COMPREHENSIVE AGREEMENT BETWEEN

THE FRANKLIN COUNTY BROADBAND AUTHORITY,

BLUE RIDGE TOWERS, INC., AND

BLUE RIDGE INTERNET SERVICE COMPANY, LLC

July 21, 2020

List of Exhibits:

A. PPEA Unsolicited Proposal (Confidential Sections Withheld)
B. Public Hearing Notice
C. VATI Grant Agreement
D. Development Agreement (With Exhibits)
E. Operating Agreement
F. Marketing Agreement

COMPREHENSIVE AGREEMENT BETWEEN
THE FRANKLIN COUNTY BROADBAND AUTHORITY,
BLUE RIDGE TOWERS, INC.,
AND
BLUE RIDGE INTERNET SERVICES COMPANY, LLC

This Comprehensive Agreement (the "Agreement") is made and entered into as of July 21, 2020, by and between the Franklin County Broadband Authority, a political subdivision of the Commonwealth of Virginia under the Wireless Service Authorities Act ("Authority" or "Owner"), Blue Ridge Towers, Inc., a Virginia corporation ("BRT" or "Developer"), and Blue Ridge Internet Service Company, LLC, a Delaware limited liability company ("BRISCNET").

Recitals

R-1. Virginia's Public-Private Education Facilities and Infrastructure Act of 2002 ("PPEA") as set forth in the Code of Virginia §§ 56-575.1, *et seq.*, and the Franklin County Broadband Authority Guidelines to the Public-Private Education Facilities and Infrastructure Act of 2002 ("Guidelines") provide the Authority the authority and procedure required to enter into an agreement with a private entity to develop or operate certain qualified public infrastructure or government facility projects and provide certain other public services on a public-private partnership basis.

R-2. Under the Wireless Service Authorities Act, Chapter 54.1 of Title 15.2 of the Code of Virginia, 1950, as amended (the "Act"), the Authority has all necessary powers to design, construct, and operate a system of qualifying communications services, defined in Section 56-484.7:1(A) of the Code of Virginia, 1950, as amended. It has power to make and enter contracts with others that it might deem necessary or incidental to the performance of its duties and the exercise of its powers under the Act. Va. Code § 15.2-5431.12.

R-3. On or about April 20, 2019, a private entity, BRT, submitted to the Authority a

conceptual proposal (the "Proposal") to enter into a public-private partnership with the Authority to provide certain services related to the design, construction, and operation of a project to provide qualifying communications services to the public (the "Project"). A copy of the Proposal, with confidential portions withheld, is attached hereto as **Exhibit A.**

R-4. On June 16, 2020, the Board of Directors of the Authority held a public hearing on the Proposal, at which public comment was heard orally and in writing. The public hearing advertisement is attached hereto as **Exhibit B**. Following analysis and consideration of the Proposal and the comments submitted, Authority staff has recommended to the Board of Directors that it enter into a comprehensive agreement with BRT to design, build, finance, operate, and manage the Project. Authority staff has moved forward with negotiation of a draft comprehensive agreement with BRT.

R-5. In aid of the financing of the Project, BRT and the Authority, in collaboration with the Shenandoah Telecommunications Company (Shentel), applied to the Virginia Telecommunications Initiative (VATI) program of the Virginia Department of Housing and Community Development for grant funding. VATI awarded $1,792,920.00 in VATI funding for this Project. The Grant Agreement between the Authority and DHCD is attached hereto as **Exhibit C.**

R-6. The Development Agreement, which provides for BRT to provide construction management services for the design and construction of the Project, is attached hereto as **Exhibit D.**

R-7. In order to ensure the long-term operation and maintenance of the Project and the financial viability of the Project, the Parties also enter the Operating Agreement attached hereto as **Exhibit E** and the Marketing and Maintenance Agreement attached hereto as **Exhibit F.**

R-6. In accordance with the PPEA and the Authority's Guidelines, this Comprehensive Agreement shall be posted on the Authority's website, along with the Proposal.

R-7. The Authority hereby determines that the Project as set forth in these Contract Documents serves the public purpose of the PPEA under the criteria of Virginia Code § 56-575.4(C), as amended, and the parties desire to enter into this Agreement.

NOW THEREFORE, for and in consideration of the mutual promises, conditions, and covenants herein set forth, the parties agree as follows:

1. Incorporation of Recitals. The foregoing recitals are true and correct and are incorporated herein by reference. The powers and duties of a "private entity" as set forth in § 56-575.8 of the PPEA and as applicable to the contracted work hereunder are hereby incorporated into this Agreement by reference and imposed upon BRT.

2. Definitions. The following definitions apply to this Agreement:

(a) "BRISCNET" means Blue Ridge Internet Service Company, LLC, or its consortium partners, subcontractors, or agents, as the context requires.

(b) "BRT" means Blue Ridge Towers, Inc., or its consortium partners, subcontractors, or agents, as the context requires.

(c) "Development Agreement" means that certain agreement providing for BRT to develop the Project, including, but not limited to, the contracting by it with third parties for the design and construction of the Project, attached hereto as **Exhibit D**.

(d) "Contract Documents" means this Agreement (together with all of its Exhibits) and any written amendments thereto. "Contract Document" means any one of these documents. In the event of any discrepancies between or among any of the Contract Documents, the document entered later shall control over the document entered earlier; if entered

simultaneously, the more specific shall control.

(e) "Marketing and Maintenance Agreement" means that certain agreement providing for BRT to maintain and market the Project and/or parts thereof on an ongoing basis attached hereto as **Exhibit F.**

(f) "Operating Agreement" means that certain agreement providing for BRISCNET to operate the wireless internet service provider ("WISP") portion of the Project after its design and construction, subject to certain terms and conditions, attached hereto as **Exhibit E.**

(g) "VATI Grant" means that certain grant of funds for the Project from the Virginia Telecommunications Initiative of the Virginia Department of Housing and Community Development (DHCD), as memorialized in **Exhibit C.**

3. Parts of Agreement; Intent. The intent of this Agreement is to create a Comprehensive Agreement to serve several functions:

(a) Provide for the general technical specifications and terms and conditions of the design and construction of six new wireless communications structures through a Development Agreement; and

(b) Provide for the financing and performance rubrics required for the VATI Grant; and

(c) Provide for the general technical specifications and terms and conditions of deployment and operation of a wireless communications system on the wireless communications structures through an Operating Agreement.

4. Term. The term of this Agreement shall begin on the date of this Agreement and shall continue until its termination pursuant to Section 6 hereof, any other provision of this Agreement, or any other Contract Document, or by law.

5. Representations and Warranties.

(a) Authority Representations and Warranties. The Authority hereby represents and warrants to BRT as follows:

(i) The Authority is the responsible public entity, as that term is used in the PPEA and the Guidelines, for the Project contemplated by the Contract Documents. As such, the Authority has full power, right, and authority to execute, deliver, and perform its obligations under, in accordance with, and subject to the terms and conditions of this Agreement and the other Contract Documents.

(ii) The Authority has taken or caused to be taken all requisite action to authorize the execution and delivery of, and the performance of its obligations under, this Agreement and the other Contract Documents, except as specifically set forth in the Contract Documents.

(iii) Each person executing this Agreement or any other Contract Document, or any other agreement, instrument, or document on behalf of the Authority to which the Authority is a party has been or at such time of execution will be duly authorized to execute each such document on behalf of the Authority.

(iv) Neither the execution and delivery by the Authority of this Agreement and the other Contract Documents executed by the Authority concurrently herewith, nor the consummation of the transactions contemplated hereby or thereby, is in conflict with or will result in a default under or violation of any other agreements or instruments to which it is a party or by which it is bound.

(v) There is no known action, suit, proceeding, investigation or litigation pending and served on the Authority which challenges the Authority's power to

execute, deliver, or perform, or the validity or enforceability of, this Agreement and the other Contract Documents to which the Authority is a party, or which challenges the authority of the Authority director or official executing this Agreement or the other Contract Documents to which the Authority is a party, and the Authority has disclosed to BRT any pending and unserved or threatened action, suit, proceeding, investigation, or litigation with respect to such matters of which the Authority is aware.

(b) Private Entity Representations and Warranties (BRISCNET). BRISCNET hereby represents and warrants to the Authority as follows:

(i) BRISCNET is a duly organized limited liability company created under the laws of the State of Delaware. It holds all licenses and certifications necessary to carry out its work as contemplated by this Agreement or the Contract Documents, and it has and will maintain throughout the term of this Agreement the requisite power and all required licenses (or it or its subcontractors will have all required licenses prior to the time activities which require licenses are undertaken) to carry on its present and proposed activities, and has full power, right, and authority to execute, deliver, and perform its obligations under, in accordance with, and subject to the terms and conditions of this Agreement and the other Contract Documents.

(ii) BRISCNET has taken or caused to be taken all requisite action to authorize the execution and delivery of, and the performance of its obligations under, this Agreement and the other Contract Documents.

(iii) Each person executing this Agreement or any other Contract Document on behalf of BRISCNET to which BRISCNET is a party has been, or at such time of execution will be, duly authorized to execute each such document on behalf of

BRISCNET.

(iv) Neither the execution and delivery by BRISCNET of this Agreement and the other Contract Documents executed by BRISCNET concurrently herewith, nor the consummation of the transactions contemplated hereby or thereby, is in conflict with or will result in a default under or violation of any other agreements or instruments to which it is a party or by which it is bound.

(v) There is no action, suit, proceeding, investigation, indictment, or litigation pending or served on BRISCNET which challenges BRISCNET's authority to execute, deliver or perform, or the validity or enforceability of, this Agreement and the other Contract Documents to which BRISCNET is a party, or which challenges the authority of the BRISCNET official executing this Agreement and the other Contract Documents to which BRISCNET is a party, and BRISCNET has disclosed to the Authority any pending and unserved or threatened action, suit, proceeding, investigation, indictment or litigation with respect to such matters of which BRISCNET is aware.

(c) Private Entity Representations and Warranties (BRT). BRT hereby represents and warrants to the Authority as follows:

(i) BRT is a duly organized corporation created under the laws of the Commonwealth of Virginia. It holds all licenses and certifications necessary to carry out its work as contemplated by this Agreement or the Contract Documents, and it has and will maintain throughout the term of this Agreement the requisite power and all required licenses (or it or its subcontractors will have all required licenses prior to the time activities which require licenses are undertaken) to carry on its present and proposed activities, and has full power, right, and authority to execute, deliver, and perform its obligations under,

in accordance with, and subject to the terms and conditions of this Agreement and the other Contract Documents.

(ii) BRT has taken or caused to be taken all requisite action to authorize the execution and delivery of, and the performance of its obligations under, this Agreement and the other Contract Documents.

(iii) Each person executing this Agreement or any other Contract Document on behalf of BRT to which BRT is a party has been, or at such time of execution will be, duly authorized to execute each such document on behalf of BRT.

(iv) Neither the execution and delivery by BRT of this Agreement and the other Contract Documents executed by BRT concurrently herewith, nor the consummation of the transactions contemplated hereby or thereby, is in conflict with or will result in a default under or violation of any other agreements or instruments to which it is a party or by which it is bound.

(v) There is no action, suit, proceeding, investigation, indictment, or litigation pending or served on BRT which challenges BRT's authority to execute, deliver or perform, or the validity or enforceability of, this Agreement and the other Contract Documents to which BRT is a party, or which challenges the authority of the BRT official executing this Agreement and the other Contract Documents to which BRT is a party, and BRT has disclosed to the Authority any pending and unserved or threatened action, suit, proceeding, investigation, indictment or litigation with respect to such matters of which BRT is aware.

6. Termination. This Contract may be terminated, unless otherwise specified more specifically elsewhere in this Agreement, as follows:

(a) If a party to this Agreement defaults or fails or neglects to carry out a material obligation under this Agreement (for purposes of this section, the "Defaulting Party") and if the other party (for this purposes of this section, the "Non-Defaulting Party") is not in material breach of this Agreement at the time, the Non-Defaulting party may give written notice to the Defaulting Party that it intends to terminate this Agreement, which notice shall contain a reasonably detailed explanation of the reasons for the proposed termination. The Defaulting Party shall correct the default, failure, or neglect within thirty (30) days after being given such notice; provided, however, if (i) the nature of such default, failure or neglect is such that it is not reasonably capable of being corrected within such thirty (30) day period and (ii) the Defaulting Party notifies the Non-Defaulting Party of a reasonable alternative period reasonably acceptable to the Non-Defaulting Party with fifteen (15) days of receipt of such notice, the Defaulting Party shall be allowed such reasonable alternative period to correct the default, failure, or neglect so long as the Defaulting Party promptly commences and diligently pursues such corrections to completion. If the Defaulting Party fails to make such corrections within the thirty (30) day period or fails to commence and diligently pursue to completion such corrections within the alternative period, then the Non-Defaulting Party may, at its sole discretion and without prejudice to any other remedy, terminate this Agreement.

(b) In the event any Essential Permit (as hereinafter defined) is denied for a tower site, the Authority and BRT agree to work to find an alternate site for such tower or, if no alternate site for such tower is available or practicable, to modify this Agreement in such a manner as will carry out the Parties' intent. If the denial of any Essential Permit or Permits is such that the Parties agree that the original goal of widespread wireless internet connectivity in Franklin County is unfeasible, then the Agreement may be terminated by either Party, without any further liability

of the Authority to BRT other than the payment of fees in accordance with the Broadband Milestone Tracker up to the point of failure. In the event an essential permit is denied, however, the Parties agree to negotiate in good faith to find a method of achieving the manifest goals of this Agreement. An Essential permit ("Essential Permit") is any permit required to be obtained from a governmental authority without which the placement and construction of a tower cannot progress. The Authority agrees to use commercially reasonable efforts cooperate with and assist BRT in obtaining Essential Permits.

(c) If not sooner terminated pursuant to the terms of subsections (a) or (b) above, or by mutual agreement, the Agreement (exclusive of warranty and indemnity obligations) shall terminate when all terms and conditions of all the Contract Documents have been satisfied and all such Contract Documents have terminated by their terms.

7. Cooperation; Resolution of Disputes, Claims, and Other Matters. The parties agree to cooperate to achieve the objectives of this Agreement, and to use reasonable and good-faith efforts to resolve all disputes and disagreements that may arise hereunder. Each party agrees to designate representatives with the authority to make decisions binding upon such party (subject in the case of the Authority to those matters requiring an appropriate vote or legal authorization) so as to not unduly delay any obligations under the Contract Documents.

8. Records.

(a) Protected Records. If BRT or BRISCNET (both or either, a "Protected Party") believes that any Work Product or any other document or item subject to transmittal to or review by the Authority under the terms of this Agreement or any other Contract Document contain trade secrets or other information exempt or protected from disclosure pursuant to applicable law, the Protected Party shall use its reasonable efforts to identify such information prior to such

transmittal or review, and the Authority shall confer with the Protected Party on an appropriate means of ensuring compliance with applicable laws prior to transmittal or review.

(b) Requests for Public Disclosure. The parties recognize that the Authority is a political subdivision and public body of the Commonwealth of Virginia, and is subject to the Virginia Freedom of Information Act (FOIA), Chapter 37 of Title 2.2 of the Code of Virginia, 1950, as amended. The Authority recognizes that certain Work Product and other documents or materials of which the Authority obtains a copy may contain trade secrets or other information exempt from disclosure under applicable law, or may include information that is otherwise subject to protection from misappropriation or disclosure. Should any such items become the subject of a request for public disclosure, the Authority shall respond as follows:

(i) The Authority shall use reasonable efforts to immediately notify the Protected Party of such request and the date by which it anticipates responding.

(ii) The Protected Party must then promptly assert in writing to the Authority any claim that such items are protected from disclosure.

(iii) If the Protected Party fails to make such assertion within three (3) business days after the Authority notifies the Protected Party of its intended response, the Authority shall have the right to disclose such Work Product as, but no more than, it and its legal counsel believe, in good faith, it is required to disclose under applicable law.

(iv) If the Protected Party makes a timely assertion that the requested items contain trade secrets or other information exempt from disclosure or otherwise protected under applicable law, the Authority and the Protected Party may seek judicial declaration of the rights of the parties. Until such declaration is made, the Authority will maintain the confidentiality of such items.

(v) If the Authority's denial of a request for disclosure of items is challenged in court, the Protected Party shall assist the Authority in its defense. If the disclosure is denied at the request of the Protected Party and the court holds that such documents must be disclosed under FOIA, the Protected Party shall indemnify the Authority against any award of attorney's fees or fines ordered by the court.

9. Conditions Precedent to Agreement's Effectiveness. It shall be a condition precedent to this Agreement's effectiveness that:

(a) the Authority, BRT, and BRISCNET, as applicable, enter into this Comprehensive Agreement and the Contract Documents, following proper approval and under signatures of both parties with actual authority, and following all legally necessary actions of their boards, commissions, or other governing bodies; and

(b) BRT has certified that all material representations, information, and data provided by BRT to the Authority in support of, or in connection with, the Proposal are true and correct in all material respects; that such certification has been made by an officer of BRT who has knowledge of the information provided in the Proposal; and that the executed certification has been delivered to the Authority; and

(c) Subject to Section 6(b), BRT and BRISCNET, as applicable, shall have responsibility, at its cost, for obtaining any necessary permits from the Federal Communications Commission (FCC), the Virginia Department of Transportation (VDOT), Franklin County, Virginia, or any other governmental authority.

10. Copy of Agreement to Auditor of Public Accounts. The Authority shall submit a copy of this Agreement to the Auditor of Public Accounts of the Commonwealth of Virginia within thirty (30) days of its effective date.

11. Miscellaneous.

(a) Successors and Assigns. Except as expressly otherwise provided, all of the terms, covenants, and conditions hereof shall be binding upon and inure to the benefit of the parties hereto and their respective successors and assigns.

(b) Binding Effect. Subject to the limitations of subsection (a) above, this Agreement shall be binding upon and shall inure to the benefit of the parties hereto and their respective legal representatives, successors and permitted assigns, and wherever a reference in this Agreement is made to any of the parties hereto, such reference also shall be deemed to include, wherever applicable, a reference to the legal representatives, successors and assigns of such party, as if in every case so expressed.

(c) Relationship of Parties. The relationship of both BRT and BRISCNET to the Authority shall be one of an independent contractor, not an agent, partner, joint venturer, or employee, and the Authority shall have no rights to direct or control the activities of BRT and BRISCNET in its performance under this Agreement except as specifically set forth herein or in the Contract Documents.

(d) Third-Party Beneficiaries. Nothing contained in this Agreement is intended or shall be construed as creating or conferring any rights, benefits, or remedies upon, or creating any obligations of the parties hereto toward, any person or entity not a party to this Agreement, excepting those consortium partners of BRT and BRISCNET who or that have been disclosed to the Authority.

(e) Waiver. No waiver by any party of any right or remedy under this Agreement of the other Contract Documents shall be deemed to be a waiver of any other or subsequent right or remedy under this Agreement or the other Contract Documents. The consent by one party to any act by the other party requiring such consent shall not be deemed to render

unnecessary the obtaining of consent to any subsequent act for which consent is required, regardless of whether similar to the act for which consent is given. No provision of this Agreement shall be deemed to have been waived unless such waiver shall be in writing signed by the party to be charged.

(f) Severability. If any term or provision of this Agreement shall be determined to be invalid or unenforceable in any respect, such invalid provision shall be replaced with a substantially similar provision to the greatest extent possible, and the Agreement shall remain in full force and effect.

(g) Counterparts. This Agreement may be executed in two or more counterparts, each of which shall be deemed an original, but both of which such counterparts together shall be deemed to be one and the same instrument. It shall not be necessary in making proof of this Agreement or any counterpart hereof to produce or account for the other counterpart.

(h) Entire Agreement. This Agreement, the other Contract Documents, and the exhibits attached hereto and forming a part hereof set forth all the covenants, promises, agreements, conditions, and understandings between BRT, BRISCNET, and the Authority concerning the Project, and there are no covenants, promises, agreements, conditions, or understandings, either oral or written, between them other than are herein set forth. No alteration, amendment, change, or addition to this Agreement shall be binding upon either party unless reduced to writing and signed by each party.

(i) Litigation Cooperation. In the event the Authority is made party to any judicial, administrative, or regulatory proceeding arising out of this Agreement or any of the actions contemplated herein, BRT and BRISCNET agree to provide, at no cost to the Authority, any necessary documentation, lay witnesses, consultation, and other non-monetary assistance as may be necessary or desirable, in the Authority's discretion, to successfully conclude such

proceeding.

(j) Headings. The section and paragraph headings appearing in this Agreement are for convenience of reference only, and shall not be deemed to alter or affect the meaning or interpretation of any provision hereof.

(k) Governing Law. This Agreement shall be governed by and construed in accordance with the laws of the Commonwealth of Virginia. Venue and jurisdiction for any action arising out of this agreement shall be in the General District Court or Circuit Court for Franklin County, Virginia.

IN WITNESS WHEREOF, the parties have executed this Comprehensive Agreement as of the day and year first above written.

Franklin County Broadband Authority:

Leland Mitchell

Leland Mitchell, Chairman

Blue Ridge Towell Inc.:

Name: President

Blue Ridge Internet Service Company, LLC:

Name: President

Franklin County Virginia

April 20, 2019

Turn Key Broadband Proposal

Performed by

BLUE RIDGE TOWERS

(540) 397-6628

www.blueridgetowers.com

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Executive Summary

To the Franklin County Broadband Authority, Board of Supervisors, Mr. Steve Sandy and all other key staff, it is with great pride and careful consideration that Blue Ridge Towers submits this proposal to provide a turnkey solution to provide Broadband services to the citizens and businesses of Franklin County, VA.

Blue Ridge Towers comes prepared with a special set of skills that are not rivaled by any of our competitors. We combine the expertise of cell tower development and construction, network design, fiber installation, finance, government affairs and the deployment of a scalable state of the art, high speed wireless internet system that has the ability to cover large territories with dependable broadband service.

Over the last 2 years Blue Ridge Towers has worked alongside the Franklin County Broadband Authority to develop a strategy for new wireless and high speed Broadband infrastructure. During this time we have listened closely to the County as you have defined the areas of need. We have also paid close attention to the diversified approach of blending different infrastructures and technologies needed to reach all of the targeted underserved areas.

Armed with these experiences and this information Blue Ridge Towers has developed a proposal and a phased design build plan, to deliver a turnkey solution that will adequately serve the County's underserved areas for High Speed internet access.

Blue Ridge Towers has also taken into consideration the funding challenges that the County is faced with in attempting to address its citizen's costly Broadband needs. As a point of credit to our ability to help our clients offset the cost of such a large project, I bring to the Authority's attention that Blue Ridge Towers was recently co-applicant with Bedford County, VA. (under a PPEA agreement) and the recipient of the Commonwealth's largest award of VATI Grant funds for the 2019 Grant fund year. We played a key and lead role in the application process yielding $1.2 million in grant funds from the Commonwealth of Virginia. We kept the same successful framework that we applied to the Bedford County project in mind as we developed this plan and proposal for Franklin County.

We hope that we can become partners with Franklin County and join forces in the effort to get your citizens this needed infrastructure.

Kindest and Best Regards,

Anthony R. Smith
Blue Ridge Towers, Inc.
Founder and President

Commonwealth of Virginia

STATE CORPORATION COMMISSION

Richmond, April 6, 2015

This is to certify that the certificate of entity conversion of

BLUE RIDGE TOWERS, INC.

was this day issued and admitted to record in this office and that the said corporation is authorized to transact its business subject to all Virginia laws applicable to the corporation and its business.
Effective date: April 6, 2015

STATE CORPORATION COMMISSION VIRGINIA SIC SEMPER TYRANNIS 1903

State Corporation Commission
Attest:

Joel H. Peck
Clerk of the Commission

CIS0362

Commonwealth of Virginia

State Corporation Commission

CERTIFICATE OF GOOD STANDING

I Certify the Following from the Records of the Commission:

That BLUE RIDGE TOWERS, INC. is duly incorporated under the law of the Commonwealth of Virginia;

That the date of its incorporation is April 6, 2015;

That the period of its duration is perpetual; and

That the corporation is in existence and in good standing in the Commonwealth of Virginia as of the date set forth below.

Nothing more is hereby certified.

Signed and Sealed at Richmond on this Date:
April 11, 2017

Joel H. Peck

Joel H. Peck, Clerk of the Commission

CISECOM
Document Control Number: 1704115360

Commonwealth of Virginia

STATE CORPORATION COMMISSION

Richmond, April 10, 2017

This is to certify that the certificate of organization of

Blue Ridge Internet Service Company LLC

was this day issued and admitted to record in this office and that the said limited liability company is authorized to transact its business subject to all Virginia laws applicable to the company and its business. Effective date: April 10, 2017

State Corporation Commission
Attest:

Joel H. Peck
Clerk of the Commission

CISECOM

VIII. TRADE SECRETS/PROPRIETARY INFORMATION IDENTIFICATION

IF NO PROTECTION IS NEEDED STATE "N/A" ON THE TABLE BELOW AND SIGN

Trade secrets or proprietary information submitted by any Bidder/Offeror in connection with a procurement transaction shall not be subject to public disclosure under the Virginia Freedom of Information Act, however, the Bidder/Offeror must invoke the protection of §2.2-4342(F) of the Code of Virginia, in writing, prior to or upon submission of the data or other materials, and must clearly and specifically identify the data or other materials to be protected, and state the reasons why protection is necessary. **The proprietary or trade secret material submitted must be identified by the Bidder/Offeror on the table below. If the Bidder/Offeror fails to identify any protected information on the table below, the Bidder/Offeror by return of this form, hereby releases the Authority and all of its employees from any and all claims, damages, demands or liabilities associated with the Authority's release of such information, and agrees to indemnify it for all costs, expenses and attorney's fees incurred by the Authority as a result of any claims made by Bidder/Offeror regarding the release of such information. By submitting its bid or proposal, Bidder/Offeror understands and agrees that any language seeking protection from public disclosure, any specific documents or information, unless identified on the table below, are null and void and of no legal or binding effect on the Authority.** The classification of line item prices, and/or total bid prices as proprietary or trade secrets is not acceptable. If, after being given reasonable time, the Bidder/Offeror refuses to withdraw such a classification designation, the bid/proposal will be rejected.

SECTION / TITLE	PAGE NUMBER(S)	REASON(S) FOR WITHHOLDING FROM DISCLOSURE
Financials. 6	1	Proprietary
Project Cost / Project Funds	1	Proprietary
Project Timeline	1	Proprietary
WISP.	143	Proprietary Design

COMPANY NAME: Blue Ridge Towers Inc.

SIGNATURE _____

Corporate Bio

Blue Ridge Towers, Inc. was founded by Anthony Smith in 2014. Blue Ridge Towers, Inc. specializes in deploying wireless infrastructure for our anchor tenants in the most difficult of scenarios. We have earned an outstanding reputation as a go to, turn-key resource for the major carriers in our markets. Blue Ridge Towers, Inc. now serves such clients as Shentel, Verizon, T-Mobile, US Cellular and others as tenants on our towers.

Company Highlights and strengths:

1. Locally owned with a careful and well trained insight to the needs of this area.
2. Experienced in the precise and quick turnkey delivery of wireless telecommunications infrastructure.
3. Blue Ridge Towers is currently involved in the State's largest PPEA project and is well versed in all that it takes to successfully structure a PPEA partnership and deliver an excellent project plan.
4. Blue Ridge Towers, Inc. is one of the few firms that have the knowhow and expertise to shape a project that can meet the needs of the citizens, set reasonable and reliable timelines and most importantly craft shared financial responsibilities between the partners and the commonwealth that will make the project eligible for maximum grant funding and ultimately financially feasible.

Anthony Smith

Mr. Smith, has spent his career in Wireless Telecommunications, Real Estate Development and Construction. With nearly 20 years experience in Wireless Telecommunications Mr. Smith is nationally recognized as a top performer in the area of site acquisition, regional project management, infrastructure development and network deployment.

Prior to founding Blue Ridge Towers, Mr. Smith worked at Mastec as a Regional Director overseeing 2 of AT&T's largest turf contracts in recent memory. Those markets included the NC/SC new site build project, where Anthony Smith was responsible for the deployment of 398 new sites. Following that project Mr. Smith also oversaw the OH/PA/WIS/IL/MI/IN microwave backhaul project. Both project had budgets of over $300 million individually.

City of Danville
Office of Economic Development

April 15, 2019

Mr. Brian Carter
Franklin County Finance Director
1255 Franklin Street, Suite 111
Bedford, VA 24151

Dear Mr. Carter:

Mr. Anthony Smith, President of Blue Ridge Towers, Inc., has contacted me regarding his interest in working with Franklin County to construct new cell towers and run new strands of fiber to supply internet users in rural areas of your county. Mr. Smith has worked with our office to establish two cell towers in the City of Danville, and for one of those towers, he actually purchased land from the Industrial Development Authority of Danville.

Our experience in working with Mr. Smith has been very satisfactory, and I am especially impressed with how he has maintained the site that he purchased from the IDA. That tower sits on a tract of land that is adjacent to a larger tract that the IDA is offering for industrial or commercial development. We were concerned that a potential unkempt plot would detract from the larger site, but Mr. Smith has maintained his plot in excellent condition and there are no issues whatsoever with his custody of this highly visible area.

Based on our experience in working with Anthony Smith and Blue Ridge Towers, Inc., I can give you an unqualified endorsement of how he and the company have performed in Danville.

Best wishes in getting a key service in place to serve your citizens with high speed broadband internet access. This is an essential component of twenty-first century life.

E. Linwood Wright
Executive Consultant

427 Patton St. P.O. Box 3300 | Danville, Virginia 24543 | 434.793.1753 | www.discoverdanville.com

Mr. Steve Sandy
Director, Zoning Administrator
Franklin County Planning & Community Development
1255 Franklin St, Rocky Mount, VA 24151

Dear Mr. Sandy,

This letter is written in support of Blue Ridge Tower/BRISCNET. Core Telecom Systems has been working closely with Blue Ridge Towers to design a fixed wireless broadband service for Franklin County, VA. Core Telecom Systems is based in St Louis, MO and has over 20 years of experience designing, building, and deploying carrier class communication and data networks throughout rural America. Core Telecom Systems is uniquely positioned to help our partners with Fixed Wireless, Microwave, Fiber to the Home, Optical Transport, and Data Center solutions.

Blue Ridge Towers is uniquely qualified to start a Wireless Internet Service Provider (WISP) network. With the experience and dedication of the Blue Ridge Towers Team of building and maintaining towers and the experience and resources of Core Telecom Systems and our manufacturing partner Cambium Networks, Franklin County is in good hands. Core Telecom Systems acts as Cambium Networks most trusted Wireless System Integrator throughout North America. This allows our team (Blue Ridge Towers, Core Telecom Systems, and Cambium Networks) to bring the best possible value to Franklin County. Blue Ridge Towers provides a trusted local partner with the ability to leverage the experience and resources of Core Telecom Systems and Cambium Networks.

If I can answer any questions or be of service to Franklin County, please do not hesitate to contact me.

Regards,
Matthew Dorsey
Director of Wireless Solutions
Core Telecom Systems
620 340 7113
mdorsey@coretelecom.net

REFERENCES

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President & COO

The Atlantic Group of Companies, Inc.

6260 Pine Slash Road,

Mechanicsville, VA 23116

gcondyles@atlanticgroup.us.com

804-559-6004 Office

804-690-1132 Cell

Allen Boaz

Chairman Bedford County Broadband Advisory Committee

haboazjr@gmail.com

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540-525-1332 cell

Gary Larrowe

Botetourt County Administrator

glarrowe@botetourtva.gov

1 west Main St, Fincastle. VA 24090

540-928-2006

Sherman Lea

Mayor, Roanoke City

215 Church Avenue SW,

Roanoke, VA 24011

540-853-2444

Sherman.lea@roanokeva.gov

Asset Development, LLC

September 14, 2018

To Whom It May Concern:

This letter is to confirm that Blue Ridge Towers, Inc., and its affiliates ("Blue Ridge") have secured financing of up to Five Million Dollars ($5,000,000.00) from Asset Development, LLC to help Blue Ridge with the development of telecommunications towers across the United States.

Asset Development, LLC specializes in working with tower developers across the United States to provide them with the ability to borrow money and grow their operations.

If there are any questions or any further information is needed, please feel free to contact me at 561.226.9316.

Sincerely,

Michael Diamond
Manager

BRT Knows of no conflicts that would disqualify us in anyway.

Towers

After careful study of the Franklin County's Broadband Survey and working closely with the County Broadband Authority, Blue Ridge Towers has studied the unserved or underserved areas in the County's survey and recommend starting with the following:

The unserved Snow Creek District will require the immediate construction of one (1) new monopole, and the installation of new Fixed Wireless Internet Service equipment on that structure. New strands of 48 pairs of fiber will be pulled from Snow Creek Elementary School to the site (1.5 miles) for fiber installation at the site and to provide a Microwave backhaul to the county owned tower at Tom's Knob.

The remaining 8 existing towers are all constructed on county owned or controlled properties. Each tower will be examined closely for structural integrity for future collocations.

The existing towers are identified as the following:

Site Name	Address	Land	Height
Franklin County Ind. Park	21743 Virgil H Goode Hwy, Rocky Mount, VA	Blue Ridge Tower	175'
Grassy Hill Tower	815 Summit Drive, Rocky Mount, VA	Franklin County	195'
Scruggs Tower	2075 Blue Water Drive, Moneta, VA	FCFD	150'
Tom's Knob Tower	1198 Tom's Knob Road, Rocky Mount, VA	Franklin County	150'
Henry Volunteer FD	5241 Henry Road, Henry, VA	FCVFD	120'
Burnt Chimney Water Tank	50 Burnt Chimney Road, Burnt Chimney, VA	FCWA Land	100'
BRT West Lake Tower	71 Parkcrest Drive, Moneta, VA	Blue Ridge Tower	175'
Franklin County E911	1247 Summit Drive, Rocky Mount, VA	Franklin County	120'
Fork Mt Fire Station Tower	2797 Virgil H Goode Hwy, Rocky Mount, VA	FCFD	150'
BRT Snow Creek	6200 Snow Creek Road, Penhook, VA	Blue Ridge Tower	195'
BRT Saw Mill Tower	706 Saw Mill Road, Ferrum, VA	Blue Ridge Tower	195'
BRT Speedway Tower	385 Speedway Lane, Calloway, VA	Blue Ridge Tower	195'

Tower Development

Blue Ridge Towers will be project managing the entire tower development process for Franklin County. As a tower developer and owner, Blue Ridge Towers is all too familiar with the tedious steps required to complete the due diligence process. These necessary steps are required prior to the construction of any tower, and demands great attention to detail and project management to avoid any timely delays,

The planning of a tower requires the following:

Determine the Parcel of Land
Determine/Secure Ingress/Egress
Determine Zoning/Easements/Right of ways
Determine/order utility access for power and telco
Survey property and proposed location & 2-C
Order NEPA
Order Phase 1/Section 106
Order FAA Air Study
Order FCC interference study
Order Geotech
Order Tower and design accordingly for additional loading
Secure ground Lease (if necessary with private landlord)
Record Lease agreement/MOL
Record Plat/Survey
Order Title commitment on the property

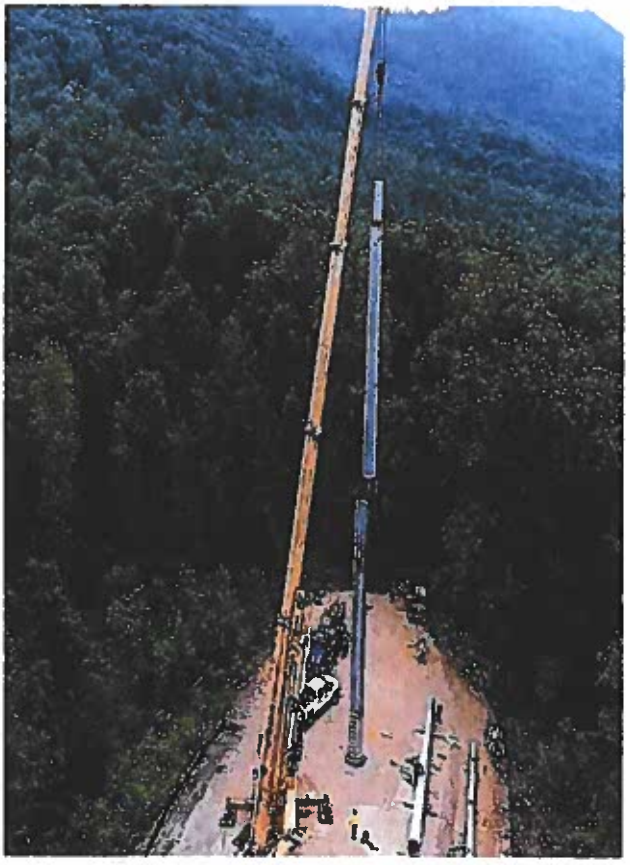
While performing and managing all these processes, Blue Ridge Towers would be working simultaneously with all the major carriers within the region to collocate on any of the county's existing towers, securing a Site Lease Agreement (SLA) or a Master Lease Agreement (MLA) between the carrier and Franklin County, working through the various departments from RF, Leasing, Compliance, Legal, and Construction.

Blue Ridge Towers will also be assembling application to obtain the necessary county approval for all new Towers, overseeing the entire application process, from filing the application, working through the legal and staff reviews, and conducting public hearings and working with all governing bodies.

Tower Construction

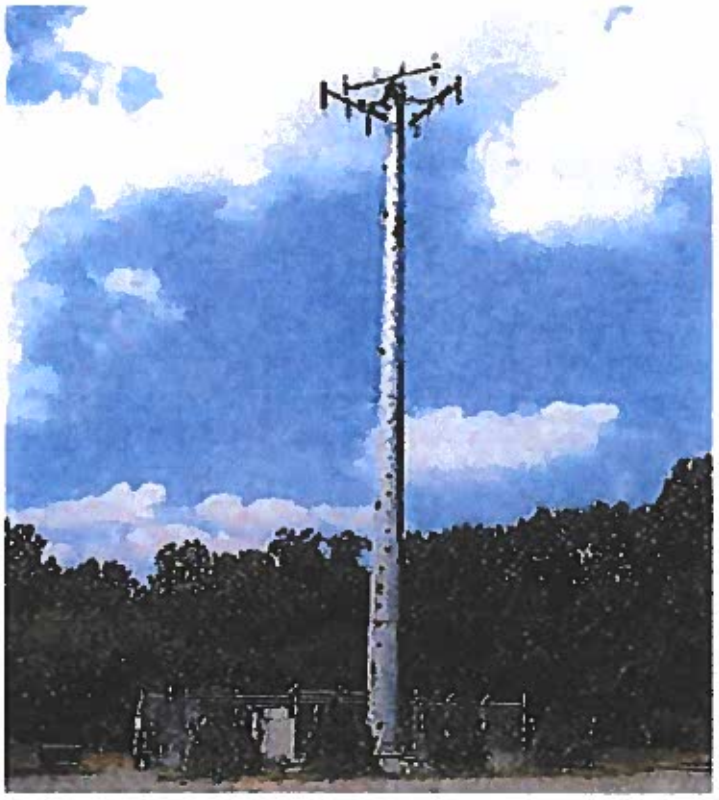
Blue Ridge Towers is proposing to construct each new tower for the cost of $225,000. The complete construction budget would include:

- Building Permits
- Cost of Tower
- Tower delivery and stacking
- All civil work
- Tower foundation
- Access/road work
- Utility order/delivery
- Grounding
- Fencing and Landscape
- Final site inspection



Tower Management

Blue Ridge Towers would continue to manage and market the entire 12 site system to the appropriate wireless carriers in the region and attract the regional carriers to collocate on the new and existing towers, generating beneficial revenue to Franklin county. Blue Ridge Towers will work diligently to ensure specific site lease agreements or Master lease agreements are in place between the county and the major wireless carriers, and project manage the entire collocation process from initial application to actual collocation.



Fiber & Microwave

Blue Ridge Towers have carefully studied complete site design system for Franklin County in the last several months. Its staff along with Blue Ridge Towers' vendors visited each site specifically and carefully designed a working Microwave Backhaul system for the entire county, utilizing existing fiber/telco available at Grassy Hill, while delivering fiber to Snow Creek, Tom's Knob, Westlake and The Franklin County Industrial Park sites for immediate fiber connectivity. The combination of Fiber installation and a Microwave backhaul installation will instantly bring connectivity to all of the areas identified in this project plan without the high cost of pulling Fiber throughout the entire County.

Fiber connectivity Points:

A- Snow Creek will receive 1.4 miles of fiber

B- Tom's Knob will receive 3 miles of Fiber.

C- Westlake Tower will receive .6 miles of Fiber.

D- Industrial Park will receive 1 mile of Fiber.

E- Scruggs Rd will be connected through a Microwave link

F- Burnt Chimney will be connected through a Microwave link

G- Henry VFD will be connected through a Microwave link

H- Fork Mountain will be connected via Microwave link

I- Calloway/Franklin County Speedway will be connected via Microwave Link

J- Saw Mill Rd will be conncected Via microwave link

Proposed Business Terms

Tower development **(soft cost development fees for New Construction towers)**	$57,000.00 x 5 sites	$285,000.00
Tower development **(soft cost development fees for existing towers)**	$30,000.00 x 7 sites	$210,000.00
Total Development Cost		**$495,000.00**
Tower construction **($11,000.00 difference in price from Self Support to Monopole, $7,000.00 cost of pole and $4,000.00 increase in foundation cost.)**	$225,000.00 x 3 sites	$675,000.00
Total Construction Cost		**$675,000.00**
MW system per unit	$38,500.00 x 9 sites	$346,500.00
MW Eng./Design	Reimbursement	$13,500.00
Total Microwave Cost		**$360,000.00**
Fiber Install fee	$67,800.00/mile x 6.4 miles	$433,920.00
Fiber Eng./Design	Reimbursement	$30,000.00
Total Fiber Cost		**$463,920.00**
Builders Risk Insurance **(estimated cost)**		$35,000.00
P & P Bond Premium	$17,000.00 per Bond x 3 Bonds	$51,000.00
Total project fee		**$2,079,922.00**

Project Timeline

The proposed timeline for the project is as follows:

May 8th, 2019

Interview

May 22nd, 2 019

Interim Agreement

June 2019

Perfect Project plan through detailed submission

July 2019

Project start

July 2019-October 2019

Tower Development to include all Site Acquisition, planning and zoning, Phase I, SHPO and NEPA.

November 2019 – March 2020

Tower Construction and Fiber Installation and Microwave Backhaul

February 2020

Turn the Network Live and Begin delivering service the Citizens!!!!

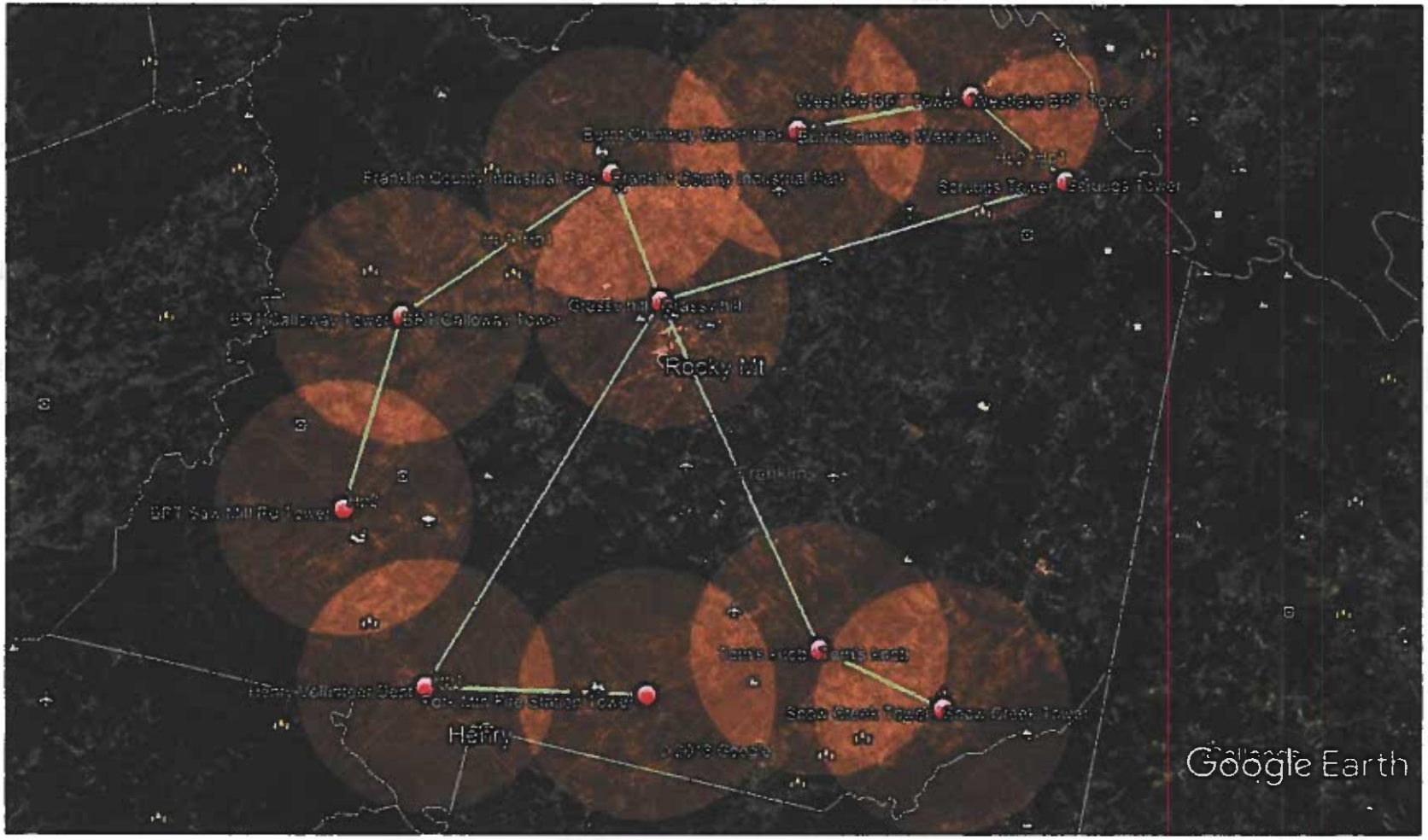
WISP

Blue Ridge Internet Service Company (BRISCNET), will be providing wireless internet service throughout Franklin County. Powered by Blue Ridge Towers, Core telecom, and Cambium Networks, BRISCNET will provide fast, reliable, and affordable wireless internet service via the 900 mhz and 5800 mhz unlicensed spectrum and through collocation on the Franklin County site design system.
BRISCNET will deploy the reliable Cambium Network (Formerly Motorola) on both the Snow Creek tower, the Industrial Park Tower, and on the 8 existing county owned towers to provide a solid infrastructure network for wireless internet. The Cambium equipment are both reliable, durable, and affordable to both business and individual users, and provides excellent upload/download speed for wireless internet.

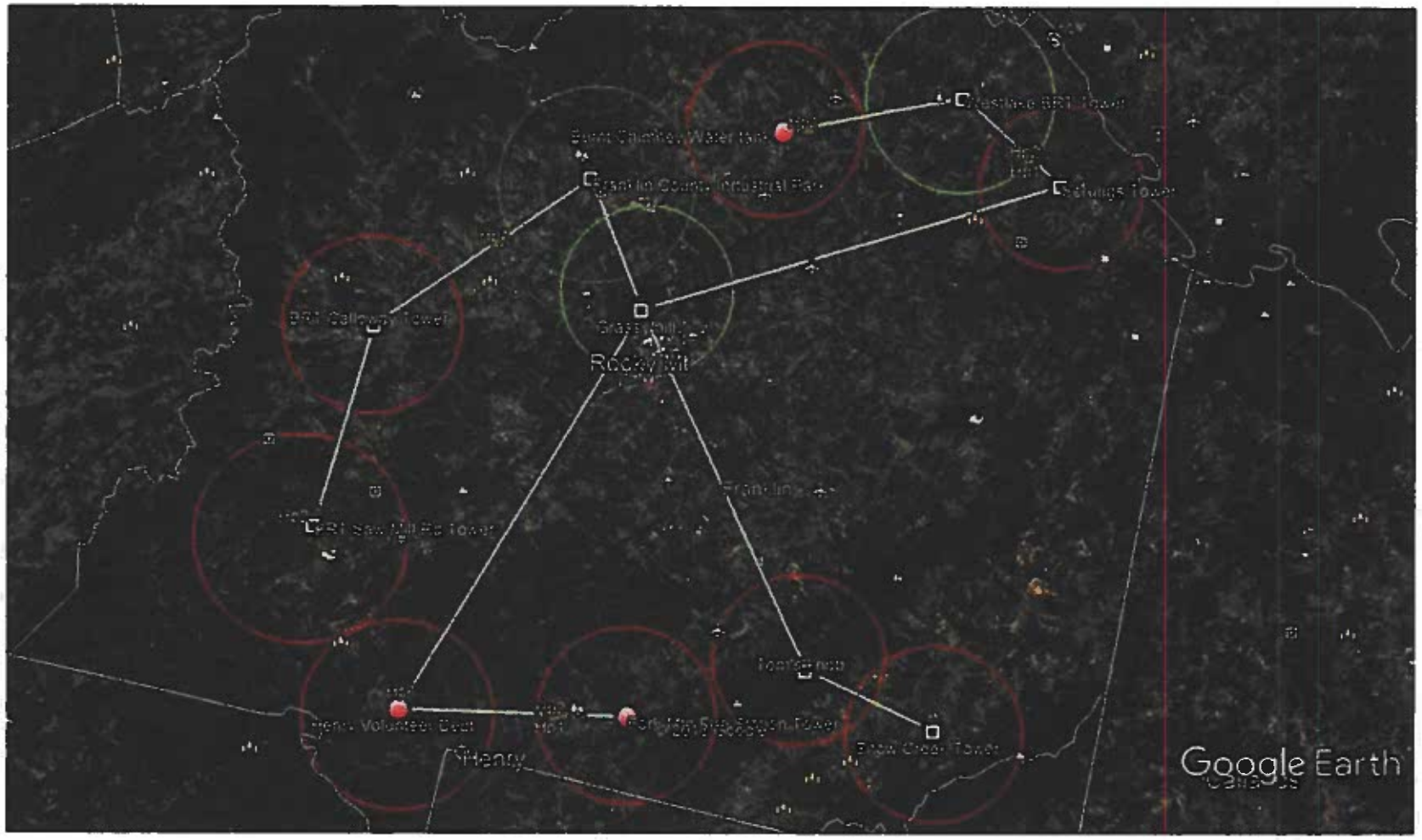
BRISCNET seeks to negotiate an affordable rental agreement for collocation on these towers to install its access point/antennas for the wireless Internet service by signing a collocation lease with Franklin County Broadband Authority.

The complete and detailed wireless Internet design for Franklin County are attached

Franklin County Wireless Broadband Design Map



Franklin County Microwave Backhaul Map



Cambium Networks

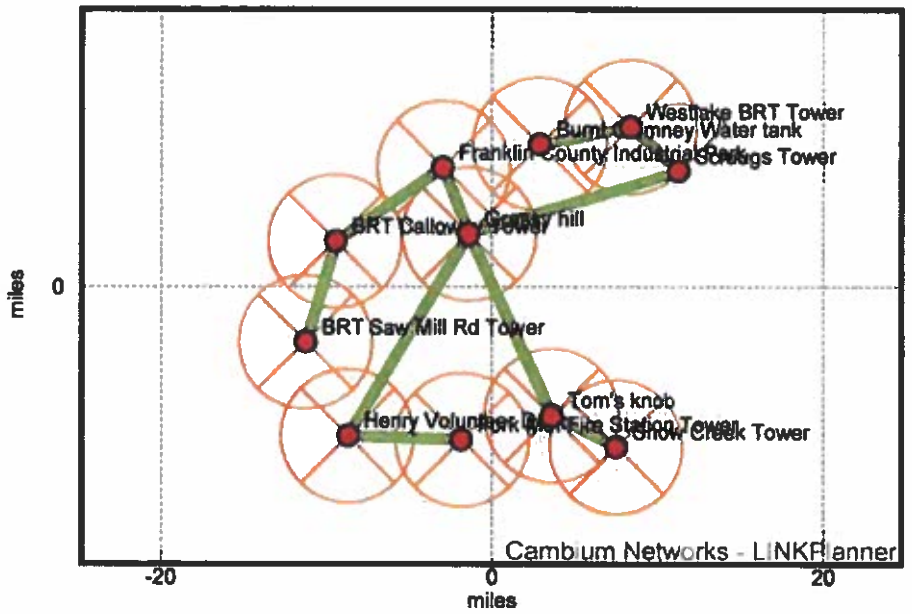
Project Franklin county sites rev4
LINKPlanner Proposal Report

22 April 2019

Matthew Hollinger
Organization: Core Telecom Systems
Phone: 5033606116
Email: mhollinger@coretelecom.net

Cambium Networks™

center = 36.97817N 079.86839W



Cambium Networks™

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40. Grassy hill : 3 96
41. Grassy hill : 4 98
42. Henry Volunteer Dept 100
43. Henry Volunteer Dept : 1 102
44. Henry Volunteer Dept : 2 104
45. Henry Volunteer Dept : 3 106
46. Henry Volunteer Dept : 4 108
47. Scruugs Tower 110
48. Scruugs Tower : 1 111
49. Snow Creek Tower 113
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52. Snow Creek Tower : 3 119
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54. Tom's knob 123
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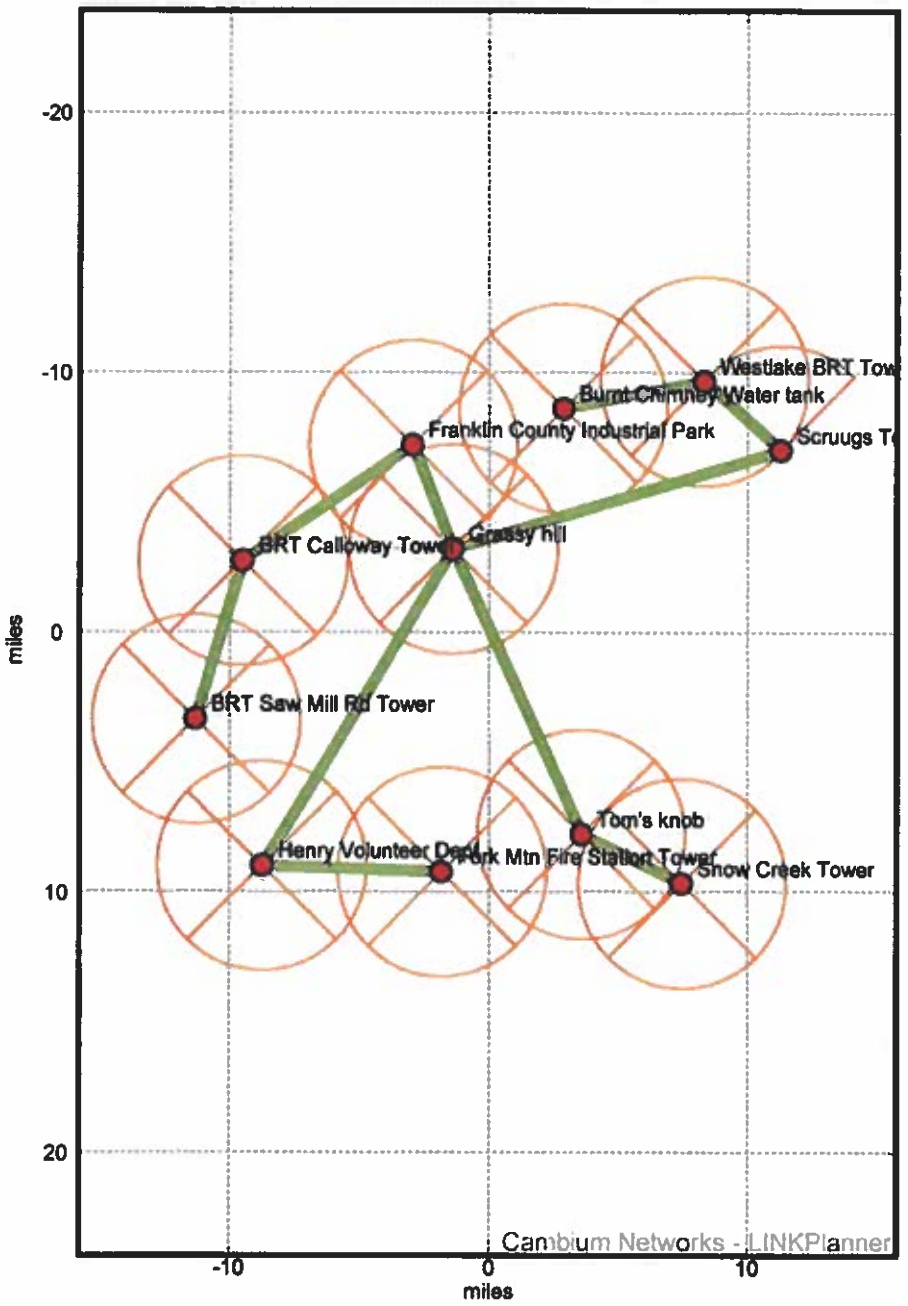
1. Project Summary

Project:	Franklin county sites rev4
	General Information
Customer Name	Sean Cai
Company Name	Blue Ridge Towers
Address	1125 1st Street, Roanoke, VA 24016
Phone	(540)595-7060
Cell Phone	
Email	sean.cai@blueridgetowers.com

Network Map

center = 36.97817N 079.86839W



Link name	Product	Local antenna	Remote antenna	Max aggregate IP throughput
BRT Calloway Tower to Franklin County Industrial Park	PTP11820S (Wide)	Cambium Networks 2ft Single Pol (Global) N110082D072 - Direct	Cambium Networks 2ft Single Pol (Global) N110082D072 - Direct	1191.89 Mbps
BRT Saw Mill Rd Tower to BRT Calloway Tower	PTP11820S (Narrow)	Cambium Networks 2ft Single Pol (Global) N110082D072 - Direct	Cambium Networks 2ft Single Pol (Global) N110082D072 - Direct	915.43 Mbps
Burnt Chimney Water tank to Westlake BRT Tower	PTP11820S (Wide)	Cambium Networks 2ft Single Pol (Global) N110082D072 - Direct	Cambium Networks 2ft Single Pol (Global) N110082D072 - Direct	1191.93 Mbps
Fork Mtn Fire Station Tower to Henry Volunteer Dept	PTP11820S (Wide)	Cambium Networks 2ft Single Pol (Global) N110082D072 - Direct	Cambium Networks 2ft Single Pol (Global) N110082D072 - Direct	1191.90 Mbps
Grassy hill to Franklin County Industrial Park	PTP18820S (Wide)	Cambium Networks 2ft Single Pol (Global) N180082D033 - Direct	Cambium Networks 2ft Single Pol (Global) N180082D033 - Direct	1191.85 Mbps
Grassy hill to Scruugs Tower	PTP11820S (Wide)	Cambium Networks 2ft Single Pol (Global) N110082D072 - Direct	Cambium Networks 2ft Single Pol (Global) N110082D072 - Direct	1191.60 Mbps
Henry Volunteer Dept to Grassy hill	PTP11820S (Wide)	Cambium Networks 3ft Single Pol (Global) N110082D073 - Direct	Cambium Networks 3ft Single Pol (Global) N110082D073 - Direct	1191.71 Mbps
Snow Creek Tower to Tom's knob	PTP18820S (Wide)	Cambium Networks 2ft Single Pol (Global) N180082D033 - Direct	Cambium Networks 2ft Single Pol (Global) N180082D033 - Direct	1191.85 Mbps
Tom's knob to Grassy hill	PTP11820S (Wide)	Cambium Networks 2ft Single Pol (Global) N110082D072 - Direct	Cambium Networks 2ft Single Pol (Global) N110082D072 - Direct	1191.37 Mbps
Westlake BRT Tower to Scruugs Tower	PTP18820S (Wide)	Cambium Networks 2ft Single Pol (Global) N180082D033 - Direct	Cambium Networks 2ft Single Pol (Global) N180082D033 - Direct	1191.87 Mbps

Access Point Name	Product	Antenna Azimuth	Beamwidth	Band	Max Range	Connected Subscribers	Total Predicted Throughput
BRT Calloway Tower : 1	PMP450i	0.0°	60.0°	900 MHz	4 miles	0	0.00 Mbps
BRT Calloway Tower : 2	PMP450i	90.0°	60.0°	900 MHz	4 miles	0	0.00 Mbps
BRT Calloway Tower : 3	PMP450i	180.0°	60.0°	900 MHz	4 miles	0	0.00 Mbps

(continued)

Access Point Name	Product	Antenna Azimuth	Beamwidth	Band	Max Range	Connected Subscribers	Total Predicted Throughput
BRT Calloway Tower : 4	PMP450i	270.0°	60.0°	900 MHz	4 miles	0	0.00 Mbps
BRT Saw Mill Rd Tower : 1	PMP450i	0.0°	60.0°	900 MHz	4 miles	0	0.00 Mbps
BRT Saw Mill Rd Tower : 2	PMP450i	90.0°	60.0°	900 MHz	4 miles	0	0.00 Mbps
BRT Saw Mill Rd Tower : 3	PMP450i	180.0°	60.0°	900 MHz	4 miles	0	0.00 Mbps
BRT Saw Mill Rd Tower : 4	PMP450i	270.0°	60.0°	900 MHz	4 miles	0	0.00 Mbps
Burnt Chimney Water tank : 1	PMP450i	0.0°	60.0°	900 MHz	4 miles	0	0.00 Mbps
Burnt Chimney Water tank : 2	PMP450i	90.0°	60.0°	900 MHz	4 miles	0	0.00 Mbps
Burnt Chimney Water tank : 3	PMP450i	180.0°	60.0°	900 MHz	4 miles	0	0.00 Mbps
Burnt Chimney Water tank : 4	PMP450i	270.0°	60.0°	900 MHz	4 miles	0	0.00 Mbps
Fork Mtn Fire Station Tower : 1	PMP450i	0.0°	60.0°	900 MHz	4 miles	0	0.00 Mbps
Fork Mtn Fire Station Tower : 2	PMP450i	90.0°	60.0°	900 MHz	4 miles	0	0.00 Mbps
Fork Mtn Fire Station Tower : 3	PMP450i	180.0°	60.0°	900 MHz	4 miles	0	0.00 Mbps
Fork Mtn Fire Station Tower : 4	PMP450i	270.0°	60.0°	900 MHz	4 miles	0	0.00 Mbps
Franklin County Industrial Park : 1	PMP450i	0.0°	60.0°	900 MHz	4 miles	0	0.00 Mbps
Franklin County Industrial Park : 2	PMP450i	90.0°	60.0°	900 MHz	4 miles	0	0.00 Mbps
Franklin County Industrial Park : 3	PMP450i	180.0°	60.0°	900 MHz	4 miles	0	0.00 Mbps
Franklin County Industrial Park : 4	PMP450i	270.0°	60.0°	900 MHz	4 miles	0	0.00 Mbps

Access Point Name	Product	Antenna Azimuth	Beamwidth	Band	Max Range	Connected Subscribers	Total Predicted Throughput
Grassy hill : 1	PMP450i	0.0°	60.0°	900 MHz	4 miles	0	0.00 Mbps
Grassy hill : 2	PMP450i	90.0°	60.0°	900 MHz	4 miles	0	0.00 Mbps
Grassy hill : 3	PMP450i	180.0°	60.0°	900 MHz	4 miles	0	0.00 Mbps
Grassy hill : 4	PMP450i	270.0°	60.0°	900 MHz	4 miles	0	0.00 Mbps
Henry Volunteer Dept : 1	PMP450i	0.0°	60.0°	900 MHz	4 miles	0	0.00 Mbps
Henry Volunteer Dept : 2	PMP450i	90.0°	60.0°	900 MHz	4 miles	0	0.00 Mbps
Henry Volunteer Dept : 3	PMP450i	180.0°	60.0°	900 MHz	4 miles	0	0.00 Mbps
Henry Volunteer Dept : 4	PMP450i	270.0°	60.0°	900 MHz	4 miles	0	0.00 Mbps
Scruugs Tower : 1	PMP450i	0.0°	60.0°	900 MHz	4 miles	0	0.00 Mbps
Snow Creek Tower : 1	PMP450i	0.0°	60.0°	900 MHz	4 miles	0	0.00 Mbps
Snow Creek Tower : 2	PMP450i	90.0°	60.0°	900 MHz	4 miles	0	0.00 Mbps
Snow Creek Tower : 3	PMP450i	180.0°	60.0°	900 MHz	4 miles	0	0.00 Mbps
Snow Creek Tower : 4	PMP450i	270.0°	60.0°	900 MHz	4 miles	0	0.00 Mbps
Tom's knob : 1	PMP450i	0.0°	60.0°	900 MHz	4 miles	0	0.00 Mbps
Tom's knob : 2	PMP450i	90.0°	60.0°	900 MHz	4 miles	0	0.00 Mbps
Tom's knob : 3	PMP450i	180.0°	60.0°	900 MHz	4 miles	0	0.00 Mbps
Tom's knob : 4	PMP450i	270.0°	60.0°	900 MHz	4 miles	0	0.00 Mbps
Westlake BRT Tower : 1	PMP450i	0.0°	60.0°	900 MHz	4 miles	0	0.00 Mbps
Westlake BRT Tower : 2	PMP450i	90.0°	60.0°	900 MHz	4 miles	0	0.00 Mbps
Westlake BRT Tower : 3	PMP450i	180.0°	60.0°	900 MHz	4 miles	0	0.00 Mbps
Westlake BRT Tower : 4	PMP450i	270.0°	60.0°	900 MHz	4 miles	0	0.00 Mbps

Bill of Materials : PTP Network		
Part Number	**Qty**	**Description**
C000000L033	40	Gigabit Surge Suppressor (56V)
C110082B001	1	PTP 820S Radio 11GHz,TR500,Ch1W6,Hi,11185-11485MHz. Please select a TX frequency
C110082B002	1	PTP 820S Radio 11GHz,TR500,Ch1W6,Lo,10695-10955MHz. Please select a TX frequency
C110082B015	6	PTP 820S Radio 11WGHz,TR500,Ch1W6,Hi,11185-11485MHz. Please select a TX frequency
C110082B016	6	PTP 820S Radio 11WGHz,TR500,Ch1W6,Lo,10695-10955MHz. Please select a TX frequency
C180082B011	3	PTP 820S Radio 18WGHz,TR1560,ChAll,Hi,19259-19710MHz. Please select a TX frequency
C180082B012	3	PTP 820S Radio 18WGHz,TR1560,ChAll,Lo,17699-18150MHz. Please select a TX frequency
EW-E4PT820S-WW	20	PTP820S Extended Warranty, 4 Additional Years
N000065L001	20	AC Power Injector 56V
N000065L003	20	US Line Cord Fig 8
N000082L014	20	PTP 820 Glands_x5_KIT
N000082L016	15	PTP 820 CAT5E Outdoor 100m drum
N000082L017	45	PTP 820 Grounding Kit for CAT5e F/UTP 8mm cable. Add 2 additional kits per PoE Injector that is installed outdoors
N000082L073	20	PTP 820 GBE_Connector_kit
N000082L116	20	PTP 820 GROUND CABLE FOR IDU and ODU
N000082L125	2	PTP 820 Act.Key - Capacity 500M
N000082L126	18	PTP 820 Act.Key - Capacity 650M
N110082D072	12	PTP 820 2' ANT,SP,11GHz,RFU-C TYPE&Std UBR100 - Andrew. Shorter lead time. Available in all regions
N110082D073	2	PTP 820 3' ANT,SP,11GHz,RFU-C TYPE&Std UBR100 - Andrew. Shorter lead time. Available in all regions
N180082D033	6	PTP 820 2' ANT,SP,18GHz,RFU-C TYPE&Std UBR220 - Andrew. Shorter lead time. Available in all regions

Bill of Materials : PMP Network		
Part Number	**Qty**	**Description**
01010419001	225	Coaxial Cable Grounding Kits for 1/4" and 3/8" Cable
30009406002	82	N-to-N CABLE (16")
C000000L066	11	cnPulse Sync Generator with CambiumSYNC. This part replaces the UGPS (1096)
C000000L500	11	CMM5 Controller
C000000L556	11	CMM5 Power and Sync Injector 56V. CMM5 supports up to 4 radios. Requires suffix 'B' or newer of N000000L054

Bill of Materials : PMP Network (continued)		
Part Number	**Qty**	**Description**
C000065L007	41	LPU and Grounding Kit (1 kit per ODU)
C009045A001	41	900 MHz PMP 450i Connectorized Access Point
EW-E4PM45AP-WW	41	PMP450/450i Access Point Extended Warranty, 4 Additional Years
N000000L034	41	POWER SUPPLY, 30W, 56V - Gbps support
N000000L125	11	CMM5 to cnPulse Shielded Cable - 20m
N009045D001	41	900 MHz 60 degree Sector Antenna (Dual Slant). Includes the mounting bracket for the antenna and AP
WB3176	33	328 ft (100 m) Reel Outdoor Copper Clad CAT5E (Recommended for PTP)

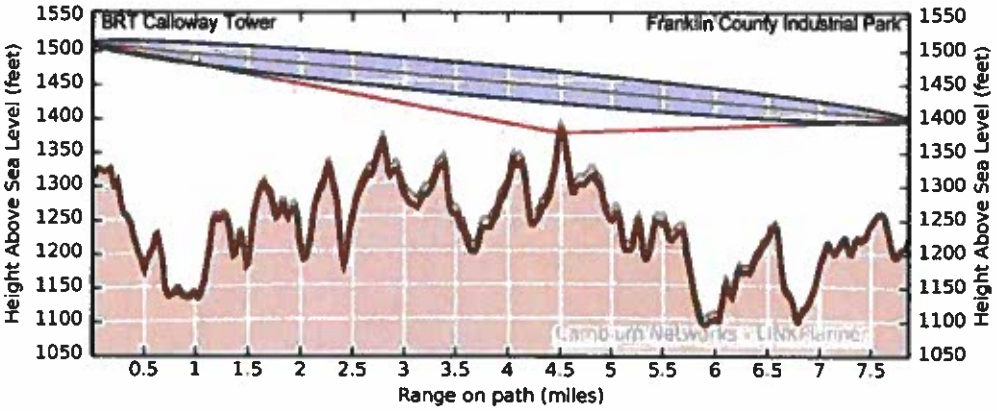
Cambium Networks™

BRT Calloway Tower to Franklin County Industrial Park

Equipment: Cambium Networks PTP11820S (Wide) - 1+0

Cambium Networks 2ft Single Pol (Global)
N110082D072 - Direct @ 195 ft

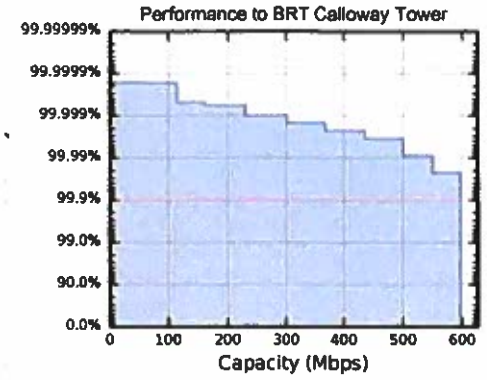
Cambium Networks 2ft Single Pol (Global)
N110082D072 - Direct @ 175 ft

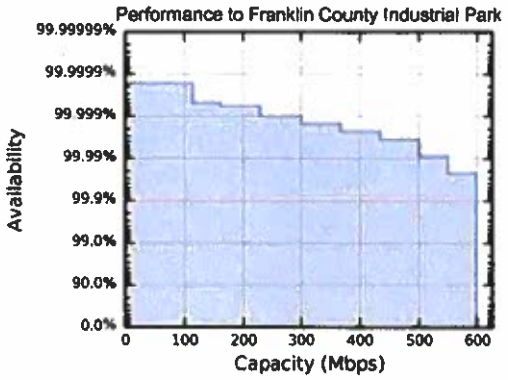


	Performance to BRT Calloway Tower	Performance to Franklin County Industrial Park
Mean IP	595.9 Mbps	595.9 Mbps
IP Availability	99.9998 % for 1.0 Mbps	99.9998 % for 1.0 Mbps

Link Summary			
Link Length	7.872 mi.	System Gain Margin	42.94 dB
Band	11 GHz	Mean Aggregate Data Rate	1191.9 Mbps
Regulation	FCC	Annual Link Availability	99.9998 %
Modulation	Adaptive	Annual Link Unavailability	1.0 mins/year
Bandwidth	80 MHz	Frame Size	1518 Bytes
Total Path Loss	135.70 dB	Prediction Model	Vigants-Barnett
System Gain	178.64 dB		

Performance Charts





Climatic Factors, Losses and Standards

Terrain Roughness	64.99 feet	Excess Path Loss	0.00 dB
Climatic Factor	1.0	Annual 2-way Availability	100.0000 %
C Factor	0.71	Annual 2-way Unavailability	8 secs/year
Temperature	53.4° F	Rain Availability	99.9998 %
Value of K Exceeded for 99.99% (ke)	0.46	Rain Unavailability	52 secs/year
Excess Path Loss at ke	0.00 dB	Atmospheric Gasses	ITU-R P.676-7, ITU-R P.835-4
0.01% Rain rate	52.66 mm/hr	Diffraction Loss	ITU-R P.526-10
Free Space Path Loss	135.49 dB	Propagation	Vigants-Barnett
Gaseous Absorption Loss	0.21 dB	Rain Rate	ITU-R P.837-5
Profile Type	Line-of-Sight	Refractivity Index	ITU-R P.453-9

Bill of Materials

Part Number	Qty	Description
C000000L033	4	Gigabit Surge Suppressor (56V)
C110082B015	1	PTP 820S Radio 11WGHz,TR500,Ch1W6,Hi,11185-11485MHz. Please select a TX frequency
C110082B016	1	PTP 820S Radio 11WGHz,TR500,Ch1W6,Lo,10695-10955MHz. Please select a TX frequency
EW-E4PT820S-WW	2	PTP820S Extended Warranty, 4 Additional Years
N000065L001	2	AC Power Injector 56V
N000065L003	2	US Line Cord Fig 8
N000082L014	2	PTP 820 Glands_x5_KIT
N000082L016	2	PTP 820 CAT5E Outdoor 100m drum
N000082L017	6	PTP 820 Grounding Kit for CAT5e F/UTP 8mm cable. Add 2 additional kits per PoE Injector that is installed outdoors

Bill of Materials (continued)

Part Number	Qty	Description
N000082L073	2	PTP 820 GBE_Connector_kit
N000082L116	2	PTP 820 GROUND CABLE FOR IDU and ODU
N000082L126	2	PTP 820 Act.Key - Capacity 650M
N110082D072	2	PTP 820 2' ANT,SP,11GHz,RFU-C TYPE&Std UBR100 - Andrew. Shorter lead time. Available in all regions

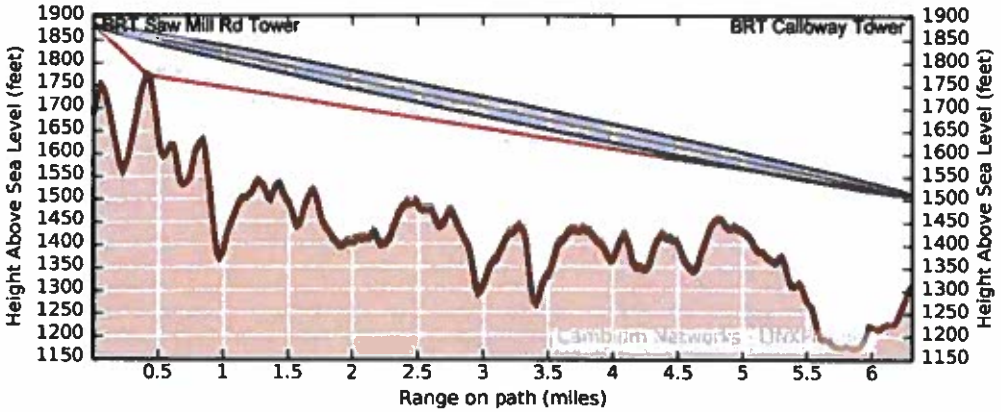
Cambium Networks

BRT Saw Mill Rd Tower to BRT Calloway Tower

Equipment: Cambium Networks PTP11820S (Narrow) - 1+0

Cambium Networks 2ft Single Pol (Global)
N110082D072 - Direct @ 195 ft

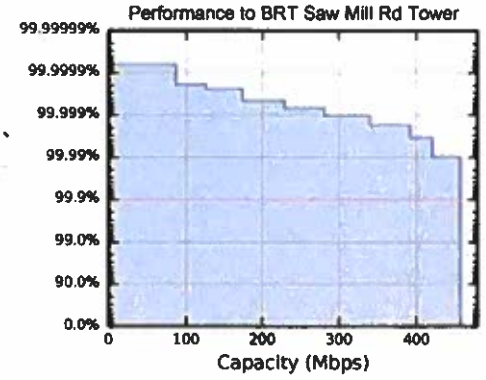
Cambium Networks 2ft Single Pol (Global)
N110082D072 - Direct @ 195 ft

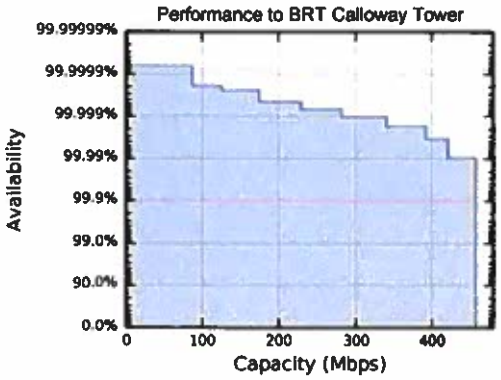


	Performance to BRT Saw Mill Rd Tower	Performance to BRT Calloway Tower
Mean IP	457.7 Mbps	457.7 Mbps
IP Availability	99.9999 % for 1.0 Mbps	99.9999 % for 1.0 Mbps

Link Summary			
Link Length	6.313 mi.	System Gain Margin	45.90 dB
Band	11 GHz	Mean Aggregate Data Rate	915.4 Mbps
Regulation	FCC	Annual Link Availability	99.9999 %
Modulation	Adaptive	Annual Link Unavailability	24 secs/year
Bandwidth	80 MHz	Frame Size	1518 Bytes
Total Path Loss	133.74 dB	Prediction Model	Vigants-Barnett
System Gain	179.64 dB		

Performance Charts





Climatic Factors, Losses and Standards

Terrain Roughness	82.31 feet	Excess Path Loss	0.00 dB
Climatic Factor	2.0	Annual 2-way Availability	100.0000 %
C Factor	1.05	Annual 2-way Unavailability	3 secs/year
Temperature	53.5° F	Rain Availability	99.9999 %
Value of K Exceeded for 99.99% (ke)	0.40	Rain Unavailability	20 secs/year
Excess Path Loss at ke	0.00 dB	Atmospheric Gasses	ITU-R P.676-7, ITU-R P.835-4
0.01% Rain rate	52.85 mm/hr	Diffraction Loss	ITU-R P.526-10
Free Space Path Loss	133.57 dB	Propagation	Vigants-Barnett
Gaseous Absorption Loss	0.17 dB	Rain Rate	ITU-R P.837-5
Profile Type	Line-of-Sight	Refractivity Index	ITU-R P.453-9

Bill of Materials

Part Number	Qty	Description
C000000L033	4	Gigabit Surge Suppressor (56V)
C110082B001	1	PTP 820S Radio 11GHz,TR500,Ch1W6,Hi,11185-11485MHz. Please select a TX frequency
C110082B002	1	PTP 820S Radio 11GHz,TR500,Ch1W6,Lo,10695-10955MHz. Please select a TX frequency
EW-E4PT820S-WW	2	PTP820S Extended Warranty, 4 Additional Years
N000065L001	2	AC Power Injector 56V
N000065L003	2	US Line Cord Fig 8
N000082L014	2	PTP 820 Glands_x5_KIT
N000082L016	2	PTP 820 CAT5E Outdoor 100m drum
N000082L017	6	PTP 820 Grounding Kit for CAT5e F/UTP 8mm cable. Add 2 additional kits per PoE Injector that is installed outdoors

Bill of Materials (continued)

Part Number	Qty	Description
N000082L073	2	PTP 820 GBE_Connector_kit
N000082L116	2	PTP 820 GROUND CABLE FOR IDU and ODU
N000082L125	2	PTP 820 Act.Key - Capacity 500M
N110082D072	2	PTP 820 2' ANT,SP,11GHz,RFU-C TYPE&Std UBR100 - Andrew. Shorter lead time. Available in all regions

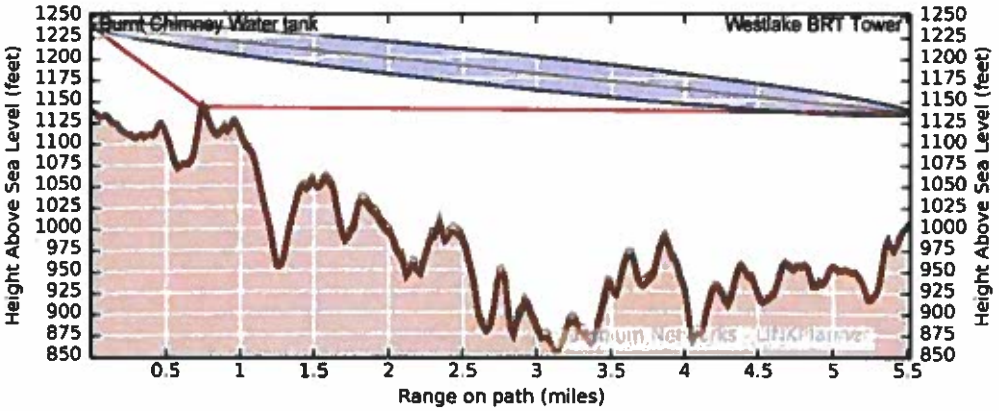
Cambium Networks

Burnt Chimney Water tank to Westlake BRT Tower

Equipment: Cambium Networks PTP11820S (Wide) - 1+0

Cambium Networks 2ft Single Pol (Global)
N110082D072 - Direct @ 100 ft

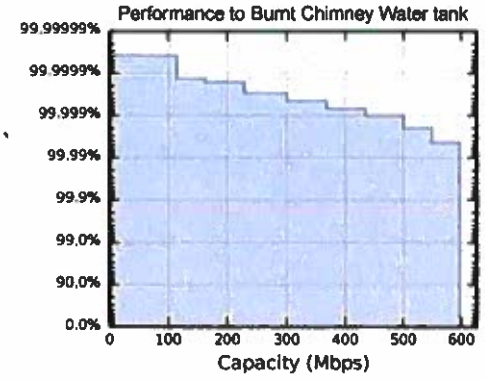
Cambium Networks 2ft Single Pol (Global)
N110082D072 - Direct @ 130 ft

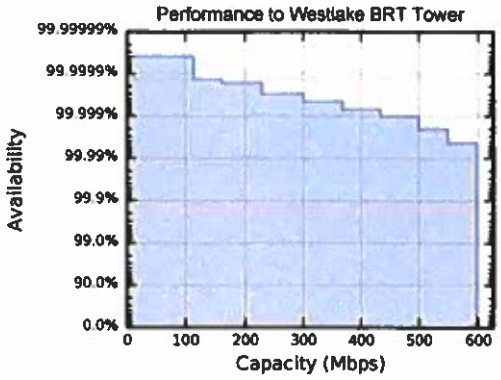


	Performance to Burnt Chimney Water tank	Performance to Westlake BRT Tower
Mean IP	596.0 Mbps	596.0 Mbps
IP Availability	100.0000 % for 1.0 Mbps	100.0000 % for 1.0 Mbps

Link Summary			
Link Length	5.521 mi.	System Gain Margin	46.08 dB
Band	11 GHz	Mean Aggregate Data Rate	1191.9 Mbps
Regulation	FCC	Annual Link Availability	100.0000 %
Modulation	Adaptive	Annual Link Unavailability	13 secs/year
Bandwidth	80 MHz	Frame Size	1518 Bytes
Total Path Loss	132.56 dB	Prediction Model	Vigants-Barnett
System Gain	178.64 dB		

Performance Charts





Climatic Factors, Losses and Standards

Terrain Roughness	71.27 feet	Excess Path Loss	0.00 dB
Climatic Factor	1.0	Annual 2-way Availability	100.0000 %
C Factor	0.63	Annual 2-way Unavailability	1 secs/year
Temperature	53.7° F	Rain Availability	100.0000 %
Value of K Exceeded for 99.99% (ke)	0.40	Rain Unavailability	12 secs/year
Excess Path Loss at ke	0.00 dB	Atmospheric Gasses	ITU-R P.676-7, ITU-R P.835-4
0.01% Rain rate	52.58 mm/hr	Diffraction Loss	ITU-R P.526-10
Free Space Path Loss	132.40 dB	Propagation	Vigants-Barnett
Gaseous Absorption Loss	0.15 dB	Rain Rate	ITU-R P.837-5
Profile Type	Line-of-Sight	Refractivity Index	ITU-R P.453-9

Bill of Materials

Part Number	Qty	Description
C000000L033	4	Gigabit Surge Suppressor (56V)
C110082B015	1	PTP 820S Radio 11WGHz,TR500,Ch1W6,Hi,11185-11485MHz. Please select a TX frequency
C110082B016	1	PTP 820S Radio 11WGHz,TR500,Ch1W6,Lo,10695-10955MHz. Please select a TX frequency
EW-E4PT820S-WW	2	PTP820S Extended Warranty, 4 Additional Years
N000065L001	2	AC Power Injector 56V
N000065L003	2	US Line Cord Fig 8
N000082L014	2	PTP 820 Glands_x5_KIT
N000082L016	1	PTP 820 CAT5E Outdoor 100m drum
N000082L017	4	PTP 820 Grounding Kit for CAT5e F/UTP 8mm cable. Add 2 additional kits per PoE Injector that is installed outdoors

Bill of Materials (continued)

Part Number	Qty	Description
N000082L073	2	PTP 820 GBE_Connector_kit
N000082L116	2	PTP 820 GROUND CABLE FOR IDU and ODU
N000082L126	2	PTP 820 Act.Key - Capacity 650M
N110082D072	2	PTP 820 2' ANT,SP,11GHz,RFU-C TYPE&Std UBR100 - Andrew. Shorter lead time. Available in all regions

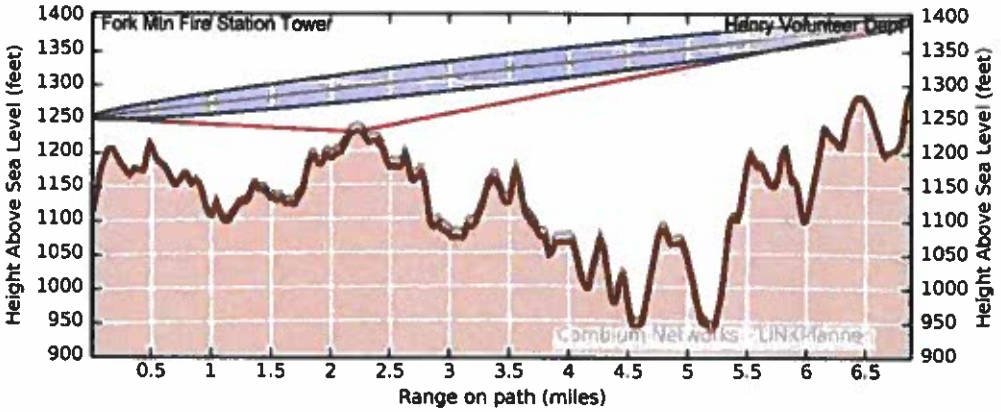
Cambium Networks™

Fork Mtn Fire Station Tower to Henry Volunteer Dept

Equipment: Cambium Networks PTP11820S (Wide) - 1+0

Cambium Networks 2ft Single Pol (Global)
N110082D072 - Direct @ 140 ft

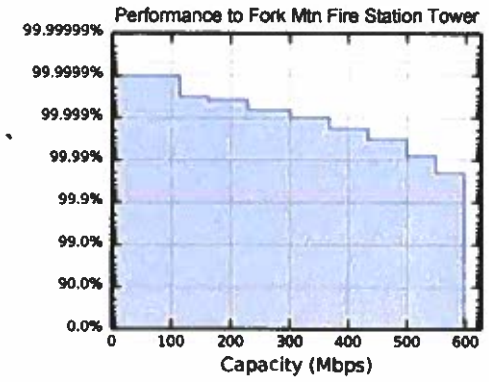
Cambium Networks 2ft Single Pol (Global)
N110082D072 - Direct @ 100 ft

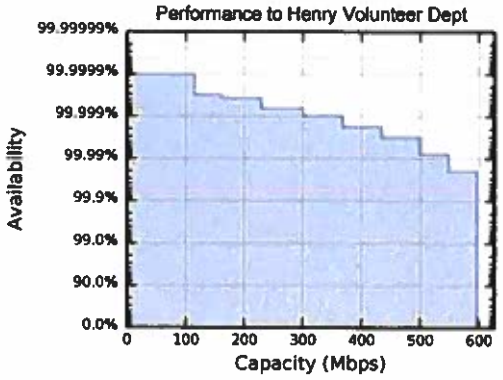


	Performance to Fork Mtn Fire Station Tower	Performance to Henry Volunteer Dept
Mean IP	595.9 Mbps	595.9 Mbps
IP Availability	99.9999 % for 1.0 Mbps	99.9999 % for 1.0 Mbps

Link Summary			
Link Length	6.888 mi.	System Gain Margin	44.12 dB
Band	11 GHz	Mean Aggregate Data Rate	1191.9 Mbps
Regulation	FCC	Annual Link Availability	99.9999 %
Modulation	Adaptive	Annual Link Unavailability	40 secs/year
Bandwidth	80 MHz	Frame Size	1518 Bytes
Total Path Loss	134.52 dB	Prediction Model	Vigants-Barnett
System Gain	178.64 dB		

Performance Charts





Climatic Factors, Losses and Standards

Terrain Roughness	72.98 feet	Excess Path Loss	0.00 dB
Climatic Factor	2.0	Annual 2-way Availability	100.0000 %
C Factor	1.22	Annual 2-way Unavailability	8 secs/year
Temperature	54.0° F	Rain Availability	99.9999 %
Value of K Exceeded for 99.99% (ke)	0.43	Rain Unavailability	32 secs/year
Excess Path Loss at ke	0.00 dB	Atmospheric Gasses	ITU-R P.676-7, ITU-R P.835-4
0.01% Rain rate	52.84 mm/hr	Diffraction Loss	ITU-R P.526-10
Free Space Path Loss	134.33 dB	Propagation	Vigants-Barnett
Gaseous Absorption Loss	0.19 dB	Rain Rate	ITU-R P.837-5
Profile Type	Line-of-Sight	Refractivity Index	ITU-R P.453-9

Bill of Materials

Part Number	Qty	Description
C000000L033	4	Gigabit Surge Suppressor (56V)
C110082B015	1	PTP 820S Radio 11WGHz,TR500,Ch1W6,Hi,11185-11485MHz. Please select a TX frequency
C110082B016	1	PTP 820S Radio 11WGHz,TR500,Ch1W6,Lo,10695-10955MHz. Please select a TX frequency
EW-E4PT820S-WW	2	PTP820S Extended Warranty, 4 Additional Years
N000065L001	2	AC Power Injector 56V
N000065L003	2	US Line Cord Fig 8
N000082L014	2	PTP 820 Glands_x5_KIT
N000082L016	1	PTP 820 CAT5E Outdoor 100m drum
N000082L017	4	PTP 820 Grounding Kit for CAT5e F/UTP 8mm cable. Add 2 additional kits per PoE Injector that is installed outdoors

Bill of Materials (continued)

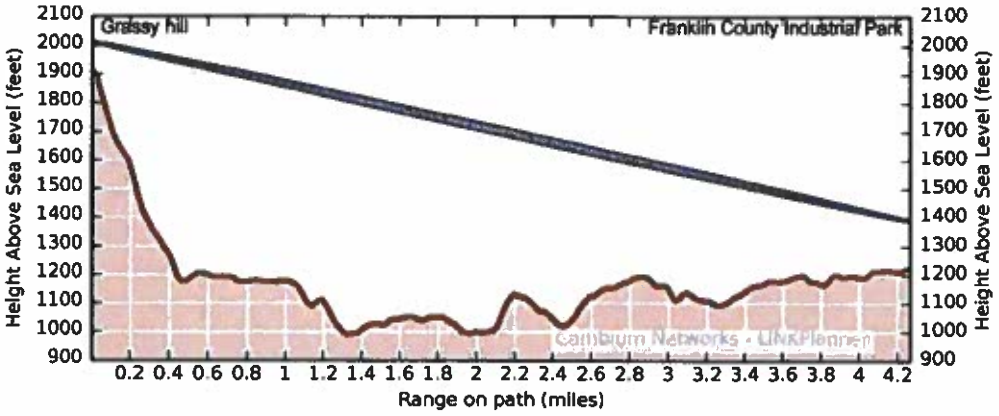
Part Number	Qty	Description
N000082L073	2	PTP 820 GBE_Connector_kit
N000082L116	2	PTP 820 GROUND CABLE FOR IDU and ODU
N000082L126	2	PTP 820 Act.Key - Capacity 650M
N110082D072	2	PTP 820 2' ANT,SP,11GHz,RFU-C TYPE&Std UBR100 - Andrew. Shorter lead time. Available in all regions

Grassy hill to Franklin County Industrial Park

Equipment: Cambium Networks PTP18820S (Wide) - 1+0

Cambium Networks 2ft Single Pol (Global)
N180082D033 - Direct @ 100 ft

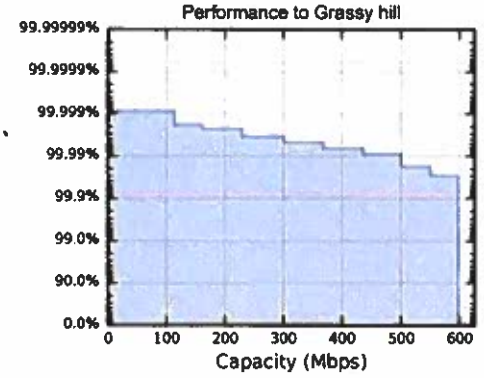
Cambium Networks 2ft Single Pol (Global)
N180082D033 - Direct @ 165 ft

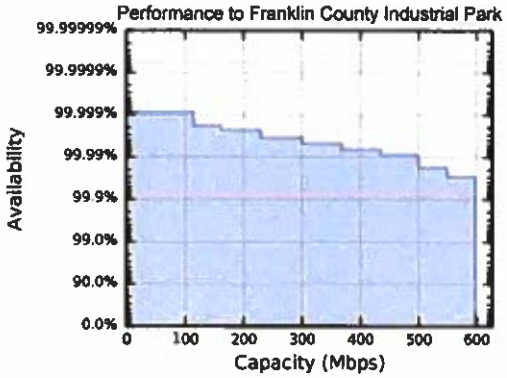


	Performance to Grassy hill	Performance to Franklin County Industrial Park
Mean IP	595.9 Mbps	595.9 Mbps
IP Availability	99.9991 % for 1.0 Mbps	99.9991 % for 1.0 Mbps

Link Summary			
Link Length	4.268 mi.	System Gain Margin	46.38 dB
Band	18 GHz	Mean Aggregate Data Rate	1191.9 Mbps
Regulation	FCC	Annual Link Availability	99.9991 %
Modulation	Adaptive	Annual Link Unavailability	4.5 mins/year
Bandwidth	80 MHz	Frame Size	1518 Bytes
Total Path Loss	135.12 dB	Prediction Model	Vigants-Barnett
System Gain	181.50 dB		

Performance Charts





Climatic Factors, Losses and Standards

Terrain Roughness	67.67 feet	Excess Path Loss	0.00 dB
Climatic Factor	1.0	Annual 2-way Availability	100.0000 %
C Factor	0.67	Annual 2-way Unavailability	1 secs/year
Temperature	53.6° F	Rain Availability	99.9991 %
Value of K Exceeded for 99.99% (ke)	0.40	Rain Unavailability	4.5 mins/year
Excess Path Loss at ke	0.00 dB	Atmospheric Gasses	ITU-R P.676-7, ITU-R P.835-4
0.01% Rain rate	52.55 mm/hr	Diffraction Loss	ITU-R P.526-10
Free Space Path Loss	134.62 dB	Propagation	Vigants-Barnett
Gaseous Absorption Loss	0.50 dB	Rain Rate	ITU-R P.837-5
Profile Type	Line-of-Sight	Refractivity Index	ITU-R P.453-9

Bill of Materials

Part Number	Qty	Description
C000000L033	4	Gigabit Surge Suppressor (56V)
C180082B011	1	PTP 820S Radio 18WGHz,TR1560,ChAll,Hi,19259-19710MHz. Please select a TX frequency
C180082B012	1	PTP 820S Radio 18WGHz,TR1560,ChAll,Lo,17699-18150MHz. Please select a TX frequency
EW-E4PT820S-WW	2	PTP820S Extended Warranty, 4 Additional Years
N000065L001	2	AC Power Injector 56V
N000065L003	2	US Line Cord Fig 8
N000082L014	2	PTP 820 Glands_x5_KIT
N000082L016	2	PTP 820 CAT5E Outdoor 100m drum
N000082L017	4	PTP 820 Grounding Kit for CAT5e F/UTP 8mm cable. Add 2 additional kits per PoE Injector that is installed outdoors

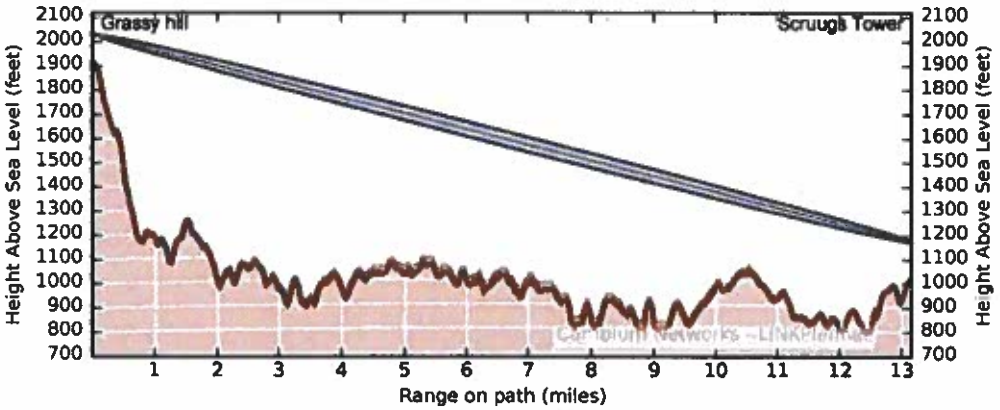
Bill of Materials (continued)		
Part Number	Qty	Description
N000082L073	2	PTP 820 GBE_Connector_kit
N000082L116	2	PTP 820 GROUND CABLE FOR IDU and ODU
N000082L126	2	PTP 820 Act.Key - Capacity 650M
N180082D033	2	PTP 820 2' ANT,SP,18GHz,RFU-C TYPE&Std UBR220 - Andrew. Shorter lead time. Available in all regions

Grassy hill to Scruugs Tower

Equipment: Cambium Networks PTP11820S (Wide) - 1+0

Cambium Networks 2ft Single Pol (Global)
N110082D072 - Direct @ 120 ft

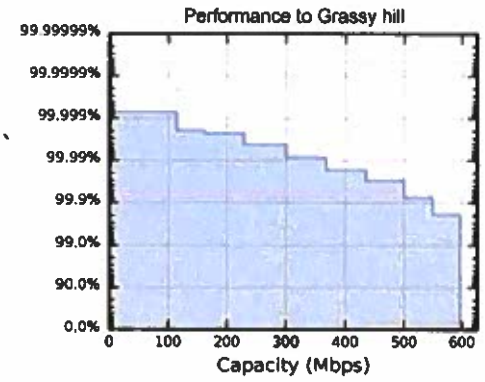
Cambium Networks 2ft Single Pol (Global)
N110082D072 - Direct @ 150 ft

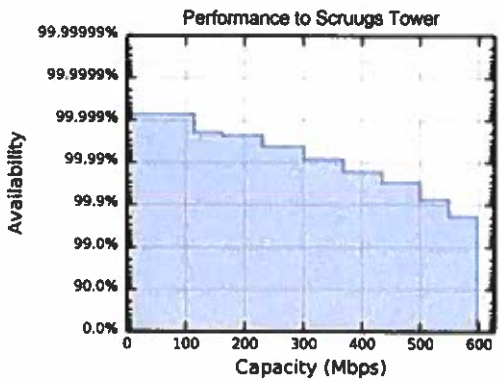


	Performance to Grassy hill	Performance to Scruugs Tower
Mean IP	595.8 Mbps	595.8 Mbps
IP Availability	99.9993 % for 1.0 Mbps	99.9993 % for 1.0 Mbps

Link Summary			
Link Length	13.160 mi.	System Gain Margin	38.34 dB
Band	11 GHz	Mean Aggregate Data Rate	1191.6 Mbps
Regulation	FCC	Annual Link Availability	99.9991 %
Modulation	Adaptive	Annual Link Unavailability	5.0 mins/year
Bandwidth	80 MHz	Frame Size	1518 Bytes
Total Path Loss	140.30 dB	Prediction Model	Vigants-Barnett
System Gain	178.64 dB		

Performance Charts





Climatic Factors, Losses and Standards

Terrain Roughness	93.46 feet	Excess Path Loss	0.00 dB
Climatic Factor	1.0	Annual 2-way Availability	99.9998 %
C Factor	0.44	Annual 2-way Unavailability	1.2 mins/year
Temperature	53.8° F	Rain Availability	99.9993 %
Value of K Exceeded for 99.99% (ke)	0.60	Rain Unavailability	3.8 mins/year
Excess Path Loss at ke	0.00 dB	Atmospheric Gasses	ITU-R P.676-7, ITU-R P.835-4
0.01% Rain rate	52.63 mm/hr	Diffraction Loss	ITU-R P.526-10
Free Space Path Loss	139.95 dB	Propagation	Vigants-Barnett
Gaseous Absorption Loss	0.35 dB	Rain Rate	ITU-R P.837-5
Profile Type	Line-of-Sight	Refractivity Index	ITU-R P.453-9

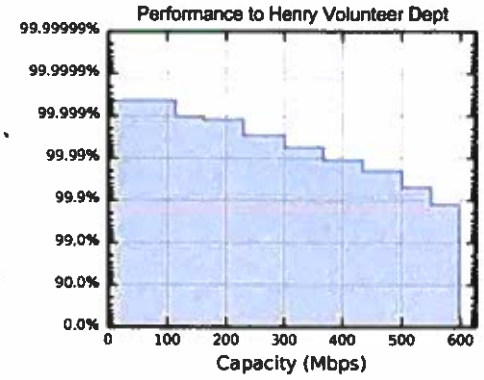
Bill of Materials

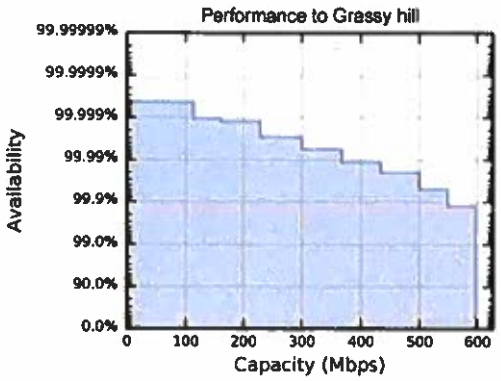
Part Number	Qty	Description
C000000L033	4	Gigabit Surge Suppressor (56V)
C110082B015	1	PTP 820S Radio 11WGHz,TR500,Ch1W6,Hi,11185-11485MHz. Please select a TX frequency
C110082B016	1	PTP 820S Radio 11WGHz,TR500,Ch1W6,Lo,10695-10955MHz. Please select a TX frequency
EW-E4PT820S-WW	2	PTP820S Extended Warranty, 4 Additional Years
N000065L001	2	AC Power Injector 56V
N000065L003	2	US Line Cord Fig 8
N000082L014	2	PTP 820 Glands_x5_KIT
N000082L016	2	PTP 820 CAT5E Outdoor 100m drum
N000082L017	4	PTP 820 Grounding Kit for CAT5e F/UTP 8mm cable. Add 2 additional kits per PoE Injector that is installed outdoors

Bill of Materials (continued)

Part Number	Qty	Description
N000082L073	2	PTP 820 GBE_Connector_kit
N000082L116	2	PTP 820 GROUND CABLE FOR IDU and ODU
N000082L126	2	PTP 820 Act.Key - Capacity 650M
N110082D072	2	PTP 820 2' ANT,SP,11GHz,RFU-C TYPE&Std UBR100 - Andrew. Shorter lead time. Available in all regions

Performance Charts





Climatic Factors, Losses and Standards

Terrain Roughness	75.22 feet	Excess Path Loss	0.00 dB
Climatic Factor	2.0	Annual 2-way Availability	99.9998 %
C Factor	1.18	Annual 2-way Unavailability	48 secs/year
Temperature	53.8° F	Rain Availability	99.9996 %
Value of K Exceeded for 99.99% (ke)	0.62	Rain Unavailability	2.3 mins/year
Excess Path Loss at ke	0.00 dB	Atmospheric Gasses	ITU-R P.676-7, ITU-R P.835-4
0.01% Rain rate	52.74 mm/hr	Diffraction Loss	ITU-R P.526-10
Free Space Path Loss	140.57 dB	Propagation	Vigants-Barnett
Gaseous Absorption Loss	0.37 dB	Rain Rate	ITU-R P.837-5
Profile Type	Line-of-Sight	Refractivity Index	ITU-R P.453-9

Bill of Materials

Part Number	Qty	Description
C000000L033	4	Gigabit Surge Suppressor (56V)
C110082B015	1	PTP 820S Radio 11WGHz,TR500,Ch1W6,Hi,11185-11485MHz. Please select a TX frequency
C110082B016	1	PTP 820S Radio 11WGHz,TR500,Ch1W6,Lo,10695-10955MHz. Please select a TX frequency
EW-E4PT820S-WW	2	PTP820S Extended Warranty, 4 Additional Years
N000065L001	2	AC Power Injector 56V
N000065L003	2	US Line Cord Fig 8
N000082L014	2	PTP 820 Glands_x5_KIT
N000082L016	1	PTP 820 CAT5E Outdoor 100m drum
N000082L017	4	PTP 820 Grounding Kit for CAT5e F/UTP 8mm cable. Add 2 additional kits per PoE Injector that is installed outdoors

Bill of Materials (continued)

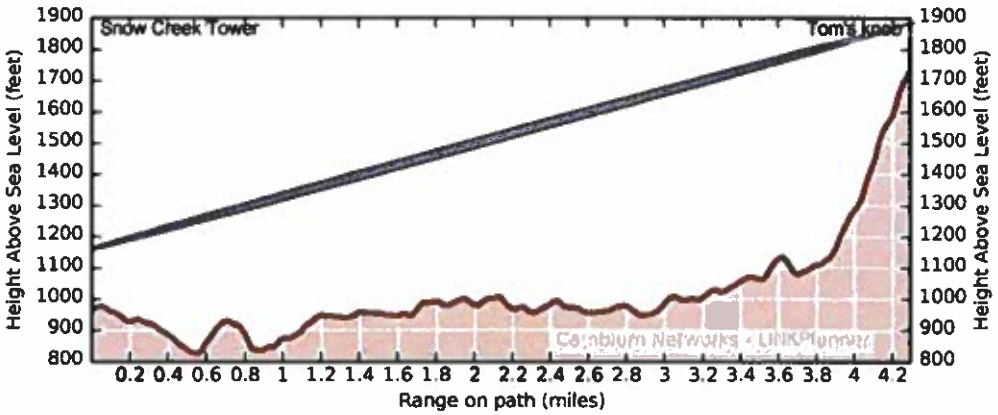
Part Number	Qty	Description
N000082L073	2	PTP 820 GBE_Connector_kit
N000082L116	2	PTP 820 GROUND CABLE FOR IDU and ODU
N000082L126	2	PTP 820 Act.Key - Capacity 650M
N110082D073	2	PTP 820 3' ANT,SP,11GHz,RFU-C TYPE&Std UBR100 - Andrew. Shorter lead time. Available in all regions

Snow Creek Tower to Tom's knob

Equipment: Cambium Networks PTP18820S (Wide) - 1+0

Cambium Networks 2ft Single Pol (Global)
N180082D033 - Direct @ 195 ft

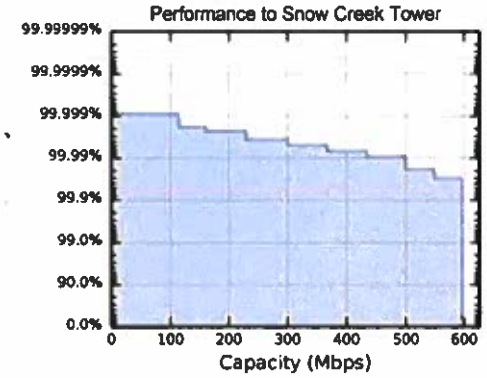
Cambium Networks 2ft Single Pol (Global)
N180082D033 - Direct @ 150 ft

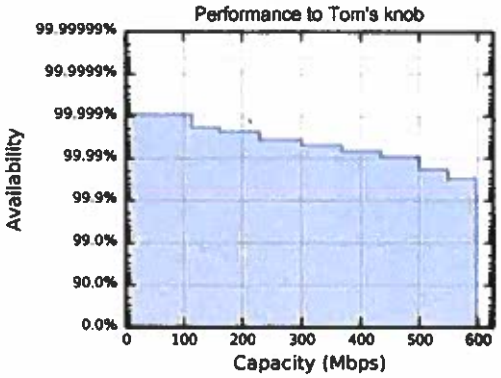


	Performance to Snow Creek Tower	Performance to Tom's knob
Mean IP	595.9 Mbps	595.9 Mbps
IP Availability	99.9991 % for 1.0 Mbps	99.9991 % for 1.0 Mbps

Link Summary			
Link Length	4.294 mi.	System Gain Margin	46.32 dB
Band	18 GHz	Mean Aggregate Data Rate	1191.8 Mbps
Regulation	FCC	Annual Link Availability	99.9991 %
Modulation	Adaptive	Annual Link Unavailability	4.7 mins/year
Bandwidth	80 MHz	Frame Size	1518 Bytes
Total Path Loss	135.18 dB	Prediction Model	Vigants-Barnett
System Gain	181.50 dB		

Performance Charts





Climatic Factors, Losses and Standards

Terrain Roughness	71.25 feet	Excess Path Loss	0.00 dB
Climatic Factor	2.0	Annual 2-way Availability	100.0000 %
C Factor	1.26	Annual 2-way Unavailability	2 secs/year
Temperature	54.3° F	Rain Availability	99.9991 %
Value of K Exceeded for 99.99% (ke)	0.40	Rain Unavailability	4.6 mins/year
Excess Path Loss at ke	0.00 dB	Atmospheric Gasses	ITU-R P.676-7, ITU-R P.835-4
0.01% Rain rate	52.87 mm/hr	Diffraction Loss	ITU-R P.526-10
Free Space Path Loss	134.67 dB	Propagation	Vigants-Barnett
Gaseous Absorption Loss	0.51 dB	Rain Rate	ITU-R P.837-5
Profile Type	Line-of-Sight	Refractivity Index	ITU-R P.453-9

Bill of Materials

Part Number	Qty	Description
C000000L033	4	Gigabit Surge Suppressor (56V)
C180082B011	1	PTP 820S Radio 18WGHz,TR1560,ChAll,Hi,19259-19710MHz. Please select a TX frequency
C180082B012	1	PTP 820S Radio 18WGHz,TR1560,ChAll,Lo,17699-18150MHz. Please select a TX frequency
EW-E4PT820S-WW	2	PTP820S Extended Warranty, 4 Additional Years
N000065L001	2	AC Power Injector 56V
N000065L003	2	US Line Cord Fig 8
N000082L014	2	PTP 820 Glands_x5_KIT
N000082L016	2	PTP 820 CAT5E Outdoor 100m drum
N000082L017	5	PTP 820 Grounding Kit for CAT5e F/UTP 8mm cable. Add 2 additional kits per PoE Injector that is installed outdoors

Bill of Materials (continued)

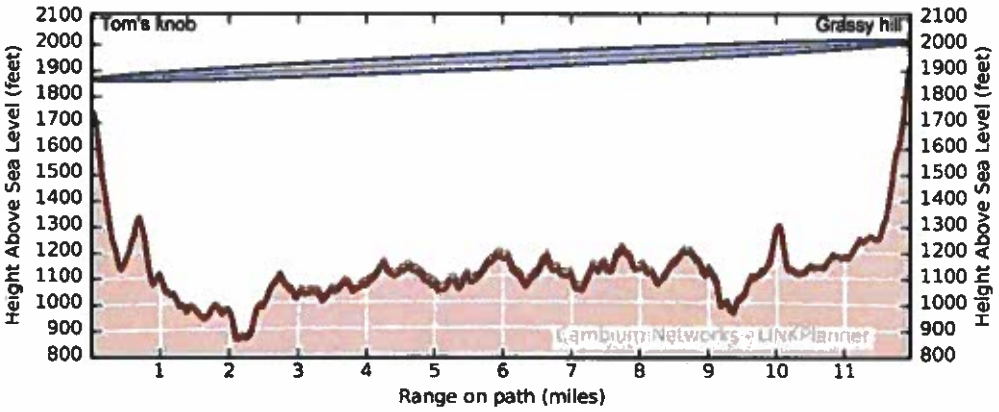
Part Number	Qty	Description
N000082L073	2	PTP 820 GBE_Connector_kit
N000082L116	2	PTP 820 GROUND CABLE FOR IDU and ODU
N000082L126	2	PTP 820 Act.Key - Capacity 650M
N180082D033	2	PTP 820 2' ANT,SP,18GHz,RFU-C TYPE&Std UBR220 - Andrew. Shorter lead time. Available in all regions

Tom's knob to Grassy hill

Equipment: Cambium Networks PTP11820S (Wide) - 1+0

Cambium Networks 2ft Single Pol (Global)
N110082D072 - Direct @ 130 ft

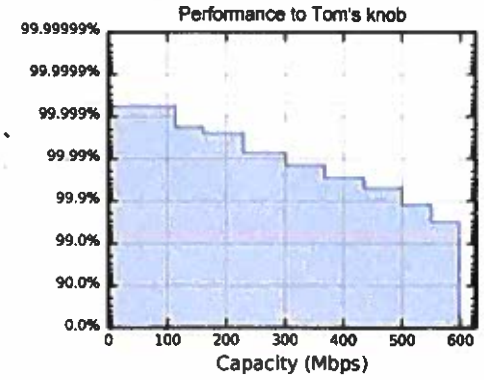
Cambium Networks 2ft Single Pol (Global)
N110082D072 - Direct @ 100 ft

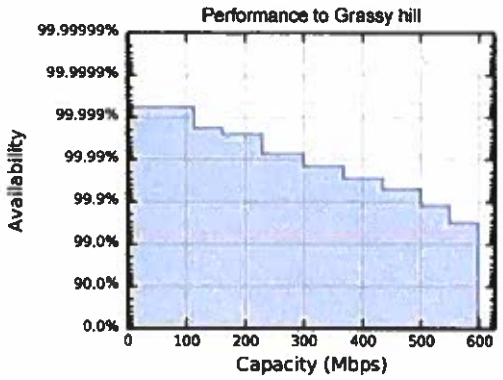


	Performance to Tom's knob	Performance to Grassy hill
Mean IP	595.7 Mbps	595.7 Mbps
IP Availability	99.9994 % for 1.0 Mbps	99.9994 % for 1.0 Mbps

Link Summary			
Link Length	11.968 mi.	System Gain Margin	39.21 dB
Band	11 GHz	Mean Aggregate Data Rate	1191.4 Mbps
Regulation	FCC	Annual Link Availability	99.9991 %
Modulation	Adaptive	Annual Link Unavailability	5.0 mins/year
Bandwidth	80 MHz	Frame Size	1518 Bytes
Total Path Loss	139.43 dB	Prediction Model	Vigants-Barnett
System Gain	178.64 dB		

Performance Charts





Climatic Factors, Losses and Standards

Terrain Roughness	73.79 feet	Excess Path Loss	0.00 dB
Climatic Factor	2.0	Annual 2-way Availability	99.9996 %
C Factor	1.21	Annual 2-way Unavailability	2.0 mins/year
Temperature	54.0° F	Rain Availability	99.9994 %
Value of K Exceeded for 99.99% (ke)	0.58	Rain Unavailability	3.0 mins/year
Excess Path Loss at ke	0.00 dB	Atmospheric Gasses	ITU-R P.676-7, ITU-R P.835-4
0.01% Rain rate	52.64 mm/hr	Diffraction Loss	ITU-R P.526-10
Free Space Path Loss	139.13 dB	Propagation	Vigants-Barnett
Gaseous Absorption Loss	0.31 dB	Rain Rate	ITU-R P.837-5
Profile Type	Line-of-Sight	Refractivity Index	ITU-R P.453-9

Bill of Materials

Part Number	Qty	Description
C000000L033	4	Gigabit Surge Suppressor (56V)
C110082B015	1	PTP 820S Radio 11WGHz,TR500,Ch1W6,Hi,11185-11485MHz. Please select a TX frequency
C110082B016	1	PTP 820S Radio 11WGHz,TR500,Ch1W6,Lo,10695-10955MHz. Please select a TX frequency
EW-E4PT820S-WW	2	PTP820S Extended Warranty, 4 Additional Years
N000065L001	2	AC Power Injector 56V
N000065L003	2	US Line Cord Fig 8
N000082L014	2	PTP 820 Glands_x5_KIT
N000082L016	1	PTP 820 CAT5E Outdoor 100m drum
N000082L017	4	PTP 820 Grounding Kit for CAT5e F/UTP 8mm cable. Add 2 additional kits per PoE Injector that is installed outdoors

Bill of Materials (continued)

Part Number	Qty	Description
N000082L073	2	PTP 820 GBE_Connector_kit
N000082L116	2	PTP 820 GROUND CABLE FOR IDU and ODU
N000082L126	2	PTP 820 Act.Key - Capacity 650M
N110082D072	2	PTP 820 2' ANT,SP,11GHz,RFU-C TYPE&Std UBR100 - Andrew. Shorter lead time. Available in all regions

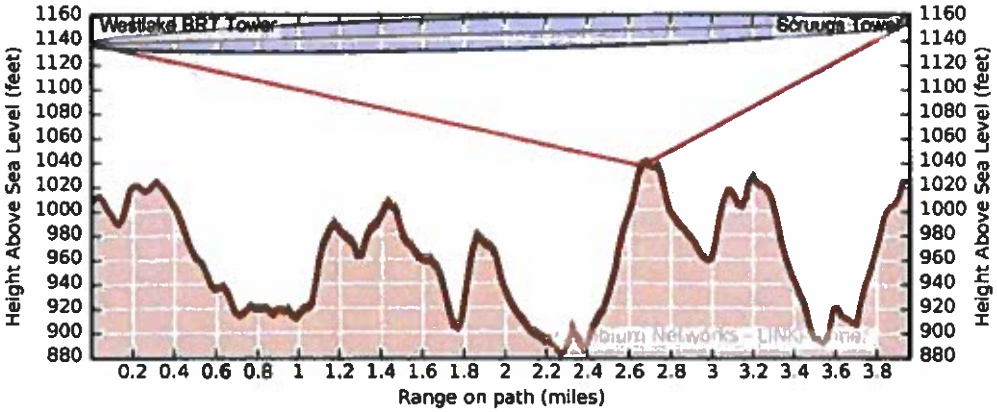
Cambium Networks

Westlake BRT Tower to Scruugs Tower

Equipment: Cambium Networks PTP18820S (Wide) - 1+0

Cambium Networks 2ft Single Pol (Global)
N180082D033 - Direct @ 130 ft

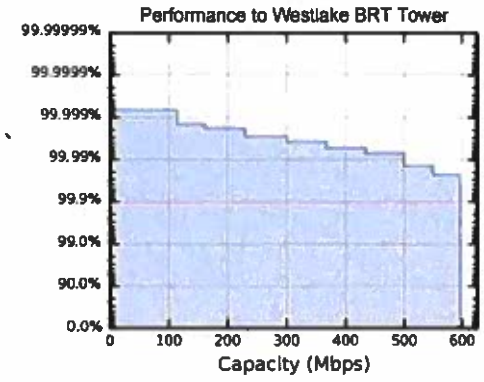
Cambium Networks 2ft Single Pol (Global)
N180082D033 - Direct @ 130 ft

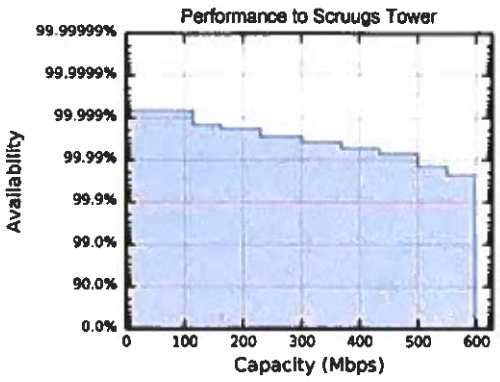


	Performance to Westlake BRT Tower	Performance to Scruugs Tower
Mean IP	595.9 Mbps	595.9 Mbps
IP Availability	99.9993 % for 1.0 Mbps	99.9993 % for 1.0 Mbps

Link Summary			
Link Length	3.962 mi.	System Gain Margin	47.03 dB
Band	18 GHz	Mean Aggregate Data Rate	1191.9 Mbps
Regulation	FCC	Annual Link Availability	99.9993 %
Modulation	Adaptive	Annual Link Unavailability	3.6 mins/year
Bandwidth	80 MHz	Frame Size	1518 Bytes
Total Path Loss	134.47 dB	Prediction Model	Vigants-Barnett
System Gain	181.50 dB		

Performance Charts





Climatic Factors, Losses and Standards

Terrain Roughness	41.76 feet	Excess Path Loss	0.00 dB
Climatic Factor	2.0	Annual 2-way Availability	100.0000 %
C Factor	2.53	Annual 2-way Unavailability	3 secs/year
Temperature	53.9° F	Rain Availability	99.9993 %
Value of K Exceeded for 99.99% (ke)	0.40	Rain Unavailability	3.6 mins/year
Excess Path Loss at ke	0.00 dB	Atmospheric Gasses	ITU-R P.676-7, ITU-R P.835-4
0.01% Rain rate	52.70 mm/hr	Diffraction Loss	ITU-R P.526-10
Free Space Path Loss	133.98 dB	Propagation	Vigants-Barnett
Gaseous Absorption Loss	0.49 dB	Rain Rate	ITU-R P.837-5
Profile Type	Line-of-Sight	Refractivity Index	ITU-R P.453-9

Bill of Materials

Part Number	Qty	Description
C000000L033	4	Gigabit Surge Suppressor (56V)
C180082B011	1	PTP 820S Radio 18WGHz,TR1560,ChAll,Hi,19259-19710MHz. Please select a TX frequency
C180082B012	1	PTP 820S Radio 18WGHz,TR1560,ChAll,Lo,17699-18150MHz. Please select a TX frequency
EW-E4PT820S-WW	2	PTP820S Extended Warranty, 4 Additional Years
N000065L001	2	AC Power Injector 56V
N000065L003	2	US Line Cord Fig 8
N000082L014	2	PTP 820 Glands_x5_KIT
N000082L016	1	PTP 820 CAT5E Outdoor 100m drum
N000082L017	4	PTP 820 Grounding Kit for CAT5e F/UTP 8mm cable. Add 2 additional kits per PoE Injector that is installed outdoors

Bill of Materials (continued)

Part Number	Qty	Description
N000082L073	2	PTP 820 GBE_Connector_kit
N000082L116	2	PTP 820 GROUND CABLE FOR IDU and ODU
N000082L126	2	PTP 820 Act.Key - Capacity 650M
N180082D033	2	PTP 820 2' ANT,SP,18GHz,RFU-C TYPE&Std UBR220 - Andrew. Shorter lead time. Available in all regions

12. BRT Calloway Tower

Hub Summary	
Hub Name	BRT Calloway Tower
Latitude	37.01778N
Longitude	080.03917W
Number of Access Points	4
Number of Connected Subscribers	0
Total Predicted DL Throughput	0.00 Mbps
Total Predicted UL Throughput	0.00 Mbps
Total Throughput	0.00 Mbps

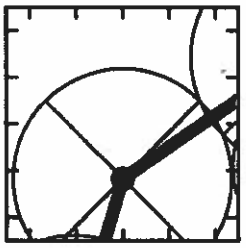
Access Point Name	Product	Antenna Azimuth	Beamwidth	Band	Max Range	Connected Subscribers	Total Predicted Throughput
BRT Calloway Tower : 1	PMP450i	0.0°	60.0°	900 MHz	4 miles	0	0.00 Mbps
BRT Calloway Tower : 2	PMP450i	90.0°	60.0°	900 MHz	4 miles	0	0.00 Mbps
BRT Calloway Tower : 3	PMP450i	180.0°	60.0°	900 MHz	4 miles	0	0.00 Mbps
BRT Calloway Tower : 4	PMP450i	270.0°	60.0°	900 MHz	4 miles	0	0.00 Mbps

Bill of Materials : PMP Network

Part Number	Qty	Description
01010419001	24	Coaxial Cable Grounding Kits for 1/4" and 3/8" Cable
30009406002	8	N-to-N CABLE (16")
C000000L066	1	cnPulse Sync Generator with CambiumSYNC. This part replaces the UGPS (1096)
C000000L500	1	CMM5 Controller
C000000L556	1	CMM5 Power and Sync Injector 56V. CMM5 supports up to 4 radios. Requires suffix 'B' or newer of N000000L054
C000065L007	4	LPU and Grounding Kit (1 kit per ODU)
C009045A001	4	900 MHz PMP 450i Connectorized Access Point
EW-E4PM45AP-WW	4	PMP450/450i Access Point Extended Warranty, 4 Additional Years
N000000L034	4	POWER SUPPLY, 30W, 56V - Gbps support
N000000L125	1	CMM5 to cnPulse Shielded Cable - 20m
N009045D001	4	900 MHz 60 degree Sector Antenna (Dual Slant). Includes the mounting bracket for the antenna and AP

Bill of Materials : PMP Network (continued)		
Part Number	Qty	Description
WB3176	4	328 ft (100 m) Reel Outdoor Copper Clad CAT5E (Recommended for PTP). Total cable requirements are aggregated at the network level

BRT Calloway Tower : 1



Access Point Summary	
AP Name	BRT Calloway Tower : 1
Equipment Type	PMP450i (running Release 16.0)
Antenna Type	Cambium Networks 60° 0.9 GHz Sector Antenna (Dual Slant) N009045D001
Modeled Beamwidth	90°
Antenna Azimuth	0.00° from True North 8.56° from Magnetic North
Antenna Tilt	0.0° (uptilt)
Connected Subscribers	0
Max Range	4 miles
RF Frequency Band	900 MHz (902 to 928 MHz)
RF Channel Bandwidth	20 MHz
Total Predicted DL Throughput	0.00 Mbps
Total Predicted UL Throughput	0.00 Mbps
Total Predicted Throughput	0.00 Mbps
Downlink Data	75 %

Subscriber Module Summary

Name	Latitude	Longitude	Product	Range	Antenna Gain

Bill of Materials : Access Point

Part Number	Qty	Description
01010419001	6	Coaxial Cable Grounding Kits for 1/4" and 3/8" Cable
30009406002	2	N-to-N CABLE (16")
C000065L007	1	LPU and Grounding Kit (1 kit per ODU)
C009045A001	1	900 MHz PMP 450i Connectorized Access Point
EW-E4PM45AP-WW	1	PMP450/450i Access Point Extended Warranty, 4 Additional Years
N000000L034	1	POWER SUPPLY, 30W, 56V - Gbps support
N009045D001	1	900 MHz 60 degree Sector Antenna (Dual Slant). Includes the mounting bracket for the antenna and AP
WB3176	1	328 ft (100 m) Reel Outdoor Copper Clad CAT5E (Recommended for PTP). Total cable requirements are aggregated at the parent level

Mode	Total Mean Predicted Throughput (Mbps)	SMs per DL modulation			SMs per UL modulation		
		Quantity	Percent	Throughput (Mbps)	Quantity	Percent	Throughput (Mbps)
x8 (256QAM MIMO-B)	0	0	0	0	0	0	0
x6 (64QAM MIMO-B)	0	0	0	0	0	0	0
x4 (16QAM MIMO-B)	0	0	0	0	0	0	0
x2 (QPSK MIMO-B)	0	0	0	0	0	0	0
x4 (256QAM MIMO-A)	0	0	0	0	0	0	0
x3 (64QAM MIMO-A)	0	0	0	0	0	0	0
x2 (16QAM MIMO-A)	0	0	0	0	0	0	0
x1 (QPSK MIMO-A)	0	0	0	0	0	0	0

BRT Calloway Tower : 2

Access Point Summary	
AP Name	BRT Calloway Tower : 2
Equipment Type	PMP450i (running Release 16.0)
Antenna Type	Cambium Networks 60° 0.9 GHz Sector Antenna (Dual Slant) N009045D001
Modeled Beamwidth	90°
Antenna Azimuth	90.00° from True North 98.56° from Magnetic North
Antenna Tilt	0.0° (uptilt)
Connected Subscribers	0
Max Range	4 miles
RF Frequency Band	900 MHz (902 to 928 MHz)
RF Channel Bandwidth	20 MHz
Total Predicted DL Throughput	0.00 Mbps
Total Predicted UL Throughput	0.00 Mbps
Total Predicted Throughput	0.00 Mbps
Downlink Data	75 %

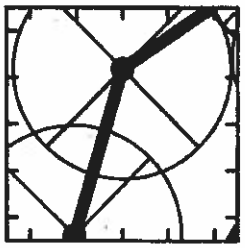
Subscriber Module Summary

Name	Latitude	Longitude	Product	Range	Antenna Gain

Bill of Materials : Access Point		
Part Number	Qty	Description
01010419001	6	Coaxial Cable Grounding Kits for 1/4" and 3/8" Cable
30009406002	2	N-to-N CABLE (16")
C000065L007	1	LPU and Grounding Kit (1 kit per ODU)
C009045A001	1	900 MHz PMP 450i Connectorized Access Point
EW-E4PM45AP-WW	1	PMP450/450i Access Point Extended Warranty, 4 Additional Years
N000000L034	1	POWER SUPPLY, 30W, 56V - Gbps support
N009045D001	1	900 MHz 60 degree Sector Antenna (Dual Slant). Includes the mounting bracket for the antenna and AP
WB3176	1	328 ft (100 m) Reel Outdoor Copper Clad CAT5E (Recommended for PTP). Total cable requirements are aggregated at the parent level

Mode	Total Mean Predicted Throughput (Mbps)	SMs per DL modulation			SMs per UL modulation		
		Quantity	Percent	Throughput (Mbps)	Quantity	Percent	Throughput (Mbps)
x8 (256QAM MIMO-B)	0	0	0	0	0	0	0
x6 (64QAM MIMO-B)	0	0	0	0	0	0	0
x4 (16QAM MIMO-B)	0	0	0	0	0	0	0
x2 (QPSK MIMO-B)	0	0	0	0	0	0	0
x4 (256QAM MIMO-A)	0	0	0	0	0	0	0
x3 (64QAM MIMO-A)	0	0	0	0	0	0	0
x2 (16QAM MIMO-A)	0	0	0	0	0	0	0
x1 (QPSK MIMO-A)	0	0	0	0	0	0	0

BRT Calloway Tower : 3



Access Point Summary	
AP Name	BRT Calloway Tower : 3
Equipment Type	PMP450i (running Release 16.0)
Antenna Type	Cambium Networks 60° 0.9 GHz Sector Antenna (Dual Slant) N009045D001
Modeled Beamwidth	90°
Antenna Azimuth	180.00° from True North 188.56° from Magnetic North
Antenna Tilt	0.0° (uptilt)
Connected Subscribers	0
Max Range	4 miles
RF Frequency Band	900 MHz (902 to 928 MHz)
RF Channel Bandwidth	20 MHz
Total Predicted DL Throughput	0.00 Mbps
Total Predicted UL Throughput	0.00 Mbps
Total Predicted Throughput	0.00 Mbps
Downlink Data	75 %

Subscriber Module Summary

Name	Latitude	Longitude	Product	Range	Antenna Gain

Bill of Materials : Access Point		
Part Number	Qty	Description
01010419001	6	Coaxial Cable Grounding Kits for 1/4" and 3/8" Cable
30009406002	2	N-to-N CABLE (16")
C000065L007	1	LPU and Grounding Kit (1 kit per ODU)
C009045A001	1	900 MHz PMP 450i Connectorized Access Point
EW-E4PM45AP-WW	1	PMP450/450i Access Point Extended Warranty, 4 Additional Years
N000000L034	1	POWER SUPPLY, 30W, 56V - Gbps support
N009045D001	1	900 MHz 60 degree Sector Antenna (Dual Slant). Includes the mounting bracket for the antenna and AP
WB3176	1	328 ft (100 m) Reel Outdoor Copper Clad CAT5E (Recommended for PTP). Total cable requirements are aggregated at the parent level

Mode	Total Mean Predicted Throughput (Mbps)	SMs per DL modulation			SMs per UL modulation		
		Quantity	Percent	Throughput (Mbps)	Quantity	Percent	Throughput (Mbps)
x8 (256QAM MIMO-B)	0	0	0	0	0	0	0
x6 (64QAM MIMO-B)	0	0	0	0	0	0	0
x4 (16QAM MIMO-B)	0	0	0	0	0	0	0
x2 (QPSK MIMO-B)	0	0	0	0	0	0	0
x4 (256QAM MIMO-A)	0	0	0	0	0	0	0
x3 (64QAM MIMO-A)	0	0	0	0	0	0	0
x2 (16QAM MIMO-A)	0	0	0	0	0	0	0
x1 (QPSK MIMO-A)	0	0	0	0	0	0	0

BRT Calloway Tower : 4

Access Point Summary	
AP Name	BRT Calloway Tower : 4
Equipment Type	PMP450i (running Release 16.0)
Antenna Type	Cambium Networks 60° 0.9 GHz Sector Antenna (Dual Slant) N009045D001
Modeled Beamwidth	90°
Antenna Azimuth	270.00° from True North 278.56° from Magnetic North
Antenna Tilt	0.0° (uptilt)
Connected Subscribers	0
Max Range	4 miles
RF Frequency Band	900 MHz (902 to 928 MHz)
RF Channel Bandwidth	20 MHz
Total Predicted DL Throughput	0.00 Mbps
Total Predicted UL Throughput	0.00 Mbps
Total Predicted Throughput	0.00 Mbps
Downlink Data	75 %

Subscriber Module Summary

Name	Latitude	Longitude	Product	Range	Antenna Gain

Bill of Materials : Access Point		
Part Number	Qty	Description
01010419001	6	Coaxial Cable Grounding Kits for 1/4" and 3/8" Cable
30009406002	2	N-to-N CABLE (16")
C000065L007	1	LPU and Grounding Kit (1 kit per ODU)
C009045A001	1	900 MHz PMP 450i Connectorized Access Point
EW-E4PM45AP-WW	1	PMP450/450i Access Point Extended Warranty, 4 Additional Years
N000000L034	1	POWER SUPPLY, 30W, 56V - Gbps support
N009045D001	1	900 MHz 60 degree Sector Antenna (Dual Slant). Includes the mounting bracket for the antenna and AP
WB3176	1	328 ft (100 m) Reel Outdoor Copper Clad CAT5E (Recommended for PTP). Total cable requirements are aggregated at the parent level

Mode	Total Mean Predicted Throughput (Mbps)	SMs per DL modulation			SMs per UL modulation		
		Quantity	Percent	Throughput (Mbps)	Quantity	Percent	Throughput (Mbps)
x8 (256QAM MIMO-B)	0	0	0	0	0	0	0
x6 (64QAM MIMO-B)	0	0	0	0	0	0	0
x4 (16QAM MIMO-B)	0	0	0	0	0	0	0
x2 (QPSK MIMO-B)	0	0	0	0	0	0	0
x4 (256QAM MIMO-A)	0	0	0	0	0	0	0
x3 (64QAM MIMO-A)	0	0	0	0	0	0	0
x2 (16QAM MIMO-A)	0	0	0	0	0	0	0
x1 (QPSK MIMO-A)	0	0	0	0	0	0	0

17. BRT Saw Mill Rd Tower

Hub Summary	
Hub Name	BRT Saw Mill Rd Tower
Latitude	36.92996N
Longitude	080.07139W
Number of Access Points	4
Number of Connected Subscribers	0
Total Predicted DL Throughput	0.00 Mbps
Total Predicted UL Throughput	0.00 Mbps
Total Throughput	0.00 Mbps

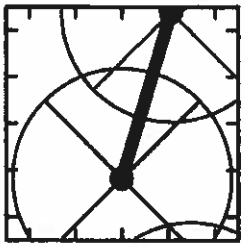
Access Point Name	Product	Antenna Azimuth	Beamwidth	Band	Max Range	Connected Subscribers	Total Predicted Throughput
BRT Saw Mill Rd Tower : 1	PMP450i	0.0°	60.0°	900 MHz	4 miles	0	0.00 Mbps
BRT Saw Mill Rd Tower : 2	PMP450i	90.0°	60.0°	900 MHz	4 miles	0	0.00 Mbps
BRT Saw Mill Rd Tower : 3	PMP450i	180.0°	60.0°	900 MHz	4 miles	0	0.00 Mbps
BRT Saw Mill Rd Tower : 4	PMP450i	270.0°	60.0°	900 MHz	4 miles	0	0.00 Mbps

Bill of Materials : PMP Network

Part Number	Qty	Description
01010419001	24	Coaxial Cable Grounding Kits for 1/4" and 3/8" Cable
30009406002	8	N-to-N CABLE (16")
C000000L066	1	cnPulse Sync Generator with CambiumSYNC. This part replaces the UGPS (1096)
C000000L500	1	CMM5 Controller
C000000L556	1	CMM5 Power and Sync Injector 56V. CMM5 supports up to 4 radios. Requires suffix 'B' or newer of N000000L054
C000065L007	4	LPU and Grounding Kit (1 kit per ODU)
C009045A001	4	900 MHz PMP 450i Connectorized Access Point
EW-E4PM45AP-WW	4	PMP450/450i Access Point Extended Warranty, 4 Additional Years
N000000L034	4	POWER SUPPLY, 30W, 56V - Gbps support
N000000L125	1	CMM5 to cnPulse Shielded Cable - 20m
N009045D001	4	900 MHz 60 degree Sector Antenna (Dual Slant). Includes the mounting bracket for the antenna and AP

Bill of Materials : PMP Network (continued)		
Part Number	Qty	Description
WB3176	4	328 ft (100 m) Reel Outdoor Copper Clad CAT5E (Recommended for PTP). Total cable requirements are aggregated at the network level

BRT Saw Mill Rd Tower : 1



Access Point Summary	
AP Name	BRT Saw Mill Rd Tower : 1
Equipment Type	PMP450i (running Release 16.0)
Antenna Type	Cambium Networks 60° 0.9 GHz Sector Antenna (Dual Slant) N009045D001
Modeled Beamwidth	90°
Antenna Azimuth	0.00° from True North 8.53° from Magnetic North
Antenna Tilt	0.0° (uptilt)
Connected Subscribers	0
Max Range	4 miles
RF Frequency Band	900 MHz (902 to 928 MHz)
RF Channel Bandwidth	20 MHz
Total Predicted DL Throughput	0.00 Mbps
Total Predicted UL Throughput	0.00 Mbps
Total Predicted Throughput	0.00 Mbps
Downlink Data	75 %

Subscriber Module Summary

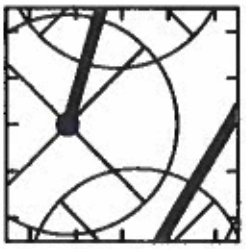
Name	Latitude	Longitude	Product	Range	Antenna Gain

Bill of Materials : Access Point		
Part Number	Qty	Description
01010419001	6	Coaxial Cable Grounding Kits for 1/4" and 3/8" Cable
30009406002	2	N-to-N CABLE (16")
C000065L007	1	LPU and Grounding Kit (1 kit per ODU)
C009045A001	1	900 MHz PMP 450i Connectorized Access Point
EW-E4PM45AP-WW	1	PMP450/450i Access Point Extended Warranty, 4 Additional Years
N000000L034	1	POWER SUPPLY, 30W, 56V - Gbps support
N009045D001	1	900 MHz 60 degree Sector Antenna (Dual Slant). Includes the mounting bracket for the antenna and AP
WB3176	1	328 ft (100 m) Reel Outdoor Copper Clad CAT5E (Recommended for PTP). Total cable requirements are aggregated at the parent level

Mode	Total Mean Predicted Throughput (Mbps)	SMs per DL modulation			SMs per UL modulation		
		Quantity	Percent	Throughput (Mbps)	Quantity	Percent	Throughput (Mbps)
x8 (256QAM MIMO-B)	0	0	0	0	0	0	0
x6 (64QAM MIMO-B)	0	0	0	0	0	0	0
x4 (16QAM MIMO-B)	0	0	0	0	0	0	0
x2 (QPSK MIMO-B)	0	0	0	0	0	0	0
x4 (256QAM MIMO-A)	0	0	0	0	0	0	0
x3 (64QAM MIMO-A)	0	0	0	0	0	0	0
x2 (16QAM MIMO-A)	0	0	0	0	0	0	0
x1 (QPSK MIMO-A)	0	0	0	0	0	0	0

Cambium Networks

BRT Saw Mill Rd Tower : 2



Access Point Summary	
AP Name	BRT Saw Mill Rd Tower : 2
Equipment Type	PMP450i (running Release 16.0)
Antenna Type	Cambium Networks 60° 0.9 GHz Sector Antenna (Dual Slant) N009045D001
Modeled Beamwidth	90°
Antenna Azimuth	90.00° from True North 98.53° from Magnetic North
Antenna Tilt	0.0° (uptilt)
Connected Subscribers	0
Max Range	4 miles
RF Frequency Band	900 MHz (902 to 928 MHz)
RF Channel Bandwidth	20 MHz
Total Predicted DL Throughput	0.00 Mbps
Total Predicted UL Throughput	0.00 Mbps
Total Predicted Throughput	0.00 Mbps
Downlink Data	75 %

Subscriber Module Summary

Name	Latitude	Longitude	Product	Range	Antenna Gain

Bill of Materials : Access Point

Part Number	Qty	Description
01010419001	6	Coaxial Cable Grounding Kits for 1/4" and 3/8" Cable
30009406002	2	N-to-N CABLE (16")
C000065L007	1	LPU and Grounding Kit (1 kit per ODU)
C009045A001	1	900 MHz PMP 450i Connectorized Access Point
EW-E4PM45AP-WW	1	PMP450/450i Access Point Extended Warranty, 4 Additional Years
N000000L034	1	POWER SUPPLY, 30W, 56V - Gbps support
N009045D001	1	900 MHz 60 degree Sector Antenna (Dual Slant). Includes the mounting bracket for the antenna and AP
WB3176	1	328 ft (100 m) Reel Outdoor Copper Clad CAT5E (Recommended for PTP). Total cable requirements are aggregated at the parent level

Mode	Total Mean Predicted Throughput (Mbps)	SMs per DL modulation			SMs per UL modulation		
		Quantity	Percent	Throughput (Mbps)	Quantity	Percent	Throughput (Mbps)
x8 (256QAM MIMO-B)	0	0	0	0	0	0	0
x6 (64QAM MIMO-B)	0	0	0	0	0	0	0
x4 (16QAM MIMO-B)	0	0	0	0	0	0	0
x2 (QPSK MIMO-B)	0	0	0	0	0	0	0
x4 (256QAM MIMO-A)	0	0	0	0	0	0	0
x3 (64QAM MIMO-A)	0	0	0	0	0	0	0
x2 (16QAM MIMO-A)	0	0	0	0	0	0	0
x1 (QPSK MIMO-A)	0	0	0	0	0	0	0

BRT Saw Mill Rd Tower : 3

Access Point Summary	
AP Name	BRT Saw Mill Rd Tower : 3
Equipment Type	PMP450i (running Release 16.0)
Antenna Type	Cambium Networks 60° 0.9 GHz Sector Antenna (Dual Slant) N009045D001
Modeled Beamwidth	90°
Antenna Azimuth	180.00° from True North 188.53° from Magnetic North
Antenna Tilt	0.0° (uptilt)
Connected Subscribers	0
Max Range	4 miles
RF Frequency Band	900 MHz (902 to 928 MHz)
RF Channel Bandwidth	20 MHz
Total Predicted DL Throughput	0.00 Mbps
Total Predicted UL Throughput	0.00 Mbps
Total Predicted Throughput	0.00 Mbps
Downlink Data	75 %

Subscriber Module Summary

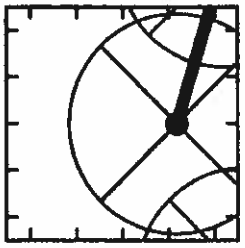
Name	Latitude	Longitude	Product	Range	Antenna Gain

Bill of Materials : Access Point

Part Number	Qty	Description
01010419001	6	Coaxial Cable Grounding Kits for 1/4" and 3/8" Cable
30009406002	2	N-to-N CABLE (16")
C000065L007	1	LPU and Grounding Kit (1 kit per ODU)
C009045A001	1	900 MHz PMP 450i Connectorized Access Point
EW-E4PM45AP-WW	1	PMP450/450i Access Point Extended Warranty, 4 Additional Years
N000000L034	1	POWER SUPPLY, 30W, 56V - Gbps support
N009045D001	1	900 MHz 60 degree Sector Antenna (Dual Slant). Includes the mounting bracket for the antenna and AP
WB3176	1	328 ft (100 m) Reel Outdoor Copper Clad CAT5E (Recommended for PTP). Total cable requirements are aggregated at the parent level

Mode	Total Mean Predicted Throughput (Mbps)	SMs per DL modulation			SMs per UL modulation		
		Quantity	Percent	Throughput (Mbps)	Quantity	Percent	Throughput (Mbps)
x8 (256QAM MIMO-B)	0	0	0	0	0	0	0
x6 (64QAM MIMO-B)	0	0	0	0	0	0	0
x4 (16QAM MIMO-B)	0	0	0	0	0	0	0
x2 (QPSK MIMO-B)	0	0	0	0	0	0	0
x4 (256QAM MIMO-A)	0	0	0	0	0	0	0
x3 (64QAM MIMO-A)	0	0	0	0	0	0	0
x2 (16QAM MIMO-A)	0	0	0	0	0	0	0
x1 (QPSK MIMO-A)	0	0	0	0	0	0	0

BRT Saw Mill Rd Tower : 4



Access Point Summary	
AP Name	BRT Saw Mill Rd Tower : 4
Equipment Type	PMP450i (running Release 16.0)
Antenna Type	Cambium Networks 60° 0.9 GHz Sector Antenna (Dual Slant) N009045D001
Modeled Beamwidth	90°
Antenna Azimuth	270.00° from True North 278.53° from Magnetic North
Antenna Tilt	0.0° (uptilt)
Connected Subscribers	0
Max Range	4 miles
RF Frequency Band	900 MHz (902 to 928 MHz)
RF Channel Bandwidth	20 MHz
Total Predicted DL Throughput	0.00 Mbps
Total Predicted UL Throughput	0.00 Mbps
Total Predicted Throughput	0.00 Mbps
Downlink Data	75 %

Subscriber Module Summary

Name	Latitude	Longitude	Product	Range	Antenna Gain

Bill of Materials : Access Point		
Part Number	Qty	Description
01010419001	6	Coaxial Cable Grounding Kits for 1/4" and 3/8" Cable
30009406002	2	N-to-N CABLE (16")
C000065L007	1	LPU and Grounding Kit (1 kit per ODU)
C009045A001	1	900 MHz PMP 450i Connectorized Access Point
EW-E4PM45AP-WW	1	PMP450/450i Access Point Extended Warranty, 4 Additional Years
N000000L034	1	POWER SUPPLY, 30W, 56V - Gbps support
N009045D001	1	900 MHz 60 degree Sector Antenna (Dual Slant). Includes the mounting bracket for the antenna and AP
WB3176	1	328 ft (100 m) Reel Outdoor Copper Clad CAT5E (Recommended for PTP). Total cable requirements are aggregated at the parent level

Mode	Total Mean Predicted Throughput (Mbps)	SMs per DL modulation			SMs per UL modulation		
		Quantity	Percent	Throughput (Mbps)	Quantity	Percent	Throughput (Mbps)
x8 (256QAM MIMO-B)	0	0	0	0	0	0	0
x6 (64QAM MIMO-B)	0	0	0	0	0	0	0
x4 (16QAM MIMO-B)	0	0	0	0	0	0	0
x2 (QPSK MIMO-B)	0	0	0	0	0	0	0
x4 (256QAM MIMO-A)	0	0	0	0	0	0	0
x3 (64QAM MIMO-A)	0	0	0	0	0	0	0
x2 (16QAM MIMO-A)	0	0	0	0	0	0	0
x1 (QPSK MIMO-A)	0	0	0	0	0	0	0

22. Burnt Chimney Water tank

Hub Summary	
Hub Name	Burnt Chimney Water tank
Latitude	37.10221N
Longitude	079.81682W
Number of Access Points	4
Number of Connected Subscribers	0
Total Predicted DL Throughput	0.00 Mbps
Total Predicted UL Throughput	0.00 Mbps
Total Throughput	0.00 Mbps

Access Point Name	Product	Antenna Azimuth	Beamwidth	Band	Max Range	Connected Subscribers	Total Predicted Throughput
Burnt Chimney Water tank : 1	PMP450i	0.0°	60.0°	900 MHz	4 miles	0	0.00 Mbps
Burnt Chimney Water tank : 2	PMP450i	90.0°	60.0°	900 MHz	4 miles	0	0.00 Mbps
Burnt Chimney Water tank : 3	PMP450i	180.0°	60.0°	900 MHz	4 miles	0	0.00 Mbps
Burnt Chimney Water tank : 4	PMP450i	270.0°	60.0°	900 MHz	4 miles	0	0.00 Mbps

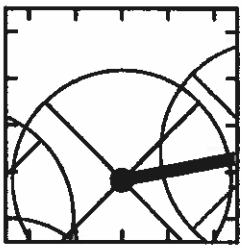
Bill of Materials : PMP Network

Part Number	Qty	Description
01010419001	20	Coaxial Cable Grounding Kits for 1/4" and 3/8" Cable
30009406002	8	N-to-N CABLE (16")
C000000L066	1	cnPulse Sync Generator with CambiumSYNC. This part replaces the UGPS (1096)
C000000L500	1	CMM5 Controller
C000000L556	1	CMM5 Power and Sync Injector 56V. CMM5 supports up to 4 radios. Requires suffix 'B' or newer of N000000L054
C000065L007	4	LPU and Grounding Kit (1 kit per ODU)
C009045A001	4	900 MHz PMP 450i Connectorized Access Point
EW-E4PM45AP-WW	4	PMP450/450i Access Point Extended Warranty, 4 Additional Years
N000000L034	4	POWER SUPPLY, 30W, 56V - Gbps support
N000000L125	1	CMM5 to cnPulse Shielded Cable - 20m

Bill of Materials : PMP Network (continued)

Part Number	Qty	Description
N009045D001	4	900 MHz 60 degree Sector Antenna (Dual Slant). Includes the mounting bracket for the antenna and AP
WB3176	2	328 ft (100 m) Reel Outdoor Copper Clad CAT5E (Recommended for PTP). Total cable requirements are aggregated at the network level

Burnt Chimney Water tank : 1



Access Point Summary	
AP Name	Burnt Chimney Water tank : 1
Equipment Type	PMP450i (running Release 16.0)
Antenna Type	Cambium Networks 60° 0.9 GHz Sector Antenna (Dual Slant) N009045D001
Modeled Beamwidth	90°
Antenna Azimuth	0.00° from True North 8.72° from Magnetic North
Antenna Tilt	0.0° (uptilt)
Connected Subscribers	0
Max Range	4 miles
RF Frequency Band	900 MHz (902 to 928 MHz)
RF Channel Bandwidth	20 MHz
Total Predicted DL Throughput	0.00 Mbps
Total Predicted UL Throughput	0.00 Mbps
Total Predicted Throughput	0.00 Mbps
Downlink Data	75 %

Subscriber Module Summary

Name	Latitude	Longitude	Product	Range	Antenna Gain

Bill of Materials : Access Point		
Part Number	Qty	Description
01010419001	5	Coaxial Cable Grounding Kits for 1/4" and 3/8" Cable
30009406002	2	N-to-N CABLE (16")
C000065L007	1	LPU and Grounding Kit (1 kit per ODU)
C009045A001	1	900 MHz PMP 450i Connectorized Access Point
EW-E4PM45AP-WW	1	PMP450/450i Access Point Extended Warranty, 4 Additional Years
N000000L034	1	POWER SUPPLY, 30W, 56V - Gbps support
N009045D001	1	900 MHz 60 degree Sector Antenna (Dual Slant). Includes the mounting bracket for the antenna and AP
WB3176	1	328 ft (100 m) Reel Outdoor Copper Clad CAT5E (Recommended for PTP). Total cable requirements are aggregated at the parent level

Mode	Total Mean Predicted Throughput (Mbps)	SMs per DL modulation			SMs per UL modulation		
		Quantity	Percent	Throughput (Mbps)	Quantity	Percent	Throughput (Mbps)
x8 (256QAM MIMO-B)	0	0	0	0	0	0	0
x6 (64QAM MIMO-B)	0	0	0	0	0	0	0
x4 (16QAM MIMO-B)	0	0	0	0	0	0	0
x2 (QPSK MIMO-B)	0	0	0	0	0	0	0
x4 (256QAM MIMO-A)	0	0	0	0	0	0	0
x3 (64QAM MIMO-A)	0	0	0	0	0	0	0
x2 (16QAM MIMO-A)	0	0	0	0	0	0	0
x1 (QPSK MIMO-A)	0	0	0	0	0	0	0

Burnt Chimney Water tank : 2

Access Point Summary	
AP Name	Burnt Chimney Water tank : 2
Equipment Type	PMP450i (running Release 16.0)
Antenna Type	Cambium Networks 60° 0.9 GHz Sector Antenna (Dual Slant) N009045D001
Modeled Beamwidth	90°
Antenna Azimuth	90.00° from True North 98.72° from Magnetic North
Antenna Tilt	0.0° (uptilt)
Connected Subscribers	0
Max Range	4 miles
RF Frequency Band	900 MHz (902 to 928 MHz)
RF Channel Bandwidth	20 MHz
Total Predicted DL Throughput	0.00 Mbps
Total Predicted UL Throughput	0.00 Mbps
Total Predicted Throughput	0.00 Mbps
Downlink Data	75 %

Subscriber Module Summary

Name	Latitude	Longitude	Product	Range	Antenna Gain

Bill of Materials : Access Point		
Part Number	Qty	Description
01010419001	5	Coaxial Cable Grounding Kits for 1/4" and 3/8" Cable
30009406002	2	N-to-N CABLE (16")
C000065L007	1	LPU and Grounding Kit (1 kit per ODU)
C009045A001	1	900 MHz PMP 450i Connectorized Access Point
EW-E4PM45AP-WW	1	PMP450/450i Access Point Extended Warranty, 4 Additional Years
N000000L034	1	POWER SUPPLY, 30W, 56V - Gbps support
N009045D001	1	900 MHz 60 degree Sector Antenna (Dual Slant). Includes the mounting bracket for the antenna and AP
WB3176	1	328 ft (100 m) Reel Outdoor Copper Clad CAT5E (Recommended for PTP). Total cable requirements are aggregated at the parent level

Mode	Total Mean Predicted Throughput (Mbps)	SMs per DL modulation			SMs per UL modulation		
		Quantity	Percent	Throughput (Mbps)	Quantity	Percent	Throughput (Mbps)
x8 (256QAM MIMO-B)	0	0	0	0	0	0	0
x6 (64QAM MIMO-B)	0	0	0	0	0	0	0
x4 (16QAM MIMO-B)	0	0	0	0	0	0	0
x2 (QPSK MIMO-B)	0	0	0	0	0	0	0
x4 (256QAM MIMO-A)	0	0	0	0	0	0	0
x3 (64QAM MIMO-A)	0	0	0	0	0	0	0
x2 (16QAM MIMO-A)	0	0	0	0	0	0	0
x1 (QPSK MIMO-A)	0	0	0	0	0	0	0

Burnt Chimney Water tank : 3

Access Point Summary	
AP Name	Burnt Chimney Water tank : 3
Equipment Type	PMP450i (running Release 16.0)
Antenna Type	Cambium Networks 60° 0.9 GHz Sector Antenna (Dual Slant) N009045D001
Modeled Beamwidth	90°
Antenna Azimuth	180.00° from True North 188.72° from Magnetic North
Antenna Tilt	0.0° (uptilt)
Connected Subscribers	0
Max Range	4 miles
RF Frequency Band	900 MHz (902 to 928 MHz)
RF Channel Bandwidth	20 MHz
Total Predicted DL Throughput	0.00 Mbps
Total Predicted UL Throughput	0.00 Mbps
Total Predicted Throughput	0.00 Mbps
Downlink Data	75 %

Subscriber Module Summary

Name	Latitude	Longitude	Product	Range	Antenna Gain

Bill of Materials : Access Point		
Part Number	Qty	Description
01010419001	5	Coaxial Cable Grounding Kits for 1/4" and 3/8" Cable
30009406002	2	N-to-N CABLE (16")
C000065L007	1	LPU and Grounding Kit (1 kit per ODU)
C009045A001	1	900 MHz PMP 450i Connectorized Access Point
EW-E4PM45AP-WW	1	PMP450/450i Access Point Extended Warranty, 4 Additional Years
N000000L034	1	POWER SUPPLY, 30W, 56V - Gbps support
N009045D001	1	900 MHz 60 degree Sector Antenna (Dual Slant). Includes the mounting bracket for the antenna and AP
WB3176	1	328 ft (100 m) Reel Outdoor Copper Clad CAT5E (Recommended for PTP). Total cable requirements are aggregated at the parent level

Mode	Total Mean Predicted Throughput (Mbps)	SMs per DL modulation			SMs per UL modulation		
		Quantity	Percent	Throughput (Mbps)	Quantity	Percent	Throughput (Mbps)
x8 (256QAM MIMO-B)	0	0	0	0	0	0	0
x6 (64QAM MIMO-B)	0	0	0	0	0	0	0
x4 (16QAM MIMO-B)	0	0	0	0	0	0	0
x2 (QPSK MIMO-B)	0	0	0	0	0	0	0
x4 (256QAM MIMO-A)	0	0	0	0	0	0	0
x3 (64QAM MIMO-A)	0	0	0	0	0	0	0
x2 (16QAM MIMO-A)	0	0	0	0	0	0	0
x1 (QPSK MIMO-A)	0	0	0	0	0	0	0

Cambium Networks

Burnt Chimney Water tank : 4

Access Point Summary	
AP Name	Burnt Chimney Water tank : 4
Equipment Type	PMP450i (running Release 16.0)
Antenna Type	Cambium Networks 60° 0.9 GHz Sector Antenna (Dual Slant) N009045D001
Modeled Beamwidth	90°
Antenna Azimuth	270.00° from True North 278.72° from Magnetic North
Antenna Tilt	0.0° (uptilt)
Connected Subscribers	0
Max Range	4 miles
RF Frequency Band	900 MHz (902 to 928 MHz)
RF Channel Bandwidth	20 MHz
Total Predicted DL Throughput	0.00 Mbps
Total Predicted UL Throughput	0.00 Mbps
Total Predicted Throughput	0.00 Mbps
Downlink Data	75 %

Subscriber Module Summary

Name	Latitude	Longitude	Product	Range	Antenna Gain

Bill of Materials : Access Point		
Part Number	**Qty**	**Description**
01010419001	5	Coaxial Cable Grounding Kits for 1/4" and 3/8" Cable
30009406002	2	N-to-N CABLE (16")
C000065L007	1	LPU and Grounding Kit (1 kit per ODU)
C009045A001	1	900 MHz PMP 450i Connectorized Access Point
EW-E4PM45AP-WW	1	PMP450/450i Access Point Extended Warranty, 4 Additional Years
N000000L034	1	POWER SUPPLY, 30W, 56V - Gbps support
N009045D001	1	900 MHz 60 degree Sector Antenna (Dual Slant). Includes the mounting bracket for the antenna and AP
WB3176	1	328 ft (100 m) Reel Outdoor Copper Clad CAT5E (Recommended for PTP). Total cable requirements are aggregated at the parent level

Mode	Total Mean Predicted Throughput (Mbps)	SMs per DL modulation			SMs per UL modulation		
		Quantity	Percent	Throughput (Mbps)	Quantity	Percent	Throughput (Mbps)
x8 (256QAM MIMO-B)	0	0	0	0	0	0	0
x6 (64QAM MIMO-B)	0	0	0	0	0	0	0
x4 (16QAM MIMO-B)	0	0	0	0	0	0	0
x2 (QPSK MIMO-B)	0	0	0	0	0	0	0
x4 (256QAM MIMO-A)	0	0	0	0	0	0	0
x3 (64QAM MIMO-A)	0	0	0	0	0	0	0
x2 (16QAM MIMO-A)	0	0	0	0	0	0	0
x1 (QPSK MIMO-A)	0	0	0	0	0	0	0

27. Fork Mtn Fire Station Tower

Hub Summary	
Hub Name	Fork Mtn Fire Station Tower
Latitude	36.84550N
Longitude	079.90117W
Number of Access Points	4
Number of Connected Subscribers	0
Total Predicted DL Throughput	0.00 Mbps
Total Predicted UL Throughput	0.00 Mbps
Total Throughput	0.00 Mbps

Access Point Name	Product	Antenna Azimuth	Beamwidth	Band	Max Range	Connected Subscribers	Total Predicted Throughput
Fork Mtn Fire Station Tower : 1	PMP450i	0.0°	60.0°	900 MHz	4 miles	0	0.00 Mbps
Fork Mtn Fire Station Tower : 2	PMP450i	90.0°	60.0°	900 MHz	4 miles	0	0.00 Mbps
Fork Mtn Fire Station Tower : 3	PMP450i	180.0°	60.0°	900 MHz	4 miles	0	0.00 Mbps
Fork Mtn Fire Station Tower : 4	PMP450i	270.0°	60.0°	900 MHz	4 miles	0	0.00 Mbps

Bill of Materials : PMP Network

Part Number	Qty	Description
01010419001	20	Coaxial Cable Grounding Kits for 1/4" and 3/8" Cable
30009406002	8	N-to-N CABLE (16")
C000000L066	1	cnPulse Sync Generator with CambiumSYNC. This part replaces the UGPS (1096)
C000000L500	1	CMM5 Controller
C000000L556	1	CMM5 Power and Sync Injector 56V. CMM5 supports up to 4 radios. Requires suffix 'B' or newer of N000000L054
C000065L007	4	LPU and Grounding Kit (1 kit per ODU)
C009045A001	4	900 MHz PMP 450i Connectorized Access Point
EW-E4PM45AP-WW	4	PMP450/450i Access Point Extended Warranty, 4 Additional Years
N000000L034	4	POWER SUPPLY, 30W, 56V - Gbps support
N000000L125	1	CMM5 to cnPulse Shielded Cable - 20m

Bill of Materials : PMP Network (continued)

Part Number	Qty	Description
N009045D001	4	900 MHz 60 degree Sector Antenna (Dual Slant). Includes the mounting bracket for the antenna and AP
WB3176	4	328 ft (100 m) Reel Outdoor Copper Clad CAT5E (Recommended for PTP). Total cable requirements are aggregated at the network level

Fork Mtn Fire Station Tower : 1

Access Point Summary	
AP Name	Fork Mtn Fire Station Tower : 1
Equipment Type	PMP450i (running Release 16.0)
Antenna Type	Cambium Networks 60° 0.9 GHz Sector Antenna (Dual Slant) N009045D001
Modeled Beamwidth	90°
Antenna Azimuth	0.00° from True North 8.62° from Magnetic North
Antenna Tilt	0.0° (uptilt)
Connected Subscribers	0
Max Range	4 miles
RF Frequency Band	900 MHz (902 to 928 MHz)
RF Channel Bandwidth	20 MHz
Total Predicted DL Throughput	0.00 Mbps
Total Predicted UL Throughput	0.00 Mbps
Total Predicted Throughput	0.00 Mbps
Downlink Data	75 %

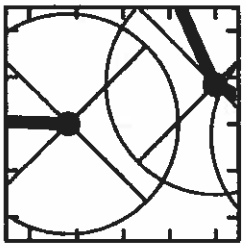
Subscriber Module Summary

Name	Latitude	Longitude	Product	Range	Antenna Gain

Bill of Materials : Access Point		
Part Number	Qty	Description
01010419001	5	Coaxial Cable Grounding Kits for 1/4" and 3/8" Cable
30009406002	2	N-to-N CABLE (16")
C000065L007	1	LPU and Grounding Kit (1 kit per ODU)
C009045A001	1	900 MHz PMP 450i Connectorized Access Point
EW-E4PM45AP-WW	1	PMP450/450i Access Point Extended Warranty, 4 Additional Years
N000000L034	1	POWER SUPPLY, 30W, 56V - Gbps support
N009045D001	1	900 MHz 60 degree Sector Antenna (Dual Slant). Includes the mounting bracket for the antenna and AP
WB3176	1	328 ft (100 m) Reel Outdoor Copper Clad CAT5E (Recommended for PTP). Total cable requirements are aggregated at the parent level

Mode	Total Mean Predicted Throughput (Mbps)	SMs per DL modulation			SMs per UL modulation		
		Quantity	Percent	Throughput (Mbps)	Quantity	Percent	Throughput (Mbps)
x8 (256QAM MIMO-B)	0	0	0	0	0	0	0
x6 (64QAM MIMO-B)	0	0	0	0	0	0	0
x4 (16QAM MIMO-B)	0	0	0	0	0	0	0
x2 (QPSK MIMO-B)	0	0	0	0	0	0	0
x4 (256QAM MIMO-A)	0	0	0	0	0	0	0
x3 (64QAM MIMO-A)	0	0	0	0	0	0	0
x2 (16QAM MIMO-A)	0	0	0	0	0	0	0
x1 (QPSK MIMO-A)	0	0	0	0	0	0	0

Fork Mtn Fire Station Tower : 2



Access Point Summary	
AP Name	Fork Mtn Fire Station Tower : 2
Equipment Type	PMP450i (running Release 16.0)
Antenna Type	Cambium Networks 60° 0.9 GHz Sector Antenna (Dual Slant) N009045D001
Modeled Beamwidth	90°
Antenna Azimuth	90.00° from True North 98.62° from Magnetic North
Antenna Tilt	0.0° (uptilt)
Connected Subscribers	0
Max Range	4 miles
RF Frequency Band	900 MHz (902 to 928 MHz)
RF Channel Bandwidth	20 MHz
Total Predicted DL Throughput	0.00 Mbps
Total Predicted UL Throughput	0.00 Mbps
Total Predicted Throughput	0.00 Mbps
Downlink Data	75 %

Subscriber Module Summary

Name	Latitude	Longitude	Product	Range	Antenna Gain

Bill of Materials : Access Point		
Part Number	**Qty**	**Description**
01010419001	5	Coaxial Cable Grounding Kits for 1/4" and 3/8" Cable
30009406002	2	N-to-N CABLE (16")
C000065L007	1	LPU and Grounding Kit (1 kit per ODU)
C009045A001	1	900 MHz PMP 450i Connectorized Access Point
EW-E4PM45AP-WW	1	PMP450/450i Access Point Extended Warranty, 4 Additional Years
N000000L034	1	POWER SUPPLY, 30W, 56V - Gbps support
N009045D001	1	900 MHz 60 degree Sector Antenna (Dual Slant). Includes the mounting bracket for the antenna and AP
WB3176	1	328 ft (100 m) Reel Outdoor Copper Clad CAT5E (Recommended for PTP). Total cable requirements are aggregated at the parent level

Mode	Total Mean Predicted Throughput (Mbps)	SMs per DL modulation			SMs per UL modulation		
		Quantity	Percent	Throughput (Mbps)	Quantity	Percent	Throughput (Mbps)
x8 (256QAM MIMO-B)	0	0	0	0	0	0	0
x6 (64QAM MIMO-B)	0	0	0	0	0	0	0
x4 (16QAM MIMO-B)	0	0	0	0	0	0	0
x2 (QPSK MIMO-B)	0	0	0	0	0	0	0
x4 (256QAM MIMO-A)	0	0	0	0	0	0	0
x3 (64QAM MIMO-A)	0	0	0	0	0	0	0
x2 (16QAM MIMO-A)	0	0	0	0	0	0	0
x1 (QPSK MIMO-A)	0	0	0	0	0	0	0

Cambium Networks

Fork Mtn Fire Station Tower : 3

Access Point Summary	
AP Name	Fork Mtn Fire Station Tower : 3
Equipment Type	PMP450i (running Release 16.0)
Antenna Type	Cambium Networks 60° 0.9 GHz Sector Antenna (Dual Slant) N009045D001
Modeled Beamwidth	90°
Antenna Azimuth	180.00° from True North 188.62° from Magnetic North
Antenna Tilt	0.0° (uptilt)
Connected Subscribers	0
Max Range	4 miles
RF Frequency Band	900 MHz (902 to 928 MHz)
RF Channel Bandwidth	20 MHz
Total Predicted DL Throughput	0.00 Mbps
Total Predicted UL Throughput	0.00 Mbps
Total Predicted Throughput	0.00 Mbps
Downlink Data	75 %

Subscriber Module Summary

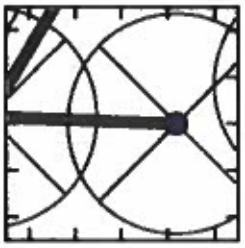
Name	Latitude	Longitude	Product	Range	Antenna Gain

Bill of Materials : Access Point

Part Number	Qty	Description
01010419001	5	Coaxial Cable Grounding Kits for 1/4" and 3/8" Cable
30009406002	2	N-to-N CABLE (16")
C000065L007	1	LPU and Grounding Kit (1 kit per ODU)
C009045A001	1	900 MHz PMP 450i Connectorized Access Point
EW-E4PM45AP-WW	1	PMP450/450i Access Point Extended Warranty, 4 Additional Years
N000000L034	1	POWER SUPPLY, 30W, 56V - Gbps support
N009045D001	1	900 MHz 60 degree Sector Antenna (Dual Slant) Includes the mounting bracket for the antenna and AP
WB3176	1	328 ft (100 m) Reel Outdoor Copper Clad CAT5E (Recommended for PTP). Total cable requirements are aggregated at the parent level

Mode	Total Mean Predicted Throughput (Mbps)	SMs per DL modulation			SMs per UL modulation		
		Quantity	Percent	Throughput (Mbps)	Quantity	Percent	Throughput (Mbps)
x8 (256QAM MIMO-B)	0	0	0	0	0	0	0
x6 (64QAM MIMO-B)	0	0	0	0	0	0	0
x4 (16QAM MIMO-B)	0	0	0	0	0	0	0
x2 (QPSK MIMO-B)	0	0	0	0	0	0	0
x4 (256QAM MIMO-A)	0	0	0	0	0	0	0
x3 (64QAM MIMO-A)	0	0	0	0	0	0	0
x2 (16QAM MIMO-A)	0	0	0	0	0	0	0
x1 (QPSK MIMO-A)	0	0	0	0	0	0	0

Fork Mtn Fire Station Tower : 4



Access Point Summary	
AP Name	Fork Mtn Fire Station Tower : 4
Equipment Type	PMP450i (running Release 16.0)
Antenna Type	Cambium Networks 60° 0.9 GHz Sector Antenna (Dual Slant) N009045D001
Modeled Beamwidth	90°
Antenna Azimuth	270.00° from True North 278.62° from Magnetic North
Antenna Tilt	0.0° (uptilt)
Connected Subscribers	0
Max Range	4 miles
RF Frequency Band	900 MHz (902 to 928 MHz)
RF Channel Bandwidth	20 MHz
Total Predicted DL Throughput	0.00 Mbps
Total Predicted UL Throughput	0.00 Mbps
Total Predicted Throughput	0.00 Mbps
Downlink Data	75 %

Subscriber Module Summary

Name	Latitude	Longitude	Product	Range	Antenna Gain

Bill of Materials : Access Point		
Part Number	**Qty**	**Description**
01010419001	5	Coaxial Cable Grounding Kits for 1/4" and 3/8" Cable
30009406002	2	N-to-N CABLE (16")
C000065L007	1	LPU and Grounding Kit (1 kit per ODU)
C009045A001	1	900 MHz PMP 450i Connectorized Access Point
EW-E4PM45AP-WW	1	PMP450/450i Access Point Extended Warranty, 4 Additional Years
N000000L034	1	POWER SUPPLY, 30W, 56V - Gbps support
N009045D001	1	900 MHz 60 degree Sector Antenna (Dual Slant). Includes the mounting bracket for the antenna and AP
WB3176	1	328 ft (100 m) Reel Outdoor Copper Clad CAT5E (Recommended for PTP). Total cable requirements are aggregated at the parent level

Mode	Total Mean Predicted Throughput (Mbps)	SMs per DL modulation			SMs per UL modulation		
		Quantity	Percent	Throughput (Mbps)	Quantity	Percent	Throughput (Mbps)
x8 (256QAM MIMO-B)	0	0	0	0	0	0	0
x6 (64QAM MIMO-B)	0	0	0	0	0	0	0
x4 (16QAM MIMO-B)	0	0	0	0	0	0	0
x2 (QPSK MIMO-B)	0	0	0	0	0	0	0
x4 (256QAM MIMO-A)	0	0	0	0	0	0	0
x3 (64QAM MIMO-A)	0	0	0	0	0	0	0
x2 (16QAM MIMO-A)	0	0	0	0	0	0	0
x1 (QPSK MIMO-A)	0	0	0	0	0	0	0

32. Franklin County Industrial Park

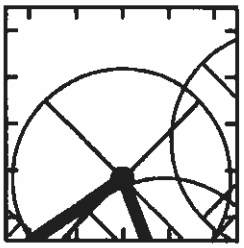
Hub Summary	
Hub Name	Franklin County Industrial Park
Latitude	37.08206N
Longitude	079.92147W
Number of Access Points	4
Number of Connected Subscribers	0
Total Predicted DL Throughput	0.00 Mbps
Total Predicted UL Throughput	0.00 Mbps
Total Throughput	0.00 Mbps

Access Point Name	Product	Antenna Azimuth	Beamwidth	Band	Max Range	Connected Subscribers	Total Predicted Throughput
Franklin County Industrial Park : 1	PMP450i	0.0°	60.0°	900 MHz	4 miles	0	0.00 Mbps
Franklin County Industrial Park : 2	PMP450i	90.0°	60.0°	900 MHz	4 miles	0	0.00 Mbps
Franklin County Industrial Park : 3	PMP450i	180.0°	60.0°	900 MHz	4 miles	0	0.00 Mbps
Franklin County Industrial Park : 4	PMP450i	270.0°	60.0°	900 MHz	4 miles	0	0.00 Mbps

Bill of Materials : PMP Network		
Part Number	Qty	Description
01010419001	24	Coaxial Cable Grounding Kits for 1/4" and 3/8" Cable
30009406002	8	N-to-N CABLE (16")
C000000L066	1	cnPulse Sync Generator with CambiumSYNC. This part replaces the UGPS (1096)
C000000L500	1	CMM5 Controller
C000000L556	1	CMM5 Power and Sync Injector 56V. CMM5 supports up to 4 radios. Requires suffix 'B' or newer of N000000L054
C000065L007	4	LPU and Grounding Kit (1 kit per ODU)
C009045A001	4	900 MHz PMP 450i Connectorized Access Point
EW-E4PM45AP-WW	4	PMP450/450i Access Point Extended Warranty, 4 Additional Years
N000000L034	4	POWER SUPPLY, 30W, 56V - Gbps support
N000000L125	1	CMM5 to cnPulse Shielded Cable - 20m

Bill of Materials : PMP Network (continued)		
Part Number	Qty	Description
N009045D001	4	900 MHz 60 degree Sector Antenna (Dual Slant). Includes the mounting bracket for the antenna and AP
WB3176	4	328 ft (100 m) Reel Outdoor Copper Clad CAT5E (Recommended for PTP). Total cable requirements are aggregated at the network level

Franklin County Industrial Park : 1



Access Point Summary	
AP Name	Franklin County Industrial Park : 1
Equipment Type	PMP450i (running Release 16.0)
Antenna Type	Cambium Networks 60° 0.9 GHz Sector Antenna (Dual Slant) N009045D001
Modeled Beamwidth	90°
Antenna Azimuth	0.00° from True North 8.65° from Magnetic North
Antenna Tilt	0.0° (uptilt)
Connected Subscribers	0
Max Range	4 miles
RF Frequency Band	900 MHz (902 to 928 MHz)
RF Channel Bandwidth	20 MHz
Total Predicted DL Throughput	0.00 Mbps
Total Predicted UL Throughput	0.00 Mbps
Total Predicted Throughput	0.00 Mbps
Downlink Data	75 %

Subscriber Module Summary

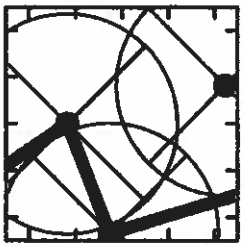
Name	Latitude	Longitude	Product	Range	Antenna Gain

Bill of Materials : Access Point		
Part Number	Qty	Description
01010419001	6	Coaxial Cable Grounding Kits for 1/4" and 3/8" Cable
30009406002	2	N-to-N CABLE (16")
C000065L007	1	LPU and Grounding Kit (1 kit per ODU)
C009045A001	1	900 MHz PMP 450i Connectorized Access Point
EW-E4PM45AP-WW	1	PMP450/450i Access Point Extended Warranty, 4 Additional Years
N000000L034	1	POWER SUPPLY, 30W, 56V - Gbps support
N009045D001	1	900 MHz 60 degree Sector Antenna (Dual Slant). Includes the mounting bracket for the antenna and AP
WB3176	1	328 ft (100 m) Reel Outdoor Copper Clad CAT5E (Recommended for PTP). Total cable requirements are aggregated at the parent level

Mode	Total Mean Predicted Throughput (Mbps)	SMs per DL modulation			SMs per UL modulation		
		Quantity	Percent	Throughput (Mbps)	Quantity	Percent	Throughput (Mbps)
x8 (256QAM MIMO-B)	0	0	0	0	0	0	0
x6 (64QAM MIMO-B)	0	0	0	0	0	0	0
x4 (16QAM MIMO-B)	0	0	0	0	0	0	0
x2 (QPSK MIMO-B)	0	0	0	0	0	0	0
x4 (256QAM MIMO-A)	0	0	0	0	0	0	0
x3 (64QAM MIMO-A)	0	0	0	0	0	0	0
x2 (16QAM MIMO-A)	0	0	0	0	0	0	0
x1 (QPSK MIMO-A)	0	0	0	0	0	0	0

Cambium Networks

Franklin County Industrial Park : 2



Access Point Summary	
AP Name	Franklin County Industrial Park : 2
Equipment Type	PMP450i (running Release 16.0)
Antenna Type	Cambium Networks 60° 0.9 GHz Sector Antenna (Dual Slant) N009045D001
Modeled Beamwidth	90°
Antenna Azimuth	90.00° from True North 98.65° from Magnetic North
Antenna Tilt	0.0° (uptilt)
Connected Subscribers	0
Max Range	4 miles
RF Frequency Band	900 MHz (902 to 928 MHz)
RF Channel Bandwidth	20 MHz
Total Predicted DL Throughput	0.00 Mbps
Total Predicted UL Throughput	0.00 Mbps
Total Predicted Throughput	0.00 Mbps
Downlink Data	75 %

Subscriber Module Summary

Name	Latitude	Longitude	Product	Range	Antenna Gain

Bill of Materials : Access Point

Part Number	Qty	Description
01010419001	6	Coaxial Cable Grounding Kits for 1/4" and 3/8" Cable
30009406002	2	N-to-N CABLE (16")
C000065L007	1	LPU and Grounding Kit (1 kit per ODU)
C009045A001	1	900 MHz PMP 450i Connectorized Access Point
EW-E4PM45AP-WW	1	PMP450/450i Access Point Extended Warranty, 4 Additional Years
N000000L034	1	POWER SUPPLY, 30W, 56V - Gbps support
N009045D001	1	900 MHz 60 degree Sector Antenna (Dual Slant). Includes the mounting bracket for the antenna and AP
WB3176	1	328 ft (100 m) Reel Outdoor Copper Clad CAT5E (Recommended for PTP). Total cable requirements are aggregated at the parent level

Mode	Total Mean Predicted Throughput (Mbps)	SMs per DL modulation			SMs per UL modulation		
		Quantity	Percent	Throughput (Mbps)	Quantity	Percent	Throughput (Mbps)
x8 (256QAM MIMO-B)	0	0	0	0	0	0	0
x6 (64QAM MIMO-B)	0	0	0	0	0	0	0
x4 (16QAM MIMO-B)	0	0	0	0	0	0	0
x2 (QPSK MIMO-B)	0	0	0	0	0	0	0
x4 (256QAM MIMO-A)	0	0	0	0	0	0	0
x3 (64QAM MIMO-A)	0	0	0	0	0	0	0
x2 (16QAM MIMO-A)	0	0	0	0	0	0	0
x1 (QPSK MIMO-A)	0	0	0	0	0	0	0

Franklin County Industrial Park : 3

Access Point Summary	
AP Name	Franklin County Industrial Park : 3
Equipment Type	PMP450i (running Release 16.0)
Antenna Type	Cambium Networks 60° 0.9 GHz Sector Antenna (Dual Slant) N009045D001
Modeled Beamwidth	90°
Antenna Azimuth	180.00° from True North 188.65° from Magnetic North
Antenna Tilt	0.0° (uptilt)
Connected Subscribers	0
Max Range	4 miles
RF Frequency Band	900 MHz (902 to 928 MHz)
RF Channel Bandwidth	20 MHz
Total Predicted DL Throughput	0.00 Mbps
Total Predicted UL Throughput	0.00 Mbps
Total Predicted Throughput	0.00 Mbps
Downlink Data	75 %

Subscriber Module Summary

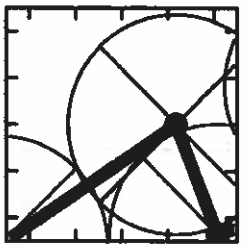
Name	Latitude	Longitude	Product	Range	Antenna Gain

Bill of Materials : Access Point

Part Number	Qty	Description
01010419001	6	Coaxial Cable Grounding Kits for 1/4" and 3/8" Cable
30009406002	2	N-to-N CABLE (16")
C000065L007	1	LPU and Grounding Kit (1 kit per ODU)
C009045A001	1	900 MHz PMP 450i Connectorized Access Point
EW-E4PM45AP-WW	1	PMP450/450i Access Point Extended Warranty, 4 Additional Years
N000000L034	1	POWER SUPPLY, 30W, 56V - Gbps support
N009045D001	1	900 MHz 60 degree Sector Antenna (Dual Slant). Includes the mounting bracket for the antenna and AP
WB3176	1	328 ft (100 m) Reel Outdoor Copper Clad CAT5E (Recommended for PTP). Total cable requirements are aggregated at the parent level

Mode	Total Mean Predicted Throughput (Mbps)	SMs per DL modulation			SMs per UL modulation		
		Quantity	Percent	Throughput (Mbps)	Quantity	Percent	Throughput (Mbps)
x8 (256QAM MIMO-B)	0	0	0	0	0	0	0
x6 (64QAM MIMO-B)	0	0	0	0	0	0	0
x4 (16QAM MIMO-B)	0	0	0	0	0	0	0
x2 (QPSK MIMO-B)	0	0	0	0	0	0	0
x4 (256QAM MIMO-A)	0	0	0	0	0	0	0
x3 (64QAM MIMO-A)	0	0	0	0	0	0	0
x2 (16QAM MIMO-A)	0	0	0	0	0	0	0
x1 (QPSK MIMO-A)	0	0	0	0	0	0	0

Franklin County Industrial Park : 4



Access Point Summary	
AP Name	Franklin County Industrial Park : 4
Equipment Type	PMP450i (running Release 16.0)
Antenna Type	Cambium Networks 60° 0.9 GHz Sector Antenna (Dual Slant) N009045D001
Modeled Beamwidth	90°
Antenna Azimuth	270.00° from True North 278.65° from Magnetic North
Antenna Tilt	0.0° (uptilt)
Connected Subscribers	0
Max Range	4 miles
RF Frequency Band	900 MHz (902 to 928 MHz)
RF Channel Bandwidth	20 MHz
Total Predicted DL Throughput	0.00 Mbps
Total Predicted UL Throughput	0.00 Mbps
Total Predicted Throughput	0.00 Mbps
Downlink Data	75 %

Subscriber Module Summary

Name	Latitude	Longitude	Product	Range	Antenna Gain

Bill of Materials : Access Point		
Part Number	Qty	Description
01010419001	6	Coaxial Cable Grounding Kits for 1/4" and 3/8" Cable
30009406002	2	N-to-N CABLE (16")
C000065L007	1	LPU and Grounding Kit (1 kit per ODU)
C009045A001	1	900 MHz PMP 450i Connectorized Access Point
EW-E4PM45AP-WW	1	PMP450/450i Access Point Extended Warranty, 4 Additional Years
N000000L034	1	POWER SUPPLY, 30W, 56V - Gbps support
N009045D001	1	900 MHz 60 degree Sector Antenna (Dual Slant). Includes the mounting bracket for the antenna and AP
WB3176	1	328 ft (100 m) Reel Outdoor Copper Clad CAT5E (Recommended for PTP). Total cable requirements are aggregated at the parent level

Mode	Total Mean Predicted Throughput (Mbps)	SMs per DL modulation			SMs per UL modulation		
		Quantity	Percent	Throughput (Mbps)	Quantity	Percent	Throughput (Mbps)
x8 (256QAM MIMO-B)	0	0	0	0	0	0	0
x6 (64QAM MIMO-B)	0	0	0	0	0	0	0
x4 (16QAM MIMO-B)	0	0	0	0	0	0	0
x2 (QPSK MIMO-B)	0	0	0	0	0	0	0
x4 (256QAM MIMO-A)	0	0	0	0	0	0	0
x3 (64QAM MIMO-A)	0	0	0	0	0	0	0
x2 (16QAM MIMO-A)	0	0	0	0	0	0	0
x1 (QPSK MIMO-A)	0	0	0	0	0	0	0

37. Grassy hill

Hub Summary	
Hub Name	Grassy hill
Latitude	37.02434N
Longitude	079.89359W
Number of Access Points	4
Number of Connected Subscribers	0
Total Predicted DL Throughput	0.00 Mbps
Total Predicted UL Throughput	0.00 Mbps
Total Throughput	0.00 Mbps

Access Point Name	Product	Antenna Azimuth	Beamwidth	Band	Max Range	Connected Subscribers	Total Predicted Throughput
Grassy hill : 1	PMP450i	0.0°	60.0°	900 MHz	4 miles	0	0.00 Mbps
Grassy hill : 2	PMP450i	90.0°	60.0°	900 MHz	4 miles	0	0.00 Mbps
Grassy hill : 3	PMP450i	180.0°	60.0°	900 MHz	4 miles	0	0.00 Mbps
Grassy hill : 4	PMP450i	270.0°	60.0°	900 MHz	4 miles	0	0.00 Mbps

Bill of Materials : PMP Network

Part Number	Qty	Description
01010419001	20	Coaxial Cable Grounding Kits for 1/4" and 3/8" Cable
30009406002	8	N-to-N CABLE (16")
C000000L066	1	cnPulse Sync Generator with CambiumSYNC. This part replaces the UGPS (1096)
C000000L500	1	CMM5 Controller
C000000L556	1	CMM5 Power and Sync Injector 56V. CMM5 supports up to 4 radios. Requires suffix 'B' or newer of N000000L054
C000065L007	4	LPU and Grounding Kit (1 kit per ODU)
C009045A001	4	900 MHz PMP 450i Connectorized Access Point
EW-E4PM45AP-WW	4	PMP450/450i Access Point Extended Warranty, 4 Additional Years
N000000L034	4	POWER SUPPLY, 30W, 56V - Gbps support
N000000L125	1	CMM5 to cnPulse Shielded Cable - 20m
N009045D001	4	900 MHz 60 degree Sector Antenna (Dual Slant). Includes the mounting bracket for the antenna and AP
WB3176	2	328 ft (100 m) Reel Outdoor Copper Clad CAT5E (Recommended for PTP). Total cable requirements are aggregated at the network level

Grassy hill : 1

Access Point Summary	
AP Name	Grassy hill : 1
Equipment Type	PMP450i (running Release 16.0)
Antenna Type	Cambium Networks 60° 0.9 GHz Sector Antenna (Dual Slant) N009045D001
Modeled Beamwidth	90°
Antenna Azimuth	0.00° from True North 8.66° from Magnetic North
Antenna Tilt	0.0° (uptilt)
Connected Subscribers	0
Max Range	4 miles
RF Frequency Band	900 MHz (902 to 928 MHz)
RF Channel Bandwidth	20 MHz
Total Predicted DL Throughput	0.00 Mbps
Total Predicted UL Throughput	0.00 Mbps
Total Predicted Throughput	0.00 Mbps
Downlink Data	75 %

Subscriber Module Summary

Name	Latitude	Longitude	Product	Range	Antenna Gain

Bill of Materials : Access Point		
Part Number	Qty	Description
01010419001	5	Coaxial Cable Grounding Kits for 1/4" and 3/8" Cable
30009406002	2	N-to-N CABLE (16")
C000065L007	1	LPU and Grounding Kit (1 kit per ODU)
C009045A001	1	900 MHz PMP 450i Connectorized Access Point
EW-E4PM45AP-WW	1	PMP450/450i Access Point Extended Warranty, 4 Additional Years
N000000L034	1	POWER SUPPLY, 30W, 56V - Gbps support
N009045D001	1	900 MHz 60 degree Sector Antenna (Dual Slant). Includes the mounting bracket for the antenna and AP
WB3176	1	328 ft (100 m) Reel Outdoor Copper Clad CAT5E (Recommended for PTP). Total cable requirements are aggregated at the parent level

Mode	Total Mean Predicted Throughput (Mbps)	SMs per DL modulation			SMs per UL modulation		
		Quantity	Percent	Throughput (Mbps)	Quantity	Percent	Throughput (Mbps)
x8 (256QAM MIMO-B)	0	0	0	0	0	0	0
x6 (64QAM MIMO-B)	0	0	0	0	0	0	0
x4 (16QAM MIMO-B)	0	0	0	0	0	0	0
x2 (QPSK MIMO-B)	0	0	0	0	0	0	0
x4 (256QAM MIMO-A)	0	0	0	0	0	0	0
x3 (64QAM MIMO-A)	0	0	0	0	0	0	0
x2 (16QAM MIMO-A)	0	0	0	0	0	0	0
x1 (QPSK MIMO-A)	0	0	0	0	0	0	0

Grassy hill : 2

Access Point Summary	
AP Name	Grassy hill : 2
Equipment Type	PMP450i (running Release 16.0)
Antenna Type	Cambium Networks 60° 0.9 GHz Sector Antenna (Dual Slant) N009045D001
Modeled Beamwidth	90°
Antenna Azimuth	90.00° from True North 98.66° from Magnetic North
Antenna Tilt	0.0° (uptilt)
Connected Subscribers	0
Max Range	4 miles
RF Frequency Band	900 MHz (902 to 928 MHz)
RF Channel Bandwidth	20 MHz
Total Predicted DL Throughput	0.00 Mbps
Total Predicted UL Throughput	0.00 Mbps
Total Predicted Throughput	0.00 Mbps
Downlink Data	75 %

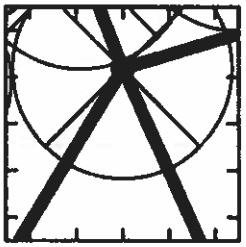
Subscriber Module Summary

Name	Latitude	Longitude	Product	Range	Antenna Gain

Bill of Materials : Access Point		
Part Number	Qty	Description
01010419001	5	Coaxial Cable Grounding Kits for 1/4" and 3/8" Cable
30009406002	2	N-to-N CABLE (16")
C000065L007	1	LPU and Grounding Kit (1 kit per ODU)
C009045A001	1	900 MHz PMP 450i Connectorized Access Point
EW-E4PM45AP-WW	1	PMP450/450i Access Point Extended Warranty, 4 Additional Years
N000000L034	1	POWER SUPPLY, 30W, 56V - Gbps support
N009045D001	1	900 MHz 60 degree Sector Antenna (Dual Slant). Includes the mounting bracket for the antenna and AP
WB3176	1	328 ft (100 m) Reel Outdoor Copper Clad CAT5E (Recommended for PTP). Total cable requirements are aggregated at the parent level

Mode	Total Mean Predicted Throughput (Mbps)	SMs per DL modulation			SMs per UL modulation		
		Quantity	Percent	Throughput (Mbps)	Quantity	Percent	Throughput (Mbps)
x8 (256QAM MIMO-B)	0	0	0	0	0	0	0
x6 (64QAM MIMO-B)	0	0	0	0	0	0	0
x4 (16QAM MIMO-B)	0	0	0	0	0	0	0
x2 (QPSK MIMO-B)	0	0	0	0	0	0	0
x4 (256QAM MIMO-A)	0	0	0	0	0	0	0
x3 (64QAM MIMO-A)	0	0	0	0	0	0	0
x2 (16QAM MIMO-A)	0	0	0	0	0	0	0
x1 (QPSK MIMO-A)	0	0	0	0	0	0	0

Grassy hill : 3



Access Point Summary	
AP Name	Grassy hill : 3
Equipment Type	PMP450i (running Release 16.0)
Antenna Type	Cambium Networks 60° 0.9 GHz Sector Antenna (Dual Slant) N009045D001
Modeled Beamwidth	90°
Antenna Azimuth	180.00° from True North 188.66° from Magnetic North
Antenna Tilt	0.0° (uptilt)
Connected Subscribers	0
Max Range	4 miles
RF Frequency Band	900 MHz (902 to 928 MHz)
RF Channel Bandwidth	20 MHz
Total Predicted DL Throughput	0.00 Mbps
Total Predicted UL Throughput	0.00 Mbps
Total Predicted Throughput	0.00 Mbps
Downlink Data	75 %

Subscriber Module Summary

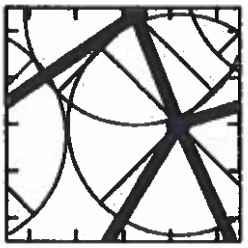
Name	Latitude	Longitude	Product	Range	Antenna Gain

Bill of Materials : Access Point

Part Number	Qty	Description
01010419001	5	Coaxial Cable Grounding Kits for 1/4" and 3/8" Cable
30009406002	2	N-to-N CABLE (16")
C000065L007	1	LPU and Grounding Kit (1 kit per ODU)
C009045A001	1	900 MHz PMP 450i Connectorized Access Point
EW-E4PM45AP-WW	1	PMP450/450i Access Point Extended Warranty, 4 Additional Years
N000000L034	1	POWER SUPPLY, 30W, 56V - Gbps support
N009045D001	1	900 MHz 60 degree Sector Antenna (Dual Slant). Includes the mounting bracket for the antenna and AP
WB3176	1	328 ft (100 m) Reel Outdoor Copper Clad CAT5E (Recommended for PTP). Total cable requirements are aggregated at the parent level

Mode	Total Mean Predicted Throughput (Mbps)	SMs per DL modulation			SMs per UL modulation		
		Quantity	Percent	Throughput (Mbps)	Quantity	Percent	Throughput (Mbps)
x8 (256QAM MIMO-B)	0	0	0	0	0	0	0
x6 (64QAM MIMO-B)	0	0	0	0	0	0	0
x4 (16QAM MIMO-B)	0	0	0	0	0	0	0
x2 (QPSK MIMO-B)	0	0	0	0	0	0	0
x4 (256QAM MIMO-A)	0	0	0	0	0	0	0
x3 (64QAM MIMO-A)	0	0	0	0	0	0	0
x2 (16QAM MIMO-A)	0	0	0	0	0	0	0
x1 (QPSK MIMO-A)	0	0	0	0	0	0	0

Grassy hill : 4



Access Point Summary	
AP Name	Grassy hill : 4
Equipment Type	PMP450i (running Release 16.0)
Antenna Type	Cambium Networks 60° 0.9 GHz Sector Antenna (Dual Slant) N009045D001
Modeled Beamwidth	90°
Antenna Azimuth	270.00° from True North 278.66° from Magnetic North
Antenna Tilt	0.0° (uptilt)
Connected Subscribers	0
Max Range	4 miles
RF Frequency Band	900 MHz (902 to 928 MHz)
RF Channel Bandwidth	20 MHz
Total Predicted DL Throughput	0.00 Mbps
Total Predicted UL Throughput	0.00 Mbps
Total Predicted Throughput	0.00 Mbps
Downlink Data	75 %

Subscriber Module Summary

Name	Latitude	Longitude	Product	Range	Antenna Gain

Bill of Materials : Access Point		
Part Number	Qty	Description
01010419001	5	Coaxial Cable Grounding Kits for 1/4" and 3/8" Cable
30009406002	2	N-to-N CABLE (16")
C000065L007	1	LPU and Grounding Kit (1 kit per ODU)
C009045A001	1	900 MHz PMP 450i Connectorized Access Point
EW-E4PM45AP-WW	1	PMP450/450i Access Point Extended Warranty, 4 Additional Years
N000000L034	1	POWER SUPPLY, 30W, 56V - Gbps support
N009045D001	1	900 MHz 60 degree Sector Antenna (Dual Slant). Includes the mounting bracket for the antenna and AP
WB3176	1	328 ft (100 m) Reel Outdoor Copper Clad CAT5E (Recommended for PTP). Total cable requirements are aggregated at the parent level

Mode	Total Mean Predicted Throughput (Mbps)	SMs per DL modulation			SMs per UL modulation		
		Quantity	Percent	Throughput (Mbps)	Quantity	Percent	Throughput (Mbps)
x8 (256QAM MIMO-B)	0	0	0	0	0	0	0
x6 (64QAM MIMO-B)	0	0	0	0	0	0	0
x4 (16QAM MIMO-B)	0	0	0	0	0	0	0
x2 (QPSK MIMO-B)	0	0	0	0	0	0	0
x4 (256QAM MIMO-A)	0	0	0	0	0	0	0
x3 (64QAM MIMO-A)	0	0	0	0	0	0	0
x2 (16QAM MIMO-A)	0	0	0	0	0	0	0
x1 (QPSK MIMO-A)	0	0	0	0	0	0	0

42. Henry Volunteer Dept

Hub Summary	
Hub Name	Henry Volunteer Dept
Latitude	36.84882N
Longitude	080.02539W
Number of Access Points	4
Number of Connected Subscribers	0
Total Predicted DL Throughput	0.00 Mbps
Total Predicted UL Throughput	0.00 Mbps
Total Throughput	0.00 Mbps

Access Point Name	Product	Antenna Azimuth	Beamwidth	Band	Max Range	Connected Subscribers	Total Predicted Throughput
Henry Volunteer Dept : 1	PMP450i	0.0°	60.0°	900 MHz	4 miles	0	0.00 Mbps
Henry Volunteer Dept : 2	PMP450i	90.0°	60.0°	900 MHz	4 miles	0	0.00 Mbps
Henry Volunteer Dept : 3	PMP450i	180.0°	60.0°	900 MHz	4 miles	0	0.00 Mbps
Henry Volunteer Dept : 4	PMP450i	270.0°	60.0°	900 MHz	4 miles	0	0.00 Mbps

Bill of Materials : PMP Network

Part Number	Qty	Description
01010419001	20	Coaxial Cable Grounding Kits for 1/4" and 3/8" Cable
30009406002	8	N-to-N CABLE (16")
C000000L066	1	cnPulse Sync Generator with CambiumSYNC. This part replaces the UGPS (1096)
C000000L500	1	CMM5 Controller
C000000L556	1	CMM5 Power and Sync Injector 56V. CMM5 supports up to 4 radios. Requires suffix 'B' or newer of N000000L054
C000065L007	4	LPU and Grounding Kit (1 kit per ODU)
C009045A001	4	900 MHz PMP 450i Connectorized Access Point
EW-E4PM45AP-WW	4	PMP450/450i Access Point Extended Warranty, 4 Additional Years
N000000L034	4	POWER SUPPLY, 30W, 56V - Gbps support
N000000L125	1	CMM5 to cnPulse Shielded Cable - 20m
N009045D001	4	900 MHz 60 degree Sector Antenna (Dual Slant). Includes the mounting bracket for the antenna and AP

Bill of Materials : PMP Network (continued)		
Part Number	Qty	Description
WB3176	2	328 ft (100 m) Reel Outdoor Copper Clad CAT5E (Recommended for PTP). Total cable requirements are aggregated at the network level

Henry Volunteer Dept : 1

Access Point Summary	
AP Name	Henry Volunteer Dept : 1
Equipment Type	PMP450i (running Release 16.0)
Antenna Type	Cambium Networks 60° 0.9 GHz Sector Antenna (Dual Slant) N009045D001
Modeled Beamwidth	90°
Antenna Azimuth	0.00° from True North 8.54° from Magnetic North
Antenna Tilt	0.0° (uptilt)
Connected Subscribers	0
Max Range	4 miles
RF Frequency Band	900 MHz (902 to 928 MHz)
RF Channel Bandwidth	20 MHz
Total Predicted DL Throughput	0.00 Mbps
Total Predicted UL Throughput	0.00 Mbps
Total Predicted Throughput	0.00 Mbps
Downlink Data	75 %

Subscriber Module Summary

Name	Latitude	Longitude	Product	Range	Antenna Gain

Bill of Materials : Access Point		
Part Number	Qty	Description
01010419001	5	Coaxial Cable Grounding Kits for 1/4" and 3/8" Cable
30009406002	2	N-to-N CABLE (16")
C000065L007	1	LPU and Grounding Kit (1 kit per ODU)
C009045A001	1	900 MHz PMP 450i Connectorized Access Point
EW-E4PM45AP-WW	1	PMP450/450i Access Point Extended Warranty, 4 Additional Years
N000000L034	1	POWER SUPPLY, 30W, 56V - Gbps support
N009045D001	1	900 MHz 60 degree Sector Antenna (Dual Slant). Includes the mounting bracket for the antenna and AP
WB3176	1	328 ft (100 m) Reel Outdoor Copper Clad CAT5E (Recommended for PTP). Total cable requirements are aggregated at the parent level

Mode	Total Mean Predicted Throughput (Mbps)	SMs per DL modulation			SMs per UL modulation		
		Quantity	Percent	Throughput (Mbps)	Quantity	Percent	Throughput (Mbps)
x8 (256QAM MIMO-B)	0	0	0	0	0	0	0
x6 (64QAM MIMO-B)	0	0	0	0	0	0	0
x4 (16QAM MIMO-B)	0	0	0	0	0	0	0
x2 (QPSK MIMO-B)	0	0	0	0	0	0	0
x4 (256QAM MIMO-A)	0	0	0	0	0	0	0
x3 (64QAM MIMO-A)	0	0	0	0	0	0	0
x2 (16QAM MIMO-A)	0	0	0	0	0	0	0
x1 (QPSK MIMO-A)	0	0	0	0	0	0	0

Henry Volunteer Dept : 2

Access Point Summary	
AP Name	Henry Volunteer Dept : 2
Equipment Type	PMP450i (running Release 16.0)
Antenna Type	Cambium Networks 60° 0.9 GHz Sector Antenna (Dual Slant) N009045D001
Modeled Beamwidth	90°
Antenna Azimuth	90.00° from True North 98.54° from Magnetic North
Antenna Tilt	0.0° (uptilt)
Connected Subscribers	0
Max Range	4 miles
RF Frequency Band	900 MHz (902 to 928 MHz)
RF Channel Bandwidth	20 MHz
Total Predicted DL Throughput	0.00 Mbps
Total Predicted UL Throughput	0.00 Mbps
Total Predicted Throughput	0.00 Mbps
Downlink Data	75 %

Subscriber Module Summary

Name	Latitude	Longitude	Product	Range	Antenna Gain

Bill of Materials : Access Point		
Part Number	Qty	Description
01010419001	5	Coaxial Cable Grounding Kits for 1/4" and 3/8" Cable
30009406002	2	N-to-N CABLE (16")
C000065L007	1	LPU and Grounding Kit (1 kit per ODU)
C009045A001	1	900 MHz PMP 450i Connectorized Access Point
EW-E4PM45AP-WW	1	PMP450/450i Access Point Extended Warranty, 4 Additional Years
N000000L034	1	POWER SUPPLY, 30W, 56V - Gbps support
N009045D001	1	900 MHz 60 degree Sector Antenna (Dual Slant). Includes the mounting bracket for the antenna and AP
WB3176	1	328 ft (100 m) Reel Outdoor Copper Clad CAT5E (Recommended for PTP). Total cable requirements are aggregated at the parent level

Mode	Total Mean Predicted Throughput (Mbps)	SMs per DL modulation			SMs per UL modulation		
		Quantity	Percent	Throughput (Mbps)	Quantity	Percent	Throughput (Mbps)
x8 (256QAM MIMO-B)	0	0	0	0	0	0	0
x6 (64QAM MIMO-B)	0	0	0	0	0	0	0
x4 (16QAM MIMO-B)	0	0	0	0	0	0	0
x2 (QPSK MIMO-B)	0	0	0	0	0	0	0
x4 (256QAM MIMO-A)	0	0	0	0	0	0	0
x3 (64QAM MIMO-A)	0	0	0	0	0	0	0
x2 (16QAM MIMO-A)	0	0	0	0	0	0	0
x1 (QPSK MIMO-A)	0	0	0	0	0	0	0

Henry Volunteer Dept : 3

Access Point Summary	
AP Name	Henry Volunteer Dept : 3
Equipment Type	PMP450i (running Release 16.0)
Antenna Type	Cambium Networks 60° 0.9 GHz Sector Antenna (Dual Slant) N009045D001
Modeled Beamwidth	90°
Antenna Azimuth	180.00° from True North 188.54° from Magnetic North
Antenna Tilt	0.0° (uptilt)
Connected Subscribers	0
Max Range	4 miles
RF Frequency Band	900 MHz (902 to 928 MHz)
RF Channel Bandwidth	20 MHz
Total Predicted DL Throughput	0.00 Mbps
Total Predicted UL Throughput	0.00 Mbps
Total Predicted Throughput	0.00 Mbps
Downlink Data	75 %

Subscriber Module Summary

Name	Latitude	Longitude	Product	Range	Antenna Gain

Bill of Materials : Access Point		
Part Number	Qty	Description
01010419001	5	Coaxial Cable Grounding Kits for 1/4" and 3/8" Cable
30009406002	2	N-to-N CABLE (16")
C000065L007	1	LPU and Grounding Kit (1 kit per ODU)
C009045A001	1	900 MHz PMP 450i Connectorized Access Point
EW-E4PM45AP-WW	1	PMP450/450i Access Point Extended Warranty, 4 Additional Years
N000000L034	1	POWER SUPPLY, 30W, 56V - Gbps support
N009045D001	1	900 MHz 60 degree Sector Antenna (Dual Slant). Includes the mounting bracket for the antenna and AP
WB3176	1	328 ft (100 m) Reel Outdoor Copper Clad CAT5E (Recommended for PTP). Total cable requirements are aggregated at the parent level

Mode	Total Mean Predicted Throughput (Mbps)	SMs per DL modulation			SMs per UL modulation		
		Quantity	Percent	Throughput (Mbps)	Quantity	Percent	Throughput (Mbps)
x8 (256QAM MIMO-B)	0	0	0	0	0	0	0
x6 (64QAM MIMO-B)	0	0	0	0	0	0	0
x4 (16QAM MIMO-B)	0	0	0	0	0	0	0
x2 (QPSK MIMO-B)	0	0	0	0	0	0	0
x4 (256QAM MIMO-A)	0	0	0	0	0	0	0
x3 (64QAM MIMO-A)	0	0	0	0	0	0	0
x2 (16QAM MIMO-A)	0	0	0	0	0	0	0
x1 (QPSK MIMO-A)	0	0	0	0	0	0	0

Henry Volunteer Dept : 4

Access Point Summary	
AP Name	Henry Volunteer Dept : 4
Equipment Type	PMP450i (running Release 16.0)
Antenna Type	Cambium Networks 60° 0.9 GHz Sector Antenna (Dual Slant) N009045D001
Modeled Beamwidth	90°
Antenna Azimuth	270.00° from True North 278.54° from Magnetic North
Antenna Tilt	0.0° (uptilt)
Connected Subscribers	0
Max Range	4 miles
RF Frequency Band	900 MHz (902 to 928 MHz)
RF Channel Bandwidth	20 MHz
Total Predicted DL Throughput	0.00 Mbps
Total Predicted UL Throughput	0.00 Mbps
Total Predicted Throughput	0.00 Mbps
Downlink Data	75 %

Subscriber Module Summary

Name	Latitude	Longitude	Product	Range	Antenna Gain

Bill of Materials : Access Point		
Part Number	Qty	Description
01010419001	5	Coaxial Cable Grounding Kits for 1/4" and 3/8" Cable
30009406002	2	N-to-N CABLE (16")
C000065L007	1	LPU and Grounding Kit (1 kit per ODU)
C009045A001	1	900 MHz PMP 450i Connectorized Access Point
EW-E4PM45AP-WW	1	PMP450/450i Access Point Extended Warranty, 4 Additional Years
N000000L034	1	POWER SUPPLY, 30W, 56V - Gbps support
N009045D001	1	900 MHz 60 degree Sector Antenna (Dual Slant). Includes the mounting bracket for the antenna and AP
WB3176	1	328 ft (100 m) Reel Outdoor Copper Clad CAT5E (Recommended for PTP). Total cable requirements are aggregated at the parent level

Mode	Total Mean Predicted Throughput (Mbps)	SMs per DL modulation			SMs per UL modulation		
		Quantity	Percent	Throughput (Mbps)	Quantity	Percent	Throughput (Mbps)
x8 (256QAM MIMO-B)	0	0	0	0	0	0	0
x6 (64QAM MIMO-B)	0	0	0	0	0	0	0
x4 (16QAM MIMO-B)	0	0	0	0	0	0	0
x2 (QPSK MIMO-B)	0	0	0	0	0	0	0
x4 (256QAM MIMO-A)	0	0	0	0	0	0	0
x3 (64QAM MIMO-A)	0	0	0	0	0	0	0
x2 (16QAM MIMO-A)	0	0	0	0	0	0	0
x1 (QPSK MIMO-A)	0	0	0	0	0	0	0

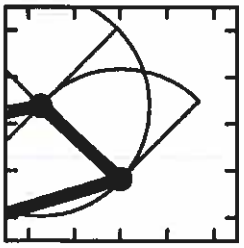
47. Scruugs Tower

Hub Summary	
Hub Name	Scruugs Tower
Latitude	37.07883N
Longitude	079.66540W
Number of Access Points	1
Number of Connected Subscribers	0
Total Predicted DL Throughput	0.00 Mbps
Total Predicted UL Throughput	0.00 Mbps
Total Throughput	0.00 Mbps

Access Point Name	Product	Antenna Azimuth	Beamwidth	Band	Max Range	Connected Subscribers	Total Predicted Throughput
Scruugs Tower : 1	PMP450i	0.0°	60.0°	900 MHz	4 miles	0	0.00 Mbps

Bill of Materials : PMP Network		
Part Number	Qty	Description
01010419001	5	Coaxial Cable Grounding Kits for 1/4" and 3/8" Cable
30009406002	2	N-to-N CABLE (16")
C000000L066	1	cnPulse Sync Generator with CambiumSYNC. This part replaces the UGPS (1096)
C000000L500	1	CMM5 Controller
C000000L556	1	CMM5 Power and Sync Injector 56V. CMM5 supports up to 4 radios. Requires suffix 'B' or newer of N000000L054
C000065L007	1	LPU and Grounding Kit (1 kit per ODU)
C009045A001	1	900 MHz PMP 450i Connectorized Access Point
EW-E4PM45AP-WW	1	PMP450/450i Access Point Extended Warranty, 4 Additional Years
N000000L034	1	POWER SUPPLY, 30W, 56V - Gbps support
N000000L125	1	CMM5 to cnPulse Shielded Cable - 20m
N009045D001	1	900 MHz 60 degree Sector Antenna (Dual Slant). Includes the mounting bracket for the antenna and AP
WB3176	1	328 ft (100 m) Reel Outdoor Copper Clad CAT5E (Recommended for PTP). Total cable requirements are aggregated at the network level

Scruugs Tower : 1



Access Point Summary	
AP Name	Scruugs Tower : 1
Equipment Type	PMP450i (running Release 16.0)
Antenna Type	Cambium Networks 60° 0.9 GHz Sector Antenna (Dual Slant) N009045D001
Modeled Beamwidth	90°
Antenna Azimuth	0.00° from True North 8.81° from Magnetic North
Antenna Tilt	0.0° (uptilt)
Connected Subscribers	0
Max Range	4 miles
RF Frequency Band	900 MHz (902 to 928 MHz)
RF Channel Bandwidth	20 MHz
Total Predicted DL Throughput	0.00 Mbps
Total Predicted UL Throughput	0.00 Mbps
Total Predicted Throughput	0.00 Mbps
Downlink Data	75 %

Subscriber Module Summary

Name	Latitude	Longitude	Product	Range	Antenna Gain

Bill of Materials : Access Point		
Part Number	Qty	Description
01010419001	5	Coaxial Cable Grounding Kits for 1/4" and 3/8" Cable
30009406002	2	N-to-N CABLE (16")
C000065L007	1	LPU and Grounding Kit (1 kit per ODU)
C009045A001	1	900 MHz PMP 450i Connectorized Access Point
EW-E4PM45AP-WW	1	PMP450/450i Access Point Extended Warranty, 4 Additional Years
N000000L034	1	POWER SUPPLY, 30W, 56V - Gbps support
N009045D001	1	900 MHz 60 degree Sector Antenna (Dual Slant). Includes the mounting bracket for the antenna and AP
WB3176	1	328 ft (100 m) Reel Outdoor Copper Clad CAT5E (Recommended for PTP). Total cable requirements are aggregated at the parent level

Mode	Total Mean Predicted Throughput (Mbps)	SMs per DL modulation			SMs per UL modulation		
		Quantity	Percent	Throughput (Mbps)	Quantity	Percent	Throughput (Mbps)
x8 (256QAM MIMO-B)	0	0	0	0	0	0	0
x6 (64QAM MIMO-B)	0	0	0	0	0	0	0
x4 (16QAM MIMO-B)	0	0	0	0	0	0	0
x2 (QPSK MIMO-B)	0	0	0	0	0	0	0
x4 (256QAM MIMO-A)	0	0	0	0	0	0	0
x3 (64QAM MIMO-A)	0	0	0	0	0	0	0
x2 (16QAM MIMO-A)	0	0	0	0	0	0	0
x1 (QPSK MIMO-A)	0	0	0	0	0	0	0

49. Snow Creek Tower

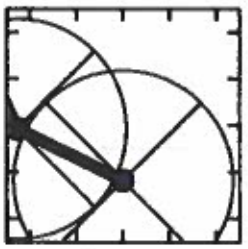
Hub Summary	
Hub Name	Snow Creek Tower
Latitude	36.83902N
Longitude	079.73463W
Number of Access Points	4
Number of Connected Subscribers	0
Total Predicted DL Throughput	0.00 Mbps
Total Predicted UL Throughput	0.00 Mbps
Total Throughput	0.00 Mbps

Access Point Name	Product	Antenna Azimuth	Beamwidth	Band	Max Range	Connected Subscribers	Total Predicted Throughput
Snow Creek Tower : 1	PMP450i	0.0°	60.0°	900 MHz	4 miles	0	0.00 Mbps
Snow Creek Tower : 2	PMP450i	90.0°	60.0°	900 MHz	4 miles	0	0.00 Mbps
Snow Creek Tower : 3	PMP450i	180.0°	60.0°	900 MHz	4 miles	0	0.00 Mbps
Snow Creek Tower : 4	PMP450i	270.0°	60.0°	900 MHz	4 miles	0	0.00 Mbps

Bill of Materials : PMP Network		
Part Number	Qty	Description
01010419001	24	Coaxial Cable Grounding Kits for 1/4" and 3/8" Cable
30009406002	8	N-to-N CABLE (16")
C000000L066	1	cnPulse Sync Generator with CambiumSYNC. This part replaces the UGPS (1096)
C000000L500	1	CMM5 Controller
C000000L556	1	CMM5 Power and Sync Injector 56V. CMM5 supports up to 4 radios. Requires suffix 'B' or newer of N000000L054
C000065L007	4	LPU and Grounding Kit (1 kit per ODU)
C009045A001	4	900 MHz PMP 450i Connectorized Access Point
EW-E4PM45AP-WW	4	PMP450/450i Access Point Extended Warranty, 4 Additional Years
N000000L034	4	POWER SUPPLY, 30W, 56V - Gbps support
N000000L125	1	CMM5 to cnPulse Shielded Cable - 20m
N009045D001	4	900 MHz 60 degree Sector Antenna (Dual Slant). Includes the mounting bracket for the antenna and AP

Bill of Materials : PMP Network (continued)		
Part Number	Qty	Description
WB3176	4	328 ft (100 m) Reel Outdoor Copper Clad CAT5E (Recommended for PTP). Total cable requirements are aggregated at the network level

Snow Creek Tower : 1



Access Point Summary	
AP Name	Snow Creek Tower : 1
Equipment Type	PMP450i (running Release 16.0)
Antenna Type	Cambium Networks 60° 0.9 GHz Sector Antenna (Dual Slant) N009045D001
Modeled Beamwidth	90°
Antenna Azimuth	0.00° from True North 8.73° from Magnetic North
Antenna Tilt	0.0° (uptilt)
Connected Subscribers	0
Max Range	4 miles
RF Frequency Band	900 MHz (902 to 928 MHz)
RF Channel Bandwidth	20 MHz
Total Predicted DL Throughput	0.00 Mbps
Total Predicted UL Throughput	0.00 Mbps
Total Predicted Throughput	0.00 Mbps
Downlink Data	75 %

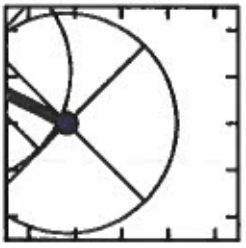
Subscriber Module Summary

Name	Latitude	Longitude	Product	Range	Antenna Gain

Bill of Materials : Access Point		
Part Number	Qty	Description
01010419001	6	Coaxial Cable Grounding Kits for 1/4" and 3/8" Cable
30009406002	2	N-to-N CABLE (16")
C000065L007	1	LPU and Grounding Kit (1 kit per ODU)
C009045A001	1	900 MHz PMP 450i Connectorized Access Point
EW-E4PM45AP-WW	1	PMP450/450i Access Point Extended Warranty, 4 Additional Years
N000000L034	1	POWER SUPPLY, 30W, 56V - Gbps support
N009045D001	1	900 MHz 60 degree Sector Antenna (Dual Slant). Includes the mounting bracket for the antenna and AP
WB3176	1	328 ft (100 m) Reel Outdoor Copper Clad CAT5E (Recommended for PTP). Total cable requirements are aggregated at the parent level

Mode	Total Mean Predicted Throughput (Mbps)	SMs per DL modulation			SMs per UL modulation		
		Quantity	Percent	Throughput (Mbps)	Quantity	Percent	Throughput (Mbps)
x8 (256QAM MIMO-B)	0	0	0	0	0	0	0
x6 (64QAM MIMO-B)	0	0	0	0	0	0	0
x4 (16QAM MIMO-B)	0	0	0	0	0	0	0
x2 (QPSK MIMO-B)	0	0	0	0	0	0	0
x4 (256QAM MIMO-A)	0	0	0	0	0	0	0
x3 (64QAM MIMO-A)	0	0	0	0	0	0	0
x2 (16QAM MIMO-A)	0	0	0	0	0	0	0
x1 (QPSK MIMO-A)	0	0	0	0	0	0	0

Snow Creek Tower : 2



Access Point Summary	
AP Name	Snow Creek Tower : 2
Equipment Type	PMP450i (running Release 16.0)
Antenna Type	Cambium Networks 60° 0.9 GHz Sector Antenna (Dual Slant) N009045D001
Modeled Beamwidth	90°
Antenna Azimuth	90.00° from True North 98.73° from Magnetic North
Antenna Tilt	0.0° (uptilt)
Connected Subscribers	0
Max Range	4 miles
RF Frequency Band	900 MHz (902 to 928 MHz)
RF Channel Bandwidth	20 MHz
Total Predicted DL Throughput	0.00 Mbps
Total Predicted UL Throughput	0.00 Mbps
Total Predicted Throughput	0.00 Mbps
Downlink Data	75 %

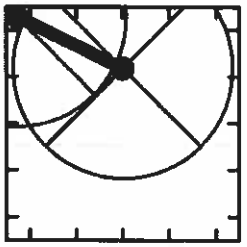
Subscriber Module Summary

Name	Latitude	Longitude	Product	Range	Antenna Gain

Bill of Materials : Access Point		
Part Number	Qty	Description
01010419001	6	Coaxial Cable Grounding Kits for 1/4" and 3/8" Cable
30009406002	2	N-to-N CABLE (16")
C000065L007	1	LPU and Grounding Kit (1 kit per ODU)
C009045A001	1	900 MHz PMP 450i Connectorized Access Point
EW-E4PM45AP-WW	1	PMP450/450i Access Point Extended Warranty, 4 Additional Years
N000000L034	1	POWER SUPPLY, 30W, 56V - Gbps support
N009045D001	1	900 MHz 60 degree Sector Antenna (Dual Slant). Includes the mounting bracket for the antenna and AP
WB3176	1	328 ft (100 m) Reel Outdoor Copper Clad CAT5E (Recommended for PTP). Total cable requirements are aggregated at the parent level

Mode	Total Mean Predicted Throughput (Mbps)	SMs per DL modulation			SMs per UL modulation		
		Quantity	Percent	Throughput (Mbps)	Quantity	Percent	Throughput (Mbps)
x8 (256QAM MIMO-B)	0	0	0	0	0	0	0
x6 (64QAM MIMO-B)	0	0	0	0	0	0	0
x4 (16QAM MIMO-B)	0	0	0	0	0	0	0
x2 (QPSK MIMO-B)	0	0	0	0	0	0	0
x4 (256QAM MIMO-A)	0	0	0	0	0	0	0
x3 (64QAM MIMO-A)	0	0	0	0	0	0	0
x2 (16QAM MIMO-A)	0	0	0	0	0	0	0
x1 (QPSK MIMO-A)	0	0	0	0	0	0	0

Snow Creek Tower : 3



Access Point Summary	
AP Name	Snow Creek Tower : 3
Equipment Type	PMP450i (running Release 16.0)
Antenna Type	Cambium Networks 60° 0.9 GHz Sector Antenna (Dual Slant) N009045D001
Modeled Beamwidth	90°
Antenna Azimuth	180.00° from True North 188.73° from Magnetic North
Antenna Tilt	0.0° (uptilt)
Connected Subscribers	0
Max Range	4 miles
RF Frequency Band	900 MHz (902 to 928 MHz)
RF Channel Bandwidth	20 MHz
Total Predicted DL Throughput	0.00 Mbps
Total Predicted UL Throughput	0.00 Mbps
Total Predicted Throughput	0.00 Mbps
Downlink Data	75 %

Subscriber Module Summary

Name	Latitude	Longitude	Product	Range	Antenna Gain

Bill of Materials : Access Point		
Part Number	Qty	Description
01010419001	6	Coaxial Cable Grounding Kits for 1/4" and 3/8" Cable
30009406002	2	N-to-N CABLE (16")
C000065L007	1	LPU and Grounding Kit (1 kit per ODU)
C009045A001	1	900 MHz PMP 450i Connectorized Access Point
EW-E4PM45AP-WW	1	PMP450/450i Access Point Extended Warranty, 4 Additional Years
N000000L034	1	POWER SUPPLY, 30W, 56V - Gbps support
N009045D001	1	900 MHz 60 degree Sector Antenna (Dual Slant). Includes the mounting bracket for the antenna and AP
WB3176	1	328 ft (100 m) Reel Outdoor Copper Clad CAT5E (Recommended for PTP). Total cable requirements are aggregated at the parent level

Mode	Total Mean Predicted Throughput (Mbps)	SMs per DL modulation			SMs per UL modulation		
		Quantity	Percent	Throughput (Mbps)	Quantity	Percent	Throughput (Mbps)
x8 (256QAM MIMO-B)	0	0	0	0	0	0	0
x6 (64QAM MIMO-B)	0	0	0	0	0	0	0
x4 (16QAM MIMO-B)	0	0	0	0	0	0	0
x2 (QPSK MIMO-B)	0	0	0	0	0	0	0
x4 (256QAM MIMO-A)	0	0	0	0	0	0	0
x3 (64QAM MIMO-A)	0	0	0	0	0	0	0
x2 (16QAM MIMO-A)	0	0	0	0	0	0	0
x1 (QPSK MIMO-A)	0	0	0	0	0	0	0

Snow Creek Tower : 4

Access Point Summary	
AP Name	Snow Creek Tower : 4
Equipment Type	PMP450i (running Release 16.0)
Antenna Type	Cambium Networks 60° 0.9 GHz Sector Antenna (Dual Slant) N009045D001
Modeled Beamwidth	90°
Antenna Azimuth	270.00° from True North 278.73° from Magnetic North
Antenna Tilt	0.0° (uptilt)
Connected Subscribers	0
Max Range	4 miles
RF Frequency Band	900 MHz (902 to 928 MHz)
RF Channel Bandwidth	20 MHz
Total Predicted DL Throughput	0.00 Mbps
Total Predicted UL Throughput	0.00 Mbps
Total Predicted Throughput	0.00 Mbps
Downlink Data	75 %

Subscriber Module Summary

Name	Latitude	Longitude	Product	Range	Antenna Gain

Bill of Materials : Access Point		
Part Number	Qty	Description
01010419001	6	Coaxial Cable Grounding Kits for 1/4" and 3/8" Cable
30009406002	2	N-to-N CABLE (16")
C000065L007	1	LPU and Grounding Kit (1 kit per ODU)
C009045A001	1	900 MHz PMP 450i Connectorized Access Point
EW-E4PM45AP-WW	1	PMP450/450i Access Point Extended Warranty, 4 Additional Years
N000000L034	1	POWER SUPPLY, 30W, 56V - Gbps support
N009045D001	1	900 MHz 60 degree Sector Antenna (Dual Slant). Includes the mounting bracket for the antenna and AP
WB3176	1	328 ft (100 m) Reel Outdoor Copper Clad CAT5E (Recommended for PTP). Total cable requirements are aggregated at the parent level

Mode	Total Mean Predicted Throughput (Mbps)	SMs per DL modulation			SMs per UL modulation		
		Quantity	Percent	Throughput (Mbps)	Quantity	Percent	Throughput (Mbps)
x8 (256QAM MIMO-B)	0	0	0	0	0	0	0
x6 (64QAM MIMO-B)	0	0	0	0	0	0	0
x4 (16QAM MIMO-B)	0	0	0	0	0	0	0
x2 (QPSK MIMO-B)	0	0	0	0	0	0	0
x4 (256QAM MIMO-A)	0	0	0	0	0	0	0
x3 (64QAM MIMO-A)	0	0	0	0	0	0	0
x2 (16QAM MIMO-A)	0	0	0	0	0	0	0
x1 (QPSK MIMO-A)	0	0	0	0	0	0	0

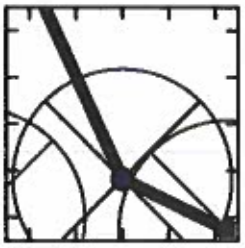
54. Tom's knob

Hub Summary	
Hub Name	Tom's knob
Latitude	36.86627N
Longitude	079.80430W
Number of Access Points	4
Number of Connected Subscribers	0
Total Predicted DL Throughput	0.00 Mbps
Total Predicted UL Throughput	0.00 Mbps
Total Throughput	0.00 Mbps

Access Point Name	Product	Antenna Azimuth	Beamwidth	Band	Max Range	Connected Subscribers	Total Predicted Throughput
Tom's knob : 1	PMP450i	0.0°	60.0°	900 MHz	4 miles	0	0.00 Mbps
Tom's knob : 2	PMP450i	90.0°	60.0°	900 MHz	4 miles	0	0.00 Mbps
Tom's knob : 3	PMP450i	180.0°	60.0°	900 MHz	4 miles	0	0.00 Mbps
Tom's knob : 4	PMP450i	270.0°	60.0°	900 MHz	4 miles	0	0.00 Mbps

Bill of Materials : PMP Network		
Part Number	Qty	Description
01010419001	20	Coaxial Cable Grounding Kits for 1/4" and 3/8" Cable
30009406002	8	N-to-N CABLE (16")
C000000L066	1	cnPulse Sync Generator with CambiumSYNC. This part replaces the UGPS (1096)
C000000L500	1	CMM5 Controller
C000000L556	1	CMM5 Power and Sync Injector 56V. CMM5 supports up to 4 radios. Requires suffix 'B' or newer of N000000L054
C000065L007	4	LPU and Grounding Kit (1 kit per ODU)
C009045A001	4	900 MHz PMP 450i Connectorized Access Point
EW-E4PM45AP-WW	4	PMP450/450i Access Point Extended Warranty, 4 Additional Years
N000000L034	4	POWER SUPPLY, 30W, 56V - Gbps support
N000000L125	1	CMM5 to cnPulse Shielded Cable - 20m
N009045D001	4	900 MHz 60 degree Sector Antenna (Dual Slant). Includes the mounting bracket for the antenna and AP
WB3176	4	328 ft (100 m) Reel Outdoor Copper Clad CAT5E (Recommended for PTP). Total cable requirements are aggregated at the network level

Tom's knob : 1



Access Point Summary	
AP Name	Tom's knob : 1
Equipment Type	PMP450i (running Release 16.0)
Antenna Type	Cambium Networks 60° 0.9 GHz Sector Antenna (Dual Slant) N009045D001
Modeled Beamwidth	90°
Antenna Azimuth	0.00° from True North 8.69° from Magnetic North
Antenna Tilt	0.0° (uptilt)
Connected Subscribers	0
Max Range	4 miles
RF Frequency Band	900 MHz (902 to 928 MHz)
RF Channel Bandwidth	20 MHz
Total Predicted DL Throughput	0.00 Mbps
Total Predicted UL Throughput	0.00 Mbps
Total Predicted Throughput	0.00 Mbps
Downlink Data	75 %

Subscriber Module Summary

Name	Latitude	Longitude	Product	Range	Antenna Gain

Bill of Materials : Access Point		
Part Number	Qty	Description
01010419001	5	Coaxial Cable Grounding Kits for 1/4" and 3/8" Cable
30009406002	2	N-to-N CABLE (16")
C000065L007	1	LPU and Grounding Kit (1 kit per ODU)
C009045A001	1	900 MHz PMP 450i Connectorized Access Point
EW-E4PM45AP-WW	1	PMP450/450i Access Point Extended Warranty, 4 Additional Years
N000000L034	1	POWER SUPPLY, 30W, 56V - Gbps support
N009045D001	1	900 MHz 60 degree Sector Antenna (Dual Slant). Includes the mounting bracket for the antenna and AP
WB3176	1	328 ft (100 m) Reel Outdoor Copper Clad CAT5E (Recommended for PTP). Total cable requirements are aggregated at the parent level

Mode	Total Mean Predicted Throughput (Mbps)	SMs per DL modulation			SMs per UL modulation		
		Quantity	Percent	Throughput (Mbps)	Quantity	Percent	Throughput (Mbps)
x8 (256QAM MIMO-B)	0	0	0	0	0	0	0
x6 (64QAM MIMO-B)	0	0	0	0	0	0	0
x4 (16QAM MIMO-B)	0	0	0	0	0	0	0
x2 (QPSK MIMO-B)	0	0	0	0	0	0	0
x4 (256QAM MIMO-A)	0	0	0	0	0	0	0
x3 (64QAM MIMO-A)	0	0	0	0	0	0	0
x2 (16QAM MIMO-A)	0	0	0	0	0	0	0
x1 (QPSK MIMO-A)	0	0	0	0	0	0	0

Tom's knob : 2

Access Point Summary	
AP Name	Tom's knob : 2
Equipment Type	PMP450i (running Release 16.0)
Antenna Type	Cambium Networks 60° 0.9 GHz Sector Antenna (Dual Slant) N009045D001
Modeled Beamwidth	90°
Antenna Azimuth	90.00° from True North 98.69° from Magnetic North
Antenna Tilt	0.0° (uptilt)
Connected Subscribers	0
Max Range	4 miles
RF Frequency Band	900 MHz (902 to 928 MHz)
RF Channel Bandwidth	20 MHz
Total Predicted DL Throughput	0.00 Mbps
Total Predicted UL Throughput	0.00 Mbps
Total Predicted Throughput	0.00 Mbps
Downlink Data	75 %

Subscriber Module Summary

Name	Latitude	Longitude	Product	Range	Antenna Gain

Bill of Materials : Access Point		
Part Number	Qty	Description
01010419001	5	Coaxial Cable Grounding Kits for 1/4" and 3/8" Cable
30009406002	2	N-to-N CABLE (16")
C000065L007	1	LPU and Grounding Kit (1 kit per ODU)
C009045A001	1	900 MHz PMP 450i Connectorized Access Point
EW-E4PM45AP-WW	1	PMP450/450i Access Point Extended Warranty, 4 Additional Years
N000000L034	1	POWER SUPPLY, 30W, 56V - Gbps support
N009045D001	1	900 MHz 60 degree Sector Antenna (Dual Slant). Includes the mounting bracket for the antenna and AP
WB3176	1	328 ft (100 m) Reel Outdoor Copper Clad CAT5E (Recommended for PTP). Total cable requirements are aggregated at the parent level

Mode	Total Mean Predicted Throughput (Mbps)	SMs per DL modulation			SMs per UL modulation		
		Quantity	Percent	Throughput (Mbps)	Quantity	Percent	Throughput (Mbps)
x8 (256QAM MIMO-B)	0	0	0	0	0	0	0
x6 (64QAM MIMO-B)	0	0	0	0	0	0	0
x4 (16QAM MIMO-B)	0	0	0	0	0	0	0
x2 (QPSK MIMO-B)	0	0	0	0	0	0	0
x4 (256QAM MIMO-A)	0	0	0	0	0	0	0
x3 (64QAM MIMO-A)	0	0	0	0	0	0	0
x2 (16QAM MIMO-A)	0	0	0	0	0	0	0
x1 (QPSK MIMO-A)	0	0	0	0	0	0	0

Tom's knob : 3

Access Point Summary	
AP Name	Tom's knob : 3
Equipment Type	PMP450i (running Release 16.0)
Antenna Type	Cambium Networks 60° 0.9 GHz Sector Antenna (Dual Slant) N009045D001
Modeled Beamwidth	90°
Antenna Azimuth	180.00° from True North 188.69° from Magnetic North
Antenna Tilt	0.0° (uptilt)
Connected Subscribers	0
Max Range	4 miles
RF Frequency Band	900 MHz (902 to 928 MHz)
RF Channel Bandwidth	20 MHz
Total Predicted DL Throughput	0.00 Mbps
Total Predicted UL Throughput	0.00 Mbps
Total Predicted Throughput	0.00 Mbps
Downlink Data	75 %

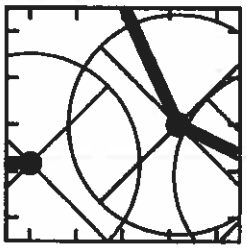
Subscriber Module Summary

Name	Latitude	Longitude	Product	Range	Antenna Gain

Bill of Materials : Access Point		
Part Number	Qty	Description
01010419001	5	Coaxial Cable Grounding Kits for 1/4" and 3/8" Cable
30009406002	2	N-to-N CABLE (16")
C000065L007	1	LPU and Grounding Kit (1 kit per ODU)
C009045A001	1	900 MHz PMP 450i Connectorized Access Point
EW-E4PM45AP-WW	1	PMP450/450i Access Point Extended Warranty, 4 Additional Years
N000000L034	1	POWER SUPPLY, 30W, 56V - Gbps support
N009045D001	1	900 MHz 60 degree Sector Antenna (Dual Slant). Includes the mounting bracket for the antenna and AP
WB3176	1	328 ft (100 m) Reel Outdoor Copper Clad CAT5E (Recommended for PTP). Total cable requirements are aggregated at the parent level

Mode	Total Mean Predicted Throughput (Mbps)	SMs per DL modulation			SMs per UL modulation		
		Quantity	Percent	Throughput (Mbps)	Quantity	Percent	Throughput (Mbps)
x8 (256QAM MIMO-B)	0	0	0	0	0	0	0
x6 (64QAM MIMO-B)	0	0	0	0	0	0	0
x4 (16QAM MIMO-B)	0	0	0	0	0	0	0
x2 (QPSK MIMO-B)	0	0	0	0	0	0	0
x4 (256QAM MIMO-A)	0	0	0	0	0	0	0
x3 (64QAM MIMO-A)	0	0	0	0	0	0	0
x2 (16QAM MIMO-A)	0	0	0	0	0	0	0
x1 (QPSK MIMO-A)	0	0	0	0	0	0	0

Tom's knob : 4



Access Point Summary	
AP Name	Tom's knob : 4
Equipment Type	PMP450i (running Release 16.0)
Antenna Type	Cambium Networks 60° 0.9 GHz Sector Antenna (Dual Slant) N009045D001
Modeled Beamwidth	90°
Antenna Azimuth	270.00° from True North 278.69° from Magnetic North
Antenna Tilt	0.0° (uptilt)
Connected Subscribers	0
Max Range	4 miles
RF Frequency Band	900 MHz (902 to 928 MHz)
RF Channel Bandwidth	20 MHz
Total Predicted DL Throughput	0.00 Mbps
Total Predicted UL Throughput	0.00 Mbps
Total Predicted Throughput	0.00 Mbps
Downlink Data	75 %

Subscriber Module Summary

Name	Latitude	Longitude	Product	Range	Antenna Gain

59. Westlake BRT Tower

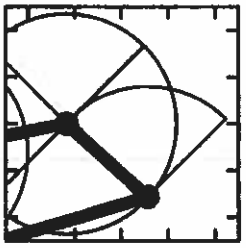
Hub Summary	
Hub Name	Westlake BRT Tower
Latitude	37.11732N
Longitude	079.71866W
Number of Access Points	4
Number of Connected Subscribers	0
Total Predicted DL Throughput	0.00 Mbps
Total Predicted UL Throughput	0.00 Mbps
Total Throughput	0.00 Mbps

Access Point Name	Product	Antenna Azimuth	Beamwidth	Band	Max Range	Connected Subscribers	Total Predicted Throughput
Westlake BRT Tower : 1	PMP450i	0.0°	60.0°	900 MHz	4 miles	0	0.00 Mbps
Westlake BRT Tower : 2	PMP450i	90.0°	60.0°	900 MHz	4 miles	0	0.00 Mbps
Westlake BRT Tower : 3	PMP450i	180.0°	60.0°	900 MHz	4 miles	0	0.00 Mbps
Westlake BRT Tower : 4	PMP450i	270.0°	60.0°	900 MHz	4 miles	0	0.00 Mbps

Bill of Materials : PMP Network

Part Number	Qty	Description
01010419001	24	Coaxial Cable Grounding Kits for 1/4" and 3/8" Cable
30009406002	8	N-to-N CABLE (16")
C000000L066	1	cnPulse Sync Generator with CambiumSYNC. This part replaces the UGPS (1096)
C000000L500	1	CMM5 Controller
C000000L556	1	CMM5 Power and Sync Injector 56V. CMM5 supports up to 4 radios. Requires suffix 'B' or newer of N000000L054
C000065L007	4	LPU and Grounding Kit (1 kit per ODU)
C009045A001	4	900 MHz PMP 450i Connectorized Access Point
EW-E4PM45AP-WW	4	PMP450/450i Access Point Extended Warranty, 4 Additional Years
N000000L034	4	POWER SUPPLY, 30W, 56V - Gbps support
N000000L125	1	CMM5 to cnPulse Shielded Cable - 20m
N009045D001	4	900 MHz 60 degree Sector Antenna (Dual Slant). Includes the mounting bracket for the antenna and AP

Westlake BRT Tower : 2



Access Point Summary	
AP Name	Westlake BRT Tower : 2
Equipment Type	PMP450i (running Release 16.0)
Antenna Type	Cambium Networks 60° 0.9 GHz Sector Antenna (Dual Slant) N009045D001
Modeled Beamwidth	90°
Antenna Azimuth	90.00° from True North 98.78° from Magnetic North
Antenna Tilt	0.0° (uptilt)
Connected Subscribers	0
Max Range	4 miles
RF Frequency Band	900 MHz (902 to 928 MHz)
RF Channel Bandwidth	20 MHz
Total Predicted DL Throughput	0.00 Mbps
Total Predicted UL Throughput	0.00 Mbps
Total Predicted Throughput	0.00 Mbps
Downlink Data	75 %

Subscriber Module Summary

Name	Latitude	Longitude	Product	Range	Antenna Gain

Bill of Materials : Access Point		
Part Number	Qty	Description
01010419001	6	Coaxial Cable Grounding Kits for 1/4" and 3/8" Cable
30009406002	2	N-to-N CABLE (16")
C000065L007	1	LPU and Grounding Kit (1 kit per ODU)
C009045A001	1	900 MHz PMP 450i Connectorized Access Point
EW-E4PM45AP-WW	1	PMP450/450i Access Point Extended Warranty, 4 Additional Years
N000000L034	1	POWER SUPPLY, 30W, 56V - Gbps support
N009045D001	1	900 MHz 60 degree Sector Antenna (Dual Slant). Includes the mounting bracket for the antenna and AP
WB3176	1	328 ft (100 m) Reel Outdoor Copper Clad CAT5E (Recommended for PTP). Total cable requirements are aggregated at the parent level

Mode	Total Mean Predicted Throughput (Mbps)	SMs per DL modulation			SMs per UL modulation		
		Quantity	Percent	Throughput (Mbps)	Quantity	Percent	Throughput (Mbps)
x8 (256QAM MIMO-B)	0	0	0	0	0	0	0
x6 (64QAM MIMO-B)	0	0	0	0	0	0	0
x4 (16QAM MIMO-B)	0	0	0	0	0	0	0
x2 (QPSK MIMO-B)	0	0	0	0	0	0	0
x4 (256QAM MIMO-A)	0	0	0	0	0	0	0
x3 (64QAM MIMO-A)	0	0	0	0	0	0	0
x2 (16QAM MIMO-A)	0	0	0	0	0	0	0
x1 (QPSK MIMO-A)	0	0	0	0	0	0	0

Westlake BRT Tower : 3

Access Point Summary	
AP Name	Westlake BRT Tower : 3
Equipment Type	PMP450i (running Release 16.0)
Antenna Type	Cambium Networks 60° 0.9 GHz Sector Antenna (Dual Slant) N009045D001
Modeled Beamwidth	90°
Antenna Azimuth	180.00° from True North 188.78° from Magnetic North
Antenna Tilt	0.0° (uptilt)
Connected Subscribers	0
Max Range	4 miles
RF Frequency Band	900 MHz (902 to 928 MHz)
RF Channel Bandwidth	20 MHz
Total Predicted DL Throughput	0.00 Mbps
Total Predicted UL Throughput	0.00 Mbps
Total Predicted Throughput	0.00 Mbps
Downlink Data	75 %

Subscriber Module Summary

Name	Latitude	Longitude	Product	Range	Antenna Gain

Westlake BRT Tower : 4

Access Point Summary	
AP Name	Westlake BRT Tower : 4
Equipment Type	PMP450i (running Release 16.0)
Antenna Type	Cambium Networks 60° 0.9 GHz Sector Antenna (Dual Slant) N009045D001
Modeled Beamwidth	90°
Antenna Azimuth	270.00° from True North 278.78° from Magnetic North
Antenna Tilt	0.0° (uptilt)
Connected Subscribers	0
Max Range	4 miles
RF Frequency Band	900 MHz (902 to 928 MHz)
RF Channel Bandwidth	20 MHz
Total Predicted DL Throughput	0.00 Mbps
Total Predicted UL Throughput	0.00 Mbps
Total Predicted Throughput	0.00 Mbps
Downlink Data	75 %

Subscriber Module Summary

Name	Latitude	Longitude	Product	Range	Antenna Gain

Bill of Materials : Access Point		
Part Number	Qty	Description
01010419001	6	Coaxial Cable Grounding Kits for 1/4" and 3/8" Cable
30009406002	2	N-to-N CABLE (16")
C000065L007	1	LPU and Grounding Kit (1 kit per ODU)
C009045A001	1	900 MHz PMP 450i Connectorized Access Point
EW-E4PM45AP-WW	1	PMP450/450i Access Point Extended Warranty, 4 Additional Years
N000000L034	1	POWER SUPPLY, 30W, 56V - Gbps support
N009045D001	1	900 MHz 60 degree Sector Antenna (Dual Slant). Includes the mounting bracket for the antenna and AP
WB3176	1	328 ft (100 m) Reel Outdoor Copper Clad CAT5E (Recommended for PTP). Total cable requirements are aggregated at the parent level

Mode	Total Mean Predicted Throughput (Mbps)	SMs per DL modulation			SMs per UL modulation		
		Quantity	Percent	Throughput (Mbps)	Quantity	Percent	Throughput (Mbps)
x8 (256QAM MIMO-B)	0	0	0	0	0	0	0
x6 (64QAM MIMO-B)	0	0	0	0	0	0	0
x4 (16QAM MIMO-B)	0	0	0	0	0	0	0
x2 (QPSK MIMO-B)	0	0	0	0	0	0	0
x4 (256QAM MIMO-A)	0	0	0	0	0	0	0
x3 (64QAM MIMO-A)	0	0	0	0	0	0	0
x2 (16QAM MIMO-A)	0	0	0	0	0	0	0
x1 (QPSK MIMO-A)	0	0	0	0	0	0	0

Cambium Networks™

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LEGAL NOTICE
NOTICE OF PUBLIC HEARING
BY THE
FRANKLIN COUNTY BROADBAND AUTHORITY

Pursuant to the provisions of Section 56-575.17 of the Code of Virginia of 1950, as amended, the Franklin County Broadband Authority will hold a public hearing on June 16, 2020, beginning at 6:00 P. M. in the Board of Supervisors meeting room located in the Franklin County Government Center at 1255 Franklin Street, Rocky Mount, VA, 24151. The purpose of this hearing is to obtain public comment on PPEA conceptual proposals and proposed comprehensive agreements for a system to provide fixed wireless broadband services and fiber extensions.

The Franklin County Broadband Authority advertised for and received solicited conceptual proposals from Blue Ridge Tower, Inc. (BRT), and Shenandoah Telecommunications Company (Shentel), to enter into a public-private partnerships to provide fixed wireless broadband services and fiber/cable services, respectively, under the provisions of the Public-Private Education Facilities and Infrastructure Act of 2002 (PPEA), Virginia Code §§ 56-575.1 et seq. The PPEA is an alternative procurement method by which the Authority may solicit proposals or accept unsolicited proposals for creative and innovative public-private partnerships for solutions to issues of public infrastructure, planning, and provision of services.

This BRT proposal calls for BRT to construct eight new towers throughout the county ranging from 80-195 feet in height, six to be owned by the Authority, as well as connecting fiber optic cable. In addition, the proposal calls for utilizing four existing towers. The Shentel proposal calls for extending approximately 7.5 miles of new fiber to the home in the Union Hall area of the county. The estimated cost of design, engineering, and construction for the entire project is approximately $4.6 million, with contingencies for unfavorable subsurface conditions. BRT would then locate fixed wireless communications equipment on the new towers, as well as on the existing facilities in the County. Deployment is expected within 18 months. In return, it would provide wireless broadband internet to the general public on a nondiscriminatory basis. This project represents Phase 1 of a multi-year and multi-phase approach to broadband deployment in Franklin County. The agreement also calls for a mechanism for resolving customer complaints, ensuring quality service, and regular replacement of facilities. Finally, BRT will provide management services to assist in finding and managing other persons who may wish to collocate their wireless facilities on the towers, thereby ensuring a long-term income stream for the Authority to partially offset construction costs. $2.3 million dollars of funding from the VA Telecommunications Initiative is proposed to leverage the private provider funding for this project.

Copies of the proposal and draft comprehensive agreement are available for review on the county website located at https://www.franklincountyva.gov/546/Broadband-Authority and are on file in the Franklin County Planning Office between the hours of 8:00 A. M. and 4:30 P. M. Monday through Friday, for public viewing.

_____
Secretary to the Broadband Authority

CONTRACT#: VATI **#2020FC-002**
GRANTEE: **Franklin County**

AGREEMENT

This AGREEMENT, entered into on the 21st day of July, 2020, by and between the Virginia Department of Housing and Community Development hereinafter referred to as "DHCD" and Franklin County, hereinafter referred to as "GRANTEE."

WITNESSETH

WHEREAS, the Commonwealth of Virginia has been authorized to distribute and administer the Virginia Telecommunication Initiative (VATI), and

WHEREAS, DHCD has been authorized to distribute and administer VATI funds according to the program guidelines and criteria, and

WHEREAS, the Project as described in the VATI application submitted by the GRANTEE has achieved a sufficiently high ranking through a competitive application selection system to qualify for VATI funding based on the program guidelines and criteria,

Now THEREFORE, the above-mentioned parties hereto do mutually agree as follows:

1. DHCD agrees to award the GRANTEE a Virginia Telecommunication Initiative grant in the amount of Two Million Three Hundred Eighty Three Thousand, Thirty Nine Dollars ($2,383,039.)

2. DHCD agrees to provide the GRANTEE with technical assistance in setting up and carrying out the administration this project.

3. The GRANTEE will commence and carry out in partnership with Blue Ridge Towers/Briscnet and Shentel a broadband construction project designed to provide access to broadband services to 70% of Franklin County

4. The GRANTEE must review all remittances/invoices from Blue Ridge Towers/Briscnet and Shentel to verify that pre-construction, and construction work has been completed, or equipment has been ordered and received prior to distributing VATI funds.

5. DHCD will conduct an Interim and Final Compliance Review. The GRANTEE will make all records available upon request by DHCD.

6. The GRANTEE shall retain financial records, supporting documents, statistical records, and all other records pertinent to the VATI award for a period of no less

than **five years** from the date of submission of the final expenditure report. When applicable, all contractors or GRANTEE shall comply with the Virginia Public Procurement Act § 2.2-4300 et seq. of the Code of Virginia, which requires that all original bids together with all documents pertaining to the award of a contract shall be retained in accordance with a retention period of at least five years.

7. The GRANTEE shall complete the Grant Activities as described in the CONTRACT DOCUMENTS on or before **October 15, 2021**. If the ACTIVITIES are not completed by that date all Grant funding and this AGREEMENT may be terminated and the GRANTEE shall return all unexpended funds, unless an amendment to the CONTRACT DOCUMENT provides otherwise.

PROJECT TITLE: Franklin County Broadband Authority

GRANT ACTIVITIES:

1. Construction fixed wireless network with 6 towers/monopoles with Briscnet plus 7 miles of fiber.
2. 6.5 miles of hybrid coaxial fiber for the FTTP portion with Shentel
3. Electronics

OUTCOMES: **22,500 serviceable units will gain access to broadband service up to 50 mbps download/5 mbps upload from Blue Ridge Towers/Briscnet. 190 serviceable units will gain access to broadband service up to 1 Gig download/30 mpbs upload from Shentel.**

REPORTING: Monthly and final progress reports to include:

1) Construction Status
2) Expenditures to date
3) Number of passings
4) Number of subscribers (i.e. residential, business, and community anchors)
5) Verify that the installed speed is equivalent to the subscriber ordered speed. VATI requires the minimum availability of 25 Mbps download and 3 Mbps upload.

TERMS and CONDITIONS

1. A total of Two Million, Two Hundred Sixteen Thousand, Thirty Eight Dollars ($2,216,038) in matching funds is committed to this project by the GRANTEE or Co-Applicant, Blue Ridge Tower/Briscnet and Shentel. To be eligible, matching funds must be used to support eligible expenses as outlined in the approved budget.

2. Blue Ridge Towers/Briscnet and Shentel will provide speed validation data to the GRANTEE and/or a DHCD representative to ensure that the proposed project outcomes have been met and broadband speeds meet VATI criteria.

3. DHCD agrees to make payment to the GRANTEE upon receipt of a remittance with supporting documentation. Submissions of remittance may be made allowing approximately thirty (30) days to receive funds.

4. GRANTEE agrees to provide the following reports to DHCD:
    a. Monthly progress reports must be submitted to DHCD no later than the 15th of each month. The reports must document VATI and Non-VATI funds obligated and expended to date and the actions taken on key deliverables, including but not limited to construction status, numbers of passings of serviceable units and number of subscribers.
    b. Final project progress report. This report must document the total VATI and Non-VATI funds expended and the actions taken on key deliverables.
    c. Post-closeout report on subscribers at six (6) months and one (1) year from project closeout

5. Grantee shall make all project documents available for an interim and final compliance review.

6. The Grantee must use the Centralized Application and Management System (CAMS) to provide all documentation including but not limited to:

    a. After the AGREEMENT has been executed, the GRANTEE must submit the project budget into CAMS.
    b. All correspondence, including contract amendment and budget revision request documents, must be uploaded into "Reports and Communication" in CAMS as *correspondence* documents.
    c. All DOCUMENTS required by this contract must be uploaded into "Reports and Communication" in CAMS as *contract* documents.
    d. All remittance requests must be submitted through "Remittance" in CAMS. If documents are submitted in "Reports and Communication" at the same time as a remittance request, the explanation text box at the bottom of the Remittances screen must note this fact.

7. To expedite receipt of payment, it is recommended that Grantees contact the Virginia Department of Accounts (DOA) to arrange for electronic transfer of VATI funds. The forms to establish electronic payment with DOA are available at www.doa.virginia.gov. At the home page, click on the Electronic Data Interchange (EDI) link button on the right. Scroll down to the Trading Partner Agreement and Enrollment form for Localities and Grantees. Print the form, fill it out and submit it. Instructions on completing the form are on the third page of the document.

8. The GRANTEE shall submit one of the following financial documents for the GRANTEE's fiscal year identified below: Financial Statement**, Reviewed Financial Statement prepared by an Independent Certified Public Accountant (CPA), Audited Financial Statement prepared by an Independent CPA or an audit required by the Code of Federal Regulations (CFR), (2 CFR 200 Subpart F), audited by an Independent CPA. Please see the table below to determine which document your organization is required to submit. The threshold requirements outlined below are the *minimal* standards required by DHCD. We strongly encourage all organizations receiving funds from DHCD to undertake the highest level of financial management review to ensure practices and procedures are fully examined and evaluated.

Threshold Requirement	**Document**
Total annual expenditures ≤$100,000 (Regardless of source)	Financial Statement prepared by organizations**
Total annual expenditure between $100,001 and $300,000 (Regardless of source)	Reviewed Financial Statement prepared by an Independent Certified Public Accountant (CPA)
Total annual expenditures > $300,000 (Regardless of source)	Audited Financial Statement prepared by an Independent CPA
Federal expenditures ≥$750,000	2 CFR 200 Subpart F--Audited by an Independent CPA

**Does not require preparation by a CPA

Entities shall file the required financial document in the Centralized Application and Management System (CAMS) within nine (9) months after the end of their fiscal year or 30 (thirty) days after it has been accepted (Reviewed Financial Statement, Audited Financial Statement, and Single Audit Act only) -whichever comes first.

The full DHCD Audit Policy, including an explanation of the specific document requirements, can be found online at:
http://www.dhcd.virginia.gov/images/DHCD/DHCD_Audit_Policy.pdf

9. GRANTEE agrees to recognize DHCD's support for Franklin County and Franklin County's efforts to expand broadband in all project related communication with the media and its marketing publications. The following statement is suggested:

   "This program/project was funded/supported in collaboration with the Commonwealth of Virginia's Telecommunication Initiative."

In witness whereof, the parties hereto have executed or caused to be executed by their duly authorized official this AGREEMENT in duplicate, each copy of which will be deemed an original.

COMMONWEALTH OF VIRGINIA,
DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT

BY: _____ DATE: _____
Tamarah Holmes, Ph.D, Director, Office of Broadband

City of Richmond,
Commonwealth of Virginia

I do certify that Tamarah Holmes, personally appeared before me and made oath that she is the Director, Office of Broadband at the Department of Housing and Community Development and that she is duly authorized to execute the foregoing document.

My commission expires: _____.

Given under my hand this _____day of July, 2020.

_____ _____
Notary Public Registration Number

Franklin County

BY: Leland Mitchell DATE: 7-21-20
Leland Mitchell, Chairman

Franklin County
Commonwealth of Virginia

I do certify that Leland Mitchell, personally appeared before me and made oath that he is the Chairman of Franklin County Broadband Authority, Virginia and that he is duly authorized to execute the foregoing document.

My commission expires: October 31, 2020.

Given under my hand this 21st day of July, 2020.

Hannah Long Powell 7705113
Notary Public Registration Number

HANNAH LONG POWELL
NOTARY PUBLIC
REG. #7705113
COMMONWEALTH OF VIRGINIA
MY COMMISSION EXPIRES OCT. 31, 2020

EXHIBIT E

DEVELOPMENT AGREEMENT

This **DEVELOPMENT AGREEMENT** (this "**Agreement**") is made as of the ___ day of _____, 2020 (the "**Effective Date**") by and between the Franklin County Broadband Authority, a political subdivision of the Commonwealth of Virginia under the Wireless Service Authorities Act ("**Authority**" or "**Owner**") and Blue Ridge Towers, Inc. (together with its successors and assigns, "**BRT**" or "**Developer**"). Owner and Developer are each hereinafter referred to individually as a "**Party**" and collectively as the "**Parties.**"

RECITALS:

A. The Franklin County Broadband Authority, a political subdivision of the Commonwealth of Virginia under the Wireless Service Authorities Act, pursuant to the PPEA and the Authority Guidelines, is seeking to provide broadband wireless internet service access ("WIS Access") to unserved and underserved areas of Franklin County. The Authority and Developer are simultaneously entering a Comprehensive Agreement under the PPEA and Guidelines to provide that WIS Access. The Authority intends to use existing Franklin County property to provide sites for the placement of towers to house telecommunications equipment, including wireless internet service to be provided through a separate arrangement under the Comprehensive Agreement, on the twelve (12) separate project sites as shown on the area map attached as **Exhibit 1** (collectively, the "**Project Sites**").

B. Pursuant to this Agreement, BRT will act as the developer for the design and construction ("**Developer Services**") of six (6) new Wireless Towers, one (1) existing Wireless Tower, and four (4) co-locations on the Project Sites, and installation of Fiber and Microwaves (the "**Project**").

C. The development and construction of the Project is being financed in part, by the Authority using its own and funds from the Department of Housing and Community Development Virginia Telecommunications Initiative (VATI) funds (the "**County Funds**").

NOW, THEREFORE, in consideration of the mutual covenants and agreements in this Agreement, the adequacy and sufficiency of which are mutually acknowledged, and intending to be legally bound hereby, the Parties agree as follows:

ARTICLE I
DEFINITIONS AND RECITALS

Defined terms not specifically defined in the body of this Agreement have the meanings ascribed to such terms in **Exhibit 2** attached hereto and made a part hereof.

The Recitals listed above and in the Comprehensive Agreement are incorporated herein and made a part of this Agreement.

ARTICLE II
PROJECT OVERVIEW AND ROLE OF DEVELOPER

2.1 **Status of Pre-Construction Items**. Prior to the Effective Date:

(a) Plans. The Developer shall prepare or cause to be prepared, for the review and approval of the Owner, any plans and specifications for the construction of the Project, which shall generally conform to the *Turn Key Broadband Proposal* attached to the Comprehensive Agreement as **Exhibit D** (the "Final Proposal"), which is incorporated herein by reference. If there are any inconsistencies or conflicts between the Final Proposal and this Agreement, the terms of this Agreement shall control.

(b) Project Budget. Developer has prepared, and Owner has reviewed and approved, the Financial Milestone Tracker, a summary form of which is set forth on **Exhibit 3** attached hereto (the "Financial Milestone Tracker" or the "Project Budget"). Upon execution of the Agreement, and before the first Application for Payment, Developer will submit the detailed Milestone Tracker spreadsheet to Owner for use as noted below. The Milestone Tracker is a spreadsheet that identifies each financial milestone activity for the Project ("Financial Milestone") and identifies a value associated with that Financial Milestone that provides the basis for the Authority's progress payments to the Developer for a portion of the Developer's Services. The Project Definitions and Key, attached as **Exhibit 5**, identifies the Financial Milestone task, event, or circumstance, the occurrence or completion of which allows Developer to bill and be paid for that Financial Milestone.

(c) Project Schedule. Developer has prepared, and Owner has reviewed and approved, the schedule for the development of the Project in the form of the Schedule Milestone Tracker spreadsheet, a summary form of which is set forth on **Exhibit 4** (the "Project Schedule"). Upon execution of the Agreement, and before commencing work under the Agreement, BRT will submit the detailed Schedule Milestone Tracker spreadsheet to Owner for use as provided in the Agreement.

(d) Permits. Developer shall be responsible to obtain, or cause others to obtain, any required Permits and will endeavor to obtain the Permits, approvals, and other entitlements that are required under Applicable Laws for the development or construction of the Project (collectively, the "Permits"). Owner agrees to cooperate with and assist Developer in requesting and obtaining any and all required Permits, approvals, services, zoning, ownership interest, and leases from an entity or agency of Franklin County, Virginia and any public or private third-party entity, including, but not limited to, land owners or lessees and water, gas, sewer, electric, or other utility entities.

2.2 **Engagement of Developer**. Owner hereby engages Developer to perform, or cause others to perform, the development services set forth in this Agreement, including, without limitation, the services described on **Exhibit 6** attached hereto and made a part hereof (collectively, the "Services" or the "Work"), subject to and in accordance with the terms and provisions of this Agreement. These Services include the design and construction, under a separate contract or contracts with licensed subcontractors and design professionals, of the six (6) new Wireless Towers, one (1) existing Wireless Tower, four (4) co-locations, and the installation of the Fiber and

Microwaves described in this Agreement.

Developer hereby accepts its engagement by Owner, and agrees to perform the Services for the benefit of and on behalf of Owner, subject to and in accordance with the terms and provisions of this Agreement. Developer agrees to diligently perform its duties, obligations, and Services in a competent manner in accordance with the standards of an experienced and qualified developer, with a scope and quality not less than those generally performed by developers of properties similar in type and quality to the Project and located in the same market area as the Project.

In exchange for the Services, Owner agrees to pay Developer the total of the costs identified on the Financial Milestone Tracker attached as **Exhibit 3**, which is $2,079,922.00. Provided, however, that the following costs are not completely accounted for in the Project Budget but will be billed to Owner at Developer's cost plus a markup of 10%: (i) payment and performance bonds for the Construction Agreements; and (ii) electrical utility connection fee.

The current Project Budget includes the agreed price for the construction of the six (6) new Wireless Towers, one (1) existing Wireless Tower, and four (4) co-locations that are described in Final Proposal. The Wireless Towers in the Amended Proposal are Fork Mountain, Henry, Sontag, Snow Creek, Callaway, Glade Hill, and Westlake of sufficient capacity to support the facilities contemplated in the Proposal, including the WIS equipment being provided under the Comprehensive Agreement. In addition, Developer will provide WIS equipment on existing towers identified as Grassy Hill, Summit View, Scruggs and Tom's Knob.

2.3 **Status of Developer**. In the performance of its duties, obligations, and Services under this Agreement, Developer is, and shall at all times during the term of this Agreement be, an independent contractor, and not an employee of Owner. Developer shall act solely as a representative of Owner in the performance of its duties, obligations, and Services under this Agreement. Nothing contained in this Agreement shall constitute or be deemed or construed to create a common-law partnership or joint venture between Owner and Developer.

2.4 **Nature of Developer's Services and Responsibilities**. Developer's engagement is in the nature of a developer, not as a design firm or a construction contractor. Owner acknowledges that Developer is not a licensed architect, engineer, or contractor and that Developer will be contracting with professionals licensed in the Commonwealth of Virginia to perform such services. Developer shall not be responsible for itself performing any design, engineering, or construction services, and Developer shall not itself have control or charge of, and shall not be responsible for, construction or construction means, methods, techniques, sequences, or procedures. However, the Developer shall be solely responsible for its services and for performing its Services competently and efficiently, devoting such attention thereto and applying or causing to be applied such skills and expertise as may be necessary to perform the Work in accordance with this Agreement; and shall be responsible to the Owner for the performance of the Work by its Vendors, including its contractors and consultants. The Developer shall not be responsible for the negligence of others in the design or selection of a specific means, method, technique, sequence, or procedure of construction where such responsibility is lodged with a Vendor under a Vendor Contract provided the third-party obligation clause required by Section 2.6 is included in such contract. Nevertheless, the Developer is solely responsible to the Owner to provide a finished, complete turnkey

broadband system in accordance with this Agreement.

The Work on the overall Project will be authorized in separate contracts issued by Developer to one or more Contractors for the Project Sites (the "Project Agreement"). Each Project Agreement for construction will: (i) authorize the Contractor to construct particular towers or phases of towers and/or install the associated Fiber and Microwaves, as more particularly described in the Project Agreement; (ii) set the Contract Price for the overall Project Agreement; (iii) set the Milestones dates and compensation for the work authorized in the Project Agreement; and (iv) the penal sum of the performance bond and labor and material payment bond required for the Work authorized by the Project Agreement, such performance bond and labor and material payment bond being in the form of the performance bond and labor and material payment bond attached as Exhibit 8 to this Agreement. Each Project Agreement for suppliers and materialmen, tower erection contractors, and design professionals will set the Contract Price and set the Milestone dates and compensation for the Work authorized in the Project Agreement. Notwithstanding anything to the contrary in this provision,, Project Agreements with suppliers and materialmen, the tower erection contractors, and design professionals will not require those entities to provide a performance bond or a labor and material payment bond.

2.5 **Limitations on Scope of Developer's Authority**. Notwithstanding any provisions of this Agreement to the contrary, Developer shall not undertake any of the following actions as to the Project without the express written approval of Owner, which approval will not be unreasonably withheld: (a) make any change to the Scope or Budget of the Project under this Agreement; (b) grant time extensions, waivers, or modifications to any contractual obligations of any Vendor or subcontractor if the time extensions, waivers, or modifications would: (i) require an extension of the Project Schedule; or (ii) require an increase in the Project Budget; or (c) commence or take legal action against any Vendor to enforce a Vendor Contract.

2.6 **Vendor Contracts**. Developer may negotiate and execute contracts with third party vendors (collectively, "Vendor Contracts") to provide products and services that Developer reasonably deems to be necessary or advisable in connection with the development of the Project, provided that, unless Owner approves otherwise: (a) all Vendor Contracts shall be made in the name of Developer, and not in the name of Owner, and shall not create nor purport to create a contractual relationship between the Owner and the Vendor unless Owner has reviewed and approved the Vendor Contract; and (b) all costs under Vendor Contracts shall be covered by funds available in the Project Budget as set forth in the Financial Milestone Tracker. The Developer shall, as soon as practicable after execution of this Agreement, notify the Owner in writing of the names of the licensed Contractors, Architect/Engineers, and any other contractors or subcontractors proposed for the principal parts of the Work ("Subcontractor List"). The Developer shall not employ any Contractor, design professional, or subcontractor to which the Owner reasonably objects as unsuitable, which objection shall be provided to Developer within fourteen (14) days of Developer providing the Subcontractor List to Owner. Failure of the Authority to reply in writing within the fourteen (14) day period shall constitute notice to Developer that the Authority has no reasonable objection to a proposed person or entity in the Subcontractor List. If the Authority has a reasonable objection to a person or entity proposed by the Developer or listed in the Subcontractor List, Developer shall propose another to whom the Authority has no reasonable objection. If the rejected person or entity would qualify as a responsible bidder or offeror, as that term is used in the Virginia Public Procurement Act, the Project Budget and Project Schedule shall

be increased by the difference, if any, occasioned by such change and an appropriate Change Order shall be issued before commencement of the Work by the substituted person or entity. The Owner shall not direct the Developer to contract with any particular person unless provided in the PPEA Proposal. Any Vendor Contract with a "first tier" general Contractor or design professional shall expressly provide that the Authority is a third-party beneficiary of such contract. If, after submission of the Subcontractor List to Owner, Developer changes any entity on the Subcontractor List, Developer will notify Owner of the change and Owner will have fourteen (14) days in which to notify Developer of Owner's reasonable objection, if any, to the new entity or entities.

2.6.1 The Vendor Contracts will be issued in separate contracts issued by Developer to one or more Vendors for the Project Sites. Each Vendor Contract for construction will: (i) authorize the Vendor to construct particular towers or phases of towers and/or install the associated Fiber and Microwaves, as more particularly described in the Project Agreement; (ii) set the Contract Price for the Vendor Contract; (iii) set the Milestones dates and compensation for the work authorized in the Vendor Contract; and (iv) the penal sum of the performance bond and labor and material payment bond required for the Work authorized by the Vendor Contract, such performance bond and labor and material payment bond being in the form of the performance bond and labor and material payment bond attached as Exhibit 8 to this Agreement. Each Vendor Contract for suppliers and materialmen, tower erection contractors, and design professionals will set the Contract Price and set the Milestone dates and compensation for the Work authorized in the Vendor Contract. Notwithstanding anything to the contrary in this Agreement, Vendor Contracts with suppliers and materialmen, the tower erection contractors, and design professionals will not require those entities to provide a performance bond or a labor and material payment bond.

2.7 **Mutual Cooperation.** In performing their respective responsibilities hereunder, Owner and Developer shall each act diligently and in good faith and shall reasonably cooperate with one another in all matters relating to development and construction of the Project. Owner shall act expeditiously in responding to requests by Developer for approval and execution of any agreement or other document pertaining to the Project. Owner agrees to cooperate with and assist Developer in requesting and obtaining any and all required Permits, approvals, services, zoning, ownership interest, and leases from an entity or agency of Franklin County, Virginia and any public or private third-party entity, including, but not limited to, land owners or lessees and water, gas, sewer, electric, or other utility entities.

2.8 **Communications Between Parties.** Owner will rely on Developer to direct and control the Project on a day-to-day basis.

ARTICLE III
PROJECT CHANGES

3.1 **Change Orders - Generally**. Developer shall review all proposals for Changes or Extras or Claims submitted by any Vendor, by the Owner, or by the Developer ("**Change Order Proposals**"), obtain pricing for such proposals from the relevant Vendor, submit recommendations to the Owner, negotiate the proposals related thereto with the Owner, and, if they are accepted by

all parties whose approval is required, prepare and execute appropriate written Change Orders. Each Change Order to this Agreement will reflect the change, if any, to the Project Schedule and the Project Budget for this Agreement.

3.2 **Owner Change Directives**. Owner shall have the right to direct and require Developer to implement any Change Orders, subject only to the requirements contained in the Development Agreement and the Vendor Contracts ("**Owner Change Directives**"). Any additional Project Costs arising from the implementation of Owner Change Directives shall constitute Excusable Costs, and any delays caused by the implementation of Owner Change Directives shall constitute Excusable Delays.

3.3 **Claims**. Below are the procedures for claims and disputes under the Agreement.

Developer Claims - Contractual claims, whether for money or for other relief, shall be submitted, in writing, no later than sixty (60) days after Final Payment; however, written notice of the Developer's intention to file such claim must be given within thirty (30) days of the time Developer knew of the conditions, circumstances, events, or other factors giving rise to the Developer Claim. Notwithstanding anything to the contrary, failure by Developer to timely provide notice to Owner of Developer's claim or intention to file a claim will not waive or preclude Developer's claim, or be the basis for denying Developer's claim, unless Owner demonstrates that it was actually prejudiced by Developer's late delivery of its claim or intention to file a claim. Pendency of a claim shall not delay payment of amounts not in dispute. Such notice shall state that it is a "notice of intent to file a claim" and include a written statement describing the act or omission of the Owner or its agents that allegedly caused or may cause damage to the Developer and the nature of the claimed damage. Oral notice or the Owner's actual knowledge shall not be sufficient to satisfy the requirements of this Section. The Developer is not prevented from submitting claims during the pendency of the Work, and the Owner shall not be obligated to render a final written decision on any claim until after Final Payment. All claims shall state that they are "claims" pursuant to this Section, be submitted along with all practically available supporting evidence and documentation and the certification required by this Agreement, and request a final decision. Certificates for payment, applications for payment, vouchers, invoices and similar requests for payment submitted for work done by the Developer in accordance with the expected contract performance are routine submissions and shall not be considered claims under this Section. Proposed or requested change orders, demands for money compensation or other relief, and correspondence and emails to the Owner or its representatives, which do not strictly comply with the requirements of this Section, shall not be considered claims under this Section.

No written decision denying a claim or addressing issues related to the claim shall be considered a denial pursuant to this Section unless the written decision makes express reference to this Section and is signed by the Owner or his designee. The Developer may not institute legal action prior to receipt of the Owner's final written decision on the claim unless the Owner fails to render such a decision within ninety (90) days of submission of the claim, at which time the claim shall be deemed denied. The decision of the Owner on the Claim shall be final and conclusive unless the Developer within six (6) months of the date of the final decision on a claim, initiates legal action as provided in § 2.2-4364 of the Code of Virginia. Failure of the Owner to render a decision within 90 days shall not result in the Developer being awarded the relief claimed nor shall it result in any other relief or penalty. The sole result of the Owner's failure to render a decision

within 90 days shall be the Developer's right to immediately institute legal action. No administrative appeals procedure pursuant to § 2.2-4365 of the Code of Virginia has been established for contractual claims under this Agreement.

In the event that a dispute, claim, or controversy between the Owner and the Developer arises regarding the requirements of the Agreement, the performance of the Services hereunder, payment due the Developer, the terms of any Change Order, or otherwise, the Developer shall not stop, suspend, or delay the Work or any part of the Work to be performed under the Agreement, or under any Change Order, or as ordered by the Owner. The Developer shall continue to diligently prosecute the Work to completion, including work required in any Change Order or as directed by the Owner. Pendency of a claim shall not delay payment of amounts not in dispute.

ARTICLE IV
PUBLIC PROCUREMENT ACT REQUIRED PROVISIONS

4.1 **Discrimination.** Section 2.2-4311 of the Code of Virginia, 1950, as amended, is applicable to this Agreement. During the term of this Agreement, the Developer agrees as follows with respect to the Work:

(a) The Developer will not discriminate against any employee or applicant for employment because of race, religion, color, sex, national origin, disability, or other basis prohibited by state law relating to discrimination in employment, except where there is a bona fide occupational qualification reasonably necessary to the normal operation of the Developer. The Developer agrees to post in conspicuous places, available to employees and applicants for employment, notices setting forth the provisions of this nondiscrimination clause.

(b) The Developer, in all solicitations or advertisements for employees placed by or on behalf of the Developer, will state that the Developer is an equal opportunity employer.

(c) Notices, advertised, and solicitations placed in accordance with federal law, rule, or regulation shall be deemed sufficient compliance for the purposes of meeting the requirements of this Section.

(d) The Developer shall include the provisions of the foregoing paragraphs a, b, and c in every Vendor Contractor or other subcontract or purchase order of over $10,000, so that the provisions will be binding upon each such subcontractor or vendor.

(e) The Virginians with Disabilities Act and the federal Americans with Disabilities Act apply to the Developer and all Vendors and subcontractors.

4.2 **Alcohol & Other Drugs.** Section 2.2-4312 of the Code of Virginia, 1950, as amended, is applicable to this Agreement. During the term of this Agreement, the Developer agrees as follows with respect to the Work:

(a) During the performance of the Work under this Agreement, the Developer agrees to: (i) provide a drug-free workplace for its employees; (ii) post in conspicuous places, available to employees and applicants for employment, a statement notifying employees that the unlawful manufacture, sale, distribution, dispensation, possession, or use of a controlled substance or marijuana is prohibited in the Developer's workplace and specifying the actions that will be taken against employees for violations of such prohibition; (iii) state in all solicitations or advertisements for employees placed by or on behalf of the Developer that the Developer maintains a drug-free workplace; and (iv) include the provisions of the foregoing clauses in every Vendor Contract, subcontract, or purchase order of over $10,000, so that the provisions will be binding upon each vendor or subcontractor. For the purposes of this Section, "drug-free workplace" means a site for the performance of work done in connection with this Agreement, the employees of whom are prohibited from engaging in the unlawful manufacture, sale, distribution, dispensation, or use of any controlled substance or marijuana during the performance of this Agreement.

(b) The Developer shall also establish, maintain, and enforce policies which prohibit the following acts by all personnel at any Site: (1) the manufacture, distribution, dispensation, possession, or use of alcohol, marijuana, or other drugs, except possession and medically prescribed use of prescription drugs; and (2) impairment of judgment or physical abilities due to the use of alcohol, marijuana, or other drugs, including impairment from prescription drugs.

4.3 **Prompt Payment Act**. Section 2.2-4354 of the Code of Virginia, 1950, as amended, is applicable to this Agreement. During the term of this Agreement, the Developer agrees as follows with respect to the Work:

(a) Within seven (7) days after receipt of amounts paid to the Developer by the Owner for Work performed by any Vendor, subcontractor, or supplier under this Agreement,

1. Pay such Vendor, subcontractor, or supplier for the proportionate share of the total payment received from the Owner attributable to the Work performed by the Vendor or subcontractor or the materials furnished by such Vendor or supplier under this Agreement; or

2. Notify the Vendor, subcontractor, or supplier, in writing of its intention to withhold all or part of the payment, with the reason for such nonpayment, and simultaneously provide a copy of such notice to the Owner.

(b) Pay interest to such Vendor, subcontractor, or supplier on all amounts owed by the Developer that remain unpaid after seven (7) days following receipt by the Developer of payment from the Owner for Work performed at a rate of one (1) per cent per month, except for amounts withheld under subsection (a)2 of this Section.

(c) Include in every subcontract a provision requiring each subcontractor to include in each of its subcontracts a provision requiring each subcontractor to include or

otherwise be subject to the same payment and interest requirements with respect to each lower tier subcontractor. Each subcontractor shall include with its invoice to, or required for payment from, the Developer, a certification that that subcontractor has paid each of its suppliers and lower tier subcontractors their proportionate share of previous payments received from the Developer attributable to the Work performed or the materials furnished by it under this Agreement.

The Developer's obligation to pay interest to a Vendor, subcontractor, or supplier pursuant to this Section is not an obligation of the Owner. A modification to this Agreement or to any payment provision will not be made for the purpose of providing reimbursement for such interest charge. The Developer's cost reimbursement claims must not include any amount for reimbursement of such interest charge.

4.4 **Registration to do Business.** This Agreement is subject to Section 2.2-4311.2 of the Code of Virginia, 1950, as amended. The Developer shall be at all times authorized to transact business in the Commonwealth of Virginia as a domestic or foreign business entity if so required by Title 13.1 or Title 50 of the Code of Virginia, 1950, as amended, or other provision. If the Developer allows its corporate existence or certificate of authority or registration to transact business in the Commonwealth to lapse, expire, or be cancelled or revoked, the Owner may void this Agreement without further liability to the Developer.

ARTICLE V
CONSTRUCTION OF PROJECT AND PROJECT SCHEDULE

5.1 **Commencement of Construction.** Following the Effective Date, and the receipt of all necessary Permits, Developer shall commence construction of the Project, and thereafter to diligently prosecute same to Final Completion, all in accordance with the Project Schedule, the Plans, the Project Budget, and the terms and conditions of this Agreement. The Owner will issue a direction hereinafter called the "Notice to Proceed" for the Construction Phase upon notice from Developer of the receipt of all necessary Permits.

(a) **Control of Project Sites.** The Owner shall be responsible for obtaining ownership or control of Project Sites. It is understood that the Owner controls, or believes it is able to obtain control of, all Project Sites. Upon receipt of surveys from the Developer in accordance with the Milestone Tracker, the Owner shall prepare and record any necessary legal documents, at its expense. Any delays by Owner in obtaining ownership or control of Project Sites or in preparing and recording any necessary legal documents will be considered an Excusable Condition and Excusable Delay, entitling Developer to an adjustment of the Project Schedule and, to the extent that Developer incurs costs related to such delay, the Project Budget.

(b) **Access to Sites.** The Owner shall provide Developer and its agents, employees, Vendors, design consultants, and Contractors (collectively, for the purposes of this subsection, "Developer") free, unfettered, and unrestricted access at all times to all Project Sites through and over its properties so that Developer can fulfill its obligations under this Agreement. The Owner also agrees to provide a written license to Developer,

irrevocable for the term of this Agreement, from any other property owners through whose properties the Project Sites must be accessed, that will allow company free, unfettered, and unrestricted access to all Project Sites at all times. The failure of the Owner to provide such access shall be grounds for a Change Order and modification to the Project Budget and Project Schedule, but shall not be deemed to relieve the Owner or the Developer of any of their obligations in this Agreement except as provided herein and in Section 5.2. In the event the Developer notifies the Owner promptly that available access to the Project Sites is not sufficient to comply with industry standard construction practices, the Owner shall take reasonable steps to acquire access sufficient to meet such need, and provide for a Change Order and modification to the Project Budget and Project Schedule to provide for any delay in acquiring such access. If access cannot be acquired, such Site shall be considered under Section 5.2.c.

5.2 **Completion Deadlines.** Under the Vendor Contracts , the Contractor performing construction work is obligated to commence construction upon the receipt of all necessary Permits and to thereafter diligently prosecute same to Final Completion, all in accordance with the Project Schedule, the Plans and the Project Budget. The current estimated substantial completion date for the Wireless Towers, Fiber, and Microwaves in the Project Schedule is set forth as "On Air Milestone 19" in the Project Schedule for the Wireless Towers, Fiber, and Microwaves (the "**Substantial Completion Deadlines**"), and the current estimated Final Completion Deadline for all of the Wireless Towers, Fiber, and Microwaves is not later than October 15, 2021, or such longer deadline as may be approved by the Department of Housing and Community Development (the "**Final Completion Deadline**"), subject to extension for Excusable Conditions and Excusable Delays under this Agreement. In the event that Excusable Conditions create an increase in the Project Budget or an extension of the Project Schedule, Developer will submit an estimate of the impact of the Excusable Conditions on the Project Schedule and/or Project Budget, which the Parties will agree upon in a Change Order.

(a) **Tower Milestone Deadlines** Each of the six (6) new Wireless Towers, one (1) existing Wireless Tower, and four (4) co-locations has individual milestone deadlines in the Project Schedule ("**Tower Milestone Deadlines**"). To the extent that the Tower Milestone Deadlines are not met for any of the Wireless Towers due to Excusable Conditions, then the Tower Milestone Deadlines for that Tower will be extended by the duration of the Excusable Delay caused by the Excusable Condition. If the final "On Air Milestone Deadline" for any of the Wireless Towers is not met due to Excusable Conditions, including delays in the installation of the Fiber and Microwaves, then the Substantial Completion Milestone for that Tower will be extended by the duration of the Excusable Delay caused by the Excusable Condition.

(b) **Tower Project Sites More Expensive.** If planned construction of the Wireless Towers at any one or more of the Project Sites, or the installation of the Fiber or Microwaves will be more expensive or take longer than planned in the Project Budget and Project Schedule due to: (i) restrictions placed on the construction by any local, state, or federal government or agency or other Authority Having Jurisdiction (AHJ); (ii) geotechnical investigations or other consultant investigations that indicate the excavation or foundation will be more expensive to design and/or construct, Developer will provide the Owner with estimates of the additional costs and time involved, if any, of complying

with the restricted approvals or using the alternate construction methods. The Parties will adjust the Project Schedule and Project Budget to reflect the additional costs and time for any alternate or restricted construction at the Project Site(s).

(c) **Tower Project Sites Not Feasible.** If planned construction of the Wireless Towers at any one or more of the Project Sites, or the installation of the Fiber or Microwaves is not feasible due to Excusable Conditions, including, but not limited to, denial of any Permits or any other approvals required by Applicable Laws, or the results of geotechnical investigations that render the Project Site(s) unsuitable for construction of the Wireless Towers, or the installation of the Fiber or Microwaves, or the failure of Owner to obtain ownership or control of Project Sites (including, but not limited to, any leases or easements required for the Project Sites), the Parties will cooperate in identifying alternate Project Site(s) for the placement of the Wireless Towers. Developer will provide the Owner with estimates of the additional costs and time involved, if any, of using the alternate Project Sites. The Parties will adjust the Project Schedule and Project Budget to reflect the additional costs and time for any alternate Project Site(s) by Change Order to this Agreement.

ARTICLE VI
PAYMENT OF PROJECT COSTS

6.1 **Generally**. Owner shall be responsible for paying all Project Costs within the Project Budget as set forth in the Financial Milestone Tracker, but excluding Developer Cost Overruns. Developer shall be responsible for paying all Developer Cost Overruns. To the extent that they are caused by the Owner, and to the extent that Developer's entitlement to same is established under this Agreement and any claim and dispute resolution procedures, Owner shall be responsible for any Excusable Costs. Developer shall use commercially reasonable efforts to actively manage the Project Budget set forth in the Financial Milestone Tracker so as to mitigate and limit any Excusable Costs and Developer Cost Overruns.

6.2 **Disbursement Requests**. Owner shall secure sufficient funds to pay all Project Costs within the Project Budget, including any authorized adjustments to the Project Budget, subject to the provisions of Section 14. Owner shall be responsible for reviewing all Requests for Payment by Developer and requisitions for payment of Project Costs. Each of Developer's Requests for Payment is subject to review and approval by Owner. Owner shall review and approve or disapprove all such payment requests within 14 days after submission. Failure to do so shall be deemed an Excusable Condition and, accordingly, any delays resulting therefrom shall be considered Excusable Delays and any costs resulting therefrom shall be considered Excusable Costs. Owner will pay the approved amounts not later than 28 days after the Request for Payment is submitted to Owner. Provided, however, that for the following Financial Milestones, Developer's Request for Payment and/or Owner's payment will be made within the time frames or upon the occurrence of the events noted below: (i) Financial Milestones 11, 13, 15, and 19 [Fiber, Microwaves, Routers and Towers] – These commencement Financial Milestones will be billed in a Request for Payment and will be paid by Owner in the time frame above from submission of the Request for Payment; and (ii) Financial Milestone 21 – Tower Delivery – This Financial Milestone will be included in a Request for Payment, separate from the monthly Request, at the time of delivery

of the Wireless Towers, and Owner will pay the Financial Milestone amount within fifteen (15) days of Developer's submission of the Request for Payment.

(a) Requests for Payment – Developer will submit by the 5th or 25th of each month, and no more than twice per month, Requests for Payment based upon the milestones identified in the Financial Milestone Tracker that were achieved by Developer during the period since Developer's last submitted Request for Payment ("Request for Payment"). The Request for Payment will be uploaded to the Share File Site, which will constitute delivery of the Request for Payment to Owner. An email from Anthony Smith with read receipt requested shall simultaneously be sent to Steve.Sandy@franklincountyva.gov. Owner agrees to pay the Developer, in the time and manner outlined above, in accordance with the Request for Payment for the requested milestones achieved by Developer during the month covered by the Request for Payment.

(b) For purposes of defining the requirements to be met for the Financial Milestones and to trigger Developer's ability to submit a Request for Payment and be paid for achievement of the Financial Milestone, the Project Definitions and Key spreadsheet, attached as Exhibit 5, defines the task, event, or circumstance, the occurrence or completion of which will permit Developer to be paid for the Financial Milestone.

(c) In the event that Developer and Owner disagree on whether or not the progress of the Work is sufficiently complete such that the applicable milestone has been achieved by Developer and payment is due from Owner to Developer on the applicable milestone, the Parties agree that the Third-Party Inspector will inspect the Work and issue a written opinion determining: (i) whether the Work is sufficiently complete such that the applicable milestone has been achieved by Developer; and (ii) if the Work is not sufficiently complete so as to achieve the applicable milestone, what is required by Developer for it to achieve the applicable milestone. The written opinion of the Third-Party Inspector shall be final and binding upon the parties.

In the event the Third-Party Inspector determines that the Work is not sufficiently complete so as to achieve the applicable milestone, Developer will complete all of the work described in the Third-Party Inspector's written opinion so as to achieve the applicable milestone. If, after Developer believes it has completed all the Work described in the Third-Party Inspector's written opinion for achievement of the applicable milestone, Owner and Developer continue to disagree on whether the Work is sufficiently complete such that Developer has achieved the applicable milestone, then the Third-Party Inspector will again review the Work and issue another written opinion as described above. Developer will continue to complete any Work described in the Third- Party Inspector's written opinion(s) and the Third-Party Inspector will continue to inspect the Work and issue written opinion(s) as described above until either (i) the Parties agree the Work is sufficiently complete such that Developer has achieved the applicable milestone and payment is due by Owner for the completion of the applicable milestone, or (ii) the Third-Party Inspector's written opinion states that the Third-Party Inspector believes the Work is sufficiently complete such that Developer has achieved the applicable milestone and payment is due by Owner for the completion of the applicable milestone.

6.3 **Changes to Project Budget**. Developer shall exert commercially reasonable efforts to manage the Project Costs pursuant to the Project Budget. Developer shall have the right, upon notice to but without the consent of Owner, to allocate any Cost Savings from one line item to other line items, so long as (a) the aggregate amount of Project Costs does not increase as a result thereof, (b) the overall function or quality of the Project is not impaired, and (c) such re-allocation is not made in connection with a Change Order that requires Owner's approval hereunder. Developer will also adjust the Project Budget in accordance with any Change Order that is permitted under this Agreement. In the event that, notwithstanding the foregoing authority to make changes to the Project Budget, Developer reasonably determines that changes to the Project Budget that are outside of Developer's scope of authority herein will be necessary to complete the Project, Developer shall promptly prepare proposed revisions to the Project Budget and submit the same to Owner for its written approval. Upon Owner's approval thereof, the revised budget shall be the Project Budget for all purposes hereunder.

6.4 **Cost Overruns and Developer Contingency**. This Agreement contains a guaranteed maximum price (GMP) for the design and construction of the Project, and the Developer has agreed to bear certain risks related to cost overruns with respect to the Project ("**Contractor Cost Overruns**") as set out in this Agreement. Developer shall be responsible for paying costs in excess of the Project Budget that are caused by Developer's negligent acts or omissions ("**Developer Cost Overruns**"). The Owner will be responsible to adjust the Project Budget to pay for costs in excess of the Project Budget that are the responsibility of the Owner ("**Excusable Costs**").

Hazardous Materials. Developer shall refrain from utilizing, producing, generating, handling, storing, or releasing hazardous materials, or authorizing or permitting another to do so, excluding Existing Conditions and any hazardous materials of a type, nature, and quantity that is consistent with Applicable Laws and the scope of work being performed. In the event of the discovery or release of hazardous materials arising out of or resulting from the development of the Project, the Developer shall perform the following actions: (a) immediately communicate the occurrence or discovery of the release to the Owner; (b) cease and discontinue development activities in areas affected by the hazardous materials as required under Applicable Laws or to prevent further damage caused by the release; (c) make any report of such discovery or release as required under Applicable Laws, after conferring with the Owner; (d) provide information and documents reasonably requested by the Owner regarding the discovery of the release; and (e) if the hazardous material was brought onto or generated at the Project Sites by the Developer or Contractor and was released as a result of the failure of the Developer or Contractor to use methods and techniques compliant with Applicable Laws ("**Developer Releases**"), Developer and/or Contractor will: (i) take all reasonable steps necessary to stop and contain the Developer Release; (ii) if authorized by the Owner, proceed with the clean-up of the Developer Release as required by the applicable governmental authority; and (iii) indemnify, protect, reimburse, hold harmless and defend the Owner from and against any and all Losses arising out of, resulting from, in connection with or relating to the Developer Release of hazardous materials. The Parties shall coordinate in the disposal of any such hazardous material. For the avoidance of doubt, Developer is not assuming legal responsibility, and shall not be liable for, the existence or release of pre-existing hazardous materials except to the extent expressly provided above with respect to Developer Releases. For pre-existing hazardous materials and releases other than Developer Releases, the Owner assumes the same obligations to Developer as Developer assumes toward Owner in the event of a Developer

Release above.

ARTICLE VII
DEFAULT AND REMEDIES

7.1 **Default**. A Party shall be in default under this Agreement if:

(a) such Party fails to pay any sum of money due by such Party to the other Party within ten (10) days after receipt of written notice from the other Party that such sum is overdue;

(b) such Party fails to perform any of its other duties and obligations under this Agreement (excluding delays in completing the Project, the consequences of which are addressed above) and does not cure such failure within thirty (30) days after receipt of written notice from the other Party with respect thereto; provided, however, if such failure shall require a period longer than thirty (30) days to cure, then the thirty (30) day period shall be extended for such additional period of time as is reasonably necessary to cure so long as such Party commences such cure within the thirty (30) day period and thereafter diligently and in good faith proceeds to cure;

(c) any receiver, trustee or custodian shall be appointed for all or any substantial part of the property or assets of Developer;

(d) Developer shall commence any voluntary proceeding under present or future federal bankruptcy laws or under any other bankruptcy, insolvency, or other laws respecting debtor's rights; or

(e) an order for relief or other judgment or decree by any court of competent jurisdiction is entered against Developer in any involuntary proceeding against such Developer under present or future federal bankruptcy laws or under any other bankruptcy, insolvency or other laws respecting debtor's rights, or any such involuntary proceeding shall be commenced against Developer and shall continue for a period of ninety (90) days after commencement without dismissal.

(f) Owner fails or refuses to cooperate with Developer in obtaining any and all required Permits, approvals, services, zoning, ownership interest, and leases from an entity or agency of Franklin County, Virginia and any public or private third-party entity and Owner does not does cure such failure within thirty (30) days after receipt of written notice from Developer; provided, however, if such failure shall require a period longer than thirty (30) days to cure, then the thirty (30) day period shall be extended for such additional period of time as is reasonably necessary to cure so long as Owner commences such cure within the thirty (30) day period and thereafter diligently and in good faith proceeds to cure.

7.2 **Remedies**. Upon the occurrence of a default by any Party under this Agreement, the other Party may pursue any and all remedies available hereunder, at law or in equity, including, without limitation, one or more of the following remedies, separately, concurrently or in any combination, without further notice or demand:

agreement is the result of, or affected by, any unlawful act of collusion with another person or company engaged in the same line of business or commerce, or any act of fraud punishable under the Virginia Governmental Frauds Act, §§ 18.2-498.1 *et seq.* of the Code of Virginia, 1950, as amended. Furthermore, BRISCNET understands that fraud and unlawful collusion are crimes and can result in fines, prison sentences, and civil damage awards.

6.4.2. *COIA.* All aspects of BRISCNET's proposal and agreement are in compliance with the applicable provisions of the State and Local Government Conflict of Interests Act, §§ 2.2-3100 *et seq.* of the Code of Virginia, 1950, as amended. Specifically, without limitation, no employee of the Authority or member of employee's immediate family shall have any proscribed personal interest in this Agreement.

6.4.3. *Ethics in Contracting.* BRISCNET's proposal and this Agreement are in accordance with the applicable provisions of the Virginia Public Procurement Act, Art. 6, Ethics in Public Contracting, §§ 2.2-4367 *et seq.* of the Code of Virginia, 1950, as amended, and any other applicable law set forth therein.

7. Remedies.

7.1. *Right of Authority to Terminate Agreement upon Bankruptcy or Insolvency of BRISCNET.* In the event BRISCNET becomes bankrupt, either voluntarily or involuntarily, or if a receiver is appointed for it, or if it executes any bill of sale, deed of trust, or general assignment for the benefit of creditors in lieu of foreclosure, or become critically insolvent, in the sole judgment of the Authority, the Authority may terminate this Agreement, giving BRISCNET reasonable time to remove its Equipment from the Towers.

7.2. *Right of Authority to Make Payments.* In the event BRISCNET intends to default on any payment to any creditor who has or may have a lien on the Equipment, it shall give notice to the Authority at the same time as it gives notice to the creditor. The Authority has the right to advance such sums as may be necessary to make payments on behalf of BRISCNET under any lien, credit, subordination, or other agreement relating to the Equipment, including any taxes, insurance proceeds, replacements, or repairs to the Equipment, or to ensure the performance of any of the covenants included in such credit agreement or lien, which sums shall become a lien on the Equipment in favor of the Authority. All such advances may be evidenced by the Authority by a memorandum of lien, and shall bear interest from the date of payment thereof at the lawful judgment interest rate in the Commonwealth of Virginia.

7.3. *Termination for Cause.*

7.3.1. If BRISCNET should fail to perform any of its material obligations under this Agreement, or otherwise be in material violation of any provision of this Agreement, then BRISCNET shall be in default of the Agreement.

7.3.2. The Authority will give BRISCNET prompt written notice of any default and allow thirty (30) days during which BRISCNET may rectify the basis for the

(a) the non-defaulting Party may terminate this Agreement by giving the defaulting Party written notice of such termination, in which event this Agreement shall be terminated at the time designated by the non-defaulting Party in its termination notice; and/or

(b) the non-defaulting Party may bring an action against the defaulting Party for its actual damages resulting from the default.

In the event of any termination by reason of a default by Developer, Owner shall pay Developer the balance of the any Project Budget milestones achieved to the date of termination as well as any Consulting Fee that has been earned prior to the date of termination, determined on a pro-rata basis. In the event of any termination by reason of a default by Owner, Owner shall pay Developer the balance of the any Project Budget milestones achieved to the date of termination as well as any Consulting Fee that has been earned prior to the date of termination.

ARTICLE VIII
TERM OF AGREEMENT

8.1 **Term**. The term of this Agreement shall commence on the Effective Date, and, unless sooner terminated as herein provided, shall continue until Final Completion of the Project has occurred and Developer has earned, and Owner has made full payment of, the Project Costs and Consulting Fees to Developer.

8.2 **Developer's Obligations**. Upon the expiration or earlier termination of this Agreement, Developer shall promptly:

(a) Deliver to Owner, or such person as Owner shall designate, all materials, supplies, equipment, keys, contracts and documents, and all records maintained for Owner pursuant to this Agreement.

(b) If terminated prior to the expiration of the Agreement, furnish all such information, take all such other reasonable action, and cooperate with Owner as Owner shall reasonably require in order to effectuate an orderly and systematic termination of Developer's Services, duties, obligations and activities hereunder.

ARTICLE IX
INSURANCE

9.1 **Owner's Insurance Requirements**. Throughout the term of this Agreement, Owner shall carry and maintain in force, or cause to be carried and maintained in force, the insurance described in **Exhibit 7**, at Owner's sole cost and expense.

9.2 **Developer's Insurance Requirements**. Throughout the term of this Agreement, Developer shall carry and maintain in force, or cause to be carried and maintained in force, the insurance described in **Exhibit 7**, at Developer's sole cost and expense.

9.3 **Notice of Loss**. Developer shall promptly notify Owner of any fire or other damage to the Project. Owner shall arrange for an insurance adjuster to view the Project before repairs are started. In no event shall Developer settle any losses, complete loss reports, adjust losses or endorse loss drafts without Owner's approval. Developer shall also promptly notify Owner of any personal injury or property damage occurring in connection with the Project.

ARTICLE X
LIABILITY; INDEMNITY

10.1 **Owner's Indemnity**. Owner hereby agrees, to the extent permitted by law and without waiving the doctrine of sovereign immunity, to indemnify and defend Developer and its members, officers, directors, shareholders, agents, affiliates, and employees from and against any and all Losses to the extent directly arising out of or resulting from any actions or omissions constituting gross negligence or willful misconduct directly related to any default by Owner, except in each instance to the extent such Losses are caused directly by the negligence or willful misconduct of Developer. The foregoing obligation, however, shall not extend to Losses caused by the negligence or willful misconduct of Developer or its agents, contractors and employees, and, to the extent that such Losses are caused in part by negligence or willful misconduct of Developer or its agents, Owner shall not be required to defend or indemnify Developer from that portion of the Losses that are caused by the such parties' negligence or willful misconduct.

10.2 **Developer's Indemnity**. Developer hereby agrees to indemnify, defend and hold harmless Owner and its Board of Directors from and against any and all Losses to the extent directly arising out of or resulting from any actions or omissions constituting negligence or willful misconduct directly related to any default by Developer. The foregoing obligation, however, shall not extend to Losses caused by the negligence or willful misconduct of Owner or its agents (other than Developer), contractors and employees, and, to the extent that such Losses are caused in part by negligence or willful misconduct of Owner or its agents (other than Developer), contractors and employees, Developer shall not be required to defend, indemnify, or hold harmless Owner from that portion of the Losses that are caused by the such parties' negligence or willful misconduct.

10.3 **Relationship to Insurance**. In no event shall the indemnification provisions of this Article diminish, affect, impede, or impair, in any manner whatsoever, the benefits to which any Party may be entitled under any insurance policy with respect to the Project required by this Agreement or otherwise, or under the terms of any waiver of subrogation contained therein.

10.4 **Non-Recourse Liability**. Any liability of Owner under this Agreement shall be limited to Owner's interest in the Project and the proceeds thereof. Neither Owner, nor any of the Officers or Directors of Owner, shall be personally liable for any liability of Owner hereunder.

10.5 **No Personal Liability, Etc**. No constituent members, owners, officers, managers or employees of Developer, nor any partners, members, shareholders, officers, directors, managers, employees, beneficiaries or trustees of the constituent members or owners of Developer, shall be personally liable for any liability of Developer hereunder.

10.6 **Limitation on Certain Damages**. No Party shall be liable to the other Party for special, consequential, or punitive damages, or for lost revenues or lost profits.

10.7 **Intellectual Property.** The Developer shall obtain or cause to be obtained all licenses necessary to use any invention, article, appliance, process, or technique of whatever kind and shall pay all royalties and license fees. The Developer shall hold the Owner, its officers, agents, and employees harmless against any loss or liability for or on account of the infringement of any patent rights in connection with any invention, process, technique, article, or appliance manufactured or used in the performance of this Agreement, including its use by the Owner upon the direction or authorization of the Developer. If, before using any invention, process, technique, article, or appliance specifically named in the Proposal the Developer has or acquires information that the same is covered by letters of patent making it necessary to secure the permission of the patentee or other person for the use of the same, it shall promptly advise the Owner. The Developer may suggest a different means, which shall be endorsed by the Architect/Engineer. The Owner may authorize use of an alternative invention, process, technique, article, or appliance of substantially similar or greater quality and purpose.

10.8 **Survival.** The accrued liabilities under the provisions of this Article XI survive the expiration or earlier termination of this Agreement.

ARTICLE XI
SUBSTANTIAL COMPLETION & FINAL COMPLETION

11.1 **Substantial Completion.** The Developer shall notify the Owner, in writing, of the date upon which the Work or a designated portion thereof will be, in its opinion, substantially complete and ready for inspection and testing to determine if it has reached Substantial Completion. The notice shall be supported by and include the testing results and reports of Developer's Inspectors. The Developer's Inspectors test results and reports is for the convenience of the Owner only and shall not relieve the Developer of his responsibilities nor shall the endorsement be evidence that the Work is substantially complete and ready for inspection and testing. Inspection and testing shall take place at a time(s) mutually agreeable to the Developer, Owner, Third-Party Inspector, and Developer's Inspectors.

The inspection shall include a demonstration by the Developer that all equipment, systems, and operable components function properly and in accordance with the Contract Documents; provided, however, that if installation of the equipment, systems and components, including fiber and microwave equipment, is delayed as a result of Excusable Conditions or Excusable Delays, Owner will either extend the Wireless Tower Substantial Completion Date or grant Developer Substantial Completion of the Wireless Tower without installed and/or operable equipment and components. The Developer shall furnish access to the Owner and the Third-Party Inspector for the purpose of carrying out such inspection and testing. The inspection and testing shall determine whether there remains any work to be completed or Defective Work. Such incomplete or Defective Work shall be memorialized in a punch list. The Developer must complete the punch list by finishing and correcting the items thereon prior to Final Completion and acceptance by the Owner.

11.2 **Final Completion.** The Developer shall notify the Owner, in writing, of the date upon which the Work or a designated portion thereof will be, in its opinion, finally complete and ready for final inspection, testing, and acceptance for ownership and issuance of a Notice to Proceed under the Operating Agreement. The inspection and testing shall be carried out in the same

manner as the inspection and testing for Substantial Completion. When the Work is finally and totally complete, including the elimination of all defects, the Work shall be finally accepted by the Owner and final payment shall be made.

Final acceptance shall not release the Developer from any warranty or guarantee of its Work of materials contained herein.

11.3 **Final Payment**. In making partial payments under Section 6.2, three percent (3%) of each payment to the Developer shall be retained until Substantial Completion ("Retainage"). Upon achievement of Substantial Completion, one half of the Retainage will be released, reducing the Retainage to one and one-half percent (1.5%) until Final Completion and acceptance of all Work covered by this Agreement. Such Retainage shall be held to ensure completion of the punch lists, if any, developed at Substantial Completion. For Financial Milestone Tracker Items 8, 9, 10, 11, 13, 15, 19, and 22, retainage shall not be withheld. Upon Final Completion and acceptance of any of the individual Sites, the Owner shall, upon written request of the Developer, release Retainage for that Site. In the event the Developer has withheld a portion of the Retainage from any Vendor, subcontractor, or supplier, Developer will release that portion of the Retainage applicable to that Vendor, subcontractor, or supplier after receipt of such Retainage from Owner.

ARTICLE XII
REPRESENTATIONS AND WARRANTIES

12.1 **Guarantee of Work**. Developer warrants that all materials, equipment, and workmanship shall be in accordance with the terms of this Agreement and will be free from defects (including defects of workmanship), except for those inherent in the quality of the Work or otherwise expressly permitted by the Agreement, for one (1) year from the date of Substantial Completion. The Developer's warranty excludes remedy for damage or defect caused by abuse, alterations to the Work not executed by the Developer, improper or insufficient maintenance, improper operation, or normal wear and tear and normal usage. Where the Owner issues a Notice to Proceed to locate Equipment in accordance with the Operating Agreement, the guarantees for materials, equipment, and workmanship in that portion or phase shall begin on the date that the Owner gives the Notice to Proceed under the Operating Agreement, unless otherwise specified in a separate agreement. At six (6) months and eleven (11) months after substantial completion or issuance of the Notice to Proceed on the Operating Agreement, the Developer shall meet with the Owner to review the status of any unresolved warranty, guarantee, and outstanding punch list items.

12.2 **Representations and Warranties**. Each Party hereby represents, warrants and covenants to the other Party that:

(a) the execution, delivery and performance of this Agreement has been authorized by all necessary action, corporate or otherwise, on the part of such Party;

(b) the execution, delivery and performance of this Agreement will not result in a breach or violation of, or a default under, such Party's articles of organization, operating agreement, or any other agreement or instrument by which such Party is bound, or of any law, order or regulation; and

(c) such Party is organized, existing and in good standing under the laws of the state of its organization.

ARTICLE XIII
GENERAL PROVISIONS

13.1 **Entire Agreement**. The Agreement contains the entire understanding of the Parties with respect to the subject matter hereof, supersedes all prior or other negotiations, representations, understandings and agreements of, by or among the Parties, express or implied, oral or written, all of which are fully merged herein. The express terms of this Agreement control and supersede any course of performance and/or customary practice inconsistent with any such terms. Any agreement hereafter made shall be ineffective to change, modify, discharge, or effect an abandonment of this Agreement except in accordance with this Agreement or by a writing or action of equal dignity.

13.2 **Assignability**. This Agreement shall be binding upon and inure to the benefit of the Parties hereto and their respective successors and permitted assigns. This Agreement may be assigned only with the approval and consent of the non-assigning Party.

13.3 **Notices**.

(a) All notices, demands, requests or other communications (collectively, "notices") from each Party to the other required or permitted under the terms of this Agreement shall be in writing and, unless and until otherwise specified in a written notice by the Party to whom notice is intended to be given, shall be sent to the Parties at the following respective addresses:

if intended for Developer:	Anthony Smith Blue Ridge Towers, Inc. 2820 Electric Road, Suite 104B Roanoke, VA 24018 asmith@blueridgetowers.com
with a copy to:	James R. Richards, Esq. Petty, Livingston, Dawson & Richards, P.C. P. O. Box 1080 Lynchburg, VA 24505 925 Main Street, Suite 300 Lynchburg, VA 24504 jrrichards@pldrlaw.com
if intended for Owner:	Steven M. Sandy Director of Community Development Franklin County Broadband Authority 1255 Franklin Street Rocky Mount, Virginia 24151 Steve.Sandy@franklincountyva.gov
with a copy to:	Michael W.S. Lockaby, Esq. Authority Counsel

Guynn, Waddell, Carroll & Lockaby, P.C.
415 South College Avenue
Salem, Virginia 24153
MikeL@guynnwaddell.com

Notices may be given on behalf of any Party by its legal counsel.

(b) Each such notice shall be deemed to have been properly given for all purposes if (i) delivered with a written receipt of delivery, (ii) mailed by registered or certified mail of the United States Postal Services, return receipt requested, postage prepaid, (iii) delivered to a nationally recognized overnight courier service for next business day delivery, to its addressee at such Party's address as set forth above; or (iv) if delivered via electronic mail to the e-mail address listed above, with a statement in the subject line that the e-mail is a "Contract Notice." If an email is returned undeliverable or an "out-of-town" auto-response message is received by the sender, then the sender shall make reasonable and expeditious efforts to send notice to the party by another acceptable means of delivering notices, but the sender's notice shall be deemed given as of the date the original email.

(c) Each such notice shall be deemed to have been given upon the earlier of (i) actual receipt or refusal by the addressee, (ii) three (3) business days after deposit thereof at any main or branch United States Post Office (if sent in accordance with section (b)(ii) above), (iii) deposit thereof with the courier (if sent pursuant to section (b)(iii) above), or (iv) the date sent, if sent by electronic mail, so long as the recipient either confirms receipt by response e-mail or the sender obtains and retains an e-mail delivery receipt for the e-mail.

13.4 **Non-Exclusive Remedies**. Except as otherwise provided herein, no remedy herein conferred or reserved is intended to be exclusive of any other available remedy or remedies, and each and every such remedy shall be cumulative and shall be in addition to every such remedy given under this Agreement or now or hereafter existing at law, in equity or by statute.

13.5 **No Waiver**. Neither the failure, nor any delay, on the part of either Party to this Agreement to exercise any right, remedy, power or privilege under this Agreement shall operate as a waiver thereof, nor shall any single or partial exercise of any right, remedy, power or privilege preclude any other or further exercise of the same or of any other right, remedy, power or privilege, nor shall any waiver of any right, remedy, power or privilege be deemed to be a waiver of such right, remedy, power or privilege with respect to any other occurrence, absent an amendment or Change Order to this Agreement setting forth such waiver.

13.6 **No Third Party Beneficiaries**. This Agreement is made solely and specifically between and for the benefit of the Parties hereto, and their respective successors and permitted assigns, subject to the express provisions hereof relating to successors and assigns, and no other person, individual, corporation, or entity whatsoever shall have any rights, interests, or claims hereunder or be entitled to any benefits under or on account of this Agreement, whether as a third party beneficiary or otherwise.

13.7 **Time**. Time is of the essence of this Agreement. In computing the number of days for purposes of this Agreement, all days shall be counted, including Saturdays, Sundays, and holidays; provided, however, that if the final day of any time period provided in this Agreement shall end on a Saturday, Sunday, or legal holiday, then the final day shall extend to 5:00 p.m. on the next full business day.

13.8 **Interpretation**. No provision of this Agreement is to be interpreted for or against either Party because that Party or that Party's legal representative or counsel drafted such provision. The Parties acknowledge and agree that this Agreement has been negotiated at arm's length with the input of counsel for each Party and it is the intent of the Parties that neither Developer nor Owner shall have this Agreement or any portion thereof construed more strictly against them.

13.9 **Additional Acts**. In connection with this Agreement and the transactions contemplated hereby, Owner and Developer each agree to execute and deliver such additional documents and instruments and take all such necessary action and perform such additional acts as may be necessary or appropriate to effectuate, carry out and perform all of the terms, provisions, and conditions of this Agreement.

13.10 **Provisions Separable**. The provisions of this Agreement are independent of and separable from each other, and no provisions shall be affected or rendered invalid or unenforceable by virtue of the fact that, for any reason, any other provision may be invalid or unenforceable in whole or in part.

13.11 **Counterparts**. This Agreement may be executed in any number of counterparts, each of which shall be deemed to be an original as against any Party whose signature appears thereon, and all of which shall together constitute one and the same instrument. This Agreement shall be binding when one or more counterparts hereof, individually or taken together, shall bear the signatures of all of the Parties reflected on this Agreement as the signatories.

13.12 **Captions**. The captions in this Agreement are inserted for convenience of reference; they form no part of this Agreement and shall not affect its interpretation.

13.13 **Relationship Between the Parties**. The relationship of the Parties shall be limited to this Agreement. Nothing herein shall be deemed to create a partnership or joint venture between the Parties, nor to authorize either Party to act as general agent (as opposed to any specific agency relationship described in this Agreement) for the other Party.

13.14 **Authorized Representatives**. Any consent, approval, authorization or other action required or permitted to be given or taken under this Agreement by Owner or Developer, as the case may be, shall be given or taken byone or more of the authorized representatives of each. For purposes of this Agreement, (a) the authorized representative of Owner shall be Jeffrey Marecic, and (b) the authorized representatives of Developer shall be Anthony Smith. Any Party hereto may from time to time designate additional or replacement authorized representatives to the other Party hereto. The written statements and representatives of any authorized representative of Owner or Developer shall be binding upon the Party for whom such person is an authorized representative, and the other Party shall have no obligation or duty whatsoever to

inquire into the authority of any such representative to take any action which he proposes to take. Provided, however, that certain decisions with respect to this Agreement are non-delegable legislative functions which may only be made by the appropriate legal authorities, and for which no action of an agent of the Authority may bind it. This Section shall not apply to such functions.

13.15 **Subject to Appropriation.** The Developer understands that the source of funds for the Authority's obligations under this Agreement is partly funds appropriated to it by the Board of Supervisors of Franklin County as an intergovernmental fund transfer under Section 15.2-1205 of the Code of Virginia, 1950, as amended, and partly funds appropriated to it by the Commonwealth of Virginia, by and through the Virginia Department of Housing and Community Development. This Agreement is not a general obligation of the full faith and credit of the Commonwealth of Virginia or Franklin County, Virginia, but a limited obligation of the Authority in accordance with the Wireless Service Authorities Act, and is not to be construed in any manner as violating Article VII Section 10 of the Virginia Constitution. In order to ensure orderly appropriation and transfer of such funds, no later than March 15 of each year, beginning March 15, 2019, the Authority shall notify the Board of Supervisors of Franklin County of the amount of funds that will be necessary to meet the Authority's financial obligations under this Agreement in the next following fiscal year. In the event that sufficient funds are not appropriated, the Authority shall give prompt notice without delay to the Developer and the Authority and the Developer shall work to "wind down" the Project and suspend work ("Suspension"). In the event of non-appropriation, the obligation of the Authority to pay the Developer shall not be less than the sum of (1) the progress payments for all Milestones achieved to the date the Developer receives notice of the event of non-appropriation; (2) the fair value for all work done by the Developer in pursuance of any further milestones not yet met; and (3) the fair value of all work done by Developer to wind down. The Suspension will continue for up to one year from the notice of non- appropriation to allow the Authority to obtain funding, if possible, for the remaining portions of the Project. In the event that funding is subsequently obtained, the Parties will execute a Change Order to modify the Project Schedule and Project Budget to reflect a new schedule for completion of the remaining Work and to adjust for increases in the cost of the labor, material, or equipment resulting from the Suspension. If the Parties agree, and if technically feasible, the Owner may issue a Notice to Proceed under the Operating Agreement for the portions of the Project that were completed prior to the non-appropriation.

13.16 **Applicable Law**. This Agreement shall be governed, construed, performed and enforced in accordance with the laws of the Commonwealth of Virginia without regard to its conflicts of laws principles.

13.17 **Confidential Information.** Confidential Information that is properly designated by a transmitting party shall be protected from disclosure by the receiving party as set forth in the definition of Confidential Information. If the Authority receives Confidential Information designated by Developer, then the Authority shall prevent the disclosure of such Confidential Information pursuant to a Virginia Freedom of Information Act (Virginia Code § 2.2-3700 *et seq.*) ("FOIA") request and as permitted by law or as otherwise set forth above.

[Remainder of page intentionally left blank.]

IN WITNESS WHEREOF, Owner and Developer have caused their respective duly authorized representatives to execute and deliver this Agreement, all as of the day and year first above written.

OWNER:

FRANKLIN COUNTY
BROADBAND AUTHORITY

By: _____
Name: Leland Mitchell
Title: Chairman

Approved as to Legal Form:

By: _____
Name: Michael W.S. Lockaby
Title: Authority Counsel

DEVELOPER:

BLUE RIDGE TOWERS, INC.:

By: _____
Name: Anthony R. Smith
Title: President

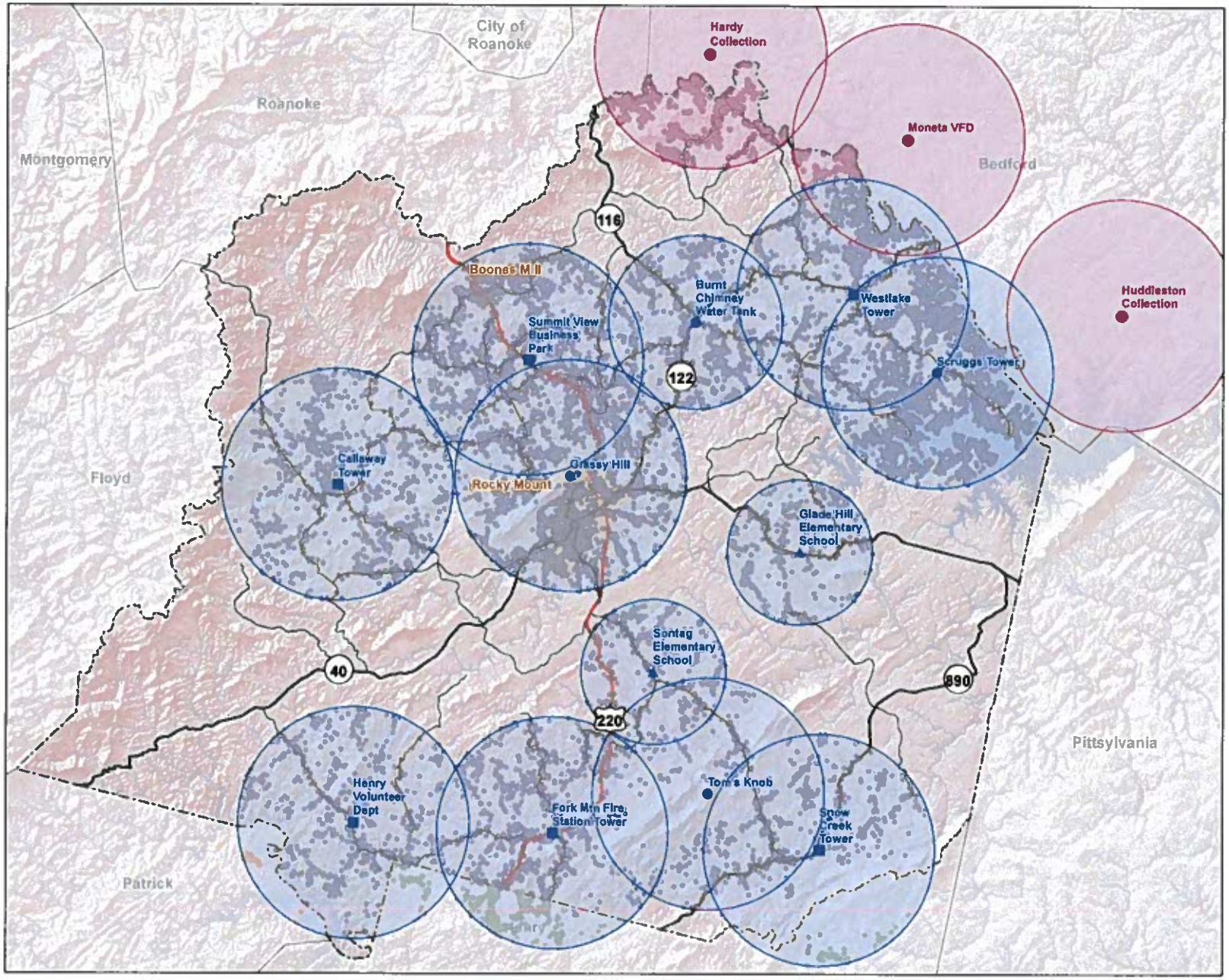
{00302316.DOCX }

Exhibit 1

Franklin County, Virginia Overall Project Area

Franklin County 2020 VATI Grant

Attachment 5 - Propagation Map Wireless Project



- Reached by Franklin Sites (21,495 Addresses)
- Reached by Bedford Sites (725 Addresses)
- Henry Co Coverage (541 Addresses)
- Patrick Co Coverage (39 Addresses)
- Franklin - Existing Pole
- Franklin - New Monopole
- Franklin - Community Pole
- Bedford - Tower Sites
- Franklin - Potential Coverage
- Bedford - Potential Coverage
- Franklin County
- Surrounding Counties
- Water Features
- US Hwy
- State Hwy
- Primary Collector

0 2.5 5 Mi

The data layers provided herein were compiled from various sources within a geographic information system (GIS) for the primary use of Franklin County. The data provided herein are believed to be accurate but are provided for reference purposes only. These GIS data are in no way meant as a replacement for a legal survey, legal description, or standard due diligence. No guarantee, expressed or implied, is made regarding their accuracy, currency, adequacy, usefulness, or reliability. These data are provided "as is" and neither Franklin County nor its employees shall be held responsible for their inappropriate use.

Date: 9/3/2019

EXHIBIT 2
DEFINED TERMS

In addition to any other terms which are defined in the Agreement, the following terms shall have the following meanings:

"Abnormal Weather" means severe or inclement weather beyond the average of the most recent five years of weather normally occurring at the Project Site, as evidenced by information generated by the National Oceanic and Atmospheric Administration and the National Weather Service.

"Agreement" shall have the meaning set forth in the Preamble.

"Applicable Laws" means all applicable laws, statutes, ordinances, rules, regulations, orders and permits of all governmental agencies having jurisdiction over the Project Sites or the Project.

"Architect," "Engineer," "Architect/Engineer," or "A/E" means the duly Virginia-licensed person, persons, or entities designated by the Developer to perform and provide the Architectural and Engineering design and related services in connection with the Work.

"Beneficial Occupancy" means the condition after Substantial Completion but prior to Final Completion of the Project or a portion thereof at which time the Project, or a portion thereof, is sufficiently complete and operational such that the Owner could, after obtaining necessary approvals and certificates, give the Developer the Notice to Proceed under the Operating Agreement and allow its occupancy and use for its intended use. Guarantees and warranties applicable to that portion of the Work begin on the date the Owner accepts the Project, or a portion thereof, for such Beneficial Occupancy. The Owner shall issue the Notice to Proceed with the Operations Phase for each portion of the Project that is accepted for Beneficial Occupancy simultaneously with such acceptance.

"Change Order" means a written directive issues after the effective date of this Agreement which is agreed to by the Developer and the Owner, and which authorizes an addition, deletion, or revision in the Work, including any adjustment in the price and/or any milestone date. A change order, once signed by all parties, is incorporated into and becomes a part of this Agreement.

"Claim" shall mean a demand or assertion by one of the Parties seeking, as a matter of right, payment of money, a change in the Project Schedule, or other relief with respect to the terms of the Agreement.

"Comprehensive Agreement" means the Comprehensive Agreement that will be entered simultaneously with this Agreement that is required by the PPEA and the County Guidelines as part of a qualifying project under the PPEA.

"Confidential Information" means any information or documents containing confidential or business proprietary information. Confidential Information does not include information that

was: (i) in the public domain prior to its transmission on this Project; (ii) independently developed by the receiving party; or (iii) previously received from a third-party. Confidential Information shall be designated in writing as "CONFIDENTIAL INFORMATION" and shall be accompanied by a statement of the reasons for why the protections under this Article are necessary which is determined to be Confidential in accordance with any applicable law or statute.

"Day" or "Days" means calendar day or calendar days unless otherwise specified.

"Construction Agreement" shall mean a Vendor Contract that Developer negotiates with another person or entity (the "**Contractor**") for the construction on one or more of the Project Sites, which will be provided to Owner for review and approval, and shall include any amendments, modifications, and changes thereto, and all replacements thereof. Provided the requirements of the previous sentence are satisfied, Developer may enter into more than one Construction Agreement with separate persons or entities. Developer will execute, in its own name, the Construction Agreement(s) with the Contractor(s).

"Contractor Cost Overruns" shall have the meaning set forth in the Agreement above.

"Contractor" shall have the meaning set forth in the Agreement above.

"Developer" shall have the meaning set forth in the Preamble.

"Developer Cost Overruns" shall have the meaning set forth in the Agreement above.

"Developer Releases" shall have the meaning set forth in the Agreement above.

"Developer's Inspectors" means the materials testing and geotechnical engineering firms retained by Developer to provide the following testing and inspections: (i) foundation subgrade inspection and density testing; (ii) foundation rebar placement; (iii) concrete pour inspections including slump and cylinder break tests.

"Due Diligence" means that certain due diligence regarding the financial and logistical feasibility of developing the Project, including, without limitation, title, survey, environmental, and geotechnical analyses, as well as analyses relating to land use and zoning, entitlements, and the need for the Permits.

"Effective Date" shall have the meaning set forth in the Preamble.

"Excusable Conditions" means any one or more of the following occurrences, circumstances or conditions: (a) the failure of Owner to reasonably cooperate with Developer; (b) the breach by Owner, the Contractor or any other party (other than Developer) of any of such party's obligations under the Development Agreement, the Construction Agreement, including, without limitation, any failure by Owner to timely pay properly requisitioned funds to Developer; (c) the failure of Owner to review and approve (or disapprove with specific comments setting forth the manner in which such matter will gain Owner's approval) any matter for which Owner's approval is required or desirable hereunder within the time period set forth herein, or if no period is set forth herein, within five (5) business days after Owner's receipt of Developer's written request therefor; (d) the failure of Owner to timely provide free and unfettered access to the Project Sites

to Developer and the Contractor for the purposes contemplated herein and in the Construction Agreement; (e) the occurrence or existence of Unforeseen Conditions; (g) any change in Applicable Laws; (h) the occurrence or existence of any Force Majeure Event; (i) any stop work order, suspension, injunction, lawsuit or other interruption of the Services or construction of the Project by Owner, or any other person or entity (other than Developer); (j) any Owner Change Directives; (k) the failure of Owner to have requisite title to and/or rights and/or ownership interest in the Project Sites, or across any property necessary for Developer or Contractor to gain access to the Project Sites to deliver materials and/or construct the Towers and appurtenances, so as to permit Developer and Contractor to perform their obligations under this Agreement and the Project Agreement; (l) the failure of any local, state, or federal agency or other Authority Having Jurisdiction (AHJ) to provide approval for any Permits or any other approval required under Applicable Laws; (m) the occurrence or existence of Abnormal Weather; (n) the existence of any hazardous materials on the Project Site(s); (o) Owner does not cooperate with and assist Developer in requesting and obtaining any and all required Permits, approvals, services, zoning, ownership interest, and leases from an entity or agency of Franklin County, Virginia and any public or private third-party entity, including, but not limited to, land owners or lessees and water, gas, sewer, electric, or other utility entities.

"Excusable Costs" means any Project Costs that are incurred by reason of Excusable Conditions.

"Excusable Delays" means any delays to the construction of the Project that are caused by Excusable Conditions.

"Existing Conditions" are any and all conditions of the Project Sites or any improvements located thereon existing as of Effective Date, including, but not limited to, geological, geotechnical, archeological, paleontological and environmental conditions, the presence or absence of any hazardous materials and compliance or non-compliance with Applicable Laws.

"Fiber" means the approximately [to be provided by BRT] miles of fiber that will be furnished and installed as part of the Project.

"Final Completion" means the event in which the Owner has confirmed that all Work on the Project or a portion thereof is totally complete and all punchlists have been completed, retainage has been released as to such portion of the Project, and title for such portion of the Project passes to the Owner, or the date on which such event occurs.

"Final Completion Deadline" shall have the meaning set forth in the Agreement above.

"Force Majeure Event" means any circumstances which are reasonably beyond the ability of Developer to control, including, without limitation, acts of God, acts of war or terrorism, governmental interference, inability to obtain labor, energy, materials or supplies (for reasons other than cash flow or other financial reasons), riot, civil commotion, strike, lockout, Abnormal Weather, Unforeseen Conditions, epidemic, pandemic, including COVID-19, a governmental declaration of a state of emergency, and any local, state of federal orders or curfews, or any other unforeseeable event.

"Grants" means grants through the Virginia Department of Housing and Community

Development under its 2019 Virginia Telecommunications Initiative Program ("VATI").

"Losses" means losses, costs, expenses (including, without limitation, reasonable attorneys' fees), claims, demands, suits, actions, responsibilities, liabilities or obligations.

"Microwave" means the approximately [to be provided by BRT] microwave dish antennae that will be furnished and installed as part of the Project.

"Notices" shall have the meaning set forth in the Agreement above.

"Owner" shall have the meaning set forth in the Preamble.

"Owner Change Directives" shall have the meaning set forth in the Agreement above.

"Party" or **"Parties"** shall have the meaning set forth in the Preamble.

"Permits" shall mean the permits and other administrative approvals of the local, state, and federal authorities having jurisdiction ("AHJ") that are required under Applicable Laws for the development or construction of the Project, including, but not limited to: (i) zoning approval from Franklin County Department of Community Development, Division of Planning and any other necessary division or department; (ii) National Historic Preservation Act & Virginia State Historic Preservation Office approval; (iii) National Environmental Policy Act approval; (iv) building permit issued by the Franklin County Department of Community Development, Building Inspections Office, and any other necessary division or department.

"Plans" shall mean the drawings and specifications, if any, that the Contractor will prepare for the construction of the Project, which will be submitted for the review and approval of Developer and Owner.

"PPEA" means the Public Private Education and Facilities Infrastructure Act of 2002 found at Virginia Code §§ 56-575.1, *et seq.*

"PPEA Guidelines" means the Franklin County Broadband Authority PPEA Guidelines, as adopted and amended by the Board of Directors of the Franklin County Broadband Authority.

"Project" shall mean the planning, design and construction of the six (6) new Wireless Towers, one (1) existing Wireless Tower, and four (4) co-locations for the Authority under this Agreement and the Project Agreement.

"Project Budget" shall have the meaning set forth in the Agreement above.

"Project Costs" means the total of all costs and expenses for the design, construction and development of the Project, as such costs are to be set forth in the Project Budget. Project Costs shall specifically include Excusable Costs but shall exclude Developer Cost Overruns.

"Project Schedule" shall have the meaning set forth in the Agreement above.

"Project Sites" shall have the meaning set forth in the Recitals.

"Services" shall have the meaning set forth in the Agreement above and in Exhibit 6.

"Share File Site" means a web portal accessible through the internet, maintained by the Owner and/or Franklin County, on which Developer will submit the documents and other information required as part of this Agreement. Developer's uploading of documents to the Share File Site will constitute delivery of the relevant documents for purposes of this Agreement, including the delivery of documents required under the Financial Milestone Tracker, and submission of applications for payment; provided, however, that notices required by this Agreement for Claims and Disputes will be submitted as required by the Section 14.3 regarding Notices.

"Substantial Completion" means the date on which the Owner can utilize the Work for its intended purpose, and the Owner can obtain certificates of occupancy. After Substantial Completion, the Owner can accept the Work on any Site for Beneficial Occupancy and issues a Notice to Proceed under the Operating Agreement.

"Substantial Completion Deadline" shall have the meaning set forth in the Agreement above.

"Third-Party Inspector" as used herein, means a qualified design professional licensed in the Commonwealth of Virginia and qualified by experience to perform such services. The identity of the Third-Party Inspector will be agreed upon between Owner and Developer, and the services of such Third Party Inspector, when required to resolve disagreements hereunder, shall be shared equally between the Parties.

"Unforeseen Conditions" means any Existing Conditions not known to Developer as of the Effective Date and indicated as a known condition in this Agreement or any other unforeseen condition that is encountered at the Project Sites. Unforeseen Conditions also means if the Developer's geotechnical and foundation structural investigations of the Project Site(s) reveal conditions at the Project Site(s) that: (i) will require additional expense to create an acceptable structural foundation for the Towers, either at the planned location for the Tower on the Project Site or at another location on the Project Site; or (ii) will require the selection of alternate Project Site(s) for the Wireless Towers excavation, Developer will provide the Owner with estimates of the additional costs and time involved, if any, of using the alternate construction methods or alternate Project Site(s). Unforeseen Conditions also means subsurface or otherwise concealed physical conditions that differ from the assumptions of Developer in the BRT Proposal or unknown physical conditions of an unusual nature that differ materially from those ordinarily found to exist and generally recognized as inherent in construction activities of the character provided for in the Agreement. Unforeseen Conditions also means any restrictions, adjustments or modifications contained in the approvals of the Permits to: (i) the use of the Sites; (ii) the placement, foundations, design or specifications for the Wireless Towers, the Fiber, or the Microwaves; or (iii) any other restriction to the Parties' assumptions for the Project.

"Vendor Contracts" shall have the meaning set forth in the Agreement above.

"Wireless Towers" means the six (6) new wireless communication towers being developed and constructed under this Agreement (the **"New Wireless Towers"**), the one (1)

existing wireless communication towers (the "**Existing Wireless Tower**"), and the four (4) co-locations (the "**Co-Locations**" and collectively with the New Wireless Towers and the Existing Wireless Tower, the "**Wireless Towers**") that may be managed by BRT under a separate management agreement.

"Work" refers to all actions necessary to carry out the obligations of this Agreement, whether carried out by Developer, its employees, agents, consortium partners, or other contractors.

EXHIBIT 3

Summary Schedule of Values

Site Name	FMS1 SCIP	FMS2 Site Acq	FMS3 2C/Survey	FMS4 Zoning Submittal	FMS5 Zoning Approval	FMS6 FAA TOW AIR Approval	FMS7 FCC Tower Registration	FMS8 Phase I	FMS9 SHPO/NEPA	FMS10 Geotech Report	FMS11 Fiber Install Deposit (cost of Fiber)	FMS12 Fiber Install Complete	FMS13 Microwave Deposit (due 30 days before order)	FMS14 Microwave Complete	FMS15 Router Order	FMS16 Router Install Complete	FMS17 Construction Drawings	FMS18 Building Permit Submittal	FMS19 Tower Order Deposit (30 days before Tower Order)	FMS20 Construction Start	FMS21 Foundation Complete	FMS22 Tower Delivery	FMS23 Tower Stack	FMS 23 Electrical Inspection Passed	FMS24 Construction Complete	Total
Total Value Per Site	$1,000.00	$4,000.00	$ 7,500.00	$5,000.00	$ 4,000.00	$ 1,500.00	$ 1,000.00	$ 8,000.00	$10,000.00	$7,000.00	Per occurrence	Per occurrence	$15,000.00	$23,500.00	$5,100.00	$5,100.00	$ 7,000.00	$1,000.00	$36,000.00	$15,000.00	$30,000.00	$29,000.00	$20,000.00	$15,000.00	$21,000.00	$280,700.00
Franklin County Industrial Park	$1,000.00	$4,000.00	$ 7,500.00	$5,000.00	$ 4,000.00	$ 1,500.00	$ 1,000.00	$ 8,000.00	$10,000.00	$7,000.00	$13,560.00	$54,240.00	$ -	$ -	$ 5,100.00	$5,100.00	$ 7,000.00	$1,000.00	$36,000.00	$15,000.00	$30,000.00	$29,000.00	$ 20,000.00	$15,000.00	$21,000.00	$310,000.00
Westlake	$1,000.00	$4,000.00	$ 7,500.00	$5,000.00	$ 4,000.00	$ 1,500.00	$ 1,000.00	$ 8,000.00	$10,000.00	$7,000.00	$6,780.00	$27,120.00	$ -	$ -	$ 5,100.00	$5,100.00	$ 7,000.00	$1,000.00	$36,000.00	$15,000.00	$30,000.00	$29,000.00	$ 20,000.00	$15,000.00	$ 21,000.00	$276,100.00
Snow Creek	$1,000.00	$4,000.00	$ 7,500.00	$5,000.00	$ 4,000.00	$ 1,500.00	$ 1,000.00	$8,000.00	$10,000.00	$7,000.00	$20,340.00	$81,360.00	$ -	$ -	$5,100.00	$ 5,100.00	$ 7,000.00	$1,000.00	$36,000.00	$15,000.00	$30,000.00	$29,000.00	$ 20,000.00	$15,000.00	$21,000.00	$343,900.00
Calloway	$1,000.00	$4,000.00	$ 7,500.00	$5,000.00	$ 4,000.00	$ 1,500.00	$ 1,000.00	$ 8,000.00	$10,000.00	$7,000.00	$6,780.00	$27,120.00	$15,000.00	$23,500.00	$5,100.00	$5,100.00	$ 7,000.00	$1,000.00	$36,000.00	$15,000.00	$30,000.00	$29,000.00	$ 20,000.00	$15,000.00	$21,000.00	$314,000.00
Henry VFD	$1,000.00	$4,000.00	$ 7,500.00	$5,000.00	$ 4,000.00	$ 1,500.00	$ 1,000.00	$8,000.00	$10,000.00	$7,000.00	$ -	$ -	$15,000.00	$23,500.00	$5,100.00	$5,100.00	$ 7,000.00	$1,000.00	$36,000.00	$15,000.00	$30,000.00	$29,000.00	$20,000.00	$15,000.00	$21,000.00	$280,700.00
Fork Mtn VFD	$1,000.00	$ 4,000.00	$ 7,500.00	$5,000.00	$ 4,000.00	$ 1,500.00	$ 1,000.00	$8,000.00	$10,000.00	$7,000.00	$ -	$ -	$15,000.00	$23,500.00	$5,100.00	$5,100.00	$ 7,000.00	$1,000.00	$36,000.00	$15,000.00	$30,000.00	$29,000.00	$ 20,000.00	$15,000.00	$21,000.00	$280,700.00
Glade Hill Elem School Sonting	$1,000.00	$4,000.00	$ 7,500.00	$5,000.00	$ 4,000.00	$ 1,500.00	$ 1,000.00	$8,000.00	$10,000.00	$7,000.00	$2,712.00	$10,848.00	$ -	$ -	$ 5,100.00	$5,100.00	$ 7,000.00	$1,000.00	$36,000.00	$15,000.00	$30,000.00	$29,000.00	$ 20,000.00	$15,000.00	$21,000.00	$255,700.00
Grassy Hill Cole	$1,000.00	$4,000.00	$ 7,500.00	$5,000.00	$ 4,000.00	$ 1,500.00	$ 1,000.00	$8,000.00	$10,000.00	$7,000.00	$2,712.00	$10,848.00	$ -	$ -	$ 5,100.00	$5,100.00	$ 7,000.00	$1,000.00	$36,000.00	$15,000.00	$30,000.00	$29,000.00	$ 20,000.00	$15,000.00	$21,000.00	$255,700.00
Scruggs Cole	$1,000.00	$3,500.00	$ 7,500.00	$5,000.00	$ 4,000.00		$ 1,000.00				$2,780.00	$4,000.00	$15,000.00	$23,500.00	$5,100.00	$5,100.00	$ 7,000.00	$1,000.00		$15,000.00				$ 9,500.00	$11,500.00	$121,400.00
Tom's Knob Cole	$1,000.00	$3,500.00	$ 7,500.00	$5,000.00	$ 4,000.00		$ 1,000.00						$15,000.00	$23,500.00	$5,100.00	$5,100.00	$ 7,000.00	$1,000.00		$15,000.00				$9,500.00	$11,500.00	$114,700.00
Burnt Chimney Cole	$1,000.00	$3,500.00	$ 7,500.00	$5,000.00	$ 4,000.00		$ 1,000.00				$30,324.00	$157,296.00	$15,000.00	$23,500.00	$5,100.00	$5,100.00	$ 7,000.00	$1,000.00		$15,000.00				$ 9,500.00	$11,500.00	$311,320.00
	$1,000.00	$3,500.00	$ 7,500.00	$5,000.00	$ 4,000.00		$ 1,000.00				$ -	$ -	$15,000.00	$23,500.00	$5,100.00	$5,100.00	$ 7,000.00	$1,000.00		$15,000.00				$ 9,500.00	$11,500.00	$314,700.00

$ 2,979,720.00

EXHIBIT 4

SUMMARY PROJECT SCHEDULE

Site Name	Tower Type	Landlord	MS1 SCIP	MS2 Site Acq	MS3 Survey/2C	MS4 Zoning Submittal	MS5 Zoning Approval	MS6 FAA TOW AIR Approval	MS7 FCC Tower Registration	MS8 Phase I	MS9 SHPO/NEPA	M10 Geotech Report	MS11 Construction Drawings	MS12 Building Permit Submittal	MS13 Tower Order	MS14 Construction Start	MS15 Foundation Complete	MS16 Tower Delivery	MS 17 Electrical Inspection Passed	MS18 Construction Complete	MS19 SITE ON AIR
Franklin County Summit View	175' Monopole	Blue Ridge Tower/FC	3/15/2019	3/15/2019	4/15/2019	4/15/2019	6/27/2019	6/1/2019	6/1/2020	6/15/2019	6/15/2019	7/5/2019	6/27/2019	7/15/19 Start with a 8/15/19 Completion	6/24/2019	8/1/2019	9/1/2019	9/12/2019	9/15/2019	9/30/2019	10/30/2019
Westlake	175' Monopole	Blue Ridge Towers	6/15/2020	7/15/2020	7/15/2020	8/15/2020	9/27/2020	7/1/2020	7/1/2021	8/15/2020	10/1/2020	7/5/2020	6/27/2020	10/1/2020	6/24/2020	10/5/2020	11/1/2020	9/1/2020	11/15/2020	11/30/2020	1/10/2021
Snow Creek	195' Monopole	Blue Ridge Towers/Daniel Smith	6/15/2020	7/15/2020	7/15/2020	8/15/2020	9/27/2020	7/1/2020	7/1/2021	8/15/2020	10/1/2020	7/5/2020	6/27/2020	10/1/2020	6/24/2020	10/5/2020	11/1/2020	9/1/2020	11/15/2020	11/30/2020	1/10/2021
Calloway	195' Monopole	Franklin County School Board	6/15/2020	7/15/2020	7/15/2020	8/15/2020	9/27/2020	7/1/2020	7/1/2021	8/15/2020	10/1/2020	7/5/2020	6/27/2020	10/1/2020	6/24/2020	10/5/2020	11/1/2020	9/1/2020	11/15/2020	11/30/2020	1/10/2021
Henry Volunteer VFD	195' Monopole	Franklin County/Henry VFD	6/15/2020	7/15/2020	7/15/2020	8/15/2020	9/27/2020	7/1/2020	7/1/2021	8/15/2020	10/1/2020	7/5/2020	6/27/2020	10/1/2020	6/24/2020	10/5/2020	11/1/2020	9/1/2020	11/15/2020	11/30/2020	1/10/2021
Fork Mtn Fire Station	195' Monopole	Franklin County/Fork Mtn VFD	6/15/2020	7/15/2020	7/15/2020	8/15/2020	9/27/2020	7/1/2020	7/1/2021	8/15/2020	10/1/2020	7/5/2020	6/27/2020	10/1/2020	6/24/2020	10/5/2020	11/1/2020	9/1/2020	11/15/2020	11/30/2020	1/10/2021
Glade Hill Elementary School	150' Monopole	Franklin County School Board	6/15/2020	7/15/2020	7/15/2020	8/15/2020	9/27/2020	7/1/2020	7/1/2021	8/15/2020	10/1/2020	7/5/2020	6/27/2020	10/1/2020	6/24/2020	10/5/2020	11/1/2020	9/1/2020	11/15/2020	11/30/2020	1/10/2021
Sontag	150' Monopole	Franklin County	6/15/2020	7/15/2020	7/15/2020	8/15/2020	9/27/2020	7/1/2020	7/1/2021	8/15/2020	10/1/2020	7/5/2020	6/27/2020	10/1/2020	6/24/2020	10/5/2020	11/1/2020	9/1/2020	11/15/2020	11/30/2020	1/10/2021
Grassy Hill Tower	Existing 195' SST	Franklin County	6/15/2020	7/15/2020	7/15/2020	8/15/2020	9/27/2020	7/1/2020	7/1/2021	8/15/2020	10/1/2020	7/5/2020	6/27/2020	10/1/2020	6/24/2020	10/5/2020	11/1/2020	9/1/2020	11/15/2020	11/30/2020	1/10/2021
Scruggs Tower	Existing 195' SST	Franklin County	6/15/2020	7/15/2020	7/15/2020	8/15/2020	9/27/2020	7/1/2020	7/1/2021	8/15/2020	10/1/2020	7/5/2020	6/27/2020	10/1/2020	6/24/2020	10/5/2020	11/1/2020	9/1/2020	11/15/2020	11/30/2020	1/10/2021
Tom's Knob Tower	Existing 150' SST	Franklin County	6/15/2020	7/15/2020	7/15/2020	8/15/2020	9/27/2020	7/1/2020	7/1/2021	8/15/2020	10/1/2020	7/5/2020	6/27/2020	10/1/2020	6/24/2020	10/5/2020	11/1/2020	9/1/2020	11/15/2020	11/30/2020	1/10/2021
Burnt Chimney Water Tank	Existing 120' watertank	Western Virginia Water Authority	6/15/2020	7/15/2020	7/15/2020	8/15/2020	9/27/2020	7/1/2020	7/1/2021	8/15/2020	10/1/2020	7/5/2020	6/27/2020	10/1/2020	6/24/2020	10/5/2020	11/1/2020	9/1/2020	11/15/2020	11/30/2020	1/10/2021

EXHIBIT 5

PROJECT DEFINITIONS & KEY

Term/Phase	General Tasks Associated
Development Phase	Site acquisition, finalization of A/E work, site work, entry of third-party contracts, and permitting. All preconstruction approvals, State, local and Federal.
Construction Phase	Laying of foundations, construction of poles, building inspections, and stacking, electrical, fencing and landscaping as required.
Fiber Phase	Running of fiber optic cable and completion of contracts with third-parties for connection to internet. Completion of pole attachment agreements.
Microwave	Installation of microwave backhaul equipment.

EXHIBIT 6
SCOPE OF SERVICES

Without limiting the general obligations of Developer contained in the Agreement, Developer shall provide the following Services to Owner in connection with the development of the Project. In the event of any direct conflict between the terms and conditions of this **Exhibit 6** and the terms and conditions of the remainder of the Agreement, the terms and conditions of the remainder of the Agreement shall apply.

1. On a regular basis throughout the term of this Agreement, with a frequency to be agreed upon between Developer and owner but not less often than monthly, Developer shall schedule and conduct meetings between Owner, Developer, the Contractor, and the Architect/Engineer to discuss construction progress.

2. Developer shall take all commercially reasonable steps consistent with this Agreement necessary to deliver a "turnkey" Project within the specifications of the Proposal.

3. Developer shall coordinate with the Owner to develop and implement procedures for the review and processing of Requests for Payment for progress and final payments. Developer shall review and approve the amounts due relative to each such application and forward such applications to Owner for payment within the time frames required by this Agreement.

4. Developer shall inspect the Work to determine if it is being performed in accordance with the conditions and requirements of this Agreement.

5. Developer shall establish and implement procedures for expediting the processing and approval by Developer and Owner, where necessary, of shop drawings, product data, samples and other submittals.

6. Developer shall monitor the delivery, storage, protection, and security of materials, systems and equipment ordered by itself or any Vendor or subcontractor in accordance with the terms of the Project Agreement until such items are incorporated into the Project.

7. Developer shall coordinate with the Owner and all applicable authorities for the installation of utilities, if required, at the Project.

8. Developer shall coordinate the performance of any tests and inspections required under Applicable Laws or this Agreement.

9. Developer shall use diligence and reasonable efforts to enforce all warranties and to cause the responsible contractors to cure all defects in the construction of the Project during the applicable warranty periods.

10. Developer shall perform generally such other acts and things as may be reasonably required for the supervision, coordination, and delivery of all phases of the Project.

EXHIBIT 7
INSURANCE

- The Developer shall neither commence Work nor authorize any other person to commence Work under this Agreement until it, its Contractor, and/or Architect/Engineer as appropriate, has obtained all insurance required hereunder from an insurer authorized to do business in the Commonwealth of Virginia and such insurance has been approved by the Owner.

- The Developer, Contractor, and Architect/Engineer shall take out, and shall maintain in force at all times during the performance of the Work, Workers' Compensation and Employers' Liability Insurance for all of their employees engaged in the Work in an amount not less than the statutory minimums. The Developer, Contractor, and Architect/Engineer shall require each Vendor or subcontractor similarly to provide Workers' Compensation and Employers' Liability Insurance for all of their employees engaged in the Work.

- During the performance of the Work under this Agreement, the Developer shall maintain commercial general liability insurance to include Premises/Operations Liability, Products, and Completed Operations Coverage, Independent Contractor's Liability, Owner's and Contractor's Protective Liability, and Personal Injury Liability, which shall insure it against claims of personal injury, including death, as well as claims for property damage, which may arise from operations under this Agreement whether such operations be by itself or by any Vendor or subcontractor, or by anyone directly or indirectly employed by either one of them. The amounts of general liability insurance shall be not less than $1,000,000 per occurrence and $2,000,000 aggregate combined limit. The Franklin County Broadband Authority, its officers, directors, employees, and agents shall be named as additional insureds with respect to the Work.

- During the performance of the Work under this Agreement, the Developer shall maintain automobile liability insurance which shall insure it against claims of personal injury, including death, as well as against claims for property damage, which may arise from operations under this Agreement, whether such operations be by itself or by any Vendor or subcontractor, or by anyone directly or indirectly employed by either of them. The amounts of automobile insurance shall not be less than $1,000,000 combined limit for bodily injury and property damage per occurrence.

- The Developer shall obtain and maintain in the names of the Owner and the Developer (and, at its option, its construction general contractor) "all-risk" builder's risk insurance (or fire, extended coverage, vandalism and malicious mischief insurance, if approved by the Owner) upon the entire structure or structures upon which the Work of this Agreement is to be done and upon all materials in or adjacent thereto which is intended for use thereon, to one hundred percent (100%) of the insurable value thereof (i.e., construction costs, soft costs, FF&E, and the residual value of the existing structure). The insurance may exclude the costs of excavations,

backfills, foundations, underground utilities, and site work. Such insurance may include a deductible provision as approved by the Owner. The party responsible for the loss, as between Owner and Developer, shall be liable for such deductibles, whenever a claim arises. The loss, if any, is to be made adjustable with and payable to the Owner or other party who was damages, in accordance with their interests, as they may appear. The Owner, its officers, directors, and employees and agents shall be named as additional insureds in any policy of insurance issued. Written evidence of the insurance shall be filed with the Owner no later than thirty (30) days following execution of this Agreement. In the event of cancellation of such insurance, no less than thirty (30) days' notice shall be given to the Owner. A copy of the policy shall be provided to the Owner upon demand.

- The Owner is a member of a qualified local government self-insurance risk pool and maintains insurance coverage on its property and buildings. The Owner shall insure all of its interests in the Project Sites and its personal property, including against loss or liability, in the same manner and to the same extent as all other property owned by the Authority. Such insurance shall not cover the Developer's or any Vendor's or subcontractor's buildings, equipment, materials, tools, or supplies onsite until the Owner has accepted title thereto in accordance with this Agreement.

EXHIBIT 8

FORM OF THE CONSTRUCTION CONTRACTOR'S PERFORMANCE BOND

KNOW ALL MEN BY THESE PRESENTS: That _____, the Contractor ("Principal"), whose principal place of business is located at _____, and _____ ("Surety"), whose address for delivery of Notices is _____, are held and firmly bound unto Blue Ridge Towers, Inc., and the Franklin County Broadband Authority, the Developer and Owner (collectively, jointly, and severally the "Obligee") in the amount of _____ dollars ($_____) for the payment whereof Principal and Surety bind themselves, their heirs, executors, administrators, successors, and assigns, jointly and severally, firmly by these presents.

WHEREAS, Principal has by written agreement dated _____ entered into a contract with Obligee for the design and construction of a system to provide qualifying communications services, as more specifically provided therein (the "Contract"), which contract is by reference expressly made a part hereof:

NOW THEREFORE, THE CONDITION OF THIS OBLIGATION is such that, if the Principal shall promptly and faithfully perform said Contract in strict conformity with the plans, specifications, and conditions of the Contract, then this obligation shall be null and void; otherwise it shall remain in full force and effect.

Provided, that any alterations which may be made in the terms of the Contract, or in the Work to be done under it, or the giving by the Obligee of any extension of time for the performance of the Contract, or any alterations, extensions, or forbearance on the part of either or both of the Obligee or the Principal to the other shall not in any way release the Principal and the Surety, or either of them, their heirs, executors, administrators, successors, or assigns from their liability hereunder, notice to the Surety of any such alterations, extensions, or forbearance being hereby waived.

No action shall be brought on this bond unless brought within one year after: (a) final completion of the Contract and all work thereunder, including expiration of all warranties and guarantees, or (b) discovery of the defect or breach of warranty of guarantee if the action be for such.

The Surety represents to Principal and to Obligee that it is legally authorized to do business in the Commonwealth of Virginia.

Signed and sealed this _____ day of _____, 2020.

[NAME]:
Contractor/Principal

_____
Witness

By:_____

Name: _____

Its: _____

_____
Surety

By: _____
Attorney-in-Fact

Name: _____

AFFIDAVIT OF ATTORNEY-IN-FACT

COMMONWEALTH OF VIRGINIA)
) to wit:
CITY/COUNTY OF_____)

I, the undersigned notary public, do certify that_____, whose name is signed to the foregoing performance bond in the sum of $_____and dated_____, and which names the Blue Ridge Towers, Inc., and the Franklin County Broadband Authority as Obligees, personally appeared before me today in the above jurisdiction and made oath that he/she is the attorney-in-fact of_____, an_____corporation which is the Surety on the foregoing bond, that he/she is duly authorized to execute the foregoing bond on the Surety's behalf pursuant to the Power of Attorney noted above and attached hereto, and on behalf of the surety, he/she acknowledged the foregoing bond before me as the surety's act and deed.

_____
Notary Public

My commission expires: _____ Notary Registration No.: _

APPROVED:

_____
Authority Counsel

Terms and Conditions of the Performance Bond

1. The Contractor and the Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to the Owner for the prompt and faithful performance of the Construction Agreement , which is incorporated herein by reference.

2. If the Contractor promptly and faithfully performs the Construction Agreement in strict conformity with the plans, specifications, and conditions of said Contract, the Surety and the Contractor shall have no obligations under this Bond.

3. In the event of Contractor's Default, and subsequent notification to the Surety, the Surety shall, within fourteen (14) days of receipt of such notice, contact the Owner in writing and arrange a meeting with the Owner to discuss methods of completing the Contract. If the Surety fails to arrange a meeting or fails to attend such meeting, the Surety shall be deemed to be in default on this Bond and the Owner may, at its sole discretion, take what measures it deems necessary to protect the Owner's interests, without further notice to the Surety, and the Owner shall be entitled to enforce any remedy available to the Owner under the Contract or any other provision of law.

4. Within thirty (30) days after such meeting, during which time the Surety may investigate and otherwise analyze the project, and which period shall not toll any time periods under the Contract nor operate as a waiver of any of the Owner's rights, the Surety shall, at its own expense, notify the Owner in writing that it is taking one of the following actions, which shall be acceptable to Owner, at the Owner's discretion:

a. By written takeover agreement with the Owner, the Surety shall itself undertake to perform and complete the Contract, which it may do through its licensed agents or through licensed independent contractors, If the Owner, at its sole discretion, consents, the Contract may serve as the Surety's independent contractor (however, the Owner will not directly contract with the contractor produced by the Surety). However, no takeover agreement shall give the Surety any rights to succeed to the Contractor's rights under the Operating Agreement, but shall be only to those rights and obligations under this Contract.

b. The Surety may, if acceptable to the Owner and at the Owner's sole discretion, waive its right to perform and complete the Contract, and with reasonable promptness under the circumstances:

   i. Pay to the Owner all amounts for which it may be liable to the Owner as surety on this Bond, including the damages provided in Paragraph 6 below; or

   ii. Deny liability, in whole or in part, and provide written notice thereof to the Owner, citing its reasons therefor.

5. If, after the meeting described in Paragraph 3 above, the Surety does not proceed with reasonable promptness with one of the options provided in Paragraphs 4.a or 4.b above, the Owner may send additional written notice to the Surety demanding that the Surety perform its obligations under the Bond. If the Surety does not proceed to perform its obligations under the

Bond within fifteen (15) days after receipt of said notice, the Surety shall be deemed to be in default on this Bond. Thereafter, the Owner shall be entitled to enforce any remedy available to the Owner under this Bond, the Contract, or other provision of law. If the Surety proceeds as provided in Paragraph 4.b, and the Surety and Owner are unable to agree as to the amount for which the Surety is liable to the Owner, or if the Surety has denied liability, in whole or in part, the Owner, without further notice, shall be entitled to enforce any remedy available to the Owner under the Bond, the Construction Agreement, or other provision of law. In such event, the Owner may immediately proceed to complete the work in any manner authorized by law.

6. After the Owner has terminated the Contractor's right to complete the Contract, and if the Surety elects to act under Paragraphs 4.a or 4.b.i above, then the responsibilities of the Surety to the Owner shall not be greater or less than those of the Contractor under the Contract, and the responsibilities of the Owner to the Surety shall not be greater or less than those of the Owner under the Contract. To the limit of the amount of this Bond, plus the increased cost of any change orders under the Construction Agreement, provided the Owner commits the balance of the Construction Contract Price to the prompt and faithful completion of the Construction Contract, the Surety is obligated without duplication for:

a. The responsibilities of the Contractor for correction of defective work and completion of the Contract;

b. Additional legal, design professional, and delay costs resulting from the Contractor's Default, and resulting from the actions or failure to act of the Surety under Paragraph 4; and

c. Liquidated damages, or, in the event liquidated damages are not specified in the Contract, actual damages caused by delayed performance or non-performance by the Contractor.

The Owner, at its sole discretion, may waive its claims for delay costs and/or liquidated damages.

7. The Surety shall not be liable to the Owner for obligations of the Contractor that are not set forth in the Contract and the Balance of the Contract Price shall not be reduced, set off, or increased by reason of any such unrelated obligations. No right of action shall accrue on this Bond to any person or entity other than the Owner, its officers, agencies, administrators, successors, or assigns.

8. The Surety hereby waives notice of any changes, including changes of time, to the Contract or to related subcontracts, purchase orders, and other obligations. The Surety understands and agrees that the penal amount of the Bond shall be increased or decreased by any changes to time and amount incorporated by any Change Orders.

9. Any proceeding by the Owner under this Bond, legal or equitable, may be instituted only in the Circuit Court or General District Court for Franklin County, Virginia, to the jurisdiction of which the Parties irrevocably consent.

10. Notice to the Surety shall be mailed or delivered to the address shown on the face of the Bond in the space for Surety address for delivery of notices.

11. When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. The intent is that this Bond shall be construed as a statutory bond under Section 2.2-4337 of the Code of Virginia, 1950, as amended, and not as a common law bond, when furnished in accordance with the statutory requirements.

12. Definitions.

a. *Balance of the Contract Price* means the total amount payable by the Owner to the Contractor under the Construction Agreement after all proper adjustments have been made, reduced by all valid and proper payments made to or on behalf of the Contractor under the Construction Agreement.

b. *Contract* means the agreement between Developer and the Owner and the Contract identified on the face of this Bond, and includes all of the contracts made a part thereof, and duly executed modifications, amendments, and change orders thereto.

c. *Contractor Default* means a failure of the Contractor, as defined in the Contract, to perform or otherwise comply with the terms of the Contract.

13. Nothing in these Terms and Conditions shall prevent a Surety from becoming involved in the Contract prior to termination, upon notice from the Owner of the Contractor's failure to promptly and faithfully perform the Contract in strict conformity with the plans, specifications, and conditions of the Contract.

[END OF PERFORMANCE BOND]

EXHIBIT 9

FORM OF THE CONSTRUCTION CONTRACTOR'S PAYMENT BOND

KNOW ALL MEN BY THESE PRESENTS: That _____, the Contractor ("Principal"), whose principal place of business is located at _____, and _____ ("Surety"), whose address for delivery of Notices is _____, are held and firmly bound unto Blue Ridge Towers, Inc., and the Franklin County Broadband Authority, the Developer and Owner (collectively, jointly, and severally the "Obligee") in the amount of _____ dollars ($_____) for the payment whereof Principal and Surety bind themselves, their heirs, executors, administrators, successors, and assigns, jointly and severally, firmly by these presents.

WHEREAS, Principal has by written agreement dated____entered into a contract with Obligee for the design and construction of a system to provide qualifying communications services, as more specifically provided therein (the " Construction Agreement"), which contract is by reference expressly made a part hereof:

NOW THEREFORE, THE CONDITION OF THIS OBLIGATION is such that, if the Principal shall promptly make payment to all claimants as hereinafter defined, for labor performed and material furnished in the prosecution of the Work provided for in the Construction Agreement, then this obligation shall be void; otherwise it shall remain in full force and effect, subject, however, to the following conditions.

The Principal and the Surety, jointly and severally, agree with Obligee as follows:

1. A "Claimant" is one having a direct contract with the Principal or with a subcontractor of the principal for labor, material, or both for use in the performance of the Construction Agreement. A "subcontractor" of the Principal, for the purposes of this Bond only, includes not only those subcontractors having a direct contractual relationship with the Principal, but also any other contractor who undertakes to participate in the Work which the Principle is to perform under the aforesaid Construction Agreement, whether there are one or more intervening subcontractors contractually positions between it and the Principal. "Labor" and "material" shall include, but not be limited to, public utility services and reasonable rentals of equipment, but only for periods when the equipment rented is actually used at the work site.

2. Any claimant who has a direct contractual relationship with the Principal and who has performed labor or furnished material in accordance with the Construction Agreement in furtherance of the Work provided in the Construction Agreement, who has not been paid in full therefor before the expiration of ninety (90) days after the day on which such claimant performed the last of such labor or furnished the last of such materials for which he claims payment may bring an action on this bond to recover any amount due him for such labor or material, and may prosecute such action to final judgment and have execution on the judgment. The Obligee need

not be a party to such action and shall not be liable for the payment of any costs, fees, or expenses of such suit.

3. Any claimant who has a direct contractual relationship with any subcontractor of the Principal but who has no contractual relationship, express or implied, with the Principal, may bring an action on this Bond only if he has given written notice to the Principal within ninety (90) days from the day on which the claimant performed the last of the labor or furnished the last of the materials for which he claims payment, stating with substantial accuracy the amount claimed and the name of the person for whom the Work was performed or to whom the material was furnished. Notice to the Principal shall be served by registered or certified mail, postage prepaid, in an envelope addressed to the Principal at any place where his office is regularly maintained for the transaction of business. Claims for sums withheld as retainages with respect to labor performed or material furnished shall not be subject to the time limitations stated in this Paragraph 3.

4. No suit or action shall be commenced hereunder by any claimant:

a. Unless brought within one year after the day on which the person bringing such action last performed labor or last furnished or supplied materials; it being understood, however, that if any limitation embodied in this Bond is prohibited by law controlling the construction of the Project, the limitation embodied in this Bond shall be deemed to be amended so as to be equal to the minimum period of limitation permitted by such law.

b. Other than in the General District Court or Circuit Court for Franklin County, Virginia.

5. The amount of this Bond shall be reduced by and to the extent of any payment or payments made for labor and materials in good faith hereunder.

[SIGNATURES ON FOLLOWING PAGE]

Signed and sealed this _____ day of _____, 2020.

[NAME]:

Contractor/Principal

_____
Witness

By: _____

Name: _____

Its: _____

_____
Surety

By: _____
Attorney-in-Fact

Name: _____

AFFIDAVIT OF ATTORNEY-IN-FACT

COMMONWEALTH OF VIRGINIA)
) to wit:
CITY/COUNTY OF_____)

I, the undersigned notary public, do certify that_____, whose name is signed to the foregoing performance bond in the sum of $__and dated_____, and which names Blue Ridge Towers, Inc., and the Franklin County Broadband Authorities as Obligees, personally appeared before me today in the above jurisdiction and made oath that he/she is the attorney-in-fact of_, an_____corporation which is the Surety on the foregoing bond, that he/she is duly authorized to execute the foregoing bond on the Surety's behalf pursuant to the Power of Attorney noted above and attached hereto, and on behalf of the surety, he/she acknowledged the foregoing bond before me as the surety's act and deed.

_____
Notary Public

My commission expires: _____
Notary Registration no.: _____

APPROVED:

_____
Authority Counsel

Signed and sealed this _____ day of _____, 2020.

[NAME]:

Contractor/Principal

_____
Witness

By: _____

Name: _____

Its: _____

_____
Surety

By: _____
Attorney-in-Fact

Name: _____

AFFIDAVIT OF ATTORNEY-IN-FACT

COMMONWEALTH OF VIRGINIA)
) to wit:
CITY/COUNTY OF_____)

I, the undersigned notary public, do certify that_____, whose name is signed to the foregoing performance bond in the sum of $__and dated_____, and which names Blue Ridge Towers, Inc., and the Franklin County Broadband Authorities as Obligees, personally appeared before me today in the above jurisdiction and made oath that he/she is the attorney-in-fact of_, an_____corporation which is the Surety on the foregoing bond, that he/she is duly authorized to execute the foregoing bond on the Surety's behalf pursuant to the Power of Attorney noted above and attached hereto, and on behalf of the surety, he/she acknowledged the foregoing bond before me as the surety's act and deed.

_____
Notary Public

My commission expires: _____
Notary Registration no.: _____

APPROVED:

_____
Authority Counsel

OPERATING AGREEMENT

This Operating Agreement ("Operating Agreement") is formed as of the 21st day of July, 2020, between the Franklin County Broadband Authority, a political subdivision of the Commonwealth of Virginia under the Wireless Service Authorities Act (the "Authority" or "Owner"), and Blue Ridge Internet Service Company, LLC, a Delaware limited liability company ("BRISCNET" or the "Contractor"; collectively, the "Parties").

RECITALS

WHEREAS, the Authority is a political subdivision of the Commonwealth of Virginia under the Virginia Wireless Service Authorities Act, Chapter 43.1 of Title 15.2 of the Code of Virginia, 1950, as amended, with the authority to participate in the provision of qualifying communications services, defined as high-speed data service and Internet access service, of general application, but excluding any cable television or other multi-channel video programming services; and

WHEREAS, BRISCNET is a wireless internet service provider (WISP) providing the infrastructure, goods, and services set forth in this Agreement, and is a "private entity" under the Act, and is capable of providing the services contemplated herein;

WHEREAS, the Parties have represented to the Virginia Department of Housing and Community Development (DHCD) Virginia Telecommunications Initiative (VATI) program with regard to their partnership under this Operating Agreement that each Tower, as hereinafter defined, will be fitted with Equipment which will allow coverage of up to 2,000 subscribers/customers per tower at download speeds between 25 mbps and 75 mbps. In addition, the project will offer a more affordable internet service option of 15 mbps download/1 mbps upload for those that do not need or want the "high speed" internet access. However, it is contemplated by the Parties that Equipment will be replaced during the Term of this Agreement as Equipment suffers wear and tear and as newer, more capable technology becomes available in order to provide quality services to the residents of Franklin County.

WITNESSETH

NOW THEREFORE, in consideration of the premises hereof and the mutual promises set forth herein, together with other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the Parties agree as follows:

1. Purpose. The purpose of this Agreement is to provide ubiquitous high-speed internet to the unserved and underserved public in Franklin County at fair, reasonable, and uniform prices.

2. Term and Extension Terms. This Agreement shall be for an initial twenty-five (25) year term (the "Initial Term"). This Agreement shall automatically renew for up to two (2) successive terms of five (5) years each (each a "Renewal Term") unless BRISCNET provides written notice to the Authority of its intention to not renew no later than six (6) months prior to the expiration of the Initial Term or the then current Renewal Term, as may be applicable. The Initial Term and Renewal Term(s) together shall be designated as the "Term."

3. **Payments.** BRISCNET will charge uniform rates to the public for its services consistent with industry standards for rural fixed wireless internet service providers. It will provide two main services as the Authority's partner: (1) Installation, maintenance, upkeep, and timely replacement and updating of its equipment; and (2) being an Internet service provider (ISP) to the public. BRISCNET will receive its payments through customer subscriptions. The Authority will own and maintain the tower structures following their Final Acceptance as set forth in the Development Agreement except the Summit View and Westlake locations which will be owned by Blue Ridge Towers or its authorized assigns. Deployment of BRISCNET's equipment will be performed in coordination with BRT's construction of the towers and backhaul. BRISCNET will be expected to meet reasonable reinvestment levels for replacement and updating of equipment on a regular basis.

4. **Tower Deployment.**

4.1. *Deployment Schedule.* The following towers (each a "Tower") will be part of Phase I rollout. Equipment chosen by BRISCNET sufficient to meet its obligations under this Agreement shall be initially deployed, with estimated deployment dates as set forth below:

SITE NAME	Site Address	BRT LAT/LONG	Tower Type/Tower Height	Deployment Date
Franklin County Industrial Park	320 Comonwealth Drive, Rocky Mount, VA 24151	37-04-55.42N, 79-55-29.11W (1283 AMSL)	Completed 175' monopole	*Already complete*
Grassy Hill Tower	815 Summit Drive, Rocky Mt, VA 24151	37-2-39N, 79-55-37 W	existing 195' SST	1/10/2021
Scruggs Tower	2075 Blue Water Drive, Moneta, VA 24121	37-03-54, 79-40-24	existing 150' SST	1/10/2021
Tom's Knob Tower	1198 Toms Knob Road, Rocky Mt, VA 24151	36-51-58.74N, 79-48-15W	Existing 150' Sabre SST	1/10/2021
Henry Volunteer Dept	5241 Henry Road, Henry, VA 24102	36-50-56N, 80-01-32W	Rebuilt to 195' monopole	1/10/2021
Burnt Chimney Water tank	50 Burnt Chimney Road, Wirtz, VA 24181	37.102211N, 79.816943W	100' water tank	1/10/2021
Westlake BRT Tower	71 Parkcrest Drive, Moneta, VA 24121	37-07-22N,79-43-28W	175' monopole	1/10/2021

Fork Mtn Fire Station Tower	2797 Virgil H Goode Hwy, Rocky Mt, VA	36-50-45.19N, 79-54-06.82W, (1167' AMSL)	195' monopole	1/10/2021
BRT Snow Creek Tower	6200 Snow Creek Road, Penhook, VA 24137	36-50-20N, 79-44-04W	195' monopole	1/10/2021
Calloway Elem School	8451 Calloway Road, Calloway, VA 24067	37-00-44.79N, 80-02-49.18W (1206' AMSL)	195' monopole	1/10/2021
Glade Hill Elem School	8081 Old Franklin Turnpike, Glade Hill, VA 24092	36-59-16.12N, 79-44-58.55W, (1032' AMSL)	80' relay monopole	1/10/2021
Sontag Park	Sontag Road , Rocky Mount, VA 24151	36-55-57.77N, 79-50-45.12W, (1096' AMSL)	150' relay monopole	1/10/2021

The "Deployment Date" is the date on which the Equipment on each Tower shall be fully installed, fully permitted, and in actual use providing wireless internet service to customers. In the event that the construction of, and/or deployment of the Equipment on, the towers and backhaul is delayed from the dates in the Development Agreement Project Schedule, the estimated Deployment Dates shall be extended in the same number of days as the Development Agreement Project Schedule is delayed. If and to the extent BRISCNET is delayed at any time in the progress of the project by strikes, fires, unusual delays in transportation or unavoidable casualties, subsurface conditions that are not reasonably foreseeable, failures of federal, state, or other permitting, government shutdowns, or other causes outside the control of BRISCNET, then BRISCNET shall give the Authority written notice within 14 days after the inception of the delay. BRISCNET shall also give the Authority written notice of the termination of the delay within 14 days after such termination. The Deployment Date shall be extended for the period of any such delay. The parties understand and agree that not all delays, causes of delay, or potential causes of delay are readily identifiable. Therefore, the parties agree that failure by BRISCNET to timely provide notice of delay to the Authority will not prejudice BRISCNET's right to an extension of the Deployment Date, unless the Authority demonstrates that it was actually prejudiced by Developer's late delivery of notice, or that failure to deliver timely notice was intentional or was due to BRISCNET's gross negligence.

4.2. It is BRISCNET's responsibility to select and license spectrum and to choose appropriate and effective equipment to achieve the goals of this Agreement in a timely

manner and as otherwise agreed. The Authority will take reasonable steps to ensure that BRISCNET has the opportunity to gain access to, and continue use of, 2.5 ghz spectrum so long as it remains regulatorily accessible. The technical specifications for a wireless network entitled "Franklin County Turn Key Broadband Proposal," dated April 20, 2019, is incorporated herein as the plans which BRISCNET agrees to implement. Nevertheless, this acceptance by the Authority does not divest BRISCNET of full and complete responsibility for the choice of technologies to achieve the goals of this Operating Agreement. In furtherance of these goals, BRISCNET shall:

4.2.1. *Prior Approval of Equipment.* All construction, installations, and alterations, including maintenance, repair, removal or relocation, except routine and/or emergency repairs and maintenance of any of BRISCNET's equipment shall require submission of plans with detail required by the Authority and the prior written approval of the Authority, which approval shall not be unreasonably withheld, conditioned, or delayed. In the event emergency repairs or routine maintenance is needed, plans shall be submitted as soon as practical following the end of the emergency or maintenance; provided that any such repairs or maintenance which is consistent with the existing as-built drawings shall not require any submittals. The Authority reserves the right, consistent with good engineering practices, to reasonably and within a reasonable time period approve or disapprove the plans and the actual changes or improvements. It shall be deemed unreasonable for the Authority to withhold, condition, or delay approval if the proposed equipment, used in conjunction with other equipment and facilities employed by BRISCNET, meets the coverage and download speed parameters set forth in the recitals on page 1 of this Agreement. In the event the changes or improvements are not in accordance with the approved plans or do not meet the requirements of this Agreement, the Authority shall provide written notice to BRISCNET of such non-compliance. In the event BRISCNET has not corrected such non-compliance within thirty (30) days following written notice, the Authority may remove the improvements or otherwise take the necessary action to remove the equipment and restore the premises at the expense of BRISCNET.

4.2.2. *As-builts.* Within thirty (30) days after substantial completion of construction, installation, or alteration of any of the equipment, BRISCNET shall provide the Authority with "as-built" plans for antennas and transmission equipment deployments.

4.2.3. *Utility Service & Redundancy.* All ground equipment used by BRISCNET will be located inside a secure compound. Ground equipment will be located outside of any buildings and mounted to the exterior of existing poles or buildings with the prior approval of the Authority. BRISCNET will install a battery backup system that will provide redundancy to their equipment at each tower location.

4.3. *Structural Integrity.* All Equipment installed by BRISCNET shall be installed in a manner that does not exceed the structural and wind loading specifications for the Tower.

5. Operations.

5.1. *Deployment Fee.* For each structure on which Equipment is deployed, BRISCNET shall pay to the Authority:

Year 1 of this Agreement: $10 per month.

Year 2 of this Agreement: $100 per month.

Year 3 of this Agreement: $150 per month.

Year 4 of this Agreement: $250 per month.

Year 5 of this Agreement: $400 per month.

Monthly lease fees for years subsequent to Year 5 shall increase each July 1 following Year 5 at a flat, non-compounded rate of 2% annually, for a total increase of forty (40%) percent over the Term.

5.2. *Filing of Financials.* BRISCNET shall file with the Secretary of the Authority, not less often than once annually, a statement setting forth its general financial condition with regard to its operations of the System in the context of the larger financial condition of the firm. The Parties believe that this information is and would be confidential under the Virginia Freedom of Information Act, including but not limited to Section 2.2-3705.6(19) of the Code of Virginia, 1950, as amended. The Authority agrees to exercise this exclusion with respect to such documents to the maximum extent permitted by law. In the event that this exemption is removed by action of the General Assembly, or is held by a decision of the Supreme Court of Virginia, or is opined not to apply in this situation by a lawful opinion of the Attorney General of Virginia or the Virginia Freedom of Information Advisory Council or successor body, this requirement shall no longer apply; provided, however, that the Parties shall negotiate, in good faith, to achieve the manifest goal of this section of collaboratively exchanging financial information on BRISCNET's activities under this Agreement to ensure the long-term financial viability of their partnership.

5.3. *Customer Service.* The goal of the Parties is to provide service to all persons desiring it at fair, reasonable, and uniform pricing.

5.3.1. *Non-Discrimination.* BRISCNET shall provide service on a non-discriminatory basis to any business or resident in Franklin County that requests it without regard to race, sex, religion, alienage, disability status, age, or other reason prohibited by law. Service shall only be denied for a valid reason due to (i) capacity, (ii) coverage, (iii) limitations of current technology or deployed equipment, or (iv) any other reasonable and legitimate business reason not in conflict with the foregoing. If a request for service is made by a residence or business and service is not available, BRISCNET shall notify the Authority, indicate what would be needed to provide service to the customer, and work with the Authority to find a solution to expand coverage to the requested area.

5.3.2. *Quarterly Reports.* BRISCNET shall provide the Authority a quarterly report describing the customer base in Franklin County and demonstrating that

broadband availability is being expanded into the County. Coverage areas, available services, new buildout activity, and customer success stories demonstrating the impact of the project are strongly encouraged. A list of customer complaints and their resolution status shall also be provided. Customer lists, however, should not be provided unless specifically requested; aggregated data is sufficient.

5.3.3. *Complaints.* Customer service complaints should be resolved as soon as practicable. Excessive legitimate complaints from customers regarding BRISCNET's service sent to the Authority will be considered a failure to meet performance criteria. For purposes of this Agreement "excessive" means a number of legitimate complaints that is more than 20% above industry standards for rural fixed wireless internet service providers. The Authority shall take the following steps to work with BRISCNET and resolve complaints before determining that complaints are excessive. After the Authority works with BRISCNET by following the steps below, the Authority shall have sole discretion in deciding whether issues have been resolved to the satisfaction of the Authority:

a) The Authority will forward all complaints it receives to BRISCNET, and provide BRISCNET's customer service contact information to any person from whom it receives a complaint.

b) If complaints are excessive, both parties shall meet at the Authority Offices or another mutually agreed upon location.

c) At the meeting BRISCNET will provide a report by which to determine whether complaints involve any common factors capable of adequate resolution.

d) BRISCNET shall then have a reasonable time thereafter to resolve such common factors and report to the Authority on the resolution.

e) Failure to resolve such common factors in a manner that is calculated to reduce the number of complaints in compliance with this Agreement shall be a default.

5.4. *Maintenance; Conveyance of Microwave and Fiber Backhaul Systems to BRISCNET.* Maintenance of Towers is the responsibility of the Authority; maintenance of all other equipment owned and utilized by BRISCNET to deliver the wireless internet services contemplated by this Agreement is the responsibility of BRISCNET. The Authority agrees to convey to BRISCNET, without additional consideration, as soon as installed and ready for operation, the fiber and microwave backhaul systems contemplated to be constructed under the Development Agreement. Such conveyance shall include the assignment of rights under any pole attachment agreements regarding the fiber components from the Authority or from Franklin County, Virginia, to BRISCNET and the execution of any other transfer documents, bills of sale, use agreements, and any other documents necessary to give BRISCNET full and unencumbered ownership and use of the fiber and

microwave backhaul systems. Any delay by the Authority in the performance of its obligations under this paragraph that causes a delay in performance of this Agreement by BRISCNET shall excuse such delay by BRISCNET for a period of time equal to the period of the delay by the Authority.

5.5. *BRISCNET's Right of Access.* Subject to such reasonable security-related rules and regulations as the Authority shall from time-to-time promulgate notifying BRISCNET in writing thirty (30) days in advance of the effective date, BRISCNET and BRISCNET's employees, representatives, contractors and subcontractors shall have the right of 24-hour, 7-day-a-week access to the premises for the purposes of installing, inspecting, maintaining, operating, repairing, or removing equipment and facilities used by BRISCNET in connection with its operations. BRISCNET shall give reasonable advance notice to the Authority, or to the company hired by the Authority to manage the Tower sites (the name and contact of which shall be provided to BRISCNET), when BRISCNET needs access to a site, if practicable, and BRISCNET shall provide a timeframe for access, as soon as practical and in the interest of security, but within 24 hours of the request, except in case of emergency. In the event of an emergency BRISCNET shall give prior notice to the Authority or manager, if possible, or within a reasonable time thereafter. Only those employees, representatives, contractors, and subcontractors of BRISCNET of which the Authority or manager has been informed in writing will be allowed access to the sites. The Authority has the option of assigning a representative to be present at all times when BRISCNET is present at a site. The Authority may establish additional or more or less stringent access requirements by written notification to BRISCNET. However, in no event shall BRISCNET be unreasonably denied access to the site.

5.6. *Duty to Replace Equipment in the Event of Damage or Destruction.* In the eventof the damage or destruction of any piece of Equipment, BRISCNET shall repair or replace such equipment within a reasonable time following such damage or destruction. In the event such damage or destruction results in a claim on insurance made under Section 6.2.2.e of this Agreement, BRISCNET shall use all funds recovered on such claim for the purpose of replacement or improvement of such equipment.

5.7. *Replacement.* Choice of wireless communications equipment and its replacement schedule is the responsibility of BRISCNET. BRISCNET has the responsibility, consistent with the other obligations of this Agreement, to replace equipment that is superannuated, technologically obsolescent, or has become unreliable due to passage of time or wear and tear consistent with acceptable practice for rural fixed wireless internet service providers.

5.8. *Exclusive Provider.* The Authority agrees that BRISCNET's Equipment will be deployed on the top position of each new tower anticipated to be constructed by this Agreement and the Authority will not allow any other carriers of fixed broadband not already deployed or with legal right (e.g., a lease) to deploy on such towers to lease or deploy on any such position for the term of this Agreement unless BRISCNET waives, in writing, such right. For purposes of this paragraph, the top space shall be deemed to mean that space on each tower having a RAD center of 190' with a total lease space of 180' to 195'. BRISCNET shall also have unlimited structural loading at its RAD center to accommodate future technology improvements and network expansion, without further permission required

by the Authority. The Authority further agrees that it will not enter any new lease to any other wireless internet service provider (WISP) any position on the 12 towers on which BRISCNET places its Equipment for a period of eighteen (18) months from the date of the first deployment of BRICNET Equipment on any of such towers. The Authority agrees that money damages may not be sufficient to compensate BRISCNET in any instance of default of this section 5.8 and agrees that BRISCNET may pursue equitable remedies therefor, including enjoining such leasing.

5.9. *VATI.* Operations and delivery of service by BRISCNET shall meet or exceed VATI requirements and shall comply with all provisions of the grants administration contract between the Authority and the Department of Housing and Community Development Virginia Telecommunications Initiative (VATI) program. Such requirements are incorporated herein by reference and expressly reimposed on BRISCNET as the Authority's private partner in this public-private partnership.

6. Public Procurement Act. BRISCNET agrees to comply with the following mandatory Public Procurement Act provisions:

6.1. *Required Terms & Conditions.* The provisions of this section apply at any site where performance of work in connection with this specific Agreement is done. Notwithstanding, if any change in the following Virginia Code sections eliminates, modifies, or adds to any of the obligations specifically set forth herein, the eliminated obligations will no longer apply and the modified obligations will apply in lieu of those specifically set forth that are modified by such changes in the law.

6.1.1. *Non-Discrimination.* BRISCNET agrees that it will (Va. Code §2.2-4311):

a) Not discriminate against any employee or applicant for employment because of race, religion, color, sex, national origin, age, disability, or other basis prohibited by local, state, or federal law relating to discrimination in employment, except where there is a bona fide occupational qualification reasonably necessary to the normal operation of BRISCNET's business;

b) Post in conspicuous places, available to employees and applicants for employment, notices setting forth the provisions of this nondiscrimination clause;

c) State that it is an equal opportunity employer in all solicitations or advertisements for employees placed by or on behalf of SCS to perform services under this Agreement. All notices, advertisements, and solicitation placed in accordance with federal law, rule, or regulation shall be deemed sufficient for the purpose of meeting the requirements of this section; and

d) Will include the provisions of the foregoing subparagraphs in every subcontract or purchase order exceeding $10,000 issued by BRISCNET in order to fulfill its obligations under this Agreement, so that the

provisions will be binding on each subcontractor or subvendor.

6.1.2. *Drug-Free Workplace.* BRISCNET agrees that it will (Va. Code § 2.2-4312):

a) Provide a drug-free workplace for its employees;

b) Post in conspicuous places, available to employees and applicants for employment, a statement notifying employees that the unlawful manufacture, sale, distribution, dispensation, possession, or use of a controlled substance or marijuana is prohibited in its workplace and specify the actions which will be taken against any employee for a violation;

c) State in all of its solicitations or advertisements for employees to perform services under this Agreement that BRISCNET maintains a drug-free workplace;

d) Include the provisions of this sub-paragraph in every subcontract or purchase order of over $10,000, so that said provisions shall be binding upon each subcontractor or subvendor.

6.1.3. *Illegal Alien Workers.* BRISCNET agrees not to employee illegal alien workers or otherwise violate the provisions of the Immigration Reform and Control Act of 1986.

6.2. *Insurance Requirements.*

6.2.1. *Liability Coverage.* BRISCNET must take out and maintain during the term of this Agreement such bodily injury, personal liability, and property damage liability insurance necessary to protect it and the Authority from claims for damages arising from personal injury, including death, as well as from claims for property damage, which might arise from BRISCNET's performance of its obligations under this Agreement. Such insurance must be issued by a company admitted to do business in the Commonwealth of Virginia and with at least an AM Best rating of A-. Within 10 days after issuance of the Notice to Proceed under this Agreement, and in no event later than the first day on which BRISCNET begins its performance, BRISCNET must provide the Authority with a certificate of insurance showing such insurance to be in force and providing that the insurer must give the Authority at least 30 days' notice prior to cancellation or other termination of or reduction in such insurance. BRISNET will be deemed in compliance with this section 6.2.1, so long as it maintains the insurance required by the following section 6.2.2.

(i) *Insurance.* BRISCNET shall maintain the following insurance to protect it from claims that could arise from performance of this Agreement, including claims under the Workers' Compensation Act; (ii) for personal injury, including death; and (iii) for damage to property, regardless of whether such claims arise out of BRISCNET's actions or inactions, or those of BRISCNET's subcontractor or other

persons directly or indirectly employed by either of them:

a) Worker's Compensation:

Coverage A: Statutory

Coverage B: $100,000

b) General Liability:

Per Occurrence: $1,000,000

Personal/Advertising Injury: $1,000,000

General Aggregate: $2,000,000

Products/Completed Operations: $2,000,000

Aggregate Fire Damage Legal Liability: $ 100,000

c) Automobile Liability:

Combined Single Limit: $1,000,000

d) Professional Liability:

Per Occurrence: $1,000,000

General Aggregate: $1,000,000

e) *Insurance on Equipment.* BRISCNET shall maintain insurance on its Equipment in an amount at least equal to its present depreciated value, which amount, however, shall not be less than 100% of the replacement cost of the Equipment.

6.3. **Registration to Transact Business** (Va. Code § 2.2-4311.2). BRISCNET warrants and certifies that it is authorized to transact business in the Commonwealth of Virginia as a domestic or foreign business entity if so required by Title 13.1 or Title 50 of the Code of Virginia, 1950, as amended, or as otherwise required by law. BRISCNET will not allow its corporate existence to lapse or its certificate of authority or registration to do business in the Commonwealth to be revoked or cancelled at any time during the term of this Agreement. The Authority may void this Agreement if BRISCNET fails to remain in compliance with the provisions of this section.

6.4. **Non-Collusion.**

6.4.1. *Governmental Frauds Act.* Neither BRISCNET's proposal nor this

notice of default. If the default is not one that is rectifiable within thirty (30) days, but is rectifiable within a reasonable period of time, BRISCNET shall have such additional time to cure as is necessary, so long as it commences such cure within thirty (30) days and diligently pursues the same. If the default is rectified to the reasonable satisfaction of the Authority within such period of time, the Authority shall rescind its notice of default. If not, the Authority may terminate this Agreement for cause by providing written notice of termination to BRISCNET. Without limiting any other remedy available to customers or the Authority, BRISCNET shall not charge customers, or shall abate all charges to customers, if any such default prevents it from providing service to such customers for more than twenty-four (24) consecutive hours, for the period of actual failure of service.

7.3.3. Termination of this Agreement under this Section is in addition to and without prejudice to any other right or remedy of the Authority. Any actions by the Authority permitted herein shall not be deemed a waiver of any other right or remedy of the Authority under this Agreement or under the law. The provisions of this Section shall survive termination of this Agreement.

8. Delays or Interruptions in Service Caused by Authority. To the extent that any delays, disruptions, or interruptions in BRISCNET's provision of wireless internet services to customers are caused by the acts, or failures to act, of the Authority, the Authority shall pay to BRISCNET any and all amounts that BRISCNET was unable to charge customers, or had to abate customers, in compliance with the provisions of Section 7.3.2, above. Such acts, or failures to act, will include, but not be limited to, the refusal or failure of the Authority or Franklin County, Virginia, to provide services through infrastructure or facilities owned by the Authority or by Franklin County, Virginia, without charges in addition to those set forth in the Agreement, necessary to allow BRISCNET to provide data and/or signal services to its customers, unless such acts or failures to act are for good cause or are beyond the control of the Authority or of Franklin County, Virginia, as the case may be. Any such payments must be paid within thirty (30) days of demand from BRISCNET to the Authority.

9. Miscellaneous.

9.1. *Integration.* This Agreement, including the exhibits hereto, constitutes the full and complete agreement of the Parties respecting its subject matter, and any prior or contemporaneous agreements or understandings, written or oral, are hereby merged into and superseded by the provisions of this Agreement. This Agreement may only be amended or supplemented by a subsequent writing of equal dignity except where expressly set forth herein. This Agreement may not be assigned by a Party without the prior written consent of the other Party.

9.2. *Assignment.* BRISCNET may assign its interests, rights, and obligations underthis Agreement, in whole and not in part, to a subsidiary or a person or entity under common ownership or control with BRISCNET without need of consent from the Authority; provided, however, that BRISCNET shall provide the Authority notice of the assignment not later than the date on which it occurs. BRISCNET may assign its interests, rights, and

obligations under this Agreement, in whole or in part, to any person or entity with the financial ability and technical expertise to exercise its rights and meet its obligations under this Agreement, with the consent of the Authority. BRISCNET shall request the consent not later than 21 days prior to closing, together with sufficient information for the Authority to assess the proposed assignee's financial ability and technical expertise to exercise its rights and meet its obligations under the assignment, which shall be the sole considerations the Authority shall take into account in giving its consent. Such consent shall not be unreasonably withheld, conditioned, or delayed.

9.3. *Notices.* Notices may be given to:

If to Authority:

Franklin County Broadband Authority
Attn: Steven Sandy
1255 Franklin St., Suite 112
Rocky Mount, Virginia 24151

If to BRISCNET:

Blue Ridge Internet Service Company, LLC
Attn: Anthony Smith
1125 1st Street
Roanoke, Virginia 22922

Either Party may amend addresses it has set forth in this paragraph by sending notice to the other Party as set forth in this paragraph, notwithstanding the provisions of section 8.1.

9.4. *No Covenants of Officials.* No covenant, agreement or obligation contained in this Agreement shall be deemed to be a covenant, agreement or obligation of any present or future director, officer, employee, council member, supervisor or agent of the Authority in his or her individual capacity, and neither Authority officials nor any officer, employee, council member, supervisor or agent thereof executing this Agreement or any related instrument shall be liable personally on this Agreement or such instrument or be subject to any personal liability or accountability by reason of the execution and delivery thereof. No director, officer, employee, council member, supervisor or agent of the Authority shall incur any personal liability with respect to any other action taken by him or her pursuant to this Agreement or any of the transactions contemplated hereby, provided he or she acts in good faith.

9.5. *Rule of construction as to dates.* If any action is required to be performed, or if any notice, consent or other communication is given, on a day that is a Saturday or Sunday or a legal holiday in the Commonwealth of Virginia, such performance shall be deemed to be required, and such notice, consent or other communication shall be deemed to be given, on the first business day following such Saturday, Sunday or legal holiday. Unless otherwise specified herein, all references in this Agreement to a "day" or "days" shall refer to calendar days and not business days.

9.6. *Choice of law.* This Agreement shall be construed according to the laws of the Commonwealth of Virginia without regard to its principles of conflicts of laws. The Parties consent to exclusive venue and jurisdiction in the General District Court or Circuit Court for Franklin County, Virginia, and shall not file any suit in any other court.

9.7. *Drafter & Severability.* This Agreement has been jointly drafted by the Parties, and is to be construed as jointly drafted and not be construed against either of the Parties as the drafter. This Agreement is severable, and if any provision is found to be invalid by any court of competent jurisdiction, the remainder shall survive. The section and paragraph headings in this Agreement are for convenience of reference only and do not modify or restrict any provisions hereof and shall not be used to construe any provisions of this Agreement.

9.8. *Covenant of authority.* All Parties warrant that the signatories below have full authority, and have undertaken such legal actions as may be necessary to ensure such authority, to bind the entities of which they are representatives to the full extent permitted by law. This Agreement may be executed by facsimile, electronic or original signature of the Parties and in counterparts which, assuming no modification or alteration, shall constitute an original and when taken together, shall constitute one and the same instrument.

9.9. *Time of the essence.* Time is of the essence of all obligations set forth herein for which a time is stated.

9.10. *Waiver.* The failure of either Party to this Agreement to insist upon strict compliance with any term herein shall not be construed to be a waiver of that requirement.

IN WITNESS WHEREOF, the Parties affix their signatures below:

FRANKLIN COUNTY
BROADBAND AUTHORITY

By: Leland Mitchell
Name: Leland Mitchell
Title: Chairman

Approved as to Legal Form:

By: Michael W. Lockaby
Name: Michael W.S. Lockaby
Title: Authority Counsel

DEVELOPER:

BRISNET, LLC.:

By: _____
Name: Anthony R. Smith
Title: C.E.O

MARKETING AGREEMENT FOR VERTICAL ASSETS

THIS AGREEMENT ("Agreement") is entered as of the ___ day of _____, 2020, by and between the Franklin County Broadband Authority, a political subdivision of the Commonwealth of Virginia (the "Authority" or "Owner") and Blue Ridge Towers, Inc., a Virginia corporation ("Contractor"; each a "Party" and collectively the "Parties"). For their Agreement, the Parties state:

A. The Owner owns several telecommunications towers (the "Facilities") which have opportunities for collocation of additional tenants, and on which it desires to earn ancillary revenues while increasing availability of wireless services to the residents of Franklin County.

B. Owner and Contractor wish to enter into an Agreement by which Owner will provide Contractor with the exclusive right to market collocation opportunities on certain Owner-owned properties listed on Exhibit A, attached hereto (the "Sites"). Any such leasing is contingent, however, on the Owner granting a Lease (as defined in § 8 hereof) to occupy the Owner-owned property and all necessary zoning approvals. Both the granting of a Lease on public property and the approval of certain zoning actions are legislative acts, which the Owner cannot commit in advance to take.

C. Except as expressly set forth herein, the Parties do not intend to create an exclusive relationship with respect to other marketing, construction, or wireless activities in the County.

Now, therefore, in consideration of the foregoing premises and the mutual promises hereinafter set forth, the Parties agree:

1. *Agreement to Market*. The Contractor may market the Owner-owned Sites listed on Exhibit A to Approved Carriers (as defined in § 8 hereof) for attachment of such Approved Carriers' equipment. The Owner and Contractor agree that Contractor shall render its services, including but not limited to identifying, contacting, and screening wireless communication companies or business entities whose operations would benefit from utilizing one or more Sites for the installation, utilization, operation, and/or maintenance of radio, wireless, and/or satellite communications transmission and receiving antennas, towers and/or equipment in order to use said Site or Sites for radio, wireless, and/or satellite communications transmitting and/or receiving location. The Owner hereby grants Contractor the exclusive right and authority to act for the purpose of marketing each Site to procure Approved Carriers to enter into leasing agreements with the Owner for collocation at the Sites.

2. *Term of the Agreement*. The Term of this Agreement is 5 years with four (4) successive automatic five (5) year renewals, unless notice is given as stated below. In the event that the Parties agree to extend the term of this Agreement, an amendment to this Agreement confirming the extension of the Term shall be executed and delivered. Termination of this Agreement shall not terminate any payments already due and payable under the terms of this Agreement.

3. *Services*. Contractor shall market the Sites for the collocation of telecommunication facilities on the existing wireless telecommunications towers on those sites and placement of equipment in equipment enclosures. Leases for space on the Sites shall be directly between the Authority and Carriers, and all lease fees and rentals for the Sites shall be paid directly from Carriers to the Authority. As compensation for Contractor's marketing and other services described herein, Contractor shall receive a marketing fee ("Marketing Fee") for each collocation lease for space on the Sites (the "Marketing Fee") for which Contractor was the primary procuring party, or any sale of a Site for which Contractor was the

primary procuring party, as follows. For the initial term of any such lease, the Marketing Fee shall be an amount equal to twenty percent (20%) of all gross lease fees or rentals paid to, and received by, Owner from any Carriers that have entered into leases with Owner for space on the Sites. In addition, Contractor shall receive an amount equal to fifteen percent (15%) of all gross lease fees or rentals paid to, and received by, Owner from any Carriers that have entered into leases with Owner for space on the Sites during any extension term of such lease, beyond the initial term. Further, should Contractor's marketing efforts result in a sale of any Site by Owner, Contactor shall be compensated the amount of twenty percent (20%) of the gross sales price, at closing, of any Sites sold by the Owner to any buyer. Revenues from collocation leases and sales will be deemed to include revenue from collocation leases entered into, or sales closed, subsequent to the termination of this Agreement with any persons or entities with whom or with which Contractor has engaged in discussions about such collocation or sale prior to termination of this Agreement.

a. *Commercially Reasonable Efforts Required.* Contractor will exercise commercially reasonable efforts to market and lease collocation opportunities at the Sites so as to maximize revenue to itself and the Authority under such leases.

b. *Sole Compensation.* Contractor's sole compensation for its services, from any source, shall be the Marketing Fee set forth in this section.

4. *Terms of Compensation.* Compensation under leases will generally be paid directly to the Owner. Owner shall remit payment not later than 30 days from receipt from the Lessee.

5. *Leases for Collocation.* The Contractor shall communicate all offers to the Owner upon receipt of an expression of interest. The Contractor shall be responsible to communicate with the Owner and represent its interests, is responsible for the course of the financial negotiation of the terms of leases for Sites, and shall make a recommendation to the Owner on whether and under what terms to enter the final lease. The Contractor shall coordinate with the Franklin County Attorney on the negotiation of the Lease, and all lease terms must be satisfactory to the Franklin County Attorney. The final decision whether to enter any lease is in the legislative discretion of the Owner.

6. *Enforcement & Eviction.* Enforcement of leases shall be the responsibility of the Owner. The Owner shall have authority and responsibility to enforce the terms of any Lease or to evict any tenant in accordance with law and terms of the applicable lease. Notwithstanding this responsibility of the Owner, the Contractor agrees to cooperate with the Owner in order to bring and/or provide such documentation as it may have in its possession and such witnesses as it may have under its control for the purpose of any such enforcement action, so long as the cost of doing so is not unreasonable.

7. *Miscellaneous Provisions.*

a. *Non-discrimination.* The Contractor agrees that it will:

i. Provide a drug-free workplace for its employees;

ii. Post in conspicuous places, available to employees and applicants for employment, a statement notifying employees that the unlawful manufacture, sale, distribution, dispensation, possession, or use of a controlled substance or marijuana is prohibited in its workplace and specify the action which will be taken against any employee for a violation;

iii. State in all of its solicitations or advertisements for employees to perform services under this Agreement that Contractor maintains a drug-free workplace; and

iv. Include the provisions of this sub-paragraph in every subcontract or purchase order of over $10,000, so that said provisions shall be binding upon each subcontractor or subvendor.

b. *Illegal Alien Workers.* Contractor agrees not to employ illegal alien workers or otherwise violate the provisions of the Immigration Reform and Control Act of 1986.

c. *Registration to Transact Business.* Contractor warrants and certifies that it is authorized to transact business in the Commonwealth of Virginia as a domestic or foreign business entity if so required by Title 13.1 or Title 50 of the Code of Virginia (1950, as amended), or as otherwise required by law. Contractor will not allow its corporate existence to lapse or its certificate of authority or registration to do business in the Commonwealth to be revoked or cancelled at any time during the term of this Agreement. The Owner may void this Agreement if Contractor fails to remain in compliance with the provisions of this section.

d. *Non-Collusion.*

i. Contractor acknowledges and agrees that nothing in this Agreement is the result of, or affected by, any unlawful act of collusion with another person or company engaged in the same line of business or commerce, or any act of fraud punishable under the Virginia Governmental Frauds Act. Furthermore, Contractor understands that fraud and unlawful collusion are crimes and can result in fines, prison sentences, and civil damage awards.

ii. Contractor acknowledges and agrees that all aspects of this Agreement are in compliance with the applicable provisions of the State and Local Government Conflict of Interests Act. Specifically, without limitation, no employee of the Owner or member of employee's immediate family shall have any proscribed personal interest in this Agreement.

iii. Contractor acknowledges and agrees that all aspects of this Agreement are in accordance with the applicable provisions of the Virginia Public Procurement Act, Art. 6 Ethics in Public Contracting provisions and any other applicable law set forth therein.

e. *Integration.* This Agreement, including the exhibits hereto, constitutes the full and complete agreement of the Parties respecting its subject matter, and any prior or contemporaneous agreements or understandings, written or oral, are hereby merged into and superseded by the provisions of this Agreement.

f. *Assignment.* This Agreement may not be assigned without the prior written consent of the Owner which shall not be unreasonably withheld.

g. *Notices*: Notices may be given to:

i. If to the Owner:

ii. If to the Contractor:

h. *Choice of Law.* This Agreement shall be construed according to the laws of the Commonwealth of Virginia without regard to its principles of conflicts of laws. The Parties consent to exclusive venue and jurisdiction in the General District Court or Circuit Court for Franklin County, Virginia, and shall not file any suit in any other court.

i. *Drafter & Severability.* This Agreement has been jointly drafted by the Parties, and is to be construed as jointly drafted and not to be construed against either of the Parties as the drafter. This Agreement is severable, and if any provision is found to be invalid by any court of competent jurisdiction, the remainder shall survive. The section and paragraph headings in this Agreement are for convenience of reference only and do not modify or restrict any provision hereof and shall not be used to construe any provisions of this Agreement.

j. *Covenant of authority.* All Parties warrant that the signatories below have full authority, and have undertaken such legal actions as may be necessary to ensure such authority, to bind the entities of which they are representatives to the full extent permitted by law. This Agreement may be executed by facsimile, electronic or original signature of the Parties and in counterparts which, assuming no modifications or alterations, shall constitute an original and when taken together, shall constitute one and the same instrument.

8. *Definitions.*

a. *Approved Carriers* shall mean any telecommunications company lawful authorized to operate and which are subject to any and all telecommunications statutory and regulatory requirements of the Federal Communications Commission.

b. *Lease* shall mean an agreement between an Approved Provider and Franklin County for the placement of telecommunications equipment at County Sites for an agreed upon monthly or annual fee.

IN WITNESS WHEREOF, the Parties affix their signatures below:

FRANKLIN COUNTY BROADBAND AUTHORITY

Leland Mitchell

By:

Its: Chair

Approved as to legal form:

Authority Counsel

BLUE RIDGE TOWERS, INC.

By: Anthony R. Smith

Its: President