

Vertical Broadband
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Delta Junction, AK 99737

December 20, 2017
Comments Regarding Notice of Proposed Rulemaking, GN Docket No. 17-258

NARRATIVE

We take exception to some of the proposed changes to the 2015 CBRS rules.

Vertical Broadband began two years ago in rural Alaska with a mission to offer high-speed uncapped Internet using an NN license.¹ We knew this approach would be the cost-effective way to deliver the best broadband value.

We serve a densely forested town, some agricultural country, and remote outlying areas.² Before we launched, most residents had unreliable and expensive Internet service via satellite or cellular — or no service — and no broadband at all.³

In 18 months, we have added over 300 customers.⁴ We have spent \$0 on advertising. We have achieved a remarkable 55% penetration where broadband was previously unavailable.⁵

¹ NN is a legacy FCC license from 3650-3700 Mhz; to be superseded by GAA under CBRS

² Zip code 99737 includes the town of Delta Junction, census designated places such as Big Delta, Whitestone, Dry Creek, and Deltana

³ As of 2016, field surveys showed that in more than half the coverage area even mobile voice calls were impossible. A tiny minority of locations had access to sub-10 megabit DSL, and an even smaller area 10 to 25 megabit DSL.

⁴ We provide baseline plans up to 15/2 Mbps using a total of 40 Mhz in a 3.65Ghz deployment under NN rules, and 50/5 Mbps using unlicensed spectrum in higher-density areas. See current plans and pricing at <http://verticalbroadband.com>

⁵ Estimated using customers served vs leads.

IMPORTANCE OF CBRS BAND AND PRIORITY ACCESS LICENSES

We tried to be forward-thinking, based on the 2015 CBRS rules in effect at the time, predicting we would need more spectrum as early as 2017. We built towers for future growth, added extra backhaul capacity, and made RF plans to take advantage of PAL and GAA spectrum when it became available. Hundreds of happy customers confirmed our direction.

We planned future tower sites, intending to expand coverage where topography prevents easy frequency reuse. Over 2016 and 2017, we invested hundreds of thousands of dollars in hardware.

Customer demand is high, and per-customer bandwidth needs continue to grow. We run the risk of failing to meet customer demand — not due to lack of hardware investment or poor site placement, but to regulatory delay.⁶

⁶ When a coverage area is saturated by balancing spectral capacity with customers served, the most cost-effective way to preserve service quality is to add spectrum and periodic incremental equipment upgrades.

"Well, in our country," said Alice, still panting a little, "you'd generally get to somewhere else—if you run very fast for a long time, as we've been doing."

"A slow sort of country!" said the Queen. "Now, here, you see, it takes all the running you can do, to keep in the same place. If you want to get somewhere else, you must run at least twice as fast as that!" — Lewis Carroll

As a provider of fixed LTE,⁷ we are concerned that GAA spectrum will not have enough protection, as we expand, to sustain the quality of service we deliver now.

GAA does allow efficient use of spectrum. Multiple operators can co-exist, and the CBRS rules encourage this. A fixed wireless operator like Vertical is likely to use GAA spectrum.

However, delivering consistent fixed wireless service relies on spectrum not vanishing overnight. GAA spectrum availability and power limits are intentionally dynamic, to encourage new operators and flexible use. GAA is therefore not completely reliable as a bandwidth fix.

We are not content to have to say to our customers, in effect, “We can serve you excellent broadband today, but we might have less capacity next week.”

We need to be able to bid on PAL licenses to take advantage of the greater certainty it affords. This is consistent both with our original vision and the quality of experience our customers have come to expect from us.

⁷ Vertical Broadband is the first Alaskan provider to have a toolchest including fixed LTE in the 3.65Ghz spectrum, anticipating expansion into CBRS. LTE works best with a carefully engineered and protected RF plan, avoiding interference between areas of frequency reuse. LTE also is more effective at greater distances than typical unlicensed spectrum technologies. Consequently, efficient and complete coverage is a balance between short-range, high-capacity (and higher frequency) unlicensed bands, and licensed mid-band spectrum for longer distances and lower population densities.

THE ALASKA PROBLEM: LARGE PARTIAL ECONOMIC AREAS

Alaska has unique geography. Rural northern Alaska has tiny populated ‘islands’, separated by vast uninhabited stretches, a sea of wilderness.⁸

Vertical Broadband has been effective at service on its island. We must continue to deliver faster speeds and reach more customers with additional licensed spectrum in order to survive and grow locally.

Unluckily, Vertical Broadband serves a small area inside the *largest partial economic area* in the United States. [See map at Appendix A] Basing PAL auctions solely on PEAs rather than census tracts would **wholly prevent** us from bidding on our existing domain. We ought not to be forced to serve discontinuous areas where not cost-effective, outside the current territory. The distances are too great and populations too small.

For visual comparison, we cover an area the size of 4/5 of New York City’s boroughs, while potentially being forced to bid on an area **larger than Texas**, more than twice the size of California. Vertical Broadband’s coverage, significant in its zip code, is only 0.05% of PEA 298’s land area — the largest PEA by far — while covering 3.5% of the population.⁹

⁸ Outside the populated/metro areas of Anchorage/MatSu, Fairbanks, and Juneau, the state averages ~0.4 persons per square mile.

⁹ See Appendix A for a map of Vertical Broadband’s coverage area vs. PEA 298.

Statistics:

PEA population (2010)	145,928	
Delta Junction population (2016 est.)	4,983	= 3.5%
PEA 298 area	346,814.56 sq. mi.	
Vertical Broadband coverage (2017)	186 sq. mi.	= 0.053%

For rural Alaskan Internet providers,¹⁰ bidding on an entire PEA (with the exception of the Anchorage PEA)¹¹ is preposterous. Even census tracts — at a population of 4000 — are larger than 91% of Alaska's named towns and villages.¹² A large, out-of-state bidder would be an unprecedented entrant to the Alaskan terrestrial ISP landscape, unlikely to provide the level of local support and involvement that makes Vertical Broadband successful.

While auction pricing will be population-based, Alaskan geography could force potential bidders to cover populations two orders of magnitude larger than wanted, and quash private and local use of licensed CBRS spectrum.

Changing the CBRS rules without taking into account Alaska's geography would be a one-size-fits-all approach. This is intuitively wrong. And it fails to hold up under scrutiny.

¹⁰ Rural Alaskan ISPs face almost insurmountable obstacles without USF support, and difficult economies of scale. Transport costs, a tiny percentage of operating expenses for typical small ISPs in the Lower 48, are estimated to be 2 to 3 orders of magnitude higher for Alaskan operators. Michael Burke, CEO of the Matanuska Telephone Association, Alaska's third-largest ISP, approximated in December 2017 the high end of this disparity.

¹¹ The Anchorage PEA is largely, if not entirely, served by DSL, gigabit-capable cable, and fiber.

¹² https://en.wikipedia.org/wiki/List_of_cities_in_Alaska

LONGER TERMS NOT NEEDED

Vertical Broadband has built out present performance that exceeds future Alaska Plan 10/1 requirements.¹³ With reliable PAL spectrum, we expect to serve 25 megabit plans in all areas, not just the isolated pockets of today. Lack of longer license terms does not prevent investment in CBRS.

Alaska's challenging geography and demographics often result in licensed spectrum staying unavailable, underutilized and undeployed.¹⁴ We find from experience and industry consensus that a three-year license term for CBRS with one renewal period is adequate for deployment and ROI.¹⁵

¹³ Alaska Plan carriers must deliver voice in CAF phase II, but only need serve 10/1 broadband. Due to lack of carrier support, few if any of Alaska's 10+ fixed wireless ISPs serve voice. However, we find that customer demand for "landline" voice is low; now that the two primary mobile providers in Alaska, AT&T and GCI, allow VoWifi — using any Internet connection to carry a cellular voice call or SMS — Vertical Broadband has made an effective doubling of home cellular voice coverage in its region, at no cost to wireless providers or to the Universal Service Fund.

¹⁴ Spectrum such as EBS, 2.5Ghz, is being repurposed in the lower 48 states to serve hard-to-reach rural customers. It would be ideal spectrum for much of low-density Alaska, but is unavailable and undeployed. TV White Spaces spectrum is not available in large enough blocks to meet modern bandwidth needs. Even TV channel frequencies, huge swathes of premium spectrum, remain completely unused and unavailable in Delta Junction. Mobile cellular networks support good speeds in town centers and isolated spots, but the move toward urban densification of cellular technologies can still leave rural or remote locations in the dust. One author of this document has at home only 2G coverage from one carrier; the other has no coverage from any carrier. The Alaska Plan seems unlikely to fix this.

¹⁵ See the Carmel Report, page 12, for a comparison of relative capital expenditure and ROI for fiber, cable, satellite, mobile, and fixed wireless.
http://www.wispa.org/Portals/37/Docs/Press%20Releases/2017/TCG's_2017_BWA_FINAL_REPORT.pdf

CBRS ENABLES LOCAL COMPETITION

Non-urban Alaskans cite poor Internet access as a major economic obstacle.¹⁶ Mobile service is insufficient to meet the demand for terrestrial, uncapped broadband.¹⁷ Gaps in Alaska's broadband coverage prompted a state legislature investigation in 2017.¹⁸

Many federal dollars enter the state, but not enough funding for carriers to build out the current FCC definition of broadband.¹⁹ Vertical Broadband's success — even without CAF or High-Cost funding — could be a model for other parts of the state to follow.

The FCC recognizes small, rural providers and new entrants as “best positioned to bring additional competition to the marketplace.”²⁰ This is not a divisive position. Bipartisan support exists for reducing barriers to entry. Changing the 2015 CBRS rules would create barriers and harm existing small, rural providers.

¹⁶ For just one area, the relatively urbanized and road-accessible outskirts of Fairbanks, see Comments on the Regulatory Commission of Alaska's docket I-17-004, <http://rca.alaska.gov/RCAWeb/Dockets/DocketDetails.aspx?id=b782bdfa-be07-412e-9f4e-3be2a6ad70d7>

¹⁷ Ibid., “My-Fi” hotspot service is expensive and inadequate both in price and data caps. Mobile data is 14 to 37 times more expensive, per gigabyte, than terrestrial data.

¹⁸ Final Report on RCA docket I-17-004: In the Matter of Report to State Legislature Regarding Alaska's Current Broadband Coverage and Planned Expansions and Gaps in Broadband Infrastructure and Financing <http://rca.alaska.gov/RCAWeb/Filings/EDocList.aspx?id=aeae7c36-bd32-4239-a0dc-8ea140e4a83a>

¹⁹ Ibid., p. 28, “The report details the annual stream of federal and state support that is currently provided to Alaska wireline and wireless carriers. These subsidies are substantial and add to the revenue carriers receive for the provision of telecommunications services, including Internet service; despite this, the message the RCA is continually reminded of by these carriers is simple — the support is not enough to deploy broadband Internet statewide.”

²⁰ Remarks of Chairman Ajit Pai on Restoring Internet Freedom, p. 2. https://transition.fcc.gov/Daily_Releases/Daily_Business/2017/db1128/DOC-347980A1.pdf

CONCLUSION

We are a successful and fast-growing business desperately needing access to more — and affordable — licensed spectrum. The uncertainty around proposed changes to CBRS has delayed 2018 build-out plans. Customers still remain unserved.

Mobile 4G is far from universal in Alaska, with many years remaining before Alaska can even pretend to be catching up to the rest of the states. Previous spectrum auctions did not encourage small, rural deployments or generate universal coverage. Plans to change the CBRS band, ostensibly to support future 5G service, deny the fact that good uses exist today for CBRS, and fail to account for Alaska's special circumstances — the rural problem turned up to 11.

This proposed rulemaking raises significant threats to Vertical Broadband's ongoing success and that of other broadband providers like us. We oppose increasing the size of PALs or lengthening the term of licenses to 10 years.

Jeremy Austin

Craig Mason


Vertical Broadband, LLC

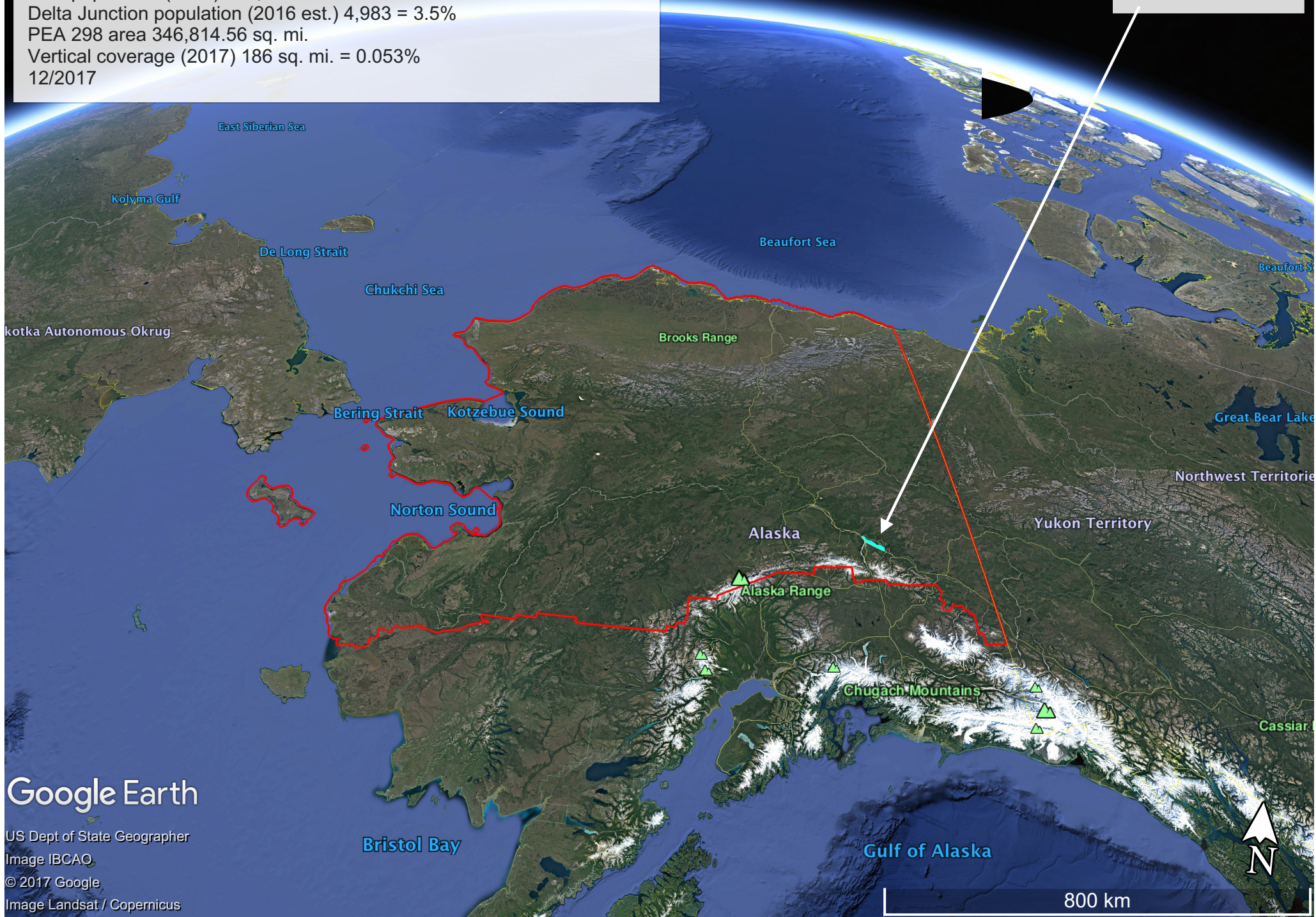
PEA 298 vs. Vertical Broadband Coverage

PEA population (2010) 145,928
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12/2017

Appendix A

Legend

 VB Coverage



Google Earth

US Dept of State Geographer
Image IBCAO
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Image Landsat / Copernicus

