

TOWN OF LIBERTY GROVE PUBLIC MEETING

Special Board Meeting joint with Technology Committee

Date: Monday, September 19, 2022

Time: 6:00 PM, or immediately following conclusion of the Personnel Committee meeting

Place: Town Hall, 11161 Old Stage Road

Agenda:

1. Call to order
2. Declaration of a quorum followed by pledge of allegiance
3. Approve Agenda
4. Public Input
5. Review of Bertram Communication Proposal for Town-wide Fiber
6. Town-wide Fiber Optic Internet Project
 - a. Presentation from Baileys Harbor Representative
 - b. Update from Nsight Representative
 - c. Contracts with Nsight
 - d. Recovering Town investment in Town-wide Fiber Optic
7. Correspondence
8. Adjourn

****Report items will not be discussed or voted on, all other agenda items may include discussion and possible action.**

Deviation from listed order may occur**

*****Audience members must ask for permission, during public input, to speak on agenda items *****

Anastasia Bell, Clerk/Treasurer

Members of the Town Board or any other Town Committee, who are not members of the body whose meeting agenda is published in this notice, are entitled, as any other citizen of the Town of Liberty Grove, to attend this meeting in an unofficial capacity. It is possible the attendance of one or more non-members may create a quorum of the membership of another body. Such a quorum is unintended, and the non-members are not meeting for the purpose of exercising the powers or duties attendant upon their membership on any Town Committee or Board.

Notes taken by DAS during Bertram presentation at 9-7-22 Liberty Grove Town Board Meeting (These notes were my attempt at documenting what Mr. Bertram stated, generally not fact checking him. I have added a few italicized comments of my own.)

1. Will need to add new “feeder” line up 57 – doesn’t exist now (*DAS: i.e. new backbone*)
2. Will start by putting FTTH connecting to towers, some of which have fiber connections to tower now
3. Bertram talking fast, in generalities, leaving out lots of detail, even when answering specific questions
4. Will do Active Optic Network (AOL) and provide “open” network available for use by any ISP such as AT&T, Verizon, Frontier, Nsight
5. DCB will be the open network manager/primary ISP
6. It will only take Bertram 1 ½ years to wire the whole county
7. Bertram currently doing other counties
8. Will provide 10G capacity on backbone
9. System will have the ability for schools to lock students’ home connection to school material only (no access to games, etc) when they log on with school access codes
10. AOL will be built as a ring structure, providing protection against outages. Only outage possible will be when there is a break between passing line and your house
11. All fiber will be buried unless just impossible due to local conditions such as solid rock for 100’s of feet.
12. Maintenance cost much lower for buried fiber
13. Total cost for LG buildout currently estimated at \$16.9 million. DCB/Bertram will provide \$4 million. Rest must come from grants and Town.
14. Bertram has grant writer to help. Doing one now with Sheboygan County. [*DAS: Later determined that project with Random Lake and work with Sheboygan County are one and the same, though presented as two independent projects.*]
15. Now working with Clay Banks to create a grant application.
16. Bertram has previously been awarded PSC grants.
17. 200 foot drops included in basic cost estimate. Charges for longer drops will depend on agreement negotiated between DCB and Town. This comment was followed by several points to be nailed down during negotiations between DCB and Town.
18. Question: Who will own? Answer: Bertram will own network once built. That’s done through a foundation with Jim Bertram as CEO/President of foundation board.
19. Basic service offered will be 250/250 at price of about \$100/month. *Later price quoted was half that – confusing.* This will be a deal to homeowners compared to what they pay now for service. The sum of subscription fee and increment on property tax (est \$300/year) to cover Town’s annual repayment of borrowing to use toward \$16 million project will be less than homeowner pays now for internet service subscription.
20. Question: What fiber systems has Bertram installed and have operating? Answer: Random Lake, WI (35 miles cable, 800 users) which is Bertram HQ village and Ogden, UT, about 5500 users.

21. Question: What about current material shortages, chips, electronics, fiber? Answer: No problem. We designed and manufacture our own electronics, no problems with chip shortage and we purchased for inventory enough fiber for any project in Door County.
22. Question: What size (number of strands) fiber do you use? Answer: We use 72 to 100 strand (he jumped back and forth) for our main lines. No sense in having it be more than you need, especially when a repair is needed and more strands would be more expensive to repair. *[DAS: This was different than his presentation in Baileys Harbor where he stated 144 or 200 strand cable would be used to take advantage of AOL's direct line from central switch to home capability. In this presentation he described configuration of having a local "splitter switch" (DAS term) that fed a group of homes. Seems a lot like a PON design to me.]*
23. Bertram has developed its own network management software. This software is widely sold and distributed to other broadband system managers and has "millions of users".
24. *Presentation was terminated at this point, though more questions were pending, because "Mr. Bertram was scheduled to present at two other meetings that evening".*

AON vs PON – Cost/Benefit

From: Dean Mischke <dmischke@finleyusa.com>
Date: Fri, Feb 11, 2022, 10:26 PM
Subject: RE: Cost per passing and mile
To: Kurt Kiefer <kkiefer18@gmail.com>

Sorry, it has been a mad rush around here with grant date deadlines pushing us hard. Following are the answers to your questions:

Cost Per Passing: I am going to limit this answer to just the OSP and Electronics costs. It does not include any of the other costs that go into a FTTH build on the operational side. Even with those conditions, the answer is not straightforward as it varies based on how many passings, the percentage of take rate, and where the passing is located. For benchmarks, you can use the following metrics:

Entire County (excluding Chambers Island)

- 100% Take Rate
 - Cost Per Passing \$4,611.29
 - Cost Per Served \$4,611.29
- 75% Take Rate
 - Cost Per Passing \$4,611.29
 - Cost Per Served \$5,679.42
- 60% Take Rate
 - Cost Per Passing \$4,611.29
 - Cost Per Served \$6,784.21
- 40% Take Rate
 - Cost Per Passing \$4,611.29
 - Cost Per Served \$9,592.14

Portions of the County not served by Spectrum or WIEC

- 100% Take Rate
 - Cost Per Passing \$5,044.29
 - Cost Per Served \$5,044.29
- 75% Take Rate
 - Cost Per Passing \$5,044.29
 - Cost Per Served \$6,267.27
- 60% Take Rate
 - Cost Per Passing \$5,044.29
 - Cost Per Served \$7,525.20
- 40% Take Rate
 - Cost Per Passing \$5,044.29
 - Cost Per Served \$10,734.00

of Miles and Cost Per Mile:

- Within the entire county, we expected to have approximately 1574 miles at \$74,740 per mile.
- Removing Spectrum/Charter and WIEC, there is approximately 1006 miles at \$61,398 per mile.

Please note that with all of the variances that exist in a FTTH build, there will be areas that are much more expensive than the average so please understand that as we look at smaller parts of a large study, the greater the need to move to the next level of study that details the specific area under consideration.

Active vs. PON: That question can be debated passionately from both side as there are certainly arguments in favor of either decision. Finley's reasoning recommend a PON is based on the following:

- The vast majority of the FTTH market is using PON based technology. This translates into a wider variety of solutions, economies of scale, and ability to find experienced technical staff.
- In the Door County PON design, every customer can burst to the full 10 Gbps allocation per PON while in an Active system, every customer will need 10 Gbps optics to achieve that capability. As the speeds increase, users spend less time at those speeds simply because they cannot consume it that fast; therefore, the request becomes a burst and then goes away.
- PON is already investigating 25, 50, and 100 Gbps solutions.
- As the speeds increase, Active solutions cost per subscriber are rising faster than PON based solutions.
- PON solutions withstand unexpected growth better than active solutions. A significant addition in any given area at the fringe of the network will almost always require placing a new active node that required commercial power and battery backup.
- Active solutions require significantly more electronics sites or larger cables to extend their reach. As the deployment gets larger, the cost ratio between PON and Active tilts even more in PON's favor.
- Active deployments require more powered sites (read utility fees that never go away) and regular ongoing maintenance to maintain and replace the battery plant every five to seven years. In addition, in a localized power outage, you now have more sites to get back-up power to than in a PON system. The Door County PON design called for 25 active nodes. An Active deployment will call for almost 240 more active sites.
- Advancements in PON Element Management Systems has made provisioning and troubleshooting just as easy as an Active point-to-point solution.

Having said all of that, the door County ODN was designed to support a mix of Active and PON based subscribers. The Active solution would be provided at a premium price for the small number of customers that need, or want, a high bandwidth service with a Service Level Agreement (SLA). In Door County, the vast majority of customers will be very well served on a

lower cost PON based system. This study called for an XGS-PON 10 Gbps solution capable of providing a constant bi-directional throughput of 156 Mbps to every customer if they all were trying to utilize their full bandwidth at the same time. In reality IP traffic is very bursty with the average PON rarely exceeding 1.0 Gbps.

Dean

Dean L. Mischke, P.E.
Finley Engineering Company, Inc

<https://www.chamberofcommerce.com/united-states/wisconsin/random-lake/internet-service-provider/6307846-bertram-internet>

	positive	negative	neutral	
2022	1	8	1	10
2021	0	5	2	7
2020	3	8	0	11
2019	2	3	0	5
2018	5	1	0	6
2017	6	0	0	6
2016	3	0	0	3
2015	0	2	0	2
	20	27	3	