

A motion to support a proposal by Madison Gigabit Internet, Inc. to pursue grant funding through the Virginia Department of Housing and Community Development's Virginia Telecommunication Initiative (VATI) program.

Whereas, Madison County is currently underserved by internet services in that many areas have slow and unreliable service, if they have any service at all; and

Whereas, the Madison County Board of Supervisors desires to support the proliferation of internet services to heretofore underserved areas of Madison County; and

Whereas, Madison Gigabit Internet, Inc. (MGI) has proposed a project with the following features that will relieve the situation in several parts of the County:

- Two main tower-mounted transmission antennae that will communicate between Blakey Ridge and Hyde's office in downtown Madison.
- Distribution antennae on smaller poles or towers that will communicate between the Blakey tower and serve approximately 300 users in a 1+/- mile radius in the Wolftown, Criglersville, Rochelle and Brightwood communities.
- Up to 80% funding of capital costs by the Virginia Department of Housing and Community Development's Virginia Telecommunication Initiative (VATI) program; Mr. Hyde would provide any other required cash, and County staff time spent on the project would be offered as part of the "match" requirement.
- Project administration by the Rappahannock-Rapidan Regional Commission.
- A series of contracts and other paperwork developed and approved by the Board if the grant monies are approved to the effect that the County would be a pass-through agent for the funding; and.

Whereas, the project was presented as a public private partnership as required by the funding program with the understanding that MGI would be taking all of the risk of the projects success or failure, the County would not be liable for anything, and his project has lower priority than many other issues currently before the County,

Now, Therefore, Be It Resolved that the Madison County Board of Supervisors supports the project and authorizes the County Administrator to participate in filing the funding application with the understanding that any contracts must be processed through the County Attorney's office prior and approved by the Board prior to signature and that budget amendments must be approved prior to the expenditure of any funds supporting the project; and.

Be it Further Resolved that, if the funding is approved, the Madison County Board of Supervisors agrees to enter into a an appropriate contractual relationship articulating the above with Madison Gigabit Internet, Inc. that holds Madison County and its agents harmless, conveys all assets to Madison Gigabit Internet, Inc. as allowed by the funding agency; and

Be it Further Resolved that Madison County agrees to provide an in-kind contribution of to \$5,000 in staff time and other non-financial support for the project.

Passed by the Madison County Board of Supervisors on December 11, 2018

Clark Security & Services LLC

126 Geer Lane
Brightwood, VA 22715
TEL 540-543-2015
FAX 540-543-2154
EMAIL clarksecsvcs@yahoo.com
DCJS # 11-4351

December 13, 2018

Madison Gigabit Internet
200 Washington Street
Madison, VA 22727

Attn: Clint Hyde

Subject: Antenna Installation

The following is Clark Security & Services, LLC's cost proposal to perform the work outlined in the attached "Statement of Work".

Costs

This effort will be performed for a total cost of Fourteen Thousand Dollars (\$14,000.00) as summarized below and itemized in the attached cost proposal.

Labor	\$ 4,720.00
Equipment/Materials	<u>\$ 9,280.00</u>
Total Cost	\$14,000.00

Milestones

Acceptance of Proposal	\$7,000.00
Final Acceptance	\$7,000.00

Schedule

Performance of this effort will commence upon an agreed upon date after the acceptance of this proposal.

If you have any questions, please feel free to contract us by email at clarksecsvcs@yahoo.com or by phone at 540-543-2015.

Sincerely,
Josh Clark

Clark Security & Services LLC

126 Geer Lane
Brightwood, VA 22715
TEL 540-543-2015
FAX 540-543-2154
EMAIL clarkseccsvcs@yahoo.com
DCJS# 11-4351

December 13, 2018

Madison Gigabit Internet
200 Washington Street
Madison, VA 22727

Attn: Clint Hyde

Subject: Antenna Installation

Statement of Work

Clark Security & Services, LLC will provide and install the following equipment:

- Supply all services and materials as specified within this Statement of Work (SOW).
- Remove a 6ft X 10ft section of concrete curbing and asphalt.
- Dig a 6ft X 6ft X 4ft hole.
- Supply a construction dumpster to remove all debris from site.
- Install a rebar cage and 4ft of the first section of tower into the pit.
- Pour concrete.
- Provide a boom lift to install the remaining sections of the antenna, not to exceed 100ft in total height.
- Install the antenna on top of the mast.
- Run and terminate all necessary cables from the antenna to the equipment inside.
- Obtain written approval from the Customer for scope or cost change orders before any changes are implemented.
- Ensure infrastructure is consistent with applicable codes.
- Perform work safely and in accordance with common trade requirements and practices and the law.
- Identify code compliance or technical issues that may impede construction.
- Coordinate with the Customer on clearance of workforce and release of work areas.
- Provide local delivery to the site for all equipment specified in the SOW.
- Workers will wear appropriate personal protective equipment.
- Trash, including cardboard boxes, plastic wrap, and banding will be promptly removed.
- Tools and equipment shall be stored or removed to avoid hazards. Contractor will be cognizant of environmental responsibilities and take appropriate measures to control and mitigate equipment fluid emissions.
- Make allowances for providing electricity (portable generators) as needed during the construction and installation process.
- All work will be performed in a professional and skillful fashion.
- Comply with all federal, state, and local codes and regulations
- Will be responsible for any rework required to meet code.
- Building penetrations and routing of any wiring inside any of the buildings will be determined in conjunction with the Customer.
- Will program and test all equipment installed.

Customer Provided Items

The Customer is responsible for the following:

- Layout approval prior to commencement of work.
- Antenna, Mast, Anchoring Kit and all cables.
- Provide any required permits.
- Provide adequate space to install all equipment.
- Provide adequate, clean, 120VAC power.
- Final Inspection.

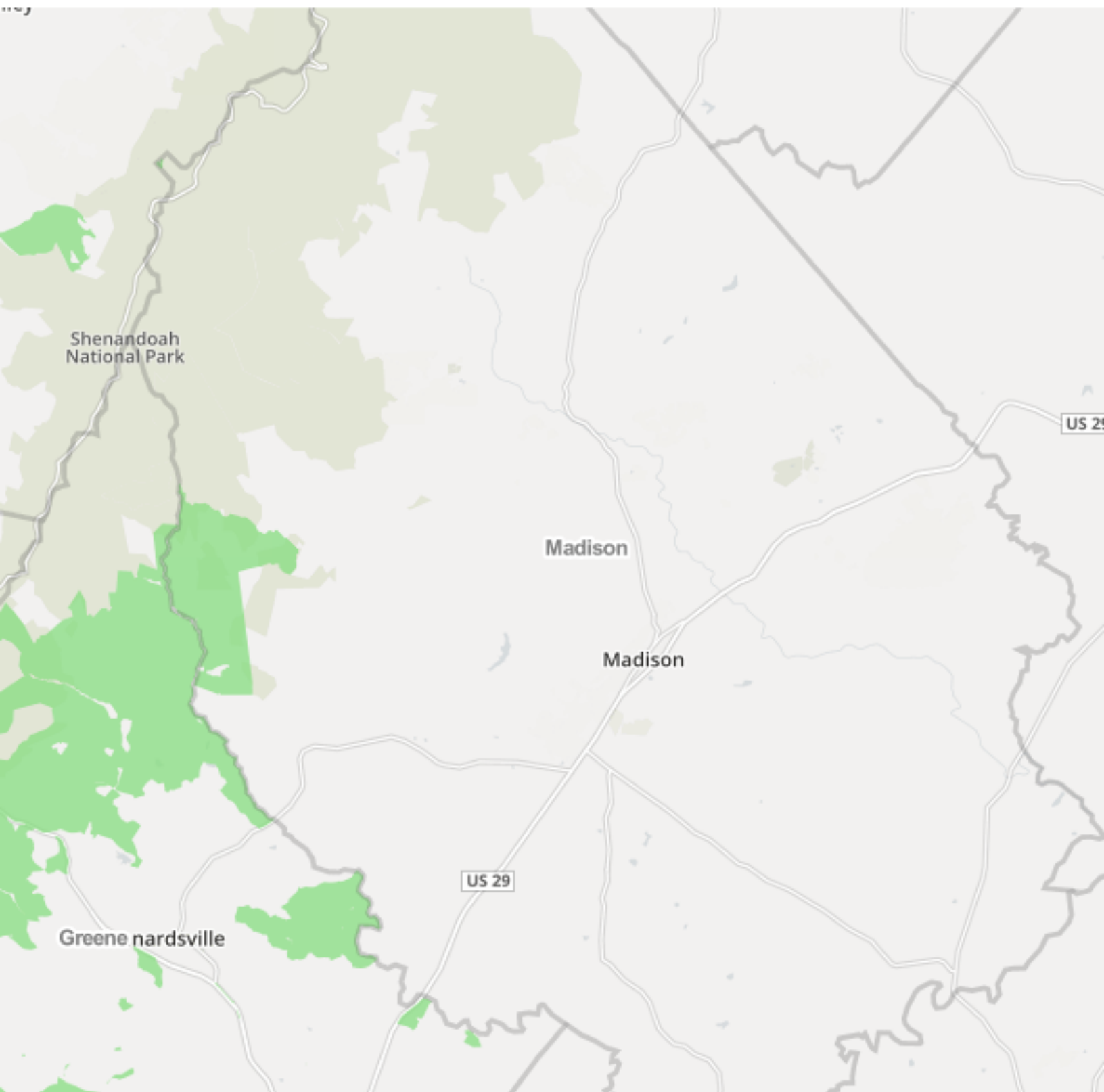
If you have any questions, please feel free to contact us by email at clarksecsvcs@yahoo.com or by phone at 540-543-2015.

Bid # 01
Supplies and Services

ITEM	SUPPLIES/SERVICES	QTY	UNIT	UNIT PRICE	TOTAL
1	LABOR CATEGORY RATES				
1A	Program Manager	8	HR	\$90.00	\$720.00
1B	Emergency Service Technician	0	HR	\$85.00	\$0.00
1C	Engineering Technician	0	HR	\$85.00	\$0.00
1D	Electronics, Tech. III	0	HR	\$75.00	\$0.00
1E	Electronics, Tech. II	0	HR	\$65.00	\$0.00
1F	Electronics, Tech. I (2 Techs - 1 Week)	80	HR	\$50.00	\$4,000.00
1G	Electrician	0	HR	\$75.00	\$0.00
1H	Laborer	0	HR	\$40.00	\$0.00
1I	Word Processor	0	HR	\$30.00	\$0.00
1J	Training	0	HR	\$65.00	\$0.00
	SUBTOTAL				\$4,720.00
2	EQUIPMENT/MATERIALS				
2A	Equipment/Material Costs	1	LS	\$7,067.78	\$7,067.78
2B	Tax	5.3	%	\$7,067.78	\$374.59
2C	Transportation	0	EA	\$0.00	\$0.00
2D	Overhead	20	%	\$7,067.78	\$1,413.56
2E	Profit	6	%	\$7,067.78	\$424.07
	SUBTOTAL				\$9,280.00
3	TRAVEL/PER DIEM				
3A	Travel	0	LS	\$0.00	\$0.00
3B	Per Diem Costs	0	LS	\$0.00	\$0.00
3C	Overhead	20	%	\$0.00	\$0.00
3D	Profit	6	%	\$0.00	\$0.00
	SUBTOTAL				\$0.00
4	SUBCONTRACTOR				
4A	Subcontractor Costs	0	LS	\$0.00	\$0.00
4B	Overhead	20	%	\$0.00	\$0.00
4C	Profit	6	%	\$0.00	\$0.00
	SUBTOTAL				\$0.00
5	MISCELLANEOUS	0	LS	\$0.00	\$0.00
	TOTAL				\$14,000.00

Bid # 01
Item Breakdown

ITEM	SUPPLIES/SERVICES	QTY	UNIT	UNIT PRICE	TOTAL
2	EQUIPMENT/MATERIALS LIST				
2A	Concrete	10	YD	\$150.00	\$1,500.00
2A	Rebar	150	FT	\$3.25	\$487.50
2A	Jack Hammer with Compressor	1	EA	\$350.00	\$350.00
2A	Mini Excavator	1	DAY	\$750.00	\$750.00
2A	Concrete Forms	1	EA	\$150.00	\$150.00
2A	125' Boom Lift	1	EA	\$2,500.00	\$2,500.00
2A	Construction Dumpster	1	WK	\$1,230.00	\$1,230.00
2A	Miscellaneous	1	EA	\$100.28	\$100.28
				SUBTOTAL	\$7,067.78
3	TRAVEL/PER DIEM				
3A	Roundtrip Airfare	0	RT	\$0.00	\$0.00
3B	Hotel	0	night	\$0.00	\$0.00
3C	Rental Car	0	day	\$0.00	\$0.00
3D	Per Diem	0	day	\$0.00	\$0.00
3E	Parking	0	EA	\$0.00	\$0.00
3F	Tolls	0	EA	\$0.00	\$0.00
3G	Miscellaneous Travel	0	EA	\$0.00	\$0.00
				SUBTOTAL	\$0.00



Madison County Board of Supervisors
and

Madison Gigabit Internet, Inc.

200 Washington Street

Madison, Virginia, 22727 703-862-4056

Madison County Rural Broadband Expansion
Technical Proposal

VATI Grant 2019

Competition Detail Maps

HighSpeedLink.net claims 12 megabits in the FCC data, but the same casual Facebook survey suggests no customers in Madison.

HighSpeedLink.net offers this coverage map over Madison and surrounding areas south



We imagine there is some kind of radio tower southwest of Madison County, that has some signal reach into Madison, but there appear to be zero actual customers in Madison. The coverage does seem to follow roads closer than a radio map typically would, making this picture suspect.

This is the Comcast Madison coverage map:
(Comcast is buried coax cable, so not broad areas)



The purple line that follows Rt 29, and east from there, is Comcast's fiber location. The pink line along the same route is where Comcast also has coax cable; the width of the line is for visibility, not as geographic coverage of distance from the roads.

The correspondence to the green census blocks on the FCC-coverage map is clear, but nowhere does Comcast cover all the space the census blocks and FCC data would suggest.

Comcast is the real competition, and we will avoid those areas for now.

The Virginia Tech Broadband-availability map (<https://broadband.cgis.vt.edu/IntegratedToolbox/>) shows that Madison has very little unserved or underserved area (because satellite covers it all), but the “not available” and “needs improvement” responses cover pretty much the entire county.

CDBG Derivation of Cost

Product	Total	VATI	Non-VATI	Source of Estimate
EXAMPLE				
<u>Construction</u>				
200 LF of fiber @\$150/LF	\$30,000	\$15,000	\$15,000	Company A
Tower	\$100,000	\$80,000	\$20,000	Company B
Engineering	\$20,000	\$0	\$20,000	ABC Engineering Firm

Product	Total	VATI	Non-VATI	Source of Estimate
Ubiquiti AirFiber 24 HD, Qty 2 @ \$3000 plus install labor	\$ 7,000	\$ 7,000	\$ -	Vendor website
Ubiquiti AirFiber 24 HD, Qty 8 @ \$3000	\$ 24,000	\$ -	\$ 24,000	Vendor website
Towers, Qty 4 @ \$2000	\$ 8,000	\$ 8,000	\$ -	Vendor website
Tower Construction, Qty 4	\$ 60,000	\$ 60,000	\$ -	Sub-contractor quote
Ubiquiti Rocket Prism AC Gen 2 (radio), Qty 24	\$ 6,000	\$ -	\$ 6,000	Vendor website
Ubiquiti PrismAP 5 90 (antenna), Qty 24	\$ 2,000	\$ -	\$ 2,000	Vendor website
Admin costs	\$ 5,000	\$ 5,000	\$ -	RRRC
Admin, engineering costs	\$ 12,000	\$ -	\$ 12,000	Madison Gigabit
Ground station electronics: networking, cable, computer servers, terminal, cabinet/rack	\$ 2,000	\$ -	\$ 2,000	Madison Gigabit

CDBG Derivation of Cost

County in-kind (use of existing tower in Town)	\$ 5,000	\$ -	\$ 5,000	Madison County
	\$ -	\$ -	\$ -	
	\$ -	\$ -	\$ -	
	\$ -	\$ -	\$ -	
	\$ -	\$ -	\$ -	
	\$ -	\$ -	\$ -	

Totals	131000	80000	51000
--------	--------	-------	-------

CDBG Derivation of Cost

Date
9/5/2016
9/5/2016
9/5/2016

Date
12/10/18
12/10/18
12/10/18
12/13/18
12/10/18
12/10/18
12/11/18
12/13/18
12/13/18

CDBG Derivation of Cost

12/05/18

[illegible]

Deployment

[illegible]

Deployment

[illegible]

Deployment

[illegible]

Deployment

[illegible]

Deployment

[illegible]

Deployment

[illegible]

Deployment

[illegible]

Deployment

[illegible]

Deployment

[illegible]

Deployment

[illegible]

Deployment

[illegible]

Deployment

[illegible]

Deployment

[illegible]

Deployment

[illegible]

Deployment

[illegible]

Deployment

[illegible]

Deployment

[illegible]

Deployment

[illegible]

Deployment

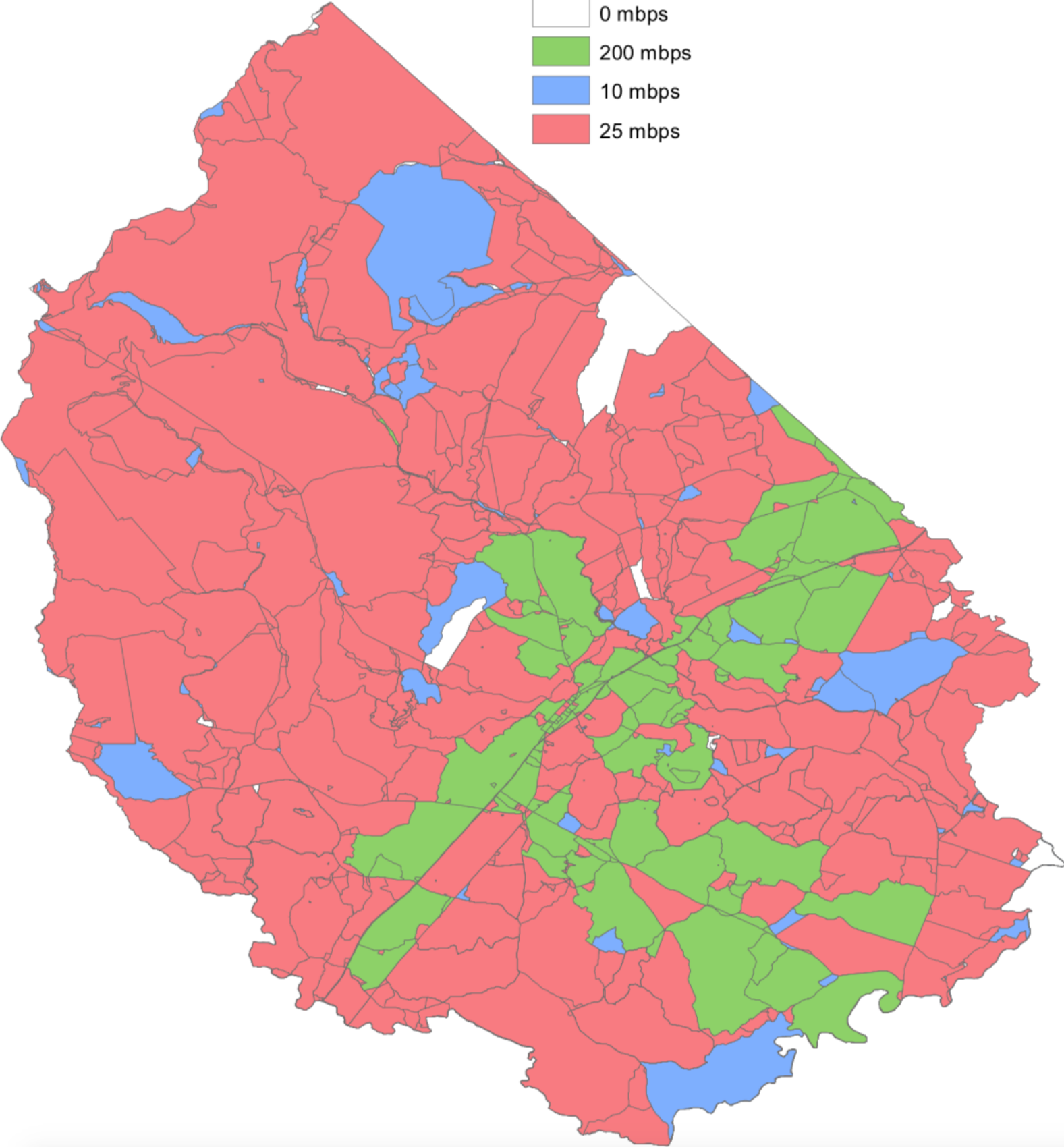
[illegible]

Subscription						
5.11139E+14	Madison Giga	70	1	100	100	1
5.11139E+14	Madison Giga	70	1	100	100	1
5.11139E+14	Madison Giga	70	1	100	100	1
5.11139E+14	Madison Giga	70	1	100	100	1
5.11139E+14	Madison Giga	70	1	100	100	1
5.11139E+14	Madison Giga	70	1	100	100	1
5.11139E+14	Madison Giga	70	1	100	100	1

Subscription

100	100
100	100
100	100
100	100
100	100
100	100
100	100
100	100

Maximum Advertised Download Speed



Madison County Board of Supervisors
and

Madison Gigabit Internet, Inc.

200 Washington Street

Madison, Virginia, 22727 703-862-4056

Madison County Rural Broadband Expansion
Technical Proposal

VATI Grant 2019

In-kind Contribution

Madison County will make in-kind contributions of the following types:

Labor hours. Up to \$5,000 associated with time spent by county staff in meetings or discussions of any kind regarding this project.

Fee waivers. For permits and approvals of tower construction. Potentially \$1,000.

Madison County Board of Supervisors and

Madison Gigabit Internet, Inc.

200 Washington Street
Madison, Virginia, 22727 703-862-4056

Madison County Rural Broadband Expansion Program Management Plan

VATI Grant 2019

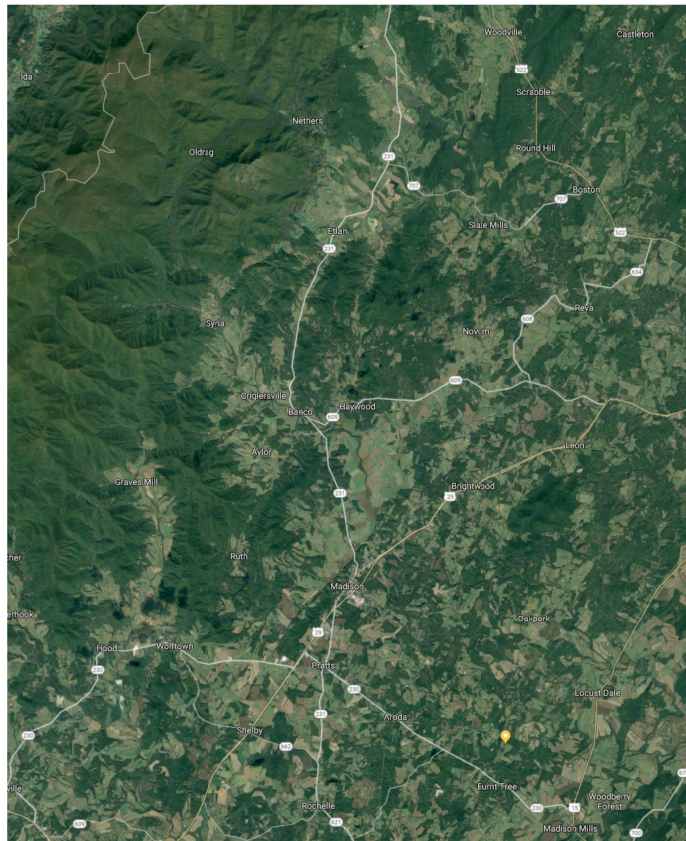


Table of Contents

Program Overview.....	3
Schedule Management	4
Change Management.....	5
Communications Management.....	6
Cost Management.....	7
Procurement Management.....	8
Project Scope Management.....	9
Risk Management.....	10
Staffing Management.....	11
Stakeholder Management.....	12
Program Governance.....	13

Program Overview

This section defines the program vision, its business value, and projected outcome. It may include a summary of the program scope, dependencies and constraints. This introductory portion may also include success criteria for measuring program outcomes.

The program vision is to deploy true high-speed and high-data-capacity internet service access throughout Madison County over the next five years, where “high-speed” substantially exceeds the FCC definitions, begins at 100 megabit and targets gigabit network speeds. Gigabit network speed is de rigueur in wired networks now, and places that have used it for years are heading towards 10 gigabit.

There are two production phases: (1) wireless-based service over some of the county, and eventually (2) fiber to the home service over all of the county.

This class of service will increase business capability and capacity across the county. Existing businesses all need better service. New businesses that want/need good internet services won't open here without it.

This class of service will be part of improving school performance here. We have changed how the schooling process works, binding it tightly to good internet access, and must address how that requirement is fulfilled outside school grounds.

The projected outcome is that everyone's life is better in a variety of ways: better entertainment options, better job options, better educational options, better commercial options.

The scope of this project and business is the entire county of Madison. It does not end at the border, because radio signals don't stop at geographic boundaries. Any expansion outside Madison is outside the current scope, and is part of a different plan.

Success is dependent on a small number of things: (1) being able to use certain assets owned by Rappahannock Electric Coop, and (2) point-of-presence access and use of a data fiber trunk line owned by LUMOS or equivalent.

Schedule Management

A roadmap or work breakdown structure may be included in this section along with a description of how scheduling will be managed, updated, and monitored. Roles and responsibilities related to scheduling should be made clear.

A WBS and time schedule will be created for this project during the first month, using program management software. This will include time for marketing, construction, equipment purchasing, testing and verification. Most of the project involves repetitive work (i.e., installing the second tower is more or less just like the first one, and antenna installs are very similar). There are no time-critical segments, the WBS will be managed on a weekly basis.

This will be personally created and managed by Mr Hyde, MGI President.

Change Management

Provide a clear process for handling program changes, including who can submit change requests, how and where those requests will be tracked, and who can approve changes.

Changes to any construction plan will be defined and approved by Mr Hyde. Software, radio, and antenna installation and management will be performed by Mr Hutchins and Mr Dickey, following engineering planning meetings and testing wherever possible.

Anything that can be tested at ground level before going up onto a tower, at full elevation height, will be tested at ground level. MGI will take any and all new devices in the field to a site where there is sufficient open-field cleared space to test the electronics. This is likeliest to be Hoover Ridge, just east of the schools and Route 29. This will result in standardized approaches to configuring the antenna systems, to minimize any need for changes later.

This project has a fixed scope. It covers the creation of exactly four radio-service endpoints. There is no scope or requirements-creep beyond that. There is one unbounded aspect to this project and that is the number of final customers that do purchase the service.

The project has a relaxed schedule has plenty of time for testing and verification for each step, so that changes can be minimized ahead of time.

Communications Management

A detailed communications plan can help prevent project issues and ensure that information is distributed appropriately. Use this section to define the frequency and type of communication to be provided, who will be providing and receiving the communications, and other guidelines or expectations.

Team members are currently using email, text messages, and “Slack” (a multi-person messaging software on desktop and mobile and cell-phone devices) for immediate communications.

Slack also allows for separating content channels for siloing distinct conversation topics, for reducing confusion.

All communications via electronics messages will be archived for the duration of the project plus at least one year, in case there's a need to revisit any decisions.

Cost Management

This section may include detailed information on program budget and expenditures as well as the parties responsible for managing costs, who can approve changes to the program budget, how project budgets will be measured and monitored, and guidelines for reporting.

The applicant side of the expenditures revenue source will be from private investment, already committed. Upon receiving contract award notification MGI will begin purchasing the first group of electronics needed, for the test/eval stage.

The initial budget will be created at that same time.

Cost tracking will be handled/managed via a separate set of sub-accounts specifically for this project at that same time. All of the purchases for this project will continue to be used for activities afterwards, as they are not consumables.

Mr Hyde will personally approve all expenditures for this project.

Procurement Management

Describe responsibilities related to procurement throughout a program lifecycle. Identify who is responsible for vendor relationships, dealing with contracts, purchasing, and other activities.

Mr Hyde, as President, is responsible for vendor management. Mr Hutchins and Mr Dickey are expected to make recommendations related to their expertise.

Mr Hyde is responsible for contracts and purchasing. MGI will be dealing with existing vendor supply chains and relationships. Nearly all such are already in place now.

Project Scope Management

Will the project scope be defined in a scope statement, WBS, or another method? How will the scope be measured? Who is responsible for managing and approving the program scope? Address these questions as well as any guidelines related to the scope change process that were not identified in the change management section.

Mr Hyde has ultimate responsibility for these decisions.

The project scope is to create radio-based internet service at four and only four end-point tower locations, for however many customers in the surrounding one-mile vicinity as are willing to purchase service.

There will not be any growth in scope of activities beyond what is defined. (While there may ultimately be such growth, that is not part of this specific grant project.)

That scope includes a ground-station with a fiber tap point, in or near the town of Madison, an antenna suite that aims a a repeater point on the REC tower at Blakey, a tower or pole at each of the four end-points, a set of antennas on those end-point towers which provide local service to customers, and the customer equipment. There is no more than that.

Because we are undertaking those four end-points one at a time, in order, we will know as we proceed exactly how effective each one is, and that will help refine the process for the remaining ones.

In any case, the scope of this specific project effort will not grow beyond the existing definition.

Risk Management

Describe how risks will be reported, monitored, and assessed, including how they can be submitted and who is responsible for dealing with them.

Mr Hyde is responsible for risk management. There are several known potential risks already. MGI is actively pursuing strategies to minimize them all.

Risks include such things as

- 1) Being unable to acquire an appropriate and available ground location for an end-point tower or pole. We consider this low-risk because we have already had offers for exactly this thing in two of the four locations, and REC existing poles are also a possibility.
- 2) Difficulty in selecting a ground-station location. We are minimizing this risk by pursuing three possible locations at the same time.
- 3) REC Blakey tower ultimately not being available. (We are minimizing this by pursuing access permission already.) We would alter the overall approach, but some pieces would remain exactly as they are. (Example: Brightwood could be served directly from a ground-station without bouncing through Blakey tower.)
- 4) Investment risk. The private investor(s) might disengage prior to receipt of funds. As Mr Hyde is one of the investors, this risk is small.
- 5) Staffing. Hiring and retaining the right employees is a risk at any business. People need to like their work and feel properly compensated for their time in order to be retained.
- 6) Weather. Cannot do anything about it, except be cognizant of the three risk forms: rain, snow, ice. So far, we have experienced all three to an extent, with no adverse outcomes.

There are risks you know, and can mitigate, that you work on. Others that you know, but cannot mitigate, you monitor and think about.

Staffing Management

This section lists program requirements for staffing, including specific resources and the timeframes in which they are needed, plus training. It describes how staff will be managed for the duration of the program.

Staffing needs:

- 1) President/manager/lead-worker. Mr Hyde works full time on this job. He does everything, including customer service installation.
- 2) Senior computer and networking experts. Mr Hutchins and Mr Dickey supply this expertise. This is a second job for them, but their time is not needed 100% ever. They will participate in the larger antenna installations and initial configuration. The devices are largely self-managing afterwards.
- 3) Customer support. Mr Hyde has been performing this so far, on the limited basis it has been needed. As this need grows, eventually a new person will be hired to handle it; there is already someone on the horizon for it.
- 4) Sub-contractors. There is one sub-contractor needed, for construction of the towers and some related aspects. This contractor is already on board, and doing some contracted work for MGI

It is MGI's preference to make local hires for various work needs. Thus far we have not had to advertise, people have come to us. We also hope to hire some of the local high school seniors or college students in the summer.

We will advertise, via word of mouth, local newspaper, Facebook, and our own website, when the time comes that additional staff is required.

Stakeholder Management

Use this section to identify stakeholders and strategies for managing them, including who is responsible for collecting and reporting stakeholder information.

The stakeholders are those local county agencies that are participants in the proposal, and related interested parties.

Mr Hyde is responsible for the reporting to the primary applicant, Madison County Board of Supervisors.

Mr Hyde already attends all the meetings of in-county and in-town groups that have interest in the successful outcome:

- 1) County Board of Supervisors
- 2) County Planning Commission
- 3) Madison Town Council
- 4) Madison Town Planning Commission
- 5) Chamber of Commerce
- 6) School Board

Mr Hyde has already given occasional presentations and had separate conversations with members of each one, everyone is aware of the general overall business goals, and will be made more formally aware of the details over the next several months.

Program Governance

Describe any governing groups, what authority they have, and their responsibilities within the program. You can include information on how often they will meet, how escalated decisions should be presented to and handled by the governing groups, how their decisions will be communicated, and when program reviews will occur.

The Madison County Board of Supervisors is the lead applicant and local municipal governing body with formal oversight of this project. This board meets publicly twice per month; at those meetings, at least once per month, Mr Hyde will give a brief presentation about the project status, for discussion and any necessary approvals (which will include billing).

Expenses incurred and billable on this project will be promptly submitted to the county government at least monthly if not more often.

Madison Gigabit Internet, Inc.
200 Washington Street
Madison, Virginia 22727
<http://www.madisongigabit.com/>



To Whom It May Concern:

The necessary and required matching funds for the 2019 DHCD VATI Proposal submitted jointly by Madison County of Virginia and Madison Gigabit Internet will be available from Madison Gigabit Internet, sourcing from a private investor.

Clinton Hyde

President, Madison Gigabit Internet
<http://www.madisongigabit.com/>

chyde@madisongigabit.com
703-862-4056

Madison County Board of Supervisors
and

Madison Gigabit Internet, Inc.

200 Washington Street

Madison, Virginia, 22727 703-862-4056

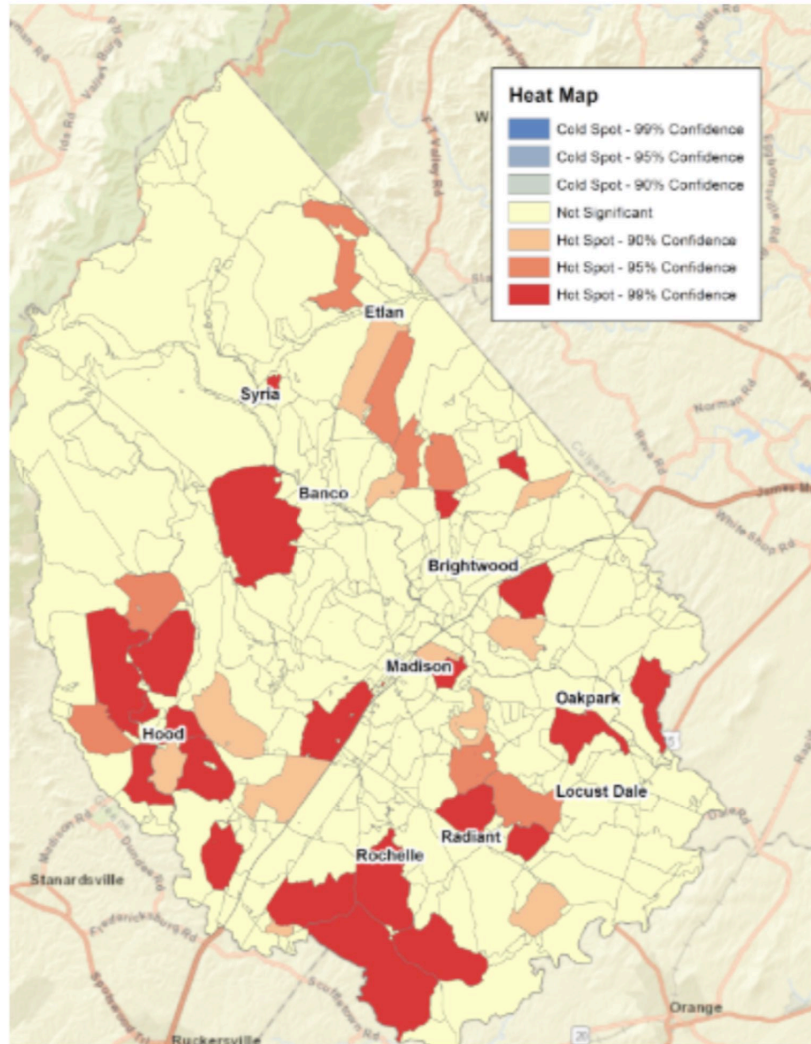
Madison County Rural Broadband Expansion
Technical Proposal

VATI Grant 2019

Project Area Maps

MAP #1

This map, from the CIT 2017 survey conducted for Madison County, is a heat map of reported inadequate service over census blocks:



It correlates to Wolfstown (Hood), Rochelle, Brightwood, and near Criglersville (Banco), which are the locations we are targeting with this proposal.

The following pages are individual local area maps.

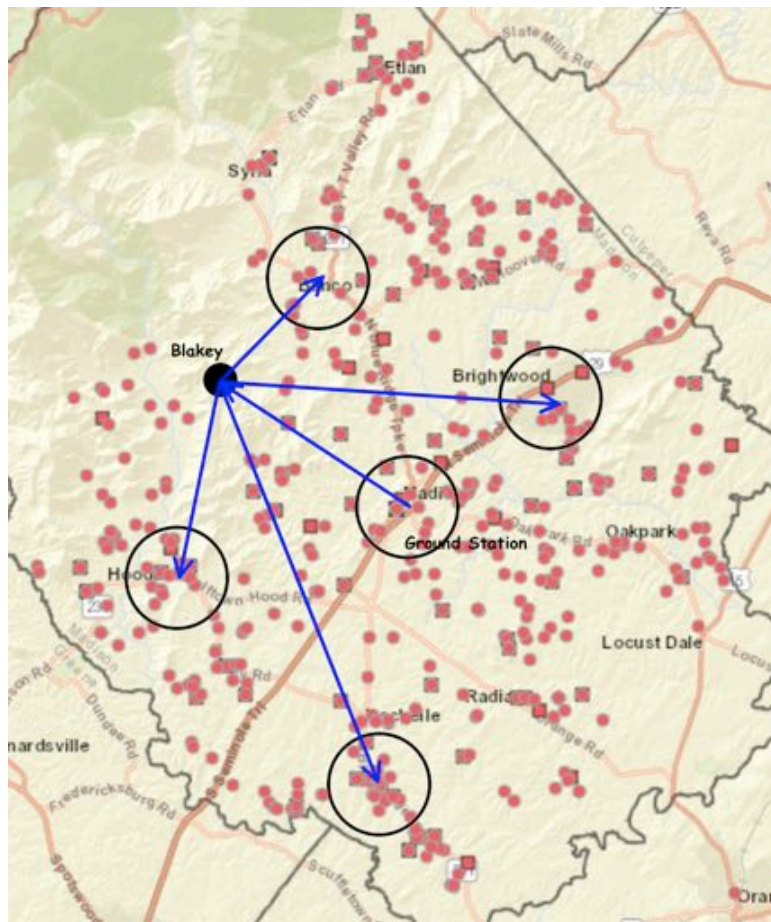
Project Description:

Madison Gigabit's long-term plan for improved internet service and access in Madison begins with high-speed wireless service and backfill with fiber-to-the-home. The wireless service is less expensive to install, and can reach farther sooner, but has hardware speed and geographic limitations.

There are multiple parts to the creation of wireless service. There must be a fiber trunk within reach. Madison has at least five lines through the county (LUMOS, Comcast, Fiberlight, Verizon, AT&T). The most readily available source is LUMOS. Both Madison County and Madison Gigabit have existing service and relationships with LUMOS.

This map is the CIT map with 2-mile diameter circles drawn for the tower deployment locations, and a black dot for the REC “Blakey” tower; Blakey is the critical repeater point, because it has greater elevation above sea-level (2000 feet) than anywhere else usable in the county (generally around 500 feet). The other green circles would be receiver end-points for local distribution. The circle in the center (in town) would be the ground station, where there will be a direct fiber tap.

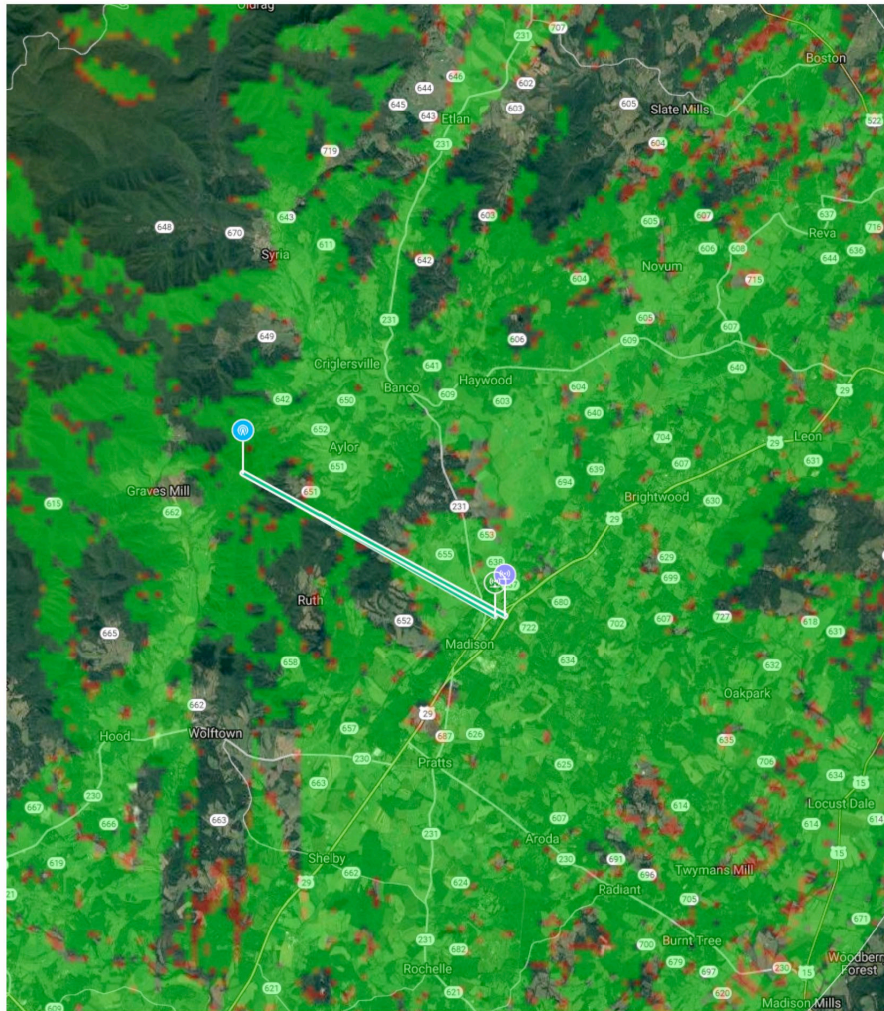
MAP #2



Overall project map, from ground station to local service areas

MAP #3

This map shows the signal coverage area for antennas on the REC Blakey Tower:



Also in this picture are two points in town that can easily send/receive to that tower. Using Blakey tower as an antenna location then covers nearly the entire county; the small areas not covered have other hills that do some signal blockage.

The backhaul radios we will use between the locations in this image are 24GHz full-duplex devices capable of reaching 20 kilometers (12+ miles). The distance there is 9 kilometers (5.6 miles).

In reality, of course, overall service delivery won't be as good as the image implies—there can be trouble about trees, but Blakey is the best intermediate point to use. MGI is currently negotiating with REC to do so.

From Blakey, we will use the same 24 GHz radios to reach the end-points. That said, you do not want to daisy-chain very many hops—there is performance loss each time. The point-to-point from in-town out to Blakey is a special antenna for middle-mile delivery. Rochelle is near that distance from Blakey, and if the 24GHz radios can't reach there we will use something smaller instead, with greater distance but somewhat less data capacity. These backhaul radios will have one hop from the ground station to

Blakey tower. A second pair will extend from Blakey to each of the desired end points. The last-mile radios are 5 GHz devices. They only need to go out to a mile or so.

The next step is to place last-mile repeater antennas in the right locations, with the best projected available customer base. These towers will have matching 24 GHz back-haul antenna to reach Blakey, and local last-mile pie-wedge directional antennas to reach individual houses. These omni antennas have a reach over a mile in all directions, so distance will not be the limiting factor.

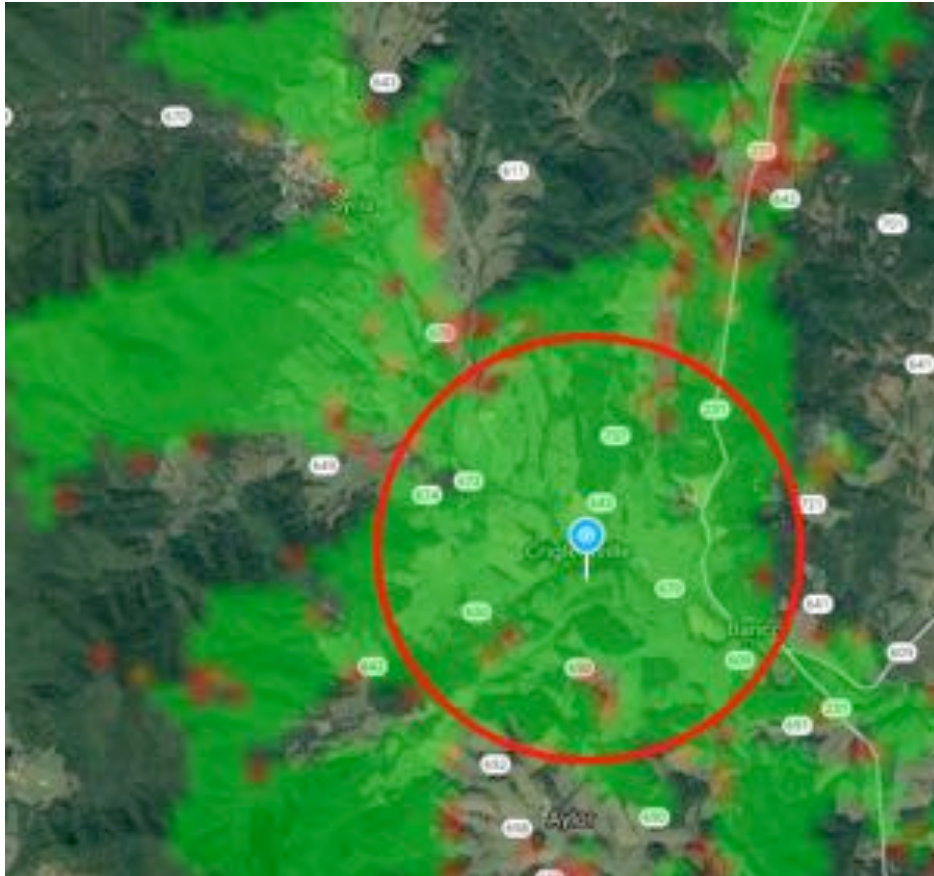
We anticipate that the last-mile antennas have a functional limit of how many individual homes they can handle, in the range of 40-50, so there will be four to six for each tower. We anticipate the total cost for each one of these “nodes” is \$12K for a pole, and \$25K for a metal tower, including all the antennas and radios.

A pole can be planted by drilling a hole and placing the pole in it. A metal tower requires a 10-foot deep hole for a concrete pad that the bottom metal piece is embedded into.

The following images are radio-signal coverage projections based on line-of-sight calculations using terrain elevation data.

MAP #4

Criglersville, shown here, is 5 kilometers (3 miles) from Blakey. The red circle is expected radio/antenna reach from the tower. Homes and businesses inside that circle are the potential customers at this tower location.



The location marked by the blue circle is a reasonably good location for a pole or tower. Criglersville is a less-populous area, and hillier than locations further east in the county, but we believe that this phase of construction and service delivery should include a location in the northwest of Madison County.

MAP #5

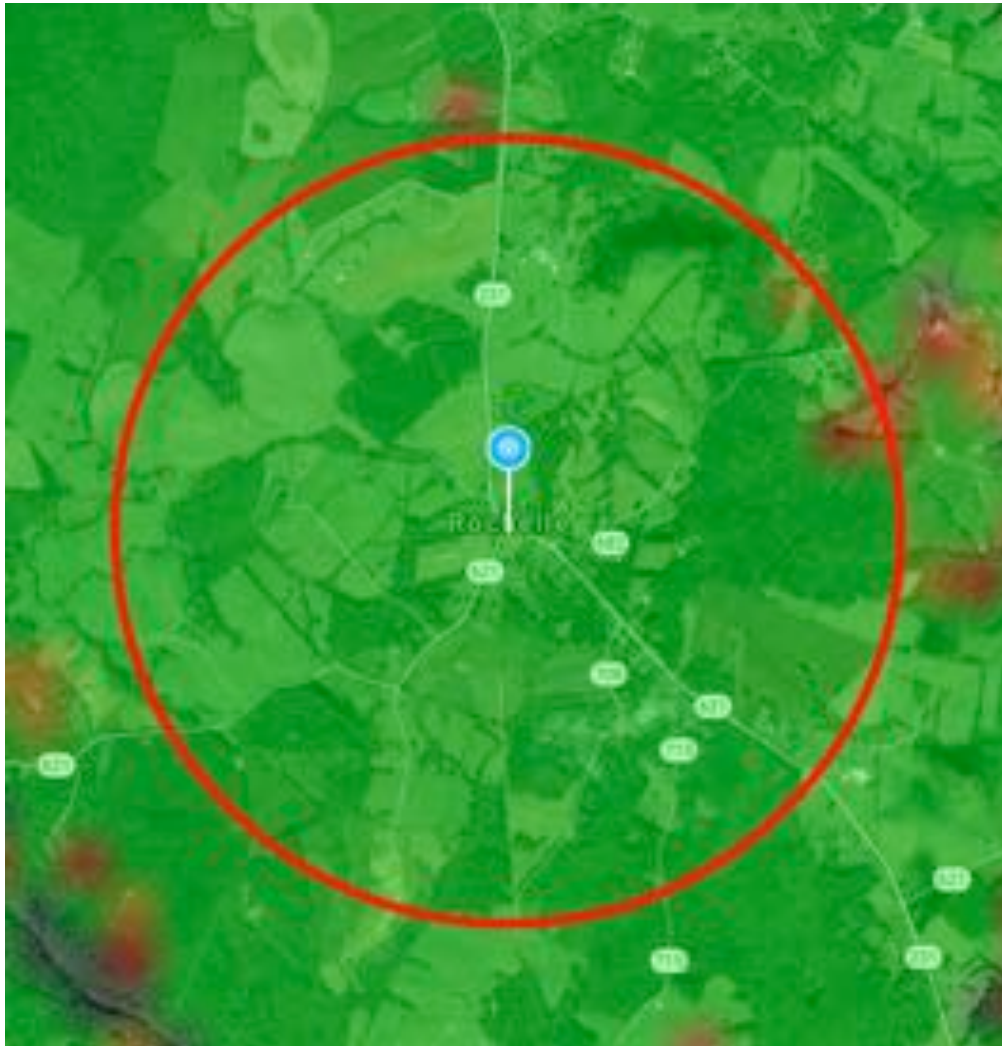
Brightwood, shown here, is 12 kilometers (7.5 miles) from Blakey. The red circle is expected radio/antenna reach from the tower. Homes and businesses inside that circle are the potential customers at this tower location.



Brightwood is a high-point in its vicinity. Just southeast off Rt 29 there is a small defunct tower already. Where the blue circle is in the image is a high point that would be an ideal location for a 75 foot tower. There is reasonable population density in this area; some of it is served by Comcast but away from Rt 29 is not.

MAP #6

Rochelle, shown here, is 16 kilometers (10 miles) from Blakey. The red circle is expected radio/antenna reach from the tower. Homes and businesses inside that circle are the potential customers at this tower location.

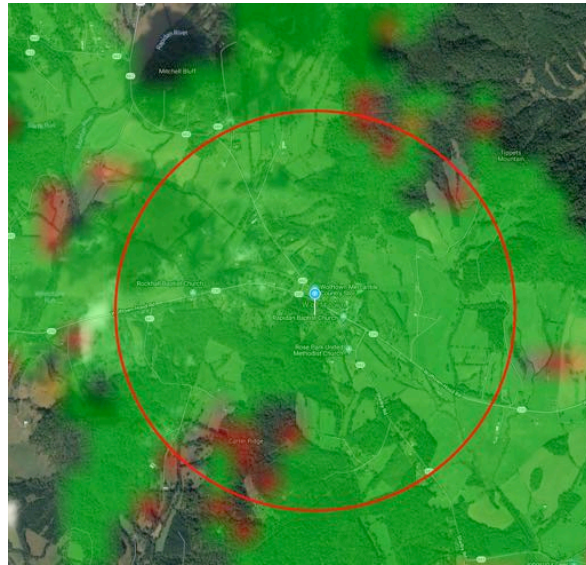


Rochelle is at a high point in the vicinity. The signal reach from here is good in all directions. In addition, as can be seen in the light-vs-dark green differences, there is very little tree cover at that peak, affording good reach for a mile or more.

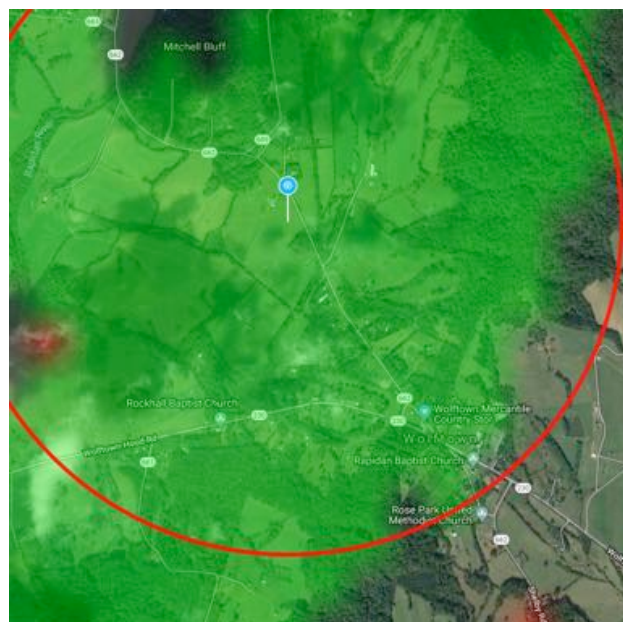
Other than satellite there isn't any good service in this area.

MAP #7

Wolftown, shown here, is 8 kilometers (5 miles) from Blakey. The red circle is expected radio/antenna reach from the tower. Homes and businesses inside that circle are the potential customers at this tower location.



Wolftown center is in a pass through a small elevation ridge. While the location of the small blue circle is more or less center for the location, the antenna at Blakey may not reach there.



We expect the signal from Blakey to reach here more effectively, but this limits coverage east of the ridge.

Other than satellite there isn't any good service in this area.

The concentration of interest, between our own gathered information and that from the 2017 survey shows that Wolftown, Rochelle, Brightwood and the Criglersville/Banco area are the best targets.

There are several interesting vertical assets in Madison other than Blakey. Two are at the edge of the Town of Madison, and will be considered as the ground-station locations for reaching to Blakey. Both are on Main Street, and the LUMOS fiber trunk runs along that street end-to-end, making for an easy tap. In addition, local service can be provided by placing other end-point service antennas on those vertical assets.

Overall the project includes backhaul between the ground station and Blakey tower, middle mile from Blakey to the four endpoints, and last mile from those endpoints to actual customers. MGI will be the owner and maintainer of the towers and attached electronics. Blakey tower space will be leased from REC.

Madison County Board of Supervisors
and

Madison Gigabit Internet, Inc.

200 Washington Street

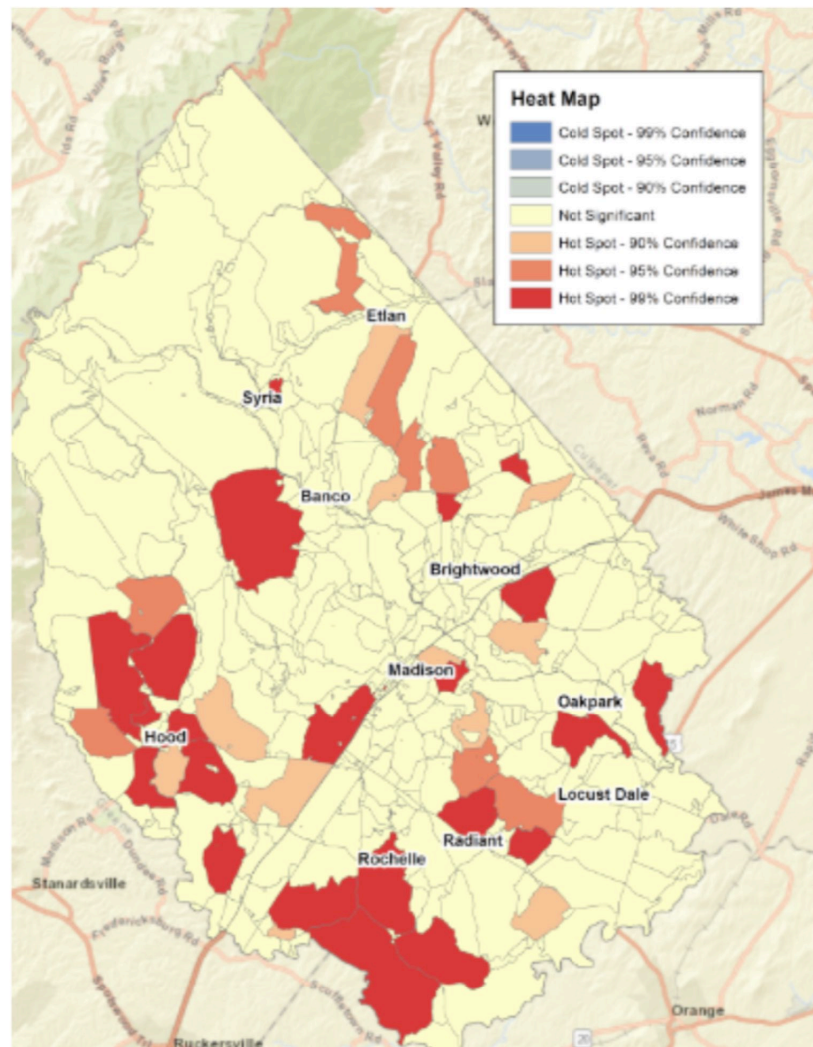
Madison, Virginia, 22727 703-862-4056

Madison County Rural Broadband Expansion
Technical Proposal

VATI Grant 2019

Project Underserved Area

This map, from the CIT 2017 survey conducted for Madison County, is a heat map of inadequate service reported in responses, over census blocks, where redder is more inadequacy:



It correlates to Wolfstown (Hood), Rochelle, Brightwood, and near Criglersville (Banco), which are the locations we are targeting with this proposal.

The following pages are individual local area maps.

While the entire county is “covered” by satellite service availability, our measurements of their performance are that satellite service is typically about 8/0.6, making nearly all the county “unserved”. All other services do overlap with satellite, because of its broad coverage.

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	\$ 80000	61	Pending
Madison County	\$7,000.00	6	Secured
Madison Gigabit Internet	\$ 44000	33	Secured
	\$		
	\$		
	\$		
	\$		
TOTAL	\$131,000.00	100.00%	

[illegible]

[illegible]

[illegible]

Supporting costs data

airFiber 24HD

AF-24HD

Revolutionary Wireless Technology

Introducing airFiber®, a truly revolutionary Point-to-Point wireless platform from Ubiquiti Networks™. Housed in a compact, highly efficient form factor, airFiber delivers amazing wireless gigabit+ performance, low latency, and long range. airFiber ushers in a new era in price-disruptive wireless technology ideal for carrier backhaul, building-to-building enterprise use, or public safety applications.

Supports 24 GHz frequencies.

NOTE: Price shown is for a single unit. airFiber® is normally purchased in pairs to form a single link.

\$3,000.00

Quantity:

– 1 +

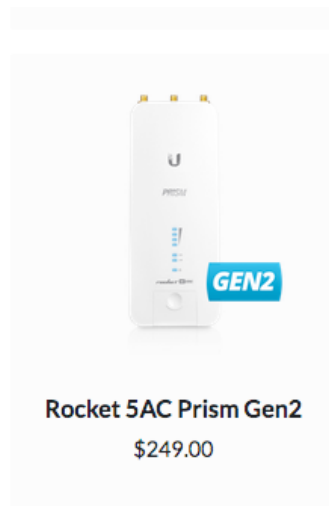
Add to Cart 



There are two of the AirFiber units per “hop”. The ground station has one, out to Blakey, where a second one will be mounted. This is the “backhaul” hop.

Blakey will have another unit to aim at each of the four end-point towers, and each end-point tower will have one. These are the middle-mile hops.

The last-mile hops begin with this radio

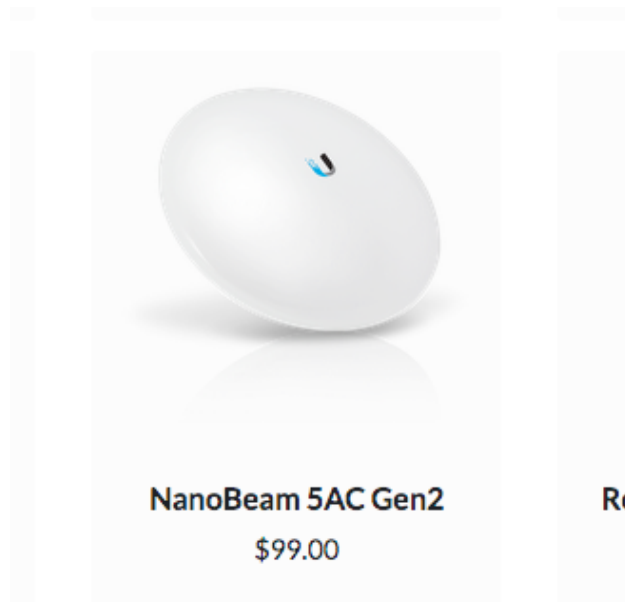


which mounts on the back of this antenna:



The antenna covers a 60-degree sector. There is also a 90-degree antenna. They can be mixed for coverage, cost is the same.

This is a Customer Premises Equipment device:



that is the exterior-mounted receiver/antenna unit. Inside unit is this WiFi/network router:



Tower cost example:

TBX Self Supporting Tower (Available from 24' to 64')



TBX Tower

TBX Self Supporting Tower (Available from 24' to 64')

★★★★★

(No reviews yet)

[Write a Review](#)

\$2,000.00

SKU: TBX

AVAILABILITY:
In stock Items usually ship within 24 hours, see our stock policy.

WEIGHT: 450.00 LBS

SHIPPING: Calculated at Checkout

BX Tower Height: *

- ☐ 24 Feet
- ☐ 32 Feet
- ☐ 40 Feet
- ☐ 48 Feet
- ☐ 56 Feet

www.rowewireless.com