

DATE: 1/15/19
TO: Erik C. Johnston
RE: Rebuttal to Grant Request of Madison Gigabit Internet

Dear Mr. Johnston:

Virginia Broadband (“VABB”), an ISP serving Madison County since 2007, has reviewed the technical documents related to the Madison Gigabit Internet (“MGI”) request for a VATI grant and there are several important issues that we believe would deem MGI ineligible for consideration to receive taxpayer funds for this grant.

The accompanying documents will prove that VABB has filed 477 forms which should quickly show that the areas MGI deems “unserved” are indeed at least partially served by VABB or satellite with speeds of 10/3 or more. The underlying market research is flawed, and therefore the results of the MGI proposal are moot. VABB covers 2.5% of Madison residents and growing. We have over 20 access points in the county, and just finished putting up three more poles to help reach deeper into the valleys of Madison County as we continue to expand.

Madison County is difficult terrain to cover with the available wireless spectrum available to WISPS. We have been trying to address the connectivity gap, particularly in rural, mountainous areas like Madison since 2004. We have acquired extensive knowledge of the details and requirements to cover such an area, and we are therefore in a better position than anyone to determine what does and does not work effectively regarding wireless propagation in the county. We feel that a startup, with self-reported 10 customers, new to wireless service and to running an ISP in general, is not in a position yet to know how to properly execute a project like this especially given the mistakes we’ve addressed after reviewing the proposed planning document.

MGI has a steep learning curve to achieve the goals of the grant and would thereby not be an efficient or responsible choice on which to spend taxpayer funds. Our rebuttal comes from experience, and we seek to prevent the inefficient use of taxpayer funds based on false premises.

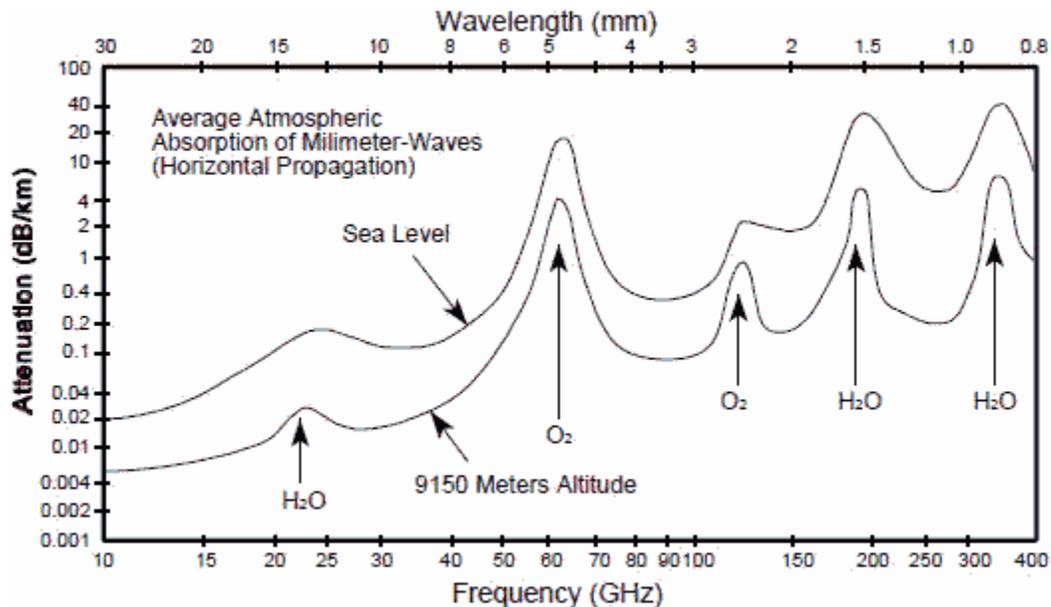
We are happy to work with anyone trying to solve the problem of getting end-users connected to the internet. It would have been beneficial for all parties involved, for Madison County, and for Mr. Hyde to reach out to us. As incumbents with extensive real-world local experience, we would be pleased to help craft and develop plans to solve this problem together.

Sincerely,
Virginia Broadband

It is Virginia Broadband's position that;

At first glance MGI's proposed build may seem technically sound to those uninitiated with the complexities of fixed terrestrial microwave deployments. However as with most technology, minor details must be considered to achieve even moderate success. With over 9 years of wireless experience in Madison county and with Ubiquiti brand equipment my assessment is that this plan is infeasible as written and could prove disastrous for both the people of Madison county and MGI as a company.

1. **Use of 24Ghz for middle mile communication:** We have had several 24ghz point to point links as Mr. Hyde describes in his proposal in full operation for several years. Including the exact model and make: "AF24HD". While we have been impressed with this device, the limitations of 24Ghz as a spectrum are not to be taken lightly. 24Ghz is particularly subject to spectral absorption due to water vapor in the air, as well as attenuation from "rain fade". In our experience a link with a distance of more than 3.5 miles would be wildly unreliable in our area with our weather conditions.



Mr. Hyde proposes to use 24ghz exclusively including for his primary back-haul communications. I would have cautioned him on these issues and recommended alternatives.

2. **The use of 5ghz for last mile connection:** Mr. Hyde has rightly determined that 5Ghz is an optimum unlicensed spectrum to deliver high speeds to customers. However, 5Ghz is incapable of penetration of any significant measure of foliage (as is abundant in in the proposed service area) This choice will severely limit the number of obtainable customers and the effective area of coverage. MGI also lists both R5AC-prism gen2 as the AP radio and PrismAP-5-60 as the antenna, these models are physically incompatible as PrismAP-5-60 requires a waveguide style feed and R5AC-prism gen2 units are connectorized with SMA- reverse polarity coaxial. This demonstrates a fundamental misunderstanding of the physical requirements of the radio equipment.

3. **Choice of structures of broadcast locations:** MGI appears to reference Shelby bran TBX towers in his proposed build. Virginia broadband currently operates a similar structure in the Graves mill area. The structural limitations of this design preclude the use of AF24HD units as the win-loading could very well exceed the structure capacity under certain conditions unless the broadest tower was under 48 ft of height. Also AF24HD units are very sensitive to even the slightest flexing of their mounting structure especially at long distances. Since significant height will be required to both achieve line-of-sight to the relay location and to the customer units in the design this structure, while competitively priced, is, in my experience insufficient to meet the safety and reliability requirements Under ANSI/TIA-222-G standards (which is the standard that Madison uses).

4. **The use of Blakey Ridge Tower as a relay location:** Virginia broadband currently broadcasts from the REC owned structure that Mr. Hyde references in his proposal. We currently serve more than 120 customers directly from this location in Madison county as well as back haul to many smaller broadcast locations such as those serving Crigglersville and Rochelle. Virginia Broadband has collocated on-structure with other WISP's in the past and we have found the resulting interference on each other's equipment (even when frequencies are carefully coordinated) very troublesome. Mr. Hyde has proposed to mount his equipment at exactly the same height as our equipment. This is, quite simply, physically impossible. In addition, as I have referenced previously, MGI will inevitably discover that 24ghz equipment will not meet their needs. Virginia broadband currently transmits in all of the 5Ghz spectrum at this location making the only other viable unlicensed frequency unusable for MGI's expected bandwidth requirements to meet their obligations under the grant.

I look forward to better internet for the people of Madison County, whether or not that service is provided by Virginia Broadband or MGI or some other provider. I cannot, in good conscience, recommend the Commonwealth of Virginia, the county of Madison, or MGI and Mr. Hyde go through with this plan as described.

Garrett Shankle

Director of Technology

Virginia Broadband LLC

Virginia Broadband's supporting documents and answers to the VATI Grant's Challenge Process:

Providers choosing to challenge a submitted application must provide an affidavit including the following:

1. Submit their current FCC Form 477 or equivalent [Please find attached](#)

2. The incumbent provider is required to provide minimum/max speeds provided by their

company in the proposed project area [Virginia Broadband provides Minimum Speeds at 10/3 and Maximum Speeds at 50/25](#)

3. Percentage of serviceable units that they provide the speed within normal service interval.

Percentage of serviceable units (properties eligible for broadband service) that they (MGI) provide the speed within normal service interval." MGI submits that they "will be providing service speed greater than 25 megabits ... MGI's current wireless speed is 100/25 and will jump to 100/100 with this newer system". We see several real world problems with this: we already use this technology and it is not capable of speeds given when factoring in oversubscription, and the take rate will be much lower than the anticipated 50% cited in the MGI proposal. The main reason uptake will be less than 50% is due to the combination of wireless propagation restrictions that MGI has not yet had experience with in Madison (all their customers are downtown, not in the rural parts of the county) plus they have not factored in competition correctly. Furthermore, it is not realistic to assert that 5 Ghz wireless gear is able to reach the proposed number of prospective customers that they cite as being 950 between 4 specific area for an average of 238 available serviceable units. This is to assume that none of the units above choose to have any provider other than MGI, which is not the case in the real world as experience has shown. By their own estimate, this grant will help MGI have the capacity to only cover 8% (calculated very generously) of the county residents, many of which are already covered by providers who are currently upgrading their networks as time and funds allow to keep up with competition.

4. Provide the number of actual customers receiving service within the normal service

interval for the proposed project area. Provide the speeds those customers are able to

receive. [54 Customers at 10/1 and 19 who can reach 25/5](#)

