

Massachusetts Broadband Institute Staff Recommendation Regarding Matrix and Comcast Grant Proposals for Montague and Hardwick

May 4, 2016

Overview

The Massachusetts Broadband Institute (“MBI”) of the Massachusetts Technology Collaborative is responsible for distributing Massachusetts state grant funds to experienced telecommunications companies to efficiently and cost-effectively expand broadband internet service to areas of Western Massachusetts that currently lack such service. These areas include the currently unserved areas of two towns, Montague, MA and Hardwick, MA, that already have cable service in approximately 95% and 80% of their respective areas, but are desirous of reaching at least the benchmark level of 96% coverage. The purpose of the grant is to expand access to broadband service to as many currently unserved residents as possible. The grant is not intended to be used to fund the introduction of new or enhanced broadband service for areas that already have access to broadband service.

In July of 2015, MBI issued a “*Request for Qualifications for Cable System Extensions*” (the “RFQ”) in connection with the above grant program. The RFQ stated that it was designed to solicit responses from qualified contractors “with experience in providing residential broadband internet and related services” to whom grant funds could be distributed. Two companies, Comcast and Matrix Design Group, Inc., responded to the RFQ by submitting proposals to provide service to the remaining unserved areas of Montague and Hardwick.

After a review and investigation of those proposals, and of the responses of both companies to certain follow-up requests for additional information, MBI staff is prepared to recommend to the MBI Board of Directors that MBI move forward to negotiate terms of a grant agreement with Comcast so as to expand service to the remaining unserved areas of Montague and Hardwick up to at least the 96% level.

Evaluation of Comcast Proposal

Comcast is a large, well-financed public company, already subject to government regulation in many areas. Comcast is already operating a large number of residential broadband networks, both nationwide and throughout Massachusetts and New England. Comcast currently provides service to approximately 95% of Montague and 80% of Hardwick residents under the cable franchise agreements renewed and extended for ten year terms by Hardwick in October of 2012 and Montague in September of 2015. Comcast is proposing to extend that coverage to at least 97% in both towns.

Comcast's public securities filings show that it has substantial revenues and cash reserves, and more than adequate financial resources to fund the network extensions involved here. They also show that Comcast can be held fully accountable if it fails to comply with the requirements of a grant agreement with MBI. Its technical capability to operate rural residential broadband networks is also proven, and it can expand its existing services in Montague and Hardwick to the unserved portions of those towns without incurring any financial loss because its existing large share of the market in the region gives it a base of revenue sufficient to absorb the cost of providing the new service.

Because of Comcast's financial stability and technical capability, it will not, in the foreseeable future, face any financial pressure to reduce or eliminate service to the currently unserved premises it proposes to cover. In other words, Comcast's proposed extension of broadband service in Montague and Hardwick is likely to be "sustainable" with the one-time award of state funds, with little risk that financial losses incurred in its operation would force an operator shutdown or threatened loss of service. Comcast has also successfully built out other similar extensions of its networks, and clearly has the capability to perform the work necessary to do so here.

Comcast's proposed solution would provide the same service that already exists for the vast majority of homes in Hardwick and Montague. This service meets and well exceeds the broadband speed (25 Mbps downstream/3 Mbps upstream) requirement of the grant program, with speeds up to 150 Mbps downstream/10 Mbps upstream. Comcast will apply their existing rate structure in those towns to newly covered homes. Comcast will also offer lower speeds at lower cost to residents who currently do not need, or cannot afford, the higher broadband speeds. Qualified low income families in the targeted areas will have the opportunity to participate in Comcast's existing Internet Essentials program, which includes residential internet access for \$10/month. These are the same services that Comcast provides throughout Massachusetts.

The technology that Comcast proposes to provide is industry-standard and will be more than sufficient for the vast majority of the residential customers in the currently unserved areas of Montague and Hardwick. It will also match the existing service provided to other residents of the towns, and over time could easily be folded into existing franchise agreements. Comcast also has extensive local technical and engineering staff located in the area to maintain the technology that it proposes to install in the expanded networks, and to respond to customer service needs. In terms of long-term development of the existing technology, Comcast has announced that it is piloting, in certain test markets outside New England, an advanced modem technology (DOCIS 3.1) that may, in future years, have the potential to significantly increase broadband speed over Comcast's existing coaxial fiber lines.

The cost of administering a grant of state funds to Comcast is minimal because Comcast has already designed, built, and operated rural residential broadband networks throughout the region, including in these two towns. In its proposal, Comcast states that it will be the owner and operator of this network pursuant to its standard practices,

procedures and operating framework. Therefore, expenditures by MBI to prepare and negotiate enforceable contracts with appropriate consumer protections, and engineering consulting expenses to vet the design, construction, testing and operation of the network infrastructure, will be minimized.

Independent consultants retained by MBI to evaluate the Comcast and Matrix proposals have confirmed the above conclusions with respect to the Comcast proposal. See Exhibits A & B (attached reports of Tilson Fiber Technologies, Inc. and Wipro, Ltd.).

Evaluation of Matrix/Millennium Proposal

Matrix Design Group, Inc. is the subsidiary of a small privately owned New Jersey corporation called Millennium Communications. Matrix's proposal states that Millennium would perform the construction of the needed infrastructure in the towns of Montague and Hardwick if Matrix's proposal were accepted, and it lists references and prior projects of Millennium in response to MBI's requests for information on its prior experience in this area. Hence the proposal appears to be from both companies (*i.e.* "Matrix/Millennium"), although it has nominally been submitted in the name of Matrix. Neither Matrix nor Millennium currently has any presence or is providing any service in the towns of Montague or Hardwick.

A Dunn & Bradstreet ("D&B") report on Matrix's parent Millennium obtained by MBI on April 14, 2016, lists Millennium as having a "high risk of severe payment delinquency" and a "high risk of severe financial distress." D&B's report on Matrix indicates that no information on it is available. When MBI asked Matrix/Millennium on April 7, 2016 to provide financial statements attesting to their financial strength, neither of them did so. Instead, they argued, in their April 18, 2016 response, that the state grant money should be given to the towns, which is not MBI's plan, and is not what Matrix proposed in its responses to the RFQ. See Matrix's July 31, 2015 Response to MBI RFQ Re: Town of Hardwick, at p. 2 ("In order to build our proposed ... network ... MBI would need [to] provide Matrix Design Group with a grant to install fiber ...") (emphasis added). MBI intends to distribute the state grant funds directly to the third party network operator who would provide the extended service to the currently unserved areas of Hardwick and Montague, pursuant to grant agreements that will enable MBI to ensure that the necessary work is completed, and the contemplated services provided, as the grant funds are disbursed.

Neither Matrix nor Millennium has ever operated a residential broadband network anywhere, nor does either company operate any networks in Massachusetts. The Matrix/Millennium proposal is for Matrix to design, Millennium to construct, and as-yet unincorporated LLC's to operate, a new network that would provide service to most of the remaining 5% of the residences in Montague, and most of the remaining 20% of the residences in Hardwick, that are now not serviced by any broadband company. In total, this would amount to approximately 360 potential residential customers, each of whom would be offered service at an upfront cost of \$500 for the connection, a charge which

Comcast's proposal does not impose, plus monthly service charges (e.g. Matrix has proposed to offer residential 50 Mbps service for \$95 per month). Under Matrix's proposal, the upfront cost for the connection rises to \$1,500 after the pre-subscription period ends.

Matrix has admitted in meetings with the Towns and MBI staff, however, that it would need to be providing service to at least 1000 residential customers in order to sustain the new network (*i.e.* make it profitable). Matrix has further stated that its intention, if its proposal is accepted, is to build the network to serve the 360 currently unserved customers in Montague and Hardwick, begin operating that network, and try to expand its customer base by building and operating additional broadband networks in the region.

MBI's consultants have reported that with only the unserved residents in Montague and Hardwick as a customer base, Matrix would be losing money at the rate of at least \$120,000 per year while it attempted to expand into unserved towns in Western Massachusetts by designing and building an infrastructure funded in part by additional MBI investments. The consultants have also observed that there is a significant risk that Matrix would require substantially more than 1000 residential customers before the network it proposes to build would be sustainable, and it is not clear that this would ever be achieved.

In addition, in an effort to acquire additional customers, Matrix has publicly stated, and coverage information that it has submitted to MBI during the due diligence process shows, that Matrix is proposing to use state grant money to help build an infrastructure that would enable it to offer its service to residents of Montague and Hardwick who already have Comcast service, thereby competing with Comcast. Matrix has also claimed, in various public hearings where it has discussed its proposal, that it intends to provide fiber-optic cable and technology in certain areas that it claims is superior to the existing technology that Comcast already provides to 95% of Montague homes, and approximately 80% of Hardwick homes. Thus, Matrix's plan is that state funds would be directly applied to support its effort to "overbuild" in an effort to compete with an existing provider, Comcast.

Fostering competition, while generally an important policy goal, is not the purpose of the Broadband Extensions grant program. Demand for limited state bond funds is very high and requires a singular focus on reducing the gaps in service in the target towns and achieving 96% service availability that meets certain minimum standards, rather than subsidizing the introduction of competing service. As discussed above in the Comcast section of this document, the existing technology offered by Comcast, in an area Matrix proposes to overbuild, already meets and exceeds the minimum broadband speed threshold for the grant program (25 Mbps downstream/3 Mbps upstream), with speeds up to 150 Mbps downstream/10 Mbps upstream. The priority of the grant program is to use state funds to expand that minimum level of service to as many homes as possible, not to subsidize the introduction of competing services.

It is also unclear, because no formal contracts or pricing have been agreed-upon, whether the cost of building out the infrastructure to support the technology that Matrix is proposing

would ultimately be borne by Matrix, or whether it would seek to pass on those costs to the towns or the state at a later date. There is a clear risk of that. Although Matrix representatives have claimed in various meetings that Matrix will make the entire investment on its own, for example, those representations are not legally binding, and there is no evidence that Millennium's financial condition would permit it to make such an investment or absorb such costs on its own, particularly if the network remains limited to Montague and Hardwick.

The above risks are exacerbated by the fact that publicly available information on Millennium's financial condition suggests that it could very well not withstand the financial strain that would be imposed on it by these kinds of out-of-pocket losses in the initial years of operating the new network, and reference checks reveal that Millennium's performance on at least one major project in Massachusetts was considered significantly substandard by the owner of that project, whose records indicate that representations Millennium made about the quality of the work it was going to provide were not subsequently honored.

Specifically, Millennium's two-year design build project with the Town of Leverett in 2014 and 2015 resulted in multiple notices of default being issued to Millennium by the Town for not performing in accordance with its contract requirements, not providing the required quality of equipment installations, and not timely paying its subcontractors. In an arbitration commenced by Millennium during the project in an effort to obtain more money from the Town than was allowed in its contract, the Town specifically stated, in a 43-page counterclaim, that:

"Millennium has – by understaffing, mismanagement of the work, delivery of substandard work, and failure to conform to the contract specifications, delayed the substantial completion of the Network. Millennium has responded to the Town's concerns by submitting excessive and repetitive change orders."

Additional inquiries about the Leverett project have revealed that in multiple instances the Town concluded that Millennium did not provide the quality of work or services that it had previously represented to the Town it would provide, and that Millennium's bonding company was advised by the Town in writing during the project, as to Millennium work that was in progress at the time, that:

"...work in progress has been repeatedly interrupted by Contractor's [Millennium's] attempts to substitute cheaper work for work specified in contract. E.g.: aerial installation for underground installation; shallow depth for deeper depth on underground installation. Certain of these attempts have been in the form of change order requests that had to be refused for operational or safety reasons; we have approved modifications of contract specifications in some instances. Greater concerns arise from attempts that were contractor implemented but were "caught in the act" and had to be reworked. We are concerned about what may be discovered later. This pattern

raises concern about contractor's ability to complete the project on schedule and within budget."

Town of Leverett July 15, 2014 Response to Liberty Mutual Surety Bond Status Inquiry, dated June 30, 2014.

Town of Leverett officials who were consulted by MBI as part of the reference checking process have also indicated to MBI that the Town had serious difficulty dealing with Millennium, that its performance was frequently substandard, that it failed to pay its subcontractors in a timely fashion with the result that those subcontractors complained to the Town, that the Town had many disputes with Millennium once the contracts with it were signed, and that the Town would not hire Millennium again.

Under these circumstances, any grant of funds to Matrix, or to the special purpose entities set up to implement its proposal, and any grant of state funds to any party intended to subsidize the implementation of a Matrix/Millennium proposal, would carry with it significant risks. Such a disbursement of state funds would have to be accompanied by complex, customized, and legally enforceable contracts, with adequate sureties and assurances of performance by Matrix/Millennium in place, and adequate financial disclosures by Matrix/Millennium – which they have declined to provide during the due diligence period. This would add significant legal and administrative costs to the granting process. There would also need to be an independent engineering review of whatever designs Matrix developed to ensure they were workable.

In addition, as described above, it is apparent that rather than simply committing to service the currently unserved residents of Montague and Hardwick, which is not a profitable standalone venture for it, Matrix is seeking to use state grant funds to help it try to establish a foothold in Massachusetts from which to compete for the business of other residential customers in the area who either already have cable service, or have a number of other options available to them to try to obtain it. If Matrix is not successful in its effort to obtain these other customers, however, or is only partially successful, Matrix will not be able to sustain its service to the currently unserved residents of Montague and Hardwick – the permanent provision of which is the primary goal of this grant program. This is another significant risk associated with its proposal.

This risk is exacerbated by the fact that Matrix/Millennium has no prior experience in operating residential broadband networks, let alone in remote rural areas, and has produced no evidence that it has financial resources sufficient to enable it to absorb the significant operating losses it will incur while it seeks to obtain more customers. As a result, regardless of how state grant money were used to support the Matrix proposal (*i.e.* even if it were disbursed to towns or utilities for make-ready work in support of that proposal), that investment would be at serious risk until Matrix succeeded in achieving the required number of customers beyond just the currently unserved residents of Montague and Hardwick, which could take years, and might never occur. It is questionable whether state grant funds should appropriately be disbursed under these circumstances.

Taking into account all of the above, MBI has asked two independent consultants to review and assess the Matrix proposal. Both have found it to be a high-risk and non-sustainable proposal. Their reports are attached to this staff recommendation. See Exhibits A & B (attached reports of Tilson Fiber Technologies, Inc. and Wipro, Ltd.).

Recommendation

Based on the MBI staff's own analysis as set forth above, supplemented by those independent evaluations, it is recommended that the Comcast proposal, and not Matrix proposal, be funded under the current grant. A summary of the contrasting features of the two grant proposals is set forth below:

Major Point by Point Comparison of the Matrix and Comcast proposals

	COMCAST	MATRIX/MILLENNIUM
<i>Stability, Resources, Ownership, & Transparency of Proposed Grantee</i>	Large, well-financed public company, already subject to government regulation in many areas, whose financial condition is publicly reported on a quarterly basis, whose financial statements are audited and readily available for inspection, and whose management is accountable to an independent board of directors.	Small privately owned New Jersey company (and subsidiary) currently listed by Dunn & Bradstreet as having a “high risk of severe payment delinquency” and a “high risk of severe financial distress.” No financial statements or details as to what assurances of performance, if any, it would provide.
<i>Experience operating residential broadband networks</i>	Currently owns and operates a large number of residential broadband networks, both nationwide and throughout Massachusetts and New England, including in rural areas.	Does not currently own or operate any residential broadband networks anywhere, and has never owned or operated any residential broadband networks.
<i>Local Assets available to service Town residents.</i>	Currently employs, owns and/or operates substantial residential broadband network maintenance and customer service resources in Massachusetts and throughout New England, including service personnel, testing equipment, service vehicles, and replacement and spare parts.	Does not currently own or operate residential broadband network maintenance and customer service resources in New England because it does not own or operate any such networks in this part of the country. Proposal does not

	COMCAST	MATRIX/MILLENNIUM
		identify what assets would be available.
Existing Presence in Towns of Montague and Hardwick	Currently providing broadband internet service to 95% of Montague residents and 80% of Hardwick residents that meets or exceeds the minimum broadband speed threshold (25 Mbps downstream/3 Mbps upstream) for the grant program, and currently owns, operates and maintains broadband network systems and equipment in both towns.	Is not currently providing any broadband internet service in Montague or Hardwick, but has been discussing proposals with those Towns to do so. Does not currently own, operate, or maintain any broadband network systems or equipment in either town, but has been discussing proposals with those towns to do so.
Nature of Proposed Technical Solution for Extending Broadband Internet Service to Unserved Areas	Proposes to provide comparable service which meets or exceeds the minimum broadband speed threshold for the grant program to the unserved areas of Montague and Hardwick up to the required level of 96% in each town by building extensions off its existing structures.	Proposes to provide fiber optic cable-delivered service which far exceeds the minimum broadband speed threshold for the grant program to the unserved areas of Montague and Hardwick up to the required level of 96% in each town by building new fiber cable infrastructure in the towns.
Sustainability of Proposed Solution	Sustainability of proposed build area is effectively assured due to the proposed grantee's existing infrastructure and customer base in the region, and its financial stability, technical capability, and existing operational resources.	Proposal is admittedly not sustainable unless the proposed grantee is able to substantially expand its residential customer base in the region, and is projected by third party consultants to operate at a loss of at least \$120,000 a year while the proposed grantee seeks expansion.
Terms likely to be imposed on Consumers	Line extensions could be folded into existing franchise agreements and be subject to existing terms of those agreements for cable services.	Uncertainty as to what consumer contracts would provide; prospect of operational losses and debt service charges being passed on to consumers; \$500 connection fee.

	COMCAST	MATRIX/MILLENNIUM
	Customers will not be required to pay a connection fee.	
Consumer Costs	<p>Same services and packages currently offered to vast majority of homes in Hardwick and Montague. A broad range of broadband services are offered to residential customers. High speed internet services that meet MBI's requirements are available starting at \$66.95 per month. Lower cost options are also offered, including the Internet Essentials service, which provides internet access for \$9.95 per month.</p> <p>Customers can also choose from a variety of bundled packages that include video and voice. The price for internet service decreases when bundled with other services.</p>	<p>Proposes to offer high speed internet service (up to 50 Mbps symmetrical) for \$95 per month. Proposes to offer residential customers a double play option with high speed internet and VoIP for \$115 a month. Additional tiers of broadband service offering higher speeds may be offered.</p>

EXHIBIT A

(Tilson Report)



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**TILSON REVIEW – RFQ FOR CABLE SYSTEM
EXTENSIONS (RFQ No. 2015-MBI-03)**

April 22, 2016

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TILSON REVIEW – RFQ FOR CABLE SYSTEM EXTENSIONS

I. APPROACH/SCOPE

The Massachusetts Broadband Institute (“MBI”) tasked Tilson Technology Management, Inc., (“Tilson”) to evaluate the responses to its Cable Extensions Program RFQ (No. 2015-MBI-03) and provide recommendations regarding the applicants for the program, Matrix Design Group, Inc./Millennium Communications Group, Inc. (“Matrix”), and Comcast. The deliverable requested by MBI was an independent summary report of Tilson’s recommendations based on the Respondents’ RFQ submittals and subsequent reference checks.

Tilson conducted a review of: 1) RFQ materials; 2) Matrix’s RFQ response; 3) Comcast RFQ response materials; and 4) Subsequent Q & A between applicants and MBI; and 5) Reference check interviews of past Matrix New England clients.

Tilson’s review was conducted independently, as Tilson does not have a relationship with Comcast, Matrix, or the towns of Hardwick and Montague.

As more fully explained in the report below, Tilson found that Comcast met the grant program criteria exactly, however Matrix had several serious deficiencies in areas of risk and owner/operator experience.

II. GRANT SELECTION PROCESS

In its RFQ, MBI requested submissions from respondents, emphasizing the following items as particularly important in its review¹:

- Similar prior experience with projects of similar scope/magnitude
- Ability/ability to acquire capability to deploy and sustain an expansion project
- Comparability of proposed services to existing options
- Previous experience in operation, construction, and extending rural networks
- Achieving goal of passing 96% of homes in community

Despite these threshold considerations, in the RFQ MBI reserved their right to consider other relevant factors giving MBI considerable discretion in making a grant award determination.² Furthermore, while

¹ Request for Qualifications for Cable System Extensions, RFQ No. 2015-MBI-03, Massachusetts Technology Collaborative, July 19, 2015, p. 3-4.

² Id. at 6.



various factors were enumerated in the RFQ, MBI nonetheless allowed itself flexibility to weigh those factors and other factors in evaluating responses.

In particular, in the MBI’s “Key Questions” section of the RFQ (Section 3.3, page 4), the MBI requests details from respondents regarding previous experience, specifically requesting details of other rural networks of similar scale and density “currently operated.”

III. RESPONDENT REVIEW

A. COMCAST

Because of the elements outlined below, Tilson believes that a grant to Comcast would achieve program objectives and would be low risk.

Corporate Capability

Tilson reviewed Comcast’s corporate capability including Comcast’s response to the RFQ, current operations in Massachusetts, as well as Comcast’s 10-K filings. Tilson has concluded that if Comcast builds out in Montague and Hardwick, it is unlikely to discontinue service for financial reasons. Comcast has no dependencies on continuing operations in the grant area, including profitability within the grant area. As an example, Comcast already has existing cable in place in these communities which are self-sustaining and these networks are scalable as well.³ Comcast does not rely on profitability in these towns uniquely to support their overall operation, making the long term viability of the network investment less risky.

Service Offered

Comcast’s current and proposed service offered in the two communities meets the MBI’s program requirements in that it would offer similar speeds and features to other areas in Massachusetts that are served by Comcast currently and that do not have Verizon Fios, including the rest of served Hardwick and Montague.⁴ In addition, Comcast has a low income program for approximately \$9.95/month as well as no connection fee.⁵ Comcast has a potential path to faster service over their existing plant in DOCSIS 3.1, as well as a fiber to the node infrastructure that allows a relatively inexpensive fiber loop upgrade, as is already in progress in several Comcast markets.⁶ While there is no guarantee that these upgrades will come to these two communities, the current level of service on DOCSIS 3.0 meets program objectives.

³ Maps of current coverage were supplied by the Massachusetts Broadband Institute.

⁴ Comcast Response to RFQ No. 2015-MBI-03, July 31, 2015, page 6.

⁵ Id. at 2.

⁶ <http://www.cbsnews.com/news/comcast-tests-super-fast-gigabit-cable-internet-access-on-philadelphia-home/>



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Program Overhead

Comcast’s proposal would be an inexpensive program to administer in that it would not require an elevated level of oversight of the grant implementation and ongoing sustainability. The grant administration process would be simple—there is a single grant recipient and no legal or contractual issues to work out between the applicant and the municipalities.

Experience

In its response to the RFQ’s “key questions,” Comcast names the rural Massachusetts communities of Gill, Buckland, Erving, and others as well as operations providing residential broadband in rural areas in 39 states.⁷ Comcast also cites that it has built/extended 35 “corridor communities” and approximately 160 miles of plant extensions in western Massachusetts and Vermont combined over the last three years.⁸ This experience clearly meets the program guidelines for “similar prior experience with project of similar scope/magnitude” as well as “previous experience in operation, construction, and extending rural networks.”

B. MATRIX

Corporate Capacity

Tilson reviewed the Matrix response and conducted further due diligence. While Matrix proposed a plan for a fiber network and has experience with network design build projects, we found several areas of serious concern, particularly with regard to the number of dependencies required to come together for the Matrix projects to be successful and sustaining. Among these concerns are the lack of an established line of business at Matrix in rural residential network ownership and operations, including a going concern entity. The start-up risk inherent with creation of a new, special purpose entity in a totally new line of business should be carefully weighed against the potential benefit of a faster fiber network. Matrix, by its own admission does not have experience with owning and operating rural residential networks which further increases this start-up risk.⁹

Service

In terms of proposed services offered, Matrix’s offerings were in excess of those required by the program, as their proposal of providing a FTTH service could be faster than cable.¹⁰ Despite the service improvements associated with fiber optic infrastructure, if costs per premise could be high because of the need to build redundant middle mile infrastructure into the neighborhoods contemplated by the grant

⁷ Comcast Response to RFQ No. 2015-MBI-03, July 31, 2015, page 4.

⁸ Id.

⁹ Matrix Design Group Request for Qualifications No. 2015-MBI-03 Re: Town of Hardwick, July 31, 2015, page 14.

¹⁰ Id. at 2.



program, MBI should consider whether obtaining an outcome short of the fiber to the home—i.e. an acceptable outcome of service comparable to that available elsewhere in the community with a hybrid fiber/coaxial network—at lower cost and little project and sustainability risk would further the State’s goals of getting more unserved people connected with limited grant funds, and deploying remaining funds in less served communities.

Experience

While Matrix highlights past projects and its answers to key questions illustrate some experience with designing and building two FTTH networks in Vermont and Massachusetts, they state that they have not owned and operated a residential network in a rural area before.¹¹ In terms of network operations experience, Matrix only refers to direct experience operating enterprise and government networks.¹² However, these networks are not rural in nature and do not serve residential customers, thus failing to provide an example of “other rural network of similar scale and density” as asked for in MBI’s Key Questions. Furthermore, while Matrix references past work with EC Fiber in Vermont, Matrix, by its own admission states that it would be incorrect to characterize their work with EC Fiber in Vermont as operations.¹³ A reference check with EC Fiber/ValleyNet in Vermont, while generally positive with regard to Matrix’s design and construction abilities, confirmed that Matrix’s work did not involve network operations and customer support, with the exception of Matrix’s construction role in deploying new customer drops for a time.¹⁴

Financial

Tilson uncovered other areas of serious concern with regard to Matrix. As illustrated in the screenshot below, a search of Matrix’s parent company, Millennium Communications Group, showed a “high risk” of both debt write-off as well as cash flow risk for the company. No company financial information was provided with the grant application by Matrix. The financial strength of the applicant is a critically important factor in reviewing a grant application from a party looking to start a new ISP in a project that takes on risks inherent in a start-up, achieving take rate targets, engaging in direct competition with a large national carriers, and reaching critical mass in adjacent communities.¹⁵

¹¹ Id. at 14.

¹² Id.

¹³ Id.

¹⁴ Phone interview with EC Fiber staff and Tilson, conducted April 18, 2016.

¹⁵ Matrix officials stated that they would need subscribers from neighboring Petersham and a base of 1000 subscribers in order to make the network viable. Video, Montague Broadband committee meeting, February 23, 2016.



Below is the referenced screenshot for Millennium from Dun & Bradstreet showing its rating of risk of debt write off and cash flow risk for Millennium. In both of these categories of risk, Millennium is rated as “high risk”.



(Figure: Screenshot of Dun & Bradstreet Report for Millennium)

Matrix/Millennium appears to have a lack of rural residential network operations experience, as this represents a new line of business for Matrix. In contrast with this, Comcast has rural network operation experience in numerous rural communities in Massachusetts, with overall operations in 39 states in total.¹⁶

After review of supplied materials, Tilson views Comcast to be adequate in terms of both service offerings as well as from a corporate capacity. With Matrix, while their proposed service offering is above the minimum threshold, Tilson found significant areas of concern with regard to Matrix’s corporate capacity relative to Comcast. This prompted Tilson to look further at Matrix and contact their references to examine their past performance in the region.

¹⁶ Comcast Response to RFQ No. 2015-MBI-03, July 31, 2015, page 4.



IV. MATRIX PAST PERFORMANCE/REFERENCES

Tilson started with Matrix-supplied references in its review, beginning with its parent company's (Millennium) work with the Town of Leverett, MA.

A. Leverett, MA

Matrix's parent company, Millennium, was engaged by the Town of Leverett, MA to design and build their network from June 2013 to August 2015.¹⁷ Ultimately, Millennium provided a partial design in the course of this work, and disputes arose between the Town and Millennium, leading to a demand for arbitration by Millennium and a counterclaim by the Town.

In its interview with Tilson, the Town expressed its difficulties with Millennium asking for additional fees for work that was already included in the original contract. In addition, according to the Town, Millennium mismanaged the work of the engagement due to understaffing, delivering work that the Town termed as "substandard", and in failing to adhere to the specifications of the initial contract. In its counterclaim to Millennium's Demand for Arbitration, the Town stated that Millennium submitted "excessive and repetitive" change orders, resulting in delays in network completion costing the Town of Leverett approximately \$27,000/month.¹⁸ In addition, the Town further cited instances where Millennium presented certifications that they had paid subcontractors and those subcontractors complained to the Town that they were not paid within terms. Ultimately, a settlement agreement was reached between the Town and Millennium, and the Town has indicated that it would not work with Millennium again in the future.¹⁹ Tilson characterizes this reference from the Town of Leverett as negative.

B. EC Fiber

Tilson's interview with EC Fiber was generally positive in describing their experience with Matrix.²⁰ The reference did mention that there were some continuity issues and design delays which EC Fiber attributed to Matrix losing staff to a competitor during their time working together, and that these issues were successfully overcome by Matrix.

¹⁷ Tilson reference check interview with Leverett officials, April 2016.

¹⁸ Millennium Communications vs. Town of Leverett, Case No. 01-14-0002-0197, Answering Statement and Counterclaim, p.42.

¹⁹ Tilson reference check Interview with Leverett officials, April 2016.

²⁰ Tilson reference check interview with EC Fiber official, April 18, 2016.



As mentioned above with regard to the type of work that Matrix/Millennium undertook in Vermont, EC Fiber said that Matrix's work was primarily in the design and construction capacity and that the direct services supplied by Matrix did not include network operations with the exception of Matrix providing new customer drop installations, a role which EC Fiber took in house.²¹ This serves to confirm Matrix's earlier statement that they could not characterize their work with EC Fiber as network operation.²² We characterize this reference as positive.

As additional follow-up, Tilson interviewed former staff members of the Vermont Telecommunications Authority (VTA), who directly engaged Matrix as well on adjacent projects in Vermont. They stated that Matrix's work with the VTA was generally successful and that staffing turnover and attendant project impacts were a concern at times. Tilson characterizes VTA's reference as neutral.

C. Princeton, MA

Having read about a Matrix project with Princeton, MA in the press, Tilson reached out to Town officials and reviewed MBI supplied correspondence with the town to learn more about their experience with Matrix. The Town explained no formal relationship between Princeton and Matrix ever materialized as no deal was reached between the two entities. Tilson views this reference as neither positive nor negative as there was no formal engagement.

V. PROJECT DEPENDENCIES

In its review and assessment of the Matrix plan, Tilson's conclusion is that it contains a number of complexities, and these create greater risk for the success of this project. In particular, at a community broadband meeting in February of 2016, Matrix officials, in discussing project viability pointed to a take rate figure of 1,000 subscribers needed in order for the project(s) to have financial success.²³ In making this statement, the official mentioned that some portion of these 1,000 subscribers would be comprised of customers from Matrix's project in neighboring communities, such as Petersham, MA.²⁴ Once again, by placing the necessary take rate for its projects at least partially dependent upon customers from other communities, Matrix's plan creates an additional dependency that adds complexity to a project, thereby increasing risk.

Sustainability of a network typically requires a minimum number of customers. At this point in the review, Tilson has not had access to information regarding take rates or customer counts, except for the assertion

²¹ Id.

²² Matrix Design Group Request for Qualifications No. 2015-MBI-03 Re: Town of Hardwick, July 31, 2015, page 14.

²³ Matrix public broadband meeting (Montague), February 23, 2016.

²⁴ Id.



made by Matrix in the community meeting above. At this meeting, Matrix said that they needed 1,000 customers, and that they had achieved this in neighboring Petersham.²⁵

Another level of uncertainty and concurrent risk Tilson has identified for Matrix is the implication by Matrix that the success of the Hardwick and Montague networks would depend, at least in part upon the success of a neighboring project. Given the challenges associated with even a one-town project, adding two other towns introduces additional variables—with three towns, there is the necessity of involving three different entities, three different town governments, and three different broadband committees. The added variables and complexity attendant to such are factors which Tilson believes introduce further risk to the Matrix plan, increasing the need for financial strength to offset project and sustainability challenges, and project oversight by MBI if awarded the grant.

VI. CASH FLOW RISK

A final consideration of risk relates to the proposed structure and timing of various elements of the Matrix network relative to the Comcast proposal. The Matrix structure places the responsibility of make ready with the Town and responsibility for construction and operations with Matrix. This arrangement has the potential to create a gap funding issue. In comparing the two models, with Comcast, the timing and structure is such that Comcast deploys and then receives funding from MBI to do so. In this simple arrangement, Comcast only receives money from the State when they meet program objectives.

In the Matrix proposal, the town is responsible for make-ready, and would likely require MBI to disburse grant funds in advance to the town, with no certainty that network would be built and service provided over the long term, giving rise to the potential of a “make-ready to nowhere” project where significant state funds are expended on make-ready and no network is built or a network is built and not operated if a project dependency down the line is not successful.

VII. CONCLUSION

Tilson believes that the choice facing the MBI is whether to award its grant money to a risky start-up venture backed by a small company not operating networks in Massachusetts, or to fund a low risk solution that will build on existing infrastructure, and provides service meeting the program objectives. Tilson believes that an additional consideration in weighing the Matrix and Comcast proposals against one another is the fact that the Matrix build will require more money to build middle mile infrastructure, whereas the Comcast proposal already utilizes their middle-mile infrastructure in place. If successful, the Matrix project would potentially provide a service exceeding the minimum threshold articulated by the MBI in its RFQ, but as detailed above, the number of dependencies and lack of network operation experience of Matrix make this a new line of business for Matrix, with variables of multiple towns and a

²⁵ Id.



mixed history of prior success with the local references it provided. In contrast, Comcast, represents a more modest build, with a qualifying service offering, but for which the likelihood of delivering as promised is high on account of Comcast's corporate capacity, experience, and lack of other project dependencies.

Furthermore, in Tilson's review of the coverage maps provided by both Matrix and Comcast, a Matrix project creates competition in areas that are already adequately served by Comcast. This type of competition, while generally a good thing in terms of reducing price for services in a geographical region, does not follow any currently articulated state policy objectives for areas that are already adequately served—it is not the policy of the MBI to expend state funding to serve areas already receiving adequate service, particularly while unserved areas remain. If the Matrix project were to be approved, this could have the unintended precedential effect of approving a practice of overbuilding in areas where service is already adequate, which is not an efficient use of state funds or a goal of the Commonwealth.



TILSON

ABOUT TILSON

Tilson is a 150 employee New England headquartered infrastructure consulting and services company serving local, state, and federal government, telecom carriers, and utilities. Tilson has several Massachusetts licensed professional engineers and Massachusetts licensed construction managers on staff. Tilson served as owner's project manager and consulting engineer for the Massbroadband123 project, and is currently assisting the National Telecommunications and Information Administration (NTIA) as its technical writer and researcher for their BroadbandUSA Program, and assisting the State of New York in their large last mile grant program as field auditors and grant application review design and evaluation. Tilson's consulting team specializes in broadband planning and project management. Tilson has nine national offices, including five in the Northeast, and has been recognized as one of America's fastest growing private companies for five consecutive years by Inc. Magazine.

ABOUT THE CONSULTANTS

Joshua Broder, CEO

Joshua Broder is the CEO of Tilson and is a Massachusetts Licensed Construction Manager. Under his leadership, the company has grown from less than 10 employees to over 150 in less than six years. From 2010-2013, Josh served as a consultant to, successful Recovery Act funded technology infrastructure projects in New England for Tilson including Maine's Three Ring Binder, Massachusetts's Massbroadband123, and several public computing and smart grid network projects. Josh cut his teeth in leadership and technology as an Army Signal Officer on missions in Europe, the Middle East, and Central Asia, where he was awarded the Bronze Star for service in Afghanistan running the tactical communications network in support of US and coalition forces. Josh has a BA from Middlebury College, and is a graduate of AT&T's executive business leadership and entrepreneurship program at JFK University. Josh is passionate about community fiber to the home projects, and you can view his TEDx talk on FTTH here: <https://youtu.be/8iAtCdxgzms>

Nick Bournakel, Senior Consultant

Nick Bournakel is a Senior Consultant in Tilson's broadband consulting group. Nick has a background in regulatory analysis and business and has significant experience working with government agencies at both the state and federal level on community broadband and energy planning projects. At Tilson, Nick works with municipalities to develop broadband plans and feasibility studies to improve connectivity and access for residents and towns. Nick has a BA from Bates College and a JD from the University of Maine School of Law.

EXHIBIT B

(Wipro Report)



April 26, 2016

Introduction

The Massachusetts Broadband Institute ("MBI") of the Massachusetts Technology Collaborative retained Michael Morgenstern, a consulting partner at Wipro Technologies with extensive experience and expertise in the broadband telecommunications industry, to assist it in evaluating the proposals of two private companies seeking grant funding from MBI to provide broadband internet access service to the currently unserved areas of two towns in Western Massachusetts, Montague, MA and Hardwick, MA. Mr. Morgenstern holds a Bachelors from The Johns Hopkins University and a Masters in Business Administration (MBA) from Columbia Business School. He has over 15 years of experience analyzing and formulating business development strategies and proposals, and assessing new markets and technologies in the broadband telecommunications area.

Beginning in 2015, Mr. Morgenstern assisted in the preparation of MBI's "Request for Qualifications for Cable System Extensions" (the "RFQ") in connection with the above grant program, which was intended to solicit responses from qualified contractors "with experience in providing residential broadband internet and related services" to whom grant funds could be distributed. Two companies, Comcast and Matrix Design Group, Inc., responded to the RFQ by submitting proposals to provide the requested service to the unserved areas of Montague and Hardwick. Mr. Morgenstern then worked with the MBI staff to review and analyze those responses, to generate supplemental requests for information to the respondents, and to evaluate their responses to those supplemental requests. Mr. Morgenstern was already familiar with the technical and geographic issues involved because he had worked on several "last-mile" projects for MBI in the past (including as specifically related to the partial cable towns), and has specific experience with both co-axial and fiber technologies, network planning, and cost modeling.

The purpose of this report is to set forth Mr. Morgenstern's independent observations and conclusions as to the relative merits and risks of the Comcast and Matrix proposals to provide extended broadband service to the currently unserved areas of Montague, MA and Hardwick, MA. Mr. Morgenstern's opinions are his own, both based on his own analysis of the submissions by both companies, and publicly available information concerning both companies, and their experience in the broadband telecommunications operations area.



Comcast

Comcast is the world’s largest cable company by subscribership and is the incumbent already providing service in both Montague and Hardwick. Comcast’s proposal indicates that it will extend its existing footprint to reach more than 96% of households. State funds would clearly be used only to extend network to unserved areas. Comcast is certainly capable of doing so as it built and operates the existing network in each town and would currently extend the network to unserved households at a fee to those households. Such an extension, particularly at limited to no cost to Comcast will inherently be sustainable and cash flow positive.

Comcast has substantive financial assets to protect against any future loss or decline in subscribership. It has existing staff and network assets already in each town.

Its proposal offers equivalent products to the currently unserved areas as are found in the served areas.

There are no issues of uncertainty with Comcast’s services, experience or abilities to deploy such a network.

Set forth below is my projection for the annual revenue and costs resulting in gross profit to offset Comcast’s share of initial infrastructure development and overhead to operate the network.

\$382,000 Total Forecast Gross Annual Revenue

212	Full time equivalent subscribers	<ul style="list-style-type: none"> • 362 homes with 4% seasonal premises taking service 4 months a year • 60% take rate
\$150	Average Revenue Per Unit (monthly)	<ul style="list-style-type: none"> • Comcast offers broadband, phone and Television services

\$153,000 Total Forecast Gross Annual Cost

\$153,000	40% cost of revenue	<ul style="list-style-type: none"> • Triple play gross margin of 60%+ (even in rural areas)
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\$229,000 total forecast gross annual profit would be available to offset Comcast’s share of initial infrastructure development and overhead to operate the network. These funds would thus render the additional network self-sustaining.



Matrix/Millennium

The principal issue with Matrix/Millennium's proposal is a lack of sustainability. During an in-person meeting on January 13, 2016 Ron Cassel (President of Millennium Communications) stated that his business plan breaks even with 1,000 homes (later clarified at a public meeting on February 23, 2016 by Chris Lynch at Matrix to mean 1,000 subscribers). Wipro's operating analysis suggests a very similar break-even point. This plan presents a problem because the unserved areas of Hardwick and Montague in total amount to only 362 homes, which means that any network that existed only serving those homes would be unsustainable and would lose money.

Matrix's proposal, using state grant money, cannot breakeven unless Matrix was able to expand that network and obtain hundreds of new customers, either in those towns or in surrounding towns. In the January meetings, Matrix agreed to this assertion. It is by no means guaranteed that Matrix would be able to do this, or that there would be the requisite demand either in the surrounding towns or in the base of Comcast customers who now live in Montague and Hardwick. Fiber "overbuilders" (other than Google) often obtain penetration rates less than 30%, which would still not get Matrix to its own professed 1,000 subscriber hurdle. In short, Matrix would have to use the state funds to build a network that could compete with incumbents in neighboring geographies. Such a use of state funds appears in violation of the legislative intent and the MBI policies supporting that intent.

In addition to issues of revenue and profit opportunity, perhaps the biggest issue is that Matrix has presented no prior experience operating a residential broadband network. And operations in a rural area will be substantively more challenging (and costly) than typical fiber deployments by experience carriers in suburban and urban settings (many of which have been problematic). Our analysis of the profit and loss of doing so for just the unserved areas of Montague and Hardwick, with the pricing structure that Matrix proposes, indicates that it will lose a minimum of \$120,000 per year. It would continue to lose money at that rate until it expands its customer base. In order to absorb these losses, Matrix would have to maintain substantive working capital and it does not appear to have significant cash assets to do so (Dun & Bradstreet lists it as a high risk credit). Alternatively, Matrix would have to more than double its monthly price – which would rise to such a level that it would be challenged in obtaining more than a handful of subscribers. Inevitably it will attempt to pass along its debt service expenses to its customers which will reduce its subscription rates and cause more spiral in a negative feedback loop – eventually resulting in business failure.

Set forth below is my projection for the annual revenue and costs resulting in a gross loss.



\$277,000 Total Forecast Gross Annual Revenue

212	Full time equivalent subscribers	<ul style="list-style-type: none"> • 362 homes with 4% seasonal premises taking service 4 months a year • 60% take rate
\$109	Average Revenue Per Unit (monthly)	<ul style="list-style-type: none"> • 90% of subscribers take the entry-level \$95 product, 10% take higher speeds with higher price points • 40% of subscribers take an additional \$25 / month phone service

\$400,000 Total Forecast Gross Annual Cost

\$150,000	Administrative and Oversight Staff Expense	<ul style="list-style-type: none"> • (1 system manager plus a fraction of other 'corporate' efforts (e.g. accounting, legal, etc.))
\$5,000	Install & On-site support	<ul style="list-style-type: none"> • 362 homes @ 60% take rate with 4% seasonal premises only taking service 4 months a year = 212 effective full time subscribers at \$2 month (a single truck roll every 8 years at \$200 cost per truck roll = ~\$2/month)
\$140,000	Provisioning Costs	<ul style="list-style-type: none"> • \$150 / mile / month of fiber for replacement and insurance costs (59 miles) • \$1.25 / pole / month for bond fees and pole rentals (1,957 poles)
\$58,500	Cost of Providing Service	<ul style="list-style-type: none"> • Axia charges \$1200+ / month / gig. To provide a Leverett-equivalent service, Matrix would need to purchase 1 of these circuits. Wipro forecast actual demand of 0.7 Gbps and therefore only added costs of \$10,000 / year. • Additional service related costs of customer equipment refurbishment (\$5 / month / home passed (362 homes) = \$22,000 / year • \$3 / month / home passed for routine maintenance = \$13,000 / year • At a 40% subscribership (85 subscribers) for phone services, with a very inexpensive outsourced VoIP phone product, Matrix would pay a minimum of \$10 / month per subscriber = \$10,000 / year • Matrix will also have CRM and billing software expenses averaging \$1 / month per subscriber = \$2,500 / year
\$7,500	Billing	<ul style="list-style-type: none"> • Billing costs (excluding bad debt based on a pay-ahead billing cycle) should average \$3 / subscriber (212) per month
\$13,000	Remote Support	<ul style="list-style-type: none"> • Making the VERY aggressive and highly cost avoiding assumption that Matrix would add support functions to existing staff, the marginal cost of non-truck roll related service costs would be minimal ~20% of a FTE (30 hours a month).
\$25,000	MLP Costs	<ul style="list-style-type: none"> • Estimated cost of running the MLP, legal, accounting, etc.

(Note that no sales or sign-up costs efforts were included. This is a very liberal assumption predicated on a very strong grassroots effort and/or a presubscription process).

\$123,000 Total Forecast Gross Annual LOSS



Conclusion

Taking into account all of the above, it is my opinion, to a great degree of certainty, that the grant proposal put forward by Comcast, rather than the proposal put forward by Matrix, should be funded under the grant and pursued by MBI. The Comcast proposal is an order of magnitude lower risk, clearly sustainable by Comcast financially (and therefore most likely to be sustained without the need for additional infusions of state funds), and the most practical of the two proposed solutions for expanding the existing coverage in Montague, and the existing coverage in Hardwick.