



NTIA
Second Panel - Successful Broadband Business Models - Part 1
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SANDEEP TAXALI: Good morning. My name is Sandeep Taxali, and I serve as a Senior Policy Analyst and Broadband Development Officer at the NTIA. It is my privilege here to moderate the panel on Successful Business Models. The term “business model” has a variety of meanings. For the purpose of our discussion, we’ll consider the term “business model” as a set of critical business decisions related to the deployment, operations, and long term sustainability of advanced broadband networks. These decisions include strategy, the customers you serve and the service offerings, the product, the network technology, last versus middle, wireless versus wire line, the operating approach, who maintains the network and provides customer care and billing, marketing approach, pricing, promotions, distribution, funding sources, and partners. Within that context, over the next 40 minutes I will ask our panelists to address a number of these points.

Our first panel focuses on privately led broadband networks. Our following panel will include models that reflect a cooperative structure, as well as city and tribal owned networks. Now, I joined NTIA six years ago to help launch the Middle Mile Funding Program, and as we designed our NOFA in our application, we really strived to engage in a set of experiments. If you look at the BTOP Middle Mile projects -- there are 110 of them -- they have a variety of different business models. From an ownership structure, we funded private carriers, state and local government owned entities, nonprofits, co-ops, and R&E networks. Besides those five ownership structures, the technology that they pursued in terms of fiber versus microwave in terms of wire line versus wireless for last mile varied in terms of the products that they offered versus dark varied in terms of the distribution strategy, whether they were a pure wholesale carrier’s carrier versus also offering retail based services, from a customer strategy whether they focused on being an INET versus focusing on partnership where one is an INET and one focuses

on serving homes and businesses, and the scope, whether they were a city-based network, county-based network, a state-based network, or a regional network. If you look at the permutations of the business models that we funded at NTIA, there are dozens and dozens if not over 100 of different permutations, and so we're here to learn from our panel of experts on what makes their business models so successful and also the risks and challenges. So I will offer you a brief introduction of our panelists.

First we have David Nelson. David serves as the CEO of The Central Valley Independent Network, which does business as Vast Networks. His company consists of several independent telephone companies located in central and northern California. Vast received a BTOP grant award of \$47 million, together with a Corporation for Education Network Initiatives in California or CENIC. CVIN deployed over 1300 miles of fiber backbone network through 18 Central Valley counties. Vast now has over 1700 miles of fiber under management.

To his right we have Tressa Bader. She serves as Vice President and General Manager of Frontier's California market. Frontier is a \$4.7 billion company in terms of revenues last year. Frontier operates across 28 states, and Frontier had announced earlier this year in agreement to acquire Verizon's wire line operations in California. That transition is under review by the FCC and the California PUC.

And finally we have Kirby Smith, who serves as a Regulatory Manager for Ducor Telephone Company. Ducor Telephone is the second smallest independent local exchange carrier in the state and has been family owned since 1938, one year before my dad was born. It consists of three exchanges, including the town of Ducor, which is about 60 miles north of Bakersfield, California.

So with that, we're gonna talk about, again their broadband strategy and objectives, their partnership approaches, how they make the business case work for rural and underserved areas, and their financing sources. So the first question, we'll just go left to right, I'll ask each of our panelists to provide an overview of your company's objectives, an overall strategy with regards to the deployment of fast networks, super fast networks as I should say, especially in underserved and rural areas. David.

DAVID NELSON: Okay. Good morning everybody. Vast Networks does cover about 1700 miles of fiber, that's 18 counties. We connect to about 115 anchor institutions, and I guess our business strategy is basically to be a private company and to stay in business. We had the original NTIA grant of \$46.9 million. We've had the CASF grant. We additionally kept pouring in capital to this day. Every month we pour in capital to extend our network. The middle mile is the middle mile. It doesn't connect to anybody, but the anchor institutions that we originally connected at one gigabit, most all of them are now being connected at ten gigabit. We really don't install as a business strategy anything less than one gigabit, so the smallest company we have is about a 12 member company about a mile-and-a-half from our office, and to talk about what broadband can do, you can look at it this way. They ask for a 50 megabit connection. We know people use more than 50 megabits, so we gave them 300 megabits, but just told them we were gonna to 50 megabits. They went to 300 megabits within 21 days. That's our kind of strategy. We give everybody the biggest pipe they can handle. Even if they tell us it's a 100 megabit connection, we go and give them a bigger connection. When we come back and explain it to them, that's what makes our business model successful. Who would know that simple schools can be more than one gigabit in a single elementary school or a high school could do more than two gigabits, but that's what's happening. That's our basic strategy.

The other thing is we partner in every way possible. We connect to all other fiber providers, all our local telephone companies. We partner with cities. We have ongoing agreements with the City of Clovis, the City of Merced, City of Fresno. We're especially proud of a relationship we have with the City of Shafter that actually did a municipal fiber network, and we're working to provide them better connectivity all the way around.

SANDEEP TAXALI: Great. Thank you. Tressa.

TRESSA BADER: Okay. So I'm with Frontier and as was mentioned, we're in 28 states, so when you look at our strategy, for one, we've been around since 1935, and you know, primarily we are a wire line company, so when you look at our strategy, we have no other, you know, conflicting business products or business units that we're competing against. We are a wire line, so one of the other strategies is because we're fairly large in nature, we do spend a lot of investment on the core network 'cause that is kind of the baseline. It doesn't really matter if you don't have a cord to support the fast really high speeds, you know, it doesn't matter what you have out at the home, so it does, you know, to some degree start at the core and then also looking at the middle mile and the last mile.

We do offer, you know, we do have a handful of markets that are where we're offering one gig residential services. When you look at the commercial business that we support, we support anywhere from the small home-based customer or owner to the enterprise, the anchor institutions that we've been talking about, and we can provide them the pipes that they need. Certainly our roots are in rural America. I mean, that is where we started. We provide access to about 90% of our households across the country. Here in California, it's 95%, but to assembly member Wood's comment 95% is not uniform, so when you get to areas like northern California it's not quite to 95%, and that last, you know, 15% or whatever it is in that area is really difficult

to get to, so we'll talk more about, you know, some of the different funding resources there. We've talked a lot about them over the last day-and-a-half, but those funds are critical to our strategy in being able to reach those last unserved and underserved areas. And then I will just say, kind of going back to the core, again, it's making sure that we have a network that again provides us the ability to reach those last mile customers, but you know, use to just doubling every 12 to 18 months because of what is going on in terms of the usage around the Internet, and Netflix usage certainly is a big piece of that, so we've got to look at all parts of the network to make sure that we've got what needs to be in place.

SANDEEP TAXALI: Thank you, Tressa. Kirby.

KIRBY SMITH: This is a great place to be. Thank you NTIA. We're right across the street in the shadow of Google. Imagine that. So let me start with a question. What's the fastest broadband speed? Anybody? Nobody knows. I can tell you. A couple of months ago I won a golf tournament at a broadband teleconference, and I won a \$100.00 Amazon gift card, and my wife is an avid Amazon user, okay? And so I went back up to the room, and I said, "Honey, I won this award, an Amazon gift card." She said, "Thank you very much. I already spent it." That's the fastest speed.

So not only do I represent Ducor Telephone Company, the second smallest here in the state as mentioned. Also CalCom, the California Communications Association. We are the member companies. We are the broadband providers, and I appreciated David's intro. CVIN is our poster child, the biggest and best with the fastest speeds, because they cover a vast network, a great territory. CalCom member companies are proactive. Broadband is who we are, it's what we deliver. We live and breathe it. It's the key infrastructure that satisfies our customers and drives our economies, particularly here in rural California. Our member ILEC companies in

addition to CVIN survey geography the size of the state of Maryland and bigger than eight states, so even though maybe some of us are defined, we do have an extensive footprint here in California. Let me give you a little perspective.

The highly touted information age, which started with the advent of the World Wide Web in 1989 was a short lived age. For many it brought confusion, chaos, stacks of information. How do I deal with all this stuff? It was overload for a lot of people getting used to the new thing. Then came the age of knowledge. This is a lot of discernment here. This fully digital age brought innovation, amazing progress, and a greater opportunity for all. Now get this -- buyers became empowered to demand a new level of customer obsession. My wife's not the only example of that. Customer obsession is what's going on today. Some say this age is really an advanced form of capitalism. Forget this. Knowledge and ideas, knowledge and ideas are the main source of economic growth. More importantly perhaps, I see the advanced technologies of today clearly permit individuals to more fully utilize the information that's available to them and make it useful and access it immediately and put it into practice to enrich their lives.

So what's the best overall strategy in reply to the question? I learned a long time ago you go out and survey people, they don't always tell you the real story. They may not understand their underlying demands. They may miscommunicate it. I for one don't even want to be surveyed, so a lot of times they would say they left the city to move to the rural countryside to get away from things like communication. That's a city service. I came out here to be peaceful. Yeah, what about your husband with a pacemaker standing right behind you? How are you gonna call the doctor? So they don't really understand what's going on, so they tell you something else, so I learned not to listen to them.

All the more here with the broadband. She and David both alluded to this massive explosion of data. What would you say it would be, 12 days or 12 seconds? It's just growing by leaps and bounds. So my point is be anticipatory, be a proactive, be a fully proactive provider. Don't sit back into the paralysis of analysis or what's the best technology or what's the strategy? Exactly how do we put it all together? In January here at Ducor we came up with a very simple campaign slogan. Get in the game. It said a lot, because we were all kind of jockeying for position. How do we get more adoption? How do we expand? Get in the game. It was simple. We completely revamped our broadband strategy and our delivery, and we doubled our subscribership in less than six months, and then finally you need to execute professional follow through. California-Oregon Telephone, one of our members up on the Oregon border, says do whatever it takes to make it right. So tap into that customer obsession and anticipate what comes next.

SANDEEP TAXALI: Thank you, Kirby. Now I want to turn the discussion to how you partner with community leaders and their stakeholders and constituents. Let me just go back to BroadbandUSA for a minute and preface this question with what we see in the field out there. So as part of BroadbandUSA, we provide technical assistance to a number of communities where we share our best practices, insights, knowledge that we learned through the Middle Mile BTOP Program, as well as our industry experience. Many of us were in industry before we joined the Obama Administration. When we talk to communities, the first point that they'll often make is that I would love to see my incumbent take a leap and launch a next generation network for today's generation. That's what they'll tell me. We want to see the incumbent do this and not us if that's possible, because they have existing assets. They obviously have the experience, the relationships, the technology, the know-how and so forth, and yet the incumbent is not moving,

and so we need to rethink our strategy. So in that context, I want to ask the panelists how do you work with community leaders, their citizens, and their key stakeholders to assure them that you, the incumbent provider, are best positioned to not only address existing gaps in broadband, but deliver next generation networks in the months and years to come, and preferably months?

DAVID NELSON: Okay, I can give an example on that. We have a little city called Exeter in our area, which is a community of about 3800 people. They have a health clinic there. We had a client that was a hospital not that far away in Visalia, so we went and packed just a whole deal. So we went to the city, we offered them a broadband connection. They were at DSL level at the time. We went to the local wireless providers, picked up one cell site. We went to all the businesses on Main Street. We literally had a person walk the door. Came back, said to the City Council, "Here's the package. What we want is no usurious fees. We don't want to pay \$15,000.00 to go 800 feet in your city. Is that okay?" They said, "Fine." We generally tend to reach out to the cities -- during the build out process of the Middle Mile, we form great relationships with a lot of counties, in Tulare, Kern, Modesto, El Dorado. These are people that didn't even know broadband was coming that we were able to form relationships with, and as a result what we see is generally an acceleration of large scale big broadband connections. And for that we have the leverage to connect ongoing relationships with cities and counties and other governments.

SANDEEP TAXALI: Okay. Tressa.

TRESSA BADER: So, yeah, similarly it's really about the local, what we call the Frontier local engagement, which is for us, you know, we're modeled such that we have managers, local managers that oversee market clusters, and so it's not that the communities are trying to figure out where we are at the corporate office, and hey, can you have a conversation

with us? We actually have local managers who can have face-to-face conversation with community leaders, and I think that's really where it starts for us. But I also look at the diversity in the market, especially here in California when you look at just -- we were talking yesterday, the size of California and the types of markets we have, Central Valley, economically, demographically, geographically is much different than the most northern California areas, and so we have to, you know, it's not a one size fits all. We have to really kind of work with each one.

A couple of different examples, maybe is, so Patterson, which is off of 99, sort of a rural community, you know, we work with them to make sure that they understand what the infrastructure we have available there so that as companies are looking at them for a place to land, they can speak to them about what communications are already there. So recently, you know, Amazon has moved in there, Restoration Hardware, and partly their decision making was around the fact that we had fiber already ready to go for them. Elk Grove is another one of our rural markets, although, you know, not as rural as some of our others, and again, we're working with the community leaders there as part of their southeast expansion policy so that as they're attracting new businesses they again can speak to what communication service infrastructure is already available.

When you get to northern California where it's very, you know, it's very spread out, it is a little more difficult. What I say there is a couple things. One is that we're trying to work with the different anchor institutions and the community leaders to understand what some of the funding opportunities are out there. I find that even some of the rural Telehealth entities that we do business with don't even really know how to apply for the discounts that are available to them, and they don't have the support to do it, so part of what we try and do is keep educated

ourselves as to what's available and make sure that they too understand. Last year we held sessions across some of our properties for the education institutions around E-Rate and all the changes that were going on and trying to stay ahead of it and help to inform them about what's coming and then what they need to be thinking about in terms of their communications needs and how to take advantage of those, so those are just some of the ways that we're trying to partner with communities.

SANDEEP TAXALI: Thank you for that. Kirby.

KIRBY SMITH: The best partnering and collaboration is always local grass roots level. That's what works. Our CalCom companies demonstrate that. As David has mentioned, we're all connected with CVIN. Earlier this year when CVIN delivered the robust bandwidth to Ducor, that facilitated our opportunity to go in there and provide much higher speeds and a lower rate to double our subscription. Another key ingredient was guess who was our marketing campaign manager? The local school superintendant. He came out and said, "All students must and need to have broadband Internet at their home." Why? To get the parents engaged with the homework and the educational process and to get the kids engaged for educational success. We realized we had to step up and piggyback and talk more with him, so we came up with a student plan, a student Internet plan, probably the only one in the state to make that incentive that he was talking about. He started talking about it before we did. It worked. Local leadership, local collaboration, local partnering. Kerman Telephone says it very well. It's their presence in the local community that really works. Their employees live and work there, they do volunteer activities, they provide 24 hour dispatch. Most importantly, they take customer service support to heart, 24 hour dispatch, all of those good things. The local presence makes a difference for the system to work well.

When a brand new high school was being built just a couple of years ago in O'Neals, California, a few hours east of here, the Ponderosa Telephone Company sprang into action, talked with the faculty, the staff, the students. Found out what the interest, the demands were, and came up with a plan to deliver very high speed network to this brand new high school. It became one of the few and best all digital high schools here in the state of California, being connected to our community and connected to the world. These are very important things.

Another partnership example comes from California-Oregon Telephone up on the border. They put together a network of five medical clinics connecting their service area with another provider's service area and made it seamless. Don't bother the medical people with your problems or your corporate barriers, that sort of thing. You do the technology and allow them to deliver the medicine. That's partnering.

SANDEEP TAXALI: Thank you. So our panelists have talked about their strategy, and obviously they're committed to rural markets and underserved areas, unserved areas. They've talked about their partnership approaches, and they're committed to working with local leaders and citizens, but in the end the business case being a private entity, their business case has to work from a return on investment perspective. So let me preface my next question by saying that before NTIA -- well, originally I'm a CPA turned policy analyst turned corporate strategy business case guy for many years turned policy person again. And before NTIA, I worked in corporate strategy for a number of TeleCom carriers as a consultant, developing business cases for new markets, new products, and new technology investments, 2G to 4G migration, for example, and oftentimes for a private carrier, and most of our clients were private carriers, we would apply -- on the cash flow performance, we would apply a discount rate or return on investment threshold of about minimum 15%, oftentimes 20 to 25%, and that would be over a

five to eight year cash flow period, and the payback usually had to be two years, three years at worst, so you would get the payback in the first two or three years, and after that it's all profit, and again you want that ROI to be a lot higher than the cost of capital in most cases, and that's why often in cases in rural areas the business case just does not make sense. The population density is not there, the payback periods are much longer. So I want to ask our panelists, when you -- obviously as I mentioned, you are committed to underserved areas, you're partnering with leaders to tell them you will be launching next generation networks, and you're committed to that, but in the end you have to work with your finance teams and your strategy teams and your product teams to justify that capital investment. So talk more about sort of your business case requirements and specifically the most significant risk to those business cases, and how communities can help you make your business case work and making it more financially viable and long term sustainable. David.

DAVID NELSON: Okay. I'm really relatively unpopular with my board at times when I give out this explanation. When I came on as CEO of this organization, I said, "This is a speculative organization, and the ROIs, the return on investment, is probably not gonna apply for the first five years," and since we are occasionally cash flow positive, they forgive me monthly. We divide all our business opportunities into one of three classes, and we'll just call them A, B, or C. A is the no-brainer, the return in two or three years. That's where we've been able to either align two or three customers or one single customer is gonna pay for an extension of the network. We try to keep that around 35 to 50% of our new business.

The next is what we call our B customers. We know one guy who's gonna pay for 35, 45% of the extension of the network, and we know two or three probables that we'll get, and so let's say for the next 25% of what we spend, those are the B customers, and we go ahead and

build. Sometimes it's part of, for example, where we'll have a big commitment to education, so we might be extending out to an elementary school or childcare center or something else, or in a community college situation, a work center, or a technical center that they have. We don't know what else is gonna be there, but we do know there are potential customers.

And then there's the C customers, and they are about 10 or 15% of our business. We don't know when other people will come, but we know they're there now, and if they're already taking our service in a business part, we'll get other customers, and we take those things on regularly, sometimes too often.

SANDEEP TAXALI: Great. Tressa.

TRESSA BADER: All right, so I'm gonna take maybe a little different twist to this. So, similar sort of process, but you know, when you were talking about the rural unserved and underserved markets, generally speaking the high cost to deploy and operate those markets just doesn't ever really prove out on a business case basis, so that's why really we are looking at -- that's why all the federal and state grants and funding that's available through those resources is absolutely critical in our ability to continue deployment to those areas, so you know, just to run through a few, we've got Connect America Funds, CAF 1 that came out. Frontier was the only larger carrier in California that took advantage of those funds. That was about \$2 million that reached another 3100 households that wouldn't have been otherwise. We've got Connect America Funds round 2 coming out. Frontier was the first carrier across the nation to accept those funds, and for California that's about \$6 million annually to reach another 12,000 plus households, not to mention but put a little bit of a plug in there for should the acquisition be approved for Verizon, you know, that will bring another \$32 million annually into the state, plus to reach another 77,000 households. So you can see how important those programs are.

We're also one of the carriers that has been leading adopters in terms of the California Advanced Services Funds grants, and we just recently submitted and it was approved one for the Petrolia area, which is just south of Eureka in a small area, and hopefully we'll get that turned up here in the next few months, and then looking at also areas like Scenic, so Scenic has put out a few RPs. They have a big one Dodo that came out recently, and so we responded to that RP, and we're in the process of finalizing locations and new circuits to about 12 schools, and so those are all really important for us to be able to make the business case and be able to continue to reach out to the rural locations.

SANDEEP TAXALI: Thank you. Kirby.

KIRBY SMITH: Let me digress for a moment maybe to address assemblyman Wood's concern in some of these outlying areas that are either unserved or underserved. I mentioned grass roots. I think you've got to have a local champion, and all the grant writing I've done and all my communications around this country is find that champion who can really drive and make it happen, and generally in school districts, it's the IT tech guy or gal. They know what they have, and they know what they don't have, and they're willing to fight hard to get it, whether that's a federal grant or state grant. When I wrote grants, I always used that person as my gopher to get me connected to the local needs, so you really need a local in a rural champion. It could be somebody else. I've only come across one or two people -- I think one's here in the audience -- here in California that has that ability, the tenacity to get it done over time. Volcano Telephone, it's all about inclusiveness when you talk about this roll out plan. You've got to get to everybody. They went and talked to the local astronomer. He wanted massive bandwidth, so they gave him 50 megs at his observatory, small observatory in northern California. He was thrilled. So how do you make the business case work? It is that grass roots I've talked about.

It's really a Nike commercial, just do it. You need to know your community leaders. How do you know them? Most of our people are already on the school boards, they've already been the chairman of the PTA, they've been on the board of supervisors. That's where you know the pulse of the community. You already know what to do, so it is just do it. Really, you talk about risk assessment, the risk is not doing it. We've got to do this. This is a customer obsession. We are broadband pipe providers. This is what drives our local economies. This is what you've been hearing. Siskiyou Telephone, they provide very reliable service up in the Oregon border to Native Americans, and they have 100 by 100 meg service to their schools on a fiber to the home bases, so they long ago anticipated the needs, thus that first word I mentioned, and then they provided and coordinated with the local leadership to get it done. Thank you.

SANDEEP TAXALI: Thank you. Finally, I want to talk about financing sources and both private and public financing and subsidy and loan programs from the federal and/or state government sources. So you've been able to -- one topic that's come up in all of these conferences is the siloed nature of different federal and state and other public funding sources, you know, there's E-Rate, there's Telehealth, there's High Cost, there's RUS Loans and formerly grants. There was the BTOP program, EDA does some small grants for both planning and infrastructure builds, and so it's very fragmented obviously, which maybe reflects the fact that in many of these markets and under various you had a fragmented approach to building infrastructure to, you know, the different beneficiaries from those funding sources. So how have you within your companies, recognizing that these sources are fragmented, how have you been able to at least work across the silos and build a comprehensive strategy that's serving all of the underserved anchors, businesses, residents, towers, etc.?

DAVID NELSON: Well, I think at Vast Networks we mainly look at the E-Rate Program and also the BIIG Program, the B-I-I-G Program with the California State Education Department. We are frequent recipients of funds from both of those, and that gets us into smaller communities, which allows us to extend to other businesses, which allows us to explore other business opportunities. The CASF Fund is a great thing to have, but it's a very time consuming, time costing sort of process. We probably will be filing some applications in the near future, and in many ways you can work with a lot of the businesses to -- we try to aggregate a lot of businesses and that helps bring some financing in also.

SANDEEP TAXALI: Tressa.

TRESSA BADER: So I think it also kind of goes back to the local management again. So we try and look at it as holistically as possible and try and combine where we can the funds from different resources or different sources, so as an example back to Petrolia. Petrolia we received a CSF grant for. We also were awarded some money through Scenic to get out to the school out there, so our ability to utilize the funds from both of those programs is getting us, you know, allowing us to put in the bandwidth, to put in the right infrastructure needed in order to bolster the home, in-home connection, as well as the anchor institutions that are along the way and in the Petrolia area. So we just really look at, you know, what's going on in that community? Who are the anchor institutions? What are their timelines? What are their needs? What resources are available? And to the best degree we can try and put our plans around taking all that into consideration.

SANDEEP TAXALI: Great. Thank you. Kirby.

KIRBY SMITH: There are two major funds being talked about, the Universal Service Support Fund -- that's a federal program -- and the California High Cost Fund A. Our California

companies rely on both of those. They're for CAPEX and OPEX. They do work in tandem and work quite well. The question was about this silo concept. Most of our companies don't have too much of a problem, because you understand how the programs can work, and you utilize them, and then you also utilize some of the outside sources, and I can talk about the rural utility service as well. There is some risk going forward. As I say, the programs have worked. There is some risk going forward in that the FCC plans to have a fairly substantive reform January 1, 2016, to reduce the federal support to most of the rural telephone companies across the country, and one of the technical terms they have utilized in announcing this is something called a haircut. If any of you have a military background as I do, you probably know what a haircut really means. To give examples of the financing that the companies have utilized, the Calaveras Telephone Company got a federal loan, got a federal grant, got the state CASF grant and its own matching funds. Four buckets of financing to build to 400 Poker Flat residents, a fiber to their home, 50 by 25 megabit system. That was under the BIP, not the BTOP.

Currently Ducor Telephone, we're applying to the California Advanced Services Fund that's been talked about a couple of times. My background is the REA, RUS, rural utility service, that taught me the concept called area coverage. Again, it's local leadership, local involvement, cover as much as you can. Don't go in there and cherry pick. Don't just look for the best businesses. Cover the area. I think Jackie [ph] or someone mentioned the concept. It's a two-way communication. The more bang for the buck, the more on the network, the better things are.

Let me conclude with a quick comment here. The mission of CalCom is to foster industry excellence and accelerate broadband deployment. So what has broadband become? We've just found out at Ducor. We did a survey to our customer base in an isolated place called

Kennedy Meadows, very high up in the mountains south of Mount Whitney. There was no commercial electricity, period, there. These are rugged folks, 151 customers. We surveyed them. The answer to one of the interesting questions was -- they didn't care about electricity. Only 2% mentioned that. It was communications. Give us the broadband, bring us the speed. 65% wanted that. A lot of them wanted 25 meg by 3. The question wasn't, what are your broadband needs? The question was what was the community need? The community need is broadband. May we not lose sight of the fact that broadband is what connects people to people and people to community.

SANDEEP TAXALI: Great way to end that session. Before we go onto the next session, which again talks about municipal led and co-op led models, I want to take two or three questions. Surely they could not have answered all of your questions. Let me start with -- let me ask one question. So when you -- maybe this could go to Frontier, but anyone can chime in. When you, for example, take E-Rate funds in your other markets -- obviously you're still not here yet -- and you're building, you know, fiber network, like they talked about yesterday -- Evan Marwell from Education Superhighway eloquently talked about adding extra fiber strands in any new Greenfield build. Is that a general policy of Frontier?

TRESSA BADER: Yeah, but I think, you know, again it kind of goes back to what the needs are in the community and kind of where they stand with, you know, the speeds they already have, so certainly again back in the rural America, rural communities, if we're doing a build to a school that's in a community that has limited speed today, we're gonna look at beefing that up then.

KIRBY SMITH: A quick answer if I may. You were alluding to deployment schedules. The Poker Flat project at Calaveras Telephone originally was copper in 1981 direct buried. So

ever since 1981 we've learned a lesson don't direct bury anymore. Put a spare conduit in. This is David's game. A spare duct or conduit, and that's the key to easily coming back to reinforce at a future date, and that's this whole issue with the highway 299.

SANDEEP TAXALI: Great. Any further questions? No, okay. Oh, there is one, sorry.

AUDIENCE MEMBER: Hi, Louie [ph] Lee [ph]. I work for Google Fiber, but I am here representing myself. I heard mention that it needs to be a grass roots effort to get things started, and you often would go to the tech guy at the school if it's a school type deployment. But oftentimes the tech guy at the school is dealing with day to day stuff, right? And his need to look beyond.

MALE SPEAKER: I found they are often quite visionary, the librarian as well.

DAVID NELSON: Yeah, he's the biggest dreamer in the area. We had one school district that, you know, has 1400 students. The guy at the high school -- he was part time, part time at the community college -- and eventually what happened to that school district now has dual 10 gig redundant connections. They have a 10 gig WAN, 1400 students, and their bandwidth use is amazing. He was a visionary. Quite frequently the case.

AUDIENCE MEMBER: Well, then, his ability to push for that, did it come from himself or did it come from a mandate through the principal or from the school district? What allowed him to actually put in the effort to push?

KIRBY SMITH: I can answer that. Thank you. That's a good question. Basically I would be invited in by a superintendant who's absolutely needy and willing to provide that grass roots leadership, and then I engage -- let me talk to your librarian, let me talk to your techie, let me talk to your other teachers and get a flavor for this school district. What do you really need? And then that visionary aspect of the IT guy came out or the librarian. The librarians were just

great, you know, they weren't just about putting books on the shelf, so it's finding who that may be, and it may not always be the superintendant or the techie person, but to get anywhere my point is you've got to have a local champion.

SANDEEP TAXALI: With that said, let's wrap it up, but I want to leave with one comment, and they made this at a session yesterday, that again with BTOP -- I look at BTOP as a very successful experiment in that we again funded a variety of permutations of business models, and we hired a firm, ASR Analytics, that did a deep dive on 12 of those infrastructure projects, as well as public computer centers and the adoption programs, and they came back and the reports are online as far as what they found. The business model was a key part of their study, but those business models are evolving and again we have 110 projects where we would love feedback from the broader community, broader research community, academia, industry, nonprofits, to go back and look at the models that we funded, and again tell us from your perspective how successful they've been. There are various metrics to measure them on, you know, one that I like to talk about is how well have these Middle Mile projects driven Last Mile investments? And there are many more metrics to look at, and again we continue to invite feedback from the community, Shelby especially, the Shelby Coalition, to go back and look at these models and again give us your feedback on their strengths, their limitations, and so forth.

[END RECORDING]