

Application to DHCD Submitted through CAMS

City of Suffolk

City of Suffolk- VATI 2020

Application ID: 64507252019115806
Application Status: Pending
Program Name: Virginia Telecommunications Initiative 2020
Organization Name: City of Suffolk
Organization Address: 442 West Washington Street
Suffolk, VA 23434
Profile Manager Name: Claire Jones
Profile Manager Phone: (757) 514-4060
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Project Name: City of Suffolk- VATI 2020
Project Contact Name: Regina Chandler
Project Contact Phone: (757) 514-7217
Project Contact Email: rmchandler@suffolkva.us
Project Location: 442 W Washington Street
Suffolk, VA 23434-5360
Project Service Area: Suffolk City

Total Requested Amount: \$661,610.00
Required Annual Audit Status: Accepted

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Budget Information:

Cost/Activity Category	DHCD Request	Other Funding	Total
Telecommunications	\$661,610.00	\$634,720.00	\$1,296,330.00
Other: Equipment	\$535,550.00	\$280,220.00	\$815,770.00
Other: Construction Labor	\$126,060.00	\$7,500.00	\$133,560.00
Other: Tower Cost	\$0.00	\$161,000.00	\$161,000.00
Other: Project Management	\$0.00	\$60,000.00	\$60,000.00
Other: Fiber and Data Center Use	\$0.00	\$126,000.00	\$126,000.00
Total:	\$661,610.00	\$634,720.00	\$1,296,330.00

Budget Narrative:

This project will deploy fixed-wireless broadband coverage to unserved addresses in the City of Suffolk. The network will consist of licensed and unlicensed wireless equipment designed to reach both line-of-sight and non-line-of-sight addresses. The equipment will be mounted on 4 existing city-owned towers and one new tower: Communication towers named Whaleyville, Hunter, and Pruden, a water tower named Holland Water Tower, and a new 140' Rohn 45 tower to be installed at the Water Treatment Plant site. Leased fiber circuits will be ordered to 2 towers, and connected back to a data center for internet upstream. Licensed 11 GHz wireless links will connect the towers to each other. A breakdown of the budget by category below: VATI Non-VATI Total Equipment Total \$535,550 \$280,200 \$815,750 Labor Total \$126,060 \$7,500 \$133,560 Tower Total \$- \$161,000 \$161,000 PM Total \$- \$60,000 \$60,000 Fiber and Datacenter \$- \$126,000 \$126,000 Grand Total \$661,610 \$634,700 \$1,296,310

Questions and Responses:

1. Project Area

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

Answer:

The City of Suffolk and its private partner Open Broadband developed a plan to implement broadband service in the unserved areas of the city. Unserved areas were first identified by using the Virginia Broadband Availability Map and Integrated Broadband Planning and Analysis Toolbox, created by the Center for Geospatial Information Technology at Virginia Tech. (<https://broadband.cgis.vt.edu/IntegratedToolbox/> - see Attachment 4) Representatives from the City's IT department and Open Broadband then conducted a 3-hour driving tour of the identified areas to determine where cable and/or fiber was and was not present.

After these assessments, the team examined suitability of three city owned towers to use for fixed-wireless broadband coverage of the area. The three towers are located at 6201 Whaleyville Blvd (Whaleyville Tower), 5850 Greenwood Rd (Hunter Tower), and 4471 Pruden Rd (Pruden Tower). Each of these towers exceeds 300 feet in

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height, and are ideally situated to provide fixed-wireless coverage to the great majority of the identified unserved areas. Open Broadband has been delivering broadband services as a Wireless Internet Service Provider in 11 counties in North Carolina, and recommends a fixed-wireless last-mile solution using 3.65 GHz non-line-of-sight frequency to provide 25 Mbps x 3 Mbps internet speeds. RF propagation studies of estimated coverage from each tower were then conducted.

Based on the unserved mapping data, the in-person site survey, the location of the existing city towers, the RF propagation maps, and conversations with incumbent providers, the project area has been defined as Holy Neck Borough Precincts, Lake Cohoon, Kilby's Mill, Holland, Whaleyville Borough Precincts, Whaleyville, Pittmantown - in other words rural Suffolk. We recognize that some portions of some of these areas are currently served by the incumbent provider, Charter Communications. This is unavoidable in fixed point wireless solutions. To fulfill the obligations and rules as defined in the VATI guidelines, Suffolk and Open Broadband will not market the service to homes and businesses in areas where the incumbent provides broadband service.

Approximate street boundaries and total reach:

Whaleyville Tower - Southeast: State line on the south, Carolina Rd on the east, Copeland Rd on the north, and Longstreet Ln on the west. Residential addresses 2108, commercial addresses 106.

Hunter Tower - Southwest: State line on the south, Arthur Dr and Box Elder Rd to the east, Pioneer Rd and Kinsale Rd to the north, and the City boundary on the west. Residential addresses 2256, commercial addresses 177.

Pruden Tower - Central-West: Holland Rd on the south and east, Buckhorn Dr on the east, Pruden Blvd to the north, and the City boundary on the west. Residential addresses 2256, commercial addresses 1949.

Holland Water Tower- 5501 Holland RD Suffolk, VA 23437

Proposed erection of vertical asset at Robert G. House Water Plant site located at 100 Bob House Parkway, Suffolk VA

Zipcode coverage within the project area are: 23432,23438, 23437, and portions of 23434.

This VATI funding request proposes a new network build utilizing Open Broadband's network design to cover the defined project area with broadband speeds of at least 25 Mbps x 3 Mbps. Faster speeds may be available to those within line-of-sight of one of the towers. The new network build requires:

- datacenter capacity and upstream connectivity
- leased fiber circuits
- licensed 11 GHz wireless circuits to distribute fiber connectivity to all the towers
- mounting at the towers of the 11 GHz backhaul antennas and 3.65 GHz (license in-hand), 5 GHz, and 60 GHz (lightly licensed) antennas for end-user connections
- installation of electronics at each location
- network engineering, design, construction and project management to complete the build
- tower climber contract fees
- tower structural analysis fees
- call center and billing system capacity increases
- equipment and labor to activate end-users

Included are the Maps of Project Areas for the location of the towers, and the coverage area that would receive broadband wireless services. One map shows the location of the towers and the radius of coverage area. Another

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map shows the broadband service propagation map. The statistics of homes and businesses above are presented as they were used in the decision to select these areas for this grant request proposal.

2.

Describe your outreach efforts to identify existing providers in the selected project area. Provide a detailed explanation of how this information was compiled and the source(s). Provide a map and list of all existing providers (fixed and wireless) and speeds offered within the project area. Label Map: Attachment 2 – Existing Provider Map; label documentation: Attachment 3 – Documentation on CAF Funding Area.

Answer:

The attachment, Existing ISP Map, overlays our defined project areas for funding. The project area chosen for this VATI grant submission currently does not have any provider that delivers high-speed service as set out by DHCD at 10 Mbps/1Mbps.

BroadbandNow.com publishes provider data from the FCC form 477 submissions, and user speed results from actual speed tests. As shown in the attached Existing ISP Map, the southwest portion of the City has no providers, and the southeast and central-west show 1 provider. That one provider is DSL, whose speed decrease with distance from the DSLAM and few residents are able to achieve the maximum advertised speed. Although Verizon DSL advertises speeds greater than 10Mbps, BroadbandNow.com runs a continuous service, which captures the actual statistics supplied by speed tests, by citizens. From 35,356 speed tests from IP verified users who took speed tests from an IP address in Suffolk between July 2018 and June 2019, the user speed test results from the BroadbandNow analysis shows the actual Verizon DSL speed to be averaging just 5 Mbps.

The City of Suffolk has requested a map from incumbent cable and broadband provider Charter Communications, d/b/a Spectrum, detailing where this company provides broadband service in the City of Suffolk. They refused to share that information with us. (See Attachment #19.)

We spoke with Verizon and have attached their email on this matter. Cox confirmed on the phone that they do not provide services in rural Suffolk (they do provide commercial service in northern Suffolk) and that they do not provide residential service in Suffolk.

We did have a rather long telephone conversation where Spectrum's government affairs liaison walked us through some of the streets where they provide service, and this information is appreciated; however, we need and asked for a detailed map to share with you and they did not provide that information to us.

As we have stated, Suffolk and our private sector partner, Open Broadband, will not market Open Broadband's fixed-wireless service to areas where a homeowner, business owner or any other group can access Spectrum's broadband service for a reasonable installation fee, per the VATI guidelines.

3. Project Need/Description

To be eligible for VATI, applicants must demonstrate that the proposed project area(s) is unserved. An unserved area is defined as an area with speeds of 10 Mbps / 1 Mbps or less and with less than 10 percent service overlap

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within the project area. Describe any anticipated service overlap with current providers within the project area. Provide specific information as to how you determined the percentage overlap. Label Attachment: Attachment 4 – Documentation Unserved Area VATI Criteria.

Answer:

Attachment 4 shows the lack of ISPs in the defined project area. In addition, as shown in attachments 2.1 and 2.2, the only providers able to deliver speeds of 10 Mbps/1Mbps are cable and occasionally Hughes Net satellite service. The speed test data is through June 2019, and includes over 35,000 user speed test results. There are no Fixed-Wireless ISPs with 10Mbps or greater in the city, and our defined project area excludes locations where broadband is available. Satellite is not considered as a 10 Mbps x 1 Mbps solution, and therefore was not viewed as serving the project area.

Sources used include:

1. BroadbandNow.com
2. Virginia Broadband Availability Map and Integrated Broadband Planning and Analysis Toolbox, created by the Center for Geospatial Information Technology at Virginia Tech.
3. FCC ISP Registration Database for Form 477
4. Public Surveys

None of these sources listed a wireline or wireless ISP within the project area demonstrating 10Mbps or more speed.

The Open Broadband fixed-wireless service does not have a hard-set geographic boundary, and as a result, wireless coverage could potentially reach into some areas that have cable access. To minimize such overlap to less than 10% of the coverage area Open Broadband will point its antennas towards the unserved areas, and tilt the antennas to maximize coverage in the unserved areas and not in cable areas. The Pruden Tower is the only one of the three towers that reaches into cable areas. To ensure VATI grant funds will not be used for overbuilds, this grant request only includes antennas on that tower that are pointed to unserved areas. As a result, the network cost and eligible user counts have been reduced to just that needed to serve the unserved.

4. Provide the number of residential serviceable units in the project area(s). Describe the eligible premises that will be served by the proposed project and the basis for these projections.

Answer:

The proposed project area is made up of rural homes, farms, and small businesses. From the three city owned towers, the number of residential addresses that can be served is 6,620, and the number of commercial addresses that can be served is 2232. This data was produced by the City of Suffolk GIS office on 6/18/19 and is calculated by the coverage area from each tower as follows:

Whaleyville Tower: Residential addresses 2108, commercial addresses 106

Hunter Tower: Residential addresses 2256, commercial addresses 177

Pruden Tower: Residential addresses 2256, commercial addresses 1949

While the Whaleyville Tower and Hunter Tower coverage maps exclude cable areas, the Pruden Tower coverage area includes areas east and north which are served. As a result, we are excluding 80% of the residential user count and 95% of the commercial user count off this tower, making the Pruden estimates 451 residential addresses and 96 commercial addresses.

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This leaves a total estimate for VATI funding of 5,194 addresses, 4815 of which are residential and 379 of which are commercial.

According to the U.S. Census Bureau the Persons per Household in Suffolk from 2013-2017 was 2.7. Using this average for the estimated 5,194 addresses yields an estimated 13,001 persons that can be served via this project

5. Indicate the numbers of businesses and community anchor institutions the proposed project will pass in the project area. Also indicate the number of home-based businesses. Provide specific information.

Answer:

As indicated in the previous section, an estimated 379 commercial addresses can be served in the project area. Zip code coverage within the project area are 23438, 23437, and portions of 23434.

Although not all-inclusive, these are some of the businesses, which have been analyzed to be passed in the service area of the towers:

1. Southeast Energy Design
2. Appliance Doctor
3. Gary Sykes, Attorney at law
4. Fowler Auto
5. Virginia Soaps and Scents
6. Dynamic Homes Inc.
7. Whaleyville Food Mart
8. Precision Diesel
9. Griffin Manufacturing Company
10. Carey Copeland Insurance
11. South Point Saddlery
12. Smalley's Motor Sports
13. Angels Salon
14. Creative Styles
15. Lewis Construction of Virginia
16. L&L Country Meats
17. Meherrin Ag and Chem
18. R&D Contracting
19. Pope's Upholstery
20. Barden Farms

In addition to these 379 businesses, there are churches, non-profits and government institutions, which can be passed and serviced by this funding. Some of these are:

1. 18 churches including 6 Churches in 23438 and 12 in 23437
2. Whaleyville Community Center
3. Better Care Family Homes Inc.
4. US Post Office (6425 Whaleyville Blvd)

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5. Robertson Elementary School (132 Robertson St.)
6. Southwestern Elementary School
7. Southwestern Intermediate School
8. Whaleyville Volunteer Fire Department
9. City of Suffolk Fire and Rescue Station 8
10. Holland Volunteer Fire Department

6. Understanding that projected take rates are an estimate, provide the anticipated take rate for the proposed service within one year of project completion and describe the basis for the estimate. Also detail all actions (e.g. marketing activities, outreach plan) to be implemented to reach the identified potential serviceable units within the project area.

Answer:

There is a possibility of 5,194 installations based on the previous analysis if Open Broadband achieved a 100% take rate. From Open Broadband's experience in similar markets in North Carolina, the estimated take rate is 1,558 installations or 30% of those who can receive the service signal. The difference is due to several factors:

1. People on long-term contracts with other providers such as satellite
2. People satisfied with less than 10Mbps service due to low Internet demands
3. Elderly people who do not use the Internet
4. Extreme low-income people who cannot afford the Internet
5. Abandoned houses and closed business locations

Open Broadband will contract out installations to Southern Virginia Regional installation teams. Our experience in using River City Systems from Danville VA has proven a capacity of each team averaging four installs a day. There are 260 weekdays in a year, which we subtract out these numbers:

1. Customer unavailability/rescheduling
2. Poor Weather
3. Holidays and Vacation Leave
4. Sick Leave

Open Broadband estimates 160 installation days a year. This would leave up to 640 installations a year for each installation team. To achieve the desired timeline, two and a half install teams will be needed to achieve 1558 installs within the time.

The process to obtain this take rate will be through Open Broadband established marketing procedures and policies. Marketing is accomplished by these means:

1. Social Media Advertising (Facebook, Twitter, and LinkedIn)
2. Email marketing
3. Yard Signs
4. Local Online News Media
5. Local Printed News Media
6. Customer Recommendation Programs

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7. Phone Calling and door knocking
8. Open Broadband Website Promoting

By using these techniques we'd achieved pre-launch signups of over 1000 residents in other markets. All service requests are automatically placed onto a map, and all service signal statistics and installation information are sent to Open Broadband's Service and Installation management.

7. For wireless projects only: Please explain the ownership of the proposed wireless infrastructure. Will the wireless co-applicant own or lease the radio mast, tower, or other raised structure onto which the wireless infrastructure will be installed?

Answer:

The five towers used in the network design (4 in place, and 1 to be constructed) are owned by the City of Suffolk. Open Broadband is entering a lease arrangement with the City to mount antennas on each structure and for space and electrical access in each tower hut. It is anticipated that additional vertical assets will be needed to fill in coverage. Those additional assets may be building rooftops, ham radio towers, and other assets. These additional assets will continue to be owned by their respective owners, and Open Broadband will enter into a leasing arrangement for all such space when they are identified.

Open Broadband will own and maintain all the equipment to be loaded onto the project area towers, as well as all the equipment for customer access. Open Broadband will operate, maintain, and upgrade the network over time. The company uses certified tower crews and follows the city's requirements for tower structural analysis.

Title to equipment acquired by Open Broadband with funds from this project shall vest in Open Broadband and become part of its overall network infrastructure. Open Broadband shall use the equipment for the purposes of this project as long as needed, and for the purposes of this Grant Agreement, immediately notify the City of repairs needed on city-owned equipment, and have reasonable 24/7 physical access to equipment located on city property.

8. Provide the proposed download and upload speeds for the project area. Detail whether that speed is based on dedicated or shared bandwidth, and detail the technology that will be used. This description can be illustrated by a map or schematic diagram, as appropriate. Describe the Internet service offerings to be provided after completion of this project and your price structure for these services. The service offerings should include all relevant tiers.

Answer:

Broadband service will be provided to the end-user over 3.65 GHz, 5 GHz, and 60 GHz wireless connections. In 2020, the FCC is implementing a new CBRS licensing arrangement for 2.5 GHz equipment with greater power for getting through difficult non-line-of-sight situations. We will take advantage of this new license's capabilities. Open Broadband will implement this technology once licenses and equipment are available.

The Internet service offering and monthly rates:

- Residential - 25Mbps down/3 Mbps up \$39.99 + \$99 Installation
- Residential - 25Mbps down/25Mbps up \$49.99 + \$99 Installation
- Residential - 50Mbps down/50Mbps up \$59.99 + \$99 Installation
- Residential - 100Mbps down/100Mbps up \$99.99 + \$99 Installation
- Residential - 200Mbps down/200Mbps up \$139.99 + \$99 Installation
- Residential - 1000Mbps down/1000Mbps up Quoted individually

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Residential – This service is month to month with no overage fees.

*Business and Government- 25Mbps down/25Mbps up \$80 + \$150 Installation

*Business and Government – 50Mbps down/50Mbps up \$120 + \$150 Installation

*Business and Government - 100Mbps down/100Mbps up \$150 + \$150 Installation

*Business and Government - 200Mbps down/200Mbps up \$225 + \$150 Installation

*Business and Government - 1000Mbps down/1000Mbps up \$575+150 Installation

* Business and Government rates are based on a 3-year agreement that includes a service level agreement.

Use of the 3.65 GHz spectrum can be used to serve any client, but service speeds are limited to 25 Mbps x 3 Mbps by the nature of the technology. The 5 GHz spectrum can be used to provide the 50, 100, and 100 Mbps speeds as long as there is line-of-sight and the user falls within a technology acceptable distance. The 60 GHz spectrum is used to provide gigabit speeds as long as there is perfect line-of-sight to the end user and the distance does not exceed 1 kilometer. The vast majority of users will only be able to use the 3.65 GHz spectrum as the trees and terrain prevent direct line-of-sight. However, an end user can install a mast/pole/tower on their own property to reach a height suitable for line-of-sight connections. In these cases, the higher speeds will be offered to that user.

Equipment Capacity and Sizing: The equipment manufacturer limits state that each 3.65 GHz base station can handle up to 96 last mile sessions, and the 5 GHz base stations can handle 60 last mile sessions each. Four base stations per tower for 3.65 GHz and four 5 GHz base stations would allow for a total of 684 sessions, or connections to homes for each tower before additional antennas are required. However, our experience has found that bandwidth used by the base station is more often the limiting factor than the connection limit. For that reason, our engineering design reduces the load by 50% of the maximum stated by the manufacturers, resulting in a planned capacity limit of 48 simultaneous connections on a 3.65 GHz base station and 30 simultaneous connections on a 5 GHz base station. The additional equipment (8 base stations of each type) needed to provide this allowance is included in this VATI grant submission.

Open Broadband provides multiple gigabit (1000 Mbps) connections to each tower to ensure plenty of bandwidth for users. Our previous experience shows shown that gigabit connections can support 1000-1500 users. Each user connection is a dedicated, encrypted wireless link. The wireless backhaul links are shared by all the customers off of that tower, and the leased fiber circuits and internet upstream at the datacenter is shared by all users of the system.

All plans are set to burst up to 10% higher than plan speed, used when the system detects the availability of backhaul bandwidth. All plans have uncapped, unlimited data. This is possible due to the bandwidth of the wireless and fiber backhails.

9. Provide a description of the network system design used to deliver broadband service from the network's primary Internet point(s) of presence to end users, including the network components that already exist and the ones that would be added by the proposed project. Also describe specific advantages of using this technology. Provide a detailed explanation on how this information was compiled and source(s). For wireless projects, provide a propagation map including the proposed project. Label Map: Attachment 5 – Propagation Map Wireless Project

Answer:

This is a new network build. Open Broadband uses a hybrid technology of fiber and fixed-wireless. It consists of

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the following components:

- Data Center with multi-carrier BGP routed internet upstream connections.
- Leased point-to-point fiber circuit(s) from the data center to tower sites in the City of Suffolk. Fiber circuits will be ordered from one of the available carriers: Spectrum, Segra, Mid-Atlantic, etc. Fiber backhaul to the data center allows for growth.
- Fixed Wireless antennas operating in various frequencies, including 11 GHz for backhaul and 5 GHz and below for customer connections. This includes the licensed 3.5-3.7GHz spectrum used by LTE and the upcoming release of the CBRS spectrum, and selected use of 2.4 GHz where applicable. This service allows for Non-Line-of-Site (NLoS) service through trees. Symmetric speeds can be provided on 5 GHz and above radios, and Open Broadband has the majority of clients using service at 25 Mbps, 50 Mbps, and 100 Mbps speeds. To a lesser degree, we have customers using us for symmetrical 200 Mbps and 1000 Mbps. In non-line-of-sight applications, we use 3.65 GHz spectrum, which operates most efficiently today at 25 Mbps x 3 Mbps. We purchase these radios “off-the-shelf” from the manufacturers. As radio technology continues to improve, we will upgrade our fixed-wireless radios to faster speeds. We are hopeful that the radio manufacturers will develop symmetric 100 Mbps service in the 3.65 GHz (CBRS) spectrum in the future. RF Propagation maps are attached.

We primarily use a fixed-wireless last-mile, and fiber to the tower network design as we have found it to be the most cost effective, fastest to install technology that results in the fastest speeds and lowest cost to consumers. Fiber alone often does not make economic sense in rural areas due to the high cost of installation and having to pass every property on the route. Wireless alone can have limitations on bandwidth and network expansion. A hybrid approach takes the best of each technology, using fiber for high bandwidth to the data center, while using last mile fixed-wireless to quickly turn up just those users who subscribe to the service.

Open Broadband Service Availability

Our network is designed with the following specifications:

- Data Center: SSAE 16 compliant, PCI DSS compliant, and HIPAA compliant. The data center is staffed 24x7x365 and has a 99.999% network uptime guarantee.
- Fiber circuits are on carrier backbones with a 99.999% network uptime guarantee.
- Fixed-wireless antennas are rated for 99.99% uptime.
- Fixed-wireless circuits are designed to withstand heavy rain, winds, and snow.
- 11GHz fixed-wireless backhaul circuits are licensed links to avoid interference.
- Consumer connections in the 3.5 – 3.7 GHz and 2.4GHz spectrum are designed to work through, or around obstructions such as heavy foliage.
- Our dedicated fixed-wireless connections are 128-bit encrypted.

10. Project Readiness

What is the current state of project development (e.g. planning, preliminary engineering, identifying easements/permits, final design, etc.)? Prepare a detailed project timeline or construction schedule which identifies specific tasks, staff, contractor(s) responsible, collection of data, etc., and estimated start and completion dates. Provide any Memorandums of Understanding (MOUs) or Memorandums of Agreement (MOAs) (drafts are allowable), letters of support, etc. The timeline should include all activities being completed within 12 months of contract execution with DHCD. Label Attachments: Attachment 6 – Timeline/Project Management Plan; Attachment 7 – Relationship between Applicant/Co-Applicant; Attachment 8 – Letters of Support;

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- i. If the partnership is formalized in a written agreement, provide a copy of that agreement.
- ii. If the partnership has not been formalized, provide a short description of the project management role, financial commitment, or other contribution to the project for the applicant, co-applicant, and any additional partners.
- iii. If applicant is not a locality(s) in which the project will occur, please provide a letter of support from that locality.

Answer:

The City of Suffolk selected Open Broadband through an RFP process where the initial scope of work was identified. The partners have since worked together to identify tower assets, physically tour the project areas, and have agreed to enter into a tower lease arrangement including space and power. The next step is to submit a lease request and pay engineering analysis to add the Open Broadband equipment on the towers. Once the lease is completed, Open Broadband will be able to order the fiber backhaul circuit and prepare the equipment orders. In parallel, all city towers and the water tower will also have wind load engineering as well as frequency analysis done by third party contractors. Although VATI allows a year to complete a funded project, this project is scheduled to be completed within one year of start date. This is shown in the attached "Project Management Plan".

11. Matching funds: Provide a description of the matching funds the applicant and co-applicant will invest in the proposed project (VATI funding cannot exceed 80 percent of total project cost). The Funding Sources Table must be completed. Label Attachments: Attachment 9 - Documentation of Match Funding; Attachment 10 – Funding Sources Table;
 - i. For each element of matching funds in the description, indicate the type of match (e.g. cash, salary expense, or in-kind contribution).
 - ii. Identify whether the applicant or co-applicant is responsible for providing each element of the proposed matching funds.
 - iii. Include copies of vendor quotes or documented cost estimates supporting the proposed budget.

Answer:

OPEN Broadband and the City of Suffolk will cover 49% of the project between matching and In-Kind contributions. OPEN Broadband will invest \$452,700 in matching funds to the project's total cost of \$1,296,310 and City of Suffolk will add in \$182,000 of In-Kind funding and a new tower. The VATI Funding Sources show the breakdown of these funds and the details of the budget with documentation per line item. Please see the attachment for all of the information requested.

12. Applicant and Co-Applicant: A description of the public-private partnership involved in the project. Detail the local government assistance: Local government co-applicants should demonstrate assistance to project that will lower overall cost and further assist in the timely completion of construction, including assistance with permits, rights of way, easements, and other issues that may hinder or delay timely construction and increase cost. Provide detail if this project includes additional partners such as municipal providers, middle-mile providers, or investor-owned utilities

Answer:

The City of Suffolk issued a broadband RFP in July 2019, selecting Open Broadband as its partner in a VATI grant.

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A project kickoff meeting was held July 25, 2019, where it was agreed that three city towers would be made available for fixed-wireless equipment to reach the unserved areas of the city. Once a RF propagation study was done, the team decided to also add a City water tower to fill gaps in rural Suffolk and to construct a new tower in northern Suffolk to reach homes that currently have no broadband access. The city is providing all of their towers at no cost during the first 3 years as in-kind funding to help the project be successful. After 3 years, Open Broadband will pay a lease rate based on the number of subscribers off each tower. Open Broadband will also pay the City for use of one 110v power outlet in each tower hut. This partnership is documented in a Lease Agreement Attachment 16, "Tower Lease Agreement". If funding is granted, a Memorandum of Understanding shall be executed as noted in Attachment 17.

Open Broadband is responsible for obtaining all data center and leased fiber circuits, whose terms are as minimum of 3 years in length. The new long-term leases for the city towers, fiber backhauls, and data center space show proof of Open Broadband's commitment to Suffolk.

The City of Suffolk Administration supports this grant request partnership and posted the proper public notice. Open Broadband will be responsible for at least 20% of the required matching funds including leasing required fiber and the datacenter space, engineering and design, project management, construction, operations, maintenance, customer care, and billing of users. The City will be responsible for ensuring Open Broadband has access to the needed space on each tower, and for monitoring of the project to completion. Completion will be the day all the towers have started provisioning broadband, after equipment installation is completed.

13. Identify key individuals, including name and title, who will be responsible for the management of the project. Provide a concise description of their role and responsibilities for the project. Present this information in table format.

Answer:

CITY OF SUFFOLK STAFF

Name	Title	Grant Role
Regina Chandler		City of Suffolk - Point of Contact - Project Manager
Charlie Harcum		City of Suffolk - Technical Lead
Kailee Wolterstroff		City of Suffolk- Grants and Records Management
Administrator		

Alan Fitzpatrick, Chief Executive Officer	CEO of the project	Open Broadband Overseeing entire Open Broadband side
Kent Winrich, Chief Technology Officer	CTO	Open Broadband Technical lead for Open Broadband
Rob Cranwell	Director of Network Deployment Suffolk coordinator to implement broadband services in the project area	Open Broadband Project Manager, working with the

14. Project Budget and Cost Appropriateness

Applicants shall provide a detailed budget as to how the grant funds will be utilized, including an itemization of equipment and construction costs and a justification of proposed expenses. Expenses should be substantiated by clear

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cost estimates. Label Attachment: Attachment 11 – Derivation of Costs; Attachment 12 - Documentation of Supporting Costs; Attachment 13 – Supporting Documentation of Cost Estimates.

Answer:

This project’s itemization of equipment and construction costs is presented in the Derivative of Costs, which contains web links to pricing for all material, and a list of all construction costs such as labor and leasing fees. All information requested is included in the Attachments.

The justification of proposed expenses is based on the equipment necessary to create, run and manage a network and are similar to awards previously made to VATI grant award fixed-wireless winners. All of the costs proposed are a component of any quality fixed-wireless network.

15. The cost benefit index is comprised of three factors: (i) state share for the total project cost, (ii) state cost per unit passed, and (iii) the internet speed. From these statistics, individual cost benefit scores are calculated. Finally, the three component scores are averaged together and converted to a 30-point scale to form a composite score. Please provide the following three pieces of information:
- a. Total State funding requested / Total Project cost
 - b. Number of serviceable units
 - c. Highest residential speed available

Answer:

The DHCD share for the cost of this project will be 51% of the total project cost of \$1,296,310 or \$661,610.

The total estimate for coverage area using VATI funding is 5,194 addresses, 4815 of which are residential and 379 of which are commercial. Dividing the 5,194 addresses “passed” into the total cost of the project gives the figure of \$249.58 as the “cost per unit passed”. That includes both Open Broadband’s contribution and the funding from DHCD.

The highest residential speed available is 1000Mbs down/1000Mbps up. This is mentioned in the answer to Question 8.

16. A brief description of applicant and co-applicant’s history or experience with managing grants and constructing broadband communication facilities in the Commonwealth of Virginia and elsewhere.

Answer:

Open Broadband, LLC (<http://openbb.net>) is a privately held Wireless ISP (WISP) headquartered in Waxhaw, NC. We offer fixed-wireless broadband service to government, education, business, and residential users, with a specific focus on unserved and underserved counties. Open Broadband has considerable experience in implementing WISP service for cities and counties. We were selected for North Carolina GREAT broadband grants for Caswell County and Vance County NC, and an ARC broadband grant for Alexander County NC. Public-Private -Partnerships were also made with Orange, Wayne, and Gaston counties in NC, and we have implemented

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broadband partnerships directly with towns throughout North Carolina. Open Broadband is a member of the Commonwealth Connect Coalition in Virginia.

Open Broadband has customers in 11 counties in North Carolina, is building out in 6 additional counties, and has several more in discussion. We provide broadband service to residential, government, business, and university clients in each region where we deploy service. Open Broadband is also working with Charles City County Virginia on their broadband needs to unserved communities.

Open Broadband service includes residential and business internet from 25Mbps to 1000Mbps, and public Wi-Fi Zones for towns, universities, and parks. We provide service to various municipal entities including town halls, police stations, parks and recreation, public works, fire stations, and an airport. Our gigabit (1000 Mbps) service is provided to entrepreneurship centers in Gaston and Mecklenburg Counties, and to business clients like Hannon Orthodontics in Belmont NC. University clients include Guilford Technical Community College, University of Mount Olive, and Pfeiffer University.

Open Broadband is engaged in economic development in the communities in which we work. Our CEO founded CharlotteHeartsGigabit.com, one of the leading advocacy groups in the country on promoting gigabit broadband, and NC Hearts Gigabit, the equivalent statewide effort that holds an annual interactive conference at the NC Rural center. Our founders spoke at Gigabit City Summit and Gigabit Cities Live events, Broadband Communities conferences, the Connect(x) Wireless Conference, and brought Mozilla to Charlotte to host a Gigabit 101 Workshop. We co-hosted a 5 city Gigabit Hackathon (GIG Hacks) in Charlotte, and emceed an ethical hacking competition in Wilson NC.

Our CEO is on the City of Charlotte's Digital Inclusion Steering Committee, focusing on closing the digital divide. A member of our team is an experienced trainer of Digital Literacy and Digital Inclusion programs. We can offer a series of classes to help residents leverage internet access for job search, medical information, education, and other applications critical to being successful in society today. We believe broadband infrastructure is an essential need, similar to electricity, and everyone needs home access.

The City of Suffolk's IT Department maintains a robust internal broadband communication network, which provides connectivity to approximately 30 municipal facilities including but not limited to Public Safety, Utilities and Works. Each facility is served by either dark fiber or site-to-site VPN connectivity to possibly two fiber distribution facilities. The IT department is included in projects relating to new facilities that are constructed for municipal use. We handle all of the vendor management relating to fiber connectivity, construction and delivery.

The City of Suffolk actively seek out grant opportunities when available. The City has a Grants Coordinator who is responsible for seeking out grant opportunities for qualifying City departments. This is done primarily using ECivics, a commercial subscription software. The role of the Grant's Coordinator also include assisting departments with the application process. The City has personnel assigned in various departments who manage grants in their perspective departments. For example planning with Housing and Community Development Block Grants, Economic Development and Workforce Development, Public Safety and Homeland Security/ Virginia Department of Emergency Management (VDEM), URASI.

17. Commonwealth Priorities

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Additional points will be awarded to proposed projects that reflect Commonwealth priorities. Please describe if the project fits into a larger locality or regional universal broadband plan.

Answer:

This project to provide broadband service to those unserved in Suffolk is directly in support to the wider regional initiative to connect the 17 Hampton Roads communities to the world.

In addition to home and business internet, this project includes equipment needed to provide free public Wi-Fi zones in Whaleyville, Lonestar Lakes, and designated parks.

The Hampton Roads Planning District Commission (HRPDC) is a regional organization in Southeastern Virginia representing seventeen local governments and 1.7 million people. Their mission is to address issues of regional importance, provide credible and timely planning, research, and analysis on matters of mutual concern, and improve the region's quality of life.

Across the Hampton Roads region, a significant digital divide exists between citizens based on place of residence. The neighborhood in which someone lives should not determine access to information and communication technology, or participation in the emerging digital economy. Hampton Roads is re-imagining smart solutions to close the divide and design an inclusive digital ecosystem.

Strategic partnerships among a regional broadband task force and a regional chief information officer's meeting whose members represent municipalities and higher education institutions are rooted in a collective vision for bringing broadband connectivity to citizens of all socioeconomic backgrounds and making the region attractive for business investment. The public-private partnership engages a variety of community groups, civic leagues, and neighborhood associations to represent the unique viewpoints of the region's diverse constituents.

Hampton Road's inclusive approach enables and accelerates the provision of affordable broadband services to under-served and unserved communities. Broadband is a fundamental tool that can help disrupt the cycle of poverty by offering access to online jobs and skills training, and improved educational outcomes for low-income residents. The regional ring will allow local governments to serve citizens and engage businesses while simultaneously laying the groundwork for deploying future technologies and security enhancements, and improving interoperability.

This project fits into the larger Hampton Roads Regional Broadband initiative. A video describing this effort is available here: (<https://youtu.be/D-INjSKtUcs>).

18. Additional Information

Any other equitable factor that the applicant desires to include. Applicants are limited to four additional attachments. Label Additional Attachments as:

- a. Attachment 14 – Two most recent Form 477 submitted to the FCC or equivalent

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b. Attachment 15 – Copy of Public Notice

c. Attachment 16 – XXXXXXXX

d. Attachment 17 – XXXXXXXX

e. Attachment 18 – XXXXXXXX

f. Attachment 19 – XXXXXXXX

Answer:

Attachment 16- Tower Lease Agreement

Attachment 17 - MOU (DRAFT- if funding granted)

Attachment 18- Verizon's reponse email of no impact of service

Attachment 19 - Charter/Spectrum's response email refusing access of broadband maps

Attachments:

Map(s) of project area, including proposed infrastructure

Attachment1ProjectAreaMap823201932331.pdf

Map(s) or schematic of existing broadband providers (inventory of existing assets)

Attachment2ExistingProviderMap823201932157.jpg

Documentation that proposed project area is not designated for Connect America Funding (CAF)

Attachment3DocumentationofCAFFundingArea823201932217.jpg

Documentation that proposed project area is unserved based on VATI criteria

Attachment4DocumentationUnservedAreasVATICriteria823201932722.pdf

Propagation Map if Wireless Project

Attachement5WirelessProjectSuffolk826201912337.jpg

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Project Management Plan

Attachment6TimelineProjectManagementPlan823201933330.xlsx

Documentation of relationship between applicant and co-applicant (formal or informal)

Attachment7RelationshipBetweenApplicantCoApplicant823201933530.docx

Letters of Support

Attachment8LettersofSupport823201940544.pdf

Documentation for in-kind contributions, including value(s)

Attachment9DocumentationforMatchFunding823201935114.xlsx

Funding Sources Table

Attachment10FUNDINGSOURCESTABLE823201935132.docx

Optional

Attachment188302019115313.pdf

Optional

Attachment198302019115422.pdf

Derivation of Cost (Project Budget)

Attachment11DerivationofCosts823201935604.xlsx

Documentation supporting project costs (i.e. vendor quotes)

Attachment12DocumentationSupportingProjectCosts826201993705.pdf

Supporting documentation for costs estimates

Attachment13SupportingDocumentationofCostEstimates826201993729.pdf

Two most recent Form 477 submitted to FCC

Form477FCC8232019104235.pdf

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Copy of Public Notice

Attachment15823201992554.docx

Optional

Attachment168232019124956.doc

Optional

Attachment17830201922911.pdf

Pruden Tower, Height ~322.8 ft

- Residential address - Total 3922
- Commercial address - Total 324
- Pruden 4 Mile Buffer

Hunter Tower, Height ~322.8 ft

- Residential address - Total 1427
- Commercial address - Total 133
- Hunter 4 Mile Buffer

Whaleyville Tower, Height ~419.9 ft

- Residential address - Total 1068
- Commercial address - Total 58
- Whaleyville 4 Mile Buffer

Holland Water Tower

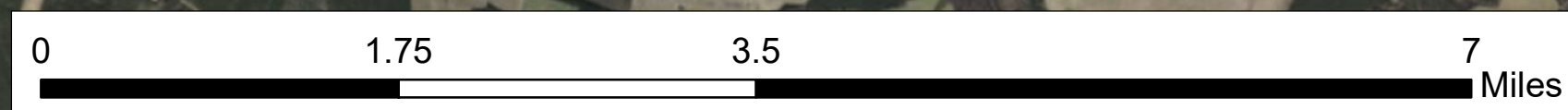
- Residential address - Total 1213
- Commercial address - Total 151
- Holland Water Tower 4 Mile Buffer

Water Treatment Plant Potential Tower

- Residential address - Total 1733
- Commercial address - Total 122
- Water Treatment Plant 4 Mile Buffer

Legend

- Street Centerlines
- City Boundary
- Approved Parcels
- Unserved Areas



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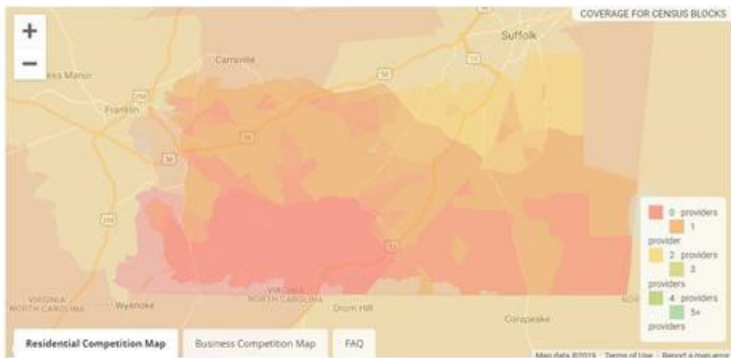
Created by City of Suffolk GIS Office, 06/18/2019

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Parcel and Zoning information has been developed to provide a graphic representation of the Real Estate Property Tax Map. The boundaries of any parcel may have been adjusted to provide a more visually pleasing presentation. User should refer to instrument of transfer (deed or plat) for legal boundary location and perimeter or area measurements.

Created by City of Suffolk GIS Office, 08/23/2019

INTERNET PROVIDER COMPETITION MAP FOR SUFFOLK



SUMMARY OF INTERNET PROVIDERS IN SUFFOLK

Provider	Type	Coverage	Speed
<small>RESIDENTIAL</small> Charter Spectrum	Cable	95.3%+	300 Mbps
<small>RESIDENTIAL</small> Verizon High Speed Internet	DSL	85.5%+	15 Mbps
<small>RESIDENTIAL</small> Cox Communications	Cable	12.1%+	300 Mbps

VATI Application is for the 0 provider areas

Connect America Fund Phase II: Auction 903 Results

Data as of 8/28/18



No winning bidder in Suffolk VA

Source: FCC Connect America Fund Phase II: Auction 903 Results

<https://www.fcc.gov/reports-research/maps/caf2-auction903-results/>

Pruden Tower, Height ~322.8 ft

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Hunter Tower, Height ~322.8 ft

- Residential address - Total 1427
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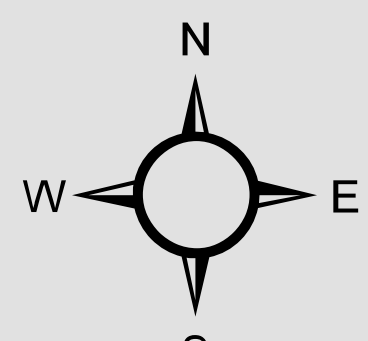
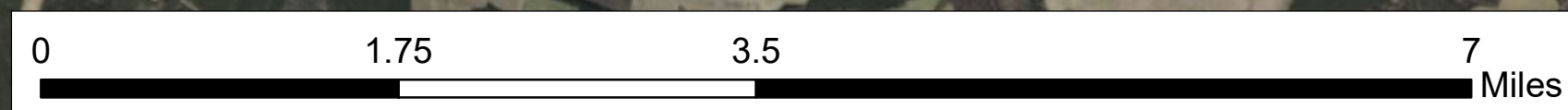
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Water Treatment Plant Potential Tower

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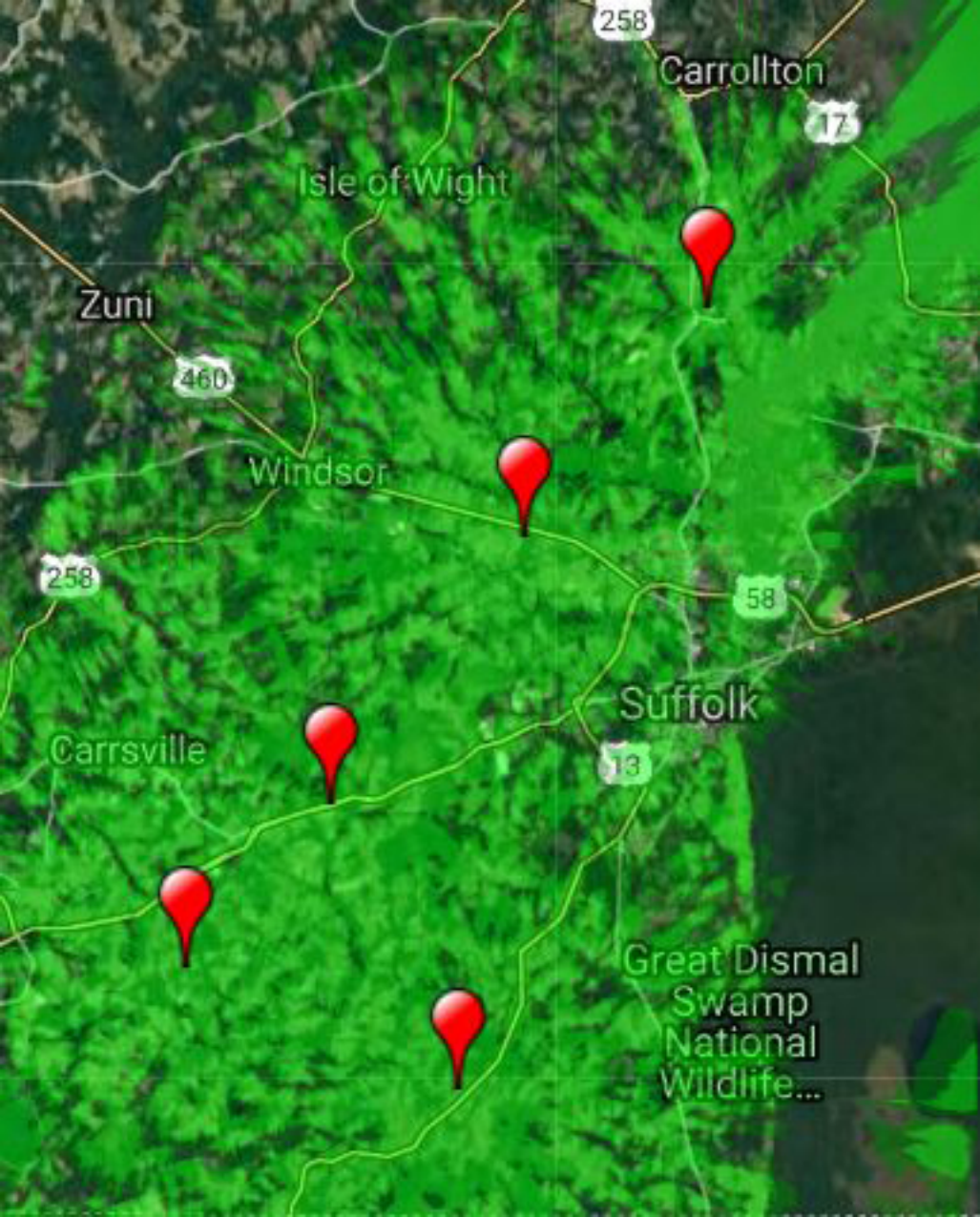
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258

Carrollton

17

Isle of Wight

Zuni

460

Windsor



258

58



Carrsville

Suffolk

13



Great Dismal
Swamp
National
Wildlife...



Install radios
 Install antennas
 Install cabling
 Program all equipment
 Perform system tests
 Perform field tests
 Begin marketing program
 Begin customer installations

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Nov Dec Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec

New Tower - Water Treatment Plant

Obtain bids for tower build
 Obtain all necessary permits
 Select tower vendor and place order
 Tower build
 Inspection and acceptance of tower
 Requisition Material
 Process FCC license
 Install outdoor enclosure
 Install network equipment and UPS
 Install tower mount arms
 Install radios
 Install antennas
 Install cabling
 Program all equipment
 Perform system tests
 Perform field tests
 Begin marketing program
 Begin customer installations

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Memorandum of Understanding

No. 20007

This Memorandum of Understanding ("MOU") is made this ____ day of August, 2019 between the **City of Suffolk, Virginia** whose principal office is the Suffolk City Hall, 442 West Washington Street, Suffolk, Virginia 23434, hereinafter referred to as the "City", party of the first part, and **Open Broadband, LLC**, P.O. Box 723, Waxhaw, NC 28173, hereinafter referred to as the "Provider", party of the second part.

It is mutually understood and agreed by the parties hereto that the Provider will perform the services and tasks as specified in the Request for Proposal 20007-JS titled Internet Service Providers for Unserved and Underserved Areas issued July 1, 2019; Proposal submitted by July 15, 2019; Anti-collision/Nondiscrimination/Drug Free Workplace Clauses; Proof of Authority to Transact Business in Virginia; Certificate of Insurance and all of the proceedings by the governing body of the City pertaining to the subject matter of the MOU; and all of which documents are hereinafter referred to as the MOU Documents and are a part of the MOU by reference as if each had been fully set out and attached hereto.

- A. The Provider agrees to furnish and pay for all labor, materials, equipment, supplies, facilities, superintendence, insurance, taxes, permits and services necessary to perform all work set forth in the MOU documents and made a part hereof in strict compliance with the MOU Documents.

Key personnel, project approach and all work shall be in accordance with the Provider's proposal dated July 15, 2019 and all MOU Documents.

- B. The PROVIDER shall comply with all Federal, State and local laws and ordinances applicable to the work. Changes to any such laws or ordinances after the effective date of this MOU are the responsibility of the Provider at no additional cost to the City.

- C. TERM

The term of the agreement shall commence on _____ and ending on successful completion of all tasks as stated in the MOU documents, contingent upon receiving sufficient funding from the Virginia Department of Housing and Community Developmental Services. This agreement shall be reviewed annually, modified as the parties agree, and executed by the parties each year, concluding on August 31, 2029. In the event that a new agreement has not been executed at the end of the term of this agreement, then the then-current agreement shall remain in effect until superseded by the next annual agreement.

- D. Provider will apply as a co-applicant for a Virginia Telecommunications Initiative 2020 Grant issued by the Virginia Department of Housing and Community Development at no cost to the City.

E. CHANGES AND ADDITIONS

It shall be the responsibility of the Provider to notify the City, in writing, of any necessary modifications or additions in the Scope of this MOU. Compensation for changes or additions in the Scope of this MOU will be negotiated and approved by the CITY, in writing.

Furthermore, it is understood and agreed by both parties that any work done by the Provider on such modification or addition to this MOU prior to the CITY'S execution of its standard MOU change order form shall be at the total risk of the Provider and said work may not be compensated by the City.

F. TERMINATION WITHOUT CAUSE

The City may at any time, and for any reason, terminate this MOU by written notice to Provider specifying the termination date, which shall be not less than sixty (60) days from the date such notice is mailed.

Notice shall be given to Provider by certified mail/return receipt requested at the address set forth in Quotation or as provided in this MOU.

In the event of such termination, Provider shall be paid such amount as shall compensate Provider for the work satisfactorily completed, and accepted by the City, at the time of termination.

If the City terminates this MOU, Provider shall withdraw its personnel and equipment, cease performance of any further work under this MOU, and turn over to the City any work completed or in process for which payment has been made.

G. TERMINATION WITH CAUSE/DEFAULT/CANCELLATION

In the event that Provider shall for any reason or through any cause be in default of the terms of this MOU, the City may give Provider written notice of such default by certified mail/return receipt requested at the address set forth in Provider PROVIDER'S Bid Proposal or as provided in this MOU.

Unless a longer period is otherwise provided, Provider shall have ten (10) days from the date such notice is mailed in which to cure the default. Upon failure of Provider to cure the default, the City may immediately cancel and terminate this MOU as of the mailing date of the default notice.

Upon termination, Provider shall withdraw its personnel and equipment, cease performance of any further work under the MOU, and turn over to the City any work in process for which payment has been made.

In the event of violations of law, safety or health standards and regulations, this MOU may be immediately cancelled and terminated by the City and provisions herein with respect to opportunity to cure default shall not be applicable.

H. NON-APPROPRIATION- Availability of Funds

It is understood and agreed between the parties hereto that the City shall be bound and obligated hereunder only to the extent that the funds shall have been appropriated and

budgeted for the purpose of this MOU. In the event funds are not appropriated and budgeted in any fiscal year for payments due under this MOU, the City shall immediately notify Provider of such occurrence and this MOU shall terminate on the last day of the fiscal year for which (an) appropriation(s) (was) were received without penalty or expense to the City of any kind whatsoever.

I. ASSIGNMENT

Neither the City nor the Provider shall assign, sublet or transfer their right or obligations in the MOU without the written consent of the other; such consent shall not be unreasonably withheld. Assignment by the Provider to any current or future parent, subsidiary, or affiliate in connection with a corporate transaction shall require the consent of the City.

J. NOTICE

Any notice, demand, or request by or made pursuant to this MOU shall be deemed properly made is personally delivered in writing or deposited in the United States mail, postage prepaid, to the representative specified below or as otherwise designated in writing and mutually agreed.

Jay Smigielski
Purchasing Agent
442 W. Washington Street, Room 1086
Suffolk, Virginia 23434
jsmigielski@suffolkva.us

PROVIDER: Alan Fitzpatrick
Chief Executive Officer
Open Broadband, LLC
P.O. Box 723
Waxhaw, NC 28173
alan@OpenBB.net

The CITY'S Representative will be Regina Chandler, Assistant Director of Information Technology, (757) 514-7217, rmchandler@suffolkva.us or as otherwise designated in writing.

The PROVIDER's Representative shall be Kent Winrich, Chief Technology Officer, (919) 924-3389, kent@openbb.net or as otherwise designated in writing and accepted by the City in writing.

Nothing contained in this article shall be construed to restrict the transmission of routine communications between representatives of the Provider and the City.

K. CONFLICT OF INTEREST

Provider shall not accept or receive commissions or other payments from third parties for soliciting, negotiating, procuring, or effecting insurance on behalf of the CITY.

L. NON-DISCRIMINATION

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

Also, the Provider in all solicitations or advertisements for employees placed by or on behalf of the Provider, will state that the Provider is an equal opportunity employer.

Notices, advertisements and solicitations placed in accordance with federal law, rule or regulation shall be deemed sufficient for the purpose of meeting the requirements of this section.

The Provider will include the provisions of this nondiscrimination clause in every subcontractor or purchase order of over \$10,000, so that the provisions will be binding upon each subcontractor or vendor supplying services, goods or materials in connection with this MOU.

M. DRUG-FREE WORKPLACE REQUIREMENTS

During the performance of this MOU, the Provider agrees to (1) provide a drug-free workplace for the Provider's employees; (2) post in conspicuous place, 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 Provider's workplace and specifying the actions that will be taken against employees for violations of such prohibition; (3) state in all solicitation or advertisement for employees placed by or on behalf of the Provider that the Provider maintains a drug-free workplace; and (4) include the provisions of the foregoing clauses in every subcontractor or purchase order of over \$10,000, so that the provisions will be binding upon each subcontractor or vendor.

For the purposes of this section, "*drug-free workplace*" means a site for the performance of work done in connection with a specific MOU awarded to a Provider, the employees of whom are prohibited from engaging in the unlawful manufacture, sale, distribution, dispensation, possession or use of any controlled substance or marijuana during the performance of the MOU.

N. INSURANCE

The Provider shall procure, maintain, and provide proof of, insurance coverage for injuries to persons and/or property damage as may arise from or in conjunction with, the work performed on behalf of the City by the Provider, his agents, representatives, employees or subcontractor. Proof of coverage as contained herein shall consist of all policies, endorsements, declaration pages, and certificates of insurance and shall be submitted fifteen (15) days prior to the commencement of work, and such coverage shall be maintained by the offeror for the duration of the MOU period; for occurrence policies. Claims made policies must be in force or that coverage purchased for two (2) years after delivery date.

1. General Liability

Coverage shall be as broad as: Comprehensive General Liability endorsed to include Broad Form, Commercial General Liability form including Products/Completed Operations.

Minimum Limits:

\$2,000,000 General Aggregate Limit
\$2,000,000 Products & Completed Operations
\$1,000,000 Personal and Advertising Injury
\$1,000,000 Each Occurrence Limit
\$ 50,000 Fire Damage Limit
\$ 5,000 Medical Expense Limit

2. Automobile Liability

Coverage sufficient to cover all vehicles owned, used, or hired by the offeror, his agents, representatives, employees or subcontractors.

Minimum Limits:

\$1,000,000 Combined Single Limit
\$ 5,000 Medical Expense Limit

3. Workers' Compensation

Limits as required by the Workers' Compensation Act of Virginia.
Employers Liability: \$100,000 / \$500,000 / \$100,000.

4. Umbrella/Excess Liability

\$2,000,000 umbrella/excess liability coverage

5. Coverage Provisions

a. All deductibles or self-insured retention shall appear on the declaration pages, endorsements, and/or policies provided.

b. The City of Suffolk, its' officers/officials, employees, agents and volunteers shall be added as "additional insured" as their interests may appear. A copy of all endorsements, declaration pages, and policies that address additional insured shall be provided. This provision does not apply to Professional Liability or Workers' Compensation/Employers' Liability.

c. The bidder's insurance shall be primary over any applicable insurance or self-insurance maintained by the City.

d. Shall provide thirty (30) days written notice to the City before any cancellation, suspension, or void of coverage in whole or part, where such provision is reasonable.

e. All coverage for subProviders of the offeror shall be subject to all of the requirements stated herein.

f. Failure to comply with any reporting provisions of the policy(s) shall not affect coverage provided the City, its' officers/officials, agents, employees and

volunteers.

g. The insurer shall agree to waive all rights of subrogation against the City, its' officers/officials, agents, employees or volunteers for any act, omission or condition of premises which the parties may be held liable by reason of negligence.

h. The bidder shall furnish the City with all certificates of insurance, endorsements, declaration pages, and policies affecting coverage. All documents are to be signed by a person authorized by the insurance company(s) to bind coverage on its' behalf, if executed by a broker, notarized copy of authorization to bind, or certify coverage must be attached.

i. All insurance shall be placed with insurers maintaining an A.M. Best rating of no less than an A:VII. If A.M. Best rating is less than A:VII, approval must be received from City's Risk Manager.

j. All coverage designated herein shall be as broad as the Insurance Services Office (ISO) forms filed for use with the Commonwealth of Virginia.

O. INDEMNIFICATION

Provider shall defend and indemnify the City, and the City's employees, agents, and volunteers, from and against any and all damage claim, liability, cost, or expense (including, without limitation, attorney's fees and court costs) of every kind and nature (including, without limitation, those arising from any injury or damage to any person, property or business) incurred by or claimed against the Provider, its employees, agents, and volunteers, or incurred by or claimed against the City, the City's employees, agents, and volunteers, arising out of, or in connection with, the performance of all services hereunder by the Provider. This indemnification includes, but is not limited to, any financial or other loss, including, but not limited to, any adverse regulatory, agency or administrative sanction or civil penalties, incurred by the City due to the negligent, fraudulent or criminal acts of the Provider or any of the Offeror's Provider's officers, shareholders, employees, agents, Providers, sub-Providers, or any other person or entity acting on behalf of the Provider. Unless otherwise provided by law, the Provider indemnification obligations hereunder shall not be limited in any way by the amount or type of damages, compensation, or benefits payable by or for the Provider under workers' compensation acts, disability benefit acts, other employee benefit acts, or benefits payable under any insurance policy. This paragraph shall survive the termination of the MOU including any renewal or extension thereof.

P. RESPONSIBILITY OF PROVIDER

The Provider shall, without additional costs or fee to the City, correct or revise any negligent errors or deficiencies in his performance. Neither the City's review, approval or acceptance of, nor payment for any of the services required under this MOU shall be deemed a waiver of rights by the City, and the Provider shall remain liable to the City for all costs which are incurred by the City as a result of the Provider's negligent performance of any of the services furnished under this MOU.

Q. COMPLIANCE WITH FEDERAL IMMIGRATION LAW

Provider does not, and shall not during the performance of the MOU for goods and

services in the Commonwealth knowingly employ an unauthorized alien as defined in the Federal Immigration Reform and Control Act of 1986.

R. SEVERABILITY

If any part, term, or provision of this MOU, shall be found by the Court to be legally invalid or unenforceable, then such provision or portion thereof, shall be performed in accordance with applicable laws. The invalidity or unenforceability of any provision or portion of any MOU document shall not affect the validity of any other provision or portion of the MOU document.

S. CONTROLLING LAW; VENUE, PENDING/DURING LITIGATION

This MOU is made, entered into, and shall be performed in the City of Suffolk, Virginia, and shall be governed by the applicable laws of the Commonwealth of Virginia without regard to its conflict of law rules. In the event of litigation concerning this MOU, the parties agree to the exclusive jurisdiction and venue of the Circuit Court of the City of Suffolk, Virginia; however, in the event that the federal court has jurisdiction over the matter, then the parties agree to the exclusive jurisdiction and venue of the U.S. District Court for the Eastern District of Virginia, Norfolk Division.

The Provider shall not cause a delay in services because of the pending or during litigation proceedings, except with the express, written consent of the CITY or written instruction/order from the Court.

T. COMPLIANCE WITH STATE LAW; FOREIGN AND DOMESTIC BUSINESSES TRANSACTING BUSINESS IN THE COMMONWEALTH

A bidder or offeror organized or authorized to transact business in the Commonwealth pursuant to Title 13.1 or Title 50 is to include in its bid or proposal the identification number issued to it by the State Corporation Commission. Any bidder or offeror that is not required to be authorized to transact business in the Commonwealth as a foreign business entity under Title 13.1 or Title 50 or as otherwise required by law shall include in its bid or proposal a statement describing why the bidder or offeror is not required to be so authorized. A public body may void any MOU with a business if the business fails to remain in compliance with the provisions of this section.

U. ENTIRE MOU

This MOU comprises the entire understanding between the parties and cannot be modified, altered or amended, except in writing and signed by all parties.

V. WAIVER

The failure by one party to require performance of any provision of this MOU shall not affect that party's right to require performance at any time thereafter, nor shall a waiver of any breach or default of the MOU constitute a waiver of any subsequent breach or default or a waiver of the provision itself.

W. PAYMENTS TO SUBCONTRACTORS

Within seven (7) days after receipt of amounts paid by the City for work performed by a subcontractor under this MOU, the Provider shall either:

- a. Pay the subcontractor for the proportionate share of the total payment received from the City attributable to the work performed by the subcontractor under this MOU; or
- b. Notify the City and subcontractor, in writing, of his intention to withhold all or a part of the subcontractor's payment and the reason for non- payment.

The Provider shall pay interest to the subcontractor on all amounts owed that remain unpaid beyond the seven-day period except for amounts withheld as allowed in item b. above. Unless otherwise provided under the terms of this MOU, interest shall accrue at the rate of one percent per month.

The Provider shall include in each of its subcontracts a provision requiring each subcontractor to include or otherwise be subject to the same payment and interest requirements as set forth above with respect to each lower-tier subcontractor.

The Provider's obligation to pay an interest charge to a subcontractor pursuant to this provision may not be construed to be an obligation of the City.

SIGNATURE PAGE FOLLOWS

IN WITNESS WHEREOF, the parties hereto have executed and sealed this AGREEMENT as of the day and year first above written.

CITY OF SUFFOLK, VA

OPEN BROADBAND, LLC

BY: _____
Jay Smigielski
Purchasing Agent

BY: _____
Alan Fitzpatrick
Chief Executive Officer

ATTEST:

BY: _____

Print Name : _____

Title: _____



COMMONWEALTH OF VIRGINIA

HOUSE OF DELEGATES
RICHMOND

S. CHRIS JONES
POST OFFICE BOX 5059
SUFFOLK, VIRGINIA 23435-0059

SEVENTY-SIXTH DISTRICT

COMMITTEE ASSIGNMENTS:
APPROPRIATIONS (CHAIRMAN)
PRIVILEGES AND ELECTIONS
RULES

August 22, 2019

Mr. Erik Johnston, Director
Department of Housing and Community Development
600 East Main Street, Suite 300
Richmond, VA 23219

Dear Director Johnston,

I would like to take this opportunity to voice my support the City of Suffolk's Virginia Telecommunication Initiative (VATI) grant application.

I have lived in Suffolk my entire life and had the opportunity to serve as Mayor of this great city. I am proud of the achievements Suffolk has made in economic growth and development as well as improving educational opportunities. Unfortunately, the city is not reaching its full potential as a result of broadband internet access unavailability in areas throughout the city.

Citizens are also impacted by this non access. The incumbent provider has chosen not to bring their broadband service to every home in Suffolk because it simply is not financially feasible and profitable. Suffolk's VATI grant application provides a plan to bring broadband access to the remaining citizens who are unserved in rural Suffolk and will enable these citizens to access the Internet from their homes and rural businesses.

Suffolk's project will utilize the latest technology to provide broadband service in the most affordable manner possible. Again, I strongly support and endorse Suffolk's VATI grant application.

Thank you for your consideration. Feel free to contact me with any additional questions.

Regards,

A handwritten signature in black ink, appearing to read "Chris Jones".

S. Chris Jones



COMMONWEALTH OF VIRGINIA
HOUSE OF DELEGATES
RICHMOND

C. E. CLIFF HAYES, JR.
POST OFFICE BOX 5142
CHESAPEAKE, VIRGINIA 23324

SEVENTY-SEVENTH DISTRICT

COMMITTEE ASSIGNMENTS:
APPROPRIATIONS
COUNTIES, CITIES AND TOWNS
HEALTH, WELFARE AND INSTITUTIONS

August 23, 2019

Mr. Erik Johnston, Director
Department of Housing and Community Development
600 East Main Street, Suite 300
Richmond, VA 23219

RE: VATI Grant Application submitted by the City of Suffolk

Mr. Johnston:

The purpose of this correspondence is to express my support for the Virginia Telecommunication Initiative (VATI) Grant Application submitted by the City of Suffolk

Suffolk's plan will provide last mile services to various areas of the City of Suffolk that are currently classified as "unserved" or have no means of accessing broadband services. Access to broadband services has become a necessity for education and business opportunities in today's society. I am happy to support the City of Suffolk's initiative to increase opportunities for unserved areas of the city.

It is my hope that you will favorably consider the City of Suffolk's grant application.

Thank you for your consideration in this matter.

Sincerely,



C. E. Cliff Hayes, Jr.



COMMONWEALTH OF VIRGINIA
HOUSE OF DELEGATES
RICHMOND

EMILY M. BREWER
POST OFFICE BOX 3
SMITHFIELD, VIRGINIA 23431

SIXTY-FOURTH DISTRICT

COMMITTEE ASSIGNMENTS:
FINANCE
MILITIA, POLICE AND PUBLIC SAFETY
SCIENCE AND TECHNOLOGY

August 23, 2019

Mr. Erik Johnston
Director
Department of Housing and Community Development
600 East Main Street, Suite 300
Richmond, VA 23219

Dear Erik:

I am writing to strongly support the City of Suffolk's VATI grant application for funding. Much of Suffolk does not have broadband, and this plan hopes to bring access to all of rural Suffolk. Implementing this plan will enable those citizens to join the rest of Hampton Roads and Virginia, where families can access the internet from their home.

As a member of the Broadband Advisory Council, I am fully familiar with the VATI program and I support it's goals wholeheartedly. Suffolk's project aligns with the Commonwealth's goal of bringing broadband access to every Virginian and, again, I strongly support and endorse Suffolk's VATI grant application.

Thank you for your consideration.

Sincerely,

Emily Brewer
Virginia House of Delegates, 64th District

openbroadband

Equipment (1-year)

Whaleyville
Hunter
Pruden
Holland Water
Water Treatment

Equipment Total

Labor (1-year)

Whaleyville
Hunter
Pruden
Holland Water
Water Treatment

Labor Total

Tower Cost (3-years)

Whaleyville
Hunter
Pruden
Holland Water
Water Treatment

Tower Total

Project Mgmt & Coordination (1-year)

Whaleyville
Hunter
Pruden
Holland Water
Water Treatment

PM Total

Fiber and Data Center BW (3-years)

3-years (\$3500/mo * 36)

Grand Total

VATI	OpenBB	Suffolk	Total
\$ 157,910	\$ 94,875	0	\$ 252,785
\$ 157,910	\$ 94,875	0	\$ 252,785
\$ 59,250	\$ 30,150	0	\$ 89,400
\$ 80,240	\$ 30,150	0	\$ 110,390
\$ 80,240	\$ 30,150	0	\$ 110,390
\$ 535,550	\$ 280,200	\$ -	\$ 815,750

VATI	OpenBB	Suffolk	Total
\$ 26,908	\$ 1,500	0	\$ 28,408
\$ 26,908	\$ 1,500	0	\$ 28,408
\$ 18,428	\$ 1,500	0	\$ 19,928
\$ 26,908	\$ 1,500	0	\$ 28,408
\$ 26,908	\$ 1,500	0	\$ 28,408
\$ 126,060	\$ 7,500	\$ -	\$ 133,560

VATI	OpenBB	Suffolk	Total
\$ -	\$ 1,800	\$ 36,000	\$ 37,800
\$ -	\$ 1,800	\$ 36,000	\$ 37,800
\$ -	\$ 1,800	\$ 36,000	\$ 37,800
\$ -	\$ 1,800	\$ 9,000	\$ 10,800
\$ -	\$ 1,800	\$ 35,000	\$ 36,800
\$ -	\$ 9,000	\$ 152,000	\$ 161,000

VATI	OpenBB	Suffolk	Total
\$ -	\$ 6,000	\$ 6,000	\$ 12,000
\$ -	\$ 6,000	\$ 6,000	\$ 12,000
\$ -	\$ 6,000	\$ 6,000	\$ 12,000
\$ -	\$ 6,000	\$ 6,000	\$ 12,000
\$ -	\$ 6,000	\$ 6,000	\$ 12,000
\$ -	\$ 30,000	\$ 30,000	\$ 60,000

VATI	OpenBB	Suffolk	Total
\$ -	\$ 126,000	\$ -	\$ 126,000

VATI	OpenBB	Suffolk	Total
\$ 661,610	\$ 452,700	\$ 182,000	\$ 1,296,310
51%	35%	14%	

openbroadband

Location: Whaleyville Tower (owned by Suffolk)

	Item	Description	Unit Cost
3.65 GHz	AW3035-T0	Alpha Sector Antennas 3.65 65 degree	\$ 420
3.65 GHz	mBS1105	BaiCells eNB 3.65 base station (inclusive of tariff)	\$ 3,999
3.65 GHz	BAICELLS-HALOB-1	BaiCells HaloB-1 Local EPC Feature Key	\$ 250
3.65 GHz	Baicells Atom OD04-19.5	Baicells Atom OD04-19.5 Gen2 3.5GHz 19.5dBi Outdoor CPE (inclusive of tariff)	\$ 245
3.65 GHz	BAICELLS-SIMCARD	BaiCells SIM cards	\$ 6
3.65 GHz	CBRS SAS License	CBRS Spectrum Access System (SAS) Licensing Fee/unit for 3.65 GHz (\$3/mo for 36 months)	\$ 108
premise	UB-AM	Ubiquiti Airmax universal mounting bracket	\$ 7.50
premise	CPE Cabling/connectors	Ethernet connectors, clips, tiewraps, outlet strips	\$ 25
premise	PL-R190WUSA-WW	Cambium cnPilot R190W 802.11n 2.4GHz Home Router	\$ 40.00
5 GHz	HG3-TP-S90	RF Elements Horn Antenna w/Twist Port Adapter	\$ 175
5 GHz	RP-5AC-Gen2 US	Ubiquiti Prism Rocket Radios 5 GHz	\$ 250
5 GHz	AF11 GHz	Ubiquiti Air Fiber Licensed 11 GHz PtP link	\$ 2,800
5 GHz	UH-TP-5-24	RF Elements Ultrahorn antenna TP 5-24	\$ 389
2.4 GHz	AM-2G16-90	Ubiquiti Airmax 2.4 ghz Sector, 16dbi, 90 deg	\$ 133
2.4 GHz	ROCKETM2	Ubiquiti Rocket M2, 2.4 GHz radio	\$ 89
2.4 GHz	NBE-2AC-13-US	Ubiquiti airMax NanoBeam 2AC, 13 dBi MIMO antenna	\$ 99
Wi-Fi	UAP-AC-M-PRO	Unifi Mesh Pro Access Point	\$ 175
core	CCR1009-7G-1C-1S+	MikroTik Cloud Core Router	\$ 420
core	ES-48-500W	Ubiquiti Edgeswitch 500w managed POE gigabit switch	\$ 850
Tower	DC2021	Shireen 1000ft, Outdoor shielded Cat6	\$ 240
Tower	ETH-SP-G2	Ubiquiti ETH-SP Ethernet Surge Protector	\$ 20
Tower	ENC-STL-24x24x16	Tycon Power Weatherproof Steel Outdoor Enclosure	\$ 375
Tower	ENC-STL-RMK	Rack mount system for Enclosure	\$ 50
Tower	RPST-POWERVENT-24	Tycon Power PowerVent System for enclosure	\$ 30
Tower	TPDIN-Monitor-WEB2	Tycon Power TPDIN PowerSens Remote Monitor Unit	\$ 160
Tower	CWT01-LL	Valmont Site Pro Tower Mount	\$ 475
Tower	P2110	Valmont Site Pro Mount Poles	\$ 62
Tower	MER8-P	Valmont H-frame rack mount hardware	\$ 565
Tower	UVC-G4-PRO	IP Camera (PTZ, outdoor, zoom, 4MP)	\$ 450
Tower	PDUMH20HV	Tripp Lite 3.2-3.8kw single-phase metered pdu	\$ 150
Tower	Misc	Misc Tower components including ethernet connectors, clips, tiewraps, jumpers, terminal strips, etc.	\$ 1,200

		Total before Shipping and taxes	
Shipping		Shipping Allowance 4%	
Taxes		Taxes Allowance 6% on equipment purchased	
		Equipment Total	
Tower Structural Analysis	Complete analysis of antenna support structure		\$ 4,000
FCC 11 GHz licensing	Fees to file and register 11 GHz link		\$ 1,800
Tower Climbers	Certified, insured, licensed professionals - 2 days + travel		\$ 12,000
Tower Design	Link Analysis, RF Propagation Analysis and Design		\$ 1,500
Electrician	Fiber and Power cabling		\$ 1,200
Tower Permits	Tower Permitting Fee Estimate		\$ 500
Configuration and Install	Install, programming and config of all equipment		\$ 4,000
		Total before taxes	
		Taxes Allowance 6% on labor	
		Labor Total	
Tower Lease	3-year lease of the Suffolk owned tower (\$1000/mo)		
Electrical Usage	3-year lease of a 110v power outlet on a 20 amp circuit, backed up by generator (\$50/mo)		
		Lease Total	

Total Estimate for the Tower Site

8/18/2019

Quantity	Total	VATI	OpenBB	Suffolk	Source
4	\$ 1,680	\$ 1,680			Baltic Networks or ISP Supplies
4	\$ 15,996	\$ 15,996			Baltic Networks or ISP Supplies
4	\$ 1,000	\$ 1,000			Baltic Networks or ISP Supplies
400	\$ 98,000	\$ 49,000	\$ 49,000		Baltic Networks or ISP Supplies
400	\$ 2,400	\$ 1,200	\$ 1,200		Baltic Networks or ISP Supplies
400	\$ 43,200	\$ 21,600	\$ 21,600		Google
500	\$ 3,750	\$ 1,875	\$ 1,875		Double Radius
500	\$ 12,500	\$ 6,250	\$ 6,250		Baltic Networks or ISP Supplies
500	\$ 20,000	\$ 10,000	\$ 10,000		Baltic Networks or ISP Supplies
4	\$ 700	\$ 700			Baltic Networks or ISP Supplies
6	\$ 1,500	\$ 1,500			Baltic Networks or ISP Supplies
2	\$ 5,600	\$ 5,600			Baltic Networks or ISP Supplies
2	\$ 778	\$ 778			Baltic Networks or ISP Supplies
4	\$ 532	\$ 532			Baltic Networks or ISP Supplies
4	\$ 356	\$ 356			Baltic Networks or ISP Supplies
100	\$ 9,900	\$ 4,950	\$ 4,950		Baltic Networks or ISP Supplies
10	\$ 1,750	\$ 875			Baltic Networks or ISP Supplies
1	\$ 420	\$ 420			Baltic Networks or ISP Supplies
1	\$ 850	\$ 850			Baltic Networks or ISP Supplies
18	\$ 4,320	\$ 4,320			Baltic Networks or ISP Supplies
12	\$ 240	\$ 240			Amazon
1	\$ 375	\$ 375			Baltic Networks or ISP Supplies
1	\$ 50	\$ 50			Baltic Networks or ISP Supplies
1	\$ 30	\$ 30			Baltic Networks or ISP Supplies
1	\$ 160	\$ 160			Baltic Networks or ISP Supplies
4	\$ 1,900	\$ 1,900			Valmont
4	\$ 248	\$ 248			Valmont
1	\$ 565	\$ 565			Valmont
1	\$ 450	\$ 450			Baltic Networks or ISP Supplies
1	\$ 150	\$ 150			Baltic Networks or ISP Supplies
1	\$ 1,200	\$ 1,200			Based on experience. Ordered through Amazon or another source

	\$ 230,600	\$ 134,850	\$ 94,875	\$ -	
	\$ 9,224	\$ 9,224			estimated all parts
	\$ 13,836	\$ 13,836			estimated all parts
	\$ 253,660	\$ 157,910	\$ 94,875	\$ -	
1	\$ 4,000	\$ 4,000			Clark Nexsen or equivalent
2	\$ 3,600	\$ 3,600			Baltic Networks or ISP Supplies
1	\$ 12,000	\$ 12,000			M&B Tower or Shenandoah Tower Service
1	\$ 1,500		\$ 1,500		based on experience
1	\$ 1,200	\$ 1,200			Sourced locally
1	\$ 500	\$ 500			based on experience
1	\$ 4,000	\$ 4,000			
	\$ 26,800	\$ 25,300	\$ 1,500	\$ -	
	\$ 1,608	\$ 1,608			estimated all labor
	\$ 28,408	\$ 26,908	\$ 1,500	\$ -	
	\$ 36,000			\$ 36,000	
	\$ 1,800		\$ 1,800		
	\$ 37,800	\$ -	\$ 1,800	\$ 36,000	
	\$ 319,868	\$ 184,818	\$ 98,175	\$ 36,000	
		58%	31%	11%	

openbroadband

Location: Hunter Tower (owned by Suffolk)

	Item	Description	Unit Cost
3.65 GHz	AW3035-T0	Alpha Sector Antennas 3.65 65 degree	\$ 420
3.65 GHz	mBS1105	BaiCells eNB 3.65 base station (inclusive of tariff)	\$ 3,999
3.65 GHz	BAICELLS-HALOB-1	BaiCells HaloB-1 Local EPC Feature Key	\$ 250
3.65 GHz	Baicells Atom OD04-19.5	Baicells Atom OD04-19.5 Gen2 3.5GHz 19.5dBi Outdoor CPE (inclusive of tariff)	\$ 245
3.65 GHz	BAICELLS-SIMCARD	BaiCells SIM cards	\$ 6
3.65 GHz	CBRS SAS License	CBRS Spectrum Access System (SAS) Licensing Fee/unit for 3.65 GHz (\$3/mo for 36 months)	\$ 108
premise	UB-AM	Ubiquiti Airmax universal mounting bracket	\$ 7.50
premise	CPE Cabling/connectors	Ethernet connectors, clips, tiewraps, outlet strips	\$ 25
premise	PL-R190WUSA-WW	Cambium cnPilot R190W 802.11n 2.4GHz Home Router	\$ 40.00
5 GHz	HG3-TP-S90	RF Elements Horn Antenna w/Twist Port Adapter	\$ 175
5 GHz	RP-5AC-Gen2 US	Ubiquiti Prism Rocket Radios 5 GHz	\$ 250
5 GHz	AF11 GHz	Ubiquiti Air Fiber Licensed 11 GHz PtP link	\$ 2,800
5 GHz	UH-TP-5-24	RF Elements Ultrahorn antenna TP 5-24	\$ 389
2.4 GHz	AM-2G16-90	Ubiquiti Airmax 2.4 ghz Sector, 16dbi, 90 deg	\$ 133
2.4 GHz	ROCKETM2	Ubiquiti Rocket M2, 2.4 GHz radio	\$ 89
2.4 GHz	NBE-2AC-13-US	Ubiquiti airMax NanoBeam 2AC, 13 dBi MIMO antenna	\$ 99
Wi-Fi	UAP-AC-M-PRO	Unifi Mesh Pro Access Point	\$ 175
core	CCR1009-7G-1C-1S+	MikroTik Cloud Core Router	\$ 420
core	ES-48-500W	Ubiquiti Edgeswitch 500w managed POE gigabit switch	\$ 850
Tower	DC2021	Shireen 1000ft, Outdoor shielded Cat6	\$ 240
Tower	ETH-SP-G2	Ubiquiti ETH-SP Ethernet Surge Protector	\$ 20
Tower	ENC-STL-24x24x16	Tycon Power Weatherproof Steel Outdoor Enclosure	\$ 375
Tower	ENC-STL-RMK	Rack mount system for Enclosure	\$ 50
Tower	RPST-POWERVENT-24	Tycon Power PowerVent System for enclosure	\$ 30
Tower	TPDIN-Monitor-WEB2	Tycon Power TPDIN PowerSens Remote Monitor Unit	\$ 160
Tower	CWT01-LL	Valmont Site Pro Tower Mount	\$ 475
Tower	P2110	Valmont Site Pro Mount Poles	\$ 62
Tower	MER8-P	Valmont H-frame rack mount hardware	\$ 565
Tower	UVC-G4-PRO	IP Camera (PTZ, outdoor, zoom, 4MP)	\$ 450
Tower	PDUMH20HV	Tripp Lite 3.2-3.8kw single-phase metered pdu	\$ 150
Tower	Misc	Misc Tower components including ethernet connectors, clips, tiewraps, jumpers, terminal strips, etc.	\$ 1,200

		Total before Shipping and taxes	
Shipping		Shipping Allowance 4%	
Taxes		Taxes Allowance 6% on equipment purchased	
		Equipment Total	
Tower Structural Analysis	Complete analysis of antenna support structure		\$ 4,000
FCC 11 GHz licensing	Fees to file and register 11 GHz link		\$ 1,800
Tower Climbers	Certified, insured, licensed professionals - 2 days + travel		\$ 12,000
Tower Design	Link Analysis, RF Propagation Analysis and Design		\$ 1,500
Electrician	Fiber and Power cabling		\$ 1,200
Tower Permits	Tower Permitting Fee Estimate		\$ 500
Configuration and Install	Install, programming and config of all equipment		\$ 4,000
		Total before taxes	
		Taxes Allowance 6% on labor	
		Labor Total	
Tower Lease	3-year lease of the Suffolk owned tower (\$1000/mo)		
Electrical Usage	3-year lease of a 110v power outlet on a 20 amp circuit, backed up by generator (\$50/mo)		
		Lease Total	

Total Estimate for the Tower Site

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1	\$ 4,000	\$ 4,000			
	\$ 26,800	\$ 25,300	\$ 1,500	\$ -	
	\$ 1,608	\$ 1,608			estimated all labor
	\$ 28,408	\$ 26,908	\$ 1,500	\$ -	
	\$ 36,000			\$ 36,000	
	\$ 1,800		\$ 1,800		
	\$ 37,800	\$ -	\$ 1,800	\$ 36,000	
	\$ 319,868	\$ 184,818	\$ 98,175	\$ 36,000	
		58%	31%	11%	

openbroadband

Location: Pruden Tower (owned by Suffolk)

	Item	Description	Unit Cost
3.65 GHz	AW3035-T0	Alpha Sector Antennas 3.65 65 degree	\$ 420
3.65 GHz	mBS1105	BaiCells eNB 3.65 base station (inclusive of tariff)	\$ 3,999
3.65 GHz	BAICELLS-HALOB-1	BaiCells HaloB-1 Local EPC Feature Key	\$ 250
3.65 GHz	Baicells Atom OD04-19.5	Baicells Atom OD04-19.5 Gen2 3.5GHz 19.5dBi Outdoor CPE (inclusive of tariff)	\$ 245
3.65 GHz	BAICELLS-SIMCARD	BaiCells SIM cards	\$ 6
3.65 GHz	CBRS SAS License	CBRS Spectrum Access System (SAS) Licensing Fee/unit for 3.65 GHz (\$3/mo for 36 months)	\$ 108
premise	UB-AM	Ubiquiti Airmax universal mounting bracket	\$ 7.50
premise	CPE Cabling/connectors	Ethernet connectors, clips, tiewraps, outlet strips	\$ 25
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5 GHz	HG3-TP-S90	RF Elements Horn Antenna w/Twist Port Adapter	\$ 175
5 GHz	RP-5AC-Gen2 US	Ubiquiti Prism Rocket Radios 5 GHz	\$ 250
5 GHz	AF11 GHz	Ubiquiti Air Fiber Licensed 11 GHz PtP link	\$ 2,800
5 GHz	UH-TP-5-24	RF Elements Ultrahorn antenna TP 5-24	\$ 389
2.4 GHz	AM-2G16-90	Ubiquiti Airmax 2.4 ghz Sector, 16dbi, 90 deg	\$ 133
2.4 GHz	ROCKETM2	Ubiquiti Rocket M2, 2.4 GHz radio	\$ 89
2.4 GHz	NBE-2AC-13-US	Ubiquiti airMax NanoBeam 2AC, 13 dBi MIMO antenna	\$ 99
Wi-Fi	UAP-AC-M-PRO	Unifi Mesh Pro Access Point	\$ 175
core	CCR1009-7G-1C-1S+	MikroTik Cloud Core Router	\$ 420
core	ES-48-500W	Ubiquiti Edgeswitch 500w managed POE gigabit switch	\$ 850
Tower	DC2021	Shireen 1000ft, Outdoor shielded Cat6	\$ 240
Tower	ETH-SP-G2	Ubiquiti ETH-SP Ethernet Surge Protector	\$ 20
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Tower	ENC-STL-RMK	Rack mount system for Enclosure	\$ 50
Tower	RPST-POWERVENT-24	Tycon Power PowerVent System for enclosure	\$ 30
Tower	TPDIN-Monitor-WEB2	Tycon Power TPDIN PowerSens Remote Monitor Unit	\$ 160
Tower	CWT01-LL	Valmont Site Pro Tower Mount	\$ 475
Tower	P2110	Valmont Site Pro Mount Poles	\$ 62
Tower	MER8-P	Valmont H-frame rack mount hardware	\$ 565
Tower	UVC-G4-PRO	IP Camera (PTZ, outdoor, zoom, 4MP)	\$ 450
Tower	PDUMH20HV	Tripp Lite 3.2-3.8kw single-phase metered pdu	\$ 150
Tower	Misc	Misc Tower components including ethernet connectors, clips, tiewraps, jumpers, terminal strips, etc.	\$ 1,200

		Total before Shipping and taxes	
Shipping		Shipping Allowance 4%	
Taxes		Taxes Allowance 6% on equipment purchased	
		Equipment Total	
Tower Structural Analysis	Complete analysis of antenna support structure		\$ 4,000
FCC 11 GHz licensing	Fees to file and register 11 GHz link		\$ 1,800
Tower Climbers	Certified, insured, licensed professionals - 1 day + travel		\$ 6,000
Tower Design	Link Analysis, RF Propagation Analysis and Design		\$ 1,500
Electrician	Fiber and Power cabling		\$ 1,200
Tower Permits	Tower Permitting Fee Estimate		\$ 500
Configuration and Install	Install, programming and config of all equipment		\$ 2,000
		Total before taxes	
		Taxes Allowance 6% on labor	
		Labor Total	
Tower Lease	3-year lease of the Suffolk owned tower (\$1000/mo)		
Electrical Usage	3-year lease of a 110v power outlet on a 20 amp circuit, backed up by generator (\$50/mo)		
		Lease Total	
		Total Estimate for the Tower Site	

8/18/2019

Quantity	Total	VATI	OpenBB	Suffolk	Source
1	\$ 420	\$ 420			Baltic Networks or ISP Supplies
1	\$ 3,999	\$ 3,999			Baltic Networks or ISP Supplies
1	\$ 250	\$ 250			Baltic Networks or ISP Supplies
100	\$ 24,500	\$ 12,250	\$ 12,250		Baltic Networks or ISP Supplies
100	\$ 600	\$ 300	\$ 300		Baltic Networks or ISP Supplies
100	\$ 10,800	\$ 5,400	\$ 5,400		Google
200	\$ 1,500	\$ 750	\$ 750		Double Radius
200	\$ 5,000	\$ 2,500	\$ 2,500		Baltic Networks or ISP Supplies
200	\$ 8,000	\$ 4,000	\$ 4,000		Baltic Networks or ISP Supplies
1	\$ 175	\$ 175			Baltic Networks or ISP Supplies
3	\$ 750	\$ 750			Baltic Networks or ISP Supplies
2	\$ 5,600	\$ 5,600			Baltic Networks or ISP Supplies
2	\$ 778	\$ 778			Baltic Networks or ISP Supplies
1	\$ 133	\$ 133			Baltic Networks or ISP Supplies
1	\$ 89	\$ 89			Baltic Networks or ISP Supplies
100	\$ 9,900	\$ 4,950	\$ 4,950		Baltic Networks or ISP Supplies
10	\$ 1,750	\$ 875			Baltic Networks or ISP Supplies
1	\$ 420	\$ 420			Baltic Networks or ISP Supplies
1	\$ 850	\$ 850			Baltic Networks or ISP Supplies
10	\$ 2,400	\$ 2,400			Baltic Networks or ISP Supplies
5	\$ 100	\$ 100			Amazon
1	\$ 375	\$ 375			Baltic Networks or ISP Supplies
1	\$ 50	\$ 50			Baltic Networks or ISP Supplies
1	\$ 30	\$ 30			Baltic Networks or ISP Supplies
1	\$ 160	\$ 160			Baltic Networks or ISP Supplies
2	\$ 950	\$ 950			Valmont
2	\$ 124	\$ 124			Valmont
1	\$ 565	\$ 565			Valmont
1	\$ 450	\$ 450			Baltic Networks or ISP Supplies
1	\$ 150	\$ 150			Baltic Networks or ISP Supplies
1	\$ 1,200	\$ 1,200			Based on experience. Ordered through Amazon or another source

	\$ 82,068	\$ 51,043	\$ 30,150	\$ -	
	\$ 3,283	\$ 3,283			estimated all parts
	\$ 4,924	\$ 4,924			estimated all parts
	\$ 90,275	\$ 59,250	\$ 30,150	\$ -	
1	\$ 4,000	\$ 4,000			Clark Nexsen or equivalent
2	\$ 3,600	\$ 3,600			Baltic Networks or ISP Supplies
1	\$ 6,000	\$ 6,000			M&B Tower or Shenandoah Tower Service
1	\$ 1,500		\$ 1,500		based on experience
1	\$ 1,200	\$ 1,200			Sourced locally
1	\$ 500	\$ 500			based on experience
1	\$ 2,000	\$ 2,000			
	\$ 18,800	\$ 17,300	\$ 1,500	\$ -	
	\$ 1,128	\$ 1,128			estimated all labor
	\$ 19,928	\$ 18,428	\$ 1,500	\$ -	
	\$ 36,000			\$ 36,000	
	\$ 1,800		\$ 1,800		
	\$ 37,800	\$ -	\$ 1,800	\$ 36,000	
	\$ 148,003	\$ 77,678	\$ 33,450	\$ 36,000	
		52%	23%	24%	

openbroadband

Location: Holland Water Tower (owned by Suffolk)

	Item	Description	Unit Cost
3.65 GHz	AW3035-T0	Alpha Sector Antennas 3.65 65 degree	\$ 420
3.65 GHz	mBS1105	BaiCells eNB 3.65 base station (inclusive of tariff)	\$ 3,999
3.65 GHz	BAICELLS-HALOB-1	BaiCells HaloB-1 Local EPC Feature Key	\$ 250
3.65 GHz	Baicells Atom OD04-19.5	Baicells Atom OD04-19.5 Gen2 3.5GHz 19.5dBi Outdoor CPE (inclusive of tariff)	\$ 245
3.65 GHz	BAICELLS-SIMCARD	BaiCells SIM cards	\$ 6
3.65 GHz	CBRS SAS License	CBRS Spectrum Access System (SAS) Licensing Fee/unit for 3.65 GHz (\$3/mo for 36 months)	\$ 108
premise	UB-AM	Ubiquiti Airmax universal mounting bracket	\$ 7.50
premise	CPE Cabling/connectors	Ethernet connectors, clips, tiewraps, outlet strips	\$ 25
premise	PL-R190WUSA-WW	Cambium cnPilot R190W 802.11n 2.4GHz Home Router	\$ 40.00
5 GHz	HG3-TP-S90	RF Elements Horn Antenna w/Twist Port Adapter	\$ 175
5 GHz	RP-5AC-Gen2 US	Ubiquiti Prism Rocket Radios 5 GHz	\$ 250
5 GHz	AF11 GHz	Ubiquiti Air Fiber Licensed 11 GHz PtP link	\$ 2,800
5 GHz	UH-TP-5-24	RF Elements Ultrahorn antenna TP 5-24	\$ 389
2.4 GHz	AM-2G16-90	Ubiquiti Airmax 2.4 ghz Sector, 16dbi, 90 deg	\$ 133
2.4 GHz	ROCKETM2	Ubiquiti Rocket M2, 2.4 GHz radio	\$ 89
2.4 GHz	NBE-2AC-13-US	Ubiquiti airMax NanoBeam 2AC, 13 dBi MIMO antenna	\$ 99
Wi-Fi	UAP-AC-M-PRO	Unifi Mesh Pro Access Point	\$ 175
core	CCR1009-7G-1C-1S+	MikroTik Cloud Core Router	\$ 420
core	ES-48-500W	Ubiquiti Edgeswitch 500w managed POE gigabit switch	\$ 850
Tower	DC2021	Shireen 1000ft, Outdoor shielded Cat6	\$ 240
Tower	ETH-SP-G2	Ubiquiti ETH-SP Ethernet Surge Protector	\$ 20
Tower	ENC-STL-24x24x16	Tycon Power Weatherproof Steel Outdoor Enclosure	\$ 375
Tower	ENC-STL-RMK	Rack mount system for Enclosure	\$ 50
Tower	RPST-POWERVENT-24	Tycon Power PowerVent System for enclosure	\$ 30
Tower	TPDIN-Monitor-WEB2	Tycon Power TPDIN PowerSens Remote Monitor Unit	\$ 160
Tower	CWT01-LL	Valmont Site Pro Tower Mount	\$ 475
Tower	P2110	Valmont Site Pro Mount Poles	\$ 62
Tower	MER8-P	Valmont H-frame rack mount hardware	\$ 565
Tower	UVC-G4-PRO	IP Camera (PTZ, outdoor, zoom, 4MP)	\$ 450
Tower	PDUMH20HV	Tripp Lite 3.2-3.8kw single-phase metered pdu	\$ 150
Tower	Misc	Misc Tower components including ethernet connectors, clips, tiewraps, jumpers, terminal strips, etc.	\$ 1,200

		Total before Shipping and taxes	
Shipping		Shipping Allowance 4%	
Taxes		Taxes Allowance 6% on equipment purchased	
		Equipment Total	
Tower Structural Analysis	Complete analysis of antenna support structure		\$ 4,000
FCC 11 GHz licensing	Fees to file and register 11 GHz link		\$ 1,800
Tower Climbers	Certified, insured, licensed professionals - 2 days + travel		\$ 12,000
Tower Design	Link Analysis, RF Propagation Analysis and Design		\$ 1,500
Electrician	Fiber and Power cabling		\$ 1,200
Tower Permits	Tower Permitting Fee Estimate		\$ 500
Configuration and Install	Install, programming and config of all equipment		\$ 4,000
		Total before taxes	
		Taxes Allowance 6% on labor	
		Labor Total	
Tower Lease	3-year lease of the water tower (\$250/mo)		
Electrical Usage	3-year lease of a 110v power outlet on a 20 amp circuit, backed up by generator (\$50/mo)		
		Lease Total	
		Total Estimate for the Tower Site	

8/18/2019

Quantity	Total	VATI	OpenBB	Suffolk	Source
4	\$ 1,680	\$ 1,680			Baltic Networks or ISP Supplies
4	\$ 15,996	\$ 15,996			Baltic Networks or ISP Supplies
4	\$ 1,000	\$ 1,000			Baltic Networks or ISP Supplies
100	\$ 24,500	\$ 12,250	\$ 12,250		Baltic Networks or ISP Supplies
100	\$ 600	\$ 300	\$ 300		Baltic Networks or ISP Supplies
100	\$ 10,800	\$ 5,400	\$ 5,400		Google
200	\$ 1,500	\$ 750	\$ 750		Double Radius
200	\$ 5,000	\$ 2,500	\$ 2,500		Baltic Networks or ISP Supplies
200	\$ 8,000	\$ 4,000	\$ 4,000		Baltic Networks or ISP Supplies
4	\$ 700	\$ 700			Baltic Networks or ISP Supplies
6	\$ 1,500	\$ 1,500			Baltic Networks or ISP Supplies
2	\$ 5,600	\$ 5,600			Baltic Networks or ISP Supplies
2	\$ 778	\$ 778			Baltic Networks or ISP Supplies
4	\$ 532	\$ 532			Baltic Networks or ISP Supplies
4	\$ 356	\$ 356			Baltic Networks or ISP Supplies
100	\$ 9,900	\$ 4,950	\$ 4,950		Baltic Networks or ISP Supplies
10	\$ 1,750	\$ 875			Baltic Networks or ISP Supplies
1	\$ 420	\$ 420			Baltic Networks or ISP Supplies
1	\$ 850	\$ 850			Baltic Networks or ISP Supplies
18	\$ 4,320	\$ 4,320			Baltic Networks or ISP Supplies
12	\$ 240	\$ 240			Amazon
1	\$ 375	\$ 375			Baltic Networks or ISP Supplies
1	\$ 50	\$ 50			Baltic Networks or ISP Supplies
1	\$ 30	\$ 30			Baltic Networks or ISP Supplies
1	\$ 160	\$ 160			Baltic Networks or ISP Supplies
4	\$ 1,900	\$ 1,900			Valmont
4	\$ 248	\$ 248			Valmont
1	\$ 565	\$ 565			Valmont
1	\$ 450	\$ 450			Baltic Networks or ISP Supplies
1	\$ 150	\$ 150			Baltic Networks or ISP Supplies
1	\$ 1,200	\$ 1,200			Based on experience. Ordered through Amazon or another source

	\$ 101,150	\$ 70,125	\$ 30,150	\$ -	
	\$ 4,046	\$ 4,046			estimated all parts
	\$ 6,069	\$ 6,069			estimated all parts
	\$ 111,265	\$ 80,240	\$ 30,150	\$ -	
1	\$ 4,000	\$ 4,000			Clark Nexsen or equivalent
2	\$ 3,600	\$ 3,600			Baltic Networks or ISP Supplies
1	\$ 12,000	\$ 12,000			M&B Tower or Shenandoah Tower Service
1	\$ 1,500		\$ 1,500		based on experience
1	\$ 1,200	\$ 1,200			Sourced locally
1	\$ 500	\$ 500			based on experience
1	\$ 4,000	\$ 4,000			
	\$ 26,800	\$ 25,300	\$ 1,500	\$ -	
	\$ 1,608	\$ 1,608			estimated all labor
	\$ 28,408	\$ 26,908	\$ 1,500	\$ -	
	\$ 9,000			\$ 9,000	
	\$ 1,800		\$ 1,800		
	\$ 10,800	\$ -	\$ 1,800	\$ 9,000	
	\$ 150,473	\$ 107,148	\$ 33,450	\$ 9,000	
		71%	22%	6%	

openbroadband

Location: New Rohn 45 Tower (owned by Suffolk)

	Item	Description	Unit Cost
3.65 GHz	AW3035-T0	Alpha Sector Antennas 3.65 65 degree	\$ 420
3.65 GHz	mBS1105	BaiCells eNB 3.65 base station (inclusive of tariff)	\$ 3,999
3.65 GHz	BAICELLS-HALOB-1	BaiCells HaloB-1 Local EPC Feature Key	\$ 250
3.65 GHz	Baicells Atom OD04-19.5	Baicells Atom OD04-19.5 Gen2 3.5GHz 19.5dBi Outdoor CPE (inclusive of tariff)	\$ 245
3.65 GHz	BAICELLS-SIMCARD	BaiCells SIM cards	\$ 6
3.65 GHz	CBRS SAS License	CBRS Spectrum Access System (SAS) Licensing Fee/unit for 3.65 GHz (\$3/mo for 36 months)	\$ 108
premise	UB-AM	Ubiquiti Airmax universal mounting bracket	\$ 7.50
premise	CPE Cabling/connectors	Ethernet connectors, clips, tiewraps, outlet strips	\$ 25
premise	PL-R190WUSA-WW	Cambium cnPilot R190W 802.11n 2.4GHz Home Router	\$ 40.00
5 GHz	HG3-TP-S90	RF Elements Horn Antenna w/Twist Port Adapter	\$ 175
5 GHz	RP-5AC-Gen2 US	Ubiquiti Prism Rocket Radios 5 GHz	\$ 250
5 GHz	AF11 GHz	Ubiquiti Air Fiber Licensed 11 GHz PtP link	\$ 2,800
5 GHz	UH-TP-5-24	RF Elements Ultrahorn antenna TP 5-24	\$ 389
2.4 GHz	AM-2G16-90	Ubiquiti Airmax 2.4 ghz Sector, 16dbi, 90 deg	\$ 133
2.4 GHz	ROCKETM2	Ubiquiti Rocket M2, 2.4 GHz radio	\$ 89
2.4 GHz	NBE-2AC-13-US	Ubiquiti airMax NanoBeam 2AC, 13 dBi MIMO antenna	\$ 99
Wi-Fi	UAP-AC-M-PRO	Unifi Mesh Pro Access Point	\$ 175
core	CCR1009-7G-1C-1S+	MikroTik Cloud Core Router	\$ 420
core	ES-48-500W	Ubiquiti Edgeswitch 500w managed POE gigabit switch	\$ 850
Tower	DC2021	Shireen 1000ft, Outdoor shielded Cat6	\$ 240
Tower	ETH-SP-G2	Ubiquiti ETH-SP Ethernet Surge Protector	\$ 20
Tower	ENC-STL-24x24x16	Tycon Power Weatherproof Steel Outdoor Enclosure	\$ 375
Tower	ENC-STL-RMK	Rack mount system for Enclosure	\$ 50
Tower	RPST-POWERVENT-24	Tycon Power PowerVent System for enclosure	\$ 30
Tower	TPDIN-Monitor-WEB2	Tycon Power TPDIN PowerSens Remote Monitor Unit	\$ 160
Tower	CWT01-LL	Valmont Site Pro Tower Mount	\$ 475
Tower	P2110	Valmont Site Pro Mount Poles	\$ 62
Tower	MER8-P	Valmont H-frame rack mount hardware	\$ 565
Tower	UVC-G4-PRO	IP Camera (PTZ, outdoor, zoom, 4MP)	\$ 450
Tower	PDUMH20HV	Tripp Lite 3.2-3.8kw single-phase metered pdu	\$ 150
Tower	Misc	Misc Tower components including ethernet connectors, clips, tiewraps, jumpers, terminal strips, etc.	\$ 1,200

		Total before Shipping and taxes	
Shipping		Shipping Allowance 4%	
Taxes		Taxes Allowance 6% on equipment purchased	
		Equipment Total	
Tower Structural Analysis	Complete analysis of antenna support structure		\$ 4,000
FCC 11 GHz licensing	Fees to file and register 11 GHz link		\$ 1,800
Tower Climbers	Certified, insured, licensed professionals - 2 days + travel		\$ 12,000
Tower Design	Link Analysis, RF Propagation Analysis and Design		\$ 1,500
Electrician	Fiber and Power cabling		\$ 1,200
Tower Permits	Tower Permitting Fee Estimate		\$ 500
Configuration and Install	Install, programming and config of all equipment		\$ 4,000
		Total before taxes	
		Taxes Allowance 6% on labor	
		Labor Total	
New Tower	New 140' Rohn 45 tower		
	3-year lease of a 110v power outlet on a 20 amp circuit		
Electrical Usage	(\$50/mo)		
		Lease Total	
		Total Estimate for the Tower Site	

8/18/2019

Quantity	Total	VATI	OpenBB	Suffolk	Source
4	\$ 1,680	\$ 1,680			Baltic Networks or ISP Supplies
4	\$ 15,996	\$ 15,996			Baltic Networks or ISP Supplies
4	\$ 1,000	\$ 1,000			Baltic Networks or ISP Supplies
100	\$ 24,500	\$ 12,250	\$ 12,250		Baltic Networks or ISP Supplies
100	\$ 600	\$ 300	\$ 300		Baltic Networks or ISP Supplies
100	\$ 10,800	\$ 5,400	\$ 5,400		Google
200	\$ 1,500	\$ 750	\$ 750		Double Radius
200	\$ 5,000	\$ 2,500	\$ 2,500		Baltic Networks or ISP Supplies
200	\$ 8,000	\$ 4,000	\$ 4,000		Baltic Networks or ISP Supplies
4	\$ 700	\$ 700			Baltic Networks or ISP Supplies
6	\$ 1,500	\$ 1,500			Baltic Networks or ISP Supplies
2	\$ 5,600	\$ 5,600			Baltic Networks or ISP Supplies
2	\$ 778	\$ 778			Baltic Networks or ISP Supplies
4	\$ 532	\$ 532			Baltic Networks or ISP Supplies
4	\$ 356	\$ 356			Baltic Networks or ISP Supplies
100	\$ 9,900	\$ 4,950	\$ 4,950		Baltic Networks or ISP Supplies
10	\$ 1,750	\$ 875			Baltic Networks or ISP Supplies
1	\$ 420	\$ 420			Baltic Networks or ISP Supplies
1	\$ 850	\$ 850			Baltic Networks or ISP Supplies
18	\$ 4,320	\$ 4,320			Baltic Networks or ISP Supplies
12	\$ 240	\$ 240			Amazon
1	\$ 375	\$ 375			Baltic Networks or ISP Supplies
1	\$ 50	\$ 50			Baltic Networks or ISP Supplies
1	\$ 30	\$ 30			Baltic Networks or ISP Supplies
1	\$ 160	\$ 160			Baltic Networks or ISP Supplies
4	\$ 1,900	\$ 1,900			Valmont
4	\$ 248	\$ 248			Valmont
1	\$ 565	\$ 565			Valmont
1	\$ 450	\$ 450			Baltic Networks or ISP Supplies
1	\$ 150	\$ 150			Baltic Networks or ISP Supplies
1	\$ 1,200	\$ 1,200			Based on experience. Ordered through Amazon or another source

	\$ 101,150	\$ 70,125	\$ 30,150	\$ -	
	\$ 4,046	\$ 4,046			estimated all parts
	\$ 6,069	\$ 6,069			estimated all parts
	\$ 111,265	\$ 80,240	\$ 30,150	\$ -	
1	\$ 4,000	\$ 4,000			Clark Nexsen or equivalent
2	\$ 3,600	\$ 3,600			Baltic Networks or ISP Supplies
1	\$ 12,000	\$ 12,000			M&B Tower or Shenandoah Tower Service
1	\$ 1,500		\$ 1,500		based on experience
1	\$ 1,200	\$ 1,200			Sourced locally
1	\$ 500	\$ 500			based on experience
1	\$ 4,000	\$ 4,000			
	\$ 26,800	\$ 25,300	\$ 1,500	\$ -	
	\$ 1,608	\$ 1,608			estimated all labor
	\$ 28,408	\$ 26,908	\$ 1,500	\$ -	
	\$ 35,000			\$ 35,000	Shenandoah Tower Service
	\$ 1,800		\$ 1,800		
	\$ 36,800	\$ -	\$ 1,800	\$ 35,000	
	\$ 176,473	\$ 107,148	\$ 33,450	\$ 35,000	
		61%	19%	20%	

VATI FUNDING SOURCES TABLE

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

Source	Amount	%	Status
REQUESTED VATI	\$ \$661,610	51%	Pending
Open Broadband, LLC	\$ \$452,700	35%	Secured Pending Award
City of Suffolk	\$ \$182,000	14%	Secured Pending Award
	\$		
	\$		
	\$		
	\$		
TOTAL	\$ \$1,296,310	100 %	

CDBG Derivation of Cost

Product	Total	VATI	Non-VATI	Source of Estimate	Date
Whaleyville Tower					
3.65 GHz AW3035-T0 Alpha Sector Antennas 3.65 65 degree	\$ 1,680	\$ 1,680	\$ -	Baltic Networks or ISP Supplies	8/18/2019
3.65 GHz mBS1105 BaiCells eNB 3.65 base station (inclusive of tariff)	\$ 15,996	\$ 15,996	\$ -	Baltic Networks or ISP Supplies	8/18/2019
3.65 GHz BAICELLS-HALOB-1 BaiCells HaloB-1 Local EPC Feature Key	\$ 1,000	\$ 1,000	\$ -	Baltic Networks or ISP Supplies	8/18/2019
3.65 GHz Baicells Atom OD04-19.5 Baicells Atom OD04-19.5 Gen2 3.5GHz 19.5dBi Outdoor CPE (inclusive of tariff)	\$ 98,000	\$ 49,000	\$ 49,000	Baltic Networks or ISP Supplies	8/18/2019
3.65 GHz BAICELLS-SIMCARD BaiCells SIM cards	\$ 2,400	\$ 1,200	\$ 1,200	Baltic Networks or ISP Supplies	8/18/2019
3.65 GHz CBRS SAS License CBRS Spectrum Access System (SAS) Licensing Fee/unit for 3.65 GHz (\$3/mo for 36 months)	\$ 43,200	\$ 21,600	\$ 21,600	Google	8/18/2019
premise UB-AM Ubiquiti Airmax universal mounting bracket	\$ 3,750	\$ 1,875	\$ 1,875	Double Radius	8/18/2019
premise CPE Cabling/connectors Ethernet connectors, clips, tiewraps, outlet strips	\$ 12,500	\$ 6,250	\$ 6,250	Baltic Networks or ISP Supplies	8/18/2019
premise PL-R190WUSA-WW Cambium cnPilot R190W 802.11n 2.4GHz Home Router	\$ 20,000	\$ 10,000	\$ 10,000	Baltic Networks or ISP Supplies	8/18/2019
5 GHz HG3-TP-S90 RF Elements Horn Antenna w/Twist Port Adapter	\$ 700	\$ 700	\$ -	Baltic Networks or ISP Supplies	8/18/2019
5 GHz RP-5AC-Gen2 US Ubiquiti Prism Rocket Radios 5 GHz	\$ 1,500	\$ 1,500	\$ -	Baltic Networks or ISP Supplies	8/18/2019
5 GHz AF11 GHz Ubiquiti Air Fiber Licensed 11 GHz PtP link	\$ 5,600	\$ 5,600	\$ -	Baltic Networks or ISP Supplies	8/18/2019
5 GHz UH-TP-5-24 RF Elements Ultrahorn antenna TP 5-24	\$ 778	\$ 778	\$ -	Baltic Networks or ISP Supplies	8/18/2019
2.4 GHz AM-2G16-90 Ubiquiti Airmax 2.4 ghz Sector, 16dbi, 90 deg	\$ 532	\$ 532	\$ -	Baltic Networks or ISP Supplies	8/18/2019
2.4 GHz ROCKETM2 Ubiquiti Rocket M2, 2.4 GHz radio	\$ 356	\$ 356	\$ -	Baltic Networks or ISP Supplies	8/18/2019
2.4 GHz NBE-2AC-13-US Ubiquiti airMax NanoBeam 2AC, 13 dBi MIMO antenna	\$ 9,900	\$ 4,950	\$ 4,950	Baltic Networks or ISP Supplies	8/18/2019
Wi-Fi UAP-AC-M-PRO Unifi Mesh Pro Access Point	\$ 1,750	\$ 875	\$ -	Baltic Networks or ISP Supplies	8/18/2019
core CCR1009-7G-1C-1S+ MikroTik Cloud Core Router	\$ 420	\$ 420	\$ -	Baltic Networks or ISP Supplies	8/18/2019
core ES-48-500W Ubiquiti Edgeswitch 500w managed POE gigabit switch	\$ 850	\$ 850	\$ -	Baltic Networks or ISP Supplies	8/18/2019
Tower DC2021 Shireen 1000ft, Outdoor shielded Cat6	\$ 4,320	\$ 4,320	\$ -	Baltic Networks or ISP Supplies	8/18/2019
Tower ETH-SP-G2 Ubiquiti ETH-SP Ethernet Surge Protector	\$ 240	\$ 240	\$ -	Amazon	8/18/2019
Tower ENC-STL-24x24x16 Tycon Power Weatherproof Steel Outdoor Enclosure	\$ 375	\$ 375	\$ -	Baltic Networks or ISP Supplies	8/18/2019

CDBG Derivation of Cost

3.65 GHz BAICELLS-SIMCARD BaiCells SIM cards	\$ 600	\$ 300	\$ 300	Baltic Networks or ISP Supplies	8/18/2019
3.65 GHz CBRS SAS License CBRS Spectrum Access System (SAS) Licensing Fee/unit for 3.65 GHz (\$3/mo for 36 months)	\$ 10,800	\$ 5,400	\$ 5,400	Google	8/18/2019
premise UB-AM Ubiquiti Airmax universal mounting bracket	\$ 1,500	\$ 750	\$ 750	Double Radius	8/18/2019
premise CPE Cabling/connectors Ethernet connectors, clips, tiewraps, outlet strips	\$ 5,000	\$ 2,500	\$ 2,500	Baltic Networks or ISP Supplies	8/18/2019
premise PL-R190WUSA-WW Cambium cnPilot R190W 802.11n 2.4GHz Home Router	\$ 8,000	\$ 4,000	\$ 4,000	Baltic Networks or ISP Supplies	8/18/2019
5 GHz HG3-TP-S90 RF Elements Horn Antenna w/Twist Port Adapter	\$ 700	\$ 700	\$ -	Baltic Networks or ISP Supplies	8/18/2019
5 GHz RP-5AC-Gen2 US Ubiquiti Prism Rocket Radios 5 GHz	\$ 1,500	\$ 1,500	\$ -	Baltic Networks or ISP Supplies	8/18/2019
5 GHz AF11 GHz Ubiquiti Air Fiber Licensed 11 GHz PtP link	\$ 5,600	\$ 5,600	\$ -	Baltic Networks or ISP Supplies	8/18/2019
5 GHz UH-TP-5-24 RF Elements Ultrahorn antenna TP 5-24	\$ 778	\$ 778	\$ -	Baltic Networks or ISP Supplies	8/18/2019
2.4 GHz AM-2G16-90 Ubiquiti Airmax 2.4 ghz Sector, 16dbi, 90 deg	\$ 532	\$ 532	\$ -	Baltic Networks or ISP Supplies	8/18/2019
2.4 GHz ROCKETM2 Ubiquiti Rocket M2, 2.4 GHz radio	\$ 356	\$ 356	\$ -	Baltic Networks or ISP Supplies	8/18/2019
2.4 GHz NBE-2AC-13-US Ubiquiti airMax NanoBeam 2AC, 13 dBi MIMO antenna	\$ 9,900	\$ 4,950	\$ 4,950	Baltic Networks or ISP Supplies	8/18/2019
Wi-Fi UAP-AC-M-PRO Unifi Mesh Pro Access Point	\$ 1,750	\$ 875	\$ -	Baltic Networks or ISP Supplies	8/18/2019
core CCR1009-7G-1C-1S+ MikroTik Cloud Core Router	\$ 420	\$ 420	\$ -	Baltic Networks or ISP Supplies	8/18/2019
core ES-48-500W Ubiquiti Edgeswitch 500w managed POE gigabit switch	\$ 850	\$ 850	\$ -	Baltic Networks or ISP Supplies	8/18/2019
Tower DC2021 Shireen 1000ft, Outdoor shielded Cat6	\$ 4,320	\$ 4,320	\$ -	Baltic Networks or ISP Supplies	8/18/2019
Tower ETH-SP-G2 Ubiquiti ETH-SP Ethernet Surge Protector	\$ 240	\$ 240	\$ -	Amazon	8/18/2019
Tower ENC-STL-24x24x16 Tycon Power Weatherproof Steel Outdoor Enclosure	\$ 375	\$ 375	\$ -	Baltic Networks or ISP Supplies	8/18/2019
Tower ENC-STL-RMK Rack mount system for Enclosure	\$ 50	\$ 50	\$ -	Baltic Networks or ISP Supplies	8/18/2019
Tower RPST-POWERVENT-24 Tycon Power PowerVent System for enclosure	\$ 30	\$ 30	\$ -	Baltic Networks or ISP Supplies	8/18/2019
Tower TPDIN-Monitor-WEB2 Tycon Power TPDIN PowerSens Remote Monitor Unit	\$ 160	\$ 160	\$ -	Baltic Networks or ISP Supplies	8/18/2019
Tower CWT01-LL Valmont Site Pro Tower Mount	\$ 1,900	\$ 1,900	\$ -	Valmont	8/18/2019
Tower P2110 Valmont Site Pro Mount Poles	\$ 248	\$ 248	\$ -	Valmont	8/18/2019
Tower MER8-P Valmont H-frame rack mount hardware	\$ 565	\$ 565	\$ -	Valmont	8/18/2019
Tower UVC-G4-PRO IP Camera (PTZ, outdoor, zoom, 4MP)	\$ 450	\$ 450	\$ -	Baltic Networks or ISP Supplies	8/18/2019
Tower PDUMH20HV Tripp Lite 3.2-3.8kw single-phase metered pdu	\$ 150	\$ 150	\$ -	Baltic Networks or ISP Supplies	8/18/2019
Tower Misc Tower components including ethernet connectors, clips, tiewraps, jumpers, terminal strips, etc.	\$ 1,200	\$ 1,200	\$ -	Based on experience. Ordered through Amazon	8/18/2019
Total before Shipping and taxes	\$ 101,150	\$ 70,125	\$ 30,150		8/18/2019
Shipping Shipping Allowance 4%	\$ 4,046	\$ 4,046	\$ -	estimated all parts	8/18/2019
Taxes Taxes Allowance 6% on equipment purchased	\$ 6,069	\$ 6,069	\$ -	estimated all parts	8/18/2019
Holland Equipment Total	\$ 111,265	\$ 80,240	\$ 30,150		8/18/2019
Tower Structural Analysis Complete analysis of antenna support structure	\$ 4,000	\$ 4,000	\$ -	Clark Nexsen or equivalent	8/18/2019
FCC 11 GHz licensing Fees to file and register 11 GHz link	\$ 3,600	\$ 3,600	\$ -	Baltic Networks or ISP Supplies	8/18/2019
Tower Climbers Certified, insured, licensed professionals - 2 days + travel	\$ 12,000	\$ 12,000	\$ -	M&B Tower or Shenandoah Tower Service	8/18/2019
Tower Design Link Analysis, RF Propagation Analysis and Design	\$ 1,500		\$ 1,500	based on experience	8/18/2019
Electrician Fiber and Power cabling	\$ 1,200	\$ 1,200	\$ -	Sourced locally	8/18/2019
Tower Permits Tower Permitting Fee Estimate	\$ 500	\$ 500	\$ -	based on experience	8/18/2019
Configuration and Install Install, programming and config of all equipment	\$ 4,000	\$ 4,000	\$ -		8/18/2019
Total before taxes	\$ 26,800	\$ 25,300	\$ 1,500		8/18/2019
Taxes Allowance 6% on labor	\$ 1,608	\$ 1,608	\$ -	estimated all labor	8/18/2019
Holland Labor Total	\$ 28,408	\$ 26,908	\$ 1,500		8/18/2019
Tower Lease 3-year lease of the water tower (\$250/mo)	\$ 9,000		\$ 9,000		8/18/2019
Electrical Usage 3-year lease of a 110v power outlet on a 20 amp circuit, backed up by generator (\$50/mo)	\$ 1,800		\$ 1,800		8/18/2019
Holland Lease Total	\$ 10,800	\$ -	\$ 10,800		8/18/2019
Holland: Total Estimate for the Tower Site	\$ 150,473	\$ 107,148	\$ 42,450		8/18/2019

CDBG Derivation of Cost

Water Treatment Tower	Total	VATI	Non-VATI	Source of Estimate	Date
3.65 GHz AW3035-T0 Alpha Sector Antennas 3.65 65 degree	\$ 1,680	\$ 1,680	\$ -	Baltic Networks or ISP Supplies	8/18/2019
3.65 GHz mBS1105 BaiCells eNB 3.65 base station (inclusive of tariff)	\$ 15,996	\$ 15,996	\$ -	Baltic Networks or ISP Supplies	8/18/2019
3.65 GHz BAICELLS-HALOB-1 BaiCells HaloB-1 Local EPC Feature Key	\$ 1,000	\$ 1,000	\$ -	Baltic Networks or ISP Supplies	8/18/2019
3.65 GHz Baicells Atom OD04-19.5 Baicells Atom OD04-19.5 Gen2 3.5GHz 19.5dBi Outdoor CPE (inclusive of tariff)	\$ 24,500	\$ 12,250	\$ 12,250	Baltic Networks or ISP Supplies	8/18/2019
3.65 GHz BAICELLS-SIMCARD BaiCells SIM cards	\$ 600	\$ 300	\$ 300	Baltic Networks or ISP Supplies	8/18/2019
3.65 GHz CBRS SAS License CBRS Spectrum Access System (SAS) Licensing Fee/unit for 3.65 GHz (\$3/mo for 36 months)	\$ 10,800	\$ 5,400	\$ 5,400	Google	8/18/2019
premise UB-AM Ubiquiti Airmax universal mounting bracket	\$ 1,500	\$ 750	\$ 750	Double Radius	8/18/2019
premise CPE Cabling/connectors Ethernet connectors, clips, tiewraps, outlet strips	\$ 5,000	\$ 2,500	\$ 2,500	Baltic Networks or ISP Supplies	8/18/2019
premise PL-R190WUSA-WW Cambium cnPilot R190W 802.11n 2.4GHz Home Router	\$ 8,000	\$ 4,000	\$ 4,000	Baltic Networks or ISP Supplies	8/18/2019
5 GHz HG3-TP-S90 RF Elements Horn Antenna w/Twist Port Adapter	\$ 700	\$ 700	\$ -	Baltic Networks or ISP Supplies	8/18/2019
5 GHz RP-5AC-Gen2 US Ubiquiti Prism Rocket Radios 5 GHz	\$ 1,500	\$ 1,500	\$ -	Baltic Networks or ISP Supplies	8/18/2019
5 GHz AF11 GHz Ubiquiti Air Fiber Licensed 11 GHz PtP link	\$ 5,600	\$ 5,600	\$ -	Baltic Networks or ISP Supplies	8/18/2019
5 GHz UH-TP-5-24 RF Elements Ultrahorn antenna TP 5-24	\$ 778	\$ 778	\$ -	Baltic Networks or ISP Supplies	8/18/2019
2.4 GHz AM-2G16-90 Ubiquiti Airmax 2.4 ghz Sector, 16dbi, 90 deg	\$ 532	\$ 532	\$ -	Baltic Networks or ISP Supplies	8/18/2019
2.4 GHz ROCKETM2 Ubiquiti Rocket M2, 2.4 GHz radio	\$ 356	\$ 356	\$ -	Baltic Networks or ISP Supplies	8/18/2019
2.4 GHz NBE-2AC-13-US Ubiquiti airMax NanoBeam 2AC, 13 dBi MIMO antenna	\$ 9,900	\$ 4,950	\$ 4,950	Baltic Networks or ISP Supplies	8/18/2019
Wi-Fi UAP-AC-M-PRO Unifi Mesh Pro Access Point	\$ 1,750	\$ 875	\$ -	Baltic Networks or ISP Supplies	8/18/2019
core CCR1009-7G-1C-1S+ MikroTik Cloud Core Router	\$ 420	\$ 420	\$ -	Baltic Networks or ISP Supplies	8/18/2019
core ES-48-500W Ubiquiti Edgeswitch 500w managed POE gigabit switch	\$ 850	\$ 850	\$ -	Baltic Networks or ISP Supplies	8/18/2019
Tower DC2021 Shireen 1000ft, Outdoor shielded Cat6	\$ 4,320	\$ 4,320	\$ -	Baltic Networks or ISP Supplies	8/18/2019
Tower ETH-SP-G2 Ubiquiti ETH-SP Ethernet Surge Protector	\$ 240	\$ 240	\$ -	Amazon	8/18/2019
Tower ENC-STL-24x24x16 Tycon Power Weatherproof Steel Outdoor Enclosure	\$ 375	\$ 375	\$ -	Baltic Networks or ISP Supplies	8/18/2019
Tower ENC-STL-RMK Rack mount system for Enclosure	\$ 50	\$ 50	\$ -	Baltic Networks or ISP Supplies	8/18/2019
Tower RPST-POWERVENT-24 Tycon Power PowerVent System for enclosure	\$ 30	\$ 30	\$ -	Baltic Networks or ISP Supplies	8/18/2019
Tower TPDIN-Monitor-WEB2 Tycon Power TPDIN PowerSens Remote Monitor Unit	\$ 160	\$ 160	\$ -	Baltic Networks or ISP Supplies	8/18/2019
Tower CWT01-LL Valmont Site Pro Tower Mount	\$ 1,900	\$ 1,900	\$ -	Valmont	8/18/2019
Tower P2110 Valmont Site Pro Mount Poles	\$ 248	\$ 248	\$ -	Valmont	8/18/2019
Tower MER8-P Valmont H-frame rack mount hardware	\$ 565	\$ 565	\$ -	Valmont	8/18/2019
Tower UVC-G4-PRO IP Camera (PTZ, outdoor, zoom, 4MP)	\$ 450	\$ 450	\$ -	Baltic Networks or ISP Supplies	8/18/2019
Tower PDUH20HV Tripp Lite 3.2-3.8kw single-phase metered pdu	\$ 150	\$ 150	\$ -	Baltic Networks or ISP Supplies	8/18/2019
Tower Misc Misc Tower components including ethernet connectors, clips, tiewraps, jumpers, terminal strips, etc.	\$ 1,200	\$ 1,200	\$ -	Based on experience. Ordered through Amaz	8/18/2019
Total before Shipping and taxes	\$ 101,150	\$ 70,125	\$ 30,150		8/18/2019
Shipping Shipping Allowance 4%	\$ 4,046	\$ 4,046	\$ -	estimated all parts	8/18/2019
Taxes Taxes Allowance 6% on equipment purchased	\$ 6,069	\$ 6,069	\$ -	estimated all parts	8/18/2019
Equipment Total	\$ 111,265	\$ 80,240	\$ 30,150		8/18/2019
			\$ -		8/18/2019
			\$ -		8/18/2019
Tower Structural Analysis Complete analysis of antenna support structure	\$ 4,000	\$ 4,000	\$ -	Clark Nexsen or equivalent	8/18/2019
FCC 11 GHz licensing Fees to file and register 11 GHz link	\$ 3,600	\$ 3,600	\$ -	Baltic Networks or ISP Supplies	8/18/2019
Tower Climbers Certified, insured, licensed professionals - 2 days + travel	\$ 12,000	\$ 12,000	\$ -	M&B Tower or Shenandoah Tower Service	8/18/2019
Tower Design Link Analysis, RF Propagation Analysis and Design	\$ 1,500		\$ 1,500	based on experience	8/18/2019
Electrician Fiber and Power cabling	\$ 1,200	\$ 1,200	\$ -	Sourced locally	8/18/2019
Tower Permits Tower Permitting Fee Estimate	\$ 500	\$ 500	\$ -	based on experience	8/18/2019
Configuration and Install Install, programming and config of all equipment	\$ 4,000	\$ 4,000	\$ -		8/18/2019
Total before taxes	\$ 26,800	\$ 25,300	\$ 1,500		8/18/2019
Taxes Allowance 6% on labor	\$ 1,608	\$ 1,608	\$ -	estimated all labor	8/18/2019
Labor Total	\$ 28,408	\$ 26,908	\$ 1,500		8/18/2019

CDBG Derivation of Cost

			\$ -		8/18/2019
New Tower New 140' Rohn 45 tower	\$ 35,000		\$ 35,000	Shenandoah Tower Service	8/18/2019
Electrical Usage 3-year lease of a 110v power outlet on a 20 amp circuit (\$50/mo)	\$ 1,800		\$ 1,800		8/18/2019
Lease Total	\$ 36,800	\$ -	\$ 36,800		8/18/2019
			\$ -		8/18/2019
Total Estimate for the Tower Site	\$ 176,473	\$ 107,148	\$ 68,450		8/18/2019
	Total	VATI	Non-VATI	Source of Estimate	Date
Equipment Whaleyville	\$ 252,785	\$ 157,910	\$ 94,875	see details above	8/18/2019
Equipment Hunter	\$ 252,785	\$ 157,910	\$ 94,875	see details above	8/18/2019
Equipment Pruden	\$ 89,400	\$ 59,250	\$ 30,150	see details above	8/18/2019
Equipment Holland Water	\$ 110,390	\$ 80,240	\$ 30,150	see details above	8/18/2019
Equipment Water Treatment	\$ 110,390	\$ 80,240	\$ 30,150	see details above	8/18/2019
Equipment Total	\$ 815,750	\$ 535,550	\$ 280,200	see details above	8/18/2019
Labor Whaleyville	\$ 28,408	\$ 26,908	\$ 1,500	see details above	8/18/2019
Labor Hunter	\$ 28,408	\$ 26,908	\$ 1,500	see details above	8/18/2019
Labor Pruden	\$ 19,928	\$ 18,428	\$ 1,500	see details above	8/18/2019
Labor Holland Water	\$ 28,408	\$ 26,908	\$ 1,500	see details above	8/18/2019
Labor Water Treatment	\$ 28,408	\$ 26,908	\$ 1,500	see details above	8/18/2019
Labor Total	\$ 133,560	\$ 126,060	\$ 7,500	see details above	8/18/2019
Tower Cost Whaleyville	\$ 37,800	\$ -	\$ 37,800	see details above	8/18/2019
Tower Cost Hunter	\$ 37,800	\$ -	\$ 37,800	see details above	8/18/2019
Tower Cost Pruden	\$ 37,800	\$ -	\$ 37,800	see details above	8/18/2019
Tower Cost Holland Water	\$ 10,800	\$ -	\$ 10,800	see details above	8/18/2019
Tower Cost Water Treatment	\$ 36,800	\$ -	\$ 36,800	see details above	8/18/2019
Tower Total	\$ 161,000	\$ -	\$ 161,000	see details above	8/18/2019
PM & Coordination Whaleyville	\$ 12,000	\$ -	\$ 12,000	based on experience	8/18/2019
PM & Coordination Hunter	\$ 12,000	\$ -	\$ 12,000	based on experience	8/18/2019
PM & Coordination Pruden	\$ 12,000	\$ -	\$ 12,000	based on experience	8/18/2019
PM & Coordination Holland Water	\$ 12,000	\$ -	\$ 12,000	based on experience	8/18/2019
PM & Coordination Water Treatment	\$ 12,000	\$ -	\$ 12,000	based on experience	8/18/2019
PM & Coordination Total	\$ 60,000	\$ -	\$ 60,000	based on experience	8/18/2019
Fiber and Datacenter bandwidth 3-years (\$3500/mo * 36)	\$ 126,000	\$ -	\$ 126,000	based on previous quotes	8/18/2019
Grand Total	\$ 1,296,310	\$ 661,610	\$ 634,700	see details above	8/18/2019

Attachment 12 –Documentation Supporting Project Costs

BaiCells eNB 3.65 base station (plus tariff)

Home > BaiCells Nova Outdoor Base Station - LTE Release 9, 1 Watt (30 dBm), 2 Port, 3.5 GHz, Band 42/43

BaiCells
BaiCells Nova Outdoor Base Station - LTE Release 9, 1 Watt (30 dBm), 2 Port, 3.5 GHz, Band 42/43
★★★★★ No Reviews yet

\$3,199.20 ~~\$3,999.00~~

SKU: mBS1105
Manufacturer: BaiCells
Data Sheet: [Download](#)
Availability: 14 In Stock (updated live)

Related Items:
Amphenol Circular MIL Spec Connector OBTS 2 Way For BaiCells Base Station
\$33.55
★★★★★

Add to Cart

Alpha Sector Antennas 3.65 65 degree

Home / Alpha Wireless 3.3 - 3.8GHz 18dBi Dual Slant 65deg Sector Antenna w/ 2x N-Female Connectors (4deg tilt)

AW3014-C2-T4 - Alpha Wireless 3.3 - 3.8GHz 18dBi Dual Slant 65deg Sector Antenna w/ 2x N-Female Connectors (4deg tilt)

Availability: **Pre Order**
\$355.00 [Login for discounted price](#) Qty: 0 [pre-order](#)

Need Help Now?
Get help from our experienced consultants [Learn more](#)

Recommended by BaiCells

There is also 10 electrical downtilt model available, please call us at (630) 929-3610

AW3014-T4 is an Alpha Wireless sector antenna operating between 3.3 and 3.8 GHz with a 4° electrical downtilt. It's an 18dBi antenna with 65° beamwidth and 2 N-Female connectors.

RF Specifications

- Frequency Range: 3300 - 3800MHz
- Polarization: ±45° Slant Linear
- Gain: 18dBi
- Azimuth Beamwidth: 65°
- Azimuth Beam Squint: 3°
- Elevation Beamwidth: 7°
- Electrical Downtilt: 14°

Related Products
Check items to add to the cart or [select all](#)

[Maxwave RF Patch Cable N:Male to N:Male \(1m\)](#)
\$11.95

4.8 ★★★★★
Google Customer Reviews

BaiCells HaloB-1 Local EPC Feature Key

Home / BaiCells HaloB-1 Local EPC Feature Key 1per eNb QTY 1

BAICELLS-HALOB-1 - BaiCells HaloB-1 Local EPC Feature Key 1per eNb QTY 1

Availability: **In stock**
\$249.99

BaiCells HaloB allows the eNodeB to continue servicing subscribers even when it has no connection to the Evolved Packet Core (EPC). The HaloB eNB eliminates the transport layer between the evolved packet core (EPC) and the eNB by embedding a "lite EPC" directly on the eNB. Therefore, critical control plane signaling is kept local. With HaloB installed, S1 (transport) failures are eliminated. This removes wireless PTP backhaul failures, fiber outages, or routing mistakes from causing customer service disruption.

CloudCore is still available for OMC monitoring and upgrade functions, as well as Boss HSS functions. SIM card activation and bandwidth packages assignment are still performed by the BOSS. Operators using the BaiCells API for billing software integration will see no change. When a UE attempts to attach to a HaloB eNB, the HaloB contacts the BOSS to verify the IMSI is valid and active, and collects the bandwidth packages. All information is downloaded to the HaloB memory bank. Once stored, the UE will remain attached indefinitely.

SIM card IMSIs can attach to multiple HaloB eNBs and each will store the SIM data for future attachments. In the event of a rare CloudCore outage, new installs may not be able to attach during the outage if the SIM data has never been downloaded from the BOSS before.

You can use the eNB GUI or the CloudCore OMC to perform the steps to implement HaloB. If you are planning to implement HaloB on more than one existing eNB, Bai Cells recommends you use the OMC to upgrade multiple eNB's simultaneously.

Benefits of HaloB

- Operators entering the world of fixed LTE wireless have a lower initial investment.
- The simplified structure means there is no need for professional design and maintenance
- The self-congruination, plug-and-play deployment model means a shorter time-to-market (TTM) and faster return-on-investment (ROI)
- Operators can provide a Layer 2 environment for SMEs and LAN gaming
- The eNBs and the core network functions are decoupled
- The control plane is processed within HaloB; user equipment will always be online

Related Products
Check items to add to the cart or [select all](#)

- BaiCells HaloB-1 Local EPC Feature Key, 1per eNb QTY 10 \$1,999.99
- BaiCells Atom OD04-6.5 Gen2 3.5GHz Indoor CPE 6.5dBi 23 ± 2dBm CAT4 Band 42/43 G2

BaiCells Atom OD04-19.5 Gen2 3.5GHz 19.5dBi Outdoor CPE (inclusive of tariff)

Home > BaiCells Atom OD04 3.5GHz 19.5dBi Gen2

BaiCells Atom OD04 3.5GHz 19.5dBi Gen2

★★★★★ No Reviews yet

\$199.99 ~~\$249.99~~
Tariff Fee: **\$34.37**

SKU: EG7035E-M11
Manufacturer: BaiCells
Availability: 134 In Stock (updated live)

1 **Add to Cart**

Add to Wishlist

BaiCells SIM cards

The screenshot shows a web browser window displaying the Baltic Networks website. The page title is "BaiCells SIM cards". The website header includes the Baltic Networks logo, contact information (888) 929-3610, and the tagline "Affordable Wireless Solutions". A search bar is visible with the text "Search for products, categories, ...". Below the search bar, there are navigation tabs: Home, Manufacturers, Complete Solutions, Network Components, and Resources. The search results section shows two items:

- BaiCells Sim Cards 100-Pack**: Price \$599.90. Description: "BaiCells SIM Cards come in packs of a 10. Useful if you need to set up an cellular network, for 3G/4G fallower, and for cell phones." A "BUY NOW" button is present.
- BaiCells SIM Card 10-Pack**: Price \$59.90. Description: "BaiCells SIM Cards come in packs of a 10. Useful if you need to set up an cellular network, for 3G/4G fallower, and for cell phones." A "BUY NOW" button is present.

The browser's taskbar at the bottom shows the time as 9:10 AM on 6/25/2019.

CBRS Spectrum Access System (SAS) Licensing Fee/unit for 3.65 GHz (\$3/mo for 36 months)

Spectrum Access System (SAS)

As the foundation for Google's [suite of products and services for CBRS](#), Google's Spectrum Access System (SAS) controls fundamental access to CBRS. Our SAS is purpose-built to support dense networks across operators and to scale on-demand - from a small in-building network to the largest nationwide deployment.

SAS Pricing



For fixed wireless.

\$2.25 per residence per month, taxes not included.

Ubiquiti Airmax universal mounting bracket

ISP Supplies

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Home > Ubiquiti UB-AM Universal Antenna Mount

UBIQUITI

Ubiquiti UB-AM Universal Antenna Mount

★★★★★ No Reviews yet

\$8.19 ~~\$9.95~~

SKU: UB-AM

Manufacturer: Ubiquiti Networks

Datasheet: [Download](#)

Availability: 546 In Stock (updated live)

1 **Add to Cart**

Related Items:

Laird Technologies UML Universal Mount (25" Long)

\$11.17

★★★★★

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AHORA HABLAMOS INGLÉS Y ESPAÑOL

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Your Partner for Building Better Networks SM

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SHOP BRANDS | WIRELESS | NETWORKING | VIDEO | VOIP | INDUSTRIES SERVED | SERVICE CENTER | RESOURCE CENTER

Brands Sold in Store > Cambium Networks > WiFi >

CAMBIMUM R190W 802.11N 2.4 GHZ WLAN ROUTER

SKU #: PL-R190WUSA-WW

Availability: IN STOCK

\$40.00

Qty: 1 **ADD TO CART**

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Tell a friend about this product

MY CART


You have 0 item/s in your shopping cart.

PRODUCT DETAILS

RF Elements Horn Antenna w/Twist Port Adapter

DOUBLE RADIUS, INC. IS A 100% EMPLOYEE OWNED COMPANY!

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AHORA HABLAMOS INGLÉS Y ESPAÑOL




Search

My Cart: 0

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Brands Sold in Store > RF elements > Horn Antennas >



RF ELEMENTS SYMMETRICAL HORN ANTENNA HG3-TP-S90

SKU #: HG3-TP-S90

Availability: **IN STOCK**

\$125.00

Qty: **ADD TO CART**

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Tell a friend about this product

MY CART
You have 0 item/s in your shopping cart.

PRODUCT DETAILS

Streakwave.com | https://mail-at: | Inbox - aftzpa: | Suffolk VATI G: | Slack | notific: | Amazon.com: | RF Elements Tw: | Search results: | Search Results: |


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Home > RF Elements TwistPort™ Adaptor for UBNT Rocket Sac Lite



ELEMENTS® RF Elements TwistPort™ Adaptor for UBNT Rocket Sac Lite

★★★★★ No Reviews yet.

\$24.06 ~~\$29.90~~

SKU: TPA-R5AC
Manufacturer: RF Elements
Data Sheet: [Download](#)

Availability: **57 In Stock** (updated live)

1 **Add to Cart**


Ubiquiti Prism Rocket Radios 5 GHz

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Home > Ubiquiti 5GHz Rocket ac Gen2 airPrism metal



UBIQUITI
Ubiquiti 5GHz Rocket ac Gen2 airPrism metal
★★★★★ No Reviews yet
\$229.37 ~~\$249.00~~
SKU: RP-5AC-GEN2-US
Manufacturer: Ubiquiti Networks
Data Sheet: [Download](#)
Quick Start Guide: [Download](#)
Availability: 181 In Stock (updated live)

Related Items:



Ubiquiti Nanobridge M9 Wireless Bridge
\$146.54
★★★★★

Type here to search 9:27 AM 8/25/2019


RF Elements Ultrahorn antenna TP 5-24

855-947-7776 sales@isp-supplies.com Contact Us Reorder Items Submit a Ticket Login

ISP Supplies Search for products Go


Shop By Category Shop By Brands Blog Knowledge Base Contact Us Financing Training & Events Tech Support About Us

Home > RF Elements UltraHorn TP 5-24 Ultimate Noise Rejecting Point-to-Point Antenna



ELEMENTS
RF Elements UltraHorn TP 5-24 Ultimate Noise Rejecting Point-to-Point Antenna
★★★★★ 1 Reviews
\$330.58 ~~\$389.00~~
SKU: UH-TP-5-24
Manufacturer: RF Elements
Data Sheet: [Download](#)
Availability: 118 In Stock (updated live)
(click to select)

Related Items:



RF Elements TwistPort Adaptor For Mimoso C5c
\$24.06
★★★★★

Type here to search 9:46 AM 8/25/2019

Ubiquiti Airmax 2.4 ghz Sector, 16dbi, 90 deg

The screenshot shows the ISP Supplies website interface. At the top, there is a navigation bar with contact information (855-947-7776, sales@isp-supplies.com) and links for Contact Us, Reorder Items, Submit a Ticket, and Login. Below this is the ISP Supplies logo and a search bar. A main navigation menu includes Shop By Category, Shop By Brands, Blog, Knowledge Base, Contact Us, Financing, Training & Events, Tech Support, and About Us. The breadcrumb trail reads: Home > Ubiquiti Airmax 2.3-2.7GHz Hi-Gain Base Station Antenna, Dual-Pol 90-Degree 16DBI.

The product page features a large image of the antenna on the left. To its right, the product title is "Ubiquiti Airmax 2.3-2.7GHz Hi-Gain Base Station Antenna, Dual-Pol 90-Degree 16DBI" with a price of \$128.50 (marked down from \$199.00). The SKU is AM-2G16-90, and the manufacturer is Ubiquiti Networks. There are links to download the Datasheet and Quick Start Guide. The availability is listed as "4 In Stock (updated live)".

Under the heading "Related Items:", there is a smaller product image of the Ubiquiti RocketM2 Wireless AP, Outdoor 802.11b/g/n 600mW, priced at \$80.95. The website footer shows the Windows taskbar with the date 8/25/2019 and time 9:48 AM.

Ubiquiti Rocket M2, 2.4 GHz radio

This screenshot shows the product page for the Ubiquiti RocketM2 Wireless AP, Outdoor 802.11b/g/n 600mW. The website layout is consistent with the previous screenshot, including the navigation bar, search bar, and main menu. The breadcrumb trail is: Home > Ubiquiti RocketM2 Wireless AP, Outdoor 802.11b/g/n 600mW.

The product image shows the white, cylindrical wireless access point. The product title is "Ubiquiti RocketM2 Wireless AP, Outdoor 802.11b/g/n 600mW" with a price of \$80.95 (marked down from \$89.00). The SKU is RocketM2-US, and the manufacturer is Ubiquiti Networks. There are links to download the Datasheet and User Guide. The availability is "24 In Stock (updated live)".

The "Related Items:" section shows a Ubiquiti Airmax Cable IP67CA-RPSMA for \$7.52. The Windows taskbar at the bottom shows the date 8/25/2019 and time 9:49 AM.

Ubiquiti airMax NanoBeam 2AC, 13 dBi MIMO antenna

The screenshot shows the IspSupplies website interface. At the top, there is a navigation bar with contact information (855-947-7776, sales@isp-supplies.com) and links for Contact Us, Reorder Items, Submit a Ticket, and Login. Below this is the IspSupplies logo and a search bar. A main navigation menu includes Shop By Category, Shop By Brands, Blog, Knowledge Base, Contact Us, Financing, Training & Events, Tech Support, and About Us. The breadcrumb trail reads: Home > Ubiquiti airMax NanoBeam 2AC, 13 dBi MIMO antenna.

The product page features a large image of the white, spherical Ubiquiti airMax NanoBeam 2AC antenna. To the right of the image, the product details are listed:

- UBIQUITI** logo
- Ubiquiti airMax NanoBeam 2AC, 13 dBi MIMO antenna**
- ★★★★★ No Reviews yet
- \$89.15** ~~\$99.00~~
- SKU: NBE-2AC-13-US
- Manufacturer: Ubiquiti Networks
- User Guide: [Download](#)
- Quick Start Guide: [Download](#)
- Availability: 23 In Stock (updated live)
- [Add to Cart](#) button

The Windows taskbar at the bottom shows the time as 9:49 AM on 8/25/2019.

Unifi Mesh Pro Access Point

The screenshot shows the IspSupplies website interface for the Ubiquiti Unifi Uap-Ac Mesh Pro 802.11Ac, 1750Mbps Outdoor AP. The layout is similar to the previous screenshot, with the same navigation and search elements.

The breadcrumb trail reads: Home > Ubiquiti Unifi Uap-Ac Mesh Pro 802.11Ac, 1750Mbps Outdoor AP.

The product page features a large image of the white, rectangular Ubiquiti Unifi Uap-Ac Mesh Pro access point. To the right of the image, the product details are listed:

- UBIQUITI** logo
- Ubiquiti Unifi Uap-Ac Mesh Pro 802.11Ac, 1750Mbps Outdoor AP**
- ★★★★★ No Reviews yet
- \$171.00** ~~\$499.00~~
- SKU: UAP-AC-M-PRO-US
- Manufacturer: Ubiquiti Networks
- Data Sheet: [Download](#)
- Availability: 34 In Stock (updated live)
- (click to select)
- UNIFI ELITE DEVICE LICENSE - TIER 1**

The Windows taskbar at the bottom shows the time as 9:50 AM on 8/25/2019.

MikroTik Cloud Core Router

The screenshot shows the ISP Supplies website with the MikroTik Cloud Core Router CCR1009-7G-1C-1S+ product page. The browser's address bar shows the URL ispsupplies.com/MikroTik-RouterBOARD-CCR1009-7G-1C-1S. The page header includes contact information (855-947-7776, sales@ispsupplies.com) and navigation links (Contact Us, Reorder Items, Submit a Ticket, Login). The ISP Supplies logo and a search bar are prominently displayed. The main navigation menu includes Shop By Category, Shop By Brands, Blog, Knowledge Base, Contact Us, Financing, Training & Events, Tech Support, and About Us. The breadcrumb trail reads Home > MikroTik Cloud Core Router CCR1009-7G-1C-1S+.

MikroTik
MikroTik Cloud Core Router CCR1009-7G-1C-1S+
★★★★★ No Reviews yet

\$411.25 ~~\$495.00~~

SKU: CCR1009-7G-1C-1S+
Manufacturer: MikroTik
Data Sheet: [Download](#)
Quick Guide: [Download](#)
Block Diagram: [Download](#)
Availability: 4 In Stock (updated live)

Related Items:

Mikrotik SFP (1.25G) Module, 20KM, Single Mode
\$20.58
★★★★★

Ubiquiti Edgeswitch 500w managed POE gigabit switch

The screenshot shows the ISP Supplies website with the Ubiquiti Edgeswitch ES-48-500W product page. The browser's address bar shows the URL ispsupplies.com/EdgeSwitch-ES-48-500W. The page header includes contact information (855-947-7776, sales@ispsupplies.com) and navigation links (Contact Us, Reorder Items, Submit a Ticket, Login). The ISP Supplies logo and a search bar are prominently displayed. The main navigation menu includes Shop By Category, Shop By Brands, Blog, Knowledge Base, Contact Us, Financing, Training & Events, Tech Support, and About Us. The breadcrumb trail reads Home > Ubiquiti 48-Port 500W Managed PoE+ Gigabit Switches With SFP.

UBIQUITI
Ubiquiti 48-Port 500W Managed PoE+ Gigabit Switches With SFP
★★★★★ No Reviews yet

\$846.76 ~~\$899.00~~

SKU: ES-48-500W
Manufacturer: Ubiquiti Networks
Data Sheet: [Download](#)
Quick Start Guide: [Download](#)
Availability: 16 In Stock (updated live)

Related Items:

Mikrotik SFP (1.25G) Module, 20KM, Single Mode
\$20.58
★★★★★

Shireen 1000ft, Outdoor shielded Cat6

ISP Supplies

855-947-7776 | sales@isp-supplies.com | Contact Us | Reorder Items | Submit a Ticket | Login

Search for products

Shop By Category | Shop By Brands | Blog | Knowledge Base | Contact Us | Financing | Training & Events | Tech Support | About Us

Home > Shireen 1000ft, Outdoor shielded Cat6

SHIREEN
Shireen 1000ft, Outdoor shielded Cat6
★★★★★ No Reviews yet

\$168.33 ~~\$264.66~~
Tariff Fee: \$29.00

SKU: DC-2021
Manufacturer: Shireen
Data Sheet: [Download](#)
Availability: 13 In Stock (updated live)

1 **Add to Cart**

Related Items:

Primus Cable CAT6 Outdoor Cable, Direct Burial Shielded Ethernet With Waterblock Tape (1000ft)
\$206.25
★★★★★

Type here to search | 9:54 AM 8/25/2019

Ubiquiti ETH-SP Ethernet Surge Protector

DOUBLERADIUS, INC. IS A 100% EMPLOYEE OWNED COMPANY!

HOME | MY ACCOUNT | MY CART | CHECKOUT | LOG OUT | BLOG | QUICK ORDER
AHORA HABLAMOS INGLÉS Y ESPAÑOL

DoubleRadius
Your Partner for Building Better Networks

Search | My Cart: 0

SHOP BRANDS | WIRELESS | NETWORKING | VIDEO | VOIP | INDUSTRIES SERVED | SERVICE CENTER | RESOURCE CENTER

Brands Sold in Store > Ubiquiti > Accessories > Surge Protectors >

UBIQUITI ETHERNET SURGE PROTECTOR G2
SKU #: ETH-SP-G2

~~\$12.50~~
\$10.81

Qty: 1 **ADD TO CART**

Tell a friend about this product

MY CART
You have 0 item/s in your shopping cart.

Type here to search | 10:01 AM 8/25/2019

Tycon Power Weatherproof Steel Outdoor Enclosure

The screenshot shows a web browser window displaying the ISP Supplies website. The browser's address bar shows the URL ispsupplies.com/Tycon-Power-ENC-STL-24x24x16. The website header includes the ISP Supplies logo, a search bar, and navigation links such as "Shop By Category", "Shop By Brands", "Blog", "Knowledge Base", "Contact Us", "Financing", "Training & Events", "Tech Support", and "About Us". The main content area features a product image of a white metal enclosure on the left. To its right, the product title "Tycon Power Weatherproof Steel Outdoor Enclosure, 23x24x16" is displayed, along with a price of \$349.95, SKU "ENC-STL-24x24x16", and manufacturer "Tycon Systems". A "Related Items" section on the right shows a "Netonix 12-Port Managed POE Switch, DC 250Watt" for \$379.95. The Windows taskbar at the bottom shows the time as 10:02 AM on 8/25/2019.

Rack mount system for Enclosure

The screenshot shows a web browser window displaying the ISP Supplies website. The browser's address bar shows the URL ispsupplies.com/rack-mount-for-tycon. The website header is identical to the previous screenshot. The main content area features a product image of two vertical metal rack mount rails on the left. To its right, the product title "Rack mount system for Tycon Systems ENC-STL-24x24x16" is displayed, along with a price of \$44.00 (reduced from \$47.50), SKU "ENC-STL-RMK", and manufacturer "ISP Supplies". An "Add to Cart" button is visible. The Windows taskbar at the bottom shows the time as 10:02 AM on 8/25/2019.

Tycon Power PowerVent System for enclosure

ispsupplies.com/Tycon-Power-rpst-powervent-24

855-947-7776 sales@ispsupplies.com Contact Us Reorder Items Submit a Ticket Login

ISPSupplies Search for products Go 0

Shop By Category Shop By Brands Blog Knowledge Base Contact Us Financing Training & Events Tech Support About Us

Home > Tycon Power PowerVent System for RPST (ENS-ST) enclosure, 12VDC/24VDC, 50C Thermostat

TYCON systems

Tycon Power PowerVent System for RPST (ENS-ST) enclosure, 12VDC/24VDC, 50C Thermostat

★★★★★ No Reviews yet

\$28.95
[Log in to see best price](#)

SKU: RPST-POWERVENT-24
Manufacturer: Tycon Systems
Data Sheet: [Download](#)
Availability: 4 In Stock (updated live)

1 [Add to Cart](#)

Type here to search

10:03 AM 8/25/2019

Tycon Power TPDIN PowerSens Remote Monitor Unit

ispsupplies.com/Tycon-Power-TPDIN-Monitor-WEB2

855-947-7776 sales@ispsupplies.com Contact Us Reorder Items Submit a Ticket Login

ISPSupplies Search for products Go 0

Shop By Category Shop By Brands Blog Knowledge Base Contact Us Financing Training & Events Tech Support About Us

Home > Tycon Power TPDIN PowerSens Remote Monitor and Control Unit, TPDIN2

TYCON systems

Tycon Power TPDIN PowerSens Remote Monitor and Control Unit, TPDIN2

★★★★★ No Reviews yet

\$159.95
[Log in to see best price](#)

SKU: TPDIN-Monitor-WEB2
Manufacturer: Tycon Systems
Data Sheet: [Download](#)
User Guide: [Download](#)
Availability: 11 In Stock (updated live)

Type here to search

10:04 AM 8/25/2019

Valmont Site Pro Tower Mount

The screenshot shows the Valmont Site Pro website interface. At the top, there's a navigation bar with the Site Pro logo and menu items: Get Started, Products, Resources, and Company. A search bar is also present. The main heading is "XLD WiMAX Tower Mounts (Standoff 16.5" Rd 2.5"-10.75" Ang 2"-8")". Below this, there's a product image showing the tower mount hardware. To the right of the image, the price is listed as \$474.09, and there's a quantity selector set to 1 and an "Add to Cart" button. Below the image, there are tabs for "Description" and "Specs/Instructions". The description lists key features: CWT01-LL kit, weight of 138 lbs, stand-off of 16-1/2", fits round legs of 2-1/2" to 10-3/4", antenna mounting pipes stand 16-1/2" off, antenna separation up to 48", and accepts 2-3/8" to 4-1/2" OD antenna mounting pipes. On the right side, there's a "My Cart" section showing a total of \$0.00 and a "Quick Navigation" button. A "Need Assistance?" section provides contact information for support, including phone numbers (888-438-7761, 888-753-7446) and an email address (SP1Support@Valmont). A live chat window is also visible, indicating staff is offline.

Valmont H-frame rack mount hardware

The screenshot shows the Valmont Site Pro website interface for the "Equipment Platform Equipment Rack (Direct Platform Attachment)". The product image shows a metal H-frame rack with a platform. The price is \$565.39, and the quantity is set to 1. The SKU is MER8-P and the size is 8'. The description lists features: Overall Size - 8' x Deck Length - 8', H-Frame with Direct Platform Attachment Kit, Complete Kits for all Equipment mounting needs, Heavy Duty Construction, Includes two 10' galvanized unistrut rails, and Designed to space unistrut at 6' (typical spacing) but spacing is adjustable. The right side of the page includes a "My Cart" section with a total of \$0.00, a "Quick Navigation" button, and a "Need Assistance?" section with contact information for support. A live chat window is also visible, indicating staff is offline.

IP Camera (PTZ, outdoor, zoom, 4MP)

The screenshot shows the DoubleRadius website. At the top, there's a navigation bar with links for HOME, MY ACCOUNT, MY CART, CHECKOUT, LOG OUT, BLOG, and QUICK ORDER. Below this is the DoubleRadius logo and a search bar. A red navigation bar contains categories like SHOP BRANDS, WIRELESS, NETWORKING, VIDEO, VOIP, INDUSTRIES SERVED, SERVICE CENTER, and RESOURCE CENTER. The main product page features a large image of the Ubiquiti Unifi Protect G4-Pro Camera. To the right of the image, the product name 'UBIQUITI UNIFI PROTECT G4-PRO CAMERA' and SKU '#: UVC-G4-PRO' are displayed. The price is listed as \$441.78. Below the price is a quantity selector set to '1' and an 'ADD TO CART' button. There are also social media sharing icons and a 'Tell a friend about this product' link. The bottom of the page shows a Windows taskbar with the date 8/25/2019 and time 10:11 AM.

Tripp Lite 3.2-3.8kw single-phase metered pdu

The screenshot shows the Amazon.com product page for a Tripp Lite Metered PDU. The product title is 'Tripp Lite Metered PDU, 20A, 10 Outlets (8 C13 & 2 C19), 200-240V, C20 / L6-20P Adapter, 12 ft. Cord, 1U Rack-Mount Power, TAA, 2 Year Warranty (PDUMH20HV)'. The price is \$134.95 with Prime and free returns. The product is marked as 'In Stock' and 'FREE Delivery Tuesday'. The page includes a large image of the PDU unit, a list of product features, and a 'Buy new' button for \$134.95. The 'Style' section shows 'Metered' as the selected option. The bottom of the page shows a Windows taskbar with the date 8/25/2019 and time 10:12 AM.

Tripp Lite Metered PDU, 20A, 10 Outlets (8 C13 & 2 C19), 200-240V, C20 / L6-20P Adapter, 12 ft. Cord, 1U Rack-Mount Power, TAA, 2 Year Warranty (PDUMH20HV)

Price: \$134.95 ✓prime & FREE Returns

FREE Delivery Tuesday if you order within 12 hrs 2 mins. Details

In Stock.

Ships from and sold by Amazon.com in easy-to-open packaging.

Free Amazon product support included

Style: **Metered**

Basic Basic (5 Adapters) Basic (L6-20P Only) **Metered** Metered + ATS Monitored

Monitored + ATS Switched Switched + ATS

- 208/240 & 230V metered 1U horizontal mount Power Distribution Unit (PDU)
- 20A maximum capacity (Agency de-rated to 16A)
- Includes L6-20P and C20 line cord options (detachable via C20 inlet)
- 10 total output receptacles (8 C13 and 2 C19)
- Outlets are arranged in a single unbreakered, metered load bank.

Buy new: \$134.95

Item arrives in packaging that reveals what's inside. To hide it, choose Ship in Amazon packaging at checkout.

Qty: 1

Buying in bulk?

Add to Cart

1-Click ordering is not available for this item.

Deliver to Danny - Mount Olive 28365

Buy used: \$110.00

Add to List

Attachment 13 – Supporting Documentation for Cost Estimates

Basis of estimates:

Tower related expenses:

City of Suffolk	Free use for 36 months: \$1,000/month/tower x 36 months = \$36,000
Open Broadband	110v electric outlet use: \$50/month x 36 months - \$1,800

Project Management and Coordination

City of Suffolk	Avg 12.5 hrs/week \$50/hr (loaded) for 52 weeks = \$30,000
Open Broadband	Avg 12.5 hrs/week \$50/hr (loaded) for 52 weeks = \$30,000

Equipment Shipping 4%, based on past experience

Taxes 6% (rates for City of Suffolk VA)

The following are based on previous experience:

Misc Tower components including Ethernet connectors, clips, tie wraps, jumpers, terminal strips, etc.
\$1,200

Fiber and Datacenter bandwidth 3-years (\$3500/mo * 36) = 126,000

Tower Structural Analysis Complete analysis of antenna support structure	\$	4,000
FCC 11 GHz licensing Fees to file and register 11 GHz link	\$	1,800
Tower Climbers Certified, insured, licensed professionals - 2 days + travel	\$	12,000
Tower Design Link Analysis, RF Propagation Analysis and Design	\$	1,500
Electrician Fiber and Power cabling	\$	1,200
Tower Permits Tower Permitting Fee Estimate	\$	500
Configuration and Install Install, programming and config of all equipment	\$	4,000



(RETAIN FOR YOUR RECORDS)
Form 477 Filing Summary

FRN: 0026202879 | Data as of: Dec 31, 2018 | Operations: Non-ILEC | Submission Status: Original - Submitted | Last Updated: Mar 7, 2019 16:52:56

Filer Identification

Section	Question	Response
Filer Information	Provider Name	Open Broadband, LLC
	Holding Company Name	Open Broadband, LLC
	SAC ID	
	499 ID	
Data Contact Information	Data Contact Name	Kent Winrich
	Data Contact Phone Number	(919) 924-3389
	Data Contact E-mail	kent@openbb.net
Emergency Operations Contact Information	Emergency Operations Name	Kent Winrich
	Emergency Operations Phone Number	(919) 924-3389
	Emergency Operations E-mail	kent@openbb.net
Certifying Official Contact Information	Certifying Official Name	Kent Winrich
	Certifying Official Phone Number	(919) 924-3389
	Certifying Official E-mail	kent@openbb.net

Data Submitted

Form Section	File Name	Date & Time	Number of Rows
Fixed Broadband Deployment	CompletedMerge.csv	Mar 7, 2019 16:46:28	11484
Fixed Broadband Subscription	TowerCoverage_477_Broadband_Subscriber_Data (2).csv	Mar 7, 2019 16:46:52	41

Fixed Broadband Deployment

Census Block Counts by State, DBA Name and Technology

State	DBA Name	Technology	Blocks
North Carolina	Open Broadband LLC	Terrestrial Fixed Wireless	11361
South Carolina	Open Broadband LLC	Terrestrial Fixed Wireless	123
Total			11484

Fixed Broadband Subscriptions by State, Technology and End-user Type

Fixed Broadband Subscription

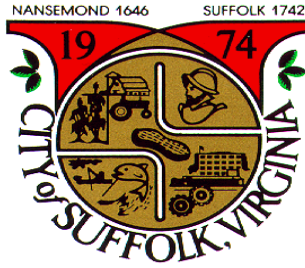
State	Technology	Census Tracts	Subscriptions		
			Consumer	Business / Govt	Total
North Carolina	Terrestrial Fixed Wireless	41	107	20	127
Total		41	107	20	127

Fixed Broadband Subscriptions by Bandwidths and End-user Type

Downstream Bandwidth (in Mbps)	Upstream Bandwidth (in Mbps)	Consumer	Business / Govt	Total
10.000	25.000	2	0	2
15.000	25.000	1	0	1
25.000	2.000	1	0	1
25.000	25.000	52	10	62
25.000	60.000	0	1	1
50.000	50.000	42	3	45
60.000	60.000	3	0	3
75.000	75.000	1	0	1
100.000	100.000	5	2	7
200.000	200.000	0	2	2
1000.000	1000.000	0	2	2
Total		107	20	127

Fixed Broadband Subscriptions by Technology, Bandwidths and End-user Type

Technology	Downstream Bandwidth (in Mbps)	Upstream Bandwidth (in Mbps)	Consumer	Business / Govt	Total
Terrestrial Fixed Wireless	10.000	25.000	2	0	2
	15.000	25.000	1	0	1
	25.000	2.000	1	0	1
	25.000	25.000	52	10	62
	25.000	60.000	0	1	1
	50.000	50.000	42	3	45
	60.000	60.000	3	0	3
	75.000	75.000	1	0	1
	100.000	100.000	5	2	7
	200.000	200.000	0	2	2
	1000.000	1000.000	0	2	2
Total			107	20	127



LEGAL NOTICE

The City of Suffolk is soliciting public comment for a potential broadband project as part of one an application for the State of Virginia Telecommunications Initiative Grant Funds.

The potential Broadband Project will provide last mile services to various areas of the City of Suffolk that currently classified as “unserved” or have no means of accessing broadband services.

The City issued Request for Proposal (RFP) 20007-JS for Internet Service Providers for Unserved and Underserved Areas on July 1, 2019. The City accepted a proposal from Open Broadband who will be co-applicants on the grant. The potential Broadband Project areas cover a five (5) mile area radius of the following radio tower sites:

1. Pruden – 4471 Pruden Boulevard
2. Hunter - 5850 Greenwood Drive
3. Whaleyville- 6201Whaleyville Blvd.

For additional information, contact Regina Chandler at 757-514-7217. Written comments may be addressed to the Information Technology Department, 442 W. Washington Street, Suffolk, VA 23434, via email to DIT@suffolkva.us, or in person during normal business hours, no later than August 27, 2019

openbroadband

TOWER ANTENNA AGREEMENT

This agreement made and entered into as of this _____ day of _____, 201__ by and between ___ City of Suffolk _____, organized and existing under the laws of the Commonwealth of Virginia, (hereafter referred to as “Tower Owner”), and Open Broadband, LLC, an Internet Service Provider organized and existing under the laws of the State of North Carolina, (hereinafter referred to as “Open Broadband”).

The term “**Tower**” is defined as a structure that may stand apart from or be attached to another building or structure. Examples include radio towers, cell towers, television towers, building rooftops, poles, park structures, and water towers.

WITNESSETH:

WHEREAS, the Tower Owner owns towers suitable for placement of fixed-wireless antennas to provide high-speed internet service; and

WHEREAS, Open Broadband desired to install, remove, replace, maintain, and operate a wireless broadband service system facility, including mounting antennas on the towers and a weather utility service box approximately 2’ x 3’ to house the communications service system fixtures and equipment (or equivalent space provided by Tower Owner), and necessary appurtenances; and in consideration of the provisions, terms, conditions and covenants contained herein, the Tower Owner and Open Broadband do mutually covenant and agree as follows:

1. Antenna Space and Cabling. Tower Owner hereby agrees to provide space on its towers and rooftops for fixed wireless antennas and mounts at locations to be selected by Open Broadband so long as they do not cause issues with tower loading or wind shear, and do not interfere with the openings to the tower, ladders, braces, paint removal, or painting of the structure and is in full compliance with all state and/or federal laws or the rules and regulations of any agency or instrumentality thereof. As required, Tower Owner also agrees to allow Open Broadband to attach outdoor Ethernet cable to the towers/roofs to connect the antennas to electronics located at or near the tower. Open Broadband is responsible for all installation and maintenance costs of their equipment, and will work in good faith with the Tower Owner for agreeable placement locations and design.

Mounting: Open Broadband plans to mount antennas on a standoff mast on the water tower railing, on a standoff mast on the Rohn 25 tower. The cost of these attachments are the responsibility of Open Broadband. We understand that the City may use a maintenance company for their towers. If the City and their maintenance company have additional requirements that would result in a different mounting method, the parties agree that any such material additional cost will be submitted as part of the VATI grant.

openbroadband

The initial locations are

2. Electronics and Power. Tower Owner hereby grants access to Open Broadband to place electronics at a suitable location near the tower. This may be an outdoor utility box or a small amount of rack space in an existing room owned by the Tower Owner. Tower Owner will provide a 120-volt AC power socket for the minimal power draw of the antennas. Power access is required to provide the service and is included in the lease at the rental rate in section 4. Power consumption will be minimal with use in the range of 1-2 amps.
3. Term. The term of this agreement (the “Initial Term”) is five (5) years, beginning on the date of late signature on this Agreement. This agreement shall be automatically renewed for an additional five (5) year period, unless Open Broadband or Tower Owner provides notice of intention not to renew not less than sixty (60) days prior to the expiration of the Initial Term or any Renewal Term.
4. Rent. It is understood that tower space and electricity are requirements in order for Open Broadband to provide service. The City agrees that the lease rate for Tower space and an electrical outlet at all City-owned towers to Open Broadband will have the following monthly payments:

Tower rent:

Months 1-36: \$0/month/tower.

Months 37+ Open Broadband will pay rent according to the schedule in Exhibit 1, up to \$1000/month/tower.

Electrical outlet rent:

Month 1+: \$50/month/outlet/tower

This is a valuable consideration, and is valid only as long as a VATI grant is awarded, and Open Broadband is providing high-speed internet service in the community.

5. Title and Quiet Possession. The Tower Owner represents and agrees (a) that it is the owner of the sites, (b) that it has the right to enter into this agreement, (c) that the person signing this agreement has the authority to sign, (d) that Open Broadband is entitled to access the sites on either an escorted basis, or independent basis, as determined by the Tower Owner. Access includes inside any security fence or area, 24x7x365 throughout the terms of the agreement so long as Open Broadband is not in default of this agreement.

openbroadband

6. Installation. In no event shall Open Broadband pierce or drill into the exterior of a tower. Open Broadband agrees that it will provide the Tower Owner a written proposal addressing the installation of antenna and that such proposal shall be approved by the Tower Owner and their representative prior to installation. Each approved proposal will be added as an Attachment to this Tower Antenna Agreement.
7. Interference. Open Broadband will resolve any technical problems with other equipment located at the sites on the installation date.
8. Maintenance of Area. Open Broadband shall make no alterations to the tower or related facilities which will compromise or impair the integrity of the structure. Open Broadband shall exercise special precaution to avoid damaging the facilities of the Tower Owner, and Open Broadband hereby assumes all responsibility for any and all loss or such damage created by Open Broadband, its employees or agents. Open Broadband agrees to make an immediate report to the Tower Owner of any installation and maintenance of Open Broadband's facilities. General tower maintenance (painting, etc.) is the responsibility of the Tower Owner. The Tower Owner shall not move, disconnect or adjust, in any way, Open Broadband's equipment without the supervision of an Open Broadband representative on site. Open Broadband acknowledges and agrees that it shall be responsible for moving or protecting its equipment during any repairs or renovations to the tower and the Tower Owner shall incur no liability to Open Broadband for any injury, expense, or claim incurred by Open Broadband during any such repair or renovation.
9. Indemnity. Open Broadband shall carry insurance to indemnify, protect, and save harmless the Tower Owner from any and all claims and demands for damages to property and injury to or death of persons, including payments made under any Workers' Compensation Laws, or under any plan for employee's disability and death benefits which may arise out of or be caused by the erection, maintenance, presence, use or removal of Open Broadband antennas, cable, equipment and necessary appurtenances at the tower site. Open Broadband shall also indemnify, protect, and save harmless the Tower Owner from any and all claims and demands of whatsoever kind which may arise directly or indirectly from the operations of Open Broadband's facilities, including but not limited to taxes, special charges by others, claims and demands for damages or less for infringement of copyrights, libel and slander, unauthorized use of frequencies, etc.
10. Termination. Either party may terminate this lease upon sixty (60) days notice without liability for further rent or damages at any time after the initial terms of three (3) years. Tower Owner may terminate this lease after three (3) years upon giving Open Broadband sixty (60) days notice of termination.
11. Hazardous Substance. Open Broadband shall not introduce or use any such substance on the site in violation of any applicable law. Open Broadband understands that if the

openbroadband

Tower Owner needs to remove the old paint and repaint the tower and the old paint contains sufficient levels of lead that it will require special handling and containment in its removal. Open Broadband agrees to cooperate fully with the Tower Owner in whatever steps are necessary for the removal of the old paint and the repainting of the tower. Open Broadband agrees to hold the Tower Owner harmless of any interruption of service or possible damage of their equipment during this process.

12. Miscellaneous. (a) This agreement applies to and binds the heirs, successors, executors, administrators and assigns of the parties to this agreement; (b) this agreement is governed by the laws of the Commonwealth of Virginia; (c) this agreement constitutes the entire agreement between the parties and supersedes all prior written and verbal agreements, representations, promises or understandings between the parties. Any amendments to this agreement must be in writing and executed by both parties; (d) if any provision of this agreement is invalid or unenforceable with respect to any party, the remainder of this agreement or the application of such provision to persons other than those as to whom it is held invalid or unenforceable will not be affected and each provision of this agreement will be valid and enforceable to the fullest extent permitted by law.
13. Insurance. Open Broadband will maintain General Liability and Umbrella insurance coverage, a copy of which will be provided to the Tower Owner. Open Broadband will also maintain Workers Compensation Insurance, and will provide a copy of insurance to the Tower Owner prior to performing any work.

Signature below commits each party to the terms of this agreement.

Tower Owner

Open Broadband, LLC

By: _____

Print Name: _____

Date: _____



Exhibit 1 – Tower Lease Rates

Lease rates for each tower are on a graduated scale as Open Broadband adds end user customers. The monthly fee schedule per tower is as follows:

Customers on the Structure	Monthly Fee
First 36 months	\$0/tower
Starting in month 37:	
0-99 customers	\$100/tower
100-149 customers	\$200/tower
150-199 customers	\$350/tower
200-249 customers	\$550/tower
250-299 customers	\$700/tower
300+ customers	\$1000/tower

City Initial

Open Broadband Initial



Memorandum of Understanding

This Memorandum of Understanding ("MOU") is made this 30th day of August, 2019 between the **City of Suffolk, Virginia** whose principal office is the Suffolk City Hall, 442 West Washington Street, Suffolk, Virginia 23434, hereinafter referred to as the "City", party of the first part, and **Open Broadband, LLC**, P.O. Box 723, Waxhaw, NC 28173, hereinafter referred to as the "Provider", party of the second part.

On July 15, 2019, Provider submitted a Proposal in response to Request for Proposal 20007-JS titled Internet Service Providers for Unserved and Underserved Areas issued July 1, 2019.

It is mutually understood and agreed by the parties hereto that the Provider will perform the services and tasks as required as a co-applicant with the City for the completion of an application for the 2020 Virginia Telecommunication Initiative (VATI) grant issued by the Virginia Department of Housing and Community Developmental Services.

The services and tasks furnished by the Provider for submittal of the VATI grant will be at no cost to the City.

Should the City be awarded the grant, the Provider will be expected to sign a contract with the City to provide the services as stated in the grant application and proposal.

IN WITNESS WHEREOF, the parties hereto have executed and sealed this AGREEMENT as of the day and year first above written.

CITY OF SUFFOLK, VA

OPEN BROADBAND, LLC

BY: _____

[Signature]
Jay Smigielski
Purchasing Agent

BY: _____

[Signature]
Alan Fitzpatrick
Chief Executive Officer

Regina M. Chandler

From: Kurtzner, Colleen Y <colleen.kurtzner@verizonwireless.com>
Sent: Tuesday, August 20, 2019 11:55 AM
To: Regina M. Chandler
Subject: Re: [E] NOTICE TO CURRENT PROVIDERS - ESTABLISHED BROADBAND NETWORKS - CITY OF SUFFOLK

Hello Regina,

I have received confirmation back that our engineers have reviewed Suffolk's planned service area under this proposal noted in the public notice listed on the DCHD website and it does not overlap Verizon FiOS.

Please let me know if you need any thing more.

Thank you,
Colleen Kurtzner
Verizon Wireless
757 646-5050

On Thu, Aug 8, 2019 at 4:55 PM Regina M. Chandler <rmchandler@suffolkva.us> wrote:

As you may know through a recent RFP, The City of Suffolk has agreed to collaborate with Open Broadband, LLC in applying for the 2020 VATI Grant to provide wireless broadband internet access. As broadband providers in Suffolk, please notify the City of Suffolk if any of the proposed areas noted in the public notice listed on the DCHD website are currently being served within your prospective broadband networks. Responses can be sent to Regina Chandler @ rmchandler@suffolkva.us by 8/22/19.

Regina Chandler, GISP, ITIL

Asst. Director of Information Technology

City of Suffolk VA

442 W Washington Street

Suffolk VA 23434

757-514-7217

--

Thank you,

Colleen Kurtzner

Major Account Manager Government
757 646-5050

Colleen.Kurtzner@verizonwireless.com

24/7 Government & Technical Support - 1-800-922-0204

[Verizon's Public Safety Website](#)

VCRT (Verizon Critical Response Team) 1-800-981-9558

VSAT (Verizon Security Assistance Team, formerly LERT) 1-800-451-5242

Regina M. Chandler

From: Collins, Eric E <Eric.Collins@charter.com>
Sent: Wednesday, August 28, 2019 9:46 AM
To: Regina M. Chandler
Cc: Charlie Harcum; Timothy Kelley
Subject: RE: Charter/Spectrum Service Areas

Hi Regina,

Unfortunately, the maps are not available and suggest that you use the information we previously shared. Let me know if you have any questions.

Thanks

Whaleyville Tower Radius

Currently Served:

Whaleyville Blvd.
Mineral Springs Road
Rt. 677 Great Fork Road to NC Border

Not serviced:

Box Elder Road/Manning Bridge
Rt. 759

Hunter Tower Radius- Greenwood Road

Currently Served:

Southwestern Blvd
Leafwood Road to Rt. 58

Not Serviced:

Rt. 616 to Rt. 58
Ellis Road
Rt. 679
New Road

Pruden Tower Radius

Currently Served:

Rt. 460 to Windsor
Nansemond Suffolk Academy

Not Serviced:

Rt. 611

Crittenden Road/N Cherry Grove

Service up to Hobson Area



Eric Collins | Director of Government Relations
Charter Communications
6202 Raeford Road | Fayetteville, NC 28304
O: 910.401.5168 | C: 910.734.2425
E: eric.collins@charter.com

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From: Collins, Eric E
Sent: Tuesday, August 27, 2019 1:36 PM
To: 'Regina M. Chandler' <rmchandler@suffolkva.us>
Cc: 'Charlie Harcum' <charcum@suffolkva.us>; 'Timothy Kelley' <tkelley@suffolkva.us>
Subject: RE: Charter/Spectrum Service Areas

Hi Regina,

Waiting on the map from construction that shows the serviceable streets.



Eric Collins | Director of Government Relations
Charter Communications
6202 Raeford Road | Fayetteville, NC 28304
O: 910.401.5168 | C: 910.734.2425
E: eric.collins@charter.com

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From: Collins, Eric E
Sent: Friday, August 16, 2019 3:30 PM
To: 'Regina M. Chandler' <rmchandler@suffolkva.us>
Cc: catron@alcalde-fay.com; Charlie Harcum <charcum@suffolkva.us>; Timothy Kelley <tkelley@suffolkva.us>
Subject: RE: Charter/Spectrum Service Areas

working on the ask now. Will let you know.

From: Regina M. Chandler [<mailto:rmchandler@suffolkva.us>]
Sent: Friday, August 16, 2019 3:27 PM
To: Collins, Eric E <Eric.Collins@charter.com>
Cc: catron@alcalde-fay.com; Charlie Harcum <charcum@suffolkva.us>; Timothy Kelley <tkelley@suffolkva.us>
Subject: RE: Charter/Spectrum Service Areas

What is your earliest availability for you to provide this information?

Regina

From: Collins, Eric E <Eric.Collins@charter.com>
Sent: Friday, August 16, 2019 3:05 PM
To: Regina M. Chandler <rmchandler@suffolkva.us>
Cc: catron@alcalde-fay.com; Charlie Harcum <charcum@suffolkva.us>; Timothy Kelley <tkelley@suffolkva.us>
Subject: RE: Charter/Spectrum Service Areas

Hi Regina,

This is the confirmation information that came back from construction. Perhaps a service area road map showing what we serve and don't service would be beneficial for everyone. Also, there is no language in the articles of the VATI grant (DCHD) that state an incumbent subscriber is prohibited from connecting to crossover provider. The purpose of this was to protect the incumbent provider. It really comes down to being able to directional aim a wireless antenna to unserved areas of an incumbent service area. We can discuss next week if you would like.

Thanks

From: Regina M. Chandler [<mailto:rmchandler@suffolkva.us>]
Sent: Wednesday, August 14, 2019 4:57 PM
To: Collins, Eric E <Eric.Collins@charter.com>
Cc: catron@alcalde-fay.com; Charlie Harcum <charcum@suffolkva.us>; Timothy Kelley <tkelley@suffolkva.us>
Subject: Charter/Spectrum Service Areas

Eric,

Per our conversation this afternoon, here are the areas we discussed that you currently provide broadband services. Please review and correct any locations that I may have missed. Thanks!

Whaleyville Tower Radius

Currently Served:

Whaleyville Blvd.
Mineral Springs Road
Rt. 677 Great Fork Road to NC Border

Not serviced:

Box Elder Road/Manning Bridge
Rt. 759

Hunter Tower Radius- Greenwood Road

Currently Served:

Southwestern Blvd
Leafwood Road to Rt. 58

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