

GREYLOCK INDEPENDENT
CITIZEN MEDIA INC.

NOTES OF BILL DENSMORE'S TELEPHONE CONVERSATION
FEB. 13, 2016 WITH MATT CROCKER
(rush copy – typos not corrected)

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Matthew Crocker is the president and majority owner of Crocker Communications Inc., of Greenfield, a provider of telephone-answering services, voice-over-IP telephony and ISP services, and is a "CLEC" (competitive local exchange carrier). Crocker joined his mother's phone-answering business in 1994 upon graduation from Umass Amherst.

Q: Does it make sense for towns to own their own fiber networks?

CROCKER: I am not convinced that is the best way. We have a lot of towns that don't want to own the network because they don't want to have the liability of owning the network. I don't want to answer that question rather than to ask it. Holyoke and Westfield have been around and they are big cities. For their municipal light departments, it may make sense. I think the MBI approach with the grant money can help turn the tables and make it favorable for some of the towns. Whether the towns own it outright or partner with somebody like Crocker to own it and maintain it. We kind of fit in a bunch of areas and we'll pick up where the towns end. We're trying to be as flexible as possible because it is not a one size fits all.

Q: What about a town like Williamstown which has current generation coaxial cable services?

CROCKER: We are making good progress with some of this towns because of MBI. Fiber in the network is good, but fiber to the home is best. With Williamstown, does it make sense to build out ultimately a superior fiber to the home network? It may well. But is that what consumers really want? That can deliver a gigabit to the home, but if you are watching your Netflix on a 25mb Comcast connection and nothing seems broken? Now Greenfield is doing a fiber-and-wireless Internet broadband service in competition with the cable company. A hybrid fiber wireless is feasible if fiber is in the street and there is pole mounted wireless infrastructure -- you run it to the pole and serve the 5-6 homes that are on that pole. Having a centralized tower to serve wireless to a community that is best suited to the cell phone network. We would overbuild Williamstown if the town would finance it but I would worry about Comcast trying to crush the town on price.

Q: You are one of the companies that responded to a Request for Proposals from MBI, and you have partnered with Fujitsu, which builds networks, in order to meet MBI's capital requirements.

CROCKER: I think we'll have some really big announcements by summertime. We're working very hard to meet MBI's requirements.

Q: Can cable companies measure up to the speed and capacity of fiber optic lines with their coaxial cable?

CROCKER: There's something called HFC -- hybrid fiber coax. It's a perfectly valid solution for existing coax plants. You can also use the Verizon twisted pair -- called VDSL -- 50mb over Verizon twisted pair copper. The cable-industry standard presently -- DOCSIS 3.1 -- delivers gigabit speeds. It's a standard developed by Cable Labs, the cable industries technology-development center in Colorado.

Q: What about access to utility poles for stringing fiber. Can towns do that easily?

CROCKER: It is pretty straightforward and very well understood. First you have to identify your route, identify poles, submit application to the pole owner. That is all straightforward. It's paperwork. You hire a civil engineer to do the survey and the pole owner does a survey which you pay for. In a hypothetical, the

owner submits back a report and says of the 200 poles you applied for, 100 OK, 50 major repairs, 30 minor repairs and they will give you a price to do that make-ready work. You have this back and forth debate about what is really true for the poles. You are going to true up your assessment to their assessment. You will settle on a number and write a check. Verizon will get about the business. That is a low-priority project for them. You have 90 days to attach once the make-ready is certified as done. There is a rent of, say, \$12/pole per year or something like that.

Q: What is the scope of what MBI is looking to enable now for the 40-plus Western Massachusetts towns that have no cable service at all?

CROCKER: It is overall an estimated \$100 million. Obviously it is a big project and it is \$16M of the state's money, depending on which towns you facilitate. They want to make sure the money goes to a company that has the balance sheet to be able to deliver on their promises. We are not that type of a company by ourselves. So we responded in a partnership with Fujitsu. That was the metrics put into our RFP response to eliminate the startups -- companies being built just to respond to this RFP. It makes sense that MBI put something like that in there. Maybe it was a little bit too aggressive and eliminated some of the middle players. We still responded. Of the six respondents that they got, only two, Comcast and Charter, met the requirements fully, however. But we were just down in Boston talking to MBI on Friday and it was a very positive meeting. I think what is going to happen is MBI is going to qualify some number of the respondents, and then leave it to individual towns to choose who they want to with among those who are qualified. I think we can do a healthy chunk of towns. Everything I have heard is MBI is not anointing any single company. What they are saying to the towns is, 'This grant money is available, we think this deal makes sense with these qualified providers, you decided.'

Q: On a personal level, and looking out five or 10 years, what is your view of a world in which, say, Verizon has acquired Charter, so that there is no private competition at all for broadband in our region, and, from a publishing perspective, there is only a single "press" to publish to the home – the broadband provider – and their pricing is completely unregulated?

CROCKER: I think that's horrible. But the towns can do it. They can put their money where their mouth is, and overbuild and push the competitor out. Now there are four private cable providers in Boston. In the small towns it is going to be tough, but it is doable if you have the consensus. In theory it is a horrible the idea of one big toll road is all owned by one big company. But if it came to that, a town could have a competitive advantage with a fiber to the home network that the town could own to bring competition in. If the town does that and creates an open network to allow small ISPs to provide service, competition keeps everybody honest and your costs down. It may not be that way to start. You might say we'll build a network and have it closed for the first five years, contracted to a single operator, and then after that it opens up. So, yes, it's horrible but there is light at the end of the tunnel.

Q: When the town of Leverett contracted with you to build and operate their gigabit-to-the-home all-fiber network, how did you finance it? And what are the per-subscriber costs?

CROCKER: Our model is a subscriber-funded model. The shortfall between full network construction minus MBI grants is covered by subscribers. There isn't town debt. The end-user is committing to a longterm contract with us so we can borrow against that. The other model is the consumer itself borrows. Either way all-in cost to connect an average home is about \$5,400 before MBI grants. Factor in MBI, it drops to about \$3,000. If you go to 70% of the homes instead of 90% it drops to below \$2,000. Those fringe homes on the outskirts of the town are *really* expensive to connect.

Also, we prefer to sell a single tier of service – either 100 megabits or 1 gigabit. It's a lot easier to sell a single tier. Multiple tiers increases everything – built, marketing, servicing, everything. Our model for single tier will be \$135/month for 2.5gb shared among customers in their Passive Optical Network (PON), which could be 32mb, initial rolling out 24mb. On average that would deliver 100 mb a customer but that's not how it works. Our experience with Leverett has proven you can deliver a gigabit to the home and for most of the people most of the time you are good.

Q: What's a PON?

CROCKER: Passive Optical Network. PON -- all passive components in the field. One strand of fiber down the street 4-5 miles and terminates to an optical splitter. There is nothing to break or wear out. There are 32 outputs one per customer. There is an Optical Network Terminator -- ONT -- at the customer -- and all 32 talk to each other, to timeshare the bandwidth. It is 2.5 gigabits supplied, but each customer is limited to 1 gigabit at any one time. They talk and negotiate. That's today's technology. That's called GPON -- gigabit PON. There is NGPON which is 10gb instead of 2.5gb and 100gb is in the labs. In 2-3 years, I would say that NGPON is going to be what we deploy. Seven years later when we do an electronic refresh it is -- who the heck knows for speeds. The concept is the actual fiber network is entirely passive and its speed is dependent on what you put at both ends.

Q: What should public officials be doing in Western Massachusetts now to ensure that we are more competitive with the rest of the nation in the broadband service available to residents and businesses?

CROCKER: I think we have to make the decisions now to stay in the game. Whether we are advantaged or not, I don't know. If we don't make the decisions now, then 20 years from now the Berkshire hill towns will be like Amish communities -- in the past as far as technology, for better or for worse. It's a matter of how you want to live, I guess. But these communities are dying -- the young people are not moving in because there is no internet. Let's face it -- our quality of life out here from the big cities is way better and we don't tell people about it. And if anybody can work from home from a small office in this beautiful countryside, you will have people moving in here -- because they want to live here. We are talking to the small community banks up and down the valley and they get that, too. They want to invest.

Q: Can you give me some feel for how quickly pricing and availability of bandwidth is changing?

CROCKER: The federally subsidized E-rate (for education) service was \$1,400 a month just last year to a school for 100mb service. That is now \$800/month for enterprise grade service. Before MBI came in I was paying \$20,000 a month to bring in 1 gig of bandwidth from Boston on a 36-month contract. Today, I'm getting 10 gigabits -- 10 times as much bandwidth -- for \$3,200 a month. That's my business, I'm always in the race, can I buy it for what I sold it for? There is pressure to drop the prices. This year our costs significantly dropped and we're banking on our reducing pricing, driving more circuits so we'll have some growth there and we're passing it on to the schools. A lot of our customers are doubling or tripling their bandwidth.

Q: So what has been the impact of MBI so far?

CROCKER: We're in a competitive environment and Comcast has reacted to the presence of MBI and their prices have come down. And that is a combination of the technology advancement and the competitive threat that MBI brought. Take the Union 38 school district in Deerfield. They used to have multiple T-1s (from Verizon) into the schools at 1.5 megabits each. They have now gone to 100 megabytes and it is budget neutral. For speed, today T1 is laughable.