178	109,391	90,771	90,834	70,170	76,349	179,064	89,770
Cash flow								
Cash flows from operating activities	149,192	231,653	282,229	254,745	98,996	199,462	265,551	304,702
Acquisition of property, plant and equipment	121,302	110,840	123,653	128,195	100,557	92,773	96,116	145,099
Free cash flow	102,844	125,062	116,158	111,372	107,503	125,307	136,999	84,250
Capital intensity	20.7 %	18.9 %	20.4 %	21.2 %	17.4 %	15.9 %	16.4 %	24.9 %
Per share data ⁽²⁾⁽³⁾								
Earnings (loss) per share								
Basic								
From continuing operations	1.71	2.24	1.89	1.90	1.50	1.65	1.96	1.78
From discontinued operations	—	—	—	—	(0.07)	(0.11)	1.67	0.04
From continuing and discontinued operations	1.71	2.24	1.89	1.90	1.42	1.55	3.62	1.82
Diluted								
From continuing operations	1.70	2.22	1.87	1.88	1.49	1.64	1.94	1.77
From discontinued operations	—	—	—	—	(0.07)	(0.11)	1.65	0.04
From continuing and discontinued operations	1.70	2.22	1.87	1.88	1.41	1.53	3.59	1.80
Dividends per share	0.58	0.58	0.58	0.58	0.525	0.525	0.525	0.525

(1) IFRS 16 was adopted by the Corporation on September 1, 2019. Under the transition method chosen, fiscal 2019 was not restated. For further details, please consult the "Accounting policies" section of the MD&A.

(2) The addition of quarterly information may not correspond to the annual total due to rounding.

(3) Per multiple and subordinate voting share.

10.2 SEASONAL VARIATIONS

Cogeco Communications' operating results are not generally subject to material seasonal fluctuations except as follows. In the Canadian and American broadband services segments, the number of Internet and video services customers are generally lower in the second half of the fiscal year as a result of a decrease in economic activity due to the beginning of the vacation period, the end of the television season, and students leaving their campuses at the end of the school year. Cogeco Communications offers its services in several towns with educational institutions. In the American broadband services segment, certain areas are also subject to seasonal fluctuations due to the winter and summer seasons.

10.3 FOURTH-QUARTER OPERATING AND FINANCIAL RESULTS

CONSOLIDATED

OPERATING AND FINANCIAL RESULTS

Three months ended August 31, (in thousands of Canadian dollars, except percentages)	2020 (1)	2019 (2)	Change	Change in constant currency (3)	Foreign exchange impact (3)
	\$	\$	%	%	\$
Revenue	605,168	583,673	3.7	3.0	4,214
Operating expenses	303,728	302,833	0.3	(0.5)	2,368
Management fees – Cogeco Inc.	6,905	5,230	32.0	32.0	—
Adjusted EBITDA	294,535	275,610	6.9	6.2	1,846
Adjusted EBITDA margin	48.7 %	47.2%			

(1) For the three-month period ended August 31, 2020, the average foreign exchange rate used for translation was 1.3424 USD/CDN.

(2) IFRS 16 was adopted by the Corporation on September 1, 2019. Under the transition method chosen, fiscal 2019 was not restated.

(3) Fiscal 2020 actuals are translated at the average foreign exchange rate of the comparable period of fiscal 2019 which was 1.3222 USD/CDN.

REVENUE

Three months ended August 31, (in thousands of Canadian dollars, except percentages)	2020 (1)	2019	Change	Change in constant currency (2)	Foreign exchange impact (2)
	\$	\$	%	%	\$
Canadian broadband services	324,197	319,935	1.3	1.3	—
American broadband services	280,971	263,738	6.5	4.9	4,214
	605,168	583,673	3.7	3.0	4,214

(1) For the three-month period ended August 31, 2020, the average foreign exchange rate used for translation was 1.3424 USD/CDN.

(2) Fiscal 2020 actuals are translated at the average foreign exchange rate of the comparable period of fiscal 2019 which was 1.3222 USD/CDN.

Fiscal 2020 fourth-quarter revenue increased by 3.7% (3.0% in constant currency) resulting from:

- organic growth combined with the impact of the Thames Valley Communications acquisition completed on March 10, 2020 in the American broadband services segment; and
- higher revenue in the Canadian broadband services segment.

OPERATING EXPENSES

Three months ended August 31, (in thousands of Canadian dollars, except percentages)	2020 (1)	2019 (2)	Change	Change in constant currency (3)	Foreign exchange impact (3)
	\$	\$	%	%	\$
Canadian broadband services	142,242	147,815	(3.8)	(3.8)	78
American broadband services	155,182	148,215	4.7	3.2	2,290
Other	6,304	6,803	(7.3)	(7.3)	—
	303,728	302,833	0.3	(0.5)	2,368

(1) For the three-month period ended August 31, 2020, the average foreign exchange rate used for translation was 1.3424 USD/CDN.

(2) IFRS 16 was adopted by the Corporation on September 1, 2019. Under the transition method chosen, fiscal 2019 was not restated.

(3) Fiscal 2020 actuals are translated at the average foreign exchange rate of the comparable period of fiscal 2019 which was 1.3222 USD/CDN.

Fiscal 2020 fourth-quarter operating expenses increased by 0.3% (decrease of 0.5% in constant currency) mainly from:

- lower operating expenses in the Canadian broadband services segment; partly offset by
- higher operating expenses in the American broadband services segment.

MANAGEMENT FEES

Fiscal 2020 fourth-quarter management fees paid to Cogeco reached \$6.9 million compared to \$5.2 million for the same period of fiscal 2019. For further details on the Corporation's management fees, please refer to the "Related party transactions" section.

ADJUSTED EBITDA

Three months ended August 31, (in thousands of Canadian dollars, except percentages)	2020 (1)	2019 (2)	Change	Change in constant currency (3)	Foreign exchange impact (3)
	\$	\$	%	%	\$
Canadian broadband services	181,955	172,120	5.7	5.8	(78)
American broadband services	125,789	115,523	8.9	7.2	1,924
Other	(13,209)	(12,033)	9.8	9.8	—
	294,535	275,610	6.9	6.2	1,846

(1) For the three-month period ended August 31, 2020, the average foreign exchange rate used for translation was 1.3424 USD/CDN.

(2) IFRS 16 was adopted by the Corporation on September 1, 2019. Under the transition method chosen, fiscal 2019 was not restated.

(3) Fiscal 2020 actuals are translated at the average foreign exchange rate of the comparable period of fiscal 2019 which was 1.3222 USD/CDN.

Fiscal 2020 fourth-quarter adjusted EBITDA increased by 6.9% (6.2% in constant currency) as a result of:

- an increase in the American broadband services segment mainly as a result of organic growth and the impact of the Thames Valley Communications acquisition; and
- an increase in the Canadian broadband services segment resulting from higher revenue combined with lower operating expenses.

INTEGRATION, RESTRUCTURING AND ACQUISITION COSTS

Fiscal 2020 fourth-quarter integration, restructuring and acquisition costs amounted to \$4.0 million mostly due to organizational changes initiated across the Corporation resulting in cost optimization.

Fiscal 2019 fourth-quarter integration, restructuring and acquisition costs amounted to \$0.7 million mostly due to acquisition and integration costs in the American broadband services segment.

DEPRECIATION AND AMORTIZATION

Three months ended August 31, (in thousands of Canadian dollars, except percentages)	2020	2019 (1)	Change
	\$	\$	%
Depreciation of property, plant and equipment ⁽²⁾	109,471	106,698	2.6
Amortization of intangible assets	15,354	14,858	3.3
	124,825	121,556	2.7

(1) IFRS 16 was adopted by the Corporation on September 1, 2019. Under the transition method chosen, fiscal 2019 was not restated.

(2) Includes the depreciation of right-of-use assets amounting to \$1.6 million for the three-month period ended August 31, 2020.

Fiscal 2020 fourth-quarter depreciation and amortization expense increased by 2.7% due to higher depreciation of property, plant and equipment as a result of higher capital expenditures during the fiscal year combined with the appreciation of the US dollar against the Canadian dollar compared to the same period of the prior year and the impact of IFRS 16 adoption.

FINANCIAL EXPENSE

Three months ended August 31, <i>(in thousands of Canadian dollars, except percentages)</i>	2020 \$	2019 (1) \$	Change %
Interest on long-term debt, excluding interest on lease liabilities	38,380	41,307	(7.1)
Interest on lease liabilities	370	—	—
Net foreign exchange gain	(181)	(403)	(55.1)
Amortization of deferred transaction costs	213	464	(54.1)
Capitalized borrowing costs	(122)	(168)	(27.4)
Other	642	(763)	—
	39,302	40,437	(2.8)

(1) IFRS 16 was adopted by the Corporation on September 1, 2019. Under the transition method chosen, fiscal 2019 was not restated.

Fiscal 2020 fourth-quarter financial expense decreased by 2.8% mainly due to:

- lower interest rates and lower outstanding debt on the First Lien Credit Facilities; partly offset by
- the \$2.8 million early redemption premium on the Senior Secured Debentures Series 2 on July 20, 2020; and
- the appreciation of the US dollar against the Canadian dollar compared to the same period of the prior year.

INCOME TAXES

Three months ended August 31, <i>(in thousands of Canadian dollars, except percentages)</i>	2020 \$	2019 (1) \$	Change %
Current	13,713	11,603	18.2
Deferred	16,592	8,899	86.4
	30,305	20,502	47.8

(1) IFRS 16 was adopted by the Corporation on September 1, 2019. Under the transition method chosen, fiscal 2019 was not restated.

Three months ended August 31, <i>(in thousands of Canadian dollars, except percentages)</i>	2020 \$	2019 (1) \$	Change %
Profit before income taxes	126,453	112,905	12.0
Combined Canadian income tax rate	26.50 %	26.50 %	—
Income taxes at combined Canadian income tax rate	33,510	29,920	12.0
Difference in operations' statutory income tax rates	534	1,404	(62.0)
Impact on income taxes arising from non-deductible expenses and non-taxable profit	317	220	44.1
Tax impacts related to foreign operations	(5,912)	(7,517)	(21.4)
Other	1,856	(3,525)	—
	30,305	20,502	47.8

(1) IFRS 16 was adopted by the Corporation on September 1, 2019. Under the transition method chosen, fiscal 2019 was not restated.

Fiscal 2020 fourth-quarter income taxes expense increased by 47.8% mainly attributable to the increase in profit before income taxes.

PROFIT FOR THE PERIOD

Three months ended August 31, (in thousands of Canadian dollars, except percentages and earnings per share)	2020 \$	2019 (1) \$	Change %
Profit for the period from continuing operations	96,148	92,403	4.1
Profit for the period	96,148	94,323	1.9
Profit for the period from continuing operations attributable to owners of the Corporation	90,834	87,850	3.4
Profit for the period attributable to owners of the Corporation	90,834	89,770	1.2
Profit for the period from continuing operations attributable to non-controlling interest ⁽²⁾	5,314	4,553	16.7
Basic earnings per share from continuing operations	1.90	1.78	6.7
Basic earnings per share	1.90	1.82	4.4

(1) IFRS 16 was adopted by the Corporation on September 1, 2019. Under the transition method chosen, fiscal 2019 was not restated.

(2) The non-controlling interest relates to the 21% ownership of CDPQ in Atlantic Broadband.

Fiscal 2020 fourth-quarter profit for the period from continuing operations and profit for the period from continuing operations attributable to owners of the Corporation increased by 4.1% and 3.4%, respectively, as a result of:

- higher adjusted EBITDA; partly offset by
- the increases in income taxes, depreciation and amortization and integration, restructuring and acquisitions costs.

Fiscal 2020 fourth-quarter profit for the period and profit for the period attributable to owners of the Corporation also increased by 1.9% and 1.2%, respectively, mainly due to the elements mentioned above, partly offset by the discontinued operations which generated a profit of \$1.9 million as a result of working capital adjustments related to the sale of Cogeco Peer 1 for the comparable period of the prior year.

CANADIAN BROADBAND SERVICES

OPERATING AND FINANCIAL RESULTS

Three months ended August 31, (in thousands of Canadian dollars, except percentages)	2020 (1) \$	2019 (2) \$	Change %	Change in constant currency (3) %	Foreign exchange impact (3) \$
Revenue	324,197	319,935	1.3	1.3	—
Operating expenses	142,242	147,815	(3.8)	(3.8)	78
Adjusted EBITDA	181,955	172,120	5.7	5.8	(78)
Adjusted EBITDA margin	56.1 %	53.8 %			
Acquisition of property, plant and equipment	46,474	79,132	(41.3)	(41.5)	187
Capital intensity	14.3 %	24.7 %			

(1) For the three-month period ended August 31, 2020, the average foreign exchange rate used for translation was 1.3424 USD/CDN.

(2) IFRS 16 was adopted by the Corporation on September 1, 2019. Under the transition method chosen, fiscal 2019 was not restated.

(3) Fiscal 2020 actuals are translated at the average foreign exchange rate of the comparable period of fiscal 2019 which was 1.3222 USD/CDN.

REVENUE

Fiscal 2020 fourth-quarter revenue increased by 1.3% as reported and in constant currency compared to the same period of the prior year mainly as a result of:

- rate increases implemented during the first and the fourth quarters of fiscal 2020 for certain services;
- customers' transition to higher value offerings; and
- continued growth in Internet service customers; partly offset by
- a decline in video service customers; and
- lower net pricing from consumer sales primarily as a result of product bundles being promoted more actively from the fourth quarter of fiscal 2019 to the second quarter of fiscal 2020.

OPERATING EXPENSES

Fiscal 2020 fourth-quarter operating expenses decreased by 3.8% as reported and in constant currency mainly attributable to:

- non-recurring elements totaling approximately \$4 million resulting from retroactive effect of new programming contracts and certain COVID-19 pandemic related impact such as lower sales expenses;
- lower marketing initiatives and installation costs due to the effects of the COVID-19 pandemic, with more self installations and remote repairs;
- the impact of IFRS 16 adoption; and
- lower programming costs resulting from lower video service customers.

ADJUSTED EBITDA

Fiscal 2020 fourth-quarter adjusted EBITDA increased by 5.7% (5.8% in constant currency) resulting mainly from higher revenue combined with lower operating expenses.

ACQUISITION OF PROPERTY, PLANT AND EQUIPMENT

Fiscal 2020 fourth-quarter acquisition of property, plant and equipment decreased by 41.3% (41.5% in constant currency) resulting from:

- lower costs related to the maintenance, growth and expansion of our network infrastructure due to the timing of certain initiatives; and
- lower purchases of customer premise equipment due to the timing of certain initiatives.

Fiscal 2020 fourth-quarter capital intensity reached 14.3% compared to 24.7% for the same period of the prior year mainly as a result of lower capital expenditures combined with revenue growth.

PRIMARY SERVICE UNIT STATISTICS

	August 31, 2020	Net additions (losses) Three months ended August 31,	
		2020	2019
Primary service units	1,799,706	(2,925)	(2,846)
Internet service customers	812,016	8,943	2,540
Video service customers	619,249	(8,359)	(8,164)
Telephony service customers	368,441	(3,509)	2,778

INTERNET

Fiscal 2020 fourth-quarter Internet service customers net additions stood at 8,943 compared to 2,540 for the same period of the prior year. The fiscal 2020 fourth-quarter growth was due to:

- the ongoing interest in high speed offerings especially as more customers were working from home in the context of the COVID-19 pandemic;
- the sustained interest in bundle offers; and
- the continued demand from Internet resellers; partly offset by
- competitive offers in the industry.

VIDEO

Fiscal 2020 fourth-quarter video service customers net losses stood at 8,359 compared to 8,164 for the same period of the prior year. The fiscal 2020 fourth-quarter loss was due to:

- highly competitive offers in the industry; and
- a changing video consumption environment; partly offset by
- customers' ongoing interest in digital advanced video services; and
- customers' interest in video services bundled with fast Internet offerings.

TELEPHONY

Fiscal 2020 fourth-quarter telephony service customers net losses amounted to 3,509 compared to net additions of 2,778 for the same period of the prior year. The fiscal 2020 fourth-quarter loss was due to:

- increasing mobile wireless penetration in Canada and various unlimited offers launched by mobile wireless operators causing some customers to cancel their landline telephony services for mobile wireless telephony services only; partly offset by
- more telephony bundles being marketed during the second half of fiscal 2019.

AMERICAN BROADBAND SERVICES

OPERATING AND FINANCIAL RESULTS

Three months ended August 31,	2020 (1)	2019 (2)	Change	Change in constant currency (3)	Foreign exchange impact (3)
(in thousands of Canadian dollars, except percentages)	\$	\$	%	%	\$
Revenue	280,971	263,738	6.5	4.9	4,214
Operating expenses	155,182	148,215	4.7	3.2	2,290
Adjusted EBITDA	125,789	115,523	8.9	7.2	1,924
Adjusted EBITDA margin	44.8 %	43.8 %			
Acquisition of property, plant and equipment	79,457	65,967	20.4	18.8	1,060
Capital intensity	28.3 %	25.0 %			

(1) For the three-month period ended August 31, 2020, the average foreign exchange rate used for translation was 1.3424 USD/CDN.

(2) IFRS 16 was adopted by the Corporation on September 1, 2019. Under the transition method chosen, fiscal 2019 was not restated.

(3) Fiscal 2020 actuals are translated at the average foreign exchange rate of the comparable period of fiscal 2019 which was 1.3222 USD/CDN.

REVENUE

Fiscal 2020 fourth-quarter revenue increased by 6.5% (4.9% in constant currency). In local currency, revenue amounted to US\$209.3 million compared to US\$199.5 million for the same period of fiscal 2019. The increase resulted mainly from:

- growth in both residential and business Internet service customers as more customers work from home in the context of the COVID-19 pandemic;
- rate increases mostly implemented during the fourth quarter of fiscal 2019; and
- the impact of the Thames Valley Communications acquisition completed on March 10, 2020; partly offset by
- the temporary waving of late fees charged to customers as a relief measure in the context of the COVID-19 pandemic.

Excluding revenue from Thames Valley Communications, revenue in constant currency increased by 3.5% for the fourth quarter of fiscal 2020.

OPERATING EXPENSES

Fiscal 2020 fourth-quarter operating expenses increased by 4.7% (3.2% in constant currency) mainly as a result of:

- higher compensation expenses and costs related to additional headcount to support growth;
- additional operating expenses resulting from the impact of the Thames Valley Communications acquisition; and
- additional costs related to the development and implementation of a new financial and human capital management system; partly offset by
- the impact of IFRS 16 adoption.

ADJUSTED EBITDA

Fiscal 2020 fourth-quarter adjusted EBITDA increased by 8.9% (7.2% in constant currency). In local currency, adjusted EBITDA amounted to US\$93.7 million compared to US\$87.4 million for the same period of fiscal 2019 mainly due to organic growth and the impact of the Thames Valley Communications acquisition.

Excluding adjusted EBITDA from Thames Valley Communications, adjusted EBITDA in constant currency increased by 5.9% for the fourth quarter of fiscal 2020.

ACQUISITION OF PROPERTY, PLANT AND EQUIPMENT

Fiscal 2020 fourth-quarter acquisition of property, plant and equipment increased by 20.4% (18.8% in constant currency) mainly due to:

- higher purchases of customer premise equipments and other related costs in order to support the increased number of connections driven by demand for high speed Internet product, as well as resulting from equipment upgrades and the timing of certain initiatives;
- additional investments to improve and expand the network infrastructure in Florida;
- accelerated purchases of certain equipment to prevent potential supply chain shortages; and
- costs related to the development and implementation of a new financial and human capital management system.

Fiscal 2020 fourth-quarter capital intensity reached 28.3% compared to 25.0% for the same period of the prior year as a result of capital expenditures growth exceeding revenue growth.

PRIMARY SERVICE UNIT STATISTICS

	August 31, 2020 (1)	Net additions (losses) Three months ended August 31,	
		2020	2019
Primary service units	957,925	20,653	7,431
Internet service customers	492,212	13,523	2,441
Video service customers	317,387	5,542	5,294
Telephony service customers	148,326	1,588	(304)

(1) Net of a provision related to non-paying customers who have not been disconnected.

INTERNET

Fiscal 2020 fourth-quarter Internet service customers net additions stood at 13,523 compared to 2,441 for the same period of the prior year. The fiscal 2020 fourth-quarter growth was due to:

- the ongoing interest in high speed offerings especially as more customers were working from home in the context of the COVID-19 pandemic; and
- growth in the residential and business sectors.

VIDEO

Fiscal 2020 fourth-quarter video service customers net additions stood at 5,542 compared to 5,294 for the same period of the prior year. The fiscal 2020 fourth-quarter growth was due to:

- our customers' ongoing interest in TiVo's digital advanced video services; and
- additional connects related to the Thames Valley Communications acquisition; partly offset by
- a changing video consumption environment; and
- competitive offers in the industry.

TELEPHONY

Fiscal 2020 fourth-quarter telephony service customers net additions stood at 1,588 compared to net losses of 304 for the same period of the prior year. The fiscal 2020 fourth-quarter growth was due to:

- growth in the residential and business sectors; partly offset by
- increasing mobile wireless penetration in the United States and various unlimited offers launched by mobile wireless operators causing some customers to cancel their landline telephony services for mobile wireless telephony services only.

CASH FLOW ANALYSIS

Three months ended August 31,	2020	2019 (1)	Change
<i>(in thousands of Canadian dollars, except percentages)</i>	\$	\$	%
Cash flows from operating activities	254,745	304,702	(16.4)
Cash flows from investing activities	(126,899)	(144,332)	(12.1)
Cash flows from financing activities	(246,410)	(50,198)	—
Effect of exchange rate changes on cash and cash equivalents denominated in a foreign currency	(8,733)	(1,405)	—
Net change in cash and cash equivalents from continuing operations	(127,297)	108,767	—
Cash and cash equivalents, beginning of the period	493,794	447,737	10.3
Cash and cash equivalents, end of the period	366,497	556,504	(34.1)

(1) IFRS 16 was adopted by the Corporation on September 1, 2019. Under the transition method chosen, fiscal 2019 was not restated.

OPERATING ACTIVITIES

Fiscal 2020 fourth-quarter cash flows from operating activities decreased by 16.4% mainly from:

- the decrease in changes in non-cash operating activities primarily due to changes in working capital; and
- the increase in financial expense paid; partly offset by
- higher adjusted EBITDA; and
- the decrease in income taxes paid.

INVESTING ACTIVITIES

Fiscal 2020 fourth-quarter investing activities decreased by 12.1% mainly due to the decrease in acquisition of property, plant and equipment.

ACQUISITION OF PROPERTY, PLANT AND EQUIPMENT

The acquisition of property, plant and equipment as well as the capital intensity per operating segment are as follows:

Three months ended August 31, <i>(in thousands of Canadian dollars, except percentages)</i>	2020 \$	2019 (1) \$	Change %	Change in constant currency (2) %
Canadian broadband services	46,474	79,132	(41.3)	(41.5)
Capital intensity	14.3 %	24.7 %		
American broadband services	79,457	65,967	20.4	18.8
Capital intensity	28.3 %	25.0 %		
Other	2,264	—	—	—
Consolidated	128,195	145,099	(11.6)	(12.5)
Capital intensity	21.2 %	24.9 %		

(1) IFRS 16 was adopted by the Corporation on September 1, 2019. Under the transition method chosen, fiscal 2019 was not restated.

(2) Fiscal 2020 actuals are translated at the average foreign exchange rate of the comparable period of fiscal 2019 which was 1.3222 USD/CDN.

Fiscal 2020 fourth-quarter acquisition of property, plant and equipment decreased by 11.6% (12.5% in constant currency) mainly due to lower capital expenditures in the Canadian broadband services segment, partly offset by higher capital expenditures in the American broadband services segment resulting from the timing of certain initiatives.

Fiscal 2020 fourth-quarter capital intensity reached 21.2% compared to 24.9% for the same period of the prior year mainly as a result of lower capital expenditures combined with revenue growth.

FINANCING ACTIVITIES

ISSUANCE AND REPAYMENT OF DEBT

Fiscal 2020 fourth-quarter changes in cash flows from the issuance and repayment of debt are mainly explained as follows:

Three months ended August 31, <i>(in thousands of Canadian dollars)</i>	2020 \$	2019 \$	Explanations
Increase (decrease) in bank indebtedness	7,610	(4,821)	Related to the timing of payments made to suppliers.
Repayment of notes, debentures and credit facilities	(205,566)	(5,650)	Redemption of the Senior Secured Debentures Series 2 during the fourth quarter of fiscal 2020 as a result of free cash flow generated combined with quarterly repayments on the Senior Secured Term Loan B Facility.
Repayment of lease liabilities	(1,143)	—	Related to the adoption of IFRS 16.
	(199,099)	(10,471)	

DIVIDENDS

During the fourth quarter of fiscal 2020, a quarterly eligible dividend of \$0.58 per share was paid to the holders of subordinate and multiple voting shares, totalling \$27.7 million, compared to an eligible quarterly dividend paid of \$0.525 per share, or \$25.9 million in the fourth quarter of fiscal 2019.

NORMAL COURSE ISSUER BID

During the fourth quarter of fiscal 2020, Cogeco Communications purchased and cancelled 194,600 subordinate voting shares with a weighted average price per share purchased of \$100.89 for a total consideration of \$19.6 million. During the fourth quarter of fiscal 2019, Cogeco Communications purchased and cancelled 169,800 subordinate voting shares with a weighted average price per share repurchased of \$105.55 for a total consideration of \$17.9 million.

FREE CASH FLOW

Three months ended August 31, (in thousands of Canadian dollars, except percentages)	2020 (1)	2019 (2)	Change	Change in constant currency (3)	Foreign exchange impact (3)
	\$	\$	%	%	\$
Adjusted EBITDA ⁽⁴⁾	294,535	275,610	6.9	6.2	1,846
Amortization of deferred transaction costs and discounts on long-term debt	2,344	2,940	(20.3)	(19.3)	29
Share-based payment	2,249	2,173	3.5	3.5	—
(Gain) loss on disposals and write-offs of property, plant and equipment	(177)	1,119	—	—	—
Defined benefit plans contributions, net of expense	(1,271)	259	—	—	—
Integration, restructuring and acquisition costs	(3,955)	(712)	—	—	(1)
Financial expense	(39,302)	(40,437)	(2.8)	(1.8)	(426)
Current income taxes	(13,713)	(11,603)	18.2	18.1	8
Acquisition of property, plant and equipment	(128,195)	(145,099)	(11.6)	(12.5)	(1,247)
Repayment of lease liabilities	(1,143)	—	—	—	(11)
Free cash flow⁽⁴⁾	111,372	84,250	32.2	32.0	198

(1) For the three-month period ended August 31, 2020, the average foreign exchange rate used for translation was 1.3424 USD/CDN.

(2) IFRS 16 was adopted by the Corporation on September 1, 2019. Under the transition method chosen, fiscal 2019 was not restated.

(3) Fiscal 2020 actuals are translated at the average foreign exchange rate of the comparable period of fiscal 2019 which was 1.3222 USD/CDN.

(4) The indicated terms do not have standardized definitions prescribed by IFRS and, therefore, may not be comparable to similar measures presented by other companies. For more details, please consult the "Non-IFRS financial measures" section, including reconciliation to the most comparable IFRS financial measures.

Fiscal 2020 fourth-quarter free cash flow increased by 32.2% (32.0% in constant currency) compared to the same period of the prior year, mainly due to the following:

- higher adjusted EBITDA; and
- the decrease in acquisition of property, plant and equipment mainly from lower capital expenditures in the Canadian broadband services segment, partly offset by higher capital expenditures in the American broadband services segment resulting from the timing of certain initiatives.

11. FISCAL 2021 FINANCIAL GUIDELINES

The following section contains forward-looking statements concerning the business outlook for Cogeco Communications. For a description of risk factors that could cause actual results to differ materially from what Cogeco Communications expects, please refer to the "Uncertainties and main risk factors" section of the present MD&A.

The Corporation presents its financial guidelines on a constant currency basis and believes this presentation enables an improved understanding of the Corporation's underlying financial performance, undistorted by the effects of changes in a foreign currency rate. Measures on a constant currency basis are considered non-IFRS financial measures and do not have any standardized meaning prescribed by IFRS and therefore, may not be comparable to similar measures presented by other companies. The Corporation is providing the following financial guidelines for fiscal 2021, on a constant currency and consolidated basis. The financial guidelines exclude the impact from the acquisition of DERYtelecom which was announced on October 21, 2020 and is expected to close no later than at the end of the second quarter of the fiscal year 2021. They also do not take into consideration the potential impact of the review and variance process currently pending before the CRTC in connection with the final rates for aggregated wholesale Internet services for resellers. For further details, please consult the "Business developments" subsection. The projections take into consideration the experience gained while operating during the COVID-19 pandemic so far but exclude potential unexpected significant material impacts from it.

On a constant currency and consolidated basis, Cogeco Communications expects low-single digit percentage growth in revenue and adjusted EBITDA for fiscal 2021. Revenue should increase mainly as a result of organic growth in the American broadband services segment for both the residential and business sectors, the continued expansion in Florida, annual rate increases and the full year effect of the Thames Valley Communications acquisition completed on March 10, 2020. In the Canadian broadband services segment, revenue growth should stem primarily from growth in the business sector and Internet customer additions.

Adjusted EBITDA should increase mainly as a result of revenue growth exceeding operating expenses in both the American and Canadian broadband services segments.

The capital intensity ratio should remain essentially stable at approximately 20%. In the American broadband services segment, capital expenditures will be driven by our continued Florida network expansion and additional investments in our network infrastructure in the areas we serve. In the Canadian broadband services segment, we expect lower customer premise equipment costs as a result of the progressive launch of our IPTV solution, sustained investments in our networks to continue to offer high performance products while expanding our networks into new areas to address the digital divide between urban centers and rural areas, combined with investments in our digital transformation.

Free cash flow⁽¹⁾ on a constant currency and consolidated basis is expected to grow at a low-single digit percentage rate mainly due to the growth of adjusted EBITDA.

The following table outlines fiscal 2021 financial guidelines on a consolidated basis:

	Projections	Actual
	Fiscal 2021 ⁽¹⁾	Fiscal 2020
<i>(in millions of Canadian dollars, except percentages)</i>	\$	\$
Financial guidelines		
Revenue	Low-single digit percentage growth	2,384
Adjusted EBITDA	Low-single digit percentage growth	1,149
Capital intensity	Approximately 20%	20.3 %
Free cash flow	Low-single digit percentage growth	455

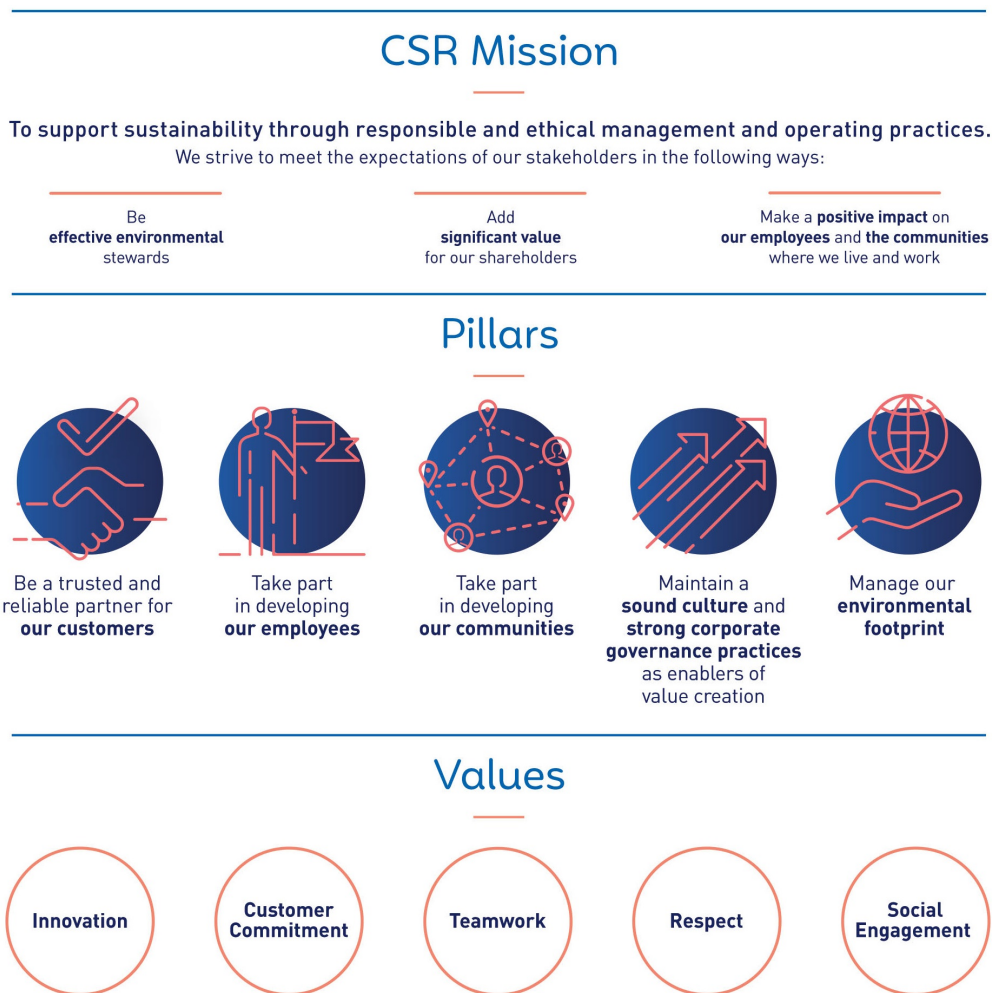
(1) Fiscal 2021 financial guidelines are based on a USD/CDN exchange rate of 1.3456 USD/CDN.

(1) The indicated terms do not have standardized definitions prescribed by IFRS and, therefore, may not be comparable to similar measures presented by other companies. For more details, please consult the "Non-IFRS financial measures" section of the MD&A.

12. CORPORATE SOCIAL RESPONSIBILITY PROGRAM

12.1 OVERVIEW

The Corporation has designed a corporate social responsibility ("CSR") program aimed at operating responsibly and sustainably and being a good corporate citizen. Concretely, this means we seek to integrate practices which improve the environmental and social impacts of our operations while ensuring the Corporation's continued growth. The CSR program integrates our corporate social responsibility objectives articulated around five pillars:



12.2 CSR GOVERNANCE

The CSR function is under the purview of the CSR Steering Committee that reports twice per year to the Corporate Governance Committee of the Board of Directors. The CSR Steering Committee, which is composed of executives from all business units, is responsible for reviewing the CSR Policy, identifying top risks, setting objectives and ambitions and monitoring CSR performance.

The CSR function is held at a corporate level and is headed by the Vice President, Enterprise Strategy and Social Responsibility who is responsible for the roll-out of corporate strategies and initiatives to promote the CSR principles and ultimately support the conduct of business in a socially responsible and ethical manner. Executives hold the business units accountable for implementing the initiatives and strategies defined by the CSR Steering Committee, including their business unit specific CSR action plans. The CSR team facilitates the integration of all business units' CSR initiatives.

The Corporation's CSR Policy, Code of Ethics and Supplier Code of Conduct together form the framework of our CSR Program.

12.3 SUSTAINABLE DEVELOPMENT GOALS

In our continued effort to drive long term corporate sustainability and contribute to a better and more sustainable future for all, Cogeco has started to review the alignment of our CSR strategy with the United Nations' ("UN") Sustainable Development Goals ("SDGs"). The SDGs are a universal call to action to end poverty, protect the planet and improve the lives and prospects of everyone, everywhere. The 17 Goals were adopted by all UN Member States in 2015, as part of the 2030 Agenda for Sustainable Development which set out a 15-year plan to achieve the Goals⁽¹⁾. 2020 marked the 5th anniversary of the adoption of the SDGs. The 17 SDGs articulate the world's most pressing environmental, social and economic issues and are outlined as follows:

THE GLOBAL GOALS For Sustainable Development



Our CSR goals serve as a means to do our part to make progress towards achieving the SDG targets most relevant to our business.

12.4 FISCAL 2020 HIGHLIGHTS

To support the achievement of our CSR goals, we have developed key performance indicators for environmental, social and governance ("ESG") objectives. During fiscal 2020, key initiatives of the CSR Program were rolled-out to our business units, namely Atlantic Broadband and Cogeco Connexion. Below are some examples of the CSR initiatives that were deployed in fiscal 2020 and how they currently align with the SDGs.

ENVIRONMENTAL HIGHLIGHTS

Our environmental initiatives and targets support progress towards SDG 13: Climate action; SDG 7: Clean energy; SDG 12: Responsible consumption and production; and SDG 8: Economic growth with improved resource efficiency.



(1) <https://www.un.org/sustainabledevelopment/development-agenda/>

ACCOMPLISHMENTS

- 34% reduction of our Greenhouse Gas ("GHG") emissions on a per revenue basis compared to fiscal year 2014, surpassing our initially set commitment of 10%. Having surpassed our target one year early, we are in the process of setting a new, longer term, more aggressive emissions reduction target in line with climate science;
- We continued to measure and track our GHG emissions from all of the Corporation's business units and we implemented various energy efficiency measures as part of our energy management strategy. Measures put in place include the installation of centrally controlled thermostats with updated temperature control settings, heating, ventilation and air conditioning ("HVAC") replacements, new airflow containment design, LED lighting retrofits, and DC plants rectifier upgrades;
- We began implementation of our strategy to reduce emissions from the consumption of electricity by investing in renewable energy, purchasing over 8,100 MWh of clean energy through Renewable Energy Certificates;
- We tackled reduction of emissions from our vehicle fleet on multiple fronts. We replaced 121 vehicles (representing approximately 10% of the Corporation's fleet) with more energy efficient ones. In addition, to support our longer term vehicle fleet electrification strategy, we implemented a policy that includes replacing any smaller vehicles at the end of their life with hybrid or electric vehicles. In fiscal 2020, we purchased 15 hybrid vehicles, and invested in two hybrid systems for our service vans to test the feasibility of their use in reducing fuel consumption and emissions;
- Cogeco Connexion voluntarily purchased carbon offsets to cover some of its GHG emissions from fiscal 2020 (200 tons of CO₂e). The offsets purchased are Gold Standard and will fund the Siam Solar Energy project in Thailand, as well as sensitive natural habitat restoration projects in Québec;
- We published our eighth CDP (formerly "Carbon Disclosure Project") report;
- We diverted more than 295,000 kilos of electronic waste from landfill during fiscal year 2020, and had an e-waste management strategy in place for 100% of Customer Premise Equipment (CPE) and office equipment at our facilities;
- Approximately 20% of the Corporation's facilities underwent environmental assessments. No significant adverse impact on the environment was identified as a result of that exercise;
- We continued our implementation of the Canadian Energy Efficiency Voluntary Agreement ("CEEVA"). This agreement, developed by Canadian telecommunications companies together with Natural Resources Canada, intends to limit the energy consumption of set-top boxes provided to our customers. With this agreement in place, it is expected that the total annual energy consumption in Canada, with the telecommunications companies' contribution, including Cogeco Connexion, will be reduced and annual carbon dioxide emissions will be cut by over 100,000 tons. This is equivalent to the emissions of over 44,000 sub-compact new vehicles driving 15,000 km/year. By the end of fiscal 2020, 86% of set-top boxes purchased in Canada by Cogeco Connexion complied with the CEEVA standards. In addition, though not a signatory of the corresponding U.S. Voluntary Agreement (USVA), 55% of set-top boxes purchased in the U.S. by Atlantic Broadband complied with the USVA standards;
- During the process of moving the Montréal head office to a new building, four Eco centres and a 5,000 square foot temporary sorting center were put in place to collect, sort and package surplus office supplies and equipment. The efforts resulted in the donation of more than three truckloads of material to organisations such as Habitat for Humanity, Regroupement Partage, Computers for Success and Renaissance. The majority of old office furniture was resold and refurbished. In total, more than 95% of all surplus material was diverted from waste disposal sites.

SOCIAL HIGHLIGHTS

Our social initiatives support progress towards SDG 3: good health and well-being; SDG 5: gender equality; SDG 8: Decent Work; and SDG 11: Sustainable cities and communities.



ACCOMPLISHMENTS

- We donated over \$7.6 million in cash and in-kind donations during fiscal year 2020, representing 1.5% of Cogeco's pre-tax profit. We also offered air time for fundraising purposes to several organizations in our communities and territories. Our principal focus areas are culture, education and entrepreneurship, health and well-being, environment, connectivity, diversity and inclusion;
- Our workplace-related incident rate remained below industry averages in the jurisdictions where we operate;
- 36% of managerial level positions in fiscal 2020 were held by women, surpassing our goal of reaching 35% by 2021;
- We improved our global workforce engagement score by 12% during fiscal 2020 vs 2019;
- Participating employees of Cogeco Connexion volunteered 2,335 hours during the first year of the employee community involvement program launched in fiscal 2019;
- We partnered with Computers for Success Canada to donate used technology in order to support the program's intent to deliver improved access to technology for Canadians at risk of digital exclusion. During fiscal 2020, we donated more than 200 units to Computers for Success Canada.

GOVERNANCE HIGHLIGHTS

Our high corporate governance standards and initiatives support progress towards SDG 5: gender equality; SDG 8: Decent work and economic growth; and SDG 16: Peace, Justice and strong institutions.



ACCOMPLISHMENTS

- We remained in the top tier of family-controlled dual-class companies listed on a Canadian stock exchange according to the Globe and Mail's Board Games;
- 95% of new and current employees are trained on the Corporation's Code of Ethics;
- Overall, considering both Cogeco Communications and Cogeco, 53% of our Board of Directors members are women;
- We achieved our goal to have 100% of our top suppliers acknowledge the Corporation's Supplier Code of Conduct or meet our CSR standards through their own code of conduct;
- As part of the purchasing process, we continued to include CSR criteria in the Request for Proposal process. In fiscal 2020, during the selection of suppliers for furniture for the new Montréal head office, increased weight was given to sustainability criteria such as the product life cycle, location of manufacturing, material composition and disposal management.

For more information on our initiatives and our performance, please refer to the latest CSR Report, which was published in February 2020. It should be noted that the Corporation will also provide annual updates relative to its CSR program and related commitments directly on the Corporation's website at corpo.cogeco.com.

RECOGNITIONS

The Corporation's CSR program and related initiatives were recognized during fiscal 2020 as follows:

- For the third consecutive year, Cogeco Communications was named to Corporate Knights' Best 50 Corporate Citizens in Canada;
- Cogeco Communications is ranked among the World's 100 Most Sustainable Corporations by Corporate Knights;
- Cogeco Communications received the ISS Quality Score environmental badge, which recognizes our environmental disclosure practices;
- Cogeco Communications continues to be part of the *Jantzi Social Index*, consisting of 50 Canadian companies that passed a set of broadly based environmental, social and governance rating criteria;
- Cogeco is part of Forbes' prestigious Canada's Best Employers for 2020;
- Cogeco received the Caring Company Certification from Imagine Canada. This certification recognizes outstanding leadership in community investment and social responsibility in Canada;
- Cogeco was recognized as one of the companies at the forefront of having women in leadership positions, making the first annual Globe and Mail Women Lead Here listing in 2020.

12.5 DRIVING CSR THROUGH DIGITAL TRANSFORMATION

April 2020 marked the 50th anniversary of Earth Day, a unified response to an environment in crisis. Cogeco took this opportunity to highlight to employees how digital transformation can connect people, the planet and technology to drive social and environmental benefits. According to the "SMARTer 2030 ICT Solutions for 21st Century Challenges" by GeSI and Accenture report, the use of information and communications technologies ("ICT") could result in the avoidance of emissions representing almost 10 times those generated by the ICT sector. ICT, including products from the telecommunications industry, can enable a 20% reduction in global carbon emissions by 2030, holding emissions at 2015 levels. Cogeco is helping to dematerialize the economy by virtualizing services replacing higher-emission products or services with lower-emission ones.

Some key initiatives undertaken in fiscal 2020 to leverage digital solutions in achieving CSR goals included:

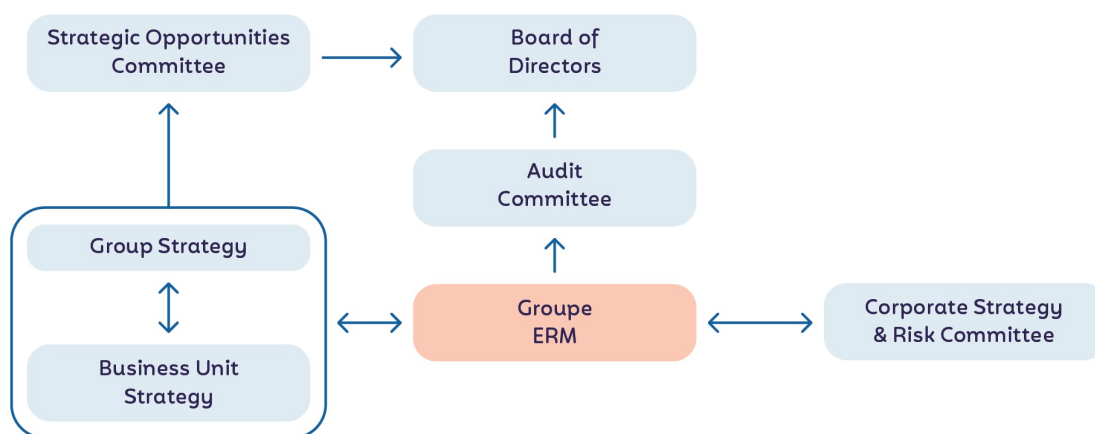
- Providing access to affordable Internet services to almost 3,000 low income families through Atlantic Broadband's Internet Assist program and Cogeco Connexion's participation in Canada's Connecting Families program;
- Using telematics devices that monitor driver behavior as well as other metrics related to vehicle performance to help drive fuel efficiency and reduce GHG emissions from our fleet. In fiscal 2020, the continued deployment of these devices resulted in over 90% of our fleet being connected;
- Providing customers with digital tools to allow self-installation and self-swap of Cogeco's products. These self-install capabilities bypass the need for appointments and technician visits, and are more convenient for customers. They also reduce the fuel consumption and GHG emissions from our fleet. In fiscal 2020, self-installs and self-swaps resulted in a reduction of over 225,000 truck rolls and approximately 2,400 tonnes of GHG emissions avoided;
- Continuing our migration to paperless billing, resulting in over 56% of customers receiving electronic bills at the end of fiscal year 2020.

13. UNCERTAINTIES AND MAIN RISK FACTORS

This section outlines the principal risks and uncertainties which Cogeco Communications and its subsidiaries currently believe to be material. It does not purport to cover all contingencies, or to describe all possible factors that might have an influence on the Corporation or its activities at any point in time. Furthermore, the risks and uncertainties outlined in this section may or may not materialize in the end, may evolve differently than expected or may have different consequences than those that are currently anticipated. If any of the following risks, or any other risks and uncertainties that the Corporation and its subsidiaries have not yet identified or that they currently consider not to be material, actually occur or become material risks, the Corporation and its subsidiaries' businesses, guidance, prospects, financial condition, results of operations and cash flows and consequently the price of the subordinate voting shares could be materially and adversely affected.

ENTERPRISE RISK MANAGEMENT

The Corporation has a formal integrated enterprise-wide risk management ("ERM") program structured and governed based on the most recent, widely adopted *Committee of Sponsoring Organizations of the Treadway Commission* ("COSO") ERM integrated framework. This framework puts forward the strong connection between risk, strategy and enterprise performance. As a result, the ERM approach at Cogeco is supported by a Risk Governance Ecosystem as illustrated below.



The Risk Governance Ecosystem solicits input from corporate functions as well as business units and feeds the strategic planning process.

Annual Consolidated Risk Assessment	Principal business risks that could impact the Corporation are identified on an annual basis. Risks considered are not only strategic, operational, financial, regulatory and compliance in nature but also environmental, social and governance ("ESG") related. In addition, as part of this annual risk assessment process, the Risk Appetite Framework, guiding strategic decision making, is reviewed and updated, as needed. Critical output from this annual risk assessment is used in the preparation of the corporate strategy and presented to the Board of Directors as part of the strategic planning process.
Business Unit Risk Assessment	As part of the strategic planning process, business units identify the principal risks specific to their business unit as well as mitigation plans.
Risk Oversight	On an annual basis, the Board, with the Audit Committee, reviews the principal business risks facing the Corporation and its subsidiaries as well as the mitigation measures implemented to manage these risks. On a quarterly basis: <ul style="list-style-type: none"> - the Corporate Risk Committee, comprised of the CEO and his direct reports, governs risk management. - the Audit Committee oversees the ERM activities and the operational and financial risks associated with significant programs or projects of the Corporation.
Other Risk Related Activities	A risk universe is maintained by the ERM function and updated through exchanges with members of the business units covering risks that could impact our risk assessment and strategic planning. In addition, context maps are developed at a group level and at a business unit level documenting forces that shape our environment representing potential opportunities, threats and risks facing the organization (e.g. demographic trends, rules and regulations, economy and environment, competition, technology trends, customer needs and uncertainties).

13.1 COMPETITIVE RISKS

The industries in which we operate are very competitive, and we expect competition to intensify in the future. Competition stems from various sources, including from traditional competitors upgrading their product offering such as incumbent phone companies investing in fiber to the home ("FTTH") networks, mobile competitors offering substitutes for fixed home Internet, Internet resellers in Canada which are gaining market share and municipalities overbuilding some of our networks.

Some of our competitors have longer operating histories, significantly greater financial, technical, marketing and other resources, greater brand recognition, a larger base of customers while some are digital native organizations with lower cost structures due to the absence of legacy systems to maintain. Our competitors may be able to adapt more quickly to new or emerging technologies, changes in customer expectations, and may also be able to develop services comparable or superior to those we offer at more competitive prices. Aggressive pricing and market offers of our competitors could result in pricing pressures and increased customer acquisition and retention costs and could put pressure and adversely affect our businesses and results of operations. Our ability to compete successfully within one or more of our market segments may thus decline in the future due to increased competition from current competitors or from new entrants taking bold actions to establish, sustain or increase their position in the market. Our businesses and results of operations could be materially adversely affected to the extent that we are unable to retain our existing customers and grow our customer base or have to lower revenue per customer in order to maintain market share.

Our principal competitive risks can be broken down as follows.

We face intensifying competition in our Canadian broadband services segment from traditional service providers and new entrants (e.g. Internet resellers, municipalities).

Large traditional phone companies and mobile service providers are our main network-based competitors. Those operators offer their services through evolving technologies such as FTTH, mobile high speed Internet services (including 4G and 5G), fixed-wireless services which allow for lower deployment costs in rural areas, and traditional satellite-based services primarily for video services. In addition to traditional competitors, other companies are developing new delivery models such as, Internet through low earth orbit satellites for hard to reach areas.

Over recent years, Internet resellers have gained significant market share in the Canadian territories where we offer our services, namely in Ontario. A favorable regulated wholesale regime, which does not require resellers to invest in network construction and low wholesale rates have enabled resellers to offer services at competitive price points. While resellers are primarily focussed on Internet services, some are also offering video and phone services.

In addition, certain Canadian municipalities plan to or have entered into public/private partnership arrangements to build and operate their own broadband networks, entering into competition with the Corporation in some of its service areas.

Some of the large integrated communications service providers we compete with in Canada also own broadcast content assets.

Some of the large integrated communications service providers we compete with in Canada own broadcast television content assets. This vertical integration could result in content being withheld from us or being made available to us at inflated prices or unattractive terms. In order to limit the power of vertically integrated entities on the public's access to diverse and quality programming services, the Canadian Radio-television and Telecommunications Commission ("CRTC") adopted in 2015 a Wholesale Code which applies to all broadcasting distribution undertakings ("BDU") and licensed programming undertakings. The Code prohibits a number of commercially unreasonable practices and sets out a dispute resolution mechanism for the renewal of affiliation agreements in situations where both the BDU and the programming undertaking intend to renew the agreement but are unable to agree on terms.

Intensifying competition in the American Broadband services segment.

The market in the United States continues to converge with mergers and acquisitions consolidating the industry. Similar to Canada, our main source of competition is traditional service providers with increasing competition for our video services from phone companies with fiber networks. Our telephony services face competition from the incumbent local exchange carriers ("ILEC"), as well as other providers such as mobile wireless and VoIP providers. We are also facing intensified competition from overbuild strategies in our Florida, Connecticut and New Hampshire markets.

Faced with increasing competition and customer demands, providers are enhancing the value they offer customers. Some are looking to disrupt the cable bundle by offering more choice to subscribers through personalized and tailored services that would eliminate contracts and bundling, others are expanding their service offering to include complementary services such as cybersecurity and home security to provide customers with a whole home experience while others still are launching a next version of WiFi to deliver faster speeds and better coverage throughout the home.

We face competition in both the Canadian and American Broadband services segments from streaming services.

Cogeco Connexion and Atlantic Broadband face increasing competition from streaming services offered not only from over-the-top ("OTT") video content providers such as Netflix but also from content owners launching or acquiring a streaming service of their own (e.g. Disney+). A majority of households already subscribe to streaming services as a complement to traditional video services. The streaming trend is expected to increase and we could be materially adversely affected if, as a result, a significant number of video customers disconnected their services or reduced their video spending and we may not be able to make up for the loss of revenue associated with this shift in customer preference.

Some of our main video competitors have entered the streaming sphere with their own streaming services. Additionally, several programming networks distributed by the Corporation offer direct-to-consumer products, such as Sportsnet in Canada or HBO Now, CBS All Access and Showtime Anytime in the United States. The Corporation enables the delivery of certain streaming services on its set top boxes, but does not own any streaming platform.

An increased number of consumers are switching from landline telephony to mobile wireless and IP based phone services.

An increased number of fixed phone customers are replacing fixed lines with mobile wireless and IP based phone services. This trend is largely the result of the increasing mobile wireless penetration rate in North America and the various unlimited offers launched by mobile wireless operators. We do not currently offer mobile wireless services and, therefore, further erosion of fixed phone customers could have a material adverse effect on our business, financial condition, prospects and results of operations.

We do not currently offer "four play" bundles that include mobile wireless communications.

Although we provide "double play" and "triple play" bundled services in Canada and the United States, with various combinations of Internet, video and landline telephony services being offered at bundled prices, we do not offer "four play" bundled services which include mobile wireless communications.

We remain interested in offering mobile wireless services to complement our service offerings to customers within our current footprint and grow our share of our customers' telecommunications spending. We believe that the model that is most likely achievable, while satisfying our profitability requirements is a hybrid model that would consist of segments where we would rely on our facilities and others on the incumbent's networks. We have started devoting relatively small amounts of capital towards accumulating spectrum to cover part of our territory, which we may use in such a hybrid MNO model or for fixed-wireless access services. However, we may not be able to secure on a timely basis the appropriate arrangements required to launch a mobile wireless operation. Also, launching a mobile wireless operation may result in downward pressure on adjusted EBITDA margins and free cash flow.

Our business services face competition from a variety of service providers.

Cogeco Connexion and Atlantic Broadband offer video, Internet and telephony services to businesses across their served areas, mainly to small to medium-sized businesses. Our business services in Canada and the United States face competition from a variety of service providers which generally offer a wider product offering. Our results of operations could be materially adversely affected to the extent that we are unable to retain our existing customers and grow our business customer base.

13.2 BUSINESS RISKS

STRATEGIC PLAN AND BUSINESS STRATEGIES

Our ability to successfully implement our business strategies described above in section "Corporate objectives and strategies" of this report in a timely and coordinated manner and to realize their anticipated benefits could be adversely affected by a number of factors beyond our control, including operating difficulties, increased ongoing operating expenses, regulatory developments, general economic conditions, increased competition, technological changes and the other factors described in this "Uncertainties and Main Risk Factors" section. Failure to successfully implement and execute our strategic plan and business strategies in a timely and coordinated manner could have a material adverse effect on our reputation, business, financial condition, prospects and results of operations and on our ability to meet our obligations, including our ability to service our Indebtedness.

PROGRAMMING COSTS

The financial performance of our businesses depends in large part on our ability to sustain and increase adjusted EBITDA by tightly controlling operating expenses. One of the largest drivers of such operating expenses is the programming license fees we pay to television programming service suppliers. The programming license fees of certain television programming services have increased significantly in Canada and in the United States in recent years, particularly for sports programming. Future increases in programming license fees could have a material adverse effect on our business and results of operations.

In Canada, the market for video content services is characterized by high levels of supplier concentration and vertical integration. Our largest programming supplier is Bell, with approximately 38% of our overall programming costs. Bell is vertically integrated and is also our largest competitor. While we have generally been able to obtain satisfactory distribution agreements with programming service suppliers in Canada to date, we may not be able to maintain our current arrangements, or conclude new arrangements that are economically viable; therefore the number of video channels may change from year to year.

Certain affiliation agreements with some of our major programming suppliers have expired and the terms and conditions for their renewal have not yet been fully concluded. We may be subject in upcoming Canadian programming services renewals to regulatory dispute resolution proceedings which could either help us obtain reasonable affiliation terms or compel us to pay increased programming license fees or otherwise subject us to adverse competitive conditions.

While the programming costs in the United States showed some signs of stabilization in the last two years, our ability to access content at reasonable rates, terms and conditions could still be negatively impacted by the changing content landscape resulting from the increasing number of company mergers such as AT&T and Time Warner, Disney and 21st Century Fox, Sinclair's purchase of Fox Regional Sports Networks and Viacom and CBS. This ongoing consolidation activity could enable combined companies to leverage popular content and negotiate better terms with us in the future or require that we carry their less popular services, thus further increasing costs. In addition to the increase in programming costs, most of our programming agreements require us to meet certain penetration thresholds, which limit our ability to offer smaller tiers and packages. Many of these same programmers are simultaneously launching their own direct-to-consumer products to effectively compete with programming distributors. While this adds marketplace confusion, it also presents alternative content sources for consumers, which could enable the rationalization of certain content and the reduction of wholesale cost.

We are also subject in the United States to increasing financial and other demands by broadcasters to obtain the required consent for the transmission of local broadcast programming to our customers. Federal law prohibits cable operators from carrying local broadcast stations without consent. Under federal "must-carry" regulations, local broadcast stations may require cable operators to carry such stations without

compensation. Alternatively, local broadcast stations may require cable operators to engage in “retransmission consent” negotiations, pursuant to which broadcast stations require significant payments and other concessions, in exchange for the right to carry such stations. We expect to continue to be subject to significant increases in fees by broadcasters in exchange for their required consent for the retransmission of local broadcast programming to customers. Failure to reach an agreement with a broadcaster could result in the loss of popular programming from our video services.

The inability to acquire and provide content to our customers that meets their expectations in terms of quality, format, variety of programming choices, packages and platforms at competitive rates which customers can afford to pay, could have a material adverse effect on our businesses as well as on our adjusted EBITDA should we fail to pass on the incremental increase in costs of programming to our customers.

ACCESS TO SUPPORT STRUCTURES AND MUNICIPAL RIGHTS OF WAYS FOR OUR BROADBAND OPERATIONS

Our business requires the execution of contracts with utilities in order to obtain access to utility support structures (such as utility poles) and with municipalities to obtain access to public rights-of-ways. Access to the support structures of telephone companies in Canada is provided on a tariff basis approved by the CRTC. In the case of Canadian provincial and municipal electric utilities, access to those support structures is subject to provincial and municipal requirements, and the terms for access to these structures may need to be obtained through provincial and municipal authorities. Where access to municipal rights-of-ways in our Canadian footprint cannot be secured, we may apply to the CRTC to obtain a right of access under the *Telecommunications Act*. In the United States, the Communications Act requires telephone companies and other utilities (other than those owned by municipalities or cooperatives) to provide cable systems with non-discriminatory access to any pole or rights-of-ways controlled by the utility. The rates that utilities may charge, together with certain terms and conditions for such access are regulated by the Federal Communications Commission (“FCC”), or, alternatively, by states that certify to the FCC that they regulate pole attachments.

Make ready work, which is the strengthening of the poles and/or relocation of other facilities on the poles to accommodate additional attachments, often takes several months to years to complete, which delays the company’s network expansion. If we have to support increasing costs in securing access to support structures needed for our broadband network or are unable to secure such agreements, we may not be able to implement our business strategies and our businesses, financial condition, results of operations, reputation and prospects could be materially adversely affected.

CUSTOMER EXPERIENCE

The Corporation strives to maintain respectful and transparent relationships with its customers by providing a superior customer experience and through honest marketing of its products. The loyalty of our customers and their retention depend on our ability to provide a service experience that meets or exceeds their expectations. The Corporation firmly believes that customer experience represents a key differentiator and has enacted various programs and actions at its different business units to constantly improve the customer experience and build upon this reputational capital.

With increased demand for digital capabilities, a failure to keep pace with customer demands could result in loss of customer base and difficulty in attracting potential new customers. In fiscal 2020, the Corporation accelerated its digital transformation efforts in response to the COVID-19 crisis and increased customer demands. Self-install capabilities and self-serve features were implemented to enable customers to manage their telecommunication service relationship online, and contact-free care options and virtual technical support were enabled. It is now possible for consumers to experience a simple end-to-end online customer journey. In addition, feedback on customer satisfaction and trends on new ways in which consumers wish to engage are measured, and advanced survey tools collect information at every point of contact, all in real time. Failure to evolve our customer experience in line with customer demands could adversely affect our business, financial results, reputation and brand value.

MEETING CUSTOMER EXPECTATIONS

Rising OTT fragmentation is also triggering a consumer call for aggregation of OTT offerings on a common platform. The Corporation has various on-going initiatives in place to evolve its products and service offerings, in the digital space, in line with customer expectations. Failure to anticipate and respond in a timely manner to changing customer expectations, changes in consumer behavior, technology trends and new market conditions may result in an outdated product/services portfolio, thus impairing our ability to retain current customers and attract new ones.

MARKETING AND SALES

The evolution of technology has enabled more targeted marketing approaches, initiatives and campaigns, thus changing the dynamics of the competitive environment. The Corporation is evolving its marketing and sales approach to align with customer preferences powered by data analytics and automated marketing platforms based on a highly segmented outreach. Furthermore, in the current market, transparency in pricing, easy to understand promotions and high value product packaging will be critical for both the acquisition and retention of customers.

The failure to achieve sales growth targets as a result of inadequate marketing and/or sales strategies, a deficient execution of said strategies or operating difficulties could have a material adverse effect on our business, financial condition and results of operations.

RELIANCE ON THIRD PARTIES

We currently offer video services to our customers in our Canadian and American footprint through a combination of equipment from various suppliers and depend on long-term agreements with suppliers for the provision of our telephony services to our residential and business customers. All these suppliers may experience business difficulties, restructure their operations, discontinue products or sell their operations to other suppliers, which could affect the availability and future development of our products and services. The inability to meet product or service delivery objectives or having to incur increased costs as a result of a failure in supply from third-party suppliers or change in suppliers could have a material adverse effect on our business, financial condition and results of operations.

MERGERS/ACQUISITIONS, DIVESTITURES AND REORGANIZATIONS

The Corporation has grown through acquisitions and will continue to seek attractive acquisition opportunities in the future. Achieving the expected benefits of acquisitions depends in part on successfully consolidating functions, integrating operations, procedures and personnel in a timely and efficient manner and realizing revenue, synergies and other growth opportunities from combining acquired businesses with ours. There is no assurance that the integration of acquisitions will be successful and will deliver the anticipated benefits and results. The integration process after an acquisition may lead to greater than expected operating expenses, financial leverage, capital costs, customer losses, asset write-offs, business disruption of our other businesses and management's diversion of time and resources. We may also be required to make capital expenditures or other investments, which may affect our ability to implement our business strategies to the extent we are unable to secure additional financing on acceptable terms or generate sufficient funds internally to cover these requirements. In addition, an acquired business could have liabilities that we fail or are unable to uncover and for which the Corporation may be responsible. Depending on the circumstances, pursuing acquisitions may also require that we raise additional capital, through debt or equity, and establish relationships with new financing partners, or use cash that would otherwise have been available to support our existing business operations. Also, we generally face competition in acquisition processes from strategic players and private equity funds, which can result in having to pay high acquisition prices or not be the ultimate buyers of the companies being sold. Any failure by Cogeco Communications to successfully integrate or address the risks associated with acquisitions or to take advantage of future strategic opportunities could materially adversely affect our financial position, financial performance, cash flows, business or reputation.

FOREIGN OPERATIONS

Our American broadband services activities are carried out by Atlantic Broadband in 11 states along the East Coast from Maine to Florida and represent 46.0% of the consolidated revenue of the Corporation. There are significant complexities and risks involved with carrying foreign operations, such as differences in political, legal, regulatory and taxation regimes or fluctuations in relative currency values against the Canadian dollar, all of which could have a material adverse effect on our operating and financial results.

TALENT MANAGEMENT AND SUCCESSION PLANNING

The fast pace of technological advancements and the digitization within the industry and the workplace have created a shortage of digital skills as industry players compete for the same resources. In addition, employees' expectations are evolving requiring comprehensive employee experiences to attract and retain talent. For this reason, the Corporation is actively engaged in fully participating in its employees' professional development through a variety of programs that promote continuous education, a healthy and safe work environment as well as diversity and inclusion and by offering competitive working conditions. Our success is substantially dependent on our capacity to attract new talent and our ability to retain existing talent and foster continued performance of our employees and executive officers. Many of these employees and executive officers are uniquely qualified in their areas of expertise, making it difficult to replace their services. Retaining key employees and executive officers is especially important to our business in order to keep pace with technological change and to avoid losing critical knowledge in the context of the organization's continued expansion. The loss of the services of key executives and/or employees in critical roles or inadequate processes designed to attract, develop, motivate and retain productive and engaged employees could impact our ability to deliver on organizational goals and have a material adverse effect on our growth, business and profitability.

LABOUR RELATIONS

Collective bargaining agreements are in place with some of our employees that are renewed from time to time in the normal course of business. The Corporation has been successful to date in negotiating satisfactory collective agreements with unions without significant labor disruption. While the Corporation's labor relations have been satisfactory in the past, we can neither predict the outcome of current or future negotiations relating to labor disputes, union representation or renewal of collective bargaining agreements, nor be able to avoid future work stoppages, strikes or other forms of labor protests pending the outcome of any current or future negotiations. A prolonged work stoppage, strike or other form of labor protest could have a material adverse effect on our businesses, operations and reputation. Although we have not experienced strikes or other forms of labour protests in recent years, the outcome of labor negotiations could adversely affect our businesses and results of operations. In addition, our ability to make short-term adjustments to control compensation and benefits costs is limited by the terms of our collective bargaining agreements.

13.3 REGULATORY RISKS

REGULATORY RISKS - CANADIAN AND AMERICAN BROADBAND SERVICES

Our Canadian and American broadband operations are subject to extensive and evolving laws, regulations and policies at the federal, provincial, state and local levels. Cogeco Connexion is primarily regulated respectively under the Broadcasting Act and the Telecommunications Act and regulations thereunder while Atlantic Broadband is regulated mainly by the Communications Act. In addition, they are both subject to other laws relating to copyright and intellectual property, data protection, privacy of personal information, spam, e-commerce, direct marketing and digital advertising which have become more prevalent in recent years. Changes to existing laws and regulations, the adoption of new laws and regulations as well as periodic reviews of copyright royalties payable in relation to the use by the Corporation of protected content could have negative financial, operational or competitive consequences on our business, financial condition, prospects and results of operations by increasing our costs, limiting our revenues and/or imposing additional restrictions on our operations.

Several recent and on-going legislative reviews, regulatory proceedings of the CRTC in Canada and the FCC in the United States or judicial hearings could have a material adverse effect on our business and results of operations depending on outcome. We describe below some of these legislative, judicial and regulatory developments in Canada and the United States.

Canada

Review of the Broadcasting Act, the Radiocommunication Act and Telecommunications Act

On June 5, 2018, the Government of Canada announced a joint review of the *Telecommunications Act*, the *Broadcasting Act* and the *Radiocommunication Act* (the "Acts"). This review was led by a panel of 7 external experts in the telecommunications and broadcast industry. The panel issued on January 29, 2020 its report entitled "Canada's Communications Future: Time to Act", which included 97 recommendations. It is difficult to predict how the Acts will be amended, and if so, when these changes will be implemented or how they will be construed by the relevant courts or the extent to which any changes might adversely affect.

Internet Wholesale Rates

The outcome of proceedings and the resulting wholesale rates applicable to Internet resellers could have a material adverse effect on our business, financial condition and results of operations. Please refer to the "Commitment, contingencies and guarantees" subsection for a description of the CRTC's wholesale Internet services 2019 costing decision.

Mobile Wireless Review

On February 28, 2019, the CRTC initiated a public consultation to review mobile wireless services in Canada. In this proceeding, the CRTC has considered three areas for review: (i) competition in the retail mobile wireless market, (ii) the current wholesale mobile wireless service regulatory framework, with a focus on wholesale MVNO access, and (iii) the future of mobile wireless services in Canada, with a focus on reducing barriers to infrastructure deployment. The CRTC is concerned that the mobile wireless market continues to demonstrate a high degree of market concentration. To protect the interest of users and further the policy objectives of the *Telecommunications Act*, the CRTC has determined as a preliminary view in this Notice of Consultation, that it would be appropriate to mandate the national mobile wireless carriers in Canada (Bell Mobility, Rogers Communications and Telus Communications) to provide wholesale MVNO access as an outcome of the proceeding. The CRTC received initial submissions on May 15, 2019 followed by a public hearing that started on February 18, 2020. Final comments were filed by participants on July 15, 2020. A decision is expected in late-2020.

Wholesale Code

On June 18, 2019, the FCA granted to Québecor the right to appeal a decision issued by the CRTC compelling TVA Group Inc. to continue providing its programming service, TVA Sports, to Bell TV customers until they can reach an agreement concerning the carriage and distribution terms of TVA Sports or until the CRTC renders a decision on matters not resolved by agreement. This order is commonly referred to as a "standstill" order and is made to enforce the "standstill" rule in the Discretionary Services Regulations. Québecor is arguing that the CRTC does not have the jurisdiction pursuant to the Broadcasting Act to interfere in commercial relations and force a party to maintain the distribution of a television signal during a dispute and that the standstill rule conflicts with the Copyright Act. Should the court confirm Québecor's position, this decision would have negative consequences for the Corporation as it would eliminate negotiation safeguards to ensure that BDUs are not threatened with the withdrawal of popular programming services or forced to accept unreasonable terms and conditions while disputes are pending before the CRTC. The Corporation has obtained the right to intervene before the Federal Court of Appeal on September 26, 2019 and will seek to have the court declare that the "standstill" rule is within the jurisdiction of the CRTC and does not conflict with the Copyright Act. In the absence of such negotiation safeguards, contained in Discretionary Services Regulations and in the Wholesale Code adopted in 2016 to govern the commercial arrangements between BDUs and programming services and in conditions of license of licensees, there is a risk that vertically integrated competitors may abuse their market power and impose anticompetitive terms for the distribution of their programming services or attempt to withhold content from us.

United States

Regulation of Internet

In 2017, the FCC classified broadband Internet access service as an information service, rather than a telecommunications service under Title II of the Communications Act (which would subject such service to more onerous regulations). In 2019, the U.S. Court of Appeals for the District of Columbia upheld the FCC's classification, but it vacated the FCC's directive preventing state and local governments from adopting any requirements inconsistent with the FCC's decision, which will likely empower state and local governments to adopt legislation regulating Internet service. Several states have passed or proposed legislation that imposes open internet requirements. Some federal and state legislators have advocated for increased regulation of broadband service, especially in light of COVID-19, during which broadband service has been

deemed to be an essential service. Some legislators have even advocated for the creation of public broadband Internet service providers. Any such legislation could reduce our revenues and restrict the way we offer products and services, as well as increase competition from publicly-funded service providers. The presidential election and certain congressional elections in November 2020 could result in a change in power in the executive, legislative and regulatory branches of government. This could result in increased regulation of broadband and other services provided by the Corporation.

Television Viewer Protection Act

As mandated by the STELA Reauthorization Act of 2014 ("STELARA"), certain sections of the Copyright Act and the Communications Act relating to cable and/or DBS retransmission of broadcast signals were scheduled to expire at the end of 2019. One such section required that broadcasters and multichannel video programming distributors ("MVPDs") negotiate retransmission consent agreements in good faith. On December 20, 2019, the President signed into law a permanent extension of the good faith retransmission consent negotiation requirements. The Television Viewer Protection Act, also includes customer transparency provisions which state information which must be provided by MVPDs to customers. The new transparency rules were scheduled to go into effect June 20, 2020, but the FCC extended the deadline to December 20, 2020.

13.4 TECHNOLOGY RISKS

NETWORK FAILURE

The Corporation manages network failure risks through a business continuity planning program as well as through a Disaster Recovery Policy and related procedures. Operational risk assessments are also conducted on an annual basis minimally to consider anticipated and unanticipated events (including climate-related incidents) in order to protect the viability of all critical business processes.

In Canada, Cogeco Connexion has a backup system for retransmission through another headend or a mobile headend if one of our headends fails. In the United States, Atlantic Broadband also has emergency backup or replacement sites, including several interconnects with adjacent cable operators to be able to use their signals as a backup. In addition, headends located in high risk areas (e.g. flood zone) are relocated as deemed necessary.

A failure in our headends could prevent us from delivering some of our services through a portion of our network until we have implemented backup solutions or resolved the failure and result in significant customer dissatisfaction, loss of revenue and potential litigation, depending on the severity of the outage condition.

MAINTENANCE OF OUR NETWORK, INFRASTRUCTURE AND IT SYSTEMS

We continuously maintain, upgrade or replace our network, infrastructure and IT systems in order to optimize our networks and systems, increase the speed of our Internet service and improve and provide new or enhanced services that meet the needs and expectations of our customers. If we are unable to do so because of capital or other constraints, this may materially adversely affect our ability to compete and negatively impact business and financial performance.

DEPENDENCE ON TECHNOLOGY SYSTEMS

Our daily operations are highly dependent on information technology systems and software, including those provided by certain third party suppliers. Our business is dependent on our payroll, customer billing, service provisioning, financial, accounting and other data processing systems. We rely on these systems to process, on a daily basis, a large number of transactions. An inability to maintain and enhance our existing information technology systems or obtain new systems to support additional customer growth or new products and services could have a material adverse effect on our ability to acquire new customers, retain existing customers, produce accurate and timely billing, generate revenue growth and manage operating expenses, or comply with regulatory requirements, all of which could materially adversely affect our operational results and financial position. Any future difficulties from system replacements or upgrades could damage our brand and reputation and have a material adverse effect on our results of operations, compliance with regulatory requirements, financial performance and future business prospects.

CYBER THREATS

Cybersecurity threats have grown in frequency and complexity over recent years in the public and private sectors. Security measures are in place to protect Cogeco and its subsidiaries against such threats. We continue to enhance our cyber resilience posture, the overall governance over information security and the security awareness of our employees through continuous training and continuous improvement efforts surrounding the security of our IT systems, the controls within our IT systems and our business processes. During fiscal 2020, the Corporation did not experience any major cybersecurity breach.

There can however be no certainty that future cybersecurity threats such as data theft, unauthorized usage and disclosure, viruses, ransomware and sabotage will not occur and have an adverse effect on our brand and reputation as well as entail significant legal and financial exposure.

DATA PROTECTION

We do not disclose our customers' personal information without their consent, unless otherwise required or authorized by law, or in accordance with the Privacy Policy of each subsidiary. We do not sell, trade, exchange that information either. In the course of our business, we collect, use and manage various data about our customers, including sensitive personal information but policies, procedures, guidelines, business rules and safeguards are in place to ensure that this information is protected and treated appropriately under applicable privacy laws. Each subsidiary

within the Corporation has implemented security measures that are designed to safeguard personal information against unauthorized access, such as firewalls, endpoint protection, vulnerability management, security site monitoring and intrusion detection systems. Personal information will be retained only as long as necessary for the fulfillment of the purposes for which it was collected and for which consent was received. The Corporation is committed to providing transparency to its customers with respect to the Corporation's practices in handling their information, and has a legal obligation to provide access thereto to individuals to whom this information belongs.

Each year, our employees must agree to abide by the rules of our Code of Ethics and the Information and Cybersecurity Policy and are required to certify in writing that they will comply with them. Privacy training is provided on a regular basis, taking into consideration risks and needs. Existing and proposed privacy legislation and regulations, including changes in the manner in which such legislation and regulations are interpreted by courts in Canada and the United States may impose limits on our collection, use and disclosure of certain kinds of information.

Any malfunction of our systems or security breaches resulting in unauthorized access to, loss, use or disclosure of, customer and employee personal information could result in the potential loss of business, damage to our market reputation, litigation, regulatory scrutiny and penalties.

13.5 FINANCIAL RISKS

CAPITAL COMMITMENTS, LIQUIDITY AND DEBT

Cogeco Communications relies on its free cash flow generated by operations to fund its capital expenditures program and on capital markets to refinance its indebtedness and further grow its business through acquisitions. Capital markets are volatile and Cogeco Communications may not be able to access them at reasonable conditions if its credit profile and general economic conditions deteriorate. Such conditions could lead to higher cost of funding, deteriorating financial position and liquidity, and more restrictions on the Corporation's operations.

We may be unable to generate sufficient cash flow and maintain an adequate liquidity position to ensure and preserve the Corporation's financial stability/solvency and fund strategic imperatives as well as operational and financial obligations of the business.

CURRENCY AND INTEREST RATES

Our financial results are reported in Canadian dollars and a significant portion of our revenue, operating expenses and capital expenditures are realized in US dollars. For the purposes of financial reporting, any change in the value of the Canadian dollar against the US dollar during a given financial reporting period would result in variations on our operating results and financial condition. Although a significant portion of our indebtedness, which is denominated in US dollars, serves as hedges of net investments in foreign operations, our revenue, adjusted EBITDA and indebtedness could fluctuate materially as a result of foreign exchange rate fluctuations.

Interest rate volatility can also impact interest cost on floating interest rate instruments and have a material adverse effect on our financial results.

CREDIT RATINGS

Credit ratings issued by rating agencies can affect the availability and terms of the Corporation's debt particularly, a downgrade below investment grade of secured debt currently rated as investment grade, could materially adversely affect our cost of capital and access to capital.

TAXATION MATTERS

Our business operations are subject to various tax laws and regulations. These tax laws and regulations are subject to frequent changes and evolving interpretation. While we believe we have adequately provided for all taxes based on the information available to us, the calculation of taxes requires significant judgment in interpreting laws and regulations. A failure to accurately assess and record taxes could result in material changes to tax amounts recorded and an assessment of interest and penalties having a material adverse effect on our financial results.

Changes to Canadian and foreign tax policies in the tax jurisdictions where we are present may also have a material adverse effect on our current financial structure and the level of our future tax costs and liabilities.

13.6 ECONOMIC CONDITIONS

We are affected by general economic conditions, consumer confidence and spending, and the demand for our products and services. Adverse general economic conditions, such as economic downturns or recessions leading to a declining level of retail and commercial activity could have a negative impact on the demand for our products and services. More specifically, adverse general economic conditions could result in customers delaying or reducing purchases of our products and services or discontinuing using them, and a decline in the creditworthiness of our customers could increase our bad debt expense.

13.7 HUMAN-CAUSED AND NATURAL THREATS TO OUR NETWORK, INFRASTRUCTURE AND SYSTEMS

In the event of natural disasters, terrorist acts or other catastrophic occurrence, either natural or man-made, our ability to protect our network, infrastructure, including customer data, and to maintain ongoing operations could be significantly impaired. Although we have business continuity and disaster recovery plans and strategies in place, they may not be successful in mitigating the effects of a natural disaster, terrorist act or catastrophic occurrence which could have a material adverse effect on our business, prospects, financial condition and results of operations. Moreover, we have limited insurance coverage against the losses resulting from natural disasters affecting our networks.

CLIMATE CHANGE

The effects of global climate change are increasing the severity and frequency of natural threats on our business, such as weather-related events, and may result in increased operational and capital costs. Certain of our facilities are located in areas more prone to weather-related events such as Atlantic Broadband's operations in Florida. Some of the more significant climate-related risks that were identified include: 1) increased operational costs due to increase in fuel and energy prices coming from carbon taxes and cap and trade programs; 2) increased operational and capital costs as a result of damage to facilities and/or equipment because of extreme weather events or increased variability in weather patterns and 3) increased operational and capital costs due to longer term shifts in climate patterns such as sea-level rise or chronic heat waves. For example, increased temperatures could impact our network equipment which could entail the need for additional cooling devices and could reduce equipment lifespan. Ice storms or extreme precipitations could have a negative impact on the physical network infrastructure which could affect the delivery of service to our customers. Hurricanes and cyclones could impact or destroy the facilities or portions of the network and could also impact our insurance-related expenses. Impacts to our supply chain would adversely affect the ability of suppliers to supply required products and services and increased capital expenditures could result from the substitution of existing products and services with lower emissions options.

Climate-related risks are mitigated through business continuity and disaster recovery plans and strategies as well as through the implementation of energy efficiency initiatives that will contribute to the reduction of operational costs (refer to the "Corporate Social Responsibility" section). The magnitude of the effects of climate change could be unpredictable and therefore, our plans may not successfully mitigate the consequences of a natural disaster. This could have a material adverse effect on our business, prospects, financial condition and results of operations.

13.8 COMMUNITY ACCEPTANCE RISKS

The Corporation is committed to taking part in developing communities. Our markets cover many rural areas and smaller centres. By bringing affordable broadband services to underserved markets, we make an important contribution to their economic and social development. The availability of broadband services at competitive prices promotes job creation by local businesses by helping them become more competitive. Moreover, our network investments help companies establish operations, expand and diversify. While call centres are often outsourced in our industry, we are committed to providing our customers with local customer service agents from the communities where we operate. In addition, the Corporation has developed community-focused initiatives, reflecting the particular needs of their communities. In 2020, the Corporation contributed \$7.6 million in cash and in-kind through donations and sponsorships, mostly contributing to culture, education, health and wellbeing. Lastly, YourTV/NousTV, our unique community television channels, are a powerful complement to our donations and sponsorship activities by providing broad visibility to local community activities and interests. YourTV/NousTV stations are dedicated to in-depth coverage of local people, places, events and issues of interest to each of the communities we serve and are funded by a regulated percentage of our gross video revenues.

Failure to maintain our community acceptance may affect our capacity to attract and retain customers therefore impacting our revenue generation and growth prospects. Furthermore, it may result in losing our social license to operate and our capacity to remain competitive in the market.

13.9 ETHICAL BEHAVIOR RISKS

Maintaining high ethical practices throughout the Corporation is particularly important in the context of the Corporation's continued expansion. The Corporation's Ethics Steering Committee, comprised of representatives from Human Resources, Legal, Finance and Internal Audit functions, provides executive oversight of our overall Ethics program, including the review of our Code of Ethics and related policies. Besides having a comprehensive Code of Ethics, the Corporation has an anonymous and confidential Ethics Line which allows employees and other individuals to report any perceived or actual instances of violations to the Corporation's Code of Ethics and employees are also encouraged to use this tool to seek advice about ethical and lawful behavior. In order to increase employee's awareness on ethics, a formal online training on the Code of Ethics is mandatory for all new employees and Board members and must be completed by employees every two years subsequently. Furthermore, articles on various topics related to ethics are published throughout the year to all employees. Despite these efforts, the Corporation may experience ethics breaches which could not only adversely affect our reputation, but may also cause the Corporation to incur extraordinary expenses related to penalties and fines.

13.10 OWNERSHIP RISKS

The Corporation is controlled by Cogeco Inc. through its ownership of multiple voting shares. Cogeco Inc. is in turn controlled by Gestion Audem Inc., a company controlled by the members of the family of the late Henri and Marie-Jeanne Audet (the "Audet Family"), through its ownership of Cogeco's multiple voting and subordinate voting shares. Both the Corporation and Cogeco Inc. are reporting issuers in Canada with subordinate voting shares listed on the Toronto Stock Exchange. Pursuant to the Conflicts Agreement in effect between the Corporation and Cogeco Inc., all cable television undertakings must be owned or controlled by the Corporation. Cogeco Inc. is otherwise free to own and operate any other business or to invest as it deems appropriate. It is possible that situations could arise where the respective interests of the Audet Family and shareholders or other stakeholders of Cogeco Inc. and of the shareholders or other stakeholders of the Corporation could differ and that the interests of these shareholders or stakeholders be adversely affected by such situations.

13.11 LITIGATION RISKS

We are involved in various litigation matters arising in the course of our business. The outcome of these claims or litigations is uncertain and may adversely affect our reputation, results of operation, liquidity or financial condition. Based on information currently known to us, we do not expect any of these claims and proceedings, individually or in total, to the extent not provided for through insurance or otherwise, to have a material adverse effect on our business, results of operations or financial condition.

14. CONTROLS AND PROCEDURES

Internal control over financial reporting ("ICFR") is a process designed to provide reasonable, but not absolute, assurance regarding the reliability of financial reporting and of the preparation of financial statements for external purposes in accordance with IFRS. The President and Chief Executive Officer ("CEO") and the Senior Vice President and Chief Financial Officer ("CFO"), together with Management, are responsible for establishing and maintaining adequate disclosure controls and procedures ("DC&P") and ICFR, as defined in National Instrument 52-109. Cogeco Communications' internal control framework is based on the criteria published in the updated version released in May 2013 of the report *Internal Control Integrated Framework* issued by the *Committee of Sponsoring Organizations of the Treadway Commission*.

The CEO and CFO, supported by Management, evaluated the overall design and effectiveness of the Corporation's DC&P and ICFR at August 31, 2020, and concluded that they were effective.

15. ACCOUNTING POLICIES

15.1 CRITICAL ACCOUNTING POLICIES AND ESTIMATES

Preparation of the consolidated financial statements in accordance with IFRS requires management to adopt accounting policies and to make estimates and assumptions that affect the reported amounts of assets and liabilities, contingent assets and liabilities and revenue and expenses during the reporting year. A summary of the Corporation's significant accounting policies is presented in note 2 of the consolidated financial statements. The following accounting policies were identified as critical to Cogeco Communications' business operations.

REVENUE RECOGNITION

Revenue is measured based on the consideration received or receivable from a customer, net of returns and discounts. The Corporation recognizes revenue from the sale of products or the rendering of services when it transfers control to the customer.

Revenue is recognized applying the following five steps:

- Identify the contract with a customer;
- Identify the performance obligations in the contract;
- Determine the transaction price;
- Allocate the transaction price to the performance obligations in the contract; and
- Recognize revenue when (or as) the Corporation satisfies a performance obligation.

The Corporation's principal sources of revenue are recognized as follows:

Residential

- Monthly subscription revenue (net of any discounts, rebates, refunds and credits) for Internet, video and telephony services and rental of equipment is recognized on a monthly basis, as the services are provided;
- Revenue from data services, long-distance and other pay-per-use services is recognized on a monthly basis, as the services are provided; and
- Revenue generated from the sale of customer premise equipment or other equipment is recognized when the customer accepts the delivery of the equipment.

Commercial

- Monthly subscription revenue (net of any discounts, rebates, refunds and credits) for Internet, video and telephony services and rental of equipment is recognized on a straight-line basis over the contractual period arrangement;
- Revenue generated from the sale of customer premise equipment or other equipment is recognized when the customer accepts the delivery of the equipment; and
- Revenue from colocation, network connectivity, hosting, cloud and managed services is recognized on a straight-line basis over the contractual period arrangement (pertaining to Cogeco Peer 1 discontinued operations).

Other

- Revenue mainly from advertising, which is recognized as the services are provided.

BUSINESS COMBINATIONS

Fair value of assets acquired and liabilities assumed in a business combination is estimated based on information available at the date of acquisition and involves considerable judgment in determining the fair values assigned to the identifiable assets acquired and liabilities assumed on acquisition. Among other things, the determination of these fair values involves the use of discounted cash flow analyses, estimated future margins and estimated future customer counts.

CAPITALIZATION OF PROPERTY, PLANT AND EQUIPMENT

During construction of new assets, direct costs plus overhead costs directly attributable to the asset are capitalized. Borrowing costs directly attributable to the acquisition or construction of qualifying assets, which require a substantial amount of time to get ready for their intended use or sale, are capitalized until such time the assets are substantially ready for their intended use or sale. All other borrowing costs are recorded as financial expense in the period in which they are incurred.

The cost of replacing a part of property, plant and equipment that is ready for its intended use is added to the carrying amount of the property, plant and equipment or recognized as a separate component if applicable, only if it is probable that the economic benefits associated with the cost will flow to the Corporation and the cost can be measured reliably. The carrying amount of the replaced part is derecognized. All other day-to-day maintenance costs are recognized in profit or loss in the period in which they are incurred.

PROVISIONS

Management's judgment is used to determine the timing, likelihood and the amount of expected cash outflows as well as the discount rate.

CONTINGENCIES

Contingencies such as lawsuits, taxes, impact of regulatory decisions, and commitments under contractual and other commercial obligations are estimated based on applying significant judgement in determining if a loss is probable and in determining the estimated outflow of economic resources. Such contingencies are estimated based on the information available to the Corporation.

MEASUREMENT OF NON-FINANCIAL ASSETS

The measurement of non-financial assets requires the use of management judgment to identify the existence of impairment indicators and the determination of cash-generating units ("CGUs"). Furthermore, when determining the recoverable amount of a CGU or an asset, the Corporation uses significant estimates such as the estimation of future cash flows and discount rates applicable. Any significant modification of market conditions could translate into an inability to recover the carrying amounts of non-financial assets.

DEFERRED TAXES

Deferred tax assets and liabilities require estimates about the nature and timing of future permanent and temporary differences, the expected timing of reversals of those temporary differences and the future tax rates that will apply to those differences.

15.2 ADOPTION OF NEW ACCOUNTING STANDARDS, AMENDMENTS TO STANDARDS AND INTERPRETATIONS

IFRS 16

Effective September 1, 2019, the Corporation adopted IFRS 16, *Leases* using the modified retrospective approach whereby the financial statements of prior periods presented are not restated and the cumulative effect of the initial application is adjusted to opening retained earnings. IFRS 16 replaces previous accounting standards for leases, including IAS 17, *Leases* and IFRIC 4, *Determining whether an arrangement contains a lease*, and establishes a comprehensive model for the identification of lease arrangements, their recognition, measurement, presentation and disclosure in the financial statements of the lessees and lessors.

IFRS 16 eliminates the distinction between operating and finance leases for lessees, requiring instead the recognition on the statement of financial position of a right-of-use ("ROU") asset (representing the right to use the underlying asset) and a lease liability (representing the obligation to make the lease payments) for all leases at lease commencement, with certain exceptions permitted through elections and practical expedients. The accounting treatment for lessors and for leases previously classified as finance leases remains largely the same as under IAS 17.

As a result of adopting IFRS 16, the Corporation has recognized an increase to both assets and liabilities on the consolidated statement of financial position, stemming from the recognition of the ROU assets and the corresponding lease liabilities. Lease liabilities at transition have been measured at the present value of remaining future lease payments discounted at the related incremental borrowing rate as at September 1, 2019. ROU assets at transition have been measured at an amount equal to the lease liability, adjusted for any prepaid or accrued rent related to that lease. The ROU assets are presented within *Property, plant and equipment* and the lease liabilities within *Long-term debt*.

The total lease expenses over the lease term remain unchanged, however the timing of recognition of these expenses are effected. The impact upon adoption of IFRS 16, relative to leases that have previously been accounted for as operating leases, represents a decrease in *Operating expenses* (due to the removal of rent expense), an increase in *Depreciation and amortization* (due to the depreciation of the ROU assets) and an increase in *Financial expense* (due to the accretion of the lease liabilities), on the consolidated statement of profit or loss.

Although the actual cash flows relative to leases that have previously been accounted for as operating leases are unaffected, the impact on the Corporation's consolidated statement of cash flows represents an increase in cash flows from operating activities and a decrease in cash flows from financing activities. This is the result of the presentation of the payment of the principal component of these leases as a cash flow use within the financing activities under the new standard, versus previously presented as an operating activities cash flow use.

As permitted by IFRS 16, the Corporation has elected to apply certain practical expedients, most notably:

- Not separating non-lease components from lease components for certain classes of underlying assets;
- Applying a single discount rate to a portfolio of leases with similar characteristics;
- Excluding initial direct costs from measuring the right-of-use assets as at September 1, 2019;
- Using hindsight in determining the lease term where the contract contains extension or termination options;
- Electing not to recognize lease liabilities and right-of-use assets for short-term leases or low-value leases; and
- Electing to exclude intangible assets from the application of IFRS 16.

The table below shows the impact of adopting IFRS 16 on the September 1, 2019 consolidated statement of financial position:

	August 31, 2019		September 1, 2019
	As reported	IFRS 16 impact	Upon adoption of IFRS 16
	\$	\$	\$
Property, plant and equipment	2,007,610	41,981	2,049,591
Current portion of long-term debt ⁽¹⁾	22,601	4,566	27,167
Long-term debt	3,382,258	39,877	3,422,135
Trade and other payables	260,481	(2,462)	258,019

(1) Excluding *Balance due on business combinations*.

The difference between operating lease commitments of \$160 million at August 31, 2019 and lease liabilities of \$44.4 million recognized upon adoption of IFRS 16 on September 1, 2019 was mainly the result of:

- The exclusion of approximately \$89 million of lease payments related to agreements that do not meet the criteria set out in IFRS 16, most notably for rent of support structures;
- The exclusion of approximately \$27 million of certain costs contractually committed under lease contracts, which do not qualify to be accounted for as lease liabilities, such as variable lease payments not tied to an index or rate;
- The diminishing effect of discounting the minimum lease payments, using the weighted average incremental borrowing rate of 3.57% at September 1, 2019, of approximately \$12 million; and
- The inclusion of approximately \$20 million of lease payments related to reasonably certain renewal periods or extension options that had not been exercised at August 31, 2019.

Amendment to IFRS 16

In May 2020, the IASB amended IFRS 16, *Leases* to include a practical expedient which permits lessees not to assess whether rent concessions that occur as a direct consequence of the COVID-19 pandemic are lease modifications and, instead, account for those rent concessions as if they were not lease modifications. The amendments are effective for annual reporting periods beginning on or after June 1, 2020, with earlier application permitted. The Corporation adopted these amendments on June 1, 2020 and elected to apply the practical expedient to all eligible rent concessions. The adoption of these amendments had no impact on the consolidated financial statements.

Amendments to IFRS 9, IAS 39 and IFRS 7 - Interest Rate Benchmark Reform (Phase 1)

In September 2019, the IASB amended IFRS 9, *Financial instruments*, IAS 39, *Financial instruments: recognition and measurement*, and IFRS 7, *Financial instruments: disclosures*, to provide temporary exceptions from applying specific hedge accounting requirements during the period of uncertainty arising from the interest rate benchmark reform. In addition, the amendments to IFRS 7 provide specific disclosure requirements regarding the uncertainty arising from the interest rate benchmark reform. The amendments modify some specific hedge accounting requirements to provide relief from potential effects of the uncertainty caused by the IBOR reform. In addition, the amendments require companies to provide additional information to investors about their hedging relationships which are directly affected by these uncertainties. The amendments are effective for annual periods beginning on or after January 1, 2020, with earlier application permitted. The Corporation early adopted these amendments for its fiscal year beginning September 1, 2019. The adoption of these amendments had no material impact on the Corporation's consolidated financial statements.

IFRIC 23

IFRIC 23, *Uncertainty over income tax treatments* clarifies the application of recognition and measurement requirements in IAS 12, *Income Taxes* when there is uncertainty over income tax treatments. It specifically addresses whether an entity considers uncertain tax treatments separately or as a group, the assumptions an entity makes about the examination of tax treatments by taxation authorities, how an entity determines taxable profit (tax loss), tax bases, unused tax losses, unused tax credits and tax rates and how an entity considers changes in facts and circumstances. The interpretation is effective for annual periods beginning on or after January 1, 2019, with earlier application permitted. The Corporation adopted this interpretation for the annual period beginning on September 1, 2019. The adoption of this interpretation had no impact on the consolidated financial statements.

15.3 NEW ACCOUNTING STANDARDS AND INTERPRETATIONS ISSUED BUT NOT YET EFFECTIVE

New standards, interpretations and amendments to existing standards were issued by the IASB or the IFRS Interpretations Committee that are mandatory but not yet effective for the year ended August 31, 2020, and have not been applied in preparing these consolidated financial statements. The following amendments to standards may have an impact on future consolidated financial statements of the Corporation:

Amendments to IFRS 9, IAS 39, IFRS 7, IFRS 4 and IFRS 16 - Interest Rate Benchmark Reform (Phase 2)	In August 2020, the IASB issued <i>Interest Rate Benchmark Reform - Phase 2</i> , which amends IFRS 9, <i>Financial instruments</i> , IAS 39, <i>Financial instruments: recognition and measurement</i> , IFRS 7, <i>Financial instruments: disclosures</i> , IFRS 4, <i>Insurance contracts</i> and IFRS 16, <i>Leases</i> . The Phase 2 amendments address issues that might affect financial reporting after the reform of an interest rate benchmark, including its replacement with alternative benchmark rates. These amendments complement those issued in 2019 and focus on issues that might affect financial reporting during the reform of an interest rate benchmark, including the effects of changes to contractual cash flows or hedging relationships arising from the replacement of an interest rate benchmark with an alternative benchmark rate (replacement issues). The amendments are effective for annual periods beginning on or after January 1, 2021, with earlier application permitted. The Corporation is in the process of determining the extent of the impact of this change on its consolidated financial statements.
Amendments to IFRS 3	In October 2018, the IASB amended IFRS 3, <i>Business combinations</i> to clarify the definition of a business, with the objective of assisting entities in determining whether a transaction should be accounted for as a business combination or as an asset acquisition. The amendments are applicable to transactions for which the acquisition date is on or after the beginning of the first annual reporting period beginning on or after January 1, 2020, with earlier application permitted. The effects, if any, of these amendments, will be dependent on the facts and circumstances of any future business combinations.

16. NON-IFRS FINANCIAL MEASURES

This section describes non-IFRS financial measures used by Cogeco Communications throughout this MD&A. These financial measures are reviewed in assessing the performance of the Corporation and used in the decision-making process with regards to our business units. Reconciliations between "free cash flow", "adjusted EBITDA", "adjusted EBITDA margin" and "capital intensity" and the most comparable IFRS financial measures are also provided. These financial measures do not have standard definitions prescribed by IFRS and, therefore, may not be comparable to similar measures presented by other companies.

This MD&A also makes reference to key performance indicators on a constant currency basis, including revenue, "adjusted EBITDA", acquisition of property, plant and equipment and "free cash flow". Measures on a constant currency basis are considered non-IFRS financial measures and do not have any standardized meaning prescribed by IFRS and therefore, may not be comparable to similarly measures presented by other companies.

Non-IFRS financial measures	Application	Calculation	Most comparable IFRS financial measures
Adjusted EBITDA and adjusted EBITDA margin	Adjusted EBITDA and adjusted EBITDA margin are key measures commonly reported and used in the telecommunications industry, as they allow comparisons between companies that have different capital structures and are more current measures since they exclude the impact of historical investments in assets. Adjusted EBITDA is one of the key metrics employed by the financial community to value a business and its financial strength. Adjusted EBITDA for Cogeco Communications' business units is equal to the segment profit (loss) reported in note 5 of the consolidated financial statements.	Adjusted EBITDA: - Profit for the year from continuing operations add: - Income taxes; - Financial expense; - Depreciation and amortization; and - Integration, restructuring and acquisition costs. Adjusted EBITDA margin: - Adjusted EBITDA divided by: - Revenue	Profit for the year from continuing operations No comparable IFRS financial measure
Free cash flow ⁽¹⁾	Management and investors use free cash flow to measure Cogeco Communications' ability to repay debt, distribute capital to its shareholders and finance its growth.	Free cash flow ⁽¹⁾ : - Adjusted EBITDA add: - Amortization of deferred transaction costs and discounts on long-term debt; - Share-based payment; - Loss (gain) on disposals and write-offs of property, plant and equipment; - Defined benefit plans expense, net of contributions; deduct: - Integration, restructuring and acquisition costs; - Financial expense ⁽²⁾ ; - Current income taxes; - Acquisition of property, plant and equipment ⁽³⁾ ; and - Repayment of lease liabilities.	Cash flows from operating activities
Constant currency basis	Revenue, operating expenses, adjusted EBITDA, acquisition of property, plant and equipment and free cash flow are measures presented on a constant currency basis to enable an improved understanding of the Corporation's underlying financial performance, undistorted by the effects of changes in foreign exchange rates.	Constant currency basis is obtained by translating financial results from the current periods denominated in US dollars at the foreign exchange rates of the comparable periods of the prior year. The average foreign exchange rate during the three-month period and year ended August 31, 2019 were 1.3222 USD/CDN and 1.3255 USD/CDN, respectively.	No comparable IFRS financial measure
Capital intensity	Capital intensity is used by Cogeco Communications' management and investors to assess the Corporation's investment in capital expenditures in order to support a certain level of revenue.	Capital intensity: - Acquisition of property, plant and equipment ⁽³⁾ divided by: - Revenue	No comparable IFRS financial measure

(1) During the second quarter of fiscal 2020, the Corporation modified the calculation method of its free cash flow in order to reflect how the Corporation analyzes and makes projections of its free cash flow. This modification has no impact on the result under the current and former calculation, and therefore free cash flow for the comparable periods were not affected by this change.

(2) Excludes the non-cash gain on debt modification.

(3) Excludes the acquisition of right-of-use assets and the purchases of spectrum licenses.

16.1 ADJUSTED EBITDA AND ADJUSTED EBITDA MARGIN RECONCILIATION

The reconciliation of adjusted EBITDA to the most comparable IFRS financial measure and the calculation of adjusted EBITDA margin are as follows:

	Three months ended		Years ended	
	August 31, 2020	August 31, 2019 (1)	August 31, 2020	August 31, 2019 (1)
<i>(in thousands of Canadian dollars, except percentages)</i>	\$	\$	\$	\$
Profit for the period from continuing operations	96,148	92,403	396,591	356,908
Income taxes	30,305	20,502	112,321	83,655
Financial expense	39,302	40,437	131,093	175,502
Depreciation and amortization	124,825	121,556	499,238	480,725
Integration, restructuring and acquisition costs	3,955	712	9,486	11,150
Adjusted EBITDA	294,535	275,610	1,148,729	1,107,940
Revenue	605,168	583,673	2,384,283	2,331,820
Adjusted EBITDA margin	48.7 %	47.2 %	48.2 %	47.5 %

(1) IFRS 16 was adopted by the Corporation on September 1, 2019. Under the transition method chosen, fiscal 2019 was not restated.

16.2 FREE CASH FLOW RECONCILIATION

The reconciliation of free cash flow to the most comparable IFRS financial measure is as follows:

	Three months ended		Years ended	
	August 31, 2020	August 31, 2019 (1)	August 31, 2020	August 31, 2019 (1)
<i>(in thousands of Canadian dollars)</i>	\$	\$	\$	\$
Cash flows from operating activities	254,745	304,702	917,819	868,711
Amortization of deferred transaction costs and discounts on long-term debt	2,344	2,940	9,503	9,454
Changes in non-cash operating activities	(1,116)	(73,274)	55,194	25,108
Income taxes paid (received)	(7,410)	12,154	20,004	48,687
Current income taxes	(13,713)	(11,603)	(57,632)	(53,361)
Financial expense paid	45,162	34,867	153,434	165,507
Financial expense ⁽²⁾	(39,302)	(40,437)	(153,991)	(175,502)
Acquisition of property, plant and equipment	(128,195)	(145,099)	(483,990)	(434,545)
Repayment of lease liabilities	(1,143)	—	(4,905)	—
Free cash flow	111,372	84,250	455,436	454,059

(1) IFRS 16 was adopted by the Corporation on September 1, 2019. Under the transition method chosen, fiscal 2019 was not restated.

(2) Excludes the \$22.9 million non-cash gain on debt modification recognized in the second quarter of fiscal 2020.

16.3 CAPITAL INTENSITY RECONCILIATION

The calculation of capital intensity is as follows:

	Three months ended		Years ended	
	August 31, 2020	August 31, 2019 (1)	August 31, 2020	August 31, 2019 (1)
<i>(in thousands of Canadian dollars, except percentages)</i>	\$	\$	\$	\$
Acquisition of property, plant and equipment	128,195	145,099	483,990	434,545
Revenue	605,168	583,673	2,384,283	2,331,820
Capital intensity	21.2 %	24.9 %	20.3 %	18.6 %

(1) IFRS 16 was adopted by the Corporation on September 1, 2019. Under the transition method chosen, fiscal 2019 was not restated.

CONSOLIDATED FINANCIAL STATEMENTS

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MANAGEMENT'S RESPONSIBILITY

RELATED TO THE CONSOLIDATED FINANCIAL STATEMENTS

The consolidated financial statements of Cogeco Communications Inc. (the "Corporation") and the financial information contained in this annual report are the responsibility of management. The consolidated financial statements include amounts determined by management based on estimates, which in their opinion are reasonable and fair. The consolidated financial statements have been prepared in accordance with International Financial Reporting Standards ("IFRS") and have been approved by the Board of Directors. Operating and financial information used elsewhere in the annual report is consistent with that of the consolidated financial statements.

In fulfilling its responsibilities, management of Cogeco Communications Inc. and its subsidiaries has developed, and continues to improve administrative and accounting systems in order to provide reasonable assurance that assets are safeguarded against loss or unauthorized use and maintains internal accounting controls to ensure that financial records are reliable for preparing the financial statements. The Board of Directors carries out its responsibility for the financial statements in this annual report principally through its Audit Committee, which reviews the annual consolidated financial statements of the Corporation and recommends their approval to the Board of Directors. The Committee periodically meets with management and the external auditor to discuss the results of the external and internal examinations and matters having an impact on financial information.

The independent auditor appointed by the shareholders, Deloitte LLP, Chartered Professional Accountants, is responsible for making an independent examination of the consolidated financial statements in accordance with Canadian auditing standards and to issue an opinion on the statements. The independent auditor has free access to the Audit Committee, with or without the presence of management. Their report follows.



Philippe Jetté
President and Chief Executive Officer



Patrice Ouimet
Senior Vice President and Chief Financial Officer

Montréal, October 27, 2020

INDEPENDENT AUDITOR'S REPORT

To the Shareholders of Cogeco Communications Inc.

Opinion

We have audited the consolidated financial statements of Cogeco Communications Inc. (the "Corporation"), which comprise the consolidated statements of financial position as at August 31, 2020 and 2019, the consolidated statements of profit or loss, consolidated statements of comprehensive income, consolidated statements of changes in shareholders' equity and consolidated statements of cash flows for the years then ended, and notes to the consolidated financial statements, including a summary of significant accounting policies (collectively referred to as the "financial statements").

In our opinion, the accompanying financial statements present fairly, in all material respects, the financial position of the Corporation as at August 31, 2020 and 2019, and its financial performance and its cash flows for the years then ended in accordance with International Financial Reporting Standards ("IFRS").

Basis for Opinion

We conducted our audit in accordance with Canadian generally accepted auditing standards ("Canadian GAAS"). Our responsibilities under those standards are further described in the *Auditor's Responsibilities for the Audit of the Financial Statements* section of our report. We are independent of the Corporation in accordance with the ethical requirements that are relevant to our audit of the financial statements in Canada, and we have fulfilled our other ethical responsibilities in accordance with these requirements. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our opinion.

Other Information

Management is responsible for the other information. The other information comprises:

- Management's Discussion and Analysis
- The information, other than the financial statements and our auditor's report thereon, in the Annual Report.

Our opinion on the financial statements does not cover the other information and we do not and will not express any form of assurance conclusion thereon. In connection with our audit of the financial statements, our responsibility is to read the other information identified above and, in doing so, consider whether the other information is materially inconsistent with the financial statements or our knowledge obtained in the audit, or otherwise appears to be materially misstated.

We obtained Management's Discussion and Analysis and the Annual Report prior to the date of this auditor's report. If, based on the work we have performed on this other information, we conclude that there is a material misstatement of this other information, we are required to report that fact in this auditor's report. We have nothing to report in this regard.

Responsibilities of Management and Those Charged with Governance for the Financial Statements

Management is responsible for the preparation and fair presentation of the financial statements in accordance with IFRS, and for such internal control as management determines is necessary to enable the preparation of financial statements that are free from material misstatement, whether due to fraud or error.

In preparing the financial statements, management is responsible for assessing the Corporation's ability to continue as a going concern, disclosing, as applicable, matters related to going concern and using the going concern basis of accounting unless management either intends to liquidate the Corporation or to cease operations, or has no realistic alternative but to do so.

Those charged with governance are responsible for overseeing the Corporation's financial reporting process.

Auditor's Responsibilities for the Audit of the Financial Statements

Our objectives are to obtain reasonable assurance about whether the financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditor's report that includes our opinion. Reasonable assurance is a high level of assurance, but is not a guarantee that an audit conducted in accordance with Canadian GAAS will always detect a material misstatement when it exists. Misstatements can arise from fraud or error and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of these financial statements.

As part of an audit in accordance with Canadian GAAS, we exercise professional judgment and maintain professional skepticism throughout the audit. We also:

- Identify and assess the risks of material misstatement of the financial statements, whether due to fraud or error, design and perform audit procedures responsive to those risks, and obtain audit evidence that is sufficient and appropriate to provide a basis for our opinion. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control.
- Obtain an understanding of internal control relevant to the audit in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the Corporation's internal control.
- Evaluate the appropriateness of accounting policies used and the reasonableness of accounting estimates and related disclosures made by management.
- Conclude on the appropriateness of management's use of the going concern basis of accounting and, based on the audit evidence obtained, whether a material uncertainty exists related to events or conditions that may cast significant doubt on the Corporation's ability to continue as a going concern. If we conclude that a material uncertainty exists, we are required to draw attention in our auditor's report to the related disclosures in the financial statements or, if such disclosures are inadequate, to modify our opinion. Our conclusions are based on the audit evidence obtained up to the date of our auditor's report. However, future events or conditions may cause the Corporation to cease to continue as a going concern.
- Evaluate the overall presentation, structure and content of the financial statements, including the disclosures, and whether the financial statements represent the underlying transactions and events in a manner that achieves fair presentation.
- Obtain sufficient appropriate audit evidence regarding the financial information of the entities or business activities within the Corporation to express an opinion on the financial statements. We are responsible for the direction, supervision and performance of the group audit. We remain solely responsible for our audit opinion.

We communicate with those charged with governance regarding, among other matters, the planned scope and timing of the audit and significant audit findings, including any significant deficiencies in internal control that we identify during our audit.

We also provide those charged with governance with a statement that we have complied with relevant ethical requirements regarding independence, and to communicate with them all relationships and other matters that may reasonably be thought to bear on our independence, and where applicable, related safeguards.

The engagement partner on the audit resulting in this independent auditor's report is Christian Jacques.

/s/ Deloitte LLP ¹

¹CPA auditor, CA, public accountancy permit No. A124341

Montréal, Québec
October 27, 2020

CONSOLIDATED STATEMENTS OF PROFIT OR LOSS

Years ended August 31, (In thousands of Canadian dollars, except per share data)	Notes	2020 \$	2019 \$
Revenue	4	2,384,283	2,331,820
Operating expenses	8	1,211,422	1,203,980
Management fees – Cogeco Inc.	24 A)	24,132	19,900
Integration, restructuring and acquisition costs	5	9,486	11,150
Depreciation and amortization	9	499,238	480,725
Financial expense	10	131,093	175,502
Profit before income taxes		508,912	440,563
Income taxes	11	112,321	83,655
Profit for the year from continuing operations		396,591	356,908
Profit for the year from discontinued operations	7	—	75,380
Profit for the year		396,591	432,288
Profit for the year attributable to:			
Owners of the Corporation		375,174	415,353
Non-controlling interest		21,417	16,935
		396,591	432,288
Earnings per share			
Basic	12		
Profit for the year from continuing operations		7.74	6.89
Profit for the year from discontinued operations		—	1.53
Profit for the year		7.74	8.41
Diluted	12		
Profit for the year from continuing operations		7.67	6.83
Profit for the year from discontinued operations		—	1.51
Profit for the year		7.67	8.35

CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME

Years ended August 31, (In thousands of Canadian dollars)	Note	2020 \$	2019 \$
Profit for the year		396,591	432,288
Other comprehensive loss			
Items to be subsequently reclassified to profit or loss			
<i>Cash flow hedging adjustments</i>			
Net change in fair value of hedging derivative financial instruments		(24,954)	(81,171)
Related income taxes		6,612	21,511
		(18,342)	(59,660)
<i>Foreign currency translation adjustments</i>			
Net foreign currency translation differences on a net investment in foreign operations		(37,356)	32,533
Net changes on translation of long-term debt designated as a hedge of a net investment in foreign operations		9,867	(20,754)
Realized foreign currency translation adjustments on disposal of a subsidiary		—	(29,809)
Related income taxes		84	1,256
		(27,405)	(16,774)
		(45,747)	(76,434)
Items not to be subsequently reclassified to profit or loss			
<i>Defined benefit plans actuarial adjustments</i>			
Remeasurement of net defined benefit liability or asset	22	1,425	(9,741)
Related income taxes		(378)	2,655
		1,047	(7,086)
		(44,700)	(83,520)
Comprehensive income for the year		351,891	348,768
Comprehensive income for the year attributable to:			
Owners of the Corporation		338,076	325,521
Non-controlling interest		13,815	23,247
		351,891	348,768

CONSOLIDATED STATEMENTS OF CHANGES IN SHAREHOLDERS' EQUITY

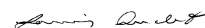
Years ended August 31, 2020 and 2019 (In thousands of Canadian dollars)	Equity attributable to owners of the Corporation						Total shareholders' equity
	Share capital	Share-based payment reserve	Accumulated other comprehensive income (loss)	Retained earnings	Equity attributable to non-controlling interest		
	\$	\$	\$	\$	\$	\$	
	(Note 19)		(Note 20)				
Balance at August 31, 2018	1,017,172	15,260	113,774	850,963	336,442	2,333,611	
Profit for the year	—	—	—	415,353	16,935	432,288	
Other comprehensive income (loss) for the year	—	—	(82,746)	(7,086)	6,312	(83,520)	
Comprehensive income (loss) for the year	—	—	(82,746)	408,267	23,247	348,768	
Issuance of subordinate voting shares under the Stock Option Plan	9,780	—	—	—	—	9,780	
Share-based payment	—	5,913	—	—	—	5,913	
Share-based payment previously recorded in share-based payment reserve for options exercised	1,717	(1,717)	—	—	—	—	
Dividends (Note 19 C))	—	—	—	(103,708)	—	(103,708)	
Purchase and cancellation of subordinate voting shares	(9,090)	—	—	(23,292)	—	(32,382)	
Acquisition of subordinate voting shares held in trust under the Incentive and Performance Share Unit Plans	(2,504)	—	—	—	—	(2,504)	
Distribution to employees of subordinate voting shares held in trust under the Incentive and Performance Share Unit Plans	6,315	(5,930)	—	(385)	—	—	
Total contributions by (distributions to) shareholders	6,218	(1,734)	—	(127,385)	—	(122,901)	
Balance at August 31, 2019	1,023,390	13,526	31,028	1,131,845	359,689	2,559,478	
Profit for the year	—	—	—	375,174	21,417	396,591	
Other comprehensive income (loss) for the year	—	—	(38,145)	1,047	(7,602)	(44,700)	
Comprehensive income (loss) for the year	—	—	(38,145)	376,221	13,815	351,891	
Issuance of subordinate voting shares under the Stock Option Plan	6,670	—	—	—	—	6,670	
Share-based payment	—	7,164	—	—	—	7,164	
Share-based payment previously recorded in share-based payment reserve for options exercised	1,129	(1,129)	—	—	—	—	
Dividends (Note 19 C))	—	—	—	(112,275)	—	(112,275)	
Purchase and cancellation of subordinate voting shares	(44,536)	—	—	(120,999)	—	(165,535)	
Acquisition of subordinate voting shares held in trust under the Incentive and Performance Share Unit Plans	(5,643)	—	—	—	—	(5,643)	
Distribution to employees of subordinate voting shares held in trust under the Incentive and Performance Share Unit Plans	3,953	(3,214)	—	(739)	—	—	
Total contributions by (distributions to) shareholders	(38,427)	2,821	—	(234,013)	—	(269,619)	
Balance at August 31, 2020	984,963	16,347	(7,117)	1,274,053	373,504	2,641,750	

CONSOLIDATED STATEMENTS OF FINANCIAL POSITION

At August 31, (In thousands of Canadian dollars)	Notes	2020 \$	2019 \$
Assets			
Current			
Cash and cash equivalents		366,497	556,504
Trade and other receivables	23 A)	83,013	75,652
Income taxes receivable		3,283	17,706
Prepaid expenses and other		29,266	22,740
		482,059	672,602
Non-current			
Other assets	13	45,109	40,020
Property, plant and equipment	14	2,088,930	2,007,610
Intangible assets	15 A)	2,800,401	2,850,844
Goodwill	15 B)	1,381,024	1,373,439
Deferred tax assets	11	6,674	6,564
		6,804,197	6,951,079
Liabilities and Shareholders' equity			
Liabilities			
Current			
Bank indebtedness		7,610	—
Trade and other payables		211,052	260,481
Provisions	16	33,864	36,553
Income tax liabilities		39,897	16,693
Contract liabilities and other liabilities	17	47,162	43,395
Derivative financial instruments		3,834	—
Current portion of long-term debt	18	29,569	27,121
		372,988	384,243
Non-current			
Long-term debt	18	3,087,033	3,382,258
Derivative financial instruments		67,375	46,044
Contract liabilities and other liabilities	17	10,965	11,119
Pension plan liabilities and accrued employee benefits	22	13,490	14,355
Deferred tax liabilities	11	610,596	553,582
		4,162,447	4,391,601
Shareholders' equity			
Equity attributable to owners of the Corporation			
Share capital	19 B)	984,963	1,023,390
Share-based payment reserve		16,347	13,526
Accumulated other comprehensive (loss) income	20	(7,117)	31,028
Retained earnings		1,274,053	1,131,845
		2,268,246	2,199,789
Equity attributable to non-controlling interest		373,504	359,689
		2,641,750	2,559,478
		6,804,197	6,951,079

Commitments, contingencies and guarantees (Note 25)
Subsequent events (Notes 25 B) and 26)

On behalf of the Board of Directors,



Louis Audet
Director



Joanne Ferstman
Director

CONSOLIDATED STATEMENTS OF CASH FLOWS

Years ended August 31, (In thousands of Canadian dollars)	Notes	2020 \$	2019 \$
Cash flows from operating activities			
Profit for the year from continuing operations		396,591	356,908
Adjustments for:			
Depreciation and amortization	9	499,238	480,725
Financial expense	10	131,093	175,502
Income taxes	11	112,321	83,655
Share-based payment		8,070	7,226
(Gain) loss on disposals and write-offs of property, plant and equipment		(515)	2,770
Defined benefit plans contributions, net of expense		(347)	1,227
		1,146,451	1,108,013
Changes in non-cash operating activities	21 A)	(55,194)	(25,108)
Financial expense paid		(153,434)	(165,507)
Income taxes paid		(20,004)	(48,687)
		917,819	868,711
Cash flows from investing activities			
Acquisition of property, plant and equipment	14	(483,990)	(434,545)
Business combinations, net of cash and cash equivalents acquired	6	(81,509)	(38,876)
Proceeds on disposals of property, plant and equipment		8,224	2,343
		(557,275)	(471,078)
Cash flows from financing activities			
Increase (decrease) in bank indebtedness		7,610	(5,949)
Net decrease under the revolving facilities		—	(443,955)
Repayment of notes, debentures and credit facilities		(269,169)	(77,639)
Repayment of lease liabilities		(4,905)	—
Repayment of balance due on business combinations		(3,228)	(655)
Increase in deferred transaction costs		(620)	(2,210)
Issuance of subordinate voting shares	19 B)	6,670	9,780
Purchase and cancellation of subordinate voting shares	19 B)	(165,535)	(32,382)
Acquisition of subordinate voting shares held in trust under the Incentive and Performance Share Unit Plans	19 B)	(5,643)	(2,504)
Dividends paid	19 C)	(112,275)	(103,708)
		(547,095)	(659,222)
Effect of exchange rate changes on cash and cash equivalents denominated in a foreign currency		(3,456)	(439)
Net change in cash and cash equivalents from continuing operations		(190,007)	(262,028)
Net change in cash and cash equivalents from discontinued operations	7	—	733,807
Cash and cash equivalents, beginning of the year		556,504	84,725
Cash and cash equivalents, end of the year		366,497	556,504

NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS

Years ended August 31, 2020 and 2019

NATURE OF OPERATIONS

Cogeco Communications Inc. ("Cogeco Communications" or the "Corporation") is a communications corporation operating in Canada under the Cogeco Connexion name in Québec and Ontario, and in the United States under the Atlantic Broadband brand (in 11 states along the East Coast, from Maine to Florida). Cogeco Communications provides residential and business customers with Internet, video and telephony services through its two-way broadband fibre networks.

On April 30, 2019, the Corporation completed the sale of its Cogeco Peer 1 subsidiary (see Note 7).

The Corporation is a subsidiary of Cogeco Inc. ("Cogeco"), which as of August 31, 2020 held 32.7% of the Corporation's equity shares, representing 83% of the votes attached to the Corporation's voting shares. Cogeco Communications is a Canadian public corporation whose subordinate voting shares are listed on the Toronto Stock Exchange ("TSX") under the trading symbol "CCA".

The Corporation's registered office is located at 1 Place Ville Marie, Suite 3301, Montréal, Québec, H3B 3N2.

1. BASIS OF PRESENTATION

These audited consolidated financial statements have been prepared in accordance with International Financial Reporting Standards ("IFRS") issued by the International Accounting Standards Board ("IASB").

The consolidated financial statements have been prepared on a going concern basis using historical cost, except for financial instruments and derivative financial instruments (see Note 2 M)), cash-settled share-based payment arrangements (see Note 2 J)) and pension plan assets (see Note 2 K)), which are measured at fair value, and for the defined benefit obligation (see Note 2 K)) and provisions (see Note 2 I)), which are measured at present value.

Financial information is presented in Canadian dollars, which is the functional currency of Cogeco Communications.

The consolidated financial statements were approved by the Board of Directors of Cogeco Communications at its meeting held on October 27, 2020.

2. SIGNIFICANT ACCOUNTING POLICIES

The accounting policies set out below have been applied consistently to all periods presented in the consolidated financial statements, unless otherwise indicated. Certain comparative amounts in the consolidated financial statements have been reclassified in order to conform to the 2020 consolidated financial statements presentation.

A) BASIS OF CONSOLIDATION

The consolidated financial statements include the accounts of the Corporation and its subsidiaries.

Subsidiaries are entities controlled by the Corporation. Control is achieved where the Corporation has the power to govern the financial and operating policies of an entity so as to obtain benefits from its activities. Subsidiaries' financial statements are included in the consolidated financial statements from the date that control commences until the date that control ceases. Subsidiaries' year-end and accounting policies are aligned with those adopted by the Corporation. Non-controlling interest in the net assets and results of consolidated subsidiaries is identified separately from the Corporation's ownership interest in them. Non-controlling interest in the equity of a subsidiary consists of the amount of non-controlling interest calculated at the date of the original business combination and its share of changes in equity since that date. Changes in non-controlling interest in a subsidiary that do not result in a loss of control by the Corporation are accounted for as equity transactions.

Operating segments and percentage of interest in the principal subsidiaries at August 31, 2020 are as follows:

Operating segments	Principal subsidiaries	Percentage of equity interest %	Voting rights %
Canadian broadband services	Cogeco Connexion	100	100
American broadband services	Atlantic Broadband	79	79

The Corporation has established special purpose entities ("SPEs") with the objective of mitigating the impact of stock price fluctuations in connection with its Incentive Share Unit and Performance Share Unit Plans. SPEs are consolidated if, based on an evaluation of the substance of their relationship with the Corporation and the SPEs' risks and rewards, the Corporation concludes that it controls the SPEs. SPEs controlled by the Corporation were established under terms that impose strict limitations on the decision-making powers of the SPEs' management,

resulting in the Corporation receiving the majority of the benefits related to the SPEs' operations and net assets, being exposed to the majority of risks incident to the SPEs' activities, and retaining the majority of the residual or ownership risks related to the SPEs or their assets.

All intercompany transactions and balances, and any unrealized revenue and expense are eliminated in preparing the consolidated financial statements.

B) BUSINESS COMBINATIONS

Business combinations are accounted for using the acquisition method. Goodwill is measured as the excess of the fair value of the consideration transferred including the recognized amount of any non-controlling interest in the acquiree over the net recognized amount of the identifiable assets acquired and liabilities assumed, all measured at the acquisition date.

The consideration transferred is measured as the sum of the fair values of assets transferred, liabilities assumed, and equity instruments issued by the Corporation at the acquisition date, including any asset or liability resulting from a contingent consideration arrangement, in exchange for control of the acquiree.

A right to receive or an obligation to pay contingent consideration is classified as an asset or a liability or as equity. Contingent consideration classified as equity is not remeasured until it is finally settled within equity. Contingent consideration classified as an asset or a liability is measured either as a financial instrument or as a provision. Changes in fair values that qualify as measurement period adjustments of preliminary purchase price allocations are adjusted in the current period and such changes are applied on a retrospective basis.

Acquisition costs, other than those associated with the issuance of debt or equity securities, and integration and restructuring costs that the Corporation incurs in connection with a business combination are recognized in profit or loss as incurred.

C) REVENUE RECOGNITION

Revenue is measured based on the consideration received or receivable from a customer, net of returns and discounts. The Corporation recognizes revenue from the sale of products or the rendering of services when it transfers control to the customer.

Revenue is recognized applying the following five steps:

- Identify the contract with a customer;
- Identify the performance obligations in the contract;
- Determine the transaction price;
- Allocate the transaction price to the performance obligations in the contract; and
- Recognize revenue when (or as) the Corporation satisfies a performance obligation.

The Corporation's principal sources of revenue are recognized as follows:

Residential

- Monthly subscription revenue (net of any discounts, rebates, refunds and credits) for Internet, video and telephony services and rental of equipment is recognized on a monthly basis, as the services are provided;
- Revenue from data services, long-distance and other pay-per-use services is recognized on a monthly basis, as the services are provided; and
- Revenue generated from the sale of customer premise equipment or other equipment is recognized when the customer accepts the delivery of the equipment.

Commercial

- Monthly subscription revenue (net of any discounts, rebates, refunds and credits) for Internet, video and telephony services and rental of equipment is recognized on a straight-line basis over the contractual period arrangement;
- Revenue generated from the sale of customer premise equipment or other equipment is recognized when the customer accepts the delivery of the equipment; and
- Revenue from colocation, network connectivity, hosting, cloud and managed services is recognized on a straight-line basis over the contractual period arrangement (pertaining to Cogeco Peer 1 discontinued operations - See Note 7).

Other

- Revenue mainly from advertising, which is recognized as the services are provided.

Multiple-element arrangements

The Corporation offers certain products and services as part of multiple deliverable arrangements. The Corporation accounts for individual products or services separately if they are distinct performance obligations, such that a product or service is separately identifiable from other items in the bundled package and a customer can benefit from it on its own or with other readily available resources.

Consideration is measured and allocated between the components based upon stand-alone selling price while applying the relevant revenue recognition policy. The stand-alone selling price is based on the observable price for which the Corporation sells its products and services separately without a contract, adjusted for market conditions and other factors.

Contract liabilities

The Corporation considers that installation and activation fees are not distinct performance obligations because a customer cannot benefit from it, on its own. Accordingly, for residential service customers, they are deferred and amortized as revenue over the period of time the fee remains material to the customer, which the Corporation estimates to be approximately six months. The estimate requires consideration of both quantitative and qualitative factors including average installation fee, average revenue per customer and customer behavior, among others. For

commercial service customers, they are deferred and amortized as revenue at the same pace as the revenue from the related services are earned over the term of the agreement.

Unearned revenue, such as payments for services and goods received in advance, is recorded as contract liabilities in the consolidated statement of financial position until the service is provided or the product is delivered to the customer.

Contract costs

Contract cost assets are recognized in the consolidated statement of financial position as *Other assets*, and are comprised of upfront fees paid to multiple-dwelling units as well as incremental costs of obtaining a contract. Upfront fees paid by the Corporation to multiple-dwelling units such as condo associations, in order to gain access to serve and market occupants of the dwelling, are recognized over the term of the contract, as a reduction of revenue. Costs to obtain a contract (such as sales commissions) are recognized in operating expenses over the period of time the customer is expected to remain a customer of the Corporation, not exceeding four years.

D) PROPERTY, PLANT AND EQUIPMENT

Owned assets

Property, plant and equipment are measured at cost, less accumulated depreciation and impairment losses.

During construction of new assets, direct costs plus overhead costs directly attributable to the asset are capitalized. Borrowing costs directly attributable to the acquisition or construction of qualifying assets, which require a substantial amount of time to get ready for their intended use or sale, are capitalized until such time the assets are substantially ready for their intended use or sale. All other borrowing costs are recorded as financial expense in the period in which they are incurred.

The cost of replacing a part of property, plant and equipment that is ready for its intended use is added to the carrying amount of the property, plant and equipment or recognized as a separate component if applicable, only if it is probable that the economic benefits associated with the cost will flow to the Corporation and the cost can be measured reliably. The carrying amount of the replaced part is derecognized. All other day-to-day maintenance costs are recognized in profit or loss in the period in which they are incurred.

Depreciation is recognized on a straight-line basis over the expected useful life of the asset⁽¹⁾, from the date the asset is ready for its intended use. Depreciation is calculated based on the depreciable amount, which is the cost of the asset less its residual value. Land is carried at cost and not depreciated.

Depreciation periods are as follows:

Buildings and leasehold improvements ⁽¹⁾	10 to 40 years
Networks and infrastructure ⁽²⁾	3 to 20 years
Customer premise equipment	3 to 5 years
Vehicles and equipment ⁽³⁾	3 to 10 years

(1) Leasehold improvements are amortized over the shorter of the term of the lease and economic life.

(2) Networks and infrastructure include cable towers, headends, transmitters, fibre and coaxial networks, customer drops and network equipment.

(3) Vehicles and equipment includes vehicles, programming equipment, furniture and fixtures, computer and software and other equipments.

When significant parts of an item of property, plant and equipment have different useful lives, they are accounted for as separate items (major components) of property, plant and equipment.

The estimated useful lives, residual values and depreciation method are reviewed annually, with the effect of any changes in estimate accounted for on a prospective basis.

The gain or loss arising on the disposal or write-off of an item of property, plant and equipment is determined as the difference between the sale proceeds, if any, and the carrying amount of the asset, and is recognized as profit or loss.

The Corporation does not record decommissioning obligations in connection with its fibre and coaxial networks. The Corporation expects to renew all of its agreements with utility companies to access their support structures in the future, thus the resulting present value of the obligation is not significant.

Right-of-use assets

Refer to accounting policy G) Leases.

E) INTANGIBLE ASSETS AND GOODWILL

Intangible assets acquired separately

Intangible assets acquired separately are measured at cost less accumulated amortization and impairment losses, if they are amortizable, otherwise, only at cost net of accumulated impairment losses. The useful lives of intangible assets are assessed as either finite or indefinite.

Identifiable intangible assets acquired in a business combination

Identifiable intangible assets acquired in a business combination are recognized separately from goodwill if they meet the definition of an intangible asset and if their fair value can be measured reliably. The cost of these intangible assets equals their acquisition-date fair value.

Subsequent to initial recognition, identifiable intangible assets acquired in a business combination are recorded at cost less accumulated amortization and impairment losses, if they are amortizable, otherwise only at cost net of accumulated impairment losses. The useful lives of intangible assets are assessed as either finite or indefinite.

Intangible assets with finite useful lives

Intangible assets with finite useful lives are amortized over their useful life. The estimated useful lives are reviewed annually, with the effect of any changes in estimate being accounted for on a prospective basis. Intangible assets with finite useful lives are amortized as follows:

- Customer relationships are amortized on a straight-line basis over the estimated useful life, defined as the average life of a customer's subscription, not exceeding eight years;
- Spectrum licenses are amortized over the initial non-cancellable term of the licenses, not exceeding ten years.

Intangible assets with indefinite useful lives

Intangible assets with indefinite useful lives are those for which there is no foreseeable limit to their useful economic life as they arise from contractual or other legal rights that can be renewed without significant cost. They are comprised of Cable Distribution Undertaking Broadcasting Licenses and Franchises ("Cable Distribution Licenses"). Cable Distribution Licenses are comprised of broadcast authorities' licenses and exemptions from licensing that allow access to homes and customers in a specific area. The Corporation has concluded that the Cable Distribution Licenses have indefinite useful lives since there are no legal, regulatory, contractual, economic or other factors that would prevent their renewals or limit the period over which they will contribute to the Corporation's cash flows. The Corporation reviews at the end of each reporting period whether events and circumstances continue to support the indefinite useful life assessment. Intangible assets with indefinite useful lives are not amortized.

Goodwill

Goodwill represents the future economic benefits arising from a business combination that are not individually identified and separately recognized. Goodwill is not amortized.

F) IMPAIRMENT OF NON-FINANCIAL ASSETS

At the end of each reporting period, the Corporation assesses whether there is an indication that an asset may be impaired. If any such indication exists, the recoverable amount of the asset is estimated in order to determine the extent of the impairment loss, if any. Goodwill and intangible assets with indefinite useful lives are tested for impairment at least annually or more frequently if there is an indication of impairment.

The recoverable amount is the higher of fair value less costs of disposal and value in use. In assessing value in use, the estimated future cash flows are discounted to their present value using a pre-tax discount rate that reflects current market assessments of the time value of money and the risks specific to the asset for which the estimates of future cash flows have not been adjusted.

For the purpose of impairment testing, assets that cannot be tested on an individual basis are grouped together into the smallest identifiable group of assets that generates cash inflows that are largely independent of the cash inflows from other assets or group of assets ("cash-generating unit" or "CGU"). When a reasonable and consistent basis of allocation can be identified, corporate assets are allocated to an individual CGU, otherwise they are allocated to the smallest group of CGU for which a reasonable and a consistent basis of allocation can be identified.

The most recent detailed calculation, made in a preceding period, of the recoverable amount of a CGU to which goodwill has been allocated, may be used in the impairment test of that unit in the current period provided all of the following criteria are met:

- The assets and liabilities making up the unit have not changed significantly since the most recent recoverable amount calculation;
- The most recent recoverable amount calculation resulted in an amount that exceeded the carrying amount of the unit by a substantial margin; and
- Based on an analysis of events that have occurred and circumstances that have changed since the most recent recoverable amount calculation, the likelihood that a current recoverable amount determination would be less than the current carrying amount of the unit is remote.

An impairment loss is recognized when the carrying amount of an asset or a CGU exceeds its recoverable amount. Impairment losses recognized are allocated first to reduce the carrying amount of any goodwill allocated to the CGU and then to reduce the carrying amounts of the other assets in the CGU on a pro-rata basis. Impairment losses are recognized in profit or loss.

For assets other than goodwill, an assessment is made at each reporting date as to whether there is any indication that previously recognized impairment losses may no longer exist or may have decreased. A previously recognized impairment loss is reversed only if there has been a change in the estimates used to determine the asset's recoverable amount since the last impairment loss recognized. An impairment loss is reversed only to the extent that the asset's carrying amount does not exceed the carrying amount that would have been determined, net of depreciation or amortization, if no impairment loss had been recognized in prior years. A reversal of an impairment loss is recognized immediately in profit or loss.

For the purpose of impairment testing, goodwill is allocated to each of the Corporation's CGUs that are expected to benefit from the synergies of the related business combination. An impairment loss recognized for goodwill cannot be reversed.

G) LEASES

At inception, the Corporation assesses whether a contract is, or contains, a lease based on whether the contract conveys the right to control the use of an identified asset for a period of time in exchange for consideration. At the commencement date of the lease, i.e. the date the underlying asset is available for use, the Corporation recognizes a lease liability with a corresponding right-of-use asset, except for short-term leases and leases of low value assets, which are expensed on a straight-line basis over the lease term.

Right-of-use assets

Right-of-use assets are measured at cost, less any accumulated depreciation and accumulated impairment losses, and adjusted for any remeasurement of lease liabilities. The cost of right-of-use assets is comprised of:

- the initial measurement amount of the lease liabilities recognized;
- any lease payments made at or before the commencement date, less any lease incentives received;
- any initial direct costs incurred; and
- an estimate of costs to dismantle and remove the underlying asset, restore the site on which it is located or restore the underlying asset to the condition required by the terms and conditions of the lease contract.

Right-of-use assets are depreciated on a straight-line basis over the lesser of the estimated useful life of the underlying assets and the lease term. The lease term consists of the non-cancellable period of the lease, the period covered by extension options which are reasonably certain to be exercised and the period covered by termination options which are reasonably certain not to be exercised. They are assessed for impairment whenever there is an indication that the right-of-use assets may be impaired.

Lease liabilities

Lease liabilities are initially measured at the present value of the lease payments that are not paid at the commencement date over the lease term, discounted using the Corporation's incremental borrowing rate, unless the rate implicit in the lease is readily determinable. The Corporation applies a single discount rate to a portfolio of leases with similar characteristics.

Lease payments included in the measurement of the lease liability include:

- fixed payments, including in-substance fixed payments;
- variable lease payments that depend on an index or rate;
- amounts expected to be payable under a residual value guarantee;
- payments relating to purchase options and renewal option periods that are reasonably certain to be exercised; and
- penalties for early termination of a lease that is reasonably certain to be exercised.

Variable lease payments that do not depend on an index or a rate are not included in the measurement of lease liabilities but instead recognized as expenses in the period in which the event that triggers the payment occurs.

After the commencement date, the carrying amount of lease liabilities is increased to reflect the accretion of interest and reduced to reflect lease payments made. Lease liabilities are remeasured when there is a change in future lease payments arising from a change in an index or rate, if there is a modification to the lease terms and conditions, a change in the amount expected to be payable under a residual value guarantee or when there is a change in the assessment of whether purchase, renewal or termination options will be exercised. The remeasurement amount of the lease liabilities is recognized as a corresponding adjustment to the right-of-use asset, or in the consolidated income statement when the carrying amount of the right-of-use asset is reduced to zero.

The Corporation elected not to separate fixed non-lease components and account for the lease and any fixed non-lease components as a single lease component, for certain classes of underlying assets, such as for land and buildings.

H) INCOME TAXES

Income tax expense represents the sum of the taxes currently payable and deferred. Current and deferred taxes are recognized in profit or loss, except when they relate to a business combination or to items that are recognized in other comprehensive income or directly in equity.

Current tax

The tax currently payable is based on taxable profit for the year. The Corporation's liability for current tax is calculated using tax rates that have been enacted or substantively enacted at the end of the reporting period.

Deferred tax

Deferred tax is recognized in respect of temporary differences between the carrying amounts of assets and liabilities for financial reporting purposes and the amounts used for taxation purposes. Deferred tax assets and liabilities are not recognized if the temporary difference arises from the initial recognition of goodwill or assets or liabilities in a transaction that is not a business combination and that affects neither the taxable profit nor the accounting profit or is related to investments in subsidiaries to the extent that the Corporation is able to control the reversal and it is probable that the temporary differences will not reverse in the foreseeable future.

Deferred tax assets are generally recognized for unused tax losses and deductible temporary differences to the extent that it is probable that future taxable profits will be available against which, those unused tax losses and deductible temporary differences can be utilized. Deferred tax assets are reviewed at each reporting date and are reduced to the extent that it is no longer probable that the related tax benefit will be realized.

Deferred tax assets and liabilities are measured at the tax rates that are expected to apply in the period in which the liability is settled or the asset realized, based on tax rates that have been enacted or substantively enacted at the end of the reporting period. The measurement of deferred tax assets and liabilities reflects the tax consequences that would follow from the manner in which the Corporation expects, at the end of the reporting period, to recover or settle the carrying amount of its assets and liabilities.

Deferred tax assets and liabilities are offset when there is a legally enforceable right to set off current tax assets against current tax liabilities and when they relate to income taxes levied by the same taxation authority on the same taxable entity, or on different tax entities, but the Corporation intends to settle its current tax assets and liabilities on a net basis.

I) PROVISIONS

Provisions represent liabilities of the Corporation for which the amount or timing is uncertain. A provision is recorded when the Corporation has a legal or constructive present obligation as a result of a past event and it is probable that an outflow of economic benefits will be required to settle the obligation, and a reliable estimate can be made of the amount of the obligation. The amount recognized represents management's best estimate required to settle the obligation at the end of the reporting period, taking into account the obligation's risks and uncertainties. When the effect of the time value of money is material, the amount of the provision is determined by discounting the expected future cash flows at a pre-tax rate that reflects current market assessments of the time value of money and the risks specific to the liability. When discounting is used, the increase in the provision due to the passage of time is recognized as financial expense.

When some or all of the economic benefits required to settle a provision are expected to be recovered from a third party, a receivable is recognized as an asset if it is virtually certain that reimbursement will be received and the amount of the receivable can be measured reliably.

J) SHARE-BASED PAYMENT

Equity-settled awards

The Corporation measures stock options granted to employees that vest rateably over the service period based on the fair value of each tranche on grant date by using the Black-Scholes option pricing model and a compensation expense is recognized on a straight-line basis over the vesting period applicable to the tranche, with a corresponding increase in share-based payment reserve. Granted options vest equally over a period of five years beginning one year after the day such options are granted. When the stock options are exercised, share capital is credited by the sum of the consideration paid and the related portion previously recorded in share-based payment reserve.

The Corporation measures Incentive Share Units ("ISUs") and Performance Share Units ("PSUs") granted to employees based on the fair value of the Corporation's subordinate voting shares at the date of grant and a compensation expense is recognized over the vesting period, with a corresponding increase in share-based payment reserve. The total vesting period of each grant is three years less one day.

Cash-settled awards

The fair value of the amount payable to the members of the Board of Directors in respect of share appreciation rights under the Deferred Share Unit ("DSU") Plan of the Corporation, which are settled in cash or shares, is recognized as a compensation expense with a corresponding increase in *Pension plan liabilities and accrued employee benefits* as of the date units are issued to the members of the Board of Directors. The accrued liability is remeasured at the end of each reporting period, until settlement, using the average closing price of the subordinate voting shares on the TSX for the twenty consecutive trading days immediately preceding by one day the closing date of the reporting period. Any changes in the fair value of the liability are recognized in profit or loss.

K) EMPLOYEE BENEFITS

Short-term employee benefits

Short-term employee benefits include wages, salaries, compensated absences, profit-sharing and bonuses. They are measured on an undiscounted basis and are expensed as the related service is provided. A liability is recognized for the amount expected to be paid under short-term cash bonus or profit sharing plans if the Corporation has a present legal or constructive obligation to pay this amount as a result of past service provided by the employee and the obligation can be estimated reliably.

Defined contribution plans

A defined contribution plan is a post-employment benefit plan under which an entity pays fixed contributions and will have no legal or constructive obligation to pay further amounts. Obligations for contributions to defined contribution plans are recognized as an expense in the periods during which services are rendered by employees.

Defined benefit plans

A defined benefit plan is a post-employment benefit plan whereby the amount of pension benefit that a plan participant will receive during retirement is defined and dependent on factors such as age, years of service and compensation. On each annual reporting date, independent actuaries extrapolate the data of the most recent full actuarial valuation to measure, for accounting purposes, the present value of the defined benefit obligation. The Corporation's net defined benefit liability in respect of its defined benefit plans is calculated separately for each plan.

The present values of the defined benefit obligation, the current service cost and, if applicable, the past service cost are actuarially determined using the projected unit credit method (sometimes known as the accrued benefit method pro-rated on service) based on management's best-estimate assumptions on the discount rate, the expected rate of compensation increase and the mortality table.

Management determines the discount rate based on a review of the current market interest rates on investment-grade fixed-rate corporate bonds, which are rates adjusted to reflect the duration of the expected future cash outflows of retirement benefit payments.

The net defined benefit liability or asset recognized in the consolidated statement of financial position corresponds to the fair value of plan assets net of the present value of the defined benefit obligation. Any asset resulting from this calculation is limited to the present value of the economic benefits available in the form of refunds from the plans or in the form of reductions in future contributions to the plans.

The net defined benefit cost components of the defined benefit plans are recognized as follows:

- Service cost is recognized in profit or loss;
- Net interest on the net defined benefit liability or asset is recognized in profit or loss; and
- Remeasurements of the net defined benefit liability or asset are recognized in other comprehensive income.

The service cost recognized in profit or loss comprises:

- Current service cost provided in exchange for employees services rendered during the period;
- Past service cost recognized in profit or loss in the period in which the plan is amended; and
- Gains or losses resulting from a settlement recognized in profit or loss in the period in which the plan settlement occurs.

Net interest on the net defined benefit liability or asset is calculated by multiplying the net defined benefit liability or asset by the discount rate.

Remeasurements of the net defined benefit liability or asset are recognized immediately in *Other comprehensive income* and they are not reclassified to profit or loss in a subsequent period. Remeasurements of the net defined benefit liability or asset comprise:

- Actuarial gains and losses arising from experience adjustments, changes in financial assumptions and changes in demographic assumptions;
- The return on plan assets, except amounts included in interest income; and
- Any change in the effect of the asset ceiling, except amounts included in net interest on the net defined benefit liability or asset.

L) FOREIGN CURRENCY TRANSLATION

For the purpose of the consolidated financial statements, the profit or loss and financial position of each group entity are expressed in Canadian dollars, which is the functional and presentation currency of the Corporation.

Foreign currency transactions

Transactions in foreign currencies are translated to the respective functional currency of the Corporation's entities at the exchange rate in effect at the transaction date. Monetary assets and liabilities denominated in foreign currencies at the reporting date are translated to the functional currency at the exchange rate at that date. Foreign currency differences arising on translation are recognized as financial expense in profit or loss, except for those arising on the translation of financial instruments designated as a hedge of a net investment in foreign operations, and financial instruments designated as hedging instruments in a cash flow hedge, which are recognized in other comprehensive income until the hedged items are settled or recognized in profit or loss.

Foreign operations

The assets and liabilities of foreign operations, including goodwill and fair value adjustment arising on acquisition, are translated into Canadian dollars using exchange rates prevailing at the end of the reporting period.

Revenue and expense items are translated at the average exchange rates for the period, unless exchange rates fluctuated significantly or significant transactions occurred during that period, in which case the exchange rates at the date of the transactions are used. Exchange differences arising from the translation process of net investments in foreign operations are recognized as foreign currency translation adjustments in other comprehensive income and accumulated in equity.

The Corporation designated a portion of its US dollar denominated debt as a hedging item in a net investment hedge in its US subsidiary. The Corporation applies hedge accounting to foreign currency differences arising between the functional currency of the foreign operation and the Corporation's functional currency. Foreign currency differences arising on the translation of long-term debt designated as hedges of a net investment in foreign operations are recognized in other comprehensive income to the extent that the hedge is effective, and are presented within equity in the foreign currency translation balance. The Corporation has established a hedge ratio of 1:1 for the hedging relationships as the underlying risk of the hedging instruments is identical to the hedged item risks. The hedge ineffectiveness will arise when the amount of the net investments in the foreign subsidiary becomes lower than the amount of the related hedging instruments. To the extent that the hedge is ineffective, such differences are recognized in profit or loss. When the hedged portion of a net investment is disposed of, the relevant amount in the cumulative amount of foreign currency translation adjustments is transferred to profit or loss as part of the profit or loss on disposal.

M) FINANCIAL INSTRUMENTS

Classification and measurement

All financial instruments, including derivatives, are included in the consolidated statement of financial position initially at fair value when the Corporation becomes a party to the contractual obligations of the instrument.

Subsequent to initial recognition, the classification of non-derivative financial instruments, based on their method of measurement, is as follows:

- Cash and cash equivalents and trade and other receivables are classified and measured at amortized cost using the effective interest method, less any impairment loss;
- Transaction costs that are directly attributable to the acquisition or related to the issuance of financial assets or liabilities (other than financial assets and financial liabilities at fair value through profit or loss) are added to or deducted from the fair value of the financial assets or financial liabilities, as required, upon initial recognition. Transaction costs directly attributable to the acquisition of financial assets or liabilities at fair value through profit or loss are recognized immediately in profit or loss; and
- Bank indebtedness, trade and other payables and long-term debt, excluding lease liabilities, are classified and measured at amortized cost using the effective interest method. Directly attributable transaction costs are added to the initial fair value of financial instruments except for those incurred with respect to the revolving facilities which are recorded as other assets and amortized over the term of the related financing on a straight-line basis.

Financial assets are derecognized only when the Corporation no longer holds the contractual rights to the cash flows of the asset or when the Corporation transfers substantially all the risks and rewards of ownership of the financial asset to another entity. Financial liabilities are derecognized only when the Corporation's obligations are discharged, cancelled or expired.

Financial assets and financial liabilities are offset and the net amount reported in the consolidated statement of financial position if, and only if, there is a currently enforceable legal right to offset the recognized amounts and there is an intention to settle on a net basis, or to realize the assets and settle the liabilities simultaneously.

Derivative financial instruments, including hedge accounting

The Corporation uses interest rate swaps as derivative financial instruments to manage interest rate risk related to its floating rate long-term debt. The Corporation also uses equity swap agreements, which are not designated as hedging relationships, in order to manage cash flow exposures related to settling DSUs. The Corporation does not hold or use any derivative financial instruments for speculative trading purposes. Derivative financial instruments are recognized initially at fair value and related transaction costs are recognized in profit or loss as incurred. Subsequent to initial recognition, derivative financial instruments are measured at fair value, and changes therein are accounted for as described below, except for equity swap instruments whereby the changes are recorded in operating expenses. Net receipts or payments arising from derivative financial instruments are recognized as financial expense.

The Corporation has elected to apply the hedge accounting requirements of IAS 39, *Financial instruments: recognition and measurement*. On initial designation of the hedge, the Corporation formally documents the relationship between the hedging instrument and the hedged item, including the risk management objectives and strategy in undertaking the hedging transaction, together with the methods that will be used to assess the effectiveness of the hedging relationship and measure the ineffectiveness. There is an economic relationship between the hedged items and the hedging instruments as the terms of the interest rate hedges match the terms of the respective variable rate loans (i.e., notional amount, maturity, payment and reset dates). The Corporation has established a hedge ratio of 1:1 for the hedging relationships as the underlying risk of the hedging instruments is identical to the hedged item risks. The Corporation makes an assessment, both at the inception of the hedge relationship as well as on an ongoing basis, whether the hedging instruments are expected to be "highly effective" in offsetting the changes in the cash flows of the respective hedged items during the period for which the hedge is designated and whether the actual results of each hedging relationship are within a range of 80-125 percent. For a cash flow hedge of a forecasted transaction, the transaction should be highly probable to occur and should present an exposure to variations in cash flows that could ultimately affect reported profit or loss. The main source of ineffectiveness in the hedge relationships relates to the effect of the counterparties and the Corporation's own credit risk on the fair value of the interest rate swaps, which is not reflected in the change in the fair value of the hedged cash flows attributable to the change in interest rates.

Cash flow hedge accounting

When a derivative financial instrument is designated as the hedging instrument in a hedge of the variability in cash flows attributable to a particular risk associated with a recognized asset or liability or a highly probable forecasted transaction that could affect profit or loss, the effective portion of changes in the fair value of the derivative financial instrument is recognized in accumulated other comprehensive income and presented in the cash flow hedge reserve in equity. The amount recognized in accumulated other comprehensive income is removed and included in profit or loss in the same period as the hedged item affects profit or loss and in the same line item as the hedged item. Any ineffective portion of changes in the fair value of the derivative financial instrument is recognized immediately in profit or loss.

If the hedging instrument no longer meets the criteria for hedge accounting, expires, is sold, terminated, exercised, or the designation is revoked, then hedge accounting is discontinued prospectively. The cumulative gain or loss previously recognized in accumulated other comprehensive income and presented in cash flow hedge reserve in equity, remains there until the forecasted hedged item affects profit or loss. If the forecasted hedged item is no longer expected to occur, then the balance in accumulated other comprehensive income is recognized immediately in profit or loss. In other cases, the amount recognized in accumulated other comprehensive income is transferred to profit or loss in the same period in which the hedged item affects profit or loss.

Embedded derivatives

Embedded derivatives are separated from the host contract and accounted for separately if the economic characteristics and risks of the host contract and the embedded derivative are not closely related, if a separate instrument with the same terms as the embedded derivative would meet the definition of a derivative, and if the combined instrument is not measured at fair value through profit or loss.

Impairment of financial assets

A financial asset is impaired if objective evidence indicates that a loss event has occurred after the initial recognition of the asset, and that the loss event had a negative effect on the estimated future cash flows of that asset that can be estimated reliably.

Trade and other receivables ("receivables") are assessed at each reporting date to determine whether there is objective evidence that they are impaired. Objective evidence that receivables are impaired can include default or delinquency by a debtor or indications that a debtor will enter into bankruptcy. The Corporation considers evidence of impairment for receivables at both the specific asset level and on an aggregate basis. All individually significant receivables are assessed for specific impairment. Receivables that are not individually significant are assessed for impairment on an aggregate basis by grouping together receivables with similar risk characteristics.

An impairment loss, with respect to receivables assessed on an aggregate basis, is measured based on the lifetime expected credit loss model which is an estimate of all possible default events over the expected life of the financial instrument. An impairment loss is recognized in profit or loss and reflected in an allowance account presented in reduction of receivables.

N) GOVERNMENT ASSISTANCE

Government assistance is recognized when there is reasonable assurance that it will be received and the Corporation will comply with all of the conditions associated with the assistance. Government grants related to an expense are recognized as a reduction of related expense for which the grant is intended to compensate. Government grants related to an asset are recognized as a deduction of the cost of the related asset.

O) CASH AND CASH EQUIVALENTS

Cash and cash equivalents, if any, include cash and highly liquid investments that have an original maturity of three months or less. It consists solely of cash in banks as at August 31, 2020 and 2019.

P) EARNINGS PER SHARE

The Corporation presents basic and diluted earnings per share data for its multiple and subordinate voting shares. Basic earnings per share is calculated by dividing the profit or loss attributable to shareholders of the Corporation by the weighted average number of multiple and subordinate voting shares outstanding during the period, adjusted for subordinate voting shares held in trust under the ISU and PSU Plans. Diluted earnings per share is determined by further adjusting the weighted average number of multiple and subordinate voting shares outstanding for the effects of all potential dilutive subordinate voting shares, which comprise stock options, ISUs and PSUs granted to executive officers and designated employees.

Q) SEGMENT REPORTING

An operating segment is a component of the Corporation that engages in business activities from which it may earn revenue and incur expenses, including revenue and expenses that relate to transactions with any of the Corporation's other components. All segments' operating results are reviewed regularly by the Corporation's chief operating decision maker ("CODM") to decide about resources to be allocated to the operating segment and to assess its performance, and for which discrete financial information is available. Segment operating results that are directly reported to the CODM include items directly attributable to an operating segment as well as those that can be allocated on a reasonable basis.

R) ACCOUNTING JUDGMENTS AND USE OF ESTIMATES

The preparation of consolidated financial statements in accordance with IFRS requires management to make judgments, estimates and assumptions that affect the application of accounting policies and the reported amounts of assets and liabilities, revenue and expenses.

Significant areas requiring the use of management's judgments and estimates relate to the following items:

- **Business combinations**

Fair value of assets acquired and liabilities assumed in a business combination is estimated based on information available at the date of acquisition and involves considerable judgment in determining the fair values assigned to the identifiable assets acquired and liabilities assumed on acquisition. Among other things, the determination of these fair values involves the use of discounted cash flow analyses, estimated future margins and estimated future customer counts (see Note 6);

- **Revenue from contracts with customers**

The identification of performance obligations within a contract and the timing of satisfaction of those performance obligations, as well as determining the costs that are incremental to obtaining and fulfilling a contract, require judgment. Determining the transaction price for a contract requires estimating the revenue expected for delivering the performance obligations within the contract. Additionally, an estimate might be necessary when determining the stand-alone selling price of performance obligations and the allocation of the transaction price between performance obligations;

- **Provisions**

Management's judgment is used to determine the timing, likelihood and the amount of expected cash outflows as well as the discount rate (see Note 16);

- **Contingencies**

Contingencies such as lawsuits, taxes, impact of regulatory decisions, and commitments under contractual and other commercial obligations are estimated based on applying significant judgement in determining if a loss is probable and in determining the estimated outflow of economic resources. Such contingencies are estimated based on the information available to the Corporation;

- **Measurement of non-financial assets**

The measurement of non-financial assets requires the use of management judgment to identify the existence of impairment indicators and the determination of CGUs. Furthermore, when determining the recoverable amount of a CGU or an asset, the Corporation uses significant estimates such as the estimation of future cash flows and discount rates applicable. Any significant modification of market conditions could translate into an inability to recover the carrying amounts of non-financial assets (see Note 15); and

- **Deferred taxes**

Deferred tax assets and liabilities require estimates about the nature and timing of future permanent and temporary differences, the expected timing of reversals of those temporary differences and the future tax rates that will apply to those differences (see Note 11).

Such judgments and estimates are based on the facts and information available to the management of the Corporation. Changes in facts and circumstances may require the revision of previous estimates, and actual results could differ from these estimates.

3. ACCOUNTING POLICY DEVELOPMENTS

A) ADOPTION OF NEW ACCOUNTING STANDARDS, AMENDMENTS TO STANDARDS AND INTERPRETATIONS

IFRS 16

Effective September 1, 2019, the Corporation adopted IFRS 16, *Leases* using the modified retrospective approach whereby the financial statements of prior periods presented are not restated and the cumulative effect of the initial application is adjusted to opening retained earnings. IFRS 16 replaces previous accounting standards for leases, including IAS 17, *Leases* and IFRIC 4, *Determining whether an arrangement contains a lease*, and establishes a comprehensive model for the identification of lease arrangements, their recognition, measurement, presentation and disclosure in the financial statements of the lessees and lessors.

IFRS 16 eliminates the distinction between operating and finance leases for lessees, requiring instead the recognition on the statement of financial position of a right-of-use ("ROU") asset (representing the right to use the underlying asset) and a lease liability (representing the obligation to make the lease payments) for all leases at lease commencement, with certain exceptions permitted through elections and practical expedients. The accounting treatment for lessors and for leases previously classified as finance leases remains largely the same as under IAS 17.

As a result of adopting IFRS 16, the Corporation has recognized an increase to both assets and liabilities on the consolidated statement of financial position, stemming from the recognition of the ROU assets and the corresponding lease liabilities. Lease liabilities at transition have been measured at the present value of remaining future lease payments discounted at the related incremental borrowing rate as at September 1, 2019. ROU assets at transition have been measured at an amount equal to the lease liability, adjusted for any prepaid or accrued rent related to that lease. The ROU assets are presented within *Property, plant and equipment* and the lease liabilities within *Long-term debt*.

The total lease expenses over the lease term remain unchanged, however the timing of recognition of these expenses are effected. The impact upon adoption of IFRS 16, relative to leases that have previously been accounted for as operating leases, represents a decrease in *Operating expenses* (due to the removal of rent expense), an increase in *Depreciation and amortization* (due to the depreciation of the ROU assets) and an increase in *Financial expense* (due to the accretion of the lease liabilities), on the consolidated statement of profit or loss.

Although the actual cash flows relative to leases that have previously been accounted for as operating leases are unaffected, the impact on the Corporation's consolidated statement of cash flows represents an increase in cash flows from operating activities and a decrease in cash flows from financing activities. This is the result of the presentation of the payment of the principal component of these leases as a cash flow use within the financing activities under the new standard, versus previously presented as an operating activities cash flow use.

As permitted by IFRS 16, the Corporation has elected to apply certain practical expedients, most notably:

- Not separating non-lease components from lease components for certain classes of underlying assets;
- Applying a single discount rate to a portfolio of leases with similar characteristics;
- Excluding initial direct costs from measuring the right-of-use assets as at September 1, 2019;
- Using hindsight in determining the lease term where the contract contains extension or termination options;
- Electing not to recognize lease liabilities and right-of-use assets for short-term leases or low-value leases; and
- Electing to exclude intangible assets from the application of IFRS 16.

The table below shows the impact of adopting IFRS 16 on the September 1, 2019 consolidated statement of financial position:

	August 31, 2019		September 1, 2019
	As reported	IFRS 16 impact	Upon adoption of IFRS 16
	\$	\$	\$
Property, plant and equipment	2,007,610	41,981	2,049,591
Current portion of long-term debt ⁽¹⁾	22,601	4,566	27,167
Long-term debt	3,382,258	39,877	3,422,135
Trade and other payables	260,481	(2,462)	258,019

(1) Excluding *Balance due on business combinations*.

The difference between operating lease commitments of \$160 million at August 31, 2019 and lease liabilities of \$44.4 million recognized upon adoption of IFRS 16 on September 1, 2019 was mainly the result of:

- The exclusion of approximately \$89 million of lease payments related to agreements that do not meet the criteria set out in IFRS 16, most notably for rent of support structures;
- The exclusion of approximately \$27 million of certain costs contractually committed under lease contracts, which do not qualify to be accounted for as lease liabilities, such as variable lease payments not tied to an index or rate;
- The diminishing effect of discounting the minimum lease payments, using the weighted average incremental borrowing rate of 3.57% at September 1, 2019, of approximately \$12 million; and
- The inclusion of approximately \$20 million of lease payments related to reasonably certain renewal periods or extension options that had not been exercised at August 31, 2019.

Amendments to IFRS 16

In May 2020, the IASB amended IFRS 16, *Leases* to include a practical expedient which permits lessees not to assess whether rent concessions that occur as a direct consequence of the COVID-19 pandemic are lease modifications and, instead, account for those rent concessions as if they were not lease modifications. The amendments are effective for annual reporting periods beginning on or after June 1, 2020, with earlier application permitted. The Corporation adopted these amendments on June 1, 2020 and elected to apply the practical expedient to all eligible rent concessions. The adoption of these amendments had no impact on the consolidated financial statements.

Amendments to IFRS 9, IAS 39 and IFRS 7 - Interest Rate Benchmark Reform (Phase 1)

In September 2019, the IASB amended IFRS 9, *Financial instruments*, IAS 39, *Financial instruments: recognition and measurement*, and IFRS 7, *Financial instruments: disclosures*, to provide temporary exceptions from applying specific hedge accounting requirements during the period of uncertainty arising from the interest rate benchmark reform. In addition, the amendments to IFRS 7 provide specific disclosure requirements regarding the uncertainty arising from the interest rate benchmark reform. The amendments modify some specific hedge accounting requirements to provide relief from potential effects of the uncertainty caused by the IBOR reform. In addition, the amendments require companies to provide additional information to investors about their hedging relationships which are directly affected by these uncertainties. The amendments are effective for annual periods beginning on or after January 1, 2020, with earlier application permitted. The Corporation early adopted these amendments for its fiscal year beginning September 1, 2019. The adoption of these amendments had no material impact on the Corporation's consolidated financial statements.

IFRIC 23

IFRIC 23, *Uncertainty over income tax treatments* clarifies the application of recognition and measurement requirements in IAS 12, *Income Taxes* when there is uncertainty over income tax treatments. It specifically addresses whether an entity considers uncertain tax treatments separately or as a group, the assumptions an entity makes about the examination of tax treatments by taxation authorities, how an entity determines taxable profit (tax loss), tax bases, unused tax losses, unused tax credits and tax rates and how an entity considers changes in facts and circumstances. The interpretation is effective for annual periods beginning on or after January 1, 2019, with earlier application permitted. The Corporation adopted this interpretation for the annual period beginning on September 1, 2019. The adoption of this interpretation had no impact on the consolidated financial statements.

B) NEW ACCOUNTING STANDARDS AND INTERPRETATIONS ISSUED BUT NOT YET EFFECTIVE

New standards, interpretations and amendments to existing standards were issued by the IASB or the IFRS Interpretations Committee that are mandatory but not yet effective for the year ended August 31, 2020, and have not been applied in preparing these consolidated financial statements. The following amendments to standards may have an impact on future consolidated financial statements of the Corporation:

<p>Amendments to IFRS 9, IAS 39, IFRS 7, IFRS 4 and IFRS 16 - Interest Rate Benchmark Reform (Phase 2)</p>	<p>In August 2020, the IASB issued <i>Interest Rate Benchmark Reform - Phase 2</i>, which amends IFRS 9, <i>Financial instruments</i>, IAS 39, <i>Financial instruments: recognition and measurement</i>, IFRS 7, <i>Financial instruments: disclosures</i>, IFRS 4, <i>Insurance contracts</i> and IFRS 16, <i>Leases</i>. The Phase 2 amendments address issues that might affect financial reporting after the reform of an interest rate benchmark, including its replacement with alternative benchmark rates. These amendments complement those issued in 2019 and focus on issues that might affect financial reporting during the reform of an interest rate benchmark, including the effects of changes to contractual cash flows or hedging relationships arising from the replacement of an interest rate benchmark with an alternative benchmark rate (replacement issues). The amendments are effective for annual periods beginning on or after January 1, 2021, with earlier application permitted. The Corporation is in the process of determining the extent of the impact of this change on its consolidated financial statements.</p>
<p>Amendments to IFRS 3</p>	<p>In October 2018, the IASB amended IFRS 3, <i>Business combinations</i> to clarify the definition of a business, with the objective of assisting entities in determining whether a transaction should be accounted for as a business combination or as an asset acquisition. The amendments are applicable to transactions for which the acquisition date is on or after the beginning of the first annual reporting period beginning on or after January 1, 2020, with earlier application permitted. The effects, if any, of these amendments, will be dependent on the facts and circumstances of any future business combinations.</p>

4. REVENUE

	Canadian broadband services		American broadband services		Consolidated	
	2020	2019	2020	2019	2020	2019
Years ended August 31, (In thousands of Canadian dollars)	\$	\$	\$	\$	\$	\$
Residential ⁽¹⁾	1,153,403	1,164,479	938,872	885,688	2,092,275	2,050,167
Commercial	133,164	130,226	132,360	123,541	265,524	253,767
Other	1,205	262	25,279	27,624	26,484	27,886
	1,287,772	1,294,967	1,096,511	1,036,853	2,384,283	2,331,820

(1) Includes revenue from Internet, video and telephony residential customers, bulk residential customers and Internet resellers customers.

5. OPERATING SEGMENTS

The Corporation's segment profit (loss) is reported in two operating segments: Canadian broadband services and American broadband services. The reporting structure reflects how the Corporation manages its business activities to make decisions about resources to be allocated to the segments and to assess their performance.

The Canadian and American broadband services segments provide a wide range of Internet, video and telephony services primarily to residential customers as well as business services across their coverage areas. The Canadian broadband services activities are carried out by Cogeco Connexion in the provinces of Québec and Ontario and the American broadband services activities are carried out by Atlantic Broadband in 11 states: Connecticut, Delaware, Florida, Maine, Maryland, New Hampshire, New York, Pennsylvania, South Carolina, Virginia and West Virginia.

The Corporation and its chief operating decision maker assess the performance of each operating segment based on its segment profit (loss), which is equal to *Revenue* less *Operating expenses*. Transactions between operating segments are measured at the amounts agreed to between the parties.

Year ended August 31, 2020	Canadian broadband services	American broadband services	Other ⁽²⁾	Consolidated
<i>(In thousands of Canadian dollars)</i>	\$	\$	\$	\$
Revenue	1,287,772	1,096,511	—	2,384,283
Operating expenses	587,752	600,425	23,245	1,211,422
Management fees – Cogeco Inc.	—	—	24,132	24,132
Segment profit (loss)	700,020	496,086	(47,377)	1,148,729
Integration, restructuring and acquisition costs ⁽¹⁾				9,486
Depreciation and amortization				499,238
Financial expense				131,093
Profit before income taxes				508,912
Income taxes				112,321
Profit for the year from continuing operations				396,591
Acquisition of property, plant and equipment	248,582	231,422	3,986	483,990

(1) Comprised primarily of costs associated with organizational changes initiated across the Corporation resulting in cost optimization, as well as costs related to the acquisition and integration of Thames Valley Communications and iTétract.

(2) Includes corporate activities and eliminations of intersegment transactions included in each segment's operating results.

Year ended August 31, 2019	Canadian broadband services	American broadband services	Other	Consolidated
<i>(In thousands of Canadian dollars)</i>	\$	\$	\$	\$
Revenue	1,294,967	1,036,853	—	2,331,820
Operating expenses	606,286	571,208	26,486	1,203,980
Management fees – Cogeco Inc.	—	—	19,900	19,900
Segment profit (loss)	688,681	465,645	(46,386)	1,107,940
Integration, restructuring and acquisition costs ⁽¹⁾				11,150
Depreciation and amortization				480,725
Financial expense				175,502
Profit before income taxes				440,563
Income taxes				83,655
Profit for the year from continuing operations				356,908
Acquisition of property, plant and equipment	241,940	192,605	—	434,545

(1) Comprised of costs related to an operational optimization program that included a voluntary departure program and costs related to the FiberLight network acquisition and integration.

The following tables set out certain segmented and geographic market information at August 31, 2020 and August 31, 2019:

Segmented information

	At August 31, 2020			
	Canadian broadband services	American broadband services	Other	Total
<i>(In thousands of Canadian dollars)</i>	\$	\$	\$	\$
Property, plant and equipment	1,142,894	939,760	6,276	2,088,930
Intangible assets	1,004,408	1,795,993	—	2,800,401
Goodwill	8,807	1,372,217	—	1,381,024

	At August 31, 2019			
	Canadian broadband services	American broadband services	Other	Total
<i>(In thousands of Canadian dollars)</i>	\$	\$	\$	\$
Property, plant and equipment	1,124,698	882,827	85	2,007,610
Intangible assets	996,296	1,854,548	—	2,850,844
Goodwill	4,662	1,368,777	—	1,373,439

Geographic market information

	At August 31, 2020		
	Canada	United States	Total
<i>(In thousands of Canadian dollars)</i>	\$	\$	\$
Property, plant and equipment	1,149,170	939,760	2,088,930
Intangible assets	1,004,408	1,795,993	2,800,401
Goodwill	8,807	1,372,217	1,381,024

	At August 31, 2019		
	Canada	United States	Total
<i>(In thousands of Canadian dollars)</i>	\$	\$	\$
Property, plant and equipment	1,124,783	882,827	2,007,610
Intangible assets	996,296	1,854,548	2,850,844
Goodwill	4,662	1,368,777	1,373,439

6. BUSINESS COMBINATIONS

BUSINESS COMBINATIONS IN FISCAL 2020

Acquisition of Thames Valley Communications

On March 10, 2020, the Corporation's subsidiary, Atlantic Broadband, completed the acquisition of Thames Valley Communications, a broadband services company operating in Southeastern Connecticut, for a net consideration of \$67 million (US\$50 million).

Acquisition of iTéract

On May 1, 2020, the Corporation's subsidiary, Cogeco Connexion, completed the acquisition of iTéract Inc., a telecommunications service provider operating in southern Québec using a combination of fixed-wireless and fibre-to-the-home technologies, and owner of 15 spectrum licenses, for \$16 million.

These acquisitions were accounted for using the purchase method and were subject to post closing adjustments. The final allocation of the purchase price of these acquisitions is as follows:

	At August 31, 2020			At May 31, 2020	
	Thames Valley Communications	iTéract	TOTAL	Thames Valley Communications	iTéract
<i>(In thousands of Canadian dollars)</i>	Final \$	Final \$	Final \$	Preliminary \$	Preliminary \$
Purchase price					
Consideration paid at closing	70,982	14,399	85,381	70,982	14,399
Balance due on a business combination	—	1,600	1,600	—	1,600
Working capital adjustments	—	(198)	(198)	—	—
	70,982	15,801	86,783	70,982	15,999
Net assets acquired					
Cash and cash equivalents acquired	3,631	43	3,674	3,631	5
Current assets	1,500	27	1,527	1,500	18
Property, plant and equipment	18,435	3,023	21,458	19,401	2,936
Intangible assets	31,003	12,449	43,452	6,391	12,468
Goodwill ⁽¹⁾	30,744	4,145	34,889	44,747	4,171
Current liabilities	(2,706)	(256)	(2,962)	(2,945)	(238)
Deferred tax liabilities	(11,625)	(3,630)	(15,255)	(1,743)	(3,361)
	70,982	15,801	86,783	70,982	15,999

(1) The goodwill recorded on these acquisitions is mainly attributable to the expected growth in both residential and business services, and to the expertise of the workforce, and is not deductible for tax purposes. Goodwill arising from the acquisition of Thames Valley Communications was allocated to the American broadband services segment, while goodwill arising from the acquisition of iTéract was allocated to the Canadian broadband services segment.

BUSINESS COMBINATION IN FISCAL 2019

Purchase of a fibre network and corresponding assets

On October 3, 2018, the Corporation's subsidiary, Atlantic Broadband, completed the acquisition of the south Florida fibre network previously owned by FiberLight, LLC ("FiberLight"). The transaction, combined with the dark fibers acquired from FiberLight in the second quarter of fiscal 2018, added 350 route miles to Atlantic Broadband's south Florida footprint.

The acquisition was accounted for using the purchase method and was subject to post closing adjustments. The final allocation of the purchase price of this acquisition is as follows:

	At August 31, 2019
	Final
	\$
<i>(In thousands of Canadian dollars)</i>	
Purchase price	
Consideration paid at closing	38,876
Balance due on business combinations	5,005
	43,881
Net assets acquired	
Current assets	1,643
Property, plant and equipment	28,785
Intangible assets	3,978
Goodwill	11,093
Current liabilities	(1,618)
	43,881

7. DISPOSAL OF A SUBSIDIARY AND DISCONTINUED OPERATIONS

Disposal of a subsidiary in fiscal 2019

On April 30, 2019, the Corporation completed the sale of Cogeco Peer 1, its Business ICT services subsidiary. The results and cash flows of Cogeco Peer 1 are presented as discontinued operations separate from the Corporation's continuing operations. As a result of the sale, the Corporation recognized the following gain on disposal in the consolidated statement of profit or loss for the year ended August 31, 2019:

	\$
<i>(In thousands of Canadian dollars)</i>	
Gross proceeds, net of cash disposed	720,314
Working capital adjustments	691
Transaction costs	(10,903)
Net proceeds from sale, net of cash disposed	710,102
Net assets disposed	(625,738)
Gain on disposal of a subsidiary	84,364

The following table presents the carrying value of the net assets disposed of:

	\$
<i>(In thousands of Canadian dollars)</i>	
Trade and other receivables	19,988
Income taxes receivable	1,126
Prepaid expenses and other	8,532
Property, plant and equipment	361,774
Intangible assets	49,618
Other assets	9,594
Goodwill	272,591
Deferred tax assets	2,061
Trade and other payables	(22,416)
Provisions	(34)
Contract liabilities and other liabilities	(25,104)
Deferred tax liabilities	(22,183)
Foreign currency translation adjustment	(29,809)
	625,738

The profit of the discontinued operations was as follows:

Year ended August 31, (In thousands of Canadian dollars)	2019 ⁽¹⁾
	\$
Revenue	174,990
Operating expenses	132,390
Depreciation and amortization	43,999
Financial expense	(1,304)
Gain on disposal of a subsidiary	(84,364)
Profit before income taxes	84,269
Income taxes	8,889
Profit for the year from discontinued operations	75,380

(1) Fiscal 2019 amounts reflect the eight-month period ended April 30, 2019.

The cash flows of the discontinued operations were as follows:

Year ended August 31, (In thousands of Canadian dollars)	2019 ⁽¹⁾
	\$
Cash flows from operating activities	41,962
Cash flows from investing activities	691,729
Effect of exchange rate changes on cash and cash equivalents denominated in foreign currencies	116
Net change in cash and cash equivalents from discontinued operations	733,807

(1) Fiscal 2019 amounts reflect the eight-month period ended April 30, 2019.

8. OPERATING EXPENSES

Years ended August 31, (In thousands of Canadian dollars)	2020	2019
	\$	\$
Salaries, employee benefits and outsourced services	374,411	345,041
Service delivery costs ⁽¹⁾	660,257	661,214
Customer related costs ⁽²⁾	84,798	83,401
Other external purchases ⁽³⁾	91,956	114,324
	1,211,422	1,203,980

(1) Include cost of equipment sold, content and programming costs, payments to other carriers, franchise fees and network costs.

(2) Include advertising and marketing expenses, selling costs, billing expenses, bad debts and collection expenses.

(3) Include office building expenses, professional service fees, Canadian Radio-television and Telecommunications Commission ("CRTC") fees, losses and gains on disposals and write-offs of property, plant and equipment and other administrative expenses.

9. DEPRECIATION AND AMORTIZATION

Years ended August 31, (In thousands of Canadian dollars)	2020	2019
	\$	\$
Depreciation of property, plant and equipment ⁽¹⁾	440,221	423,432
Amortization of intangible assets	59,017	57,293
	499,238	480,725

(1) Includes depreciation of right-of-use assets amounting to \$6.7 million for the year ended August 31, 2020.

10. FINANCIAL EXPENSE

Years ended August 31, (In thousands of Canadian dollars)	2020 \$	2019 \$
Interest on long-term debt, excluding interest on lease liabilities	156,911	176,798
Interest on lease liabilities	1,520	—
Gain on debt modification ⁽¹⁾	(22,898)	—
Net foreign exchange loss (gain)	198	(2,744)
Amortization of deferred transaction costs	1,106	1,836
Capitalized borrowing costs ⁽²⁾	(584)	(690)
Other	(5,160)	302
	131,093	175,502

- (1) On February 3, 2020, the Senior Secured Term Loan B Facility was amended and the most significant change consisted in the reduction of the interest rate by 0.25%. As a result, the Corporation recognized a gain on debt modification of \$22.9 million.
- (2) For the years ended August 31, 2020 and 2019, the weighted average interest rate used in the capitalization of borrowing costs was 4.5%.

11. INCOME TAXES

Years ended August 31, (In thousands of Canadian dollars)	2020 \$	2019 \$
Current	57,632	53,361
Deferred	54,689	30,294
	112,321	83,655

The following table provides the reconciliation between income tax expense at the Canadian statutory federal and provincial income tax rates and the consolidated income tax expense:

Years ended August 31, (In thousands of Canadian dollars)	2020 \$	2019 \$
Profit before income taxes	508,912	440,563
Combined Canadian income tax rate	26.50 %	26.50 %
Income taxes at combined Canadian income tax rate	134,862	116,749
Difference in operations' statutory income tax rates	2,167	1,466
Impact on income taxes arising from non-deductible expenses and non-taxable profit	(443)	(565)
Tax impacts related to foreign operations	(24,135)	(28,633)
Other	(130)	(5,362)
Income taxes at effective income tax rate	112,321	83,655

The following table shows deferred income taxes resulting from temporary differences between the carrying amounts of assets and liabilities for accounting purposes and the amounts used for tax purposes, as well as tax losses carryforwards:

At August 31, (In thousands of Canadian dollars)	2020 \$	2019 \$
Property, plant and equipment	(257,272)	(205,251)
Intangible assets and goodwill	(548,666)	(514,233)
Contract liabilities and other liabilities	13,607	15,214
Non-capital losses and other tax credits carryforwards, net of unrecognized benefits related to tax losses	153,000	135,205
Other	35,409	22,047
Net deferred tax liabilities	(603,922)	(547,018)
Consolidated financial statements presentation:		
Deferred tax assets	6,674	6,564
Deferred tax liabilities	(610,596)	(553,582)
Net deferred tax liabilities	(603,922)	(547,018)

The movements in deferred tax asset and liability balances during fiscal 2020 and 2019 were as follows:

Year ended August 31, 2020	Balance beginning of the year	Recognized in profit or loss	Recognized in other comprehensive income	Acquisition through business combinations	Foreign currency translation adjustments	Balance end of the year
<i>(In thousands of Canadian dollars)</i>	\$	\$	\$	\$	\$	\$
Property, plant and equipment ⁽¹⁾	(205,251)	(52,426)	—	(3,574)	3,979	(257,272)
Intangible assets and goodwill	(514,233)	(29,134)	—	(11,681)	6,382	(548,666)
Contract liabilities and other liabilities	15,214	(1,574)	—	—	(33)	13,607
Non-capital losses and other tax credits carryforwards, net of unrecognized benefits related to tax losses	135,205	21,083	—	—	(3,288)	153,000
Other ⁽¹⁾	22,047	7,362	6,318	—	(318)	35,409
	(547,018)	(54,689)	6,318	(15,255)	6,722	(603,922)

(1) The net income tax effect of IFRS 16 adoption on Property, plant and equipment and Other (lease liabilities) is nil.

Year ended August 31, 2019	Balance beginning of the year	Recognized in profit or loss	Recognized in other comprehensive income	Discontinued operations	Foreign currency translation adjustments	Balance end of the year
<i>(In thousands of Canadian dollars)</i>	\$	\$	\$	\$	\$	\$
Property, plant and equipment	(173,352)	(44,351)	—	14,055	(1,603)	(205,251)
Intangible assets and goodwill	(500,068)	(28,718)	—	18,850	(4,297)	(514,233)
Contract liabilities and other liabilities	16,904	(2,198)	—	482	26	15,214
Non-capital losses and other tax credits carryforwards, net of unrecognized benefits related to tax losses	112,738	44,531	—	(23,704)	1,640	135,205
Other	(5,441)	442	25,422	1,551	73	22,047
	(549,219)	(30,294)	25,422	11,234	(4,161)	(547,018)

At August 31, 2020, the Corporation and its subsidiaries had accumulated federal income tax losses, the benefits of which have been recognized in these consolidated financial statements, unless indicated otherwise. The benefits represent the amount expected to be realized, based on management's assessment of the Corporation's projected future profitability, deferred tax liabilities reversal and available carryback and carryforward periods, among others. These losses expire as follows:

<i>(In thousands of Canadian dollars)</i>	2025	2026	2027	Thereafter	Total
	\$	\$	\$	\$	\$
United States	43,765	71,973	38,928	480,642	635,308

The Corporation and its subsidiaries also had accumulated capital losses in Canada amounting to \$1,146 million which can be carried forward indefinitely and used against Canadian capital gains, and \$93 million of unrealized foreign exchange temporary differences, the benefits of which have not been recognized in these consolidated financial statements.

12. EARNINGS PER SHARE

The following table provides the components used in the calculation of basic and diluted earnings per share:

Years ended August 31,	2020	2019
<i>(In thousands of Canadian dollars, except number of shares)</i>	\$	\$
Profit for the year from continuing operations attributable to owners of the Corporation	375,174	339,973
Profit for the year from discontinued operations attributable to owners of the Corporation	—	75,380
Profit for the year attributable to owners of the Corporation	375,174	415,353
Weighted average number of multiple and subordinate voting shares outstanding	48,496,273	49,359,124
Effect of dilutive stock options ⁽¹⁾	237,696	181,471
Effect of dilutive incentive share units	74,360	95,816
Effect of dilutive performance share units	112,776	133,757
Weighted average number of diluted multiple and subordinate voting shares outstanding	48,921,105	49,770,168

(1) For the year ended August 31, 2020, 199,125 stock options (185,635 in 2019) were excluded from the calculation of diluted earnings per share as the exercise price of the options was greater than the average share price of the subordinate voting shares.

13. OTHER ASSETS

At August 31, (In thousands of Canadian dollars)	2020 \$	2019 \$
Contract costs ⁽¹⁾	42,070	36,372
Transaction costs	2,512	3,121
Other	527	527
	45,109	40,020

(1) Include incremental costs of obtaining a contract and upfront fees paid to multiple-dwelling units.

The table below provides a reconciliation of the contract costs balance:

Years ended August 31, (In thousands of Canadian dollars)	2020 \$	2019 \$
Balance, beginning of the year	36,372	35,328
Additions	17,890	17,666
Amortization	(11,525)	(8,972)
Foreign currency translation adjustments	(667)	422
Discontinued operations	—	(8,072)
Balance, end of the year	42,070	36,372

14. PROPERTY, PLANT AND EQUIPMENT

At August 31,	2020	2019
(In thousands of Canadian dollars)	\$	\$
Owned assets	2,043,406	2,007,610
Right-of-use assets	45,524	—
	2,088,930	2,007,610

A) OWNED ASSETS

During fiscal 2020 and 2019, owned assets variations were as follows:

Years ended August 31, 2020 and 2019 (In thousands of Canadian dollars)	Land, buildings and leasehold improvements \$	Networks and infrastructure \$	Data centre equipment \$	Customer premise equipment \$	Vehicles and equipment \$	Total \$
Cost						
Balance at August 31, 2018	263,054	3,896,470	340,377	725,059	486,409	5,711,369
Acquisitions through business combinations	—	28,785	—	—	—	28,785
Additions	6,292	289,417	—	84,892	53,944	434,545
Disposals and write-offs	(4)	(8,675)	—	(43,233)	(2,764)	(54,676)
Foreign currency translation adjustments	545	21,161	—	3,850	1,549	27,105
Discontinued operations	(142,615)	(321,089)	(340,377)	—	(85,148)	(889,229)
Balance at August 31, 2019	127,272	3,906,069	—	770,568	453,990	5,257,899
Reclassified to ROU assets upon adoption of IFRS 16	—	(9,576)	—	—	—	(9,576)
Acquisitions through business combinations	921	19,634	—	449	209	21,213
Additions ⁽¹⁾	8,454	301,306	—	115,875	57,064	482,699
Disposals and write-offs	(7,337)	(9,234)	—	(35,772)	(2,876)	(55,219)
Foreign currency translation adjustments	(501)	(29,303)	—	(5,796)	(2,488)	(38,088)
Balance at August 31, 2020	128,809	4,178,896	—	845,324	505,899	5,658,928
Accumulated depreciation and impairment losses						
Balance at August 31, 2018	107,829	2,265,479	174,960	510,220	329,203	3,387,691
Depreciation expense	7,115	280,437	—	88,393	47,487	423,432
Disposals and write-offs	(4)	(5,541)	—	(41,623)	(2,395)	(49,563)
Foreign currency translation adjustments	180	8,512	—	1,605	631	10,928
Discontinued operations	(55,646)	(212,737)	(174,960)	—	(78,856)	(522,199)
Balance at August 31, 2019	59,474	2,336,150	—	558,595	296,070	3,250,289
Reclassified to ROU assets upon adoption of IFRS 16	—	(1,688)	—	—	—	(1,688)
Depreciation expense	6,699	287,767	—	88,535	50,514	433,515
Disposals and write-offs	(3,750)	(6,364)	—	(34,809)	(2,582)	(47,505)
Foreign currency translation adjustments	(313)	(15,044)	—	(2,650)	(1,082)	(19,089)
Balance at August 31, 2020	62,110	2,600,821	—	609,671	342,920	3,615,522
Carrying amounts						
At August 31, 2019	67,798	1,569,919	—	211,973	157,920	2,007,610
At August 31, 2020	66,699	1,578,075	—	235,653	162,979	2,043,406

(1) In fiscal 2020, the Corporation received \$1.6 million of government assistance, which was accounted for as a deduction of the cost of property, plant and equipment.

B) RIGHT-OF-USE ASSETS

During fiscal 2020, right-of-use assets variations were as follows:

Year ended August 31, 2020 (In thousands of Canadian dollars)	Land and buildings \$	Other ⁽¹⁾ \$	Total \$
Balance at August 31, 2019	—	—	—
Reclassified upon adoption of IFRS 16	—	7,888	7,888
IFRS 16 transition	41,540	441	41,981
Acquisitions through business combinations	184	61	245
Additions ⁽²⁾	1,879	1,305	3,184
Modifications	(117)	—	(117)
Disposals and write-offs	(521)	—	(521)
Depreciation expense	(5,878)	(828)	(6,706)
Foreign currency translation adjustments	(224)	(206)	(430)
Balance at August 31, 2020	36,863	8,661	45,524

(1) Includes right-of-use assets pertaining to networks and infrastructure, and vehicles and equipment.

(2) Includes \$1.3 million of indefeasible rights of use paid.

15. INTANGIBLE ASSETS AND GOODWILL

A) INTANGIBLE ASSETS

During fiscal 2020 and 2019, intangible assets variations were as follows:

Years ended August 31, 2020 and 2019 (In thousands of Canadian dollars)	Finite useful life			Indefinite useful life		Total \$
	Customer relationships \$	Spectrum Licenses \$	Other \$	Cable Distribution Licenses \$	Trade name \$	
Cost						
Balance at August 31, 2018	594,872	32,306	1,251	2,583,601	25,934	3,237,964
Acquisitions through business combinations	3,978	—	—	—	—	3,978
Foreign currency translation adjustments	7,683	—	—	29,720	—	37,403
Discontinued operations	(173,317)	—	(1,251)	—	(25,934)	(200,502)
Balance at August 31, 2019	433,216	32,306	—	2,613,321	—	3,078,843
Acquisitions through business combinations	9,112	10,000	—	24,340	—	43,452
Foreign currency translation adjustments	(8,392)	—	—	(32,324)	—	(40,716)
Balance at August 31, 2020	433,936	42,306	—	2,605,337	—	3,081,579
Accumulated amortization and impairment losses						
Balance at August 31, 2018	308,930	897	749	—	—	310,576
Amortization expense	53,706	3,587	—	—	—	57,293
Foreign currency translation adjustments	3,047	—	—	—	—	3,047
Discontinued operations	(142,168)	—	(749)	—	—	(142,917)
Balance at August 31, 2019	223,515	4,484	—	—	—	227,999
Amortization expense	55,096	3,921	—	—	—	59,017
Foreign currency translation adjustments	(5,838)	—	—	—	—	(5,838)
Balance at August 31, 2020	272,773	8,405	—	—	—	281,178
Carrying amounts						
At August 31, 2019	209,701	27,822	—	2,613,321	—	2,850,844
At August 31, 2020	161,163	33,901	—	2,605,337	—	2,800,401

B) GOODWILL

During fiscal 2020 and 2019, goodwill variations were as follows:

Years ended August 31, 2020 and 2019		\$
<i>(In thousands of Canadian dollars)</i>		
Cost		
Balance at August 31, 2018		2,031,679
Acquisitions through business combinations		11,093
Foreign currency translation adjustments		24,903
Discontinued operations		(694,236)
Balance at August 31, 2019		1,373,439
Acquisitions through business combinations		34,889
Foreign currency translation adjustments		(27,304)
Balance at August 31, 2020		1,381,024
Accumulated impairment losses		
Balance at August 31, 2018		423,233
Discontinued operations		(423,233)
Balance at August 31, 2019		—
Balance at August 31, 2020		—
Carrying amounts		
At August 31, 2019		1,373,439
At August 31, 2020		1,381,024

C) IMPAIRMENT TESTING OF GOODWILL AND INTANGIBLE ASSETS

The Corporation tests goodwill and intangible assets with indefinite useful lives for impairment annually, or more frequently when indicators of impairment are identified.

Goodwill is allocated to cash-generating units ("CGU") based on the level at which management monitors goodwill. The allocation is made to CGUs that are expected to benefit from the synergies of the business combination from which it arose.

Intangible assets with indefinite useful lives who do not generate independent cash inflows from those of other assets or group of assets, are allocated and tested for impairment as part of the CGU to which they belong.

For the purpose of impairment testing, goodwill and intangible assets with indefinite useful lives are allocated to each of the Corporation's CGUs as follows:

At August 31,	2020		2019	
	Goodwill	Cable Distribution Licenses	Goodwill	Cable Distribution Licenses
<i>(In thousands of Canadian dollars)</i>	\$	\$	\$	\$
Canadian broadband services	8,807		4,662	
Ontario		857,696		857,696
Québec		109,304		109,304
American broadband services	1,372,217		1,368,777	
Southern Florida		243,885		248,617
South Carolina		40,430		41,215
Pennsylvania		499,770		509,465
Delaware/Maryland/Virginia		410,432		418,394
Eastern Connecticut		117,248		95,723
New Hampshire/Maine		326,572		332,907
Total	1,381,024	2,605,337	1,373,439	2,613,321

Goodwill and intangible assets with indefinite useful lives are considered impaired if the recoverable amount is less than the carrying amount. The recoverable amount of each CGU is calculated based on the higher of value in use and fair value less costs of disposal. The value in use is determined using cash flow projections derived from internal financial projections covering a period of five to eight years, depending on the CGU. A period of five to eight years is used, as the payback period of the Corporation's capital investments often exceeds five years. They reflect management's expectations of revenue growth, expenses and capital expenditures for each CGU based on past experience and expected growth for the CGU. Cash flows beyond that period are extrapolated using an estimated terminal growth rate determined with regard to projected growth rates for the specific markets in which the CGUs participate and are not considered to exceed the long-term average growth rates for those

markets. Discount rates applied to the cash flow forecasts are derived from the Corporation's pre-tax weighted average cost of capital, adjusted for the different risk profiles of the individual CGUs.

At June 30, 2020 and 2019, the Corporation performed impairment tests for all its CGUs within the Canadian and American broadband services segments. The recoverable amount of each CGU was calculated based on the value in use and was determined to be higher than its carrying amount and no impairment loss has been recognized for the years ended August 31, 2020 and 2019.

The following represents the key assumptions that were used to determine the recoverable amounts in the most recent impairment tests performed for each of the Corporation's operating segments:

	2020		2019	
	Pre-tax discount rate	Terminal growth rate	Pre-tax discount rate	Terminal growth rate
Operating segments	%	%	%	%
Canadian broadband services	8.3	2.0	10.0	2.0
American broadband services	8.1 to 9.3	2.5 to 3.0	7.8 to 9.1	2.5 to 3.0

The following table presents, for each operating segment, the change in the pre-tax discount rate and in the terminal growth rate used in the tests performed, that would have been required in order for the recoverable amount to equal the carrying value of the CGU at the date of the most recent impairment tests:

Operating segments	Increase in pre-tax discount rate	Decrease in terminal growth rate
	%	%
Canadian broadband services	(1)	(1)
American broadband services	0.6 to 11.0	0.9 to 48.0

- (1) The recoverable amount of the Canadian broadband services CGUs exceeds the corresponding carrying value. No reasonable changes in the discount rate or in the terminal growth rate, used in the impairment test performed, would have caused the recoverable amount to equal the carrying value of the Canadian broadband services CGUs.

16. PROVISIONS

During fiscal 2020, provisions variations were as follows:

Year ended August 31, 2020 <i>(In thousands of Canadian dollars)</i>	Withholding and stamp taxes ⁽¹⁾	Programming and content costs ⁽²⁾	Other ⁽³⁾	Total
	\$	\$	\$	\$
Balance, beginning of the year	6,977	13,585	15,991	36,553
Provisions made during the year	—	11,225	1,437	12,662
Provisions used during the year	—	(1,313)	(70)	(1,383)
Provisions reversed during the year	—	(9,438)	(4,935)	(14,373)
Foreign currency translation adjustments	450	(30)	(15)	405
Balance, end of the year	7,427	14,029	12,408	33,864

- (1) The provisions for withholding and stamp taxes relate to contingent liabilities for withholding and stamp taxes relating to fiscal years prior to the acquisition of a subsidiary by the Corporation.
- (2) The provisions for programming and content costs include provisions for retroactive rate increases as well as additional royalties or content costs as a result of periodical audits from service providers.
- (3) The other provisions include provisions for contractual obligations and other legal obligations.

17. CONTRACT LIABILITIES AND OTHER LIABILITIES

At August 31, <i>(In thousands of Canadian dollars)</i>	2020	2019
	\$	\$
Advance billings	38,629	36,085
Deferred customer connection fees	18,005	17,642
Customer deposits and prepayments	1,221	536
Contract liabilities	57,855	54,263
Other liabilities	272	251
	58,127	54,514
Current	47,162	43,395
Non-current	10,965	11,119

During fiscal 2020 and 2019, contract liabilities variations were as follows:

Years ended August 31, <i>(In thousands of Canadian dollars)</i>	2020	2019
	\$	\$
Balance, beginning of the year	54,263	77,744
Revenue deferred in the previous period and recognized in the current period	(43,200)	(38,879)
Net additions arising from operations	46,815	40,044
Additions arising from business combinations	718	454
Foreign currency translation adjustments	(741)	584
Discontinued operations	—	(25,684)
Balance, end of the year	57,855	54,263

18. LONG-TERM DEBT

At August 31, (In thousands of Canadian dollars)	2020 \$	2019 \$
Notes, debentures and credit facilities	3,072,511	3,404,859
Lease liabilities	41,235	—
Balance due on business combinations	2,856	4,520
	3,116,602	3,409,379
Less current portion	29,569	27,121
	3,087,033	3,382,258

A) Notes, debentures and credit facilities

At August 31, (In thousands of Canadian dollars, except percentages)	Maturity	Interest rate %	2020 \$	2019 \$
Corporation				
Term Revolving Facility ^{a)}	January 2025	—	—	—
Senior Secured Notes ^{b)}				
Series A - US\$25 million	September 2024	4.14	32,538	33,155
Series B - US\$150 million	September 2026	4.29	195,123	198,845
Senior Secured Notes - US\$215 million ^{c)}	June 2025	4.30	279,687	284,996
Senior Secured Debentures Series 2 ^{d)}	—	—	—	199,744
Senior Secured Debentures Series 3 ^{e)}	February 2022	4.93	199,671	199,457
Senior Secured Debentures Series 4 ^{f)}	May 2023	4.18	299,027	298,697
Subsidiaries				
First Lien Credit Facilities ^{g)}				
Senior Secured Term Loan B Facility - US\$1,626.8 million (US\$1,678.8 million in 2019)	January 2025	2.16 ^{(1) (2)}	2,066,465	2,189,965
Senior Secured Revolving Facility	July 2024	—	—	—
			3,072,511	3,404,859
Less current portion			22,171	22,601
			3,050,340	3,382,258

- (1) Interest rate on debt includes applicable credit spread. On February 3, 2020, a US subsidiary of the Corporation amended its Senior Secured Term Loan B Facility, whereby the most significant change consisted in the reduction of the interest rate by 0.25%.
- (2) A US subsidiary of the Corporation entered into interest rate swap agreements to fix the interest rate on a notional amount of US\$1.1 billion of its LIBOR based loans. These agreements have the effect of converting the floating US LIBOR base rate into fixed rates ranging from 2.017% to 2.262% for maturities between January 31, 2021 and November 30, 2024, under the Senior Secured Term Loan B Facility. Taking into account these agreements, the effective interest rate on the Senior Secured Term Loan B Facility is 3.50%.

- a) The Corporation has a Term Revolving Facility of \$750 million with a syndicate of lenders. On December 6, 2019, the Corporation reduced the facility from \$800 million to \$750 million and the maturity was extended until January 24, 2025 and can be further extended annually. The amended and restated Term Revolving Facility is available in Canadian dollars, US dollars, Euros and British Pounds and interest rates are based on banker's acceptance, US dollar base rate loans, LIBOR loans in US dollars, Euros or British Pounds, plus the applicable credit spread. The Term Revolving Facility provides access to a swingline with a limit of \$30 million. The Term Revolving Facility is indirectly secured by a first priority fixed and floating charge and a security interest on substantially all present and future real and personal properties and undertaking of every nature and kind of the Corporation and its subsidiaries, except for the unrestricted subsidiaries, and provides for certain permitted encumbrances, including purchased money obligations, existing funded obligations and charges granted by any subsidiary prior to the date when it becomes a subsidiary, subject to a maximum amount. The provisions under this facility provide for restrictions on the operations and activities of the Corporation and its subsidiaries, except for the unrestricted subsidiaries. Generally, the most significant restrictions relate to total indebtedness, financial expense, permitted investments, distributions to shareholders including dividends on multiple and subordinate voting shares and share repurchases, as well as the incurrence and maintenance of certain financial ratios primarily linked to EBITDA from continuing operations, adjusted for integration, restructuring and acquisition costs ("adjusted EBITDA").
- b) On August 27, 2014, the Corporation completed pursuant to a private placement, the issuance of US\$25 million Senior Secured Notes Series A and of US\$150 million Senior Secured Notes Series B. The Senior Secured Notes Series A bear interest at 4.14% per annum payable semi-annually and mature on September 1, 2024, and the Senior Secured Notes Series B bear interest at 4.29% per annum payable semi-annually and mature on September 1, 2026. The Senior Secured Notes Series A and B are redeemable at any time at Cogeco Communications' option, in whole or in part, at 100% of the principal amount plus a make-whole premium. These notes are indirectly secured by a first priority fixed and floating charge and a security interest on substantially all present and future real and personal property and undertaking of every nature and kind of the Corporation and its subsidiaries except for the unrestricted subsidiaries. The provisions under these notes provide for restrictions on the operations and activities of the Corporation and its subsidiaries except for

the unrestricted subsidiaries. Generally, the most significant restrictions relate to permitted indebtedness, dispositions and maintenance of certain financial ratios.

- c) On June 27, 2013, the Corporation completed pursuant to a private placement, the issuance of US\$215 million Senior Secured Notes. The Senior Secured Notes bear interest at 4.30% payable semi-annually and mature on June 16, 2025. The Senior Secured Notes are redeemable at the Corporation's option at any time, in whole or in part, at 100% of the principal amount plus a make-whole premium. These notes are indirectly secured by a first priority fixed and floating charge and a security interest on substantially all present and future real and personal property and undertaking of every nature and kind of the Corporation and its subsidiaries except for the unrestricted subsidiaries. The provisions under these notes provide for restrictions on the operations and activities of the Corporation and its subsidiaries except for the unrestricted subsidiaries. Generally, the most significant restrictions relate to permitted indebtedness, dispositions and maintenance of certain financial ratios.
- d) On November 16, 2010, the Corporation completed pursuant to a public debt offering, the issuance of \$200 million Senior Secured Debentures Series 2. These debentures bore interest at 5.15% per annum payable semi-annually and were maturing on November 16, 2020. On July 20, 2020, the Corporation proceeded with the early redemption of these debentures. A redemption premium of \$2.8 million was charged to financial expense in fiscal 2020, in connection with the early redemption.
- e) On February 14, 2012, the Corporation completed pursuant to a public debt offering, the issuance of \$200 million Senior Secured Debentures Series 3. These debentures mature on February 14, 2022 and bear interest at 4.93% per annum payable semi-annually. These debentures are indirectly secured by a first priority fixed and floating charge and a security interest on substantially all present and future real and personal property and undertaking of every nature and kind of the Corporation and its subsidiaries except for the unrestricted subsidiaries. The provisions under these debentures provide for restrictions on the operations and activities of the Corporation and its subsidiaries except for the unrestricted subsidiaries. Generally, the most significant restrictions relate to permitted indebtedness, dispositions and maintenance of certain financial ratios.
- f) On May 27, 2013, the Corporation completed pursuant to a public debt offering, the issuance of \$300 million Senior Secured Debentures Series 4. These debentures mature on May 26, 2023 and bear interest at 4.18% per annum payable semi-annually. These debentures are indirectly secured by a first priority fixed and floating charge and a security interest on substantially all present and future real and personal property and undertaking of every nature and kind of the Corporation and its subsidiaries except for the unrestricted subsidiaries. The provisions under these debentures provide for restrictions on the operations and activities of the Corporation and its subsidiaries except for the unrestricted subsidiaries. Generally, the most significant restrictions relate to permitted indebtedness, dispositions and maintenance of certain financial ratios.
- g) On January 4, 2018, in connection with the financing of the MetroCast acquisition, a \$2.1 billion (US\$1.7 billion) Senior Secured Term Loan B maturing January 2025, and a \$188 million (US\$150 million) Senior Secured Revolving facility maturing January 2023 were entered into by two of Cogeco Communications' US subsidiaries. On December 6, 2019, the maturity date of the US\$150 million Senior Secured Revolving Facility was extended by an additional 18 months until July 4, 2024.

The interest rate on these First Lien Credit Facilities is based on LIBOR plus an applicable credit spread. Commencing in August 2018, the Senior Secured Term Loan B is subject to a quarterly amortization of 0.25% until its maturity date. In addition to the quarterly amortization, the loan shall be prepaid according to a prepayment percentage of excess cash flow generated during the prior fiscal year as defined below and such payments are starting in fiscal 2020, if applicable.

- (i) 50% if Atlantic Broadband's ratio of net senior secured indebtedness / adjusted EBITDA ("Leverage Ratio") is greater than or equal to 5.1;
- (ii) 25% if Atlantic Broadband's Leverage Ratio is greater than or equal to 4.6 but less than 5.1; and
- (iii) 0% if Atlantic Broadband's Leverage Ratio is less than 4.6.

Atlantic Broadband's leverage ratio was below 4.6 as of August 31, 2020, therefore no excess cash flow prepayments are applicable in fiscal 2021. The First Lien Credit Facilities are non-recourse to the Corporation and most of its Canadian subsidiaries, and are indirectly secured by a first priority fixed and floating charge on substantially all present and future real and personal property and undertaking of every nature and kind of Atlantic Broadband and its subsidiaries. The provisions under these facilities provide for restrictions on the operations and activities of Atlantic Broadband and its subsidiaries. Generally, the most significant restrictions relate to permitted indebtedness, investments, distributions and maintenance of certain financial ratios.

B) Lease liabilities

In the normal course of operations, the Corporation enters into leases for buildings, land, network infrastructure and equipment. Lease contracts are typically individually negotiated for a wide range of fixed periods, but may also include renewal or termination options.

The weighted average interest rate on lease liabilities was approximately 3.55% and the weighted average lease term was approximately 6.7 years, as at August 31, 2020.

At August 31, 2020	
<i>(In thousands of Canadian dollars)</i>	
Lease liabilities	\$ 41,235
Less current portion	4,542
	36,693

Total expenses of \$16.4 million have been recognized during fiscal 2020 relating primarily to variable lease payments not included in the measurement of lease liabilities.

19. SHARE CAPITAL

A) AUTHORIZED

Unlimited number of:

Class A Preference shares, without voting rights, redeemable by the Corporation and retractable at the option of the holder at any time at a price of \$1 per share, carrying a cumulative preferential cash dividend at a rate of 11% of the redemption price per year.

Class B Preference shares, without voting rights, could be issued in series.

Multiple voting shares, 10 votes per share.

Subordinate voting shares, 1 vote per share.

B) ISSUED AND PAID

At August 31,	2020	2019
<i>(In thousands of Canadian dollars, except number of shares)</i>	\$	\$
15,691,100 multiple voting shares	98,346	98,346
32,231,433 subordinate voting shares (33,717,668 at August 31, 2019)	902,896	939,633
	1,001,242	1,037,979
76,957 subordinate voting shares held in trust under the Incentive Share Unit Plan (76,935 at August 31, 2019)	(6,346)	(5,409)
115,222 subordinate voting shares held in trust under the Performance Share Unit Plan (118,667 at August 31, 2019)	(9,933)	(9,180)
	984,963	1,023,390

During fiscal 2020 and 2019, subordinate voting share transactions were as follows:

Years ended August 31,	2020		2019	
	Number of shares	Amount	Number of shares	Amount
<i>(In thousands of Canadian dollars, except number of shares)</i>		\$		\$
Balance, beginning of the year	33,717,668	939,633	33,874,114	937,226
Shares issued for cash under the Stock Option Plan	105,765	6,670	170,754	9,780
Share-based payment previously recorded in share-based payment reserve for options exercised	—	1,129	—	1,717
Purchase and cancellation of subordinate voting shares ⁽¹⁾	(1,592,000)	(44,536)	(327,200)	(9,090)
Balance, end of the year	32,231,433	902,896	33,717,668	939,633

(1) During fiscal 2020, under its Normal Course Issuer Bid ("NCIB") program, the Corporation purchased and cancelled 1,592,000 (327,200 in 2019) subordinate voting shares with an average stated value of \$44.5 million (\$9.1 million in 2019), for consideration of \$165.5 million (\$32.4 million in 2019). The excess of the purchase price over the average stated value of the shares totaled \$121.0 million (\$23.3 million in 2019) and was charged to retained earnings.

NORMAL COURSE ISSUER BID

On April 30, 2020, the Corporation announced that the TSX accepted the renewal of its notice of intention for a NCIB, enabling it to acquire for cancellation up to 1,809,000 subordinate voting shares from May 4, 2020 to May 3, 2021. Under its previous NCIB that commenced on May 3, 2019 and ended on May 2, 2020, the Corporation could purchase for cancellation a maximum of 1,869,000 subordinate shares.

The Corporation has also entered into an automatic share purchase plan ("ASPP") with a designated broker to allow for the purchase of subordinate voting shares under the NCIB at times when the Corporation would ordinarily not be permitted to purchase shares due to regulatory restrictions or self-imposed blackout periods. Such purchases are executed by the broker based on parameters established by the Corporation prior to the pre-established ASPP period under the ASPP.

During fiscal 2020 and 2019, subordinate voting shares held in trust under the Incentive Share Unit Plan transactions were as follows:

Years ended August 31,	2020		2019	
	Number of shares	Amount	Number of shares	Amount
<i>(In thousands of Canadian dollars, except number of shares)</i>				
		\$		\$
Balance, beginning of the year	76,935	5,409	111,717	7,569
Subordinate voting shares acquired	21,290	2,437	9,688	864
Subordinate voting shares distributed to employees	(21,268)	(1,500)	(44,470)	(3,024)
Balance, end of the year	76,957	6,346	76,935	5,409

During fiscal 2020 and 2019, subordinate voting shares held in trust under the Performance Share Unit Plan transactions were as follows:

Years ended August 31,	2020		2019	
	Number of shares	Amount	Number of shares	Amount
<i>(In thousands of Canadian dollars, except number of shares)</i>				
		\$		\$
Balance, beginning of the year	118,667	9,180	143,377	10,831
Subordinate voting shares acquired	28,005	3,206	18,609	1,640
Subordinate voting shares distributed to employees	(31,450)	(2,453)	(43,319)	(3,291)
Balance, end of the year	115,222	9,933	118,667	9,180

C) DIVIDENDS

For the year ended August 31, 2020, quarterly eligible dividends of \$0.58 per share, for a total of \$2.32 per share or \$112.3 million, were paid to the holders of multiple and subordinate voting shares, compared to quarterly eligible dividends of \$0.525 per share, for a total of \$2.10 per share or \$103.7 million, for the year ended August 31, 2019.

Years ended August 31,	2020	2019
	\$	\$
<i>(In thousands of Canadian dollars)</i>		
Dividends on multiple voting shares	36,403	32,951
Dividends on subordinate voting shares	75,872	70,757
	112,275	103,708

At its October 27, 2020 meeting, the Board of Directors of Cogeco Communications declared a quarterly eligible dividend of \$0.64 per share for multiple voting and subordinate voting shares, payable on November 24, 2020 to shareholders of record on November 10, 2020.

D) SHARE-BASED PAYMENT PLANS

The Corporation offers an Employee Stock Purchase Plan for the benefit of its employees and those of its subsidiaries and a Stock Option Plan to its executive officers and designated employees. No more than 10% of the outstanding subordinate voting shares are available for issuance under these plans. Furthermore, the Corporation offers an Incentive Share Unit Plan ("ISU Plan") and a Performance Share Unit Plan ("PSU Plan") for executive officers and designated employees, and a Deferred Share Unit Plan ("DSU Plan") for members of the Board of Directors ("Board").

Stock purchase plan

The Corporation offers, for the benefit of its employees and those of its subsidiaries, an Employee Stock Purchase Plan, which is accessible to all employees up to a maximum of 7% of their base annual salary and the Corporation contributes 25% of the employee contributions. The subscriptions are made monthly and employee subordinate voting shares are purchased on the stock market.

Stock option plan

A total of 3,432,500 subordinate voting shares are reserved for the purpose of the Stock Option Plan. The minimum exercise price at which options are granted is equal to the market value of such shares at the time the option is granted. Options vest equally over a period of five years beginning one year after the day such options are granted and are exercisable over ten years.

Under the Stock Option Plan, the following options were granted by the Corporation and are outstanding at August 31:

Years ended August 31,	2020		2019	
	Options	Weighted average exercise price	Options	Weighted average exercise price
<i>(In Canadian dollars, except number of options)</i>		\$		\$
Outstanding, beginning of the year	715,614	65.93	819,393	65.27
Granted ⁽¹⁾	207,150	114.19	201,525	65.62
Exercised ⁽²⁾	(105,765)	63.07	(170,754)	57.28
Cancelled	(30,200)	79.67	(134,550)	72.43
Outstanding, end of the year	786,799	78.49	715,614	65.93
Exercisable, end of the year	291,294	59.99	264,374	55.99

(1) For the year ended August 31, 2020, the Corporation granted 110,875 (97,725 in 2019) stock options to Cogeco's executive officers as executive officers of the Corporation.

(2) The weighted average share price for options exercised during the year was \$110.44 (\$92.43 in 2019).

At August 31, 2020, the range of exercise prices, the weighted average exercise price and the weighted average remaining contractual life of options are as follows:

At August 31, 2020	Options outstanding			Options exercisable	
	Number outstanding	Weighted average remaining contractual life (years)	Weighted average exercise price \$	Number exercisable	Weighted average exercise price \$
Range of exercise prices \$					
38.08 to 50.10	115,199	2.42	45.68	115,199	45.68
50.11 to 64.20	130,075	5.58	61.89	78,185	61.66
64.21 to 85.00	184,465	7.34	65.91	52,085	66.80
85.01 to 114.30	357,060	8.32	101.63	45,825	85.36
	786,799	6.77	78.49	291,294	59.99

The weighted average fair value of stock options granted for the period ended August 31, 2020 was \$18.43 (\$9.60 in 2019) per option. The weighted average fair value of each option granted was estimated at the grant date for purposes of determining share-based payment expense using the Black-Scholes option pricing model based on the following weighted-average assumptions:

Years ended August 31,	2020	2019
	%	%
Expected dividend yield	2.07	3.18
Expected volatility ⁽¹⁾	20.51	20.37
Risk-free interest rate	1.53	2.42
Expected life (in years)	5.9	6.0

(1) The expected volatility is based on the historical volatility of the Corporation's subordinate voting shares for a period equivalent to the expected life of the options.

A compensation expense of \$0.8 million (\$0.4 million in 2019) was recorded for the year ended August 31, 2020 related to this plan.

ISU plan

The Corporation offers to its executive officers and designated employees an Incentive Share Unit ("ISU") Plan. According to this plan, executive officers and designated employees periodically receive a given number of ISUs which entitle the participants to receive subordinate voting shares of the Corporation after three years less one day from the date of grant. The number of ISUs is based on the dollar value of the award and the average closing stock price of the Corporation for the previous twelve month period ending August 31. ISUs are redeemable in case of death, permanent disability, normal retirement or termination of employment not for cause. A trust was created for the purpose of purchasing these shares on the stock market in order to protect against stock price fluctuation and the Corporation instructed the trustee to purchase subordinate voting shares of the Corporation on the stock market. These shares are purchased and are held in trust for the participants until they are fully vested. The trust, considered as a special purpose entity, is consolidated in the Corporation's consolidated financial statements with the value of the acquired subordinate voting shares held in trust under the ISU Plan presented in reduction of share capital.

Changes in the outstanding number of ISUs are as follows:

Years ended August 31,	2020	2019
Outstanding, beginning of the year	71,825	105,475
Granted ⁽¹⁾	29,200	37,600
Distributed	(21,268)	(44,470)
Cancelled	(3,616)	(26,780)
Outstanding, end of the year	76,141	71,825

(1) The weighted average fair value of the ISUs granted was \$113.02 in 2020 (\$65.55 in 2019).

A compensation expense of \$2.0 million (\$2.0 million in 2019) was recorded for the year ended August 31, 2020 related to this plan.

PSU plan

The Corporation also offers a Performance Share Unit ("PSU") Plan for the benefit of its executive officers and designated employees. The objectives of the PSU Plan are to retain executive officers and designated employees, to align their interests with those of the shareholders and to sustain positive corporate performance, as measured by an economic value creation formula, a performance measure used by management. The number of PSUs is based on the dollar value of the award and the average closing stock price of the Corporation for the previous twelve month period ending August 31. The PSUs vest over a three-year less one day period, based on the level of increase in the economic value of the Corporation or the relevant subsidiary for the preceding three-year period ending August 31, meaning that no vesting will occur if there is no increase in the economic value. The participants are entitled to receive dividend equivalents in the form of additional PSUs but only with respect to vested PSUs. PSUs are redeemable in case of death, permanent disability, normal retirement or termination of employment not for cause, in which cases, the holder of PSUs is entitled to payment of the PSUs in proportion to the time of employment from the date of the grant to the date of termination versus the three-year less one day vesting period. A trust was created for the purpose of purchasing these shares on the stock market in order to protect against stock price fluctuation and the Corporation instructed the trustee to purchase subordinate voting shares of the Corporation on the stock market. These shares are purchased and are held in trust for the participants until they are fully vested. The trust, considered as a special purpose entity, is consolidated in the Corporation's consolidated financial statements with the value of the acquired subordinate voting shares held in trust under the PSU Plan presented in reduction of share capital.

Changes in the outstanding number of PSUs are as follows:

Years ended August 31,	2020	2019
Outstanding, beginning of the year	107,551	133,181
Granted ⁽¹⁾	39,425	45,800
Performance-based additional units granted	—	200
Distributed	(31,450)	(43,319)
Cancelled	(5,102)	(31,889)
Dividend equivalents	2,462	3,578
Outstanding, end of the year	112,886	107,551

(1) For the year ended August 31, 2020, the Corporation granted 14,375 (14,625 in 2019) PSUs to Cogeco's executive officers as executive officers of the Corporation. The weighted average fair value of the PSUs granted was \$114.15 in 2020 (\$65.75 in 2019).

A compensation expense of \$1.7 million (\$1.4 million in 2019) was recorded for the year ended August 31, 2020 related to this plan.

DSU plan

The Corporation also offers a Deferred Share Unit ("DSU") Plan for members of the Board to assist in the attraction and retention of qualified individuals to serve on the Board of the Corporation. Each existing or new member of the Board may elect to be paid a percentage of the annual retainer in the form of DSUs with the balance, if any, being paid in cash. The number of DSUs that a member is entitled to receive is based on the average closing price of the subordinate shares on the TSX for the twenty consecutive trading days immediately preceding by one day the date of issue. Dividend equivalents are awarded with respect to DSUs in a member's account on the same basis as if the member was a shareholder of record of subordinate shares on the relevant record date, and the dividend equivalents are credited to the individual's account as additional DSUs. DSUs are redeemable and payable in cash or in shares, upon an individual ceasing to be a member of the Board or in the event of the death of the member.

Changes in the outstanding number of DSUs are as follows:

Years ended August 31,	2020	2019
Outstanding, beginning of the year	42,679	42,607
Issued ⁽¹⁾	7,233	11,328
Redeemed	—	(12,351)
Dividend equivalents	1,046	1,095
Outstanding, end of the year	50,958	42,679

(1) The weighted average fair value of the DSUs issued was \$113.75 in 2020 (\$65.85 in 2019).

A compensation expense of \$0.7 million (\$1.8 million in 2019) was recorded for the year ended August 31, 2020 related to this plan.

20. ACCUMULATED OTHER COMPREHENSIVE (LOSS) INCOME

During fiscal 2020 and 2019, accumulated other comprehensive (loss) income variations were as follows:

Years ended August 31, 2020 and 2019 (In thousands of Canadian dollars)	Cash flow hedge reserve \$	Foreign currency translation \$	Total \$
Balance at August 31, 2018	25,818	87,956	113,774
Other comprehensive loss for the year	(59,660)	(23,086)	(82,746)
Balance at August 31, 2019	(33,842)	64,870	31,028
Other comprehensive loss for the year	(18,342)	(19,803)	(38,145)
Balance at August 31, 2020	(52,184)	45,067	(7,117)

21. ADDITIONAL CASH FLOW INFORMATION

A) CHANGES IN NON-CASH OPERATING ACTIVITIES

Years ended August 31, (In thousands of Canadian dollars)	2020 \$	2019 \$
Trade and other receivables	(8,550)	(1,734)
Prepaid expenses and other	(6,337)	(1,100)
Other assets	(6,384)	(8,665)
Trade and other payables	(35,513)	(24,143)
Provisions	(4,460)	10,103
Contract liabilities and other liabilities	6,050	431
	(55,194)	(25,108)

B) CHANGES IN LIABILITIES ARISING FROM FINANCING ACTIVITIES

Years ended August 31, 2020 and 2019 (In thousands of Canadian dollars)	Long-term debt				Total \$
	Bank indebtedness \$	Notes, debentures and credit facilities \$	Lease liabilities \$	Balance due on business combinations \$	
Balance at August 31, 2018	5,949	3,858,208	—	—	3,864,157
Decrease in bank indebtedness	(5,949)	—	—	—	(5,949)
Net decrease under the revolving facilities	—	(443,955)	—	—	(443,955)
Repayment of notes, debentures and credit facilities	—	(77,639)	—	—	(77,639)
Increase in deferred transaction costs	—	(1,778)	—	—	(1,778)
Repayment of balance due on business combinations	—	—	—	(655)	(655)
Total cash flows used in financing activities excluding equity	(5,949)	(523,372)	—	(655)	(529,976)
Effect of changes in foreign exchange rates	—	62,405	—	170	62,575
Amortization of discounts, transaction costs and other	—	7,618	—	—	7,618
Increase in balance due on business combinations	—	—	—	5,005	5,005
Total non-cash changes	—	70,023	—	5,175	75,198
Balance at August 31, 2019	—	3,404,859	—	4,520	3,409,379
Increase in bank indebtedness	7,610	—	—	—	7,610
Repayment of notes, debentures and credit facilities	—	(269,169)	—	—	(269,169)
Repayment of lease liabilities	—	—	(4,905)	—	(4,905)
Increase in deferred transaction costs	—	(98)	—	—	(98)
Repayment of balance due on business combinations	—	—	—	(3,228)	(3,228)
Total cash flows from (used in) financing activities excluding equity	7,610	(269,267)	(4,905)	(3,228)	(269,790)
Interest paid on lease liabilities	—	—	(1,094)	—	(1,094)
Total cash flow changes	7,610	(269,267)	(5,999)	(3,228)	(270,884)
IFRS 16 transition	—	—	44,443	—	44,443
Gain on debt modification	—	(22,898)	—	—	(22,898)
Effect of changes in foreign exchange rates	—	(50,094)	(226)	(36)	(50,356)
Amortization of discounts, transaction costs and other	—	9,911	—	—	9,911
Net increase in lease liabilities	—	—	3,017	—	3,017
Increase in balance due on business combinations	—	—	—	1,600	1,600
Total non-cash changes	—	(63,081)	47,234	1,564	(14,283)
Balance at August 31, 2020	7,610	3,072,511	41,235	2,856	3,124,212

22. EMPLOYEE BENEFITS

A) DEFINED CONTRIBUTION PLANS AND COLLECTIVE REGISTERED RETIREMENT SAVING PLANS

The Corporation and its subsidiaries offer to certain employees defined contribution plans or collective registered retirement savings plans. Under these plans, the Corporation and its subsidiaries' obligations are limited to the payment of the monthly employer's contribution. The total expense recognized with respect to these plans amounted to \$8.2 million (\$8.0 million in 2019) for the year ended August 31, 2020 and is included in the Corporation's consolidated statement of profit and loss under *Salaries, employee benefits and outsourced services*.

B) DEFINED BENEFIT PLANS

The Corporation and its subsidiaries sponsor a defined benefit plan for the benefit of certain employees and a separate defined benefit plan for the benefit of their executive officers, which provide pensions based on the number of years of service and the average salary during the employment of each participant. In addition, the Corporation and its subsidiaries offer to their designated executive officers a supplementary pension plan. The defined benefit plans are registered with the Office of the Superintendent of Financial Institutions and are subject to the

Federal Pension Benefits Standards Act. The plans are also registered with the Canada Revenue Agency and are subject to the Income Tax Act (Canada). The Corporation's funding policy is to maintain its contribution at a level sufficient to cover benefits and to meet requirements of the applicable regulations and plan provisions that govern the funding of the plans. The defined benefit plans are funded by the Corporation's and the participants' contributions. The defined benefits plans funding is calculated based on actuarial estimates and is subject to limitations under applicable income tax and other regulations.

Each year at August 31 the Corporation and its subsidiaries measure plan assets at fair value, as well as the defined benefit obligation for all plans. The most recent actuarial valuation of the pension plan for the benefit of the employees was at August 31, 2019 and the next required valuation is at August 31, 2020, which is expected to be completed in February 2021. For the executive officers' plans, the most recent actuarial valuation was at August 31, 2017 and the next required valuation is at August 31, 2020, which is expected to be completed in February 2021.

The following table provides a reconciliation of the change in the defined benefit obligations and plan assets at fair value and a statement of the funded status at August 31:

Years ended August 31, (In thousands of Canadian dollars)	2020 \$	2019 \$
Defined benefit obligation ⁽¹⁾		
Defined benefit obligation, beginning of the year	57,686	51,183
Current service cost	1,963	1,788
Past service cost	—	(131)
Interest cost	1,686	1,854
Contributions by plan participants	226	280
Benefits paid	(1,750)	(1,635)
Actuarial losses (gains) on obligation arising from:		
Experience adjustments	(148)	(513)
Changes in financial assumptions	1,694	6,541
Defined benefit obligation reallocated to Cogeco's pension plans ⁽²⁾	—	(1,681)
Defined benefit obligation, end of the year	61,357	57,686
Plan assets at fair value		
Plan assets at fair value, beginning of the year	47,650	51,777
Interest income	1,376	1,848
Return on plan assets, except amounts included in interest income	2,971	(3,713)
Administrative expense	(202)	(303)
Contributions by plan participants	226	280
Employer contributions	2,740	1,038
Benefits paid	(1,750)	(1,635)
Plan assets reallocated to Cogeco's pension plans ⁽²⁾	—	(1,642)
Plan assets at fair value, end of the year	53,011	47,650
Funded status		
Plan assets at fair value	53,011	47,650
Defined benefit obligation	61,357	57,686
Net defined benefit liability	(8,346)	(10,036)

(1) The weighted average duration of the defined benefit obligation at August 31, 2020 and 2019 is 14 years.

(2) Arose following the transfer of Cogeco Communications' employees to Cogeco.

The net defined benefit liability is included in the Corporation's consolidated statements of financial position under *Pension plan liabilities and accrued employee benefits*.

Pension plan liabilities and accrued employee benefits

At August 31, (In thousands of Canadian dollars)	2020 \$	2019 \$
Pension plan liabilities	8,346	10,036
Accrued employee benefits - DSU liability	5,144	4,319
	13,490	14,355

Defined benefit costs recognized in profit or loss

Years ended August 31, (In thousands of Canadian dollars)	2020 \$	2019 \$
Recognized in operating expenses (salaries, employee benefits and outsourced services)		
Current service cost	1,963	1,788
Past service cost	—	(131)
Administrative expense	202	303
Recognized in financial expense (other)		
Net interest	310	6
	2,475	1,966

Defined benefit costs recognized in other comprehensive income

Years ended August 31, (In thousands of Canadian dollars)	2020 \$	2019 \$
Actuarial losses (gains) arising from:		
Experience adjustments	(148)	(513)
Change in financial assumptions	1,694	6,541
Return on plan assets, except amounts included in interest income	(2,971)	3,713
	(1,425)	9,741

The expected employer contributions to the Corporation's defined benefit plans should be approximately \$3.2 million in 2021.

Plan assets consist of:

At August 31,	2020 %	2019 %
Equity securities ⁽¹⁾	48	58
Debt securities ⁽¹⁾	35	19
Deposits in trust ⁽²⁾	16	17
Other	1	6
Total	100	100

(1) All equity and debt securities have a quoted price in active markets and do not include securities issued by the Corporation.

(2) Deposits in trust prescribed by the Canada Revenue Agency for funded supplemental employee retirement plans are non-interest bearing.

The significant weighted average assumptions used in measuring the Corporation's defined benefit obligation and defined benefit costs are as follows:

At August 31,	2020 %	2019 %
Defined benefit obligation		
Discount rate	2.65	2.85
Rate of compensation increase	2.60 ⁽¹⁾	2.75
Mortality table	CPM-2014	CPM-2014
Defined benefit costs		
Discount rate	2.85	3.00
Rate of compensation increase	2.75	2.75
Mortality table	CPM-2014	CPM-2014

(1) Increase of 1.67% for 2021 and 2.60% from January 1, 2022.

C) EXPOSURE TO ACTUARIAL RISKS

The Corporation is exposed to the following actuarial risks:

Investment risk

The investment strategy of the plans is to diversify the nature of the returns on assets. Given the long-term nature of the defined benefit obligation, a portion of the assets are invested in equity securities in order to maximize return. Since equity securities are inherently volatile and risky, the Corporation sets investment goals, both in terms of asset mix percentage and target return, which is monitored monthly and adjusted as needed.

Interest rate risk

A decrease in the interest rate on investment-grade fixed-rate corporate bonds will reduce the discount rate used and increase the present value of the defined benefit obligation. However, the increase in the obligation would be partly offset by an increase in the value of plan investments in debt securities.

Salary risk

Active members' expected benefits are linked to their pre-retirement compensation. The present value of the defined benefit obligation is calculated using management's best estimate of the expected rate of compensation increase of plan members. Increasing that assumption would increase the defined benefit obligation.

D) SENSITIVITY ANALYSIS

The sensitivity analysis of the defined benefit obligation was calculated based on reasonably possible changes to each key actuarial assumption without considering simultaneous changes to several key actuarial assumptions. A change in one actuarial assumption could trigger a change in another actuarial assumption, which could amplify or mitigate the impact of the change in these assumptions on the present value of the defined benefit obligation. The sensitivity analysis was prepared in accordance with the Corporation's accounting policies described in Note 2 K). The actual results of items subject to estimates may differ.

At August 31, 2020	Change in assumption	Increase in the defined benefit obligation
<i>(In thousands of Canadian dollars, except percentages)</i>	%	\$
Discount rate decrease	0.10	913
Expected rate of compensation increase	0.25	146

23. FINANCIAL INSTRUMENTS

A) FINANCIAL RISK MANAGEMENT

Management's objectives are to protect the Corporation and its subsidiaries against material economic exposures and variability of results, and against certain financial risks including credit, liquidity, interest rate, foreign exchange and market risks.

Credit risk

Credit risk represents the risk of financial loss for the Corporation if a customer or counterparty to a financial asset fails to meet its contractual obligations. The Corporation is exposed to credit risk arising from the derivative financial instruments, cash and cash equivalents and trade accounts receivable, the maximum exposure of which is represented by the carrying amounts reported on the consolidated statements of financial position.

Credit risk from derivative financial instruments arises from the possibility that counterparties to the interest rate swaps may default on their obligations in instances where these agreements have positive fair values for the Corporation. The Corporation reduces this risk by completing transactions with financial institutions that carry a credit rating equal to or superior to its own credit rating. The Corporation assesses the creditworthiness of the counterparties in order to minimize the risk of counterparties default under the agreements. At August 31, 2020, management believes that the credit risk relating to its derivative financial instruments is minimal, since the lowest credit rating of the counterparties to the agreements is "A" by Standard & Poor's rating services ("S&P").

Cash equivalents consist mainly of highly liquid money market short-term investments. The Corporation has deposited the cash and cash equivalents with reputable financial institutions, for which management believes the risk of loss to be remote. At August 31, 2020 and 2019, cash and cash equivalents consisted solely of cash in banks.

The Corporation is also exposed to credit risk in relation to its trade accounts receivable. To mitigate such risk, the Corporation continuously monitors the financial condition of its customers and reviews the credit history or worthiness of each new large customer. The Corporation establishes an allowance for lifetime expected credit losses related to doubtful accounts. The doubtful accounts allowance is calculated on a specific-identification basis for larger customer accounts receivable and on a statistically derived basis for the remainder. Factors such as the current economic conditions, forward-looking macroeconomic data and historical information (number of overdue days of the customer's balance outstanding as well as the customer's collection history) are examined. The Corporation believes that its allowance for doubtful accounts is sufficient to cover the related credit risk. The Corporation has credit policies in place and has established various credit controls, including credit checks, deposits on accounts and advance billing, and has also established procedures to suspend the availability of services when customers have fully utilized approved credit limits or have violated existing payment terms. Since the Corporation has a large and diversified clientele dispersed throughout its market areas in Canada and the United States, there is no significant concentration of credit risk.

The following table provides further details on trade and other receivables, net of allowance for doubtful accounts:

At August 31, (In thousands of Canadian dollars)	2020 \$	2019 \$
Trade accounts receivable	79,821	74,021
Allowance for doubtful accounts	(6,235)	(6,759)
	73,586	67,262
Other accounts receivable	7,673	8,390
Receivable from Cogeco	1,754	—
	83,013	75,652

Trade accounts receivable past due is defined as the amount outstanding beyond normal credit terms and conditions for the respective customers. The Corporation considers the amount outstanding at the due date as trade accounts receivable past due. A large portion of the Corporation's customers are billed and pay before the services are rendered.

The following table provides further details on trade accounts receivable past due, net of allowance for doubtful accounts:

At August 31, (In thousands of Canadian dollars)	2020 \$	2019 \$
Less than 60 days past due	13,075	18,645
60 to 90 days past due	362	899
More than 90 days past due	—	3,074
	13,437	22,618

The following table shows changes in the allowance for doubtful accounts:

Years ended August 31, (In thousands of Canadian dollars)	2020 \$	2019 \$
Balance, beginning of the year	6,759	6,497
Provision for impaired receivables	20,418	24,059
Net use	(20,695)	(23,176)
Foreign currency translation adjustments	(247)	21
Discontinued operations	—	(642)
Balance, end of the year	6,235	6,759

Liquidity risk

Liquidity risk is the risk that the Corporation will not be able to meet its financial obligations as they become due. The Corporation manages liquidity risk through the management of its capital structure and access to different capital markets. It also manages liquidity risk by continuously monitoring actual and projected cash flows to ensure sufficient liquidity to meet its obligations when due. At August 31, 2020, the Corporation had used \$0.02 million of its \$750 million amended and restated Term Revolving Facility for a remaining availability of \$749.98 million. Management believes that the committed Term Revolving Facility will, until its maturity in 2025, provide sufficient liquidity to manage its long-term debt maturities and support working capital requirements. In addition, two subsidiaries related to Atlantic Broadband also benefit from a Senior Secured Revolving Facility of \$195.6 million (US\$150 million), of which \$3.2 million (US\$2.4 million) was used at August 31, 2020 for a remaining availability of \$192.5 million (US\$147.6 million).

The following table summarizes the contractual maturities of the financial liabilities and lease liabilities, and related capital amounts at August 31, 2020:

	Contractual cash flows						
	2021 \$	2022 \$	2023 \$	2024 \$	2025 \$	Thereafter \$	Total \$
(In thousands of Canadian dollars)							
Bank indebtedness	7,610	—	—	—	—	—	7,610
Trade and other payables ⁽¹⁾	203,633	—	—	—	—	—	203,633
Notes, debentures and credit facilities	22,171	222,171	322,171	22,171	335,179	2,206,382	3,130,245
Lease liabilities	4,115	3,297	3,047	2,851	2,626	23,279	39,215
Balance due on business combinations	2,856	—	—	—	—	—	2,856
	240,385	225,468	325,218	25,022	337,805	2,229,661	3,383,559

(1) Excluding accrued interest on notes, debentures and credit facilities.

The following table is a summary of interest payable on long-term debt that is due for each of the next five years and thereafter:

	2021	2022	2023	2024	2025	Thereafter	Total
<i>(In thousands of Canadian dollars)</i>	\$	\$	\$	\$	\$	\$	\$
Interest payments on notes, debentures and credit facilities ⁽¹⁾	89,745	84,342	78,939	65,936	39,371	12,589	370,922
Interest payments on lease liabilities	1,573	1,178	1,070	971	873	4,632	10,297
Interest receipts on derivative financial instruments ⁽¹⁾	(1,851)	(1,570)	(1,297)	(756)	(127)	—	(5,601)
Interest payments on derivative financial instruments ⁽¹⁾	25,270	21,415	17,673	10,212	1,698	—	76,268
	114,737	105,365	96,385	76,363	41,815	17,221	451,886

(1) Based on the principal amounts and interest rates prevailing on the outstanding debt at August 31, 2020 and their respective maturities.

Interest rate risk

The Corporation is exposed to interest rate risks on its floating interest rate instruments. Interest rate fluctuations will have an effect on the repayment of these instruments. At August 31, 2020, all of the Corporation's notes, debentures and credit facilities were at fixed rate, except for the amounts drawn under the First Lien Credit Facilities, which are subject to floating interest rates.

To reduce the risk on the floating interest rate instruments and mitigate the impact of interest rate variations, the Corporation's US subsidiary entered into fixed interest rate swap agreements. The following table shows the interest rate swaps outstanding at August 31, 2020:

Type of hedge	Notional amount	Receive interest rate	Pay interest rate	Maturity	Hedged item
Cash flow	US\$1.1 billion	US LIBOR base rate	2.017% - 2.262%	January 2021 - November 2024	Senior Secured Term Loan B

The sensitivity of the Corporation's annual financial expense to an increase of 1% in the interest rate applicable to the unhedged portion of these facilities would represent an increase of approximately \$6.9 million based on the outstanding debt and swap agreements at August 31, 2020.

Foreign exchange risk

The Corporation is exposed to foreign exchange risk with respect to the interest associated with its notes, debentures and credit facilities denominated in US dollars. The impact of a 10% increase in the exchange rate of the US dollar into Canadian dollars would increase financial expense by approximately \$9.6 million based on the outstanding debt and swap agreements at August 31, 2020.

The Corporation faces exposure to foreign exchange risk on cash and cash equivalents and trade and other payables denominated mainly in US dollars. The Corporation's exposure to foreign currency risk on cash and cash equivalents and trade and other payables is not significant as at August 31, 2020 and 2019.

A foreign currency exposure arises from the Corporation's net investment in its US subsidiary, as a result of the translation of the net investment into the Corporation's functional currency. A portion of the Corporation's net investment in its US subsidiary is hedged by the Corporation's US dollar denominated Senior Secured Notes, which the Corporation has designated as hedges of the net investment, while the remaining portion is economically hedged by its subsidiary's US dollar denominated First Lien Credit Facilities.

The following table shows the aggregate investment in foreign operations attributable to owners of the Corporation and the notional amount of debt borrowed to hedge this investment at August 31, 2020:

Type of hedge	Notional amount of debt	Aggregate investment	Hedged item
Net investment	US\$390 million	US\$1,077 million	Net investment in foreign operations in US dollar

The exchange rate used to translate the US dollar currency into Canadian dollars for the consolidated statement of financial position accounts at August 31, 2020 was \$1.3042 (\$1.3295 as at August 31, 2019) per US dollar. A 10% decrease in the exchange rate of the US dollar into Canadian dollars would decrease other comprehensive income by approximately \$89.6 million.

Market risk

The Corporation uses derivative instruments to manage the cash flow exposure to the risk of changes in the price of its subordinate voting shares under the DSU plan. As such, the Corporation uses equity swap agreements to economically hedge the market price appreciation risk of its subordinate voting shares.

The following table shows the equity derivatives contracts outstanding at August 31, 2020:

Type of hedge	Notional	Maturity	Average share price	Hedged item
Economic	48,000 units	January 2021	\$102.61	Equity price exposure

As at August 31, 2020, the fair value of the equity swap was \$0.2 million and recognized as a liability. A 10% increase in the market price of the subordinate voting shares would result in a gain of approximately \$0.5 million due to the equity swap fair value appreciation, offset by a \$0.5 million increase in the DSU plan expense.

B) FAIR VALUE OF FINANCIAL INSTRUMENTS

Fair value is the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date. Fair values are estimated at a specific point in time, by discounting expected cash flows at rates for assets and liabilities of the same remaining maturities and conditions. These estimates are subjective in nature and involve uncertainties and significant judgment, and therefore, cannot be determined with precision. In addition, income taxes and other expenses that would be incurred on disposition of these financial instruments are not reflected in the fair values. As a result, the fair values are not necessarily the net amounts that would be realized if these instruments were settled. The Corporation has determined the fair value of its financial instruments as follows:

- The carrying amount of cash and cash equivalents, trade and other receivables, bank indebtedness and trade and other payables approximates fair value because of the short-term nature of these instruments;
- Interest rates under the terms of the Term Revolving Facility and First Lien Credit Facilities are based on bankers' acceptance, US dollar base rate loans, LIBOR loans in US dollars, Euros or British Pounds plus applicable credit spread. The fair value of these instruments is based on current trading values for similar financial instruments;
- The fair value of the Senior Secured Debentures Series 3 and 4, and Senior Secured Notes is based on current trading values for similar financial instruments.

The carrying value of all the Corporation's financial instruments approximates fair value, except as otherwise noted in the following table:

At August 31,	2020		2019	
	Carrying value	Fair value	Carrying value	Fair value
<i>(In thousands of Canadian dollars)</i>	\$	\$	\$	\$
Notes, debentures and credit facilities	3,072,511	3,224,816	3,404,859	3,521,418

All financial instruments recognized at fair value on the consolidated statements of financial position must be measured based on the three fair value hierarchy levels, which are as follows:

- Level 1: quoted prices (unadjusted) in active markets for identical assets or liabilities;
- Level 2: inputs other than quoted prices included in Level 1 that are observable for the asset or liability, either directly (i.e., as prices) or indirectly (i.e., derived from prices); and
- Level 3: inputs for the asset or liability that are not based on observable market data (unobservable inputs).

The Corporation considers that its derivative financial instruments are classified as Level 2 under the fair value hierarchy. The fair value of derivative financial instruments is estimated using valuation models that reflect projected future cash flows over contractual terms of the derivative financial instruments and observable market data, such as interest and currency exchange rate curves.

C) CAPITAL MANAGEMENT

The Corporation's objectives in managing capital are to ensure sufficient liquidity to support the capital requirements of its various businesses, including growth opportunities. The Corporation manages its capital structure and makes adjustments in light of general economic conditions, the risk characteristics of the underlying assets and the Corporation's working capital requirements. Management of the capital structure involves the issuance of new debt, the repayment of existing debt, the issuance or repurchase of equity and distributions to shareholders.

The capital structure of the Corporation is composed of shareholders' equity, cash and cash equivalents, bank indebtedness and long-term debt.

The provisions of financing agreements provide for restrictions on the activities of the Corporation. Generally, the most significant restrictions relate to permitted investments and dividends on multiple and subordinate voting shares, as well as the maintenance of certain financial ratios primarily linked to the adjusted EBITDA, financial expense and total indebtedness. At August 31, 2020 and 2019, the Corporation was in compliance with all of its debt covenants and was not subject to any other externally imposed capital requirements.

The following table summarizes certain of the key ratios used to monitor and manage the Corporation's capital structure:

Years ended August 31,	2020	2019
Net indebtedness ⁽¹⁾ / adjusted EBITDA	2.4	2.6
Adjusted EBITDA / financial expense ⁽²⁾	7.5	6.3

(1) Net indebtedness is defined as the total of bank indebtedness and principal on long-term debt, less cash and cash equivalents.

(2) Financial expense for fiscal 2020 excludes the gain on debt modification of \$22.9 million, which is consistent with the covenants calculation.

D) CATEGORIES OF FINANCIAL INSTRUMENTS

At August 31, (In thousands of Canadian dollars)	2020 \$	2019 \$
Financial assets		
Financial assets measured and classified at amortized cost	449,510	632,156
	449,510	632,156
Financial liabilities		
Financial liabilities measured and classified at amortized cost	3,294,029	3,669,860
Derivative financial instruments in designated hedge relationships	70,998	46,044
	3,365,027	3,715,904

24. RELATED PARTY TRANSACTIONS

A) MANAGEMENT FEES AND OTHER RELATED PARTY TRANSACTIONS

Cogeco Communications is a subsidiary of Cogeco, which as of August 31, 2020 held 32.7% of the Corporation's equity shares, representing 83% of the votes attached to the Corporation's voting shares.

Cogeco provides executive, administrative, financial, strategic planning and additional services to the Corporation under a Management Services Agreement (the "Agreement"). The methodology used to establish the management fees, which was modified on May 1, 2019, is based on the costs incurred by Cogeco plus a reasonable mark-up. Provision is made for future adjustment upon the request of either Cogeco or the Corporation from time to time during the term of the Agreement. For fiscal 2020, management fees paid to Cogeco amounted to \$24.1 million (\$19.9 million in 2019).

No direct remuneration is payable to Cogeco's executive officers by the Corporation. However, during fiscal 2020 and 2019, the Corporation granted stock options and PSUs to these executive officers, as executive officers of Cogeco Communications, and issued DSUs to Board directors of Cogeco, as shown in the following table:

Years ended August 31,	2020	2019
Stock options	110,875	97,725
PSUs	14,375	14,625
DSUs	1,847	2,469

The following table shows the amounts that the Corporation charged Cogeco with regards to the Corporation's stock options, ISUs and PSUs granted to these executive officers, as well as DSUs issued to Board directors of Cogeco:

Years ended August 31, (In thousands of Canadian dollars)	2020 \$	2019 \$
Stock options	1,205	1,046
ISUs	39	61
PSUs	1,386	981
DSUs	217	631
	2,847	2,719

B) COMPENSATION OF KEY MANAGEMENT PERSONNEL

Key management personnel are comprised of the members of the Board and of the Management Committee of the Corporation. The compensation paid or payable to key management personnel for employee services, which excludes the compensation to executive officers of Cogeco paid under the Management Services Agreement (included in *Management fees - Cogeco inc.*), is as follows:

Years ended August 31, (In thousands of Canadian dollars)	2020 \$	2019 \$
Salaries and other short-term employee benefits	2,706	2,729
Share-based payments and post-employment benefits	2,189	1,908
	4,895	4,637

25. COMMITMENTS, CONTINGENCIES AND GUARANTEES

A) COMMITMENTS

The following table presents the Corporation's commitments that are not recognized as liabilities at August 31, 2020, and are due in each of the next five years and thereafter:

(In thousands of Canadian dollars)	2021	2022	2023	2024	2025	Thereafter
	\$	\$	\$	\$	\$	\$
Acquisition of property, plant and equipment ⁽¹⁾	1,800	1,800	1,800	1,800	1,800	1,800
Other long-term contracts ⁽²⁾	41,902	30,967	24,947	23,579	20,632	36,855
	43,702	32,767	26,747	25,379	22,432	38,655

(1) Include minimum spend commitments for acquisition of customer premise equipment.

(2) Include long-term commitments under service and product contracts for operating expenditures, including minimum spend commitments.

B) CONTINGENCIES

CRTC's wholesale Internet services 2019 costing decision

On August 15, 2019, the Canadian Radio-television and Telecommunications Commission ("CRTC") issued a costing decision setting new rates for aggregated wholesale Internet services for resellers, significantly lowering the interim rates it had previously fixed in 2016 and applying the new rates on a retroactive basis. On September 13, 2019, the Corporation, together with other telecommunications service providers (the "Cable Carriers"), jointly filed an application for leave to appeal the CRTC order to the Federal Court of Appeal ("FCA") and to suspend its effect pending the Court decision to hear the matter. On November 22, 2019, the FCA granted leave to appeal the CRTC decision and stayed the order pending final judgement, with the result that operators did not have to implement the new rates nor to make the retroactive payments pending final decision of the Court. A decision dismissing the appeal of the Cable Carriers was rendered by the FCA on September 10, 2020, repealing the stay order of the Court.

In parallel, on December 13, 2019, the Cable Carriers submitted to the CRTC an application for review and variance of the CRTC order, based on substantial doubt as to the correctness of the rate setting methodology relied upon by the CRTC in the order. The application also requested a stay of the Order pending a decision from the CRTC. On September 28, 2020, the CRTC approved the Cable Carriers' request to stay the implementation of Telecom Order 2019-288 regarding final rates for aggregated wholesale high-speed access services until the CRTC completes its review of that order.

In addition to the FCA appeal and the review and variance process, on November 13, 2019, the Cable Carriers filed a petition with the Governor in Council, asking Cabinet to refer the CRTC order back to the CRTC for reconsideration in conjunction with the CRTC's planned review of its regulatory framework for wireline wholesale services and in accordance with specific policy considerations. Interested parties filed comments on February 14, 2020 and a decision was issued on August 15, 2020. The Governor in Council rendered an order confirming that the rates set by the CRTC decision do not in all instances appropriately balance the required policy objectives. However, as a review and variance process is currently pending before the CRTC, the Governor in Council confirmed that any further instructions from Cabinet to the CRTC would be premature.

As at August 31, 2020, the total retroactive payments based on the CRTC's final aggregated wholesale service rates' 2019 costing decision, if not otherwise modified, is estimated at approximately \$43 million, of which approximately \$25 million relates to fiscal years from 2016 to 2019, and approximately \$18 million relates to fiscal year 2020. Due to the significant uncertainty surrounding both the outcome of this decision and its financial implications, the Corporation has therefore not recorded the impact of the reduced rates as at August 31, 2020 and 2019.

Other

The Corporation and its subsidiaries are involved in matters involving litigations, other regulatory decisions or potential claims from customers and suppliers arising out of the ordinary course and conduct of its business. Although such matters cannot be predicted with certainty, management does not consider these exposures to be significant to these consolidated financial statements. At August 31, 2020 and 2019, no liability has been recorded with respect to these litigations, other regulatory decisions and potential claims, except for those disclosed in Note 16.

C) GUARANTEES

In the normal course of business, the Corporation provides indemnification in conjunction with certain transactions. While many of the agreements specify a maximum potential exposure, some do not specify a maximum amount. The overall maximum amount of an indemnification obligation will depend on future events and conditions and therefore cannot be reasonably estimated. As a result, the Corporation cannot determine how they could affect its future liquidity, capital resources or credit risk profile. At August 31, 2020 and 2019, no liability has been recorded with respect to these indemnifications, except for those disclosed in Note 16.

Sale of a business

In connection with the sale of a business, the Corporation has agreed to indemnify the purchaser against claims related to events that occurred prior to the date of sale.

Long-term debt

Under the terms of the Senior Secured Notes, the Corporation has agreed to indemnify the lenders against changes in regulations relative to withholding taxes and costs incurred due to changes in laws.

Sale of services

As part of transactions involving the sale of services, the Corporation and its subsidiaries may be required to make payments to counterparties as a result of breaches of representations and warranties made into the service agreements.

Purchase and development of assets

As part of transactions involving the purchase and development of assets, the Corporation and its subsidiaries may be required to pay counterparties for costs and losses incurred as a result of breaches of representations and warranties contained in the purchase agreements.

26. SUBSEQUENT EVENTS

Acquisition of DERYtelecom

On October 21, 2020, Cogeco Communications announced that its subsidiary, Cogeco Connexion, had entered into a definitive agreement to purchase DERYtelecom, the third largest cable provider in the province of Québec, for \$405 million. DERYtelecom offers Internet, television and telephony services to approximately 100,000 customers in over 200 municipalities across several regions in Québec.

The purchase price will be financed with a combination of cash on hand and Cogeco Communications' Term Revolving Facility. The transaction, which will be executed essentially through an asset purchase, is subject to regulatory approvals under the Competition Act along with other customary closing conditions and is expected to close no later than the end of the second quarter of the fiscal year 2021.

Altice USA, Inc. and Rogers Communications Inc.'s proposal

On September 1, 2020, Cogeco and Cogeco Communications received an unsolicited non-binding proposal from Altice USA, Inc. and Rogers Communications Inc. to acquire all of the issued and outstanding multiple and subordinate voting shares of both companies. On September 2, 2020, following separate deliberations of the independent board members, the Boards of Directors of Cogeco and Cogeco Communications rejected the proposal after Gestion Audem, the Audet family's holding company, had stated that its shares were not for sale. On October 18, 2020, Cogeco and Cogeco Communications received a revised unsolicited non-binding proposal from Altice USA, Inc. and Rogers Communications Inc. That same day, Gestion Audem rejected this revised proposal, stating again that it was not interested in selling its shares. The revised proposal was submitted for review to the Board of Directors of both companies. On October 20, 2020, following separate deliberations of the independent board members, the Boards of Directors of Cogeco and Cogeco Communications announced that they had unanimously rejected the revised proposal.

INVESTOR INFORMATION

CREDIT RATINGS

The table below shows Cogeco Communications' and Atlantic Broadband's credit ratings:

At August 31, 2020	S&P	DBRS	Moody's
Cogeco Communications			
Senior Secured Notes and Debentures	BBB-	BBB (low)	NR
Atlantic Broadband			
First Liens Credit Facilities	BB	NR	B1

NR : Not rated

Our ability to access debt capital markets and bank credit markets and the cost and amount of funding available partly depends on the quality of our credit ratings. Obligations rated in the "BBB" category are considered investment grade and their cost of funding is typically lower relative to the "BB/B" rating category. In addition, obligations with "BBB" ratings generally have greater access to funding than those with "BB/B" ratings.

On January 28, 2020, S&P raised the credit rating of Atlantic Broadband's First Lien Credit Facilities from BB- to BB on the basis that its strategic importance to the Corporation has increased over time.

SHARE INFORMATION

At August 31, 2020		Registrar / Transfer agent
Number of multiple voting shares (10 votes per share) outstanding	15,691,100	Computershare Trust Company of Canada 100 University Avenue, 9th Floor Toronto, ON M5J 2Y1 Tel.: 514-982-7555 Tel.: 1-800-564-6253 Fax: 416-263-9394
Number of subordinate voting shares (1 vote per share) outstanding	32,231,433	
Stock exchange listing	The Toronto Stock Exchange	
Trading symbol	CCA	

DIVIDENDS

DIVIDEND DECLARATION

At its October 27, 2020 meeting, the Board of Directors of Cogeco Communications declared a quarterly eligible dividend of \$0.64 per share for multiple voting and subordinate voting shares, payable on November 24, 2020 to shareholders of record on November 10, 2020. The declaration, amount and date of any future dividend will continue to be considered and approved by the Board of Directors of the Corporation based upon the Corporation's financial condition, results of operations, capital requirements and such other factors as the Board of Directors, at its sole discretion, deems relevant. There is therefore no assurance that dividends will be declared, and if declared, the amount and frequency may vary.

TRADING STATISTICS

					2020
Quarters ended	Nov. 30	Feb. 29	May 31	Aug. 31	Total
<i>(in Canadian dollars, except subordinate voting share volumes)</i>	\$	\$	\$	\$	
The Toronto Stock Exchange					
High	120.20	117.49	111.46	107.28	
Low	103.18	101.11	87.57	94.88	
Close	114.73	106.22	102.82	97.78	
Volume (subordinate voting shares)	6,489,012	8,608,568	9,911,064	6,313,799	31,322,443
					2019
Quarters ended	Nov. 30	Feb. 28	May 31	Aug. 31	Total
<i>(in Canadian dollars, except subordinate voting share volumes)</i>	\$	\$	\$	\$	
The Toronto Stock Exchange					
High	69.51	82.82	93.63	107.34	
Low	61.68	62.78	82.29	90.84	
Close	64.60	82.29	92.70	104.64	
Volume (subordinate voting shares)	4,895,169	5,098,057	5,196,782	6,448,128	21,638,136

PRIMARY SERVICE UNIT STATISTICS

	August 31, 2020	May 31, 2020	February 29, 2020	November 30, 2019	August 31, 2019
CONSOLIDATED					
Primary service units	2,757,631	2,739,903	2,719,347	2,722,302	2,711,812
Internet service customers	1,304,228	1,281,762	1,253,183	1,246,358	1,234,380
Video service customers	936,636	939,453	945,085	954,964	962,138
Telephony service customers	516,767	518,688	521,079	520,980	515,294
CANADA					
Primary service units	1,799,706	1,802,631	1,812,140	1,818,732	1,810,366
Internet service customers	812,016	803,073	795,950	794,895	788,243
Penetration as a percentage of homes passed	45.7%	45.3%	44.9%	45.0%	44.7%
Video service customers	619,249	627,608	638,833	646,326	649,583
Penetration as a percentage of homes passed	34.9%	35.4%	36.1%	36.6%	36.8%
Telephony service customers	368,441	371,950	377,357	377,511	372,540
Penetration as a percentage of homes passed	20.7%	21.0%	21.3%	21.4%	21.1%
UNITED STATES					
Primary service units	957,925	937,272	907,207	903,570	901,446
Internet service customers	492,212	478,689	457,233	451,463	446,137
Penetration as a percentage of homes passed	53.3%	52.2%	51.8%	51.3%	50.8%
Video service customers	317,387	311,845	306,252	308,638	312,555
Penetration as a percentage of homes passed	34.4%	34.0%	34.7%	35.1%	35.6%
Telephony service customers	148,326	146,738	143,722	143,469	142,754
Penetration as a percentage of homes passed	16.1%	16.0%	16.3%	16.3%	16.2%

BOARD OF DIRECTORS AND CORPORATE MANAGEMENT

BOARD OF DIRECTORS

★ **LOUIS AUDET**, Eng., MBA, C.M., **Executive Chairman of the Board**
Westmount (Québec)

★ **JAMES C. CHERRY**, B.Com, FCPA, FCA, **Lead Director**
Elizabethtown (Ontario)
Corporate Director

● **COLLEEN ABDOULAH**, MBA, APR
Denver (Colorado)
Corporate director

◆ **PIPPA DUNN**, LL.B
London (UK)
Founder and partner of Broody (an incubator for startups and accelerator to more established businesses)

● ★ **JOANNE FERSTMAN**, CPA, CA, B.Com
Toronto (Ontario)
Corporate Director

● ◆ **LIB GIBSON**, M.Sc., B.Sc., ICD.D
Toronto (Ontario)
Corporate Director

★ **PHILIPPE JETTÉ**, Eng.
Montréal (Québec)
President and Chief Executive Officer of Cogeco and Cogeco Communications

◆ **BERNARD LORD**, LL.B., B.Soc.Sc.
Moncton (New Brunswick)
Chief Executive Officer of Medavie (Canadian health company)

■ ◆ ★ **DAVID MCAUSLAND**, B.C.L., LL.B.
Baie-D'Urfé (Québec)
Counsel of McCarthy Tétrault (Major law firm in Canada)

■ ◆ **CAROLE J. SALOMON**, B.A., MBA
Toronto (Ontario)
President and Chief Executive Officer of Cardavan Corporation (Management consultancy)

Legend :

- ★ Attends as an observer and participates in meetings of all the committees
- Member of the Audit Committee
- Member of the Human Resources Committee
- ◆ Member of the Corporate Governance Committee
- ★ Member of the Strategic Opportunities Committee

CORPORATE HEAD OFFICE

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Suite 3301
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CORPORATE MANAGEMENT

LOUIS AUDET

Executive Chairman of the Board

PHILIPPE JETTÉ

President and Chief Executive Officer

ELIZABETH ALVES

Vice President, Enterprise Strategy and Social Responsibility

PHILIPPE BONIN

Vice President, Finance

NATHALIE DORVAL

Vice President, Regulatory Affairs and Copyright

CHANTAL FRAPPIER

Vice President, Internal Audit

MARTIN GRENIER

Vice President, Procurement

CHRISTIAN JOLIVET

Senior Vice President, Corporate Affairs, Chief Legal Officer and Secretary

MARIE-HÉLÈNE LABRIE

Senior Vice President and Chief Public Affairs, Communications and Strategy Officer

STÉPHANE LACOMBE

Vice President, Information Technology

MARIE GINETTE LEPAGE

Vice President, Wireless Solutions and Innovation

DIANE NYISZTOR

Senior Vice President and Chief Human Resources Officer

PATRICE OUMET

Senior Vice President and Chief Financial Officer

ANDRÉE PINARD

Vice President and Treasurer

JÉRÔME PRAT

Vice President, Total Compensation and HR Systems

ELINA TEA

Vice President, Corporate Development

LIETTE VIGNEAULT

Vice President, Talent and Employee Experience

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President

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AMERICAN BROADBAND SERVICES

ATLANTIC BROADBAND

FRANK VAN DER POST
President

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CORPORATE INFORMATION

ANNUAL MEETING

January 15, 2021
Additional information on Cogeco Communications Inc. and press releases are available on the Corporation's website at: corpo.cogeco.com

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TRANSFER AGENT FOR SUBORDINATE VOTING AND MULTIPLE VOTING SHARES, AND TRUSTEE FOR SENIOR SECURED DEBENTURES AND NOTES
Computershare Trust Company of Canada

QUARTER ENDS

November, February, May

YEAR END

August 31

INQUIRIES

The Annual Report, Annual Information Form, Quarterly Reports and Information Circular are available in the Investors section of the Corporation's website (corpo.cogeco.com) or upon request by calling 514-764-4700.

Des versions françaises du rapport annuel, de la notice annuelle, des rapports trimestriels et de la circulaire d'information sont disponibles sous la section « Investisseurs » du site Internet de la société (corpo.cogeco.com) ou sur demande au 514-764-4700.

INVESTORS AND ANALYSTS

For financial information about the Corporation, please contact the Finance Department of the Corporation.

SHAREHOLDERS

For any inquiries regarding a change of address or a change of registration of shares, please contact Computershare Trust Company of Canada. For any other inquiries please refer to the Shareholder Engagement Policy which can be found on the "Information for Shareholders" section on the Corporation's website at corpo.cogeco.com.

DUPLICATE COMMUNICATIONS

Some shareholders may receive more than one copy of publications such as Quarterly Reports and the Annual Report. Every effort is made to avoid such duplication. Shareholders who receive duplicate mailings should advise Computershare Trust Company of Canada.

ETHICS LINE

The Corporation's parent company, Cogeco Inc., makes available an anonymous and confidential Ethics Line for its employees and the employees of all of its business units and other individuals who wish to report any perceived or actual instances of violations of the Cogeco Code of Ethics (including complaints regarding accounting, internal accounting controls and audit matters). The Ethics Line is operated by a specialized external provider that is independent of Cogeco Inc. Reports can be made through secured confidential toll-free telephone lines or the web site described below. All reports submitted through the Ethics Line will be examined by the Vice President, Internal Audit and/or the Senior Vice President, Corporate Affairs, Chief Legal Officer and Secretary. Individuals will be protected from dismissal or retaliation of any kind for reporting truthfully and in good faith.

By telephone:

Canada or United States: 1-877-706-2640

Web site of ClearView Connects: www.clearviewconnects.com

corpo.cogeco.com



MPPDC Region Broadband Plan and Final Recommendations

SEPTEMBER, 2017

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Executive Summary

This report describes the approach that the localities and the Pamunkey Tribe of the Middle Peninsula Planning District could pursue (the “Project”, or “PamunkeyNet”) as an effort to expand access to improved and more affordable broadband coverage throughout the region.

The broadband study convened by the Middle Peninsula Planning District Commission was to provide the PDC with an effective and actionable course of action that will promote the availability of affordable, high speed broadband and Internet services in the PDC region . The overall goal of this effort is to:

- ▶ Identify the kind, type and cost of a highly resilient and redundant broadband network needed to support the activities of residents, businesses, and local governments in the Middle Peninsula region.
- ▶ Specify the cost and technical characteristics of a high performance, affordable wireless broadband network that would leverage existing assets, including existing towers and the King and Queen network, existing public safety towers, and where feasible, some commercial cellular towers.
- ▶ Specify the cost and technical characteristics of a first phase Fiber Technology Corridor on Route 33 that would be integrated with the planned Telework Center.
- ▶ Specify the cost and technical characteristics for a fiber to the home initiative on the Pamunkey Reservation.
- ▶ Identify financially feasible and sustainable strategies to achieve these goals.
- ▶ Identify the steps needed to be taken to initiate and develop the project if a decision is made to move forward.

VISION STATEMENT

In the Middle Peninsula region, PamunkeyNet will:

- Build and operate a modern high performance wireless and fiber broadband infrastructure that provides the region with an economic development tool to retain existing businesses, attract new businesses, and help create jobs.
- Provide a robust broadband infrastructure using both wireless and fiber technologies that provides rural residents with improved Internet and Internet-based services at affordable prices.
- Support small businesses, home-based businesses, and home-based workers with affordable Internet access and Internet-based business services.
- Provide businesses and residents with a choice of competitive service providers and a choice of Internet-based services at a variety of affordable price points.
- Create a new Pamunkey Tribe business enterprise (PamunkeyNet) that will assist with funding, oversee network operations, and manage the business aspects of the Project.

OVERVIEW OF THE STRATEGY

The approach for this project has three primary objectives:

- Create a new business enterprise owned by the Pamunkey tribe.
- Create a network of existing and new wireless towers throughout the Middle Peninsula region that will have a high performance backbone between towers and local access radios on each tower to provide affordable business, residential, and institutional broadband Internet service.
- Create a fiber-based Technology Corridor on Route 33 between Rappahannock Community College, the planned Telework Center, and the Middle Peninsula airport.
- Provide the Pamunkey Tribe with state of the art Gigabit fiber services on the reservation.

The project will use and expand upon the existing successful King and Queen wireless network. Tower locations will be identified using several criteria:

- Make best possible use of existing local government (e.g. county) tower assets, including public safety towers and public safety backbone radio systems.
- Where affordable, lease space on privately owned towers to keep capital costs as low as possible.
- Build new towers where existing tower assets are not available or affordable, including the Pamunkey Reservation

Tower site identification and placement will be based on a goal of providing the maximum service coverage possible in each of the six counties in the Project area. The relatively flat terrain of the Middle Peninsula lends itself well to providing excellent wireless broadband service, but heavy tree cover will create line of sight problems for some potential users. Some businesses and residents may find it necessary to install a wooden or steel utility pole to get the customer radio above local tree cover.

DESIGN GOALS

A network initiative in partnership with the Pamunkey Tribe should have the following characteristics:

- ▶ Equal access to all residents and businesses over time – The goal of the initiative should be to deliver high performance broadband services to all residents, businesses, and local governments/agencies as rapidly as possible consistent with fiscally conservative operations.
- ▶ Scalable - The initial design of the network should support a graceful expansion over time.
- ▶ Small and home-based business support - The network should be able to support business needs, especially small businesses, business from home, and work from home opportunities. This is particularly important for future business attraction success.
- ▶ Enterprise business support - Provide business and carrier-class services over a fiber backbone to attract medium and large businesses to the region.

- ▶ Redundancy and Resiliency – The network should be designed to achieve a redundant “ring” architecture to minimize downtime from accidental fiber cuts and network equipment failures. Residents, schools, businesses and anchor tenants should have a high reliability network.
- ▶ Business Approach - Infrastructure investments by the enterprise should be carefully targeted to be financially sustainable over the long term. The goal should be operational expenses managed on a cost-plus basis.
- ▶ Funding Strategy - The enterprise should develop a “basket” of funding options, including long term service commitments from anchor tenants (e.g. K12 schools, the local public safety agencies, etc.), state and Federal grant opportunities, revenue from the network itself, and one time fees for costs associated with connecting a new customer to the network.

NEXT STEPS

Next steps include:

- Identify the initial partners and interested parties that are ready to commit to the project, including the Pamunkey Tribe, the Middle Peninsula PDC, Rappahannock Community College, and other regional entities.
- Identify legal counsel for advice on company formation and tax rules. While tribal businesses are exempt from Federal taxes and may be exempt from state taxes, the entity may still have to register with the Virginia State Corporation Commission (SCC) and file annual reports even if there is not tax liability.
- Formation of the legal entity that will be responsible for the ownership and governance of PamunkeyNet. This would be formed by and owned by the Pamunkey tribe with a governing board/partners that include regional entities like the Middle Peninsula Planning District Commission and Rappahannock Community College.
- Once the entity is formed, it should register as an ETC (Eligible Telecommunications Carrier), which would give it access to certain kinds of Federal and state grants and loans.
- Identify a basket of funding sources for capital projects (fiber backbone, colocation facility, and regional wireless expansion).
- Begin working with the counties to identify additional county-owned sites where towers could be located.
- Begin close coordination with county-level and any regional public safety tower projects, which could provide a valuable source of funding where towers could support dual use—public safety voice/data communications and wireless broadband access.
- Identify additional planning funds to support detailed network design activities for both the wireless and fiber portions of the planned network.

Improving Broadband Access

In the Middle Peninsula region, both fiber and wireless technologies and systems are going to be important to meet the goal of improving access to broadband. The rest of this section provides more detail and some specific build out strategies. There are three major parts of any modern network:

- The **Core Network** provides access to the Internet, a place for service providers (ISPs) to distribute their services locally on the network, and for larger institutional and business customers to meet service providers. The King and Queen network has an existing wireless core network. As the network expands regionally, a colocation facility and meet point at the Telework Center will provide the equipment space and facilities to support continuous expansion of both the fiber and wireless portions of the network.
- The **Distribution** portion of the network connects the Core Network with collections of users. The Distribution network will include both fiber and wireless portions of the network.
- The **Access or Last Mile** portion of the network connects individual users and businesses to the network, and like the Distribution network, that connection will be by fiber or by a wireless link.

For improved wireless access in the region, the Project can use existing and new towers to improve access to broadband services. The well-established model of local fiber access supported by a high capacity wireless link can be used as an important business attraction and retention tool. This hybrid wireless-fiber model can also be used to provide rural residential fiber service to support work from home and business from home opportunities.

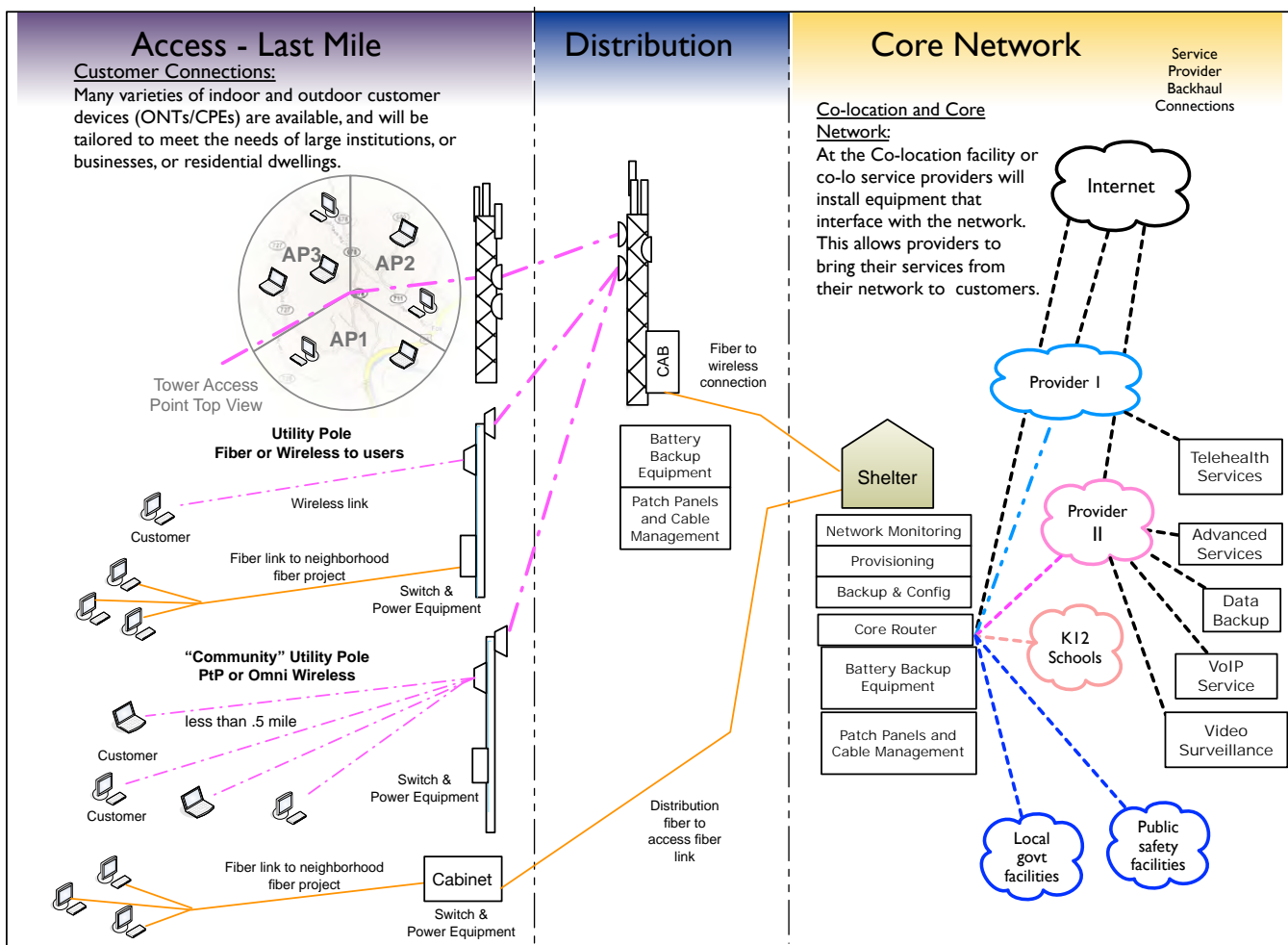
Businesses and residents in the region may obtain Internet service:

- With a small radio directly attached to their home or business that receives a signal directly from one of the Project towers.
- With a small radio attached to a utility pole (60 or 70') to improve line of sight to a Project tower.
- With a small radio directly attached to their home or business that receives a signal from a “community” utility pole. The “community” pole will receive a signal from a distant Project tower and redistribute it locally to a cluster of customers (typically within a half mile).
- With a fiber connection to the fiber installed along Route 33 and in other areas as additional fiber network segments are added.

The existing King and Queen network uses point to point wireless component which provides backhaul between towers and for redundancy and improved service reliability.

The table below summarizes how fiber and wireless can work together in a variety of ways.

Distribution Type	Access Type	Capacity
Wireless	Wireless	Typical customer connection starting at 5 to 10 Megabits, can be higher, with 50 Meg connections common. More dependent on the capacity of the wireless Distribution link.
Wireless	Fiber	Users can have fiber Gigabit connections locally, but total throughput dependent upon the capacity of the wireless link, which can be up to a Gigabit, depending on distance and budget.
Fiber	Fiber	Any amount of bandwidth needed, with standard connection typically a Gigabit (1,000 Megabits).
Fiber	Wireless	Typical customer connection starting at 5 to 10 Megabits, can be higher, with 50 Meg connections common.

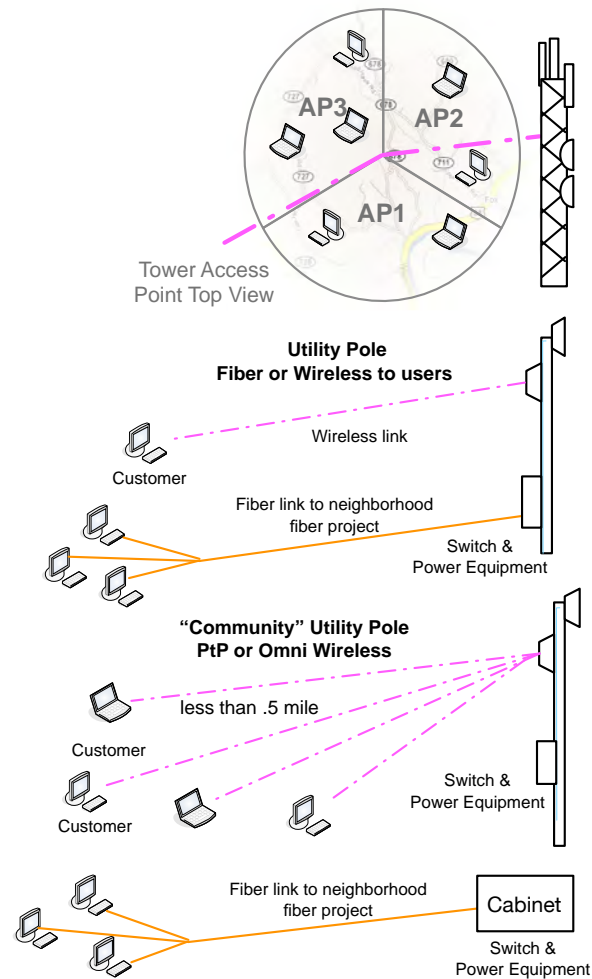


LAST MILE ACCESS

The Last Mile Access is the portion of the network that connects customers to their service provider and the Internet. Both broadband wireless and fiber links can be utilized to provide service.

There are several ways that customers can receive service:

- ▶ Service providers can install their own local access radios on the Distribution towers, using both point to multi-point and point-to-point radios to deliver service to their customers.
- ▶ A single user utility pole (or inexpensive steel lattice tower) can be installed on the property of a single resident or business. A radio at the top of the pole receives service from another tower site (typically one of the Distribution towers).
- ▶ A utility pole (or inexpensive steel lattice tower) can be installed near a cluster of homes (e.g. a rural residential sub-division, several homes in close proximity on a rural road). Service providers can install their point to multi-point radios on this pole and provide economical service to several customers from a single pole.
- ▶ A utility pole (or inexpensive steel lattice tower) can be installed in a rural subdivision. A service provider installs a point to point radio on the pole, and fiber cable can be run from the pole past several homes to offer fiber service with wireless backhaul.
- ▶ Customers near existing fiber can have a fiber drop installed directly to their home or business.



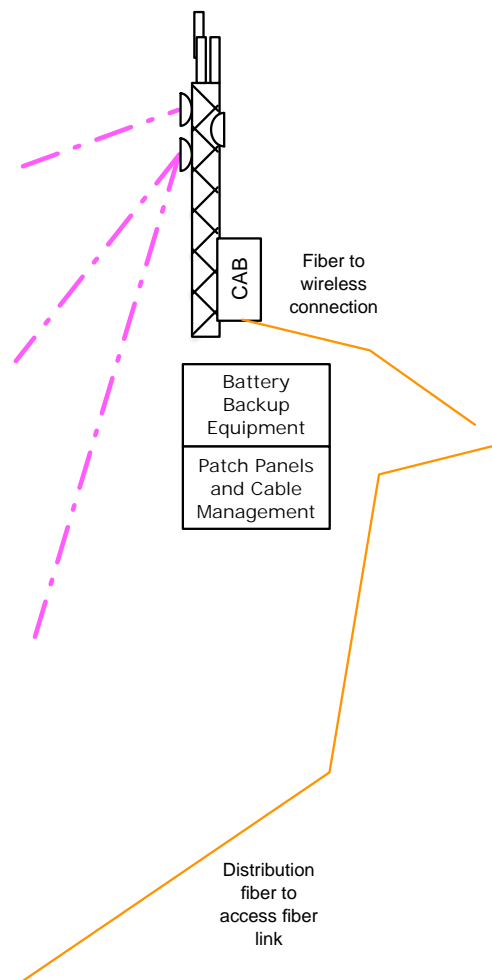
For the fiber to the home project on the Pamunkey Reservation, fiber will be deployed to the premises in the cluster of homes and community buildings in the area around the Pamunkey Indian Museum (about 40 homes and community buildings). A wireless tower will provide high performance Internet backhaul connectivity to the local fiber.

DISTRIBUTION NETWORK

Distribution is the portion of the network between the Distribution sites to the Last Mile Access portion of the network. It is desirable for each distribution site to have a connection back to more than one Distribution site (tower) on a redundant ring. This ring topology protects against hardware failure at the port level and does provide some protection if one of the tower to tower wireless links is disabled by an equipment failure.

These tower sites are typically 120' to 180' tall to provide the height needed to enable Line Of Sight (LOS) between towers, and for local access, to enable service providers to mount point to multi-point radios on the towers. That is, the towers provide two functions:

- Space for backhaul connections to other towers in the region.
- Space for local access radios to provide Internet access within 2-3 miles of the tower (or farther with good Line Of Sight).
- The existing King and Queen network provides good coverage in many parts of that county, and this model will be expanded to provide service in the other Middle Peninsula counties.
- The Technology Corridor between Rappahannock Community College, the Telework Center, and the Middle Peninsula airport will provide the first phase of middle mile (distribution) fiber. Additional fiber segments can be added as needed.



CORE NETWORK AND SERVICE PROVIDERS

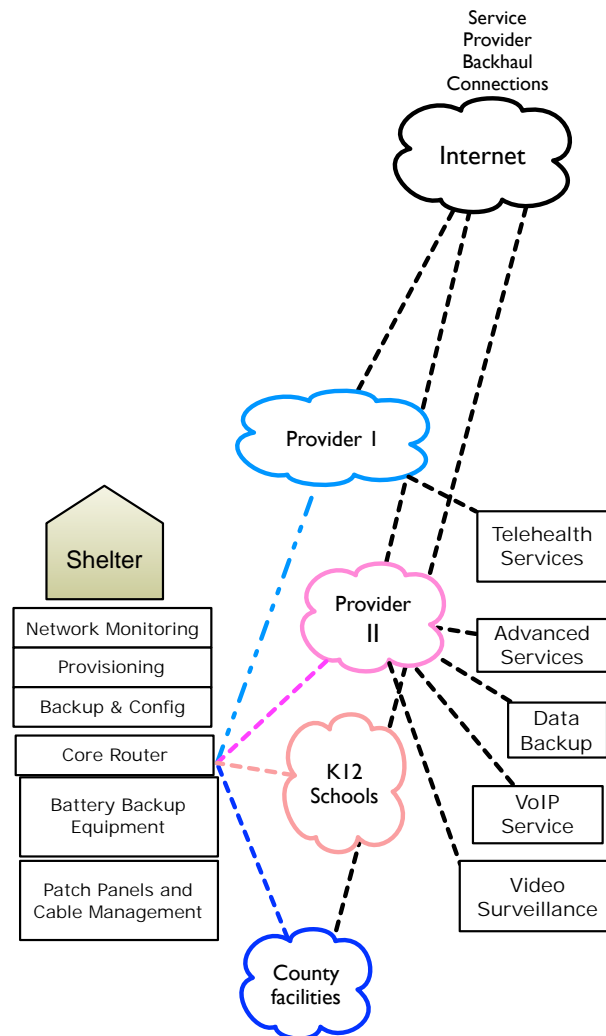
In the past, the telephone company switch office (Central Office, or CO) has provided that function. Today, many communities have either a community-owned data center or a privately owned data center that offers an affordable range of options for customers of broadband services.

The Co-Location facility provides a meet point for various public and private fiber cables and networks to inter-connect. In the Middle Peninsula, the planned Telework Center, on the Route 33 first phase fiber segment, would be an ideal location for a colocation facility and service provider meet point.

A colocation facility is a controlled environment (i.e. secure, heated, and air-conditioned) room with Internet access through wired and/or wireless systems. The colocation facility is a place where fiber, wireless, and copper-based network facilities meet. It is equipped to house high-end network equipment, servers, and other electronic gear. A variety of middle layer network components and services can be located within the co-lo including, for example, directory services, replicated content servers, routing services, and other elements needed to deliver new multimedia services to the home and small office from multiple, competing providers.

Characteristics of the colocation facility are:

- ▶ A reliable source of AC electric power is required, with backup UPS (Uninterruptible Power Supply) service, and additional power backup available by an onsite generator.
- ▶ Controlled access to the facility (e.g. by electronic keycard) 24 hours/day, seven days a week.
- ▶ Racks for locating network equipment and servers, and optionally locked cages for equipment racks.
- ▶ Sufficient cooling capacity for the network's current and long-term needs.



Network Design and Cost Estimates

ABOUT THE COST ESTIMATE SUMMARIES

The estimate tables in this section shows the estimated costs for the tower improvements and new towers. Additional cost estimate information will be included in the next draft of this report.

TOWER CONSTRUCTION

The line items for each named tower include the cost of the tower, site preparation, estimated cost of electric service, generator cost and placement, cost of the tower, and labor to assemble and erect the tower, and backbone equipment.



FIBER CONSTRUCTION

Line items contained in the fiber construction estimate include the labor needed to install underground conduit, place the fiber in the conduit, place handholes and splice closures, and the equipment needed to provision the lit network.

PROJECT MANAGEMENT

Project Management, Network Integration, Configuration, and Testing for a telecom build requires thorough and detailed planning, experience in procuring construction materials for a telecom project, and the ability to oversee and convey project information to contractors through the duration of the project, including construction inspection work (ensuring construction contractors have done their job properly).

Some configuring and testing will take place after the network is built and before it is ready for use. This fee includes all of the project management, contractor supervision, procurement activities, and many other activities related to getting the network/towers built.

ENGINEERING, CONSTRUCTION INSPECTION, AND PERMITTING

This work include a full design of the outside plant network (towers), cabinet specifications, and extensive detail (CAD drawings where needed) that specifies how the wireless towers and network equipment (if any) is to be installed. These documents have to be completed prior to bidding out any construction work, and are usually included as part of a construction bid package. The detail site plan engineering if required, and any other engineering, inspection work, and permitting necessary to complete construction.

Some costs will be incurred based on the permitting requirements of the project. If shelters/cabinets are able to be placed on some properties at no charge, the cost of leases will be lower. If cabinets or shelters have to be placed on private property, the cost of the land or long term leases will increase. Some property owners prefer to receive ten or twenty years of lease payments up front, which can make this cost unpredictable. The cost of permits needed for crossing wetlands, streams, other sensitive areas, and State, County, or City permits are also included in this category.

MISCELLANEOUS FEES AND TECHNICAL SERVICES

Many projects routinely incur a variety of mostly small amounts for fees and services. Typical items might include railroad crossing fees, lease and title fees, notary fees, legal fees for lease agreements or other legal matters, fees for archeological studies, etc.

BOOKKEEPING AND ADMINISTRATION

Network projects create substantial amounts of paperwork, invoices, and related bookkeeping requirements. This amount may vary based on whether or not the Project has the work done by an outside firm or by Project staff. Projects funded by federal or state grants often have additional reporting requirements that increase the requirements placed on staff and grant administrators.

CONTINGENCY

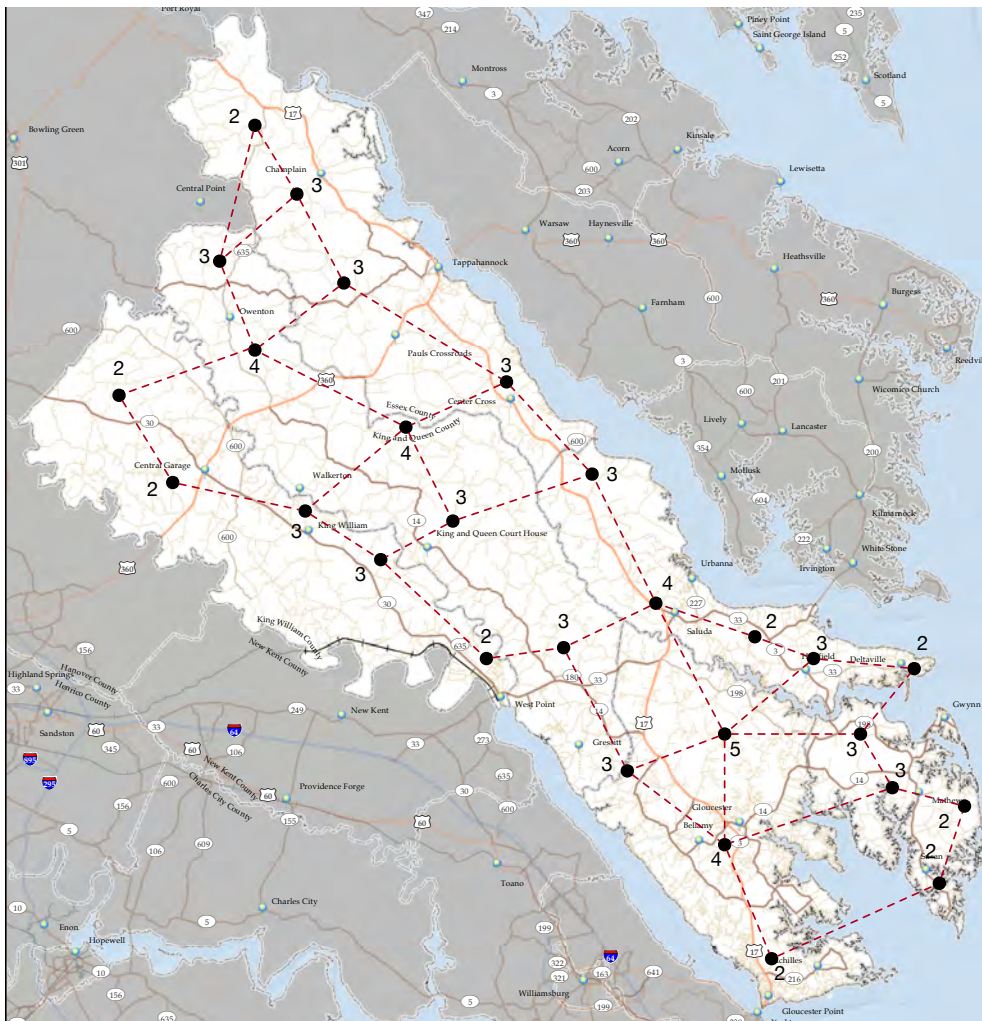
We recommend that a small contingency fund be allocated for unanticipated expenses which could include higher than expected construction costs or retail costs, higher site leases than expected, archeological discovery and research, right of way acquisition, and other unplanned costs.

WIRELESS NETWORK DESIGN

A conceptual network design for a regional broadband network is illustrated below, using a wireless architecture similar to that currently employed in King and Queen County. The design includes:

Full redundancy — Each of the 27 (estimated) sites is connected to 2, 3, 4, or 5 other sites. Failure of any single link will not interrupt customer service. Two thirds of the sites have links to three other sites, meaning they can tolerate two point to point link failures and continue to function.

Licensed frequencies — The point to point links will use licensed radio frequencies to minimize interference problems and to improve performance.



Excellent coverage — The estimated number of sites is based on the propagation studies in the previous section that indicates 90% or better coverage is available. Individual customers may still have line of site issues, which can generally be addressed with a local utility power or inexpensive steel tower.

Segmentation — The multiple point to point links, coupled with careful traffic routing, will enable the network to provide good bandwidth based on local customer traffic demands. Internet feeds can be accommodated in several locations throughout the network.

WIRELESS TOWER COST ESTIMATES

This section of the report provides an estimate of the cost of constructing new towers where they may be needed.

Any placement of new towers should be preceded by a careful viewshed analysis (how much area/users are likely to be able to receive service). Site acquisition and site preparation costs can affect the overall cost of such a project. Existing county properties (e.g. fire/rescue stations, county parks, dump transfer sites, etc.) may be candidates for towers.

TOWER- SPACE ONLY COST ESTIMATE

For towers currently owned by the localities (e.g. public safety towers) that might be candidates for Project use, modest upgrades to equipment at the base of the tower would make them “broadband-ready.” Upgrades to existing towers typically may include adding or upgrading generators, additional cabinet or shelter space for service provider equipment, and sometime fencing and physical access changes.

1	ITEM/PROJECT	UNITS	Estimated Cost (Conservative)	BEST ESTIMATE (WEIGHTED AVERAGE)
2	Small Telecom Cabinet	1	\$6,000	\$6,000
3	10kW Liquid Propane Generator	1	\$6,000	\$6,000
4	Cabinet Foundation and Installation	1	\$800	\$800
5	Spare Fuses	1	\$20	\$20
6	Power System Installation Materials	1	\$40	\$40
7	Samlex 1000W Inverter	1	\$450	\$450
8	Samlex SEC1230-UL Battery Charger	1	\$300	\$300
9	100ah 12v Non Spillable Backup Battery	1	\$350	\$350
10	DC Voltage Monitoring Device	1	\$60	\$60
11	Unmanaged Rack Mount PDU (60)	1	\$45	\$45
12	Cabinet Installation Labor	1	\$1,000	\$1,000
13	Power System Installation Labor	1	\$500	\$500
14	Generator Installation Labor	1	\$1,700	\$1,700
15	Ubiquiti Access Point + 120° Sector	3	\$375	\$1,880
16	Project Management		18%	\$3,446
17	Estimated Construction Cost			\$22,591

NEW TOWER ONLY COST ESTIMATE

New towers have a range of configurations and cost options. This estimate is for a new 180' tower with no radio equipment (that is, the cost of the bare tower). If located on existing county properties, the time needed to plan for construction can be shortened. If site acquisition or a site lease (of private property) is required, purchase or lease negotiations can add several months to the process. Note that some counties may require a full permitting process even if a new tower is placed on existing county-owned property. The permit process can add sixty to one hundred and twenty days to the time needed to put a new tower in service

1	ITEM/PROJECT	UNITS	COST(HIGH)	BEST ESTIMATE (WEIGHTED AVERAGE)
2	Small Telecom Cabinet	1	\$3,000.00	\$3,000
3	10kW Liquid Propane Generator	1	\$6,000.00	\$6,000
4	Cabinet Foundation and Installation	1	\$800.00	\$800
5	New Power Service / Installation	1	\$1,250.00	\$1,250
6	180' Self Supporting Tower Construction Materials	1	\$22,000.00	\$22,000
7	Spare Fuses	1	\$20.00	\$20
8	Power System Installation Materials	1	\$40.00	\$40
9	Samlex 1000W Inverter	1	\$450.00	\$450
10	Samlex SEC1230-UL Battery Charger	1	\$300.00	\$300
11	100ah 12v Non Spillable Backup Battery	1	\$350.00	\$350
12	DC Voltage Monitoring Device	1	\$60.00	\$60
13	Unmanaged Rack Mount PDU (60)	1	\$45.00	\$45
14	Tower Site Land Clearing and Site Development	1	\$12,500.00	\$12,500
15	180' guyed Tower Construction Labor	1	\$26,000.00	\$26,000
16	Cabinet Installation Labor	1	\$1,000.00	\$1,000
17	Power System Installation Labor	1	\$500.00	\$500
18	Generator Installation Labor	1	\$1,700.00	\$1,700
19	FCC License Coordination	1	\$1,500.00	\$1,500
20	Construction Total:			\$77,515
21	Project Management, Network Engineering, Testing			\$23,260
22	Site Engineering, Surveying, viewshed analysis Etc.			\$9,500
23	Misc Fees, Technical Services			\$7,500
24	Bookkeeping and Administration			\$5,000
25	Contingency			\$12,280
26	TOTAL:			\$135,055

180' TOWER COST ESTIMATE WITH TWO BACKHAUL LINKS

This cost estimate includes the cost of both point to point backhaul radios to connect the tower to two other towers in the network and the cost of the local access radios that would deliver service to nearby businesses and residents. This is for a self-supporting tower, and a similar guyed tower would be somewhat less expensive.

I	ITEM/PROJECT	UNITS	COST (LOW)	COST (HIGH)	TOTAL (LOW)	TOTAL (HIGH)	BEST ESTIMATE (WEIGHTED AVERAGE)
2	Small Telecom Cabinet	1	\$4,000	\$6,000	\$4,000	\$6,000	\$4,600
3	10kW Liquid Propane Generator	1	\$4,000	\$6,000	\$4,000	\$6,000	\$4,600
4	Cabinet Foundation and Installation	1	\$1,000	\$1,500	\$1,000	\$1,500	\$1,150
5	New Power Service / Installation	1	\$1,250	\$3,000	\$1,250	\$3,000	\$1,775
6	Tower Construction Materials	1	\$25,000	\$35,000	\$25,000	\$35,000	\$28,000
7	Spare Fuses	1	\$10	\$20	\$10	\$20	\$13
8	Power System Installation Materials	1	\$20	\$40	\$20	\$40	\$26
9	Samlex 1000W Inverter	1	\$350	\$450	\$350	\$450	\$380
10	Samlex SEC 1230-UL Battery Charger	1	\$200	\$300	\$200	\$300	\$230
11	100ah 12v Non Spillable Backup Battery	1	\$250	\$350	\$250	\$350	\$280
12	DC Voltage Monitoring Device	1	\$40	\$60	\$40	\$60	\$46
13	Unmanaged Rack Mount PDU (6O)	1	\$35	\$45	\$35	\$45	\$38
14	Tower Site Land Clearing and Site Development	1	\$7,500	\$12,500	\$7,500	\$12,500	\$9,000
15	Tower Construction Labor	1	\$25,000	\$32,000	\$25,000	\$32,000	\$27,100
16	Cabinet Installation Labor	1	\$600	\$1,000	\$600	\$1,000	\$720
17	Power System Installation Labor	1	\$300	\$500	\$300	\$500	\$360
18	Generator Installation Labor	1	\$1,250	\$1,700	\$1,250	\$1,700	\$1,385
19	FCC License Coordination	2	\$750	\$1,500	\$1,500	\$3,000	\$1,950
20	Dragonwave Horizon Quantum 11GHz Link (includes below)	2	\$19,500	\$22,500	\$39,000	\$45,000	\$40,800
21	Horizon Quantum Radio		\$0	\$0	\$0	\$0	\$0
22	Dragonwave 4' to 6' dish		\$0	\$0	\$0	\$0	\$0
23	Coaxial Cabling		\$0	\$0	\$0	\$0	\$0
24	Dragonwave Power Supply		\$0	\$0	\$0	\$0	\$0
25	DPRM - Dual Pol Radio Mount		\$0	\$0	\$0	\$0	\$0
26	Tower Site Switch	1	\$1,700	\$2,300	\$1,700	\$2,300	\$1,880
27	Ubiquiti Access Point + 120° Sector	3	\$375	\$500	\$1,125	\$1,500	\$1,313
28	Construction Total:				\$113,005	\$150,765	\$124,333
29	Project Management, Network Engineering, Testing						\$31,090
30	Site Engineering, Surveying, Etc.						\$7,500
31	Misc Fees, Technical Services						\$10,000
32	Contingency						\$17,300
33	TOTAL:						\$190,223

180' TOWER COST ESTIMATE WITH THREE BACKHAUL LINKS

This cost estimate includes the cost of both point to point backhaul radios to connect the tower to three other towers in the network and the cost of the local access radios that would deliver service to nearby businesses and residents. This is for a self-supporting tower, and a similar guyed tower would be somewhat less expensive.

I	ITEM/PROJECT	UNITS	COST (LOW)	COST (HIGH)	TOTAL (LOW)	TOTAL (HIGH)	BEST ESTIMATE (WEIGHTED AVERAGE)
2	Small Telecom Cabinet	1	\$4,000	\$6,000	\$4,000	\$6,000	\$4,600
3	10kW Liquid Propane Generator	1	\$4,000	\$6,000	\$4,000	\$6,000	\$4,600
4	Cabinet Foundation and Installation	1	\$1,000	\$1,500	\$1,000	\$1,500	\$1,150
5	New Power Service / Installation	1	\$1,250	\$3,000	\$1,250	\$3,000	\$1,775
6	Tower Construction Materials	1	\$25,000	\$35,000	\$25,000	\$35,000	\$28,000
7	Spare Fuses	1	\$10	\$20	\$10	\$20	\$13
8	Power System Installation Materials	1	\$20	\$40	\$20	\$40	\$26
9	Samlex 1000W Inverter	1	\$350	\$450	\$350	\$450	\$380
10	Samlex SEC1230-UL Battery Charger	1	\$200	\$300	\$200	\$300	\$230
11	100ah 12v Non Spillable Backup Battery	1	\$250	\$350	\$250	\$350	\$280
12	DC Voltage Monitoring Device	1	\$40	\$60	\$40	\$60	\$46
13	Unmanaged Rack Mount PDU (6O)	1	\$35	\$45	\$35	\$45	\$38
14	Tower Site Land Clearing and Site Development	1	\$7,500	\$12,500	\$7,500	\$12,500	\$9,000
15	Tower Construction Labor	1	\$25,000	\$32,000	\$25,000	\$32,000	\$27,100
16	Cabinet Installation Labor	1	\$600	\$1,000	\$600	\$1,000	\$720
17	Power System Installation Labor	1	\$300	\$500	\$300	\$500	\$360
18	Generator Installation Labor	1	\$1,250	\$1,700	\$1,250	\$1,700	\$1,385
19	FCC License Coordination	3	\$750	\$1,500	\$2,250	\$4,500	\$2,925
20	Dragonwave Horizon Quantum 11GHz Link (includes below)	3	\$19,500	\$22,500	\$58,500	\$67,500	\$61,200
21	Horizon Quantum Radio		\$0	\$0	\$0	\$0	\$0
22	Dragonwave 4' to 6' dish		\$0	\$0	\$0	\$0	\$0
23	Coaxial Cabling		\$0	\$0	\$0	\$0	\$0
24	Dragonwave Power Supply		\$0	\$0	\$0	\$0	\$0
25	DPRM - Dual Pol Radio Mount		\$0	\$0	\$0	\$0	\$0
26	Tower Site Switch	1	\$1,700	\$2,300	\$1,700	\$2,300	\$1,880
27	Ubiquiti Access Point + 120° Sector	3	\$375	\$500	\$1,125	\$1,500	\$1,313
28	Construction Total:				\$133,255	\$174,765	\$145,708
29	Project Management, Network Engineering, Testing						\$36,430
30	Site Engineering, Surveying, Etc.						\$7,500
31	Misc Fees, Technical Services						\$10,000
32	Contingency						\$19,970
33	TOTAL:						\$219,608

180' TOWER COST ESTIMATE WITH FOUR BACKHAUL LINKS

This cost estimate includes the cost of both point to point backhaul radios to connect the tower to four other towers in the network and the cost of the local access radios that would deliver service to nearby businesses and residents. This is for a self-supporting tower, and a similar guyed tower would be somewhat less expensive.

I	ITEM/PROJECT	UNITS	COST (LOW)	COST (HIGH)	TOTAL (LOW)	TOTAL (HIGH)	BEST ESTIMATE (WEIGHTED AVERAGE)
2	Small Telecom Cabinet	1	\$4,000	\$6,000	\$4,000	\$6,000	\$4,600
3	10kW Liquid Propane Generator	1	\$4,000	\$6,000	\$4,000	\$6,000	\$4,600
4	Cabinet Foundation and Installation	1	\$1,000	\$1,500	\$1,000	\$1,500	\$1,150
5	New Power Service / Installation	1	\$1,250	\$3,000	\$1,250	\$3,000	\$1,775
6	Tower Construction Materials	1	\$25,000	\$35,000	\$25,000	\$35,000	\$28,000
7	Spare Fuses	1	\$10	\$20	\$10	\$20	\$13
8	Power System Installation Materials	1	\$20	\$40	\$20	\$40	\$26
9	Samlex 1000W Inverter	1	\$350	\$450	\$350	\$450	\$380
10	Samlex SEC1230-UL Battery Charger	1	\$200	\$300	\$200	\$300	\$230
11	100ah 12v Non Spillable Backup Battery	1	\$250	\$350	\$250	\$350	\$280
12	DC Voltage Monitoring Device	1	\$40	\$60	\$40	\$60	\$46
13	Unmanaged Rack Mount PDU (60)	1	\$35	\$45	\$35	\$45	\$38
14	Tower Site Land Clearing and Site Development	1	\$7,500	\$12,500	\$7,500	\$12,500	\$9,000
15	Tower Construction Labor	1	\$25,000	\$32,000	\$25,000	\$32,000	\$27,100
16	Cabinet Installation Labor	1	\$600	\$1,000	\$600	\$1,000	\$720
17	Power System Installation Labor	1	\$300	\$500	\$300	\$500	\$360
18	Generator Installation Labor	1	\$1,250	\$1,700	\$1,250	\$1,700	\$1,385
19	FCC License Coordination	4	\$750	\$1,500	\$3,000	\$6,000	\$3,900
20	Dragonwave Horizon Quantum 11GHz Link (includes below)	4	\$19,500	\$22,500	\$78,000	\$90,000	\$81,600
21	Horizon Quantum Radio		\$0	\$0	\$0	\$0	\$0
22	Dragonwave 4' to 6' dish		\$0	\$0	\$0	\$0	\$0
23	Coaxial Cabling		\$0	\$0	\$0	\$0	\$0
24	Dragonwave Power Supply		\$0	\$0	\$0	\$0	\$0
25	DPRM - Dual Pol Radio Mount		\$0	\$0	\$0	\$0	\$0
26	Tower Site Switch	1	\$1,700	\$2,300	\$1,700	\$2,300	\$1,880
27	Ubiquiti Access Point + 120° Sector	3	\$375	\$500	\$1,125	\$1,500	\$1,313
28	Construction Total:				\$153,505	\$198,765	\$167,083
29	Project Management, Network Engineering, Testing						\$41,780
30	Site Engineering, Surveying, Etc.						\$7,500
31	Misc Fees, Technical Services						\$10,000
32	Contingency						\$22,640
33	TOTAL:						\$249,003

180' TOWER COST ESTIMATE WITH FIVE BACKHAUL LINKS

This cost estimate includes the cost of both point to point backhaul radios to connect the tower to five other towers in the network and the cost of the local access radios that would deliver service to nearby businesses and residents. This is for a self-supporting tower, and a similar guyed tower would be somewhat less expensive.

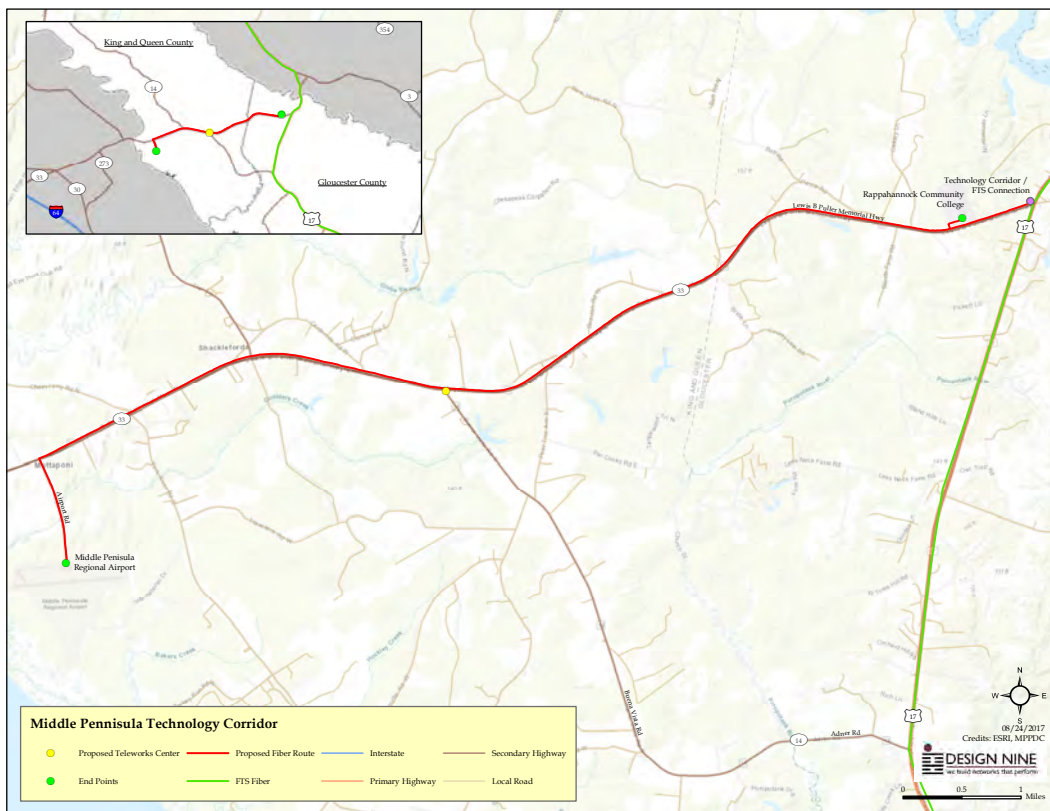
I	ITEM/PROJECT	UNITS	COST (LOW)	COST (HIGH)	TOTAL (LOW)	TOTAL (HIGH)	BEST ESTIMATE (WEIGHTED AVERAGE)
2	Small Telecom Cabinet	1	\$4,000	\$6,000	\$4,000	\$6,000	\$4,600
3	10kW Liquid Propane Generator	1	\$4,000	\$6,000	\$4,000	\$6,000	\$4,600
4	Cabinet Foundation and Installation	1	\$1,000	\$1,500	\$1,000	\$1,500	\$1,150
5	New Power Service / Installation	1	\$1,250	\$3,000	\$1,250	\$3,000	\$1,775
6	Tower Construction Materials	1	\$25,000	\$35,000	\$25,000	\$35,000	\$28,000
7	Spare Fuses	1	\$10	\$20	\$10	\$20	\$13
8	Power System Installation Materials	1	\$20	\$40	\$20	\$40	\$26
9	Samlex 1000W Inverter	1	\$350	\$450	\$350	\$450	\$380
10	Samlex SEC1230-UL Battery Charger	1	\$200	\$300	\$200	\$300	\$230
11	100ah 12v Non Spillable Backup Battery	1	\$250	\$350	\$250	\$350	\$280
12	DC Voltage Monitoring Device	1	\$40	\$60	\$40	\$60	\$46
13	Unmanaged Rack Mount PDU (6O)	1	\$35	\$45	\$35	\$45	\$38
14	Tower Site Land Clearing and Site Development	1	\$7,500	\$12,500	\$7,500	\$12,500	\$9,000
15	Tower Construction Labor	1	\$25,000	\$32,000	\$25,000	\$32,000	\$27,100
16	Cabinet Installation Labor	1	\$600	\$1,000	\$600	\$1,000	\$720
17	Power System Installation Labor	1	\$300	\$500	\$300	\$500	\$360
18	Generator Installation Labor	1	\$1,250	\$1,700	\$1,250	\$1,700	\$1,385
19	FCC License Coordination	5	\$750	\$1,500	\$3,750	\$7,500	\$4,875
20	Dragonwave Horizon Quantum 11GHz Link (includes below)	5	\$19,500	\$22,500	\$97,500	\$112,500	\$102,000
21	Horizon Quantum Radio		\$0	\$0	\$0	\$0	\$0
22	Dragonwave 4' to 6' dish		\$0	\$0	\$0	\$0	\$0
23	Coaxial Cabling		\$0	\$0	\$0	\$0	\$0
24	Dragonwave Power Supply		\$0	\$0	\$0	\$0	\$0
25	DPRM - Dual Pol Radio Mount		\$0	\$0	\$0	\$0	\$0
26	Tower Site Switch	1	\$1,700	\$2,300	\$1,700	\$2,300	\$1,880
27	Ubiquiti Access Point + 120° Sector	3	\$375	\$500	\$1,125	\$1,500	\$1,313
28	Construction Total:				\$173,755	\$222,765	\$188,458
29	Project Management, Network Engineering, Testing						\$47,120
30	Site Engineering, Surveying, Etc.						\$7,500
31	Misc Fees, Technical Services						\$10,000
32	Contingency						\$25,310
33	TOTAL:						\$278,388

FIBER TECHNOLOGY CORRIDOR ESTIMATE

The Middle Peninsula Technology Corridor fiber would be anchored by the Telework Center, Rappahannock Community College (RCC), and the Middle Peninsula airport. The PamunkeyNet colocation facility would be located in secure space in the Telework Center, and would serve as a meet-me point for service providers, and would have additional rack space available for lease by public and private interested parties who need secure off-site space for servers, data backup, and other uses.

The fiber will continue past RCC to meet FTS fiber on route 17. Meeting FTS would give PamunkeyNet a reliable and redundant fiber connection to Norfolk and D.C.—where inexpensive sources of Internet backhaul will be available—FTS has a fully redundant fiber ring around the Bay. The fiber-enabled Technology Corridor will give the Middle Peninsula essential economic development tools:

- A local fiber backbone that provides ten miles of Gigabit service availability that can be used to attract high technology companies to the region.
- A high performance connection out of the region with a fully redundant backhaul connection that will be of great interest to relocating companies.



The cost tables below provide a pre-engineering estimate of the cost of construction 10.4 miles of underground fiber construction along Route 33. Handholes would be placed every four hundred feet for convenient customer fiber access (shorter fiber drops at less cost). Both business and residential Gigabit fiber connections would be available to any location along the entire route. The standard customer connection for both business and residential customers would be a Gigabit of bandwidth, and both GPON and Active Ethernet services can be offered. Active Ethernet is particularly important so that business class/carrier class services can be offered on the network.

The network can be extended easily in either direction (east or west) with additional fiber segments, and any additional fiber switch capacity required would be placed in the Telework Center colo facility. The network will support 10Gig, 100Gig, and light path services as requested by larger and enterprise business customers.

With the connection to the FTS fiber on Route 17, the Technology Corridor will be able to offer businesses whatever amount of bandwidth they need to compete globally at affordable prices, giving the Middle Peninsula the network needed for economic growth and jobs attraction.

Middle Peninsula Technology Corridor - Route Overview

0	ITEM/PROJECT	VALUE
1	Miles of Fiber / Conduit Installed	10.4
2	Number of Handholes Installed	92
3	Splice Closures Installed	31
4	Cabinets Installed	0
5	Number of Customers Connected	48

Middle Peninsula Technology Corridor - Cost Summary

0	ITEM/PROJECT	ESTIMATED
1	Middle Peninsula Technology Corridor - Construction Materials	\$188,378.00
2	Middle Peninsula Technology Corridor - Distribution Labor	\$617,110.00
3	Middle Peninsula Technology Corridor - Drop Construction	\$100,920.00
4	Network Construction Subtotal	\$906,408.00
5	Project Management, Network Engineering, Integration, and Testing	\$147,651.60
6	Engineering, Permitting (15% of construction costs)	\$57,200.00
7	Misc Fees, Advertising, Technical Services	\$10,000.00
8	Bookkeeping and Administration	\$2,500.00
9	Other Costs Subtotal	\$217,351.60
10	Project Total	\$1,123,759.60
11	Contingency at 10%	\$112,375.96
12	Gigabit fiber backbone Total (with contingency)	\$1,236,135.56

COLOCATION FACILITY COST ESTIMATE

If space is allocated at the Telework Center, it would be an ideal location for a colocation facility and meet-me point. Two hundred fifty to five hundred square feet would be entirely adequate. The room would require 24/7 controlled access from an exterior door, dedicated HVAC (primarily enhanced cooling), some battery back up UPS (Uninterruptible Power System), and outdoor space adjacent to the room for a small generator to provide power during an extended power outage.

The space could be 250 to 500 square feet, and would be initially provisioned with six enclosed racks. PamunkeyNet equipment would use less than one rack, leaving five additional racks of leasable space. The facility costs also include the network equipment required to support up to 48 fiber customers with Gigabit service. There would be ample space to increase capacity with additional fiber switches, and 1000 or more fiber customers could be easily served out of the facility.

The facility would also be used to house servers and other equipment needed to support the wireless network. Dedicated redundant Juniper core routers would provide routing and access to service providers selling Internet and other services on the network.

1	ITEM	UNITS	BEST ESTIMATE (WEIGHTED AVERAGE)
2	Network Room fit up in Telework Center	1	\$22,500.00
3	Network Room Lighting / Electrical Fit-up	1	\$14,500.00
4	Dedicated Network Room Cooling - Split Mini Unit 24k BTUs	2	\$6,000.00
5	Enclosed Rack	6	\$5,250.00
6	Patch Panel (144 port)	2	\$7,500.00
7	New Power Service / Installation	1	\$4,000.00
8	Unmanaged Rack Mount PDU (60)	12	\$1,200.00
9	Patch Cables (POP)	48	\$936.00
10	Calix 48V DC System Retrofit Kit	1	\$1,700.00
11	Calix E7-2 Chassis	2	\$1,650.00
12	Calix E7-2 GE-24 Card	4	\$17,500.00
13	Calix Advantage System Support and Maintenance (1 year)	1	\$3,000.00
14	CMS Server	1	\$3,750.00
15	Dell Server	1	\$3,000.00
16	Juniper core router for service provider network access	2	\$25,000.00
17	Rack Mount UPS (AC)	2	\$1,450.00
18			\$118,936.00

GIGABIT FIBER ON THE PAMUNKEY RESERVATION

For the fiber to the home project on the Pamunkey Reservation, fiber will be deployed to the premises in the cluster of homes and community buildings in the area around the Pamunkey Indian Museum (about 40 homes and community buildings). A wireless tower will provide high performance Internet backhaul connectivity to the local fiber.

The map below shows the area where approximately 6.5 miles of fiber will be installed underground, connecting 34+ homes and several community buildings, including the Museum. The Gigabit fiber infrastructure will provide the tribe with a state of the art network and a long term asset that will support telemedicine and telehealth services, distance learning and access to college classes, jobs from home, and businesses from home.

The table on the next page provides a breakdown of costs. For the wireless backhaul, one of the towers in the previous cost estimate will be installed at an appropriate location and be connected to the local fiber.



Pamunkey Reservation FTTH Cost Summary

0	ITEM/PROJECT	ESTIMATED
1	Pamunkey Reservation FTTH Construction Materials	\$57,246.16
2	Pamunkey Reservation FTTH Distribution Labor	\$254,528.00
3	Pamunkey Reservation FTTH Structures, Cabinets, and Equipment	\$38,311.00
4	Pamunkey Reservation FTTH Drop Construction	\$46,800.00
5	Network Construction Subtotal	\$396,885.16
6	Project Management, Network Engineering, Integration, and Testing	\$59,532.77
7	Engineering, Permitting	\$35,750.00
8	Misc Fees, Advertising, Technical Services	\$10,000.00
9	Bookkeeping and Administration	\$2,500.00
10	Other Costs Subtotal	\$107,782.77
11	Project Total	\$504,667.93
12	Contingency at 10%	\$50,466.79
13	Project Total (with contingency)	\$555,134.73

SUMMARY PROJECT COST ESTIMATE

The first table below shows both a “worst case estimate” if no existing towers are available other than what is available with the existing five towers in the King and Queen network and a more likely estimate using some existing tower space (e.g. public safety towers). If approximately 30% of the 22 estimated towers are available for use at a reasonable fee (or no fee) and are in locations that provide appropriate coverage, we estimate that the total cost for tower construction and tower enhancement would be approximately \$3.4 million.

Tower Type	Number of Towers	Per Tower Construction	Totals
Two backhaul links	7	\$190,223	\$1,331,561
Three backhaul links	10	\$219,608	\$2,196,080
Four backhaul links	4	\$249,003	\$996,012
Fiver backhaul links	1	\$278,333	\$278,333
Total estimate for all new towers	22		\$4,801,986
Estimated total using 30% existing towers			\$3,361,390
Customer radio fund for 500 new customers			\$87,500
Total wireless expansion cost			\$3,448,890

The table below summarizes the costs of the three portions of the network, along with a recommended operational reserve for the first two years of operations.

Region-side wireless expansion (some use of existing towers)	\$3,448,890
Technology Corridor Gigabit fiber backbone	\$1,236,136
Telework Center colocation facility	\$118,936
Pamunkey Reservation FTTH project	\$555,135
PamunkeyNet two year operational reserve	\$500,000
Total	\$5,859,096

NEIGHBORHOOD UTILITY POLE ACCESS COSTS

A single wooden utility pole with a wireless connection to a 180' tower and local access radios could provide access to any residence with line of sight within a half mile or more. This would spread the cost of pole construction and equipment costs across several households or businesses. There are many rural areas in the Middle Peninsula region where there is a cluster of homes along a relatively short stretch of road. All of those homes could share the use of a single local utility pole access site.

VI	VARIABLE	VALUE	NOTES
V2	Weight Variable	5	0-10 scale used in Best Estimate column (10 is best)
V3	Towers	1	Number of Towers
V4	Height	60	Tower Height
V5	Type	Wooden Utility Pole	Tower Type
V7	Backbone Radio System Licensed / Un-licensed	Un-licensed	
V8	Backbone Links	1	
	Site Development (Average)	1,000	

I	ITEM/PROJECT	UNITS	COST (LOW)	COST (HIGH)	TOTAL (LOW)	TOTAL (HIGH)	BEST ESTIMATE
2	Site Development (Clearing, Road Improvements, etc.)	1	- n/a -	- n/a -	- n/a -	- n/a -	\$1,000
3	3x3 NEMA Box	1	\$300.00	\$600.00	\$300.00	\$600.00	\$450
4	New Power Service / Installation	1	\$500.00	\$1,250.00	\$500.00	\$1,250.00	\$875
5	60' Wooden Utility Pole Construction Materials	1	\$2,500.00	\$3,500.00	\$2,500.00	\$3,500.00	\$3,000
6	Spare Fuses	1	\$10.00	\$20.00	\$10.00	\$20.00	\$15
7	Power System Installation Materials	1	\$20.00	\$40.00	\$20.00	\$40.00	\$30
8	Samlex 1000W Inverter	1	\$350.00	\$450.00	\$350.00	\$450.00	\$400
9	Samlex SEC1230-UL Battery Charger	1	\$200.00	\$300.00	\$200.00	\$300.00	\$250
10	100ah 12v Non Spillable Backup Battery	4	\$250.00	\$350.00	\$1,000.00	\$1,400.00	\$1,200
11	DC Voltage Monitoring Device	1	\$40.00	\$60.00	\$40.00	\$60.00	\$50
12	Unmanaged Rack Mount PDU (60)	1	\$35.00	\$45.00	\$35.00	\$45.00	\$40
13	60' Wooden Utility Pole Construction Labor & Contracting	1	\$2,000.00	\$3,000.00	\$2,000.00	\$3,000.00	\$2,500
14	Power System Installation Labor	1	\$300.00	\$500.00	\$300.00	\$500.00	\$400
15	Ubiquiti IsoBeam PTP System	2	\$200.00	\$400.00	\$400.00	\$800.00	\$600
16	Ubiquiti Access Point + 120° Sector	3	\$375.00	\$500.00	\$1,125.00	\$1,500.00	\$1,313
17	Total:				\$8,780.00	\$13,465.00	\$12,122.50

Planning for Tower Development

NEW TOWER SITING CONSIDERATIONS

There are many factors in choosing sites to develop for towers. The cost of site prep in an area with unfavorable conditions can quickly outweigh the cost of the actual tower.

Site work - Land acquisition and leases are not included in tower estimate. Site preparation is estimated and assumes a typical site with some small vegetation and work needed. If a site will require more extensive land clearing or road improvement work it should be estimated on a site by site basis.

Generator - a small liquid propane generator is included in the estimate for this tower. The estimate does not include a tank and tank install because in our experience this cost is typically covered by the local gas company as long as there is a service contract.

Cellular Carriers and Upgrades - Towers at this size must be specifically engineered for their location and equipment load. The pricing shown above is estimated at a size which will support one cell provider, and WISP/Public Safety equipment. Designing to accommodate multiple cellular providers should be expected to increase the cost by \$7,500 to \$15,000.

- Favorable site leasing or purchasing conditions such as county properties, infrastructure sites, industrial areas, or areas with other towers.
- The site must be useful to the network from the wireless engineering standpoint. Evaluate how the new site will fit into the wireless network and determine if it desirable early in the process.
- Proposed tower sites should be close to a road and accessible by truck. Improving access to a site and repairing damage caused by construction is expected, but constructing new roads on a site will increase costs dramatically.
- Proposed sites should be close to grid power. While evaluating a site locate the nearest utility poles or pedestals. If there is no transformer near the site, within 500 feet, there will likely be higher costs to bring power in.
- Mostly flat, or gently sloping sites cost less to develop than sites with steep terrain. When considering tower sites look for flat areas to place the tower and compound. It may be worth sacrificing some altitude or doing some additional clearing to avoid major ground disturbances and earth work.
- It is common to clear some trees and vegetation while developing a tower site, but excessive clearing requirements will raise costs. If sites are in a wooded area look for locations where vegetation is sparse and the tree growth is somewhat young (e.g., 8-10" in diameter). Large trees or very dense brush will be more expensive to clear.
- Look for secure sites with limited access. Sites are better off in an area that doesn't get frequent visitors.

- Look for tower sites with the potential to connect to fiber networks. Access to multiple fiber providers on a wireless network will be very important to potential tenants and the economic viability of the network.

Things to avoid

- Avoid dense residential areas and retail areas when evaluating tower sites.
- Avoid parcels with creeks or other water features that could be an impediment to construction.
- Large concrete trucks will have to access the site while constructing the towers. During site evaluation consider the entire route that trucks will have to take.
- Avoid locating tower sites near areas where permitting could be an issue. Historic Districts, airports, scenic locations, and areas with strict zoning should be avoided.

FUNDING OPTIONS

The relatively low cost of tower upgrades and new tower construction suggests the most expedient funding is direct financial support from the Project. If grant funds are needed (e.g. several new towers are proposed), working with public safety officials to combine public safety grant opportunities and public safety capital funds could be very beneficial.

OPERATION AND MANAGEMENT CONSIDERATIONS

Towers are passive infrastructure, and if properly designed and constructed, require minimal maintenance. If the tower is shared with public safety users, those agencies will install their own radios, antennas, and electronics, which could relieve the Project of any responsibility for equipment management and configuration, and equipment repairs and replacement. A contract with a qualified tower maintenance and tower climbing firm will be required to do tower climbs and repairs to equipment on the tower.

RECOMMENDATION AND NEXT STEPS

An preliminary analysis of existing county towers and potential county-owned sites for new towers suggests that good coverage could be obtained with careful site analysis. If the Project moves forward, line of sight and viewshed studies are recommended for existing towers and for any possible new sites.

Next steps would include securing funding, line of sight and viewshed analysis of existing sites, identification of county-owned property for new towers, line of sight and viewshed analysis of the new sites, determination of tower type for new towers (guyed or self supporting), and discussions with service providers. final identification of sites, complete detailed network engineering including site layouts and Line of Sight engineering, and work with public safety officials.

TYPICAL CONSTRUCTION SCHEDULE

The timeline and activities describe the typical process for constructing a tower. Combining multiple sites into a single construction project will expand the timeline below but overall will save

time and expense. Delays in the site identification and procurement stages of a project are the most common delays for counties and cities.

- *MONTH ONE*

- Project kick-off
- Site identification
- Network design
- Prep work and site plan development needed for permitting

- *MONTH TWO*

- Pre-construction site planning
- Lease / MOU negotiation
- Procurement
- Submission of permit application

- *MONTH THREE*

- Processing of permit applications, public meetings and ballon tests as needed.
- Permit approval
- Submission of purchase orders for tower, radios, equipment.

- *MONTH FOUR-FIVE*

- Site clearing and preparation
- Tower materials shipping
- Foundation construction
- Inspection
- Tower construction
- Construction wrap-up

- *MONTH SIX*

- Equipment installation and network testing
- Tower is put in service

Creating the Enterprise

The Middle Peninsula Broadband Network (PamunkeyNet) will be operated as an independent entity owned by the Pamunkey Tribe. This will provide the network with two important requirements:

- ▶ The enterprise will have the business and management flexibility needed to make decisions efficiently and effectively in the fast-moving broadband business environment.
- ▶ As a Pamunkey enterprise, it will be vested in the community and can be managed on behalf of the broader community and economic development goals of the community.

The network will be operated as a single high performance hybrid wireless and fiber optic network available to any and all service providers, including incumbent providers who want access to the significant market opportunity represented by the network. This shared business model is fundamentally different from the twentieth century copper-based networks where each provider has to build and operated a completely duplicated network (i.e. two providers each build a separate and duplicated network to reach the same customers, which results in higher costs across the board for customers).

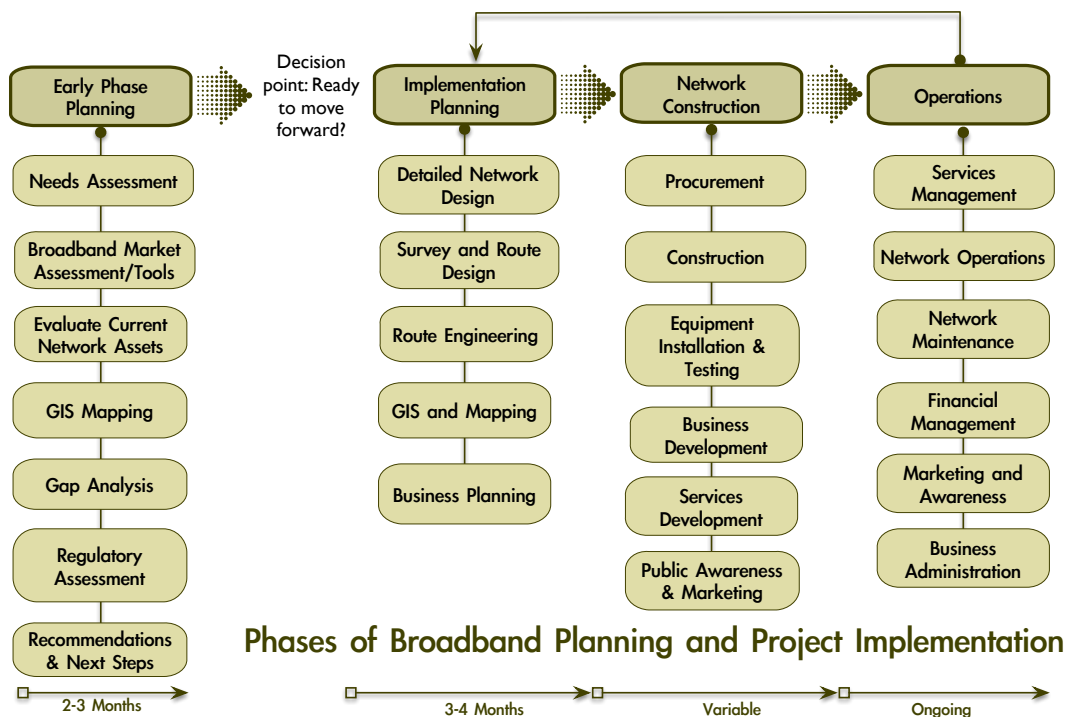
The Project will have several essential roles:

- ▶ **Contract and Staff Management** - The Project will hold contracts for outsourced network operations, outsourced network repairs and maintenance, outsourced construction of network extensions, and service provider contracts for the services offered on the network. The Project will need a small number of staff, but the scope of the network should minimize staff requirements.
- ▶ **Financial Management** - The Project will be responsible for the financial oversight of the network. The routine bookkeeping and accounting will likely require, at most, a full time bookkeeper and a part time or full time billing clerk.
- ▶ **Public Awareness** - The Project will need to maintain a modest, ongoing public awareness campaign to ensure that residents and local businesses are aware of the opportunity to obtain higher performance, broadband services from the Project. The Project will need a sharp focus on name and brand awareness in the Middle Peninsula region to be successful.
- ▶ **Project Development/Management** - As funding sources are developed for individual network projects, the Project will provide financial and project oversight of these projects during the implementation and construction phase.

For the Project, the development of a successful Pamunkey-owned network will require attention in several areas including the technical (network equipment selection), engineering and construction, and business and financial planning. It is important to note that the business and financial planning are critical elements that will in large part determine the long term success of the effort. This section provides an overview of the key task areas and activities.

The illustration below shows the sequence of key phases and activities in the course of a network project. On the pages following this diagram is more detailed information about the individual

tasks and activities that will lead to successful completion of a fully operational network, including the business processes required.



To be successful, the Project requires a plan that ensures the right resources are available at the appropriate times during the various phases of development. Some resources must be identified and procured during the planning phase, some during the implementation and construction phases, and some during the operations phase.

Financial Planning – Financial planning includes the development of short term and long term budget estimates and pro-formas. These materials form the basis of developing a funding plan, as well as providing a solid base for ongoing evaluation of the success of the enterprise.

Business Model – The business model selected determines the kind and type of revenue that will be generated by the project, and also affects the kind and type of expenses that are incurred. Following the King and Queen business model, the Project will provide retail broadband Internet service purchased on a wholesale basis from a private sector Internet provider.

Legal Counsel – Whether the retail or wholesale business model is chosen, there is a short term and long term need for legal counsel familiar with telecom and broadband business agreements and contracts. Well written contracts with construction companies, wholesale Internet providers, and other contractors protect the Project.

Engineering – For new tower sites, engineering services will be required to prepare site plans, manage the permit process paperwork, provide support where public meetings are provided prior to permit approval, and to handle other tower site work (e.g. balloon tests). Where fiber

cable is being deployed, if it is hung on utility poles or placed underground in conduit, prior to construction, the routes must be surveyed and engineered drawings must be developed to meet DOT (Dept. of Transportation) requirements and to provide contractors with the information needed to construct the network to industry and state technical requirements.

Network Design – The logical design of the network must be matched to expected public and private uses (e.g. support for shared public safety use, business uses, K12 use, residential and small business use). The network design must also meet the requirements of large and small businesses, and for large businesses with extensive broadband and data needs, the network must be capable of meeting both current needs and future growth.

Equipment – Once a network design is complete, an evaluation of equipment vendors must take place, ideally via a bidding process to ensure that the selected equipment will meet all of the business and technical requirements of the network, at the best possible price. A Total Cost of Ownership (TCO) evaluation should be completed to ensure that the right initial price is balanced with the longer term costs of extended warranties and technical support. The least expensive purchase price for equipment may be more expensive over time than equipment from a vendor with a higher initial equipment cost but lower support and warranty fees.

Build Out – While community network build outs are generally much less expensive than other typical community projects like water and sewer development, care must be taken to select contractors with the appropriate experience constructing towers or installing fiber. The cost of construction can vary widely, so the development of very specific bid documents that include the right engineering information as well as a carefully structured proposal response on pricing is needed to ensure the community obtains the right contractor at the right price.

EARLY PHASE PLANNING

The work in this report represents some of the activities of the early phase planning. The early phase work should include:

Needs Assessment and Market Analysis – An evaluation of current assets and projections of future needs, based on local business and economic conditions. Design Nine is working with the PDC and the counties to map existing tower and fiber assets, incorporate the logical and physical King and Queen network into a regional design, and to perform propagation studies to identify where towers should be located to maximize Internet access regionally.

Pre-engineering Cost Estimates – Pre-engineering cost estimates of potential network projects provide a baseline for understanding the costs of getting started, provide necessary inputs to the financial pro forma development, and also inform funding strategies.

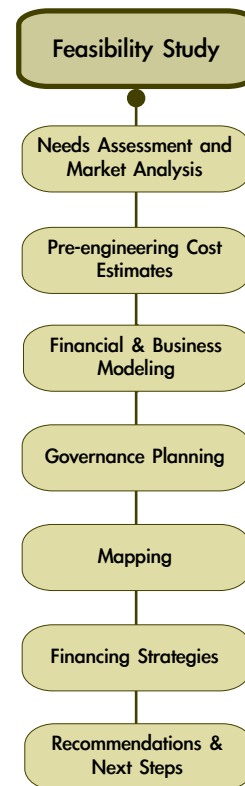
Financial and Business Modeling – A ten year financial pro forma, using inputs from the business requirements analysis and the cost estimates, provides an early test of the financial sustainability of the project and provides a long term road map for financial management.

Governance Planning – Before making a commitment to move to implementation planning, it is necessary to have a basic understanding of the key operations and management tasks related to operating the enterprise.

Mapping – Mapping of current assets, areas and business locations of needs, economic growth areas, and key customers and stakeholders informs the development of the network architecture and the financial pro forma.

Funding Strategies – Before moving to the next steps, it is vital to understand where the planning, engineering, and initial construction funds will come from. There are many options available.

Next Steps – A list of key activities and milestones needed to move the project ahead.



IMPLEMENTATION PLANNING PHASE

This phase produces the equipment and construction specifications needed to bid out the work of constructing new network assets (e.g. towers, access radio equipment, backhaul radios and frequencies, etc.).

Business and Financial Planning – The Project Manager and Network Integrator perform detailed business and financial planning. This includes planning how the business front office and back office will be run.

Governance Model - The formal governance model is determined and legal arrangements between governing entities are negotiated and contracts signed. For PamunkeyNet, the tribe would probably form a tribe-owned LLC with a governing board and/or partners like the MPPDC.

Funding Sources - Funding sources are identified and fun raising commences. Partner agreements which may include network resources (IRUs) or dividends from network income are determined.

Business Administration Planning - Determining how the actual network business will be operated is determined at this time. Front and back office operating models are identified, outsourced business functions are identified and planned.

Tower Site and/or Route Engineering – An on the ground survey is needed to complete tower layouts and a final site/route design. This work is performed by an engineering firm that also has the responsibility to produce the engineered design and obtain required permitting. The field survey confirms that the final route can be built to the necessary standards and regulations.

Construction Methodology (Design vs. Design/Build) - One method to shorten the design and build phases of a project are to award up front a “design build” contract where the engineering firm is also responsible for construction. This approach can shorten this part of the project significantly and is often recommended for projects where time is of the essence.

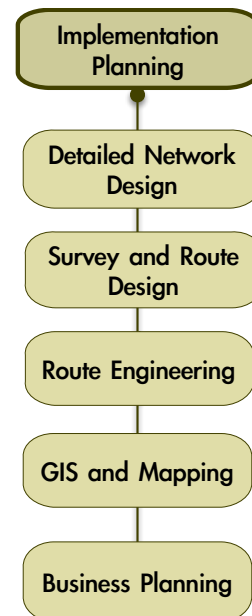
Engineered Drawings and Cost Estimates – The full set of engineered drawings or site plan and tower specifications is attached to the construction bid documents and becomes the basis for the awarded construction contract.

Permitting - The engineer or design/build firm will prepare all required permit forms and submit the permits with the plans. Some permits will require that Project pay a fee to the permitting entity. It is important to start the permitting process early to avoid delays.

Network Architecture Design (Detailed) – Final analysis of vendor equipment is performed and selection is made.

Equipment Selection - Analysis is performed to determine which equipment offers the lowest Total Cost of Ownership (typically analyzed over ten years or more).

Detailed Network Architecture - The detailed network design starts with the completed network architecture and completely specifies all of the equipment, cabinets, patch cables,



power supplies, radios, batteries, and all other necessary parts and equipment needed to create a functional network. The output is a complete Bill Of Materials (BOM) used to create purchase orders for equipment, as well as specifications for the configuration of routers and switches.

Equipment and Materials Specifications – The engineering or design/build firm also completes a detailed list of all equipment required for the construction. Bill Of Materials includes all wire-less equipment, fiber, conduit, handholes, fiber splice enclosures, and related hardware needed to install the fiber cable underground and/or on utility poles.

CONSTRUCTION PHASE

The documents produced in the Implementation Phase are used to bid out the construction work and to procure the network equipment needed to produce an operational network.

Procurement – At the beginning of the construction phase the Project will bid out the project construction.

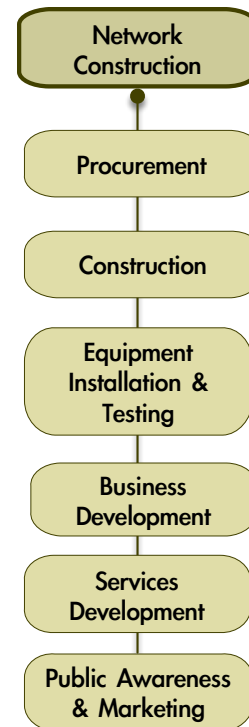
- **Construction Contracts** - Multiple contractors may be involved depending on how the engineering and construction documents were planned in earlier phases.
- **Other Physical materials** - The network integrator will also be responsible for procuring all physical assets not the responsibility of the construction contractors which may include shelters, cabinets, generators.
- **Network Equipment** - All network equipment such as servers, switches, and routers must be purchased and tracked.
- **Operating Contracts** - If outsourced business functions are to be used, the agreements have to be drafted and qualified outsourced firms need to be selected.

Construction Management – The construction work is bid out and an award is made to a qualified contractor with the best price. It is common to negotiate the final cost of this work once a firm has been selected.

- **Engineering Inspection** - Depending on how the construction contracts were awarded will determine if the engineering firm is responsible for inspecting the contractors work performed during construction.

Network Equipment Installation – Network equipment is ordered from a vendor that meets the technical specifications. Equipment must be tested, installed in cabinets or shelters, powered up, and connected to the fiber cable. After installation and

- **Staging** - The site where equipment will be installed must be designed with the correct power circuits, racks, and grounding for equipment. Cable trays and other accessories will be installed to accommodate the physical connections to equipment.
- **Installation** - Equipment must be configured which may involve staging in a laboratory or bench. Once on site equipment will be installed in the racks, and the physical cable connections made. Equipment will then be powered up and can be configured.
- **Configuration/Integration** - Prior to installation equipment can be pre-configured in a lab or staging area. After installation the initial configuration is completed or confirmed and con-



nections to other network equipment is tested. Adding one device can require modifications to the configuration throughout the network.

- Testing - When equipment is installed and configured, end to end network testing of the equipment must be completed. Testing will confirm that network elements are communicating properly. Testing is required not only when new network elements are installed, but also when new services or features are configured on the network.

Business Process Development – During the construction phase, business and operational decisions must be made to produce a set of business processes that will guide the day to day operations of the network.

- A business process will be developed for essentially all recurring activities on the network, including new customer provisioning, service provider billing, utility locating, processing invoices, and so on.
- Some functions can be outsourced to create local private sector jobs (e.g. field maintenance, utility locating).
- Internal processes overlapping with the network configuration will be created for new customers joining the network, and the definition of new services.
- Legal contracts and other related business documents must be developed as part of this process.

Services Development– Negotiations with qualified service providers continues.

- Additional development and specification of the Master Agreements and Service Level Agreements (the contracts between the network and the Service Providers) are finalized
- The network and the providers enter into contractual agreements.
- Wholesale Internet providers will work with the Network Operator to define services and configure the delivery of the service over the network.

Contracts, Agreements, and Leases – The construction phase will generate the need for a variety of legal documents. Some will be related directly to the construction (e.g. an easement agreement to have conduit cross property)

- Typical documents include the development of the Master Network Agreement that is used to sign service providers to the network. Other contracts would include the development of a draft network operations agreement if network operations is outsourced, and a similar agreement for outside plant maintenance and repairs.

Marketing and Public Awareness – As the network is constructed, a modest but ongoing public awareness and publicity effort is required to ensure that business customers, schools, local government agencies and other potential users of the network are aware of the project and the possibility of reducing costs and obtaining more and better services.

Operational Considerations

As construction is approaching completion PamunkeyNet must begin to put the human resources and business processes in place to support, monitor and maintain the network.

The goal is to create a financially sustainable tribal enterprise that over the long term creates good-paying jobs for Pamunkey tribe members. During the first two or three years, a training period will be needed to train tribe staff and to ensure that they have the business, operations, and maintenance experience to support the enterprise. During that time, one or more third party firms may be needed on a contract basis to provide some of the operations and maintenance functions of the network. Any companies contracted for support should be under contract at least two to three months before the first customer comes online.

Network Monitoring – The Project will need on or two months of testing and configuration before the first customer is brought online. This time will be spent configuring monitoring equipment, configuring alerts, setting up internal processes, and bringing NOC (Network Operations Center) staff up to speed on the new environment.

Outside Plant Maintenance – As soon as the contractor completes construction the Project will be responsible for maintaining the network. Some responsibilities such as utility locating, fiber repairs, and maintenance of generators, HVAC systems, and other assets will begin before the network is under full operations.

Internet Service – As the Project signs on wholesale Internet providers they will need time to bring their connections into the co-lo, install equipment, and configure their network for the new services. If construction is involved this process could take several months.

GOING BEYOND INTERNET SERVICE

Even though the Network is will start with just Internet service, the network will become more valuable and useful to businesses and residents of the region if additional services are offered over time. These can either be new “traditional” services (VoIP telephone, IPTV) or can be niche services like security (e.g. closed circuit video), healthcare, gaming or any other service which can be delivered over the network.

OVERVIEW OF ROLES AND RESPONSIBILITIES

PamunkeyNet will have a range of roles and responsibilities. The table below provides a summary of key activities and responsibilities. Additional detail on the tasks and activities of the enterprise are discussed in more detail in the next section.

Activity	Responsibility
Financial Oversight	Enterprise Board
The Board will provide financial oversight and fiscal agency.	
Bookkeeping and Accounting	Enterprise Board
The network will generate a set of accounts payable and accounts receivable tasks, along with normal financial reporting (e.g. income statement, cash flow statement, balance sheet, etc.).	
Network Monitoring	Tribe or outsourced
The enterprise must have a 24/7 process in place to respond to emergency repairs. This can be based on alerts received from dark fiber users and/or active monitoring equipment put in place by the to provide additional alert capability independent of dark fiber customers.	
Break-Fix	Designated break-fix firm
The enterprise must have a contract in place for 24/7/365 emergency repairs to conduit and fiber.	
Equipment Replacement - scheduled	Enterprise staff
Routine and preventative maintenance on the passive network components will be occasional at best, but enterprise staff and/or a qualified fiber contractor must be able to make routine (scheduled) repairs.	
Utility Marking Services	Enterprise staff or third party locating service
The enterprise will have to be registered with the Virginia 811 service and must be prepared to manage locate requests (which have to be completed in a specified period of time. Enterprise staff could be trained to do the locates or a third party could provide this service.	
Site Maintenance	Enterprise staff
Enterprise staff will perform regular maintenance activities at the sites, including mowing, painting, replacing lights, and related maintenance.	
Network Operations	Enterprise staff
Enterprise staff must be able to respond to emergency break-fix alerts and be prepared to manage the repair process on nights and weekends.	
Inventory Management	Enterprise Staff
Enterprise staff will maintain an inventory of in-use conduit, fiber cable, handholes, and patch panel ports, and also maintain the spares inventory.	

Tier 2 Support	Enterprise staff
The enterprise must provide support to dark fiber lessees who report connectivity problems with their fiber strands.	
Tier 1 Support / Direct Customer Support	Enterprise staff
Service Providers provide end user support to their customers.	
End User Billing	Enterprise staff
Customers will get invoiced monthly.	
Sales to End Users	Enterprise staff
Service providers are responsible for selling their services to customer prospects, obtaining contracts, and providing Tier 1 customer support.	
Network Marketing and Awareness	Enterprise staff, PDC, localities
The Enterprise will develop and maintain a modest and ongoing public awareness and marketing effort to ensure that the Enterprise receives the maximum economic and community benefit from the network.	



OPERATIONS AREAS OF RESPONSIBILITY

Once the Project has integrated the existing King and Queen network with new network assets, customers will begin (or continue) to receive service. At that point, the enterprise becomes operational and a variety of ongoing activities begin to take place.

MANAGEMENT AND OVERSIGHT

The Enterprise needs a board of directors and a senior manager responsible for day to day oversight. The senior manager should have a strong business background with experience in successfully starting and managing new businesses.

SERVICES MANAGEMENT

Services are a vital part of any Network. In essence the Service Providers are the customers of the network. The actual network end users (institutions, businesses, and residents) are the Enterprises's customers.

NETWORK OPERATIONS

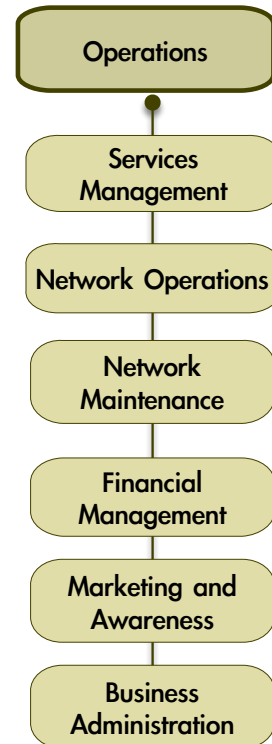
Operations can be managed in-house, but start-up networks sometimes find it less expensive to out-source operations to a qualified firm. Operations must include 24/7/365 activities, and it is generally better in the first several years, when the network is small, to use a service rather than bear the expense of several dedicated technical staff that would be needed to cover nights, weekends, holidays, and vacations.

FINANCIAL MANAGEMENT

The Enterprise will have to maintain a budget, pay contractors and staff, collect revenue, and bill for services provisioned on the network. Bills need to include a level of detail meaningful to customers. During the planning phase, the Enterprise needs to determine several items about billing such as partial month billing, credits for service outages, and credits for bad payers.

Monthly bills need to be created and sent to the service providers. Tracking payment and handing billing disputes needs to be performed. Often the NOC staff are responsible for creating the bills and handing billing inquiries while an accounting office is responsible for sending invoices and tracking payments. In the event of billing disputes the NOC staff, the customer (in most cases a Service Provider), and the accountant are involved in developing a remedy for a billing dispute.

Prudent and careful financial management is needed for accounts receivables and accounts payables, along with other normal bookkeeping activities--chart of accounts maintenance, bank deposits, check writing, and other related tasks. A part time bookkeeper may be an affordable solution in the early days of operations.



ACCOUNTING BUDGET SUPPORT

As the Open Network is a business enterprise, maintaining an operational budget is required. The network will have operational costs such as pole rentals, locate costs, annual equipment maintenance, electric bills, debt service, or other costs. Having an accounting office is often out of the reach of a small network so these functions can be completed by an outsourced company or even completed by NOC staff.

MARKETING AND AWARENESS

The Enterprise is responsible for marketing the network. Marketing incentives can be time based, geography based, or revenue based. While service providers will be responsible for their own marketing and sales efforts, an ongoing modest awareness/marketing campaign is required to ensure that customer take rate targets are met.

ANNUAL PRICING REVIEW

The Project should plan to have all tower leases renew around the same time so that it may review the market and make adjustments to the monthly lease rate if necessary. Working with providers before making any changes will be an important factors in meeting the Project's goals.

NETWORK OPERATIONS CENTER (NOC)

Network Operations Center or NOC is a 24/7/365 staffed facility with many tools to manage, operate, debug and assist the NOC staff in identifying the root cause of issues reported, in monitoring network electronics, and to keep the network running smoothly. The NOC operators will be available during extended business hours (Monday-Friday, 8 AM to 8 PM) to deal with routine customer needs, and the NOC will provide 24/7/365 monitoring the network and connected customers for outages and follow up repairs. The NOC can be an outsourced remote center or can reside on the network.

HELP DESK

The Enterprise is responsible for handling Tier 1 support to their customers--the network end users. This Help Desk is part of the NOC, and should be staffed to handle problems during both normal business hours and on nights and weekends.

MONITORING

One of the tools available to the NOC is software which monitors the active elements of the network. Some monitoring systems are available from the manufacturers of the network hardware, known as Element Management Systems (EMS), as well as systems which use standards-based software tools to monitor the network for problems. Monitoring takes a variety of forms, including a standard uptime monitor that periodically checks the status of the Network Elements as well as more sophisticated tools that monitor bandwidth, CPU cycles, temperature, fan speeds, etc.

Monitoring systems are useful not only during troubleshooting with a service provider or end user but as well as providing proactive capabilities to prevent problems or outages. As an example, a

sophisticated monitoring system could provide NOC technicians with alarms when bandwidth exceeds a set threshold, allowing the technician to take proactive actions to prevent an outage.

TICKETING

Trouble Ticketing or just Ticketing is a system or process that uses software to manage and track reported troubles, outages, orders, or questions submitted online via Web forms or via email and phone calls. NOC staff are responsible for tracking all tickets and timestamps as well as allowing the providers visibility into the system to see what action is being taken or what is planned for an outage or other problem that arises on the network.

Ticketing systems include Web based portals, text messaging tools, and e-mail based responders, and can receive and respond to tickets in a variety of ways including phone calls, emails, SMS, or other means.

OUTAGE REPORTING

When an outage is discovered via monitoring or a call to the Help Desk, outage reports can be broadcast to Service Providers or end users. This type of proactive reporting can reduce the burden of calls to the NOC by notifying the service providers of pre-existing outages.

PROVISIONING AND ORDER MANAGEMENT

Provisioning is the act of setting up services on the network. Provisioning can be for service providers, end users, or can be required for core network requirements. For service provider and end user provisioning, the end result is usually a billable event such as adding, changing, or terminating an end user service.

Once a new customer has been identified, the fiber or wireless link has to be provisioned. This process is initiated via a self service portal, an order ticket, or some other automated mechanism and flows through a defined process which may include external work orders to contractors and ultimately ends in a billing event when the customer is active and will be billed for services.

While provisioning is the setting up of services on the actual network elements, Order Management is a higher level activity that can include dispatch of physical assets, estimating of network build costs, or processing a more complex order for Network changes. Order Management can be provided through a Ticketing system or can be a stand alone system in larger networks.

PERFORMANCE REPORTING AND METRICS

To provide proactive feedback to network operators, owners, and service providers there can be systems dedicated specifically to reporting on the health and reliability of the network. Metrics can also be created out of the ticketing system, provisioning system, or order management. Overall the performance of not only the network, but also of contractors, outsourced providers, vendors, and even data on service providers can be reported on and used as a mechanism to view the health of the network and entities charged with providing services. As an example, a ticketing system report could indicate the average length of time before a ticket is addressed by NOC personnel, or the

monitoring system can report on the total number and average length of time for outages in a given period.

CHANGE MANAGEMENT

Any time there are changes made to the network via provisioning, repair, or otherwise, it is vital that those changes be managed and tracked. Simple methods of Change Management include keeping a record of every update in a spreadsheet, or keeping configuration files in a directory on a server. More complex methods involve using change tracking software to automatically capture network changes and provide capabilities for reversing changes in the event of an outage or interruption of services.

NETWORK MAINTENANCE

While routine maintenance (e.g. replacement of worn out equipment) may be limited in the first year or two of operations, non-routine/emergency maintenance support must be in place as soon as the network has customers. Maintaining network equipment involves regular patching of firmware or software upgrades as well as performing physical maintenance if required. Network elements must be patched when critical security or performance updates are released from the manufacturer. Maintenance which can potentially cause an outage need to be scheduled with the NOC and these events often occur as scheduled maintenance windows during non critical times (typically on weekends at 2-5am). Examples of required physical maintenance can include keeping equipment in clean working conditions such as cleaning fans, testing UPS systems, or replacing batteries as needed.

SECURITY

Security is both a physical and logical problem in keeping networks operational. Physical security includes protecting expensive or sensitive equipment with access controls or locks. Logical security can include required password rotation, keeping equipment on the latest security release of software, and protecting confidential information of end users and service providers. Firewalls are needed to protect the network not only from outside threats, but the network needs to be protected against internal attacks as well.

OUTSIDE PLANT MAINTENANCE

Wireless networks are susceptible to occasional damage from severe weather, including lightning strikes, ice damage, and water damage. Radios near the tops of towers experience extremes of heat and cold repeatedly, and repairs or replacement is more frequent than for fiber network equipment, which is usually installed at ground level in more protected cabinets or shelters.

Fiber is occasionally damaged (e.g. tree limb falling on aerial fiber, backhoe damaging buried fiber), and a qualified firm must be available to make repairs within two to four hours. This service is almost always outsourced to a qualified private sector company and is referred to as “break-fix”

In addition to break-fix underground utilities often need to be “located” when new construction, street repairs, or other activities disturbing the earth occur near buried cable. The network should

belong to the local dial-before-you-dig service and should respond to tickets originating from those systems. Utilizing an accurate inventory of the network if digging will occur in close proximity to owned plant, NOC staff will dispatch a locator to locate the fiber cable. This is often part of the break-fix contract, but can be outsourced to another entity specializing in such work. In small municipal networks, the Public Works department will often locate fiber optic cable as they are already locating water and sewer assets.

BACKUPS AND CONFIGURATION MANAGEMENT

NOC staff are responsible for keeping secure backups of all Network Element configurations, backups of critical systems mentioned in this chapter including ticketing, provisioning, and billing. Backups should be stored locally for a quick restoration in the event of a failure, but also should be kept offsite in a physically diverse location.

INVENTORY MANAGEMENT

Keeping track of all Network Elements and all network assets is key to keeping a network reliable and operational. Inventory systems should:

- Track equipment location, in-service dates, serial numbers, model numbers
- Link equipment with end-users or service providers
- Provide location reports for technicians and service providers
- Store logical information such as IP addresses, OS versions, etc.

Managing the physical assets is also required in a network. Tracking all Outside Plant (OSP) assets reduces the time needed to find and solve outages, and reduces the time required to provision new services, or create work orders for changes to the physical network. A network asset management system provides an overall view of the physical state of the network. Fiber optic OSP management systems should:

- Track conduit, cables, buffer tubes, individual fiber, splices.
- Generate reports and information for splice work.

Wireless OSP management systems should:

- Track all in-service radios (location, model, type, serial number).
- Maintain adequate spare radios for all makes/models in-use.

OUTREACH

Outreach is often required to make sure that the local and regional community are aware of the network. Working with local economic developers, chambers of commerce, local technology companies is often required. Additionally municipal and Open Access Fiber projects receive regional and national awareness. Local, regional, state and even national elected officials need to be aware of the network, how it was funded, and how it is benefiting local constituents.

GROWING THE NETWORK

Often the network is built in stages. There may be a pilot phase or a small deployment followed by larger deployments. These deployments need to be planned and managed, but the PamunkeyNet board of directors should constantly be looking for new funding opportunities like state or federal grants. While the network is being expanded, the NOC staff will be responsible for bringing newly constructed segments of the network into operations.

Operations Costs and Revenue

Annual Expense Projections

Budget Item	Description	Annual
Network Ops	Outsourced network monitoring and operations contract expense.	\$48,000
PamunkeyNet Staff	At least three staff members will be needed during the first two years (Project Manager, bookkeeper, and technician).	\$225,000
Legal Services	Legal counsel on an as-needed basis for review of construction and service contracts, IRU agreements, and other business documents.	\$7,500
Accounting	Part time accounting and bookkeeping services will be required	\$4,800
Maintenance	Generators require periodic maintenance, along with other routine tasks. This can be performed by PamunkeyNet staff.	\$2,400
Training	PamunkeyNet staff will require technical training on an annual basis, including fiber construction techniques, wireless network management, fiber splicing, and server administration.	\$25,000
Internet backhaul	PamunkeyNet will follow the King and Queen model of providing retail Internet, purchased from a qualified service provider.	\$72,000
Spares/Supplies	Spare radios, replacement fiber equipment, cables, and other supplies.	\$24,000
Utilities	Each tower site requires electric power, and the colocation facility will also require electric service. Will vary depending on number of sites.	\$12,000
Locates	Once some fiber has been constructed, it will be necessary to provide locates. PamunkeyNet staff can be trained to do this work.	\$1,500
Pole Use Fees	No aerial fiber is anticipated for the Technology Corridor first phase fiber, but aerial fiber may be deployed in later phases.	\$0
Storage	Storage space for spare conduit, fiber, splice closures, handholes and other spare parts will be needed. A rental storage unit or used shipping container would be adequate.	\$1,800
Site Leases	Some towers and/or fiber switch equipment may be placed on private property which would require annual site leases. This will vary depending on the availability of local government properties that may be available for tower placement.	\$12,000
Break-Fix reserve fund	PamunkeyNet will need a fund to cover fiber damage and wireless repairs. A regular annual contribution to the fund will be needed.	\$35,000
Insurance	Some insurance is likely to be needed (general liability, unemployment, asset insurance, umbrella policy).	\$15,000
Office administration	Expenses related to providing office space, office equipment (printers, computers, laptops, etc), office supplies for two employees.	\$34,200
Marketing activities	PamunkeyNet will need a well-designed and consistent marketing plan to ensure the project meets its customer subscriber goals.	\$35,000
Total Costs	Projected annual expenses	\$555,200

REVENUE DISCUSSION

Operating as a retail service provider, PamunkeyNet will need 1000+ customers to break even by the end of the second year. The table below shows one possible scenario for expected revenue. Several assumptions have been made in this projection.

- PamunkeyNet will have a cash reserve adequate to fund operational shortfalls (revenue does not exceed expenses) in the first two years. This should be a minimum of 50% of expected expenses, or about \$500,000 for the first two years.
- PamunkeyNet has a capital fund for adding fiber customers that are adjacent to the Technology Corridor fiber (i.e. within 500 to 1000 feet). Some fiber drops have been included in the cost estimate, but adding more customers will require funding the fiber drop connections (average about \$1500/drop).
- The initial capital funding of PamunkeyNet includes the full cost of building the Technology Corridor fiber and colocation facility.
- The initial capital funding of PamunkeyNet includes the full cost of adding a minimum of ten new wireless access points on new or leased towers.
- PamunkeyNet takes over operations of the existing King and Queen network, including all existing customers.
- Each of the towers in the expanded PamunkeyNet (about 15 access sites) is able to have an average of 50-60 customers per site at the end of the first two years (15 sites * 60 = 900 customers).

Revenue Projections

Service Item	Description	Monthly Fee	Estimated Customers	Projected Annual Revenue
5Meg down/1 Meg up Residential Wireless	Expected to be the most popular and affordable service.	\$35	650	\$273,000
10 Meg down/10 Meg up Residential and Small Business Wireless	A higher bandwidth service that would meet work from home needs.	\$90	200	\$216,000
100/25 Business class fiber service	Business class GPON fiber service.	\$150	12	\$21,600
Gigabit residential fiber service	Best effort GPON Gigabit residential service	\$75	10	\$9,000
Gigabit business fiber service	Business class Active Ethernet fiber service	\$850	3	\$30,600
Installation fees	Non-recurring wireless and fiber one time installation fees			\$15,000
Total	Total estimated annual revenue			\$565,200

Funding the Enterprise

FUNDING NEEDS

PamunkeyNet will need a basket of funding to support various tasks, activities and capital expenses. These include:

Capital Expenses — As outlined in previous portions of this report, there are three major capital expenditures: the Gigabit fiber backbone, the Telework Center colocation facility, and the wireless expansion to all of the Middle Peninsula counties.

Operational Expenses — PamunkeyNet, managed carefully, should have a growth path to sustainability within two years, but will need a cash reserve to cover revenue deficits, especially in the first year. While the goal should be that revenue will cover all operational expenses as quickly as possible, an operational reserve will provide a financial cushion for early operations.

Training — While training is a relatively minor cost compared to capital and operational expenses, funds to train Pamunkey tribe members will be a critical success factor.

Customer Connections — The capital cost estimate includes the cost of connecting some fiber and wireless customers, but successful networks have a strategy for underwriting one time connection fees. This is particularly important for adding new fiber customers, where the drop cost connection from the existing backbone can be anywhere from \$750 to several thousand dollars. Some projects subsidize these costs directly, and others have had success providing low interest or no interest financing.

Fiber Expansion — PamunkeyNet will be successful financially in part by continued expansion of the fiber network to other areas of the PDC. Fiber customers, especially business fiber customers, provide higher levels of revenue that can help fund further expansion.

FUNDING OPPORTUNITIES

As a Federally recognized tribe, the Pamunkeys bring a unique opportunity to the Middle Peninsula. As a sovereign nation, the tribe is not subject to a number of state-level and Federal regulations that have often hindered other community broadband efforts. Federally recognized tribes are not subject to Federal taxes, among other benefits.

Federally recognized tribes are also eligible for a variety of Federal funds that are not available to other communities and local governments. These include:

USDA Community Connect grants — Tribes are eligible for these telecommunications grants. Grant funds are limited, but many communities have difficulty meeting the unserved/underserved requirements. The Pamunkey tribe may be well-positioned to be competitive.

USDA Distance Learning and Telemedicine — The DTL program is designed to assist rural areas with education and health needs. Eligible entities providing education and medical care via

telecommunications include Indian tribes or tribal organizations, state or local units of government, consortia, and private for-profit or not-for profit corporations. 15% match is required.

Tribal Mobility Fund — On Tribal lands, eligible telecommunications carriers (ETCs) that provide service on these lands, have access to spectrum capable of 3G or better, and are financially capable of providing service are eligible to participate in spectrum auctions. Provisions have also been provided for a tribally-owned or controlled entity that is not yet an ETC to participate in an auction as long as that entity has a pending ETC designation application using a short-form application in time to meet a set deadline. Providing cellular voice/data services is more technically challenging than broadband only wireless services, but there may be opportunities for the tribe to partner with a cellular carrier for certain areas of the region.

FirstNet — FirstNet is the First Responder Network Authority, an independent authority within the Department of Commerce's National Telecommunications and Information Administration (NTIA). Congress charged FirstNet to take "all actions necessary" to build, deploy, and operate the network, in consultation with Federal, state, *tribal*, and local public policy entities. The Act provides \$7 billion in funding towards deployment of this network, as well as \$135 million for a new State and Local Implementation Grant Program administered by NTIA to support State, regional, tribal and local jurisdictions' efforts to plan and work with FirstNet to ensure the network meets their wireless public safety communications needs.

Dept. of Homeland Security — More than \$1.6 billion was allocated to DHS grant programs provide funding to state, local, *tribal* and territorial governments to improve the nation's readiness in preventing, protecting against, responding to, recovering from and mitigating terrorist attacks, major disasters and other emergencies. There may be significant opportunities for PamunkeyNet to partner with public safety initiatives in the region to qualify for these funds.

USDA Telecom Infrastructure Loans and Loan Guarantees — Federally recognized tribes are eligible for these loan packages. A loan may not be ideal for funding initial capital expansion, but once PamunkeyNet is financially in the black, loans for fiber expansion could be useful source of funding.

Dept. of Justice Coordinated Tribal Assistance Solicitation — This program is intended to address tribal criminal justice and public safety needs. PamunkeyNet and local public safety officials may be able to combine efforts to qualify for these funds.

HUD Indian Community Development Block Grants — Eligible applicants for assistance include any Indian tribe. Provides funds to eligible grantees for housing rehabilitation, land acquisition, community facilities, infrastructure construction, and economic development activities.

Planning for Success

With more than a dozen years of operation for a variety of community-owned network infrastructure projects around the country, there is very little “experimentation” that is still necessary. With more than three hundred communities making investments in broadband infrastructure, there is now enough information about what works and what does not work to be able to identify best practice across nearly all areas of operations, planning, management, and finance.

DEVELOP PARTNERSHIPS WITH PUBLIC SAFETY

The Project should develop partnerships with public safety entities in the region. These partnerships could be expanded as well as new partnerships created to jointly work on activities involving mapping and needs assessment, tower siting, pursuing grant funding, advertising and marketing, and others.

TRAINING IS ESSENTIAL

If PamunkeyNet is to grow into a sustainable tribal enterprise with good jobs, training of tribe members with the aptitude and interest for technically challenging work will be essential. PamunkeyNet should develop a partnership with Rappahannock Community College (RCC) and other technical training resources to ensure that over a period of two or three years, more tribe members have the qualifications and training to join the PamunkeyNet staff. Over time, the goal should be to reduce reliance on outsourced resources.

RCC currently has some technically oriented courses that will be useful, but additional programs like the Cisco Network Academy and Microsoft server and networking certifications (e.g. MTA, MCSA, MCSE) will be important to develop workers with technical skills not just for PamunkeyNet but to create a pipeline of trained workers for private sector companies that want to locate in the fiber-enabled Technology Corridor.

OUTSOURCE WHERE SENSIBLE AND ECONOMICAL

Overstaffing on start up networks has been a common source of early financial difficulties for some community broadband projects. Given the relatively small scope of the proposed initial projects, PamunkeyNet should seek to outsource some maintenance and operational tasks where using internal staff may be more expensive.

USE GRANTS PRUDENTLY

Grants can be extremely important in the early stages of an effort to support planning activities and/or to fund a Phase One build out initiative. But grants rarely will allow spending on operational expenses. Grants should be used as one time cash injections to support very specific capital expansion goals (like the initial wireless and fiber “phase one” portions of PamunkeyNet). Communities that have relied too heavily on “the next grant” as a key source of expansion or operational funding usually experience financial problems within two or three years.

MANAGE FINANCES

Broadband infrastructure projects require hard-nosed financial oversight. Projects that have developed financial problems have usually over-estimated early revenue, under-estimated expenses, and/or simply spent too much without aligning expenses with revenue. Volunteer board members who are contributing time while also maintaining a full time job (often in local government) may not provide enough financial oversight to ensure that staff use the budget as a tool to measure financial performance.



USE MARKET DEMAND TESTING TO DRIVE EXPANSION

The initial business plan should have a minimum three to ten year projection of connected premises (i.e. the take rate), including K12 schools, local government facilities, large and small businesses, health care facilities, and residential customers (if fiber to the home is part of the business plan). Take rates directly affect revenue: if take rate projections are not being met, revenue shortfalls are likely. Take rates (both raw numbers and month to month growth rates) should be analyzed at least quarterly (monthly would be preferable).

INCREASED WOOD UTILITY POLE USE

Tree cover is a constant problem for rural residents and businesses, as good line of site is required for fixed wireless Internet services. Even newer technologies like white space and LTE systems work better with clear line of sight to distant towers.

The increased use of wooden utility poles is already common in some other Virginia counties, and increased use of this technique to get the customer CPE radio/antenna above tree cover is a relatively simple solution.

The utility poles would normally be placed on private property, subject to existing or updated ordinances governing the placement of wooden utility poles. The local government would have no responsibility for maintenance and repairs.

Depending on the source of the poles and the location where it is mounted the cost of installing a new pole with wireless equipment could be in the \$10,000 to \$15,000 range. Major cost factors include the cost of moving construction equipment to site, the cost of labor, and the cost of shipping the pole. At remote locations the cost to install a electric utility service can also be high. This is a conservative estimate for a single pole. Constructing multiple sites at once and identifying local sources of labor could reduce the cost substantially. Some Virginia counties provide “by right” permitting of these poles if they are placed on private property, which can reduce the cost of installing them.

PLAN FOR MARKETING AND PUBLIC AWARENESS EFFORTS

If the Project move forward, it will be necessary to have a modest but regular marketing and awareness campaign to ensure that area businesses know that the new network is available, that they know what services are available on the network, and they know how to order service.

PLAN FOR EXPANSION

Most community-funded efforts start small. This minimizes financial risk. But some projects tend to stall out after the first year or two. The underlying problem is twofold: even small networks have a certain amount of fixed operational costs regardless of size, and the network needs enough revenue to pay those expenses, as well as make principal and interest payments on any loans. The second problem is that network infrastructure wears out and needs routine maintenance. Lack of funding to keep the network in good condition will degrade service over time. The solution is to have an expansion plan (which could be modest) that contributes to revenue growth over time.

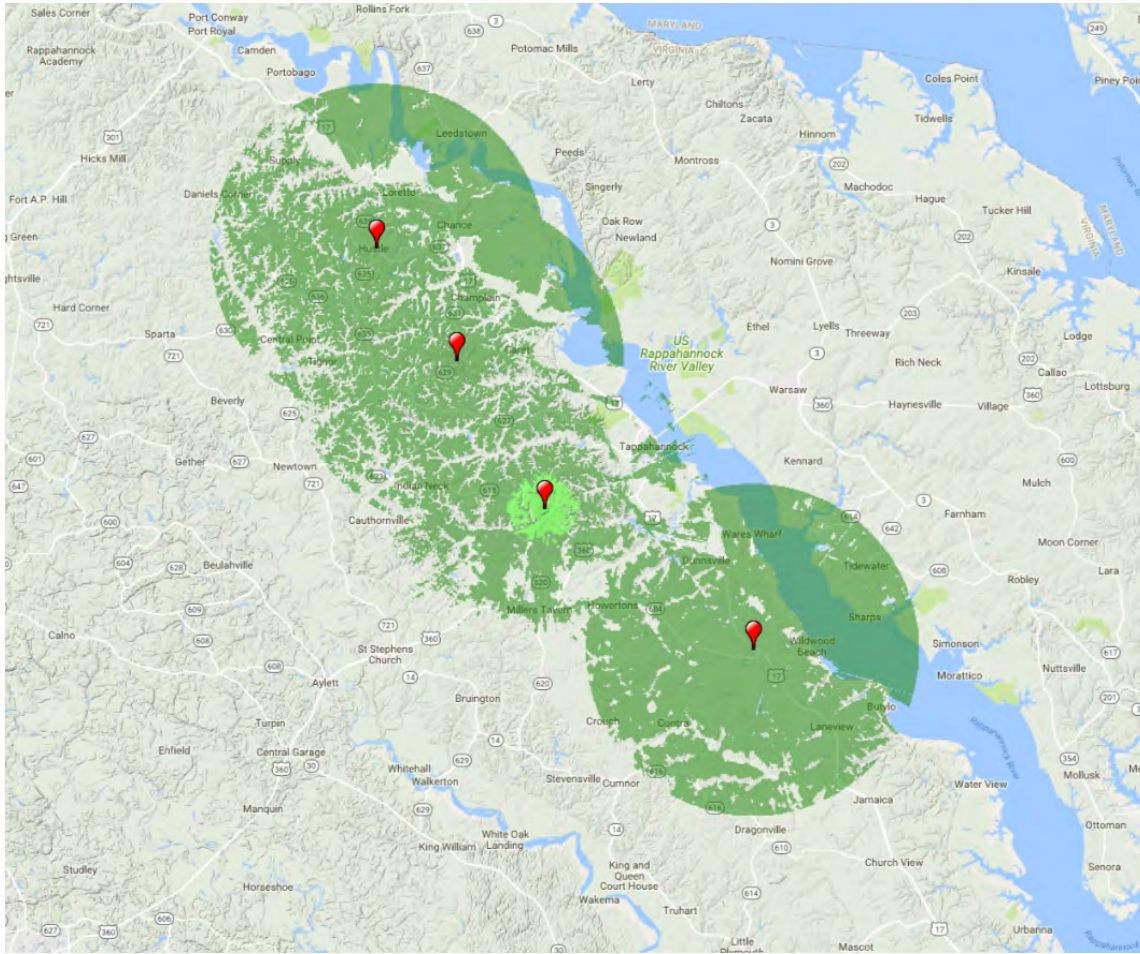
BUDGET FOR CUSTOMER CONNECTIONS

If the network is going to achieve financial sustainability, new customers have to be added on a schedule that matches the financial projections. For wireless networks, the cost of the customer radio installed at the premises has to be included in growth cost projections. For fiber networks, this means the project must have the funds to support adding customer “drops” from the distribution fiber on poles or underground in right of way at the edge of the street or road. This is where careful budgeting and adequate funding is a necessity. The worst possible outcome is to have business and residents requesting a connection to the network but having a lack of the funds to make that “last hundred feet” connection. There are a variety of charge back and fee-based strategies for raising the capital needed to complete drops, and a plan that supports funding of new customer connections is essential.

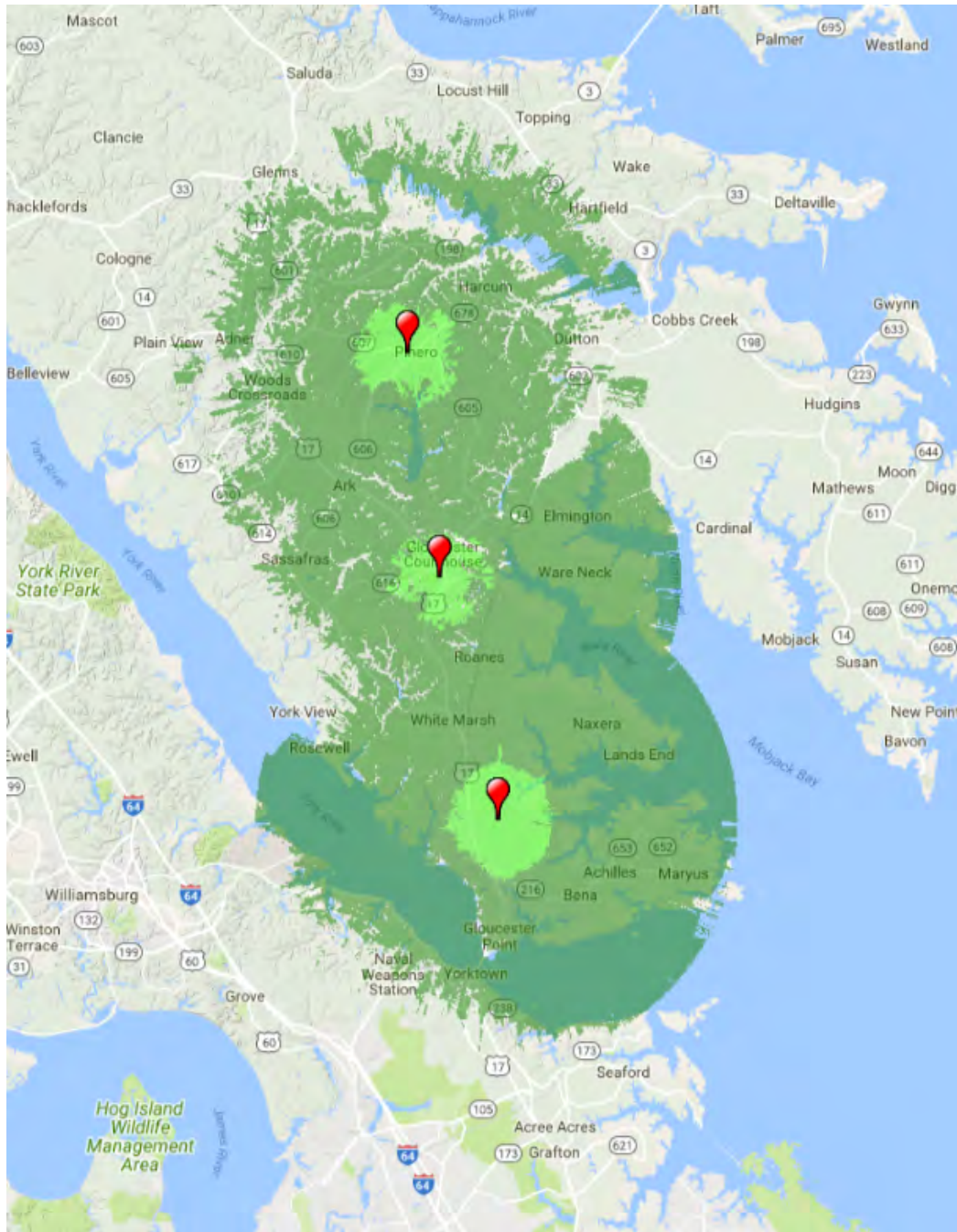
MAINTAIN A TOWERS OPPORTUNITY MAP/LIST

The Project should maintain a list or map of wireless tower opportunities. At least quarterly the Project should reach out to local planning and permitting departments to see if any new towers are under development in the region and identify co-location opportunities. The list could be expanded to include underground projects and available properties for tower development.

ESSEX STUDY



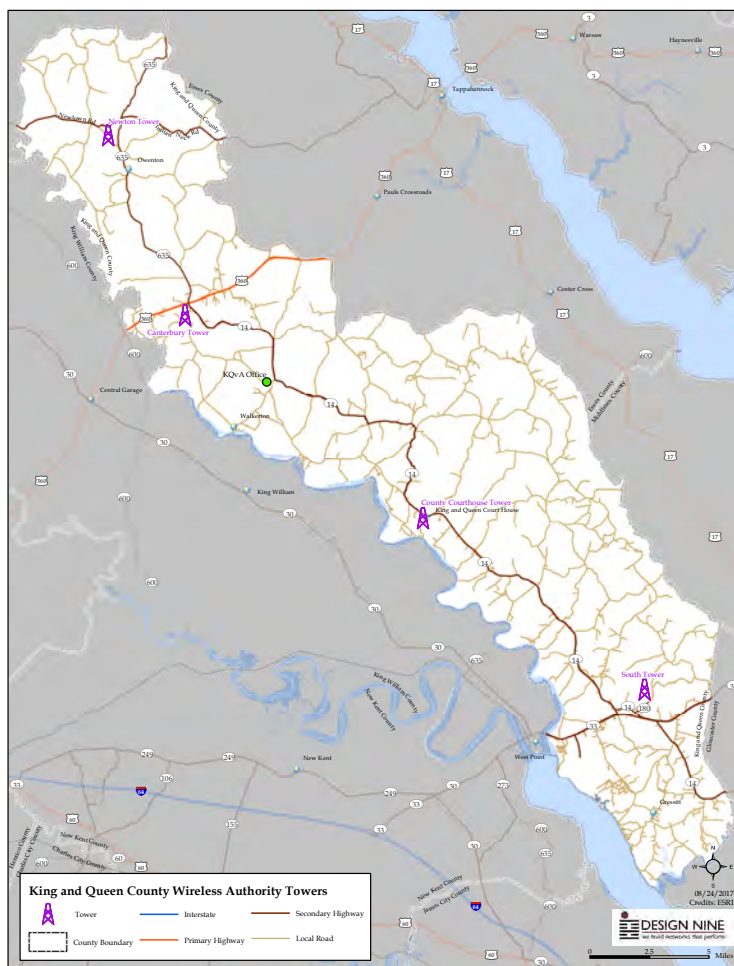
GLOUCESTER STUDY



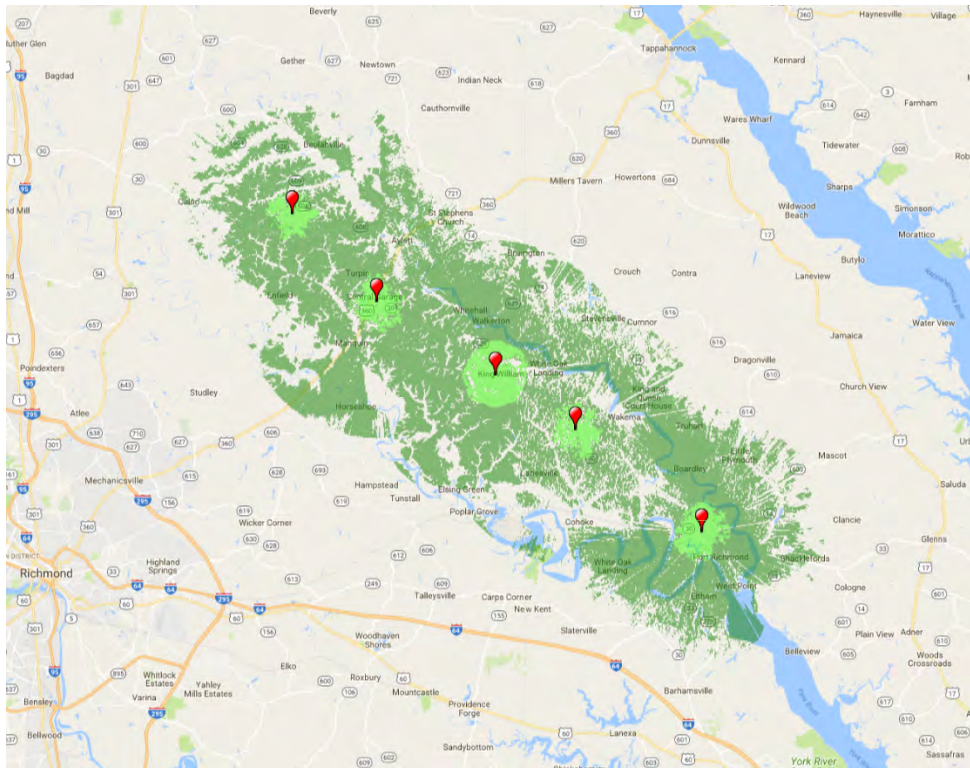
KING AND QUEEN STUDY

The existing King and Queen network has existing tower sites (shown in the map below) that provide good coverage throughout the county. The network offers a range of five different wireless services. PamunkeyNet will benefit by taking over the existing network and would have a revenue stream from existing customers while new tower sites and the Route 33 fiber is being constructed.

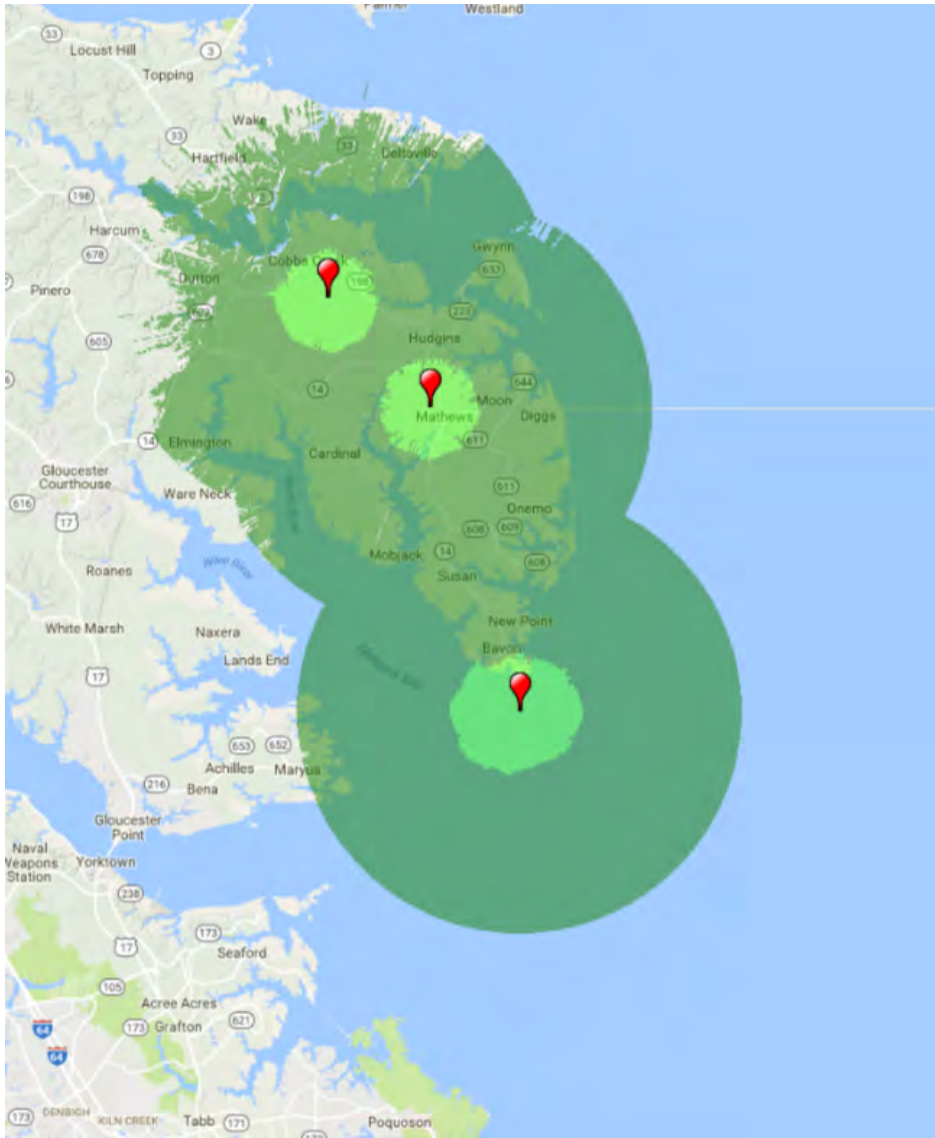
Wireless Service	Description	Monthly Fee
512 Kb down/128 Kb up	Basic “lifeline” service	\$30
1 Mb down/512 Kb up	Standard service for light Internet use	\$40
2 Mb down/768 Kb up	Supports some streaming video	\$50
3 Mb down/3 Mb up	Supports streaming video, some work from home	\$60
6 Mb down/6 Mb up	Small business class service, multiple residential users	\$90



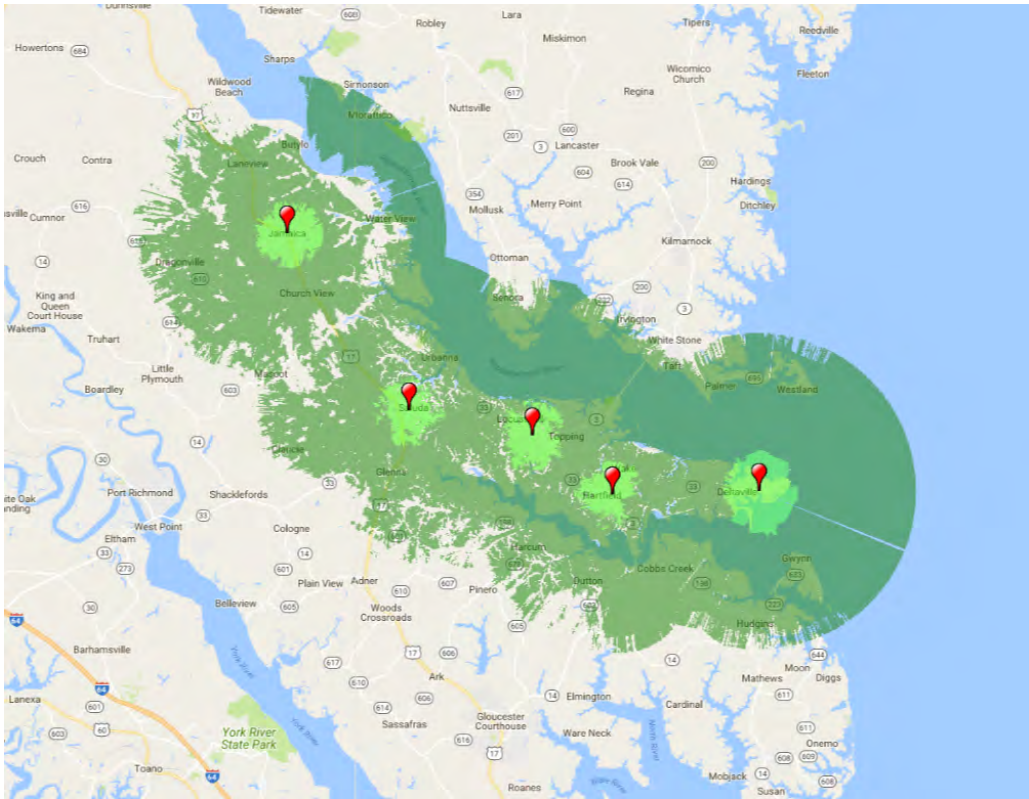
KING WILLIAM STUDY



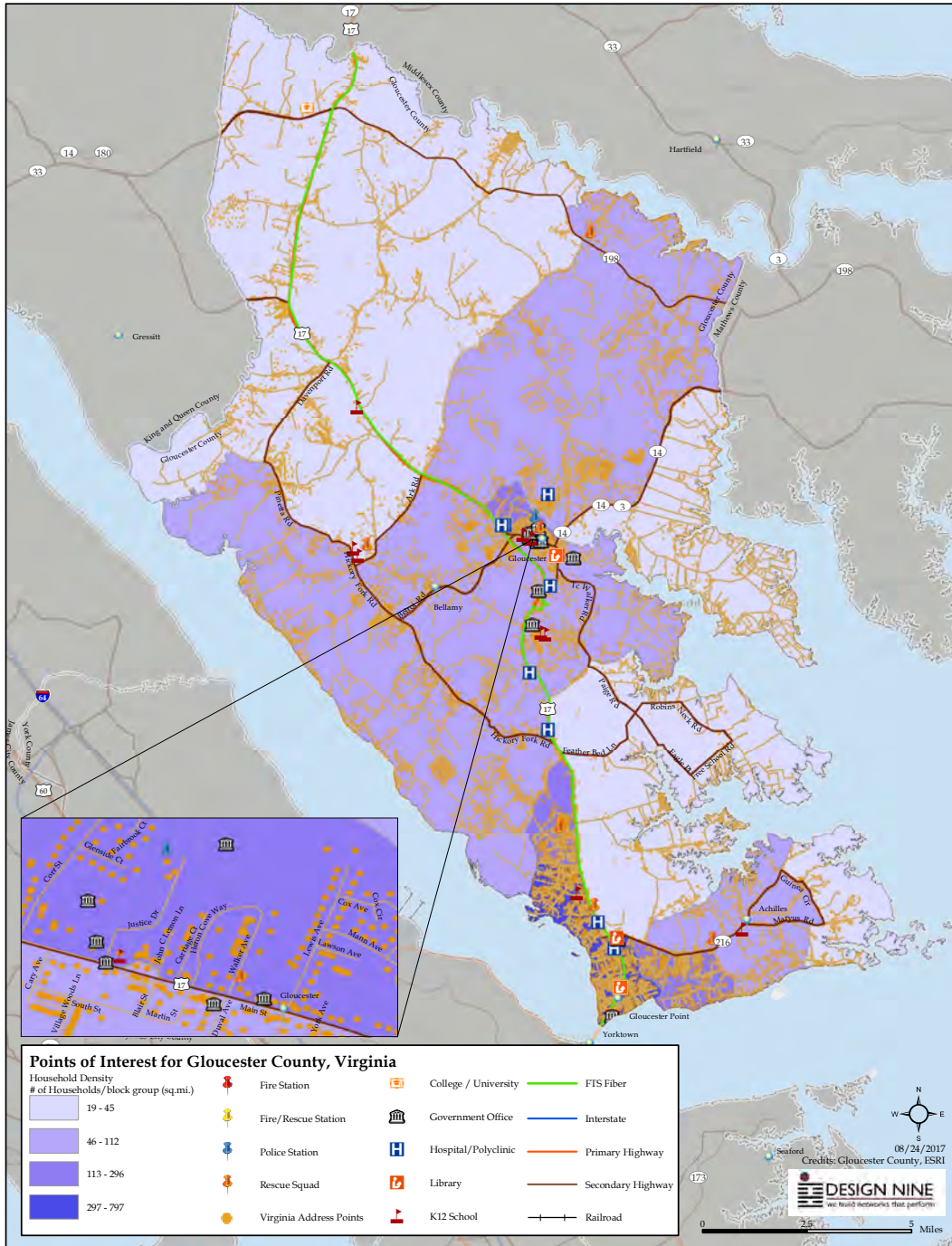
MATHEWS STUDY

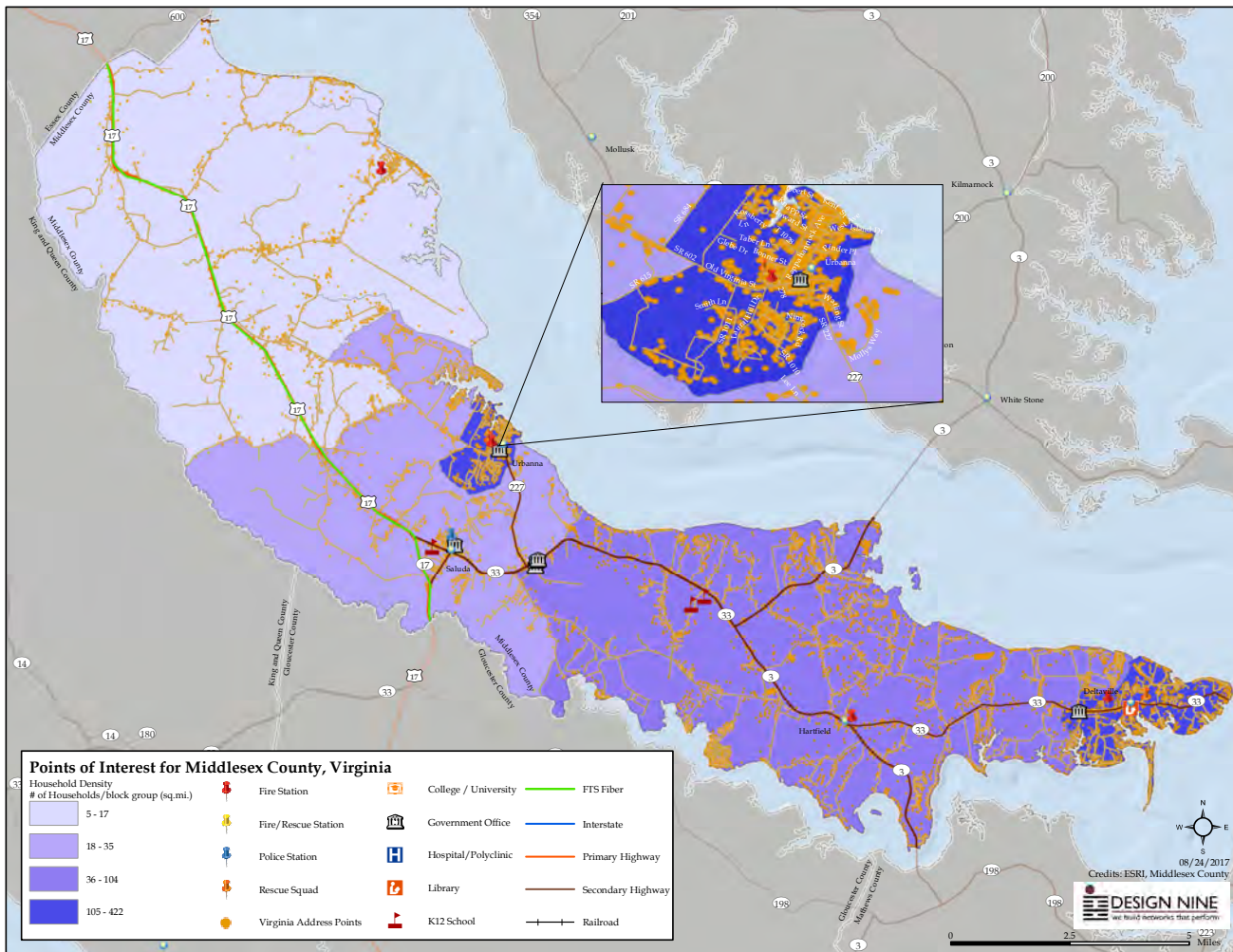


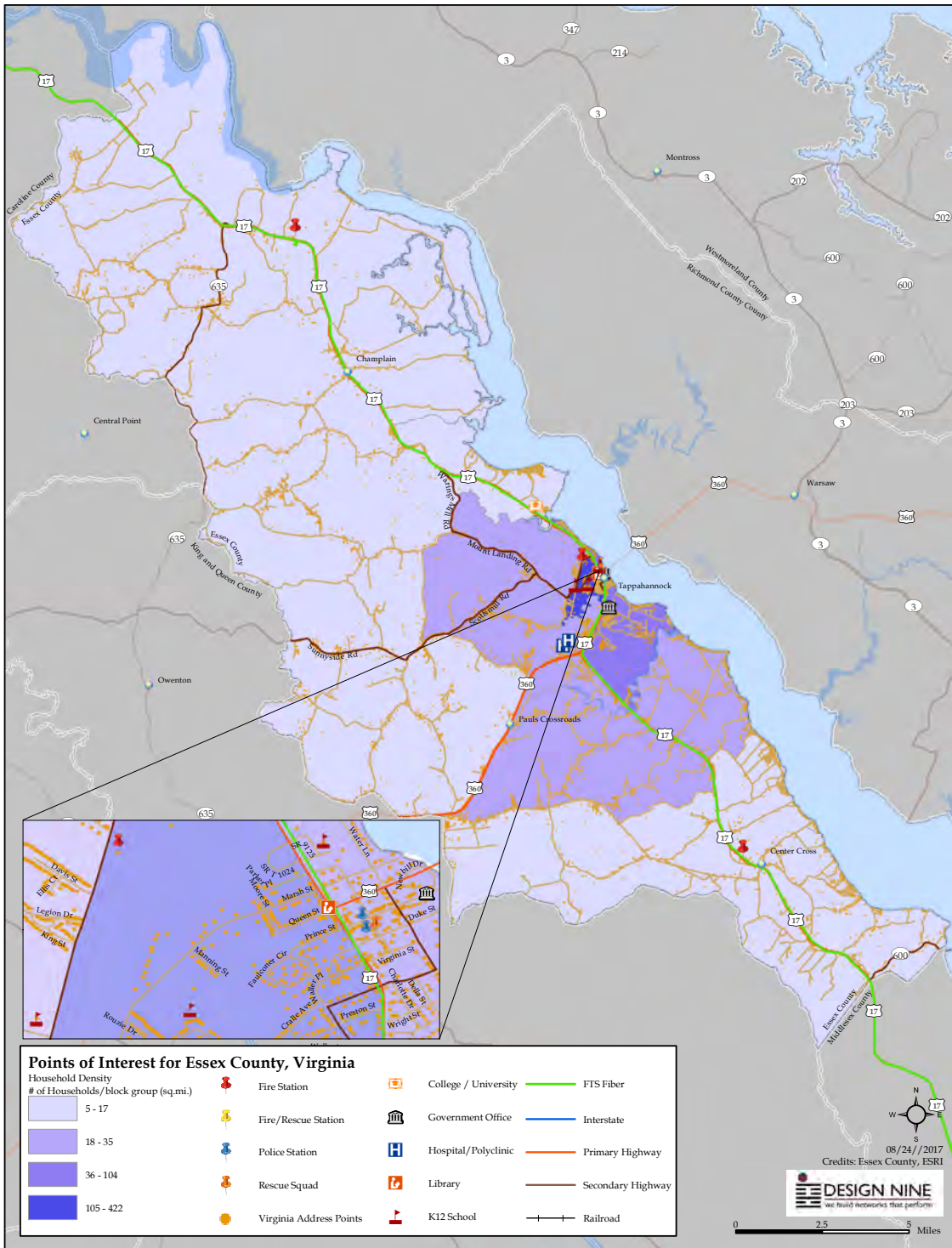
MIDDLESEX STUDY

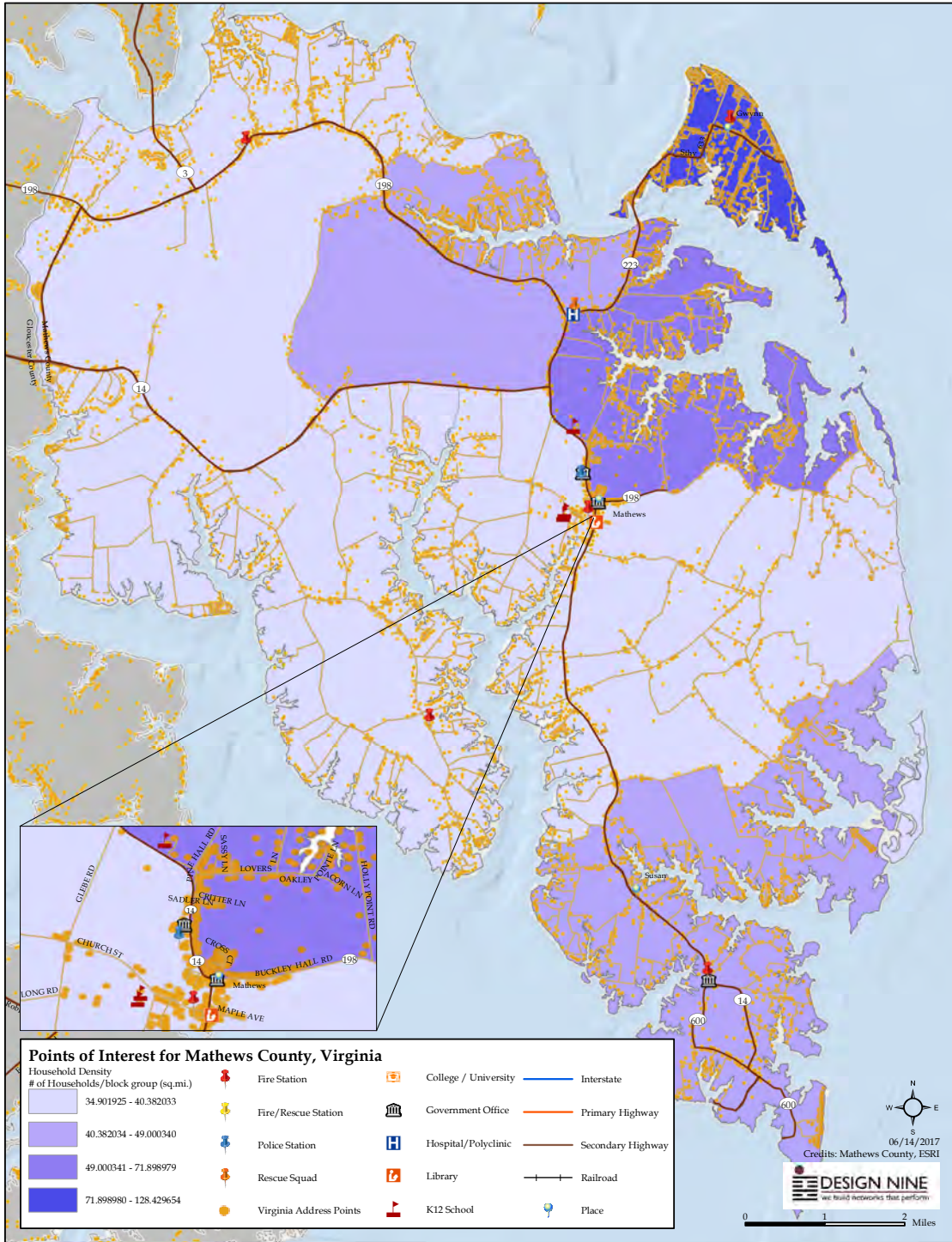


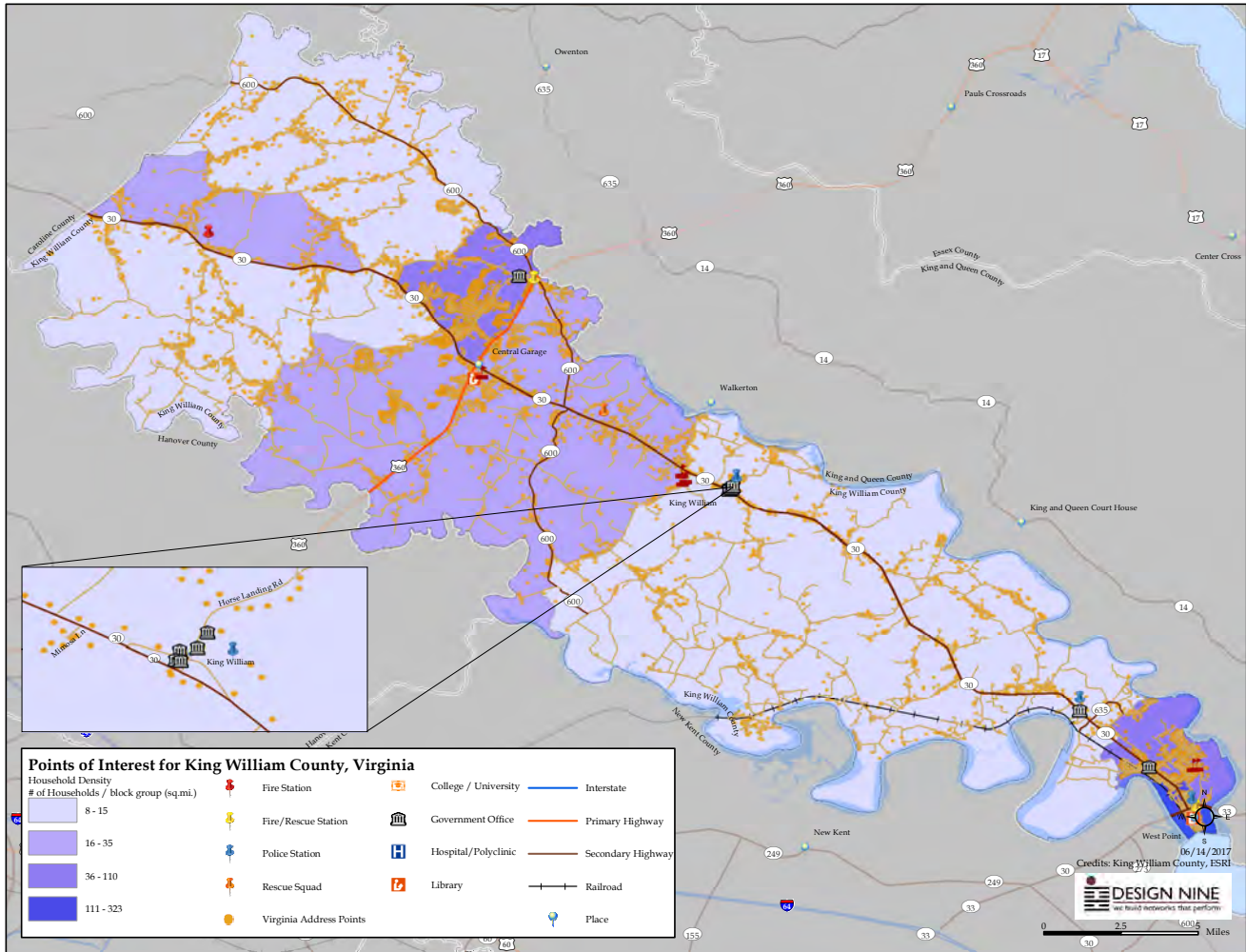
Appendix B: Area Maps

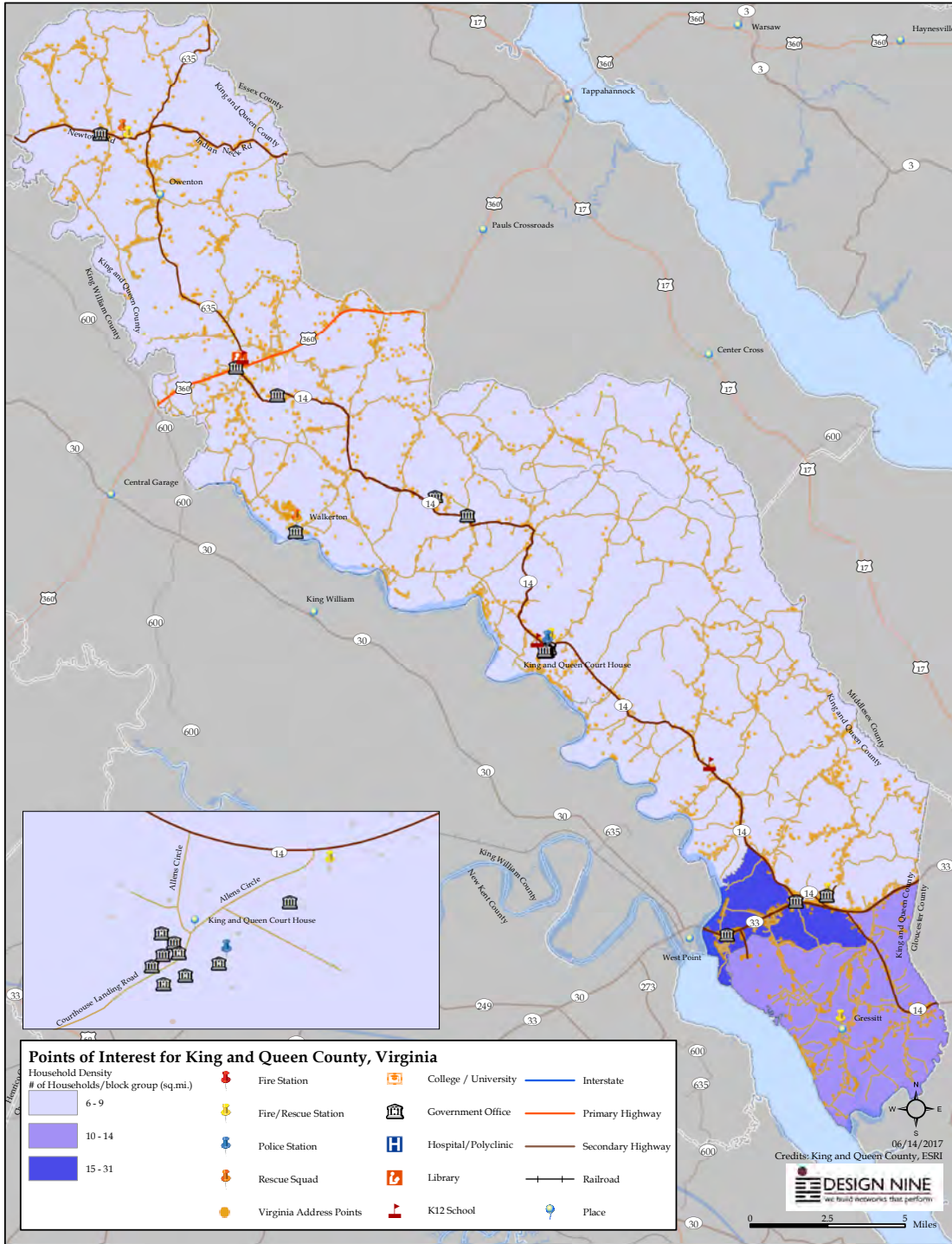


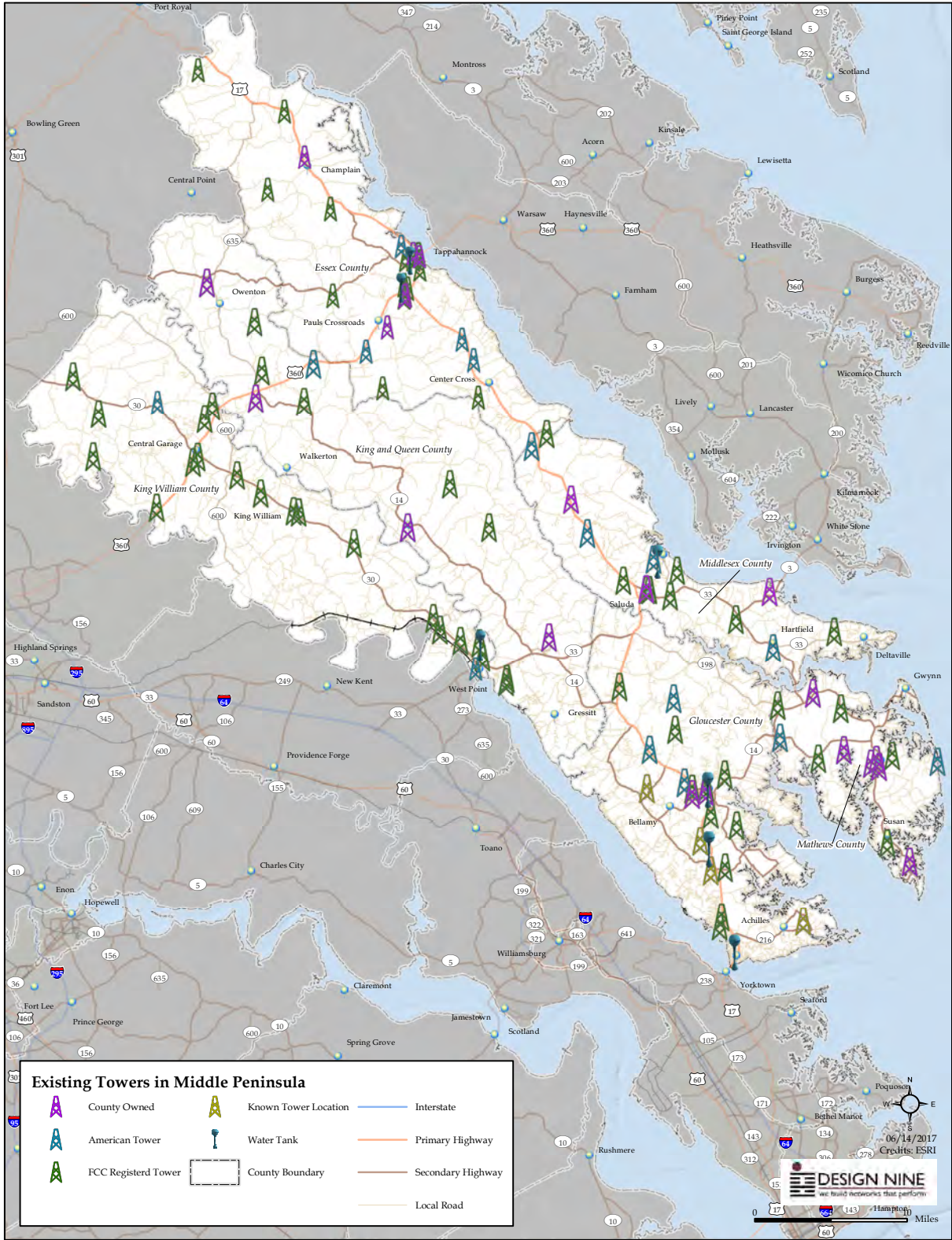












Appendix C: Glossary

Active network: Typically a fiber network that has electronics (fiber switches and CPE) installed at each end of a fiber cable to provide “lit” service to a customer.

Passive network: Refers to infrastructure that does not have any powered equipment associated with it. Examples include wireless towers, conduit (plastic duct), handholes, and dark fiber.

Dark fiber: Dark fiber is fiber cable that does not have any electronics at the ends of the fiber cable, so no laser light is being transmitted down the cable.

Lit network: A “lit” network (or lit fiber) is the same as an active network. “Lit” refers to the fact that the fiber equipment at each end use small lasers transmitting very high frequency light to send the two way data traffic over the fiber.

FTTH/FTTP/FTTx: Fiber to the Home (FTTH), Fiber to the Premises (FTTP), and Fiber to the X (FTTx) all refer to Internet and other broadband services delivered over fiber cable to the home or business rather than the copper cables traditionally used by the telephone and cable companies.

Symmetric connection: The upload and download bandwidth (speed) is equal. This is important for businesses and for work from home/job from home opportunities.

Asymmetric connection: The upload and download bandwidth (speed) are not equal. Cable Internet and satellite Internet services are highly asymmetric, with upload speeds typically 1/10 of download speeds. Asymmetric services are problematic for home-based businesses and workers, as it is very difficult to use common business services like two way videoconferencing or to transfer large files to other locations.

IP video: Video in various forms, including traditional packages of TV programming, delivered over the Internet rather than by cable TV or satellite systems.

Latency: The time required for information to travel across the network from one point to another. Satellite Internet suffers from very high latency because the signals must travel a round trip to the satellite in stationary orbit (22,500 miles each way). High latency makes it very difficult to use services like videoconferencing.

Fiber switch: Network electronic equipment usually found in a cabinet or shelter

CPE: Customer Premises Equipment, or the box usually found in a home or business that provides the Internet connection. DSL modems and cable modems are examples of CPE, and in a fiber network, there is a similarly-sized fiber modem device.

Handhole: Handholes are open bottom boxes with removable lids that are installed in the ground with the lids at ground level. The handholes provide access to fiber cable and splice closures that are placed in the handhole. Handholes are also called pull boxes.

Pull boxes: Pull boxes (also called handholes) are used to provide access to fiber cable and splice closures. They are called pull boxes because they are also used during the fiber cable construction process to pull the fiber cable through conduit between two pull boxes.

Splice closures: Splice closures come in a variety of sizes and shapes and are used to provide access to fiber cable that has been cut open to give installers access to individual fiber strands. Splice closures are designed to be waterproof (to keep moisture out of the fiber cable) and can be mounted on aerial fiber cable or placed underground in handholes.

Splicing: The process of providing a transparent joint (connection) between two individual fiber strands so that laser light passes through. A common use of splicing is to connect a small “drop” cable of one or two fiber strands to a much larger (e.g. 144 fiber strand) cable to provide fiber services to a single home or business.

SCADA: Supervisory Control and Data Acquisition. Used by the electric utility industry and some other utilities (e.g. water/sewer) to manage their systems.

Colo facility: Colo is short for Colocation. Usually refers to a prefab concrete shelter or data center where network infrastructure converges. A colo or data center can also refer to a location where several service provider networks meet to exchange data and Internet traffic.

Backhaul: Typically refers to a high capacity Internet path out of a service area or locality that provides connectivity to the worldwide Internet.

Appendix D: Key Broadband Technologies

In the Middle Peninsula region, there is no one technology that is going to provide a “one size fits all” solution for homes, businesses and institutions. While wireless broadband will be a primary means of access for many if not most homes and businesses, fiber routes in key areas to support economic, community, public safety, and K12 use may be important complementary network assets.

FIBER SYSTEMS

Fiber is a future proof investment. The upper limit of fiber capacity has not yet been found, and off the shelf hardware can handle thousands of times the needs of an average home or business well into the future. Fiber has a life expectancy of thirty to forty years, and may last much longer than that; every year, the number goes up as fiber systems installed in the 1970s continue to perform adequately. A single fiber can carry all the traffic and services needed by a home or business, including voice telephone service, television programming, live videoconferencing, and HD television.

Fiber's primary drawback is its apparent high cost compared to other systems. Fiber is often unfairly compared to wireless, with the misleading conclusion that wireless is much cheaper. Regrettably, most fiber versus wireless studies compare the start up costs for wireless to the thirty year life cycle costs of fiber infrastructure. During a thirty year period, fiber is installed just once, while wireless systems will have to be replaced entirely several times. Properly costed over a thirty year period, fiber is actually less expensive than wireless, with many times the capacity.

Metro Ethernet is a point-to-point service provided over fiber. Metro Ethernet networks can deliver service as far as 50 miles from network element locations and provide speeds up to 10 Gigabits per second (10GB Metro Ethernet circuits are now commonly available from some providers).

Carrier Ethernet is the term used to describe Active or Metro Ethernet deployed to the premises. Carrier Ethernet is available in 100 Mbps and 1 Gbps utilizing a pair or a single fiber strand and speeds of 10 Gbps over a pair of fiber optic strands. Carrier Ethernet can be deployed at distances of up to 50 miles (80km) from the central office.

A Passive Optical Network, or PON, is a fiber optic network based upon a splitter technology. A single PON port can support up to 64 customers utilizing either daisy chained splitters or a central splitter location. For service providers PON is cost effective as it allows the service providers to create "fiber light" networks and fewer network elements. However, PON has many drawbacks including bandwidth limitations due to the shared nature of the feeder fibers as all customers fed from a splitter share bandwidth over a single fiber (or single pair in some networks). A major drawback of PON, if field splitters are used, is the upgradeability of the network which usually requires additional feeder fiber to be deployed which is costly as it is considered a "forklift upgrade."

CARRIER FIBER (ACTIVE) ETHERNET CHARACTERISTICS

Bandwidth	1 Gbps standard
Line sharing	Each user has a dedicated 1Gbps between the premises and the core location.
Latency	Not latent
Symmetric/Asymmetric	Symmetric
Effective Distance	up to 50 miles (10km, 20km, 40km, and 80km optics available)
Services Support	Multiple services, multiple providers
Typical per subscriber build cost	\$3250 - \$3500

PON FIBER (PASSIVE) CHARACTERISTICS

Bandwidth	2.4 Gbps/1.24 Gbps (shared between users on a port). A few 10Gig PON systems are now being deployed because the older PON systems are running out of bandwidth.
Line sharing	Each port is shared by a power of 2 premises (2, 4, 8, 16, 32, or 64) depending on how the network is configured.
Latency	Minimal latency.
Symmetric/Asymmetric	Asymmetric
Effective Distance	up to 25 miles (40km)
Services Support	Multiple services, multiple providers
Typical per subscriber build cost	\$3250

We are now seeing even small and medium-sized businesses asking for fiber connections. Fiber is the only transmission system that will be able to deliver all the services businesses and residents will expect and demand in just a few years. Communities that choose to delay fiber infrastructure investments will be at a severe disadvantage in the next several years when trying to attract and retain businesses and workers.

In business areas of the region, fiber is an absolute requirement to retain existing businesses and to attract new ones. Many of subdivisions could have fiber within the neighborhood and wireless backhaul, and multiple services (e.g. video, Internet, voice, data backup) could be delivered within the neighborhood by fiber. In growth areas, retail and office space would become more valuable with high performance fiber availability.

FIXED POINT ACCESS WIRELESS

Fixed point wireless Internet access via private sector providers is already available in some areas of the region. This service introduces additional competition for Internet access customers, which can lower prices and create incentives to offer better customer service from the providers. Over time, most fixed point Internet users (five to seven years out) will want to migrate to fiber connections which will have the capacity to provide a much wider range of services, including HD TV, telemedicine, and tele-health, among other applications.

Fixed point wireless infrastructure investments (e.g. locations for towers, towers, fiber and duct backhaul connections) can be re-used over time to support mobile wireless services and long term public safety voice and data services.

The goal would be to identify existing tower sites that could be reached affordably with fiber. Fiber access to these towers will lower the cost of backhaul for local wireless broadband providers while simultaneously allowing them to increase bandwidth and overall performance.

Wireless broadband services will be important in rural parts of the region. And wireless is not going away; it will remain as an important component of a well-designed community broadband system--as a mobility solution. As we travel around the community, we want to be able to access the Web, check email, make phone calls, and do other sorts of things. Wireless services enable that, and in rural areas, wireless services are an important step up from dial-up.

WiMax and LTE capacities and distances are widely exaggerated. It is very common to see promises of “up to 80-100 megabits” of capacity and distances of “10 to 20 miles.” With respect to bandwidth, that 100 megabits of capacity will be shared among all connected users, so if 100 households are trying to access the network via a single WiMax access point, the usable bandwidth may be more like 2-4 megabits per household or per user. Distances are limited by line of sight.

Both WiFi and WiMax signals will work over many miles, but only with narrow angle antennas and clear line of sight. While WiFi can easily reach ten miles or more with clear line of sight, and WiMax can reach twenty miles with clear line of sight, in practice these optimum distances are rarely achieved; it is more realistic to consider WiFi usable over 2-4 miles and WiMax over 4-8 miles. Tree cover is particularly problematic, and it is often necessary to remove tree limbs, an entire tree, or to relocate the antenna in order to get a good signal.

LTE and television “white space” systems are emerging standards that can provide connectivity at much longer distances (five to ten miles is possible under ideal circumstances) and the radio frequencies used are better able to penetrate at least some foliage. Bandwidth of several megabits are possible, and compare very favorably with copper-based systems like DSL. But even these systems will have a limited ability to handle TV programming, interactive videoconferencing, and other business class services.

FIXED POINT WIRELESS CHARACTERISTICS

Bandwidth	5Mbps - 10Mbps on average for rural/residential service. Higher speeds available at higher cost.
Line sharing	In most Wireless ISP (WISP) architectures customers share a point to multi-point connection with an access point. Service can be affected when too many customers are on an access point.
Latency	Minimal latency issues
Symmetric/Asymmetric	Symmetric
Effective Distance	The effective range of an access point depends on the frequency chosen.
Services Support	Internet, VoIP, and streaming video can be supported by WISP architectures. A multi-provider environment can be configured on a WISP network, but is less commonly found compared to fiber networks.
Typical per subscriber build cost	\$370 to \$550, and costs could be much higher if a pole has to be installed (\$2000 to \$7000). High operating costs should be considered as a factor because of the high failure rate for wireless equipment.

CELLULAR DATA WIRELESS

Wireless access to the Internet and other mobile services like cellular telephone providers is a long term need that will not be replaced by fiber access. In fact, over the next five to seven years, the most common use for wireless Internet access will be for mobility--casual business, personal, and government access away from the home or office. In the rural areas of the region, fixed point cellular data services (e.g. "air card") can provide substantial improvements over DSL, satellite, or dial up.

Mobile wireless access to voice and data services is already widely available from multiple providers in most of the U.S. Nationwide, Verizon, Sprint, and AT&T have already begun an aggressive expansion and upgrade to LTE (the so-called 4G/5G networks). However, the bandwidth caps and bandwidth overage charges make cellular data services too expensive as a primary residential or small business connection.

Perhaps more alarming, some telephone companies, including Verizon and AT&T, are abandoning their copper line plant in many rural areas of the country, and are only offering cellular-based dial tone for home and small business use.

Cellular data plans, because of the bandwidth caps and overcharges that are included with typical plans, can be a poor solution for rural residents who may be trying to use it for business purposes, for K12 school assignments, and/or personal use. Households with children report that it is very difficult (and/or expensive) to keep within data caps.

CELLULAR DATA SERVICE CHARACTERISTICS	
Bandwidth	2Mbps-12Mbps and up, but actual bandwidth can vary widely.
Line sharing	In a mobile wireless broadband network the access point is in a point to multi-point configuration, meaning access is shared.
Latency	Latency is generally not an issue
Symmetric/Asymmetric	Symmetric
Effective Distance	The effective range of an access point depends on the frequency chosen.
Services Support	Internet, VoIP, and streaming video can be supported but service may degrade at peak times.
Typical per subscriber build cost	\$80 and up, depending on data plan, bandwidth caps and overage charges.

EMERGING WIRELESS TECHNOLOGIES

MIMO WIRELESS

MIMO (Multiple Input, Multiple Output) describes a variety of technologies that can be summarized as using more than one receive and transmit antenna for wireless data applications. Wireless protocols that are using the MIMO concept include IEEE 802.11n (Wi-Fi), IEEE 802.11ac (Wi-Fi), 4G, LTE (Long Term Evolution), and WiMAX. Each of these protocols use the MIMO technology to increase the amount of available bandwidth in a given section of radio frequency spectrum.

New hardware is required to make effective use of MIMO. While the technology increases wireless bandwidth, the typical amount of bandwidth being used by wireless devices is also increasing rapidly. Some applications where MIMO is likely to provide noticeable improvements are in home wireless routers, where the effective throughput will be able to better handle the demanding bandwidth requirements of HD and 4K video streams. MIMO is slowly being developed for use with cellular smartphones, but both the phones and the cell tower radios have to be upgraded to support MIMO.

LTE/4G/5G

LTE (Long Term Evolution) is a set of protocols and technologies designed to improve the performance of voice/data smartphones. Like MIMO, both the user phone and the cell tower radios have to be upgraded to support LTE improvements. In 2013, only 19% of U.S. smartphone users were able to take advantage of LTE speeds, although that percentage has been increasing rapidly since then, and more than 85% of the U.S. cellular towers are expected to be upgraded to LTE in the next two years. As noted previously, the actual bandwidth available to a smartphone user is highly variable and depends on distance from the cell tower, the number of smartphones accessing the same tower simultaneously, and the kinds of services and content being accessed by those users.

The primary purpose of cellular bandwidth caps is to keep cellular users from using too much bandwidth and degrading the overall service. While LTE and MIMO improvements will improve overall cellular service, these technologies are not going to replace fiber to the home and fiber to the business.

The 5G technical standard is not scheduled for release until 2020, so any promises of 5G systems eliminating the need for fiber services is just marketing promises without any substance.

Attachment 20 –Essex Public Library Digital Literacy Initiative and Community Survey

- Essex Public Library Digital Literacy Initiative
- Essex Community Survey

Attachment 20 - Essex Public Library Digital Literacy Initiative

Digital inclusion efforts require more than access to affordable and robust internet service. In order for individuals and communities to reap the benefits of broadband availability, they also need access to digital literacy training and instructional tools designed to encourage self-sufficiency, participation, and collaboration.

With funding provided through this VATI grant, Essex Public Library will undertake a three-year digital literacy initiative focused on providing skills and guidance to help our county residents benefit from affordable broadband access. The anticipated date for starting the program is February 2023, continuing through February 2026. Instruction will focus on topics such as components of a computer, creating and using an email account, using an internet browser, privacy and security, finding trusted information sources, word processing, and more.

At Essex Public Library, we see the effects of the digital divide in our community first-hand every day. For example, a job seeker needs to complete an online job application, but they have never set up or used an email account. Someone looking for a free tax form gets lured into paying an unnecessary subscription cost through a fishy website. A young person cannot access the DMV's online driver's license exam study guide from home so she struggles to pass the test. As a well-established and highly trusted nonprofit organization, Essex Public Library is well situated to provide this training in our community. Many of our patrons already rely on us as the center of digital literacy in Essex County. We assist people of all ages and backgrounds in navigating the internet and using their devices. We would also work with appropriate community partners to align training with the needs of students, including local workforce and social services agencies.

We strive to equitably serve all residents in Essex County, and our digital literacy instruction would be designed for a wide variety of learners. Our staff will undertake targeted efforts to reach underserved populations within the county, including people lacking transportation, older adults, and low-income households. We will also use a targeted marketing and outreach campaign to reach residents in the northern and central areas of the county, the areas that have the lowest levels of broadband connectivity.

Many people seeking digital literacy have one specific problem to solve. Others may be seeking a general or introductory understanding of what the internet is all about. In both cases, digital literacy training can address immediate needs and also help students explore further areas of interest.

Our digital literacy initiative will include the implementation of a mobile computer lab that can be set up in a variety of community spaces. We expect to offer courses and one-on-one assistance in the library's meeting room as well as at other sites throughout the county, including schools and churches. If current COVID-19 concerns continue, we can check out devices to patrons for them to use at home, and we can even offer training through a remote video delivery platform such as Zoom.

A part-time Digital Literacy Instructor will be hired by Essex County and supervised by the Library Director as part of the library's team of employees. This instructor will work for 24 hours

Attachment 20 - Essex Public Library Digital Literacy Initiative

per week to facilitate digital literacy instruction in person and online, both at the library and at other sites across Essex County. Quality digital literacy instructional tools, such as training resources from the Goodwill Community Foundation, can readily be implemented to create a flexible in-person curriculum for classes and one-on-one assistance.

Project Budget

Item Title/Description	Unit Price	Total Cost
10 - Outlet Dell Latitude 3120 2n1 11 inch Laptop/Tablet Combo	\$550	\$5,500
2 - Copernicus Tech Tub2	\$325	\$650
1 - AAXA P7 Mini Projector	\$380	\$380
Part-Time Digital Literacy Instructor	24 hours/week @ \$12/hour + FICA Insurance @ 7.65%	\$48,442
Transportation Support - Gas Reimbursement	\$0.56 per mile, 30 miles per week on average	\$2,500
Advertising & Marketing		\$1,500
Total Budget Requested		\$58,972



Essex County
VIRGINIA

Essex County Community Vision—Summary

Overview

With a trained facilitator from State of Virginia Libraries, the Essex Library Director and I conducted five community vision sessions around Tappahannock, including Essex High School.

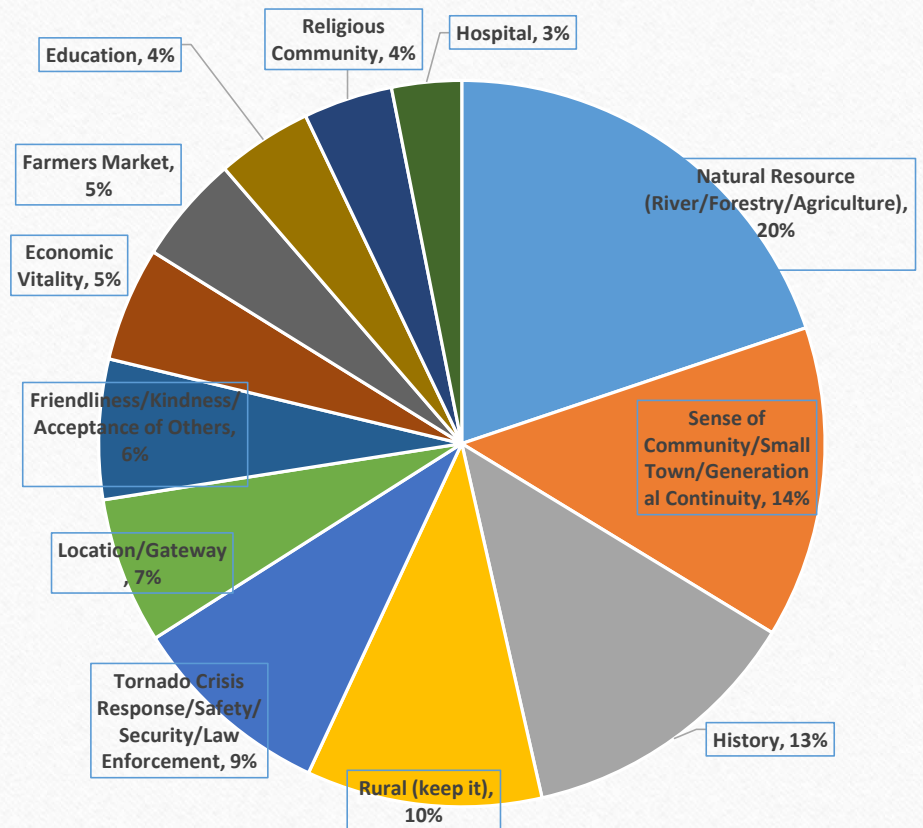
Three questions were asked at the sessions:

1. “What is and will be Essex at its best?”
2. What do we have currently that expresses that? (assets)
3. What do we need to get there?”
 - We recorded the statements, in writing, and required attendees to vote on the statements to which they most agreed (see sample sheet). The Deputy Clerk then summarized the results.
 - We will discuss the results and then organize them for what they are saying about an Essex County Vision to guide future decisions.

1st Question Results:

Essex at its Best

Category	Rank	Votes	% of Total
Protect/appreciates Natural Resources (River/Forestry/Agriculture)	1	70	20%
Preserves Sense of Community/Small Town/Generational Continuity	2	49	14%
Celebrates History	3	45	13%
Maintains Rural Character	4	37	10%
Provides Climate of Public Safety: Tornado Crisis Response/Safety/Security/Law Enforcement	5	32	9%
Promotes Strategic Location/Gateway	6	23	7%
Expresses Friendliness/Kindness/Acceptance of Others	7	22	6%
Builds Economic Vitality	8	18	5%
Offers Community Events e.g. Farmers Market	9	17	5%
Provides Strong Education	10	15	4%
Respects Religious Community	11	14	4%
Provides Basic Health care, e.g. Hospital	12	11	3%
Total		353	100%



2nd Question Results:



Assets for Essex at Its Best

<u>Category</u>	<u>Rank</u>	<u>Votes</u>	<u>% of Total</u>
River	1	132	22%
Rural Community/Location	2	63	11%
Farmland/Agriculture/Wetlands/Wildlife	3	52	9%
Churches (e.g. Essex Churches Together)	4	49	8%
Hospital and Free Clinic	5	49	8%
Library	6	41	7%
Essex County Museum	7	23	4%
Artisan/Winery Trails	8	22	4%
Restaurants	9	22	4%
Small Business	10	20	3%
Airport	11	19	3%
Community Events, eg. Farmers Market	12	19	3%
Golf Course	13	17	3%
History	14	16	3%
St Margarets	15	13	2%
Volunteer Fire Department & Rescue Squad	16	13	2%
Bay Transit	17	12	2%
Rotary Poor House Tract Park	<u>18</u>	<u>12</u>	<u>2%</u>
Total		594	100%

3rd Question Results:



What do we need to get there?

Category	Rank	Votes	% of Total
River Access (free to citizens)	1	415	25%
High Speed Internet/Broadband	2	238	14%
Improve Schools	3	179	11%
Playground & Community (Public) Park	4	121	7%
Grants	5	85	5%
Jobs – Create More Opportunities	6	73	4%
Celebrate Essex Events (RivahFest, Farmers Market, Wine on the Water, etc)			
RivahFest needs to return	7	67	4%
County/Town Collaboration & Coordination (Unified Government)	8	56	3%
Outdoor Venue for events/Banquet Hall	9	51	3%
Grantwriter	10	48	3%
Revitalize Downtown/Improved Main Street Program	11	37	2%
Tourism Development	12	33	2%
County Resources for our Homeless Population	13	32	2%
Tax Incentives for Businesses to Relocate Here	14	32	2%
Strong, Stable, Organized Essex Government Leadership	15	31	2%
Community Center	16	29	2%
Economic Marketing	17	29	2%
Waterfront Restaurant	18	27	2%
Beautification (Plan and Codes)	19	26	2%
Public Pier	20	26	2%
Affordable Housing	<u>21</u>	<u>25</u>	<u>2%</u>
Total		1,660	100%

Emerging Vision Statements

Essex County is and will be a community that:

1. Values and protects its God-given **natural resources**: abundant clean water, wide river, open greenspace, agricultural lands, forests and wildlife, for visitors, recreational users, residents, and future generations to enjoy.
2. Appreciates the historical **connection to the Rappahannock River**, with the origination of Essex as a colonial English port, and seeks **modern use of the river with direct public access connection** for recreational, social, and economic activities.
3. Respects its **rural roots and heritage** as pillars of both its economic and quiet, pastoral, scenic quality of life.
4. Preserves a **small town sense of place, friendliness and community, hometown pride**, with social and ethnic diversity, resulting in inter-generational continuity, children who grow up and return, and an inflow of new folks who want to live here.
5. Provides a **safe, stable community of neighbors** who take care of each other, in daily life and public safety crises, living in neighborhoods where residents can leave cars and homes unlocked without fear.
6. Celebrates its important **place in early American colonial history**, dating back to the earliest foundations of America by English colonists, which it preserves and offers to the world as valuable learning sites for education and knowledge.

Vision Statements

7. Is **vibrant and diverse economically**, with a mix of light manufacturing, small and medium size businesses, entrepreneurs, agricultural/forestry, professional, governmental sectors and retail options to meet citizen and visitor needs, with **a vibrant, active downtown and Main Street as a primary focus**.
8. Is led by a **collaborative Town and County government**, working together on a unified vision of community development.
9. Provides for the **social and medical health needs of the entire community**, including residents at all socioeconomic income levels, with its own **local hospital system**.
10. Maintains a **strong religious affiliation with area churches and faith-based organizations**, as integral to a harmonious and peaceful community quality of life.
11. Recognizes and promotes its **strategic location as gateway** to the Northern neck, coastal plain, and access to major metropolitan areas in Richmond, Norfolk and DC, the Chesapeake Bay, beaches and mountains, for recreation and trade.
12. Is an **educational leader and magnet**, offering high levels of preparatory training for academic, governmental, military or trade careers at the pre-college (Essex school system) and college level (RCC, Fredericksburg and Richmond universities).
13. Embraces a **vibrant intellectual, artistic and cultural heritage** for residents and visitors, not only in galleries museums but in the natural and built environment.
14. Meets the recreational and social needs of citizens and visitors with a **broad menu of recreational parks, trails and community-sponsored events**, such as the Farmers market and seasonal festivals, parades and community gatherings.

So, What is Our Authentic Essex County, Virginia “Story,” that we Tell ourselves and to Others Who Want to Know Why They Should Come Here

We are a rural riverside community, rooted in colonial history and religious affiliation, preserving a quiet rural coastal quality of life, yet intellectually and culturally vibrant, where neighbor helps neighbor. We offer small town hospitality, a haven from big city noise and congestion, with our open greenspace, forests, river and quiet, low-density neighborhoods, yet we are located strategically to the Chesapeake Bay, mountains, ocean and metropolitan areas.

The community is traditional yet inclusive and is supported by unified, stable government and schools, where our children feel safe, many of whom want to return to live and work. We offer a diverse mix of academic, recreational and economic opportunity, with an abundance of natural assets and available workforce for development, which, however, has not yet realized its fullest potential.

Conclusion

- With community visions statements we have a good idea of what goals and policies citizens want us to pursue as a County, Town, Economic Development Authority, and downtown Main Street as executive organizations.
- The Vision Statements will be included in our Main Street Designated Community application, and provide a basis for the Downtown Tappahannock Main Street organization vision, which we are revitalizing.