

## Broadband Alliance Public Outreach Meeting

Friday, March 4th, 2016 10 am-11:30 am  
Community Foundation of Mendocino County  
Call in Number: **641-715-3341** Access code: 108 1131#

### I. Call to Order

- A. Introductions: **Brooke Clark**, community member, **Rick Eller**, Mendocino County Office of Emergency Services, **Katie Gibbs**, BAMC Executive Committee, **Heather Gurewitz**, Field Representative, Congressman Huffman, **Dan Hamburg**, Supervisor 5<sup>th</sup> District, BAMC Executive Committee, **Chris Hannon**, GIS & IT Manager, Lyme Redwood Forest Company, **Maureen “Mo” Mulheren**, Ukiah City Council Member, **Mike Nicholls**, NBNCBC Management Team Member, Sonoma, **Susanne Norgard**, Director, Community Foundation, BAMC Executive Committee, **Kim Remick**, SeaKay, **Jacob Turner**, SeaKay, **Diann Simmons**, BAMC Administrative Coordinator, **Trish Steel**, BAMC Chair,

**Call-in:** **Cathy Emerson**, Program Manager, Center for Economic Development, **Judy James**, Director of Govt. Affairs, North Bay, Comcast, **Steve McLaughlin**, Owner, Editor, Independent Coast Observer, Gualala,

- B. Special guests: **Yahel Ben-David** of Further Reach for Fixed Wireless presentation, **Tamir Scheinok**, Advisor, Further Reach, **Dhundup Namgyal**, AirJaldi.com
- C. Additions to the agenda  
None

### II. Special Guest presentation

- A. **“Why fixed wireless is the hope for sustainable rural broadband.”**

**Yahel is the Director of the DeNovo Group** that turns university research into applicable technological solutions to address the needs of communities in developing regions. **Further Reach is their on-the-ground local project** to provide affordable broadband to South Mendocino Coast communities. The question today is “How can WISPs (wireless internet service providers) bridge the broadband gap”. Yahel showed a map of the world with the areas with broadband lit up and those without, dark. His life goal is to make this map brighter. He has built wireless networks in many locations around the world. Most have failed, and a few survived including one very large successful one in India with thousands of subscribers - “AirJaldi.com”.

Connection to DLS service requires that the home or business be within 2 kilometers of the provider’s exchange central office. This works in urban areas but not rural areas where few beyond the town centers can be served. In cities it is easy and cost effective to replace old copper lines with fiber. The companies own the lines and don’t need permits, as it’s only an upgrade. In rural areas, the cost is much higher and permits are required to do the work so fiber upgrades are not normally offered.

**In Mendocino County, AT&T has fiber everywhere.** Manchester is considered unserved, but there is fiber at every street corner. But, AT&T will not sell access to their fiber to smaller providers, at a reasonable price. They often report these areas as served, when they only serve the anchor institutions, and keep other providers from being able to attract any funding because they are already served. Even though the CPUC maps consider mobile/cellular with a typical data limit of 4 gigabytes “served” areas, mobile cannot replace broadband. The going rate for 1 gigabyte (GB) of mobile data is \$10 or more. Yahel’s family of 4 (no teens) used 600 GBs of broadband last month. If that had been mobile access it would have cost him \$6,000. The average family with teens uses over 1,000 GB per month and every year there is an increase of 29% being used by the public. Currently the mobile infrastructure will not support much higher use, so they make it expensive to use, as it is very expensive to build out more. Compared to wireless, it is inefficient in the use of resources and much more expensive. Mobile is not a replacement for fixed broadband to the home.

**What is the hope?** Big companies have some big solutions they are working on such as balloons in the stratosphere and low orbiting satellites all of which cost billions of dollars. But none of these will be on the table any time soon. But what is now available and growing like wild fire is WISPs. They are agile, and they can change their networks to fit each unique situation. They work on low return margins, low overhead and often with low regulatory burdens. They can work within constraints. The big companies cannot work that way. They need cookie cutter solutions that they can replicate.

**Developing a WISP network takes a low capital expenditure,** with the investment counted in months not in decades, which makes WISPs a good business opportunity. They can go into the extra rural areas and have a high social effect. To succeed, a WISP needs at least 100 to 1,000 subscribers, which can be challenging to grow to. **How can WISPs replicate and scale – that is what Yahel is working on.**

**How do WISPs work:** coverage depends on line of sight and often requires tall masts, unlicensed radio-frequency spectrum, bi-directional links – each receiving and sending; typically links are of symmetric capacity, they backhaul point to point. The last mile is point to multi-point; coverage depends on the line; they use exceptionally low cost devices that are very durable. But the software for these devices is very bad and more expensive. It is important to build in redundancy, a way to recover if stuck and individually power cycle a device if it doesn’t respond. A lot of relays are needed instead of one central tower.

**Sources for the bandwidth/middle mile:** If a WISP tried to buy fiber to an incumbent’s headquarters it would not be affordable. It is common for WISPs to buy residential service and extend it with wireless to another place. But the speeds are low, so they buy more than one line. This quality will only work for residential, is asymmetrical (the data speed differs in different directions) and **does not scale.**

**One solution in the US is to buy middle mile from long distance providers that don’t serve end users, at lower prices.** There are 35 long-haul intra-regional (between states) carriers with fiber networks, and more than half work in Mendocino County. Further Reach buys bandwidth from one of them – Level 3. The access they sell is symmetric (same speed upload and download), reliable and redundant. It is designed to provide business rate services. Level 3 has regeneration huts in various locations in many places in the state, which is where a WISP can connect. Often there is a cell tower next to the hut. SeaKay brought up that Level 3 will generally not sell to local WISPs, as they do not meet their threshold. Yahel is willing to broker

with Level 3 for local WISPs. Because he is in the door already, they are more willing to work with him again.

**How to scale WISP networks to connect the last billion:** Further Reach (FR) guarantees a minimum speed of 4 mbps with their lowest cost plan. For 92% of their subscribers they give double that speed. (Their higher cost plans offer typical speeds of 15 and 30 mbps). Their customers are figuring out on their own how to set up to receive TV through their computers, which the speed also allows.

The County's new expedited permit for BB installation is very progressive. FR puts up their towers in one day (after the cement foundation is poured a week earlier). A recent installation had no power to the area, which meant they had to be flexible in their installation (an asset of a WISP). Currently FR has 48 relays in the county, with only 4 towers in that group, including an existing one that was a problem for the owner to deal with. The other relays are very small.

The biggest issue that FR has is management, not technology. Because they were able to purchase a very high amount of broadband capacity from Level 3, their speed is not an issue, unlike most WISPs.

DeNovo received \$2,000,000 from Google for research on how to replicate and scale wireless systems that can be installed in unserved areas around the world. The grant was not for deployment. Of that amount, \$400,000 went to Stanford and \$400,000 to Berkeley for research. FR only received \$350,000 directly from the grant, which ran out long ago. FR is already self-sustainable and is paying for its own growth. Once growth stops, they will recoup the investment. Research is meaningless if not grounded in reality.

#### **Questions:**

##### **How can what you are learning about scaling be used by others in the county?**

Yahel: We've done a lot of work, but for most WISPs, our research is not "baked enough" yet for their use. We are continuing to work with it.

The part that they can help with now is to broker a deal with Level 3 for other WISPs.

##### **Why doesn't DeNovo build a redundant core and allow other WISPs to purchase access through it?**

Yahel: It's a good idea but someone needs to pay for it. There are some funding sources but the organizational part is difficult. Yahel is oriented to the technology but can't do the rest that this would require. Acquisition of a site would be the biggest cost. Issues would be who maintains the system, who owns it. The operating expenses overshadow the capacity building costs. It would be good for DeNovo to start building the partnerships this would need. **The research that is needed is not technical, it's about management.** Another possibility would be hooking into the county system that's already a loop.

SeaKay: The county microwave ring is not open to private businesses for security reasons.

Trish wondered if there has actually ever been a proposal to the county. They have been upgrading the system.

Yahel: **A repeating theme, building a highly distributed network with relays and the ability to manage it, makes a WISP successful.** But the management tends to be the hardest. Many WISPs build their own code for their systems, often putting many years of work into their own software, but don't share their systems management. Many WISPs aren't thinking about the

future when higher bandwidth will be needed. That is the focus that DeNovo is working on for the future. The large incumbents also have problems with software/management. They are researching it but not doing so well.

**Who are the many long-haul providers present in our county?**

Yahel: Cogent, Charter Communications, British Telecom, China Telecom, Level 3, etc. It is complex to get access to their bandwidth, but they do share, have global agreements and offer lower prices. We need a group to leverage access to these providers, but whoever is doing the work needs to be paid for it.

Trish: **Some providers are finding it difficult to get people to commit to a subscription before a potential buildout, an important element to attract providers to build in an area.** This may indicate there are people who don't see the relevance of broadband in their lives. Education is important and she wants to also focus on that.

Yahel's experience is that more and more people understand that broadband is an important requirement for many activities. It's a lifeline for many people now. Many FR customers switched from satellite and now that they are used to it they can't go back.

An interesting upcoming event was mentioned - the **Extreme Conference on Communication and Computing**, which will be holding its 2016 conference in Mendocino and Sonoma counties in August. Previous conferences have been held around the world. Attendees are academic researchers working on computing in extreme operating conditions. The conference is very technical and would not be interesting to the average person, but it would be interesting for the media to cover.

**III. BAMC/NBNCBC News and updates since last meeting on 11/6/15**

- A. NBNCBC Volume 3 Newsletter published – <http://www.mendocinobroadband.org/wp-content/uploads/PDF.NBNCBC-Volume-3-Newsletter.January-2016.pdf>
- B. NBNCBC grant application update  
There has been a change of staff at the CPUC and the new reviewer of the grant applications has a different approach, but we are optimistic. We will hear in several months if we have been funded.
- C. "Crossing the Digital Divide" - new consumer education blog on our website: (Under Data and Reports – Consumer Education): <http://www.mendocinobroadband.org/topics/consumer-education/>

**IV. Legislative issues**

**A. AB 1758 - (Stone) Internet For All Now Act of 2016**

This bill would re-authorize the CPUC California Advanced Services Fund for broadband infrastructure grants. This is the only state program that is used to build out "last-mile", and in the past it has been used to connect Boonville, Comptche, Hopland, Covelo and Laytonville. The bill is opposed by the larger carries, who argue that federal "Connect America" money is now available in these areas, and therefore the state CASF program is not necessary. The NBNCBC and other consortiums do not agree, and feel this state program is vitally important to end the Digital Divide.

The Board of Supervisors approved letters to Assembly Member Wood and State Senator McGuire asking them to co-sponsor the bill, as did the Broadband Alliance (posted on the website)

Mike Nicholls reported that Sonoma County also sent letters to Wood and McGuire requesting them to co-sponsor, and to the Assembly Committee considering the bill.

**B. SB 1250 (McGuire) Emergency Reliability and Public Safety Act**

This bill is a result of the recent outages and will require providers to inform the county and state Office of Emergency Services (OES) when outages within specific parameters occur. It has to go through two committees, including Appropriations, which allows more opportunity for changes from the incumbent lobbyists.

**C. HR 4160 (Huffman) Rural Broadband Infrastructure Investment Act**

This will modernize the Rural Electrification Act by increasing funding available for broadband infrastructure.

**D. A recent senate bill will bring the Next Generation 911 – text-to-911 to our county.** Tami Bartolomei confirmed that County OES will be a part of the network. Rick Eller of OES will find out more to report to us at the next meeting.

**V. Broadband deployment updates and data**

**A.** Round 11 CPUC data - a more detailed analysis for Mendocino County is available on our website- broken down by cities, Census Designated Places (CDPs) and zip codes

<http://www.mendocinobroadband.org/wp-content/uploads/Pdf2.Mendocino-2015-Availability.pdf>

**B.** Loss of dial-up Laytonville north to Oregon

It appears that all dial-up internet has been lost in the northern areas due to a complicated layer of reasons. A Laytonville resident has filed a law suit against Verizon and asked the Alliance to share his letter, which was provided in hard copy at the meeting.

**C.** Provider updates

**(1) US Cellular**

Recently a UC field research facility In Branscomb lost its US Cellular mobile signal. Trish requested help from US Cellular, reporting it as an issue for public safety due to the presence of hikers, researchers, and residents in the remote location. US Cellular responded quickly and positively, with engineers and technicians on site and at Cahto Peak to get the signal back. This was a very responsive action for a low density area and Trish would like to recognize and thank them for that.

**(2) AT&T**

- To report a line outage: 1-800-288-2020
- Mike reported that after the AT&T meeting with several County supervisors, McGuire and Wood requested a second meeting at the state level with AT&T to get clearer information about the promised upgrades. The meeting has been rescheduled several times by AT&T. Senator McGuire addressed some of the concerns in SB 1250 (see above).

**(3) SeaKay**

Half of Westport has signed up for SeaKay's new service, including free service to the volunteer fire department. But there are fewer people up and down the coast signing up. Trish is excited to work with SeaKay in the community.

- D. Trish reported that the Assembly and Senate committees that will hold hearings on CPUC oversight of telephone corporations to provide adequate service, have said that they "haven't heard of any problems." She immediately sent a letter to the chief consultant for these committees, and included two other documents: our outage report (endorsed by our Board of Supervisors), and a letter to AT&T from Senator McGuire, Assembly member Wood and signed by the chair of four boards of supervisors. You can read the letter [here](#).
  
- E. "CalSpeed" Iphone app  
This app allows you to test your mobile signal with the information going directly into the CPUC data base. Trish has collected most of the data shown on the map, following a Ukiah-Laytonville-Westport route that she frequently travels. The Alliance encourages more people to download this free app, and test in areas where you travel and find mobile signal strength lacking.

Brooke brought up that if a census block has only one served household, the provider can claim that the whole block is served. He contacted the CPUC about this practice and was told that is a legal rule, but they couldn't point the rule out to him. He's trying to find where the CPUC has referenced this as law.

## VI. County reports

### A. EDFC

The Sonoma-Mendocino Economic Development District just formed. Once approved by the Economic Development Administration (EDA) it will hopefully improve funding success for projects, including broadband projects.

## VII. Access Sonoma Broadband Update - Mike Nicholls

Sonoma sent two CASF applications to the CPUC, which rejected the one from Sea Ranch. Sea Ranch is developing the infrastructure on their own and it will be lit in the fall. The other application for Joy Road is called Gigify Occidental which would serve 760 households with fiber to the home at a cost of \$9,000,000. It was submitted to the CPUC over 100 days ago and still has not started review. Other projects around the state have been waiting for review for up to 200 days.

## VIII. Outreach and future agenda items

The Alliance will be hosting a **special presentation by Computers for Classrooms on Friday May 20<sup>th</sup>**. They will also be accepting donations of old computers. Watch for more details on this special presentation.

## IX. Final comments

According to the CPUC new data, Mendocino County has 3% of the households in the state and 7% of the underserved households in the state.

Chris Hannon, in attendance today, represents the Lyme Redwood Forest Company that has new owners. He's trying to figure out how to get broadband access for employees out in the field.

Rick Eller from the Mendocino Office of Emergency Services, reports that they continue to look at ways to communicate better. OES is working on installing radio and satellite systems as back-up during outages. On March 23<sup>rd</sup> OES will be testing systems on the coast, which will affect radios, etc.

**Meeting adjourned at 12:00**

**Next meeting: Friday, May 6th, 2016**

**Special presentation Friday, May 20th on how low-cost computers are available for residents, students, and classrooms.**

**ACRONYMS LIST**

BAMC – (also referred to as “the Alliance”) Broadband Alliance of Mendocino County

Cal OES – California Office of Emergency Services

CASF – California Advanced Services Fund (through the CPUC)

CLEC - Competitive Local Exchange Carrier

County OES – Mendocino County Office of Emergency Services

CPUC – California Public Utilities Commission

FCC – Federal Communications Commission

FEMA – Federal Emergency Management Agency

GAO – (Federal) Government Accountability Office

ILEC – Incumbent Local Exchange Carrier (Verizon and AT&T)

NBNCBC- North Bay/North Coast Broadband Consortium

RCRC - Rural County Representatives of California

SMEDD - The Sonoma Mendocino Economic Development District

TURN -The Utility Reform Network

WISP – Wireless Internet Service Provider