

## The Status of Worthington Broadband – Annual Town Meeting 2017

Since last Summer, the Worthington Broadband Committee has been meeting weekly to understand the process of bringing broadband internet access to Worthington taking advantage of funds the state has made available. Over this time, the options available to Worthington have changed dramatically. Our aim has been to bring a set of options before the select board and town residents to allow them to decide which best fits their needs. We are getting closer, but the range of options is still not final. In particular, the proposal from Crocker Communications has not been officially accepted by the Massachusetts Broadband Initiative (MBI) which ultimately controls the state financial contribution to this project.

This handout is meant to explain the three options currently on the table, to the best of our understanding today. We hope that many of the missing details will become clear in the next couple months at most, at which point we expect to hold informational meetings and finally a special town meeting to make a final decision as to the future of broadband internet access in Worthington.

**There are three options**, but they are similar in several important ways. What follows is a discussion of the similarities, followed by a table expressing the differences between the options.

When assessing the options, it is important to draw a distinction between *building* a network and *operating* a network. The costs associated with building a network are relatively large but only incurred once, and can be borrowed. The costs to operate a network are also large, but are ongoing. In either case, the costs can be borne by the subscribers or the tax payers, or both. The different options differ in how these costs are handled and the table below attempts to make that clear.

### **All three options propose a similar network design**

To bring the internet to Worthington, there will be a “backhaul” connection from an interconnection point such as the one in Springfield to one spot in Worthington, referred to as the “hut”. From the “hut” fibers will run towards subscribers’ houses.

This is a Fiber To The Home (FTTH) design and is similar to the model that Verizon and Frontier are using nationwide for their FiOS services. It is the most common way to deploy residential fiber in the US, and most equipment innovation is focusing on this model. Even though the fiber is shared, it supports high bandwidth to each subscriber. This design also supports subscribers who need particularly high bandwidth, such as a business which requires guaranteed symmetric bandwidth, through changes to the electronics at the end of the fiber. There would be no need to change the fiber itself.

The broadband committee is satisfied that this design will serve the needs of Worthington for many years to come.

### **All options support the same services**

All three options provide a direct connection to the internet for every subscriber. Anything that can be done over an internet connection would be possible including email, web browsing, the use of cloud based applications and file storage, streaming movies, website development, remote health monitoring, and many other applications in the entertainment, education, health, and business realms.

Telephone service (so called Voice Over Internet Protocol, or VOIP) is supported by all options at a cost of \$15-20 per month. The hardware at each premises would be directly connected to the existing telephone wiring with no need for further modifications to the home wiring or telephone equipment. The system itself, both at the home and at the “hut” would be protected by battery or generator backup so power outages would not affect telephone service if the fiber network itself was unaffected.

None of the options support conventional television directly. There are a wide, and ever increasing, range of options for accessing television content over any internet connection including streaming services such as:

- Live TV: DirectTV Now, SlingTV, and PlayStation Vue
- Movies and TV Shows: Hulu, HBO Now, NetFlix, Amazon Prime
- Sports: MLB.tv or NFL Game Pass

Viewing this content on your television requires a “smart TV”, an AppleTV or some other interface device.

### **All options cover at least 96% of the town**

Our goal is to cover 100% of the town. We expect that to be possible with all three options, but the cost of extending to 100% coverage will not be known until the design is done and may not prove to be feasible. It is worth noting that the only option we have complete control over is the town-owned option. In most cases, the proposal is to hang fiber on the street outside 96% of the premises in town, with actual connections only to subscribers. The Crocker proposal would connect to 96% of the premises whether they subscribed or not. People with driveways over 300’ can expect to pay at least \$1 per foot, over 300’.

### **Operations**

There are a range of costs to operate a network. Some of these costs are dependent on the number of subscribers, but many are based on the physical size of the network – the number of miles of fiber or the number of poles. Regardless of who owns, builds or operates a broadband network in town, these expenses will be paid, and more likely than not, they will be paid by the subscriber base.

This table shows the cost estimates we have been using, based on extrapolations from Leverett’s actual costs. The numbers would be different for every company, but it is important to know that this array of costs is in your bill, regardless of who operates the network.

Category	Estimated Annual Cost	Cost Basis
Administrative Costs	\$13,800	
Insurance	\$27,560	Size of network
Operations	\$30,664	Size of network and number of subscribers.
Maintenance	\$85,116	Size of network
Pole Bonding & Rental	\$26,747	Number of poles
Replacement Reserve	\$50,700	15% of Electronics cost (replace in 7 years)
Contingency	\$24,125	8% of plant cost
Debt Service	\$69,500	50% of the annual debt service
<b>Subtotal</b>	<b>\$328,212</b>	
Internet Access	\$97,800	Number of subscribers <i>assumes 326 subscribers @ \$25 per month</i>
<b>Total</b>	<b>\$425,712</b>	<b>\$109.16 per month, per subscriber</b> <i>(\$425,712 / 326 / 12 = \$109.16)</i>

Since most of the annual operating cost is independent of the number of subscribers, the more subscribers there are to the network, the smaller the share of that cost would be for each subscriber. The chart to the right illustrates this over a range of about 30% of the town subscribing to about 80%.

As this chart illustrates, if the number of subscribers is low, the subscriber price is very high. That is the inherent risk of this project and each option handles it differently.

On the other hand, if the number of subscribers is high, the cost per subscriber is relatively low. If the town



owned the network, and the number of subscribers was high, we would get to decide how to respond. Some possible responses include lowering the price to the subscriber, covering more of the debt service, or saving more for replacement. If the town does not own the network, we would not have that level of control.

### **How the options differ**

The table on the following 4 pages explores how the options differ over a wide range of issues. It represents our best guesses at the moment, and ***should be expected to change!***

We hope that this has been helpful in furthering your understanding of the options for bring broadband internet access to Worthington. If you have any questions, please do not hesitate to reach out to any of us, or to the group at [broadband@worthington-ma.us](mailto:broadband@worthington-ma.us), or come to a meeting. All meetings are posted at the town hall.

Sincerely,

The Worthington Broadband Committee

Charley Rose, Chair  
Joe Boudreau  
John Dearie  
Bart Niswonger  
George Ulrich  
Cai Walkowiak

	Town Owned with Contracted Operator	Matrix Owned & Operated	Crocker Owned & Operated (4/24/17)
Total Cost	Estimated by the MBI to be \$2,860,000	Unknown	Estimated by Crocker to be \$3,955,040
Cost to the Town	Estimated by the MBI to be \$1,790,000	Estimated by Matrix to be \$918,500	\$0 up-front cost, but \$40-50 per month, per premises, regardless of whether they subscribe, for 15 years.  This equates to an annual payment of between \$304,800 and \$381,000 from the town to Crocker, based on their estimate of 635 premises.
What does the cost cover?	The town would own the entire network - the fiber on the poles, the electronics required to transmit data over the fiber, both at the subscribers' premises and in the "hut". It would also own a right of way on all the utility owned poles used by the network and any additional poles required would be owned outright.	The town would own a right of way on all the poles used in the network, as well as any additional poles required by the network. It would also own the "hut" - which is likely to be a modular building constructed for holding telecommunications equipment. Matrix would own the fiber and the associated equipment.	
Financing Options	The \$1.8 million would need to be borrowed. The debt service could be born by the subscribers, legally, but the town would be the 'backstop'. If, for example, there were not enough subscribers to cover the cost of the debt service, the town would be required to make the payments. We recommend that the debt service be shared equally by the tax payers and the subscribers although the final decision would be made by the ML board, presumably in conjunction with the Finance Committee and Select board.	The state has set aside money to help towns pay for constructing broadband networks. It is not clear if some or all of this money would be available for this project, but there seem two likely possibilities: 1 - No money is available in which case the town would borrow the money. As with the town owned option, the debt service could be carried by the subscribers but the town would be the 'backstop'. We recommend sharing the debt service between the tax payers and the subscribers.  2 - All the money allocated to the town is available, in which case the town's cost would be \$0.	Crocker would receive the entire \$1.07 million state allocation from Worthington. The town would have to determine how it would raise the approximately \$350,000 per year to pay Crocker. It could do so through taxation or subscriber fees, and most likely would choose a combination.  The town would be ultimately responsible - if there were no subscribers, the payment would have to come through taxation. Worthington does not have sufficient capacity within our levy limit to raise even the lower amount of \$304,800, and would have to pass a proposition 2 1/2 override. In this worst case scenario, taxpayers could expect an average tax increase of \$480 - \$600 per year.
Who would decide what kind of network was built?	The Select Board / ML Board would ultimately decide, presumably with input from the residents.	Matrix.	Crocker
Who would manage the construction?	Ultimately the town's ML Board or Select board would be responsible for ensuring the job was done well. We assume an outside firm would be hired to provide construction management services.	Matrix would manage its own construction. The town would have very little role.	Crocker and Fujitsu would coordinate the management and the town would have no role.
Who would do the construction?	We expect an outside firm would be hired to construct the network, including both along the roads and running fiber to each house.  We expect to contract with an experience network design firm to oversee the design and construction of a town owned network. Westfield Gas & Electric has emerged as a likely candidate for many towns in the region. We may collaborate with other towns which would reduce the load on Westfield Gas & Electric. WiredWest may have a role to play in that collaboration.	Matrix would do its own construction, although they may use subcontractors for portions.	It is expected that Fujitsu would contract with local network construction firms.
What experience does this company or group of companies have to offer?	Westfield Gas & Electric has built fiber networks for 20 years and is in the process of building a fiber to the home (FTTH) network serving 70% of Westfield as well as designing and building a FTTH network in Otis. They have relationships with vendors and subcontractors which would be useful to Worthington.	Matrix Design Group and Millennium Construction are privately held sister companies. They have significant experience designing and building fiber optic networks for a range of institutions from FiOS networks for Verizon to municipal fiber in Vermont for ECFiber to colleges and universities and military networks.	Crocker has never built a network. They are partnering with Fujitsu which has extensive experience designing and constructing fiber networks within the US and around the world.
Are there any triggers to starting construction?	The town must vote at town meeting to authorize borrowing the money to build this network, and further must vote at an election to exclude this borrowing from the provisions of Proposition 2½.	Yes. Matrix requires 365 people to pay \$250 (half of the \$500 signup fee), and agree to a 24 month contract, before they will start construction.	No.
How soon would this network be built?	We cannot start even designing a network until the debt has been authorized and excluded, possibly by mid to late summer. Once that is complete, pole surveys and design should take at most 3 months followed by "make-ready" for which Verizon and Eversource have 6 to 9 months. Construction would then begin and is expected to take 3 to 9 months. All told, a fully operational network should be ready in 18 to 24 months from the debt authorization.	Matrix estimates 18-24 months to complete the design and build. However they can start serving subscribers as the network is built and they expect the first subscribers to have access in as little as 10 months.	At this point there is no timeline. This proposal was verbally agreed to by MBI on 4/24/17, but in our view has significant flaws and legal hurdles and it is not clear it will remain in its current form. We expect it to take a couple months just to reach final consensus on the proposal. Once a workable proposal was in hand, there is no reason to expect the design and construction would not proceed at approximately the same rate as the other options with completion in 18-24 months.

	Town Owned with Contracted Operator	Matrix Owned & Operated	Crocker Owned & Operated (4/24/17)	
Construction	How would the network be connected to the broader internet?	There are a range of options. The simplest would be a single connection to the MBI Middle Mile network to Springfield. A more robust solution may be available by cooperating with other towns either formally through Wired West or more informally. To achieve multiple interconnections with the broader internet would probably require either additional cost.	At this point there is no suggestion of anything more than a single connection to the MBI Middle Mile. Connections to the broader internet can be facilitated by leasing existing fiber strands from other companies.	Crocker already has a ring network connecting Greenfield, Springfield and Boston which means anyone on their network has multiple redundant interconnections with the broader internet. How the network in Worthington would connect to the rest of the Crocker network would depend on what other towns went with Crocker. It is possible that there would only be a single path to the rest of the Crocker network, but they do show awareness of the issue.
	How much of the town would be covered?	Our goal is to pass at least 96% of all premises in town, and we hope it would pass 100%.	They expect to pass 100% of the premises which have existing poles. Premises which receive their utilities from another community, or have no utilities, or would otherwise require new poles would be considered on a case-by-case basis and most likely would require additional investment on the part of the town or the homeowner.	A minimum of 96% of the premises would be covered. The remaining 4% would have the option of paying to be included. That payment could come from either the homeowner or the town.
	Would there be a sign up fee?	The Broadband Committee does not have a recommendation either way. The Municipal Lighting Board (ML board) would have the authority to ask for a signup fee, and it may choose to do so to help with cash flow during the initial year, as well as to have a reserve in case of unexpected operating costs during the first year.  Additionally, it could decide to impose a signup fee on those who did not initially take the service to help defray the costs of bringing them into the network.  There would be a \$99 activation fee if WiredWest were selected as the network operator.	Yes. \$500 would be due in two installments. The first installment would be due at signup, the second at the start of construction. Construction would not start until more than 50% of the town had signed up. The first installment would be refundable. The second could be spread out over the first year of service.	No. Subscribers would be responsible for any inside wiring that may be required.
	Will I have to pay for the fiber running down my driveway?	The committee recommends sharing the cost of aerial installations for driveways under 300' across all subscribers. This covers approximately 70% of the driveways in town. Subscribers with aerial service over 300', or those with underground service costing more than the cost of 300' of aerial installation, would be required to cover the additional cost for their installation. We estimate this additional cost to be about \$1 / foot. For example, if your driveway is 500' and your electrical or telephone service is delivered on poles, you could expect to pay about \$200 for installation. If your services are underground you will be billed at cost, less the cost of installing 300' of aerial.	Matrix will run aerial fiber up to 300' at no additional cost. Any distance over 300', or if underground, cost over that of 300' of aerial, will be charged to the subscriber at cost. They expect it to cost about \$1 / foot for aerial installations. Underground installations are much less predictable. They expressed openness to spreading those costs out over time.	No, unless your premises is one of the 4% (about 25) which are not included in the build.
	Will it cost more to get hooked up after the initial construction period?	Yes. We expect to charge new subscribers the actual cost of the hookup, which includes bringing a truck out. In Leverett this cost is approximately \$1500.	Yes. Matrix expects to charge \$1500.	Every premises within the 96% covered will be connected, so there will be no opportunity to be connected after the initial construction period. We do not know what the costs would be for new houses or those in the 4% of "uncovered" premises.
Would every premises be wired, or only those of subscribers?	The Broadband Committee currently recommends that only subscribers be wired.	Only the subscribers would be wired. There would be an incentive to sign up prior to construction rather than to wait a year.	Every premises would be wired, and every premises would have "free" baseline service of 12Mbps down and 3Mbps up.	
Operation	What would the monthly cost be?	We estimate the cost to be between \$75 and \$125 a month, depending on a wide variety of factors. There may be different tiers of service, or a single tier.	Matrix proposes a tiered system of \$95 per month for up to 50Mbps, and \$135 for up to 100Mbps. There would also be a small MLP Fee (estimated at \$6-\$7) to cover the town's costs associated with the right of way on the poles.	The town would be required to pay between \$40 and \$50 a month for every premises, regardless of whether the owner of that premises was a subscriber.  Subscribers would have several options: * 12/3 Mbps would cost \$0. This is better than DSL or Satellite, and would be unlimited unlike Cellular. * 100 Mbps would cost \$50 / month (above the base rate the town would pay) * 1000 Mbps would cost \$75 / month (above the base rate)
	Who would I write the check to?	The contracted ISP would handle billing for the town.	Matrix	In any case, phone service could be had for \$15 / month.  Crocker

	Town Owned with Contracted Operator	Matrix Owned & Operated	Crocker Owned & Operated (4/24/17)	
Operation	How fast would my connection be?	We expect a 2Gbps backhaul connection to the broader internet via the MBI Middle Mile to Springfield. This connection would be shared by all subscribers. We could elect to limit how much of that connection any one subscriber could consume, or we could leave it open as Leverett has. We could add additional bandwidth at any time, for additional cost.	Matrix also assumes a 2Gbps connection to Springfield, shared by all subscribers. They would limit their 'standard' tier customers to 50Mbps. 100Mbps customers would have priority over 50Mbps customers if there was congestion on the network. There is nothing to suggest that there would be more than 1 backhaul link, raising some concern about reliability.	The base offering of 12/3 Mbps is better than DSL. 100 Mbps and 1000 Mbps options would be available at additional cost to the subscriber.
	Who would handle customer service?	The town would contract with an Internet Service Provider to handle all aspects of customer service - billing, technical support, etc.	Matrix.	Crocker
	What if the customer service is awful or if the operator is otherwise unsatisfactory?	The town could decide to not renew the ISP contract, and find a new service provider.	Matrix argues that it is in their best interest to perform well, and they suggest a desire to be very open and transparent with the town about the operation of the network. However, if things went bad, the town would have the option, after 3 years, of buying the network from Matrix. The cost would be known before construction, and is estimated to be \$2.2 million, but would decrease by \$128k per year until in year 20 it would be \$10.	There would be very little recourse. Crocker would own and operate the network, much like Verizon does today. The town would have no role.
	What experience does this company or group of companies have to offer?	We expect to contract with a firm to manage the network. The firm would be responsible for customer service, including billing, repairing issues at subscribers' houses, maintaining the equipment and the fiber plant itself. There are several companies which would be capable of playing this role. One is Crocker who managed Leverett's network for the first three years. Another is OT&T, which has replaced Crocker as the ISP for Leverett. A third is Westfield Gas & Electric. All three have extensive experience with customer service and managing networks. It is likely that all of them would subcontract some portions of the maintenance but the customer service would be handled in house. Both Crocker and Westfield Gas & Electric are local companies for whom the addition of Worthington subscriber would not represent a significant increase in subscribers. On the other hand, if a large number of towns contracted with them, it would be a significant increase in scale. Both seem to have thought about how to manage that growth.	Matrix has limited experience operating residential-scale networks. They do have experience with commercial networks which share the same concerns about equipment maintenance, plant repair, negotiating backhaul rates, etc., but they do not have the same customer service requirements. Matrix is not concerned about scaling up that portion of their business.	Crocker has been a local Internet Service Provider (ISP) for 20 years, starting with dial-up service. They were the ISP for Leverett until this Spring.  They have all the requisite experience to manage a network, including customer service functions, ISP functions and operator functions.
	How soon would this network be operational?	The network would need to be built prior to making it operational. We estimate 18 to 24 months before any subscriber would have access, but then all the subscribers would have access within a few weeks at most.	Matrix estimates 18-24 months to complete the design and build. However they can start serving subscribers as the network is built and they expect the first subscribers to have access in as little as 10 months.	It is not clear.
	What about my privacy or "net neutrality"?	The town would have complete control in terms of protecting subscribers privacy and preserving net neutrality within the town owned network. We would be buying access to the larger network over networks such as the MBI's. The town could decide to allow WiredWest to negotiate the ISP contract.	Matrix would set the policies relating to subscriber privacy and net neutrality. They have shown an interest in working with the town, but ultimately it would be their network to run, unless we bought it from them.	Crocker would set the policies relating to subscriber privacy and net neutrality. We have no reason to think they would do anything which was against the interest of subscribers, but if they did, there would be no recourse short of
	How does WiredWest fit into this picture?	Subscribers may get a better per month cost as a result, and the amount of work for the ML Board may decrease. In addition, being part of WiredWest would spread the risk of low subscriber numbers over a larger population.	It has no role, unless the town decides to buy the network and not hire Matrix to operate it.	It has no role.
	What is the long term plan?	The expectation with any fiber network is that it would last at least 20 years. The town would own the network and be responsible for replacing it if and when it needed it.	The town would have the option to buy the network after 3 years, but before 20 years. After 20 years, Matrix would own the network and the town would not have any rights to it.	Crocker has committed to owning and operating the network for 15 years. There is no further commitment either to continue running it, nor to stop.
Highlights	Cost to Town	\$1.79 million	\$0 - \$771,000	Nothing upfront, but approximately \$350,000 per year for 15 years
	Cost to Subscribers	\$75 - \$125 depending on a large number of factors. It could be lower (WiredWest) and it could be higher (too few subscribers)	\$101 - \$141 depending on level of service, plus \$500 startup	\$0 - \$140 depending on level of service and town policy.
	Control	The town has complete control in design and operations.	Matrix has complete control in design and operations. The town (ML Board) must approve rate increases over Consumer Price Index.	Crocker has complete control in design and operations, including rates.
	Bandwidth	Shared 2Gbps backhaul Possibly tiered, limited traffic; possibly unlimited  Were we to be part of a regional solution such as WiredWest, there would likely be multiple higher bandwidth connections to the broader internet. However, that increase in bandwidth would be mostly offset by an increase in subscribers using that bandwidth.	Shared 2Gbps backhaul Standard limited to 50 Mbps Optionally limited to 100 Mbps; 100 Mbps customers would have priority traffic	Three tiers: 12/3 Mbps, 100 Mbps, and 1000 Mbps. It is not clear what the backhaul link would be, but Crocker has shown sensitivity to bandwidth requirements and would presumably provision the backhaul to accommodate the traffic.

**Town Owned with Contracted Operator**

**Matrix Owned & Operated**

**Crocker Owned & Operated (4/24/17)**

What factors will affect subscriber cost?

If the town owns the network then the relatively significant fixed annual cost to operate the network is shared by all subscribers. This has the advantage that as the number of subscribers goes up, the cost for each subscriber goes down. If the town owns the network, that can result in a reduction of the monthly bill for each subscriber, an increase in the share of the debt service that the subscribers bear, or both.

Matrix has stated that the monthly cost per subscriber will be \$95 (for 50Mbps), and that cost will be fixed for the first 2 years. After that, the cost can be increased, but the Worthington ML Board will have to approve any increase over the Consumer Price Index. Decreases are possible, if unlikely.

Crocker has proposed a pricing structure which puts a significant burden on the town. The Worthington ML Board could decide to pass a portion of that cost on to the subscribers, but any portion not passed on will go to the taxpayers.

On the other hand, if the number of subscribers is low, then the cost per subscriber will be high, potentially higher than the market rate for such a service, which will further impact how many residents subscribe.

It should be noted that Matrix would allow the town to buy the network after 3 years. The price is expected to start at \$2.2 million, and decrease by approximately \$130k per year, until at year 20, it would cost \$10. This is the same affect that we would see in the town owned option if the subscribers covered the entirety of the debt service. In that case the debt service is estimated at \$137k per year.

The base price of \$40-50 per month per premises which the town is responsible for would be fixed for 15 years and would guarantee every premises 12 / 3 Mbps service.

It is possible that if the town were part of a regional group such as WiredWest, that in itself would reduce the operational cost for Worthington enough that the subscribers and taxpayers would benefit even if a smaller percentage of the residents in Worthington subscribed to the service.

The cost for additional bandwidth (100Mbps or 1000Mbps) or phone service is not fixed, and Crocker would have complete control over them.

How transparent would the operation be?

The operation would be managed at a high level by the town's elected ML board, which is bound by the same transparency and public access laws as all other town boards. That board would be responsible for contracting with vendors to provide the services needed. The primary contract would be with a company like Westfield Gas & Electric or Crocker to operate the network, but there are other costs such as insurance and pole rentals. The board would develop a budget each year and set the subscriber cost based on that budget. This process would be public, with opportunities for public input into the subscriber rate.

Matrix has proposed that all assets associated with the network within Worthington would be held by an LLC, and that the town would have access to the accounting records of that LLC. Having the assets held by an LLC facilitates an easy sale, if the town decided to buy the network. Having access to the accounting records allows the town to understand exactly what they would be buying, both in terms of costs and revenues.

Crocker has offered no transparency into the financial operations of the network.

This is a high level of transparency.

If the town were to join WiredWest there would still be openness to the process, but significantly less control within the town. The subscriber rate would be set by the cooperative with input from all member towns.

However the town would have very little input into any decision making processes, as long as Matrix owned the network.

What happens if it fails to attract enough subscribers?

We expect to pre-subscribe as many as we can so that we know whether the network will be sustainable prior to building it. In order to be sustainable at a reasonable cost to subscribers we estimate we need approximately 325 subscribers, or 50% of the 650 potential subscribers. It is possible we do not get enough subscribers to make operating the network sustainable, in which case it seems likely it would not be built.

Matrix will not start construction until 365 people have put down \$250 and promised to pay another \$250, plus subscribe for 2 years. We estimate there are 650 premises in Worthington, so this represents 56% of the possible subscribers. If they do not get that many early subscribers, the network will not be built. They will work with the town to do outreach and marketing.

The risk of having too few subscribers is born entirely by the town. Regardless of how many subscribers there are, the town as a whole would be responsible for paying Crocker \$40 - 50 per month, per premises, or approximately \$350,000 per year.

Also it is possible that we build the network and after a few years the number of subscribers drops off until we have too few to operate it sustainably. What happens next depends on just how few subscribers we have. If we are close to 50% we may be able to join with WiredWest which may lower our operational costs as well as spreading that cost over subscribers in other towns as well. If the numbers are really low, we may have to stop operating the network which would mean the town owns and the tax payers are paying debt service on an asset which we are not able to use. It seems conceivable that we could sell it, were there a buyer. This is the scenario we are working very hard to be sure will not happen!

If they reach that number and build the network, it is still possible that after a few years people stop subscribing. At some point, Matrix would be at risk of losing money, and could decide to sell the network or to simply shut it down. The town would have the option of buying the network, if it felt it was worth preserving.