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NOTES OF BILL DENSMORE'S TELEPHONE CONVERSATION
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She directs the firm's work in network business planning; market analysis; financial modeling, policy, and strategy; and management consulting. She advises public sector clients regarding how to build strategy and opportunity for public-private partnerships in broadband. She led the CTC teams that developed first-of-their-kind partnerships for the Commonwealth of Kentucky; the City of Santa Cruz, California; the City of Westminster, Maryland; rural Garrett County, Maryland; and the Champaign-Urbana Big Broadband consortium. Joanne co-authored "The Emerging World of Broadband Public-Private Partnerships: A Business Strategy and Legal Guide," which was published by the Benton Foundation

An attorney with a background in communications and commercial litigation, Joanne is also the CEO of the Coalition for Local Internet Choice (CLIC), and former President of the National Association of Telecommunications Officers and Advisors (NATOA). She serves as a member of the Board of Directors of the Fiber to the Home Council and the Benton Foundation.

ROUGH NOTES OF CONVERSATION

I am the majority owner of a consulting firm in the DC area, 40 people, mostly engineers and financial analysts and work only on public sector projects -- primarily local governments and states to develop broadband strategies.

They do public-safety wireless, economic-development strategy, business planning in rural and urban markets. They have been doing it for 20 years from really small rural communities -- tiny towns in Appalachia as well as for the state of Connecticut. They worked for Massachusetts for awhile, Boston and Seattle. A focus on the full range of options that the public-sector has for it.

In some cases it is just 'we want to negotiate a better deal.' In other communities it is 'we want to own our own network, we want to own our own destiny.'

It is exceptionally high risk, very challenging in a lot of ways. The most successful of those networks have been those entities that already have operations as a public electric company. But even for them it is enormously challenging, you are up against a giant industry that has so many ways to reduce the opportunity.

We have a political culture of 'public sector bad.'

How to develop leverage?

Let me share a few thoughts. One of the things we see happening around the country. In 100% of the markets where Google has built Google Fiber, AT&T has responded by building fiber. Before Google entered the fiber business, AT&T was completely uninterested in fiber. Much as Verizon is completely uninterested in wired. And even sold

off FIOS in some of the urban markets. They have stayed interested in the institutions. As far as residential and small business, Verizon is just not in that business in the wireline market.

But wherever AT&T saw Google building, it has responded. 100%. Randall Stephenson is regarded as a brilliant businessman and the company is regarded as very capable. Mobile is where the money is going. Even the cable industry is putting more money into mobile. The cable industry is placing wifi equipment in the homes of their customers. So they are about to turn up a mobile product. They have agreements so if I'm a Comcast customer in mobile it will work be reciprocity agreement with Spectrum in areas where Spectrum, or in rural areas they will resell Verizon Wireless in mobiles. So the cable industry is about to turn up a mobile product.

If the phone companies start buying the cable companies, then what would have been cable mobile competition against the wireless industry will be eliminated.

See: "Verizon might buy Charter, which just bought Time Warner Cable."
<http://www.theverge.com/2017/1/26/14397432/verizon-charter-acquisition-talks>

But coming back to your immediate situation -- here is the good news from your standpoint. The fact you have cable capacity throughout that community is a very good thing. It depends what Spectrum is going to put into maintaining that network.

I'm a lawyer by training.

The protocol, the technology that allows the cable to take a oneway video platform and turn it into a two-way Internet platform is called DOCSIS. You probably have DOCSIS 3.0, which is what is deployed across most markets. The industry will be upgrading to DOCSIS 3.1. If they do it right and expand the fiber in the network to some degree -- it is mostly an electronics upgrade -- they will have to upgrade the electronics. If they do it right you could see speeds shared in the neighborhood of gigabit down and significantly less than that up.

If you are getting 17 meg down, you are sharing it and if everybody who is on at the same time, it will slow down. Even if the network is capable of delivering a certain number. When everybody's kids are streaming Netflix it is going to slow down. But the network will be capable of gigabit down. Ideally you want to be not more than 50 homes per node. But even in the more prosperous suburban markets it looks like 500 homes per node. But if the put more fiber into the network they can bring the node size down and that will improve things.

So the question is how much fiber do they put in when they do the DOCSIS 3.1 upgrade. And that brings us back to the threat of competition. You are a small community but probably a high-value community from Charter's standpoint meaning high revenues per customer. They will get to you but will it be in the next 18 months or the next seven years. Comcast has been starting to deploy in some suburban areas around Chicago and Atlanta. Our guess is they will go first to the markets where they have competition, so they won't lose market share to Google Fiber or a smaller competitor.

If I were pointing to a strategy for your folks -- if you are not coming from the standpoint that we have to own our own network or we have to have competition but rather we want to make sure our Spectrum network is top of the line around the country. I would suggest possibly a strategy where you create a dynamic where you are putting pressure on them, you evaluate on how the current network functions, does the architecture allow for these faster speeds to be deployed, would they need to have a lot more fiber to maximize DOCSIS 3.1 and how soon can we get them to deploy. What is the pressure point you would want to apply to get them to move.

Is the prospect of threatening that you might build a municipal network get them to move. I honestly don't know. We don't have a sense yet of what Spectrum to respond in terms of pressure points. I think you can assume.

How can they guarantee no slowdown with business class but not on residential. They are configuring the technology differently and charging you more for business service. But there are still going to be bottlenecks built in.

NOW TALKING TO Andrew Afflerbach, CEO and director of engineering

ANDREW: Has done a recently analysis of this for another prospect. Every cable company does this different. Charter does this by breaking their business service into two categories, one is a version they provision over the cable modem system and the other they extend the fiber to the customer all the way. The main distinction is they have a guarantee speed they will guarantee with the fiber, but if you get the coaxial and they have a service level objective ("objective" but not "guaranteed") which means they will try harder than the residential service. There are a lot of ways they can do that. They have monitoring equipment to see how much utilization there is and if they see it is, they can enhance by bringing fiber in or adding more channels to the cable service. IT is pretty cost effective and incremental that they can do. Sometimes they'll provide the service based on a term commitment of a few years.

Can copper wire be competitive?

There is technology that can really get a lot out of copper. Your speed drops off at the edges of the link. To get gig type speeds for most copper lines they distance you are limited to is within an apartment building or a house. As you get to the longer distances it acts as a filter to the higher frequencies which is what allows you to have higher speeds. There are businesses that are doing rooftop-to-rooftop at gig and then use phone lines within the building.

Verizon went to FIOS all the way and why typically what's happening when companies want to get more out of the copper is the fiber is brought very close to the resident. But even then it is not gig, it is not competition with the cable TV service.

What about community wifi? In Western Maryland there is a network similar to what you have in Western Mass. There, Garrett County has created a public-private partnership with a wireless ISP using a variety of technologies that allow them to deliver wireless services exactly like you are talking about. WiFi itself, the range is no quite 1,000 feet it is more like a few hundred feet and you have to pass through walls and things. But you could set up a network that is designed where you beam wireless from your roof top at your library to other strategic points within your town and basically have small wifi networks from various places. That could be very effective if you want to set up wireless to parks or community centers. If you are doing pure wireless you start to lose speeds as you get far away but you start.

Unlicensed wifi doesn't have the power or frequency compared to the Verizon tower. But you would get around that by having multiple hot spots. The trick is how do you connect those back.

It is the goal of these wireless companies to be completely competitive with the cable companies. I don't see the business model changing from the metered cap anytime soon, however. They may get to that eventually.

now back to Joanne:

About four years ago when MBI was first contemplating the last-mile buildout in the western part of the state they hired a number of different consultants in different roles. We were hired to help them develop a community outreach strategy. I'm not sure it was ever executed. What I saw at MBI was enormous turnover in staffing, so they never quite found their footing. When your new governor came in they seemed to shift dramatically.

I feel like the first choice should be the community. MBI didn't get much done for a number of years. They were going to let those rural communities make those decisions themselves about how to proceed. That seemed to me to be insightful. What I think happened is the Baker administration just sees things a little differently. The Democrats are not intrinsically not municipal or public ownership when it comes to broadband. Republicans at least in the last 10 years have been pretty hostile to that approach. When Barack Obama came out in favor of municipal broadband that kind of cemented it. Ten years ago John McCain was in favor of municipal broadband. Frankly it is really unfortunately because there were organizations like WiredWest which we thought had some very interesting viable plans for achieving scale by aggregating communities.

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You could say the RFP that MBI put out requires the bidders to have \$100M in capital. It means smaller providers are just not in a position to bid nor are local communities. Maybe that's for the best, but that is the result of a changed political dynamic and a changed political philosophy.

About two years ago, WiredWest asked us to review its business plan and financial projections and we did so and their funding was from MBI, we were paid by MBI, we did a review of WiredWest's business model at the time and generally we found that the model was pretty sound. That's the other involvement we have had with the state.

what about putting fiber on the poles?

Your instinct is exactly right, the critical factor in building out broadband is pole access and how expensive it is to get on the poles. It is without question when we do cost estimation the number one issue from a contingency standpoint. It will make or break a project. I have seen small operators walk away from a project because they can't get on the poles.

The key factor is do you have a right to get on and do you have a right to get on and what does it cost -- the make ready. How much work needs to be done on the pole to make it ready for another provider to get on. Incredibly costly in urban areas. If the poles are not too congested and the incumbent wireline company doesn't go out of their way to make your life miserable -- and AT&T has done that with Google Fiber. The formal matter is do you have a right and a right at a particular price. At the federal level, Section 224 gives certain companies a right of access. You have to be a regulated entity. If you are a local government that has not chosen to undergo the benefits as well as the obligations to register as a CLEC, you don't have that right. The FCC imposes certain kind of prices for attachment rates, where you get the benefits of certain pricing if you are covered by Section 224. If you aren't covered, you don't get those pricing benefits. The other factor is the federal regulatory regime is a default regime if your state has chosen not to regulate. But Massachusetts has chosen to step in in your case.

There is a really great advocacy group called Next Century Cities, which focuses on municipal broadband. They are based in Washington, D.C.:

<http://www.nextcenturycities.org>

They just published a very basic guide to pole-attachment issues.

What about using fire-alarm wire stringing authority to get on poles?

Wow, that would be really, really nice. You would want to see if that was for infrastructure only for public purposes. You'd want to see if there is a limitation on how you can use that. There is a battle about that in Connecticut over a law that says municipalities are allowed to a certain amount of space on the poles. If you are not restricted or the restriction is modest, I could certainly see a strategy where you could build fiber for internal and safety purposes. That is a no-brainer. I am bullish on fiber for internal government purposes. If you don't already have that, your town is spending an enormous amount on services with the fiber and phone companies. I have never seen a situation in 20 years where that doesn't work as an economic model. What we see all over the country is communities who are doing that. They put in a lot of fiber and then look for ways to use that fiber to get to the home and business. If you did have a right to be on the pole at low cost or no cost for fire alarm purposes and you could build, chances are it would pay for itself over a period of time -- from two to 20 years including financing costs. Then the extra fiber is available to spur some competition. That is a strategy that is worth considering.

What about playing hardball with the cable carrier about renewing a contract? There are certain situations where you can decline a renewal and in some where you have an option. But it is very infrequent that we have seen that done. There are maybe around 12 states left with local franchising. There's definitely a process under which you can do that and you can document your needs and requirements where if they don't do it you can do a non-renewal. The one thing I would say is that the way the FCC Act still reads, the networks are siloed. Your local authority is with regard to the cable function of that network. So even though what you really care about is the data function, because of your authority extending only to the cable, that is part of the challenge.

My idea outlined.

HER REPLY:

I think it is pragmatic and smart and non-ideological. As someone who has watched local communities I feel there has been so much innovation in local broadband that they don't get credit for. Every community in America has some level of alarm at this point. In rural communities they are absolutely panicked about outmigration. It is essential to allow some local decision making. It is a good thing, not a bad thing. We'll see what the result is of the RFP. It really look like a deliberate effort. It really does look like the think was setup so clearly only a large company could do that. It really effectively creates that kind of situation. All over the country we have seen smaller companies, smaller than the cable industry. Smaller companies have been entirely cut out of this opportunity and it is unfortunate.