



HARRIS, WILTSHIRE  
& GRANNIS LLP

November 24, 2015

**Ex Parte**

Marlene H. Dortch, Secretary  
Federal Communications Commission  
445 12th Street SW  
Washington, DC 20554

*Re: Application of the Alaska Wireless Network, LLC and T-Mobile License LLC for  
Consent to Assign a Lower 700 MHz A Block License (WT Docket No. 15-265)*

Dear Ms. Dortch:

The Alaska Wireless Network (“AWN”) submits the attached redacted version of its narrative response to the Commission’s request for information, and supporting documents. All redacted information is highly confidential pursuant to the Protective Order in this proceeding.

Sincerely,

A handwritten signature in cursive script that reads 'P. Margie'.

Paul Margie  
*Counsel for AWN*

Encl.

**Before the  
FEDERAL COMMUNICATIONS COMMISSION  
Washington, D.C. 20554**

In the Matter of

Application of The Alaska Wireless  
Network, LLC and T-Mobile License LLC  
for Consent to Assign a Lower 700 MHz A  
Block License

WT Docket No. 15-265

**RESPONSE OF ALASKA WIRELESS NETWORK, LLC TO GENERAL  
INFORMATION REQUEST DATED NOVEMBER 10, 2015**

**November 24, 2015**

Alaska Wireless Network, LLC (“AWN”) provides this response to the letter and General Request for Information dated November 10, 2015, from Roger C. Sherman, Chief of the Wireless Telecommunications Bureau of the Federal Communications Commission.

***Request 1(a)*** — *A detailed discussion of the Company’s plans to provide high-quality, high-speed wireless broadband services prior to the Proposed Transaction, including a detailed description of the Company’s current and planned deployment of advanced broadband services, including the spectrum bands and the total amount of spectrum used for such deployment.*

AWN is committed to delivering high-quality wireless broadband service to Alaskans—in both urban and rural areas. No other carrier shares AWN’s focus on the Alaska market and track record of delivering service statewide, including in challenging rural deployments.

AWN’s current five-year plan includes rural coverage improvements throughout Alaska. Just this year, AWN brought new wireless broadband service to Manley Hot Springs and Minto, with additional communities to be added in the near future including [REDACTED]. AWN has also worked to expand its existing GSM and UMTS/HSPA coverage in Bethel and the nearby villages of Napakiak, Napaskiak, Oscarville, Kasigluk, Atmautluak, Kwethluk, Akiachak, Akiak, and Tuluksak. In addition, AWN has worked towards further network expansions in Beluga, Barrow, Coldfoot, King Cove, King Salmon, and Naknek including the completion of new secondary sites in Bethel, King Cove, and Naknek. Although the extent and precise locations of future expansions will be determined based on future consumer demand, demographic growth, and the certainty and stability of universal service fund high-cost support, AWN currently plans to invest in similar rural coverage expansion projects in communities across the state.

In addition to expanding coverage, AWN has also increased its network capacity in the rural areas it already covers in numerous Alaska communities. This year alone, AWN improved capacity in the Matanuska-Susitna Valley, Kenai Peninsula, Ketchikan, and Kodiak.

Furthermore, although the delivery of any wireless broadband service is a huge challenge in much of Alaska, AWN is actively upgrading the mobile broadband technologies it has already deployed throughout rural Alaska. This year, AWN upgraded its network in the North Slope to LTE, upgraded King Salmon to HSPA, and brought 3G to tribal communities in Twin Hills, Napakiak, Napaskiak, Oscarville, Kasigluk, Atmaultluk, Kwethluk, Akiachak, Akiak, and Tuluksak. In the coming years, AWN will continue to upgrade its network in many of these same communities while significantly expanding these efforts, with plans to upgrade its service to LTE in [REDACTED] and to begin rolling out VoLTE technology in [REDACTED].

In addition to building out service for AWN's own subscribers, AWN also invests heavily in meeting the needs of competing carriers' subscribers when they roam onto AWN's network. AWN has active, and in many cases growing, roaming relationships with several other carriers, which allows AWN to serve the many businesspeople, tourists, and military personnel who come to Alaska only temporarily, and expect voice and data service comparable to what they enjoy at home—but without switching wireless carriers just for their stay in Alaska. Over the next five years, AWN expects to invest more than [REDACTED] statewide just to support these roaming customers.

***Request 1(b)*** — *A detailed description of how the Company would use the spectrum that it would acquire under the Proposed Transaction to provide advanced mobile telephony/broadband services to consumers, on a standalone basis and/or in conjunction with any other of the Company's spectrum holdings.*

As the Commission knows, and as explained in greater detail below, low-band spectrum, such as 700 MHz-band spectrum, is particularly valuable to wireless carriers due to its propagation characteristics—sub-1 GHz spectrum significantly improves the economics of covering less dense populations, especially in environments with uneven terrain, tree cover, or other unfavorable terrain morphologies.

While these characteristics make low-band spectrum attractive to carriers nationwide, they are of exceptional importance in Alaska. This spectrum permits increased efficiencies for rural coverage, which allows AWN to expand and/or improve wireless broadband for more Alaskans than is possible with higher frequencies. Considering the high costs unique to network deployment in Alaska, including site development and construction costs greatly increased by short construction seasons, inhospitable weather, permitting, logistics and designing sites to operate, maintain and sustain arctic and subarctic extremes, and the high middle-mile backhaul costs between served communities, the efficiency inherent in low-band spectrum becomes even more important.

Accordingly, AWN has invested heavily in 850 MHz spectrum to improve the economics of its rural deployments (which, in Alaska, includes the majority of *all* deployments). 700 MHz spectrum is also needed, however, to meet growing demand, increase coverage, deploy new technologies, and compete with the national carriers. For example, AWN will use 700 MHz spectrum as soon as practicable to roll out new LTE service in [REDACTED] [REDACTED]—in fact, AWN is already beginning preparations to deploy this spectrum in [REDACTED] through its short-term lease arrangement with T-Mobile. AWN plans to expand this deployment to an additional [REDACTED] [REDACTED]

[REDACTED]. In the longer term, 700 MHz spectrum will allow AWN to make similar service upgrades throughout Alaska, which could include augmenting existing low-band capacity [REDACTED].

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

***Request 1(c) – The Company’s timeline for deploying the spectrum that it would acquire in the Proposed Transaction.***

AWN plans to deploy LTE in [REDACTED] using 700 MHz as soon as practicable. In fact, AWN has already begun preparations to deploy 700 MHz LTE in [REDACTED] under a short-term lease agreement covering the spectrum that is the subject of this proposed transaction. In the same timeframe AWN also plans to deploy the spectrum in [REDACTED]

[REDACTED]

[REDACTED] AWN plans to expand this build-out to [REDACTED]  
[REDACTED], covering [REDACTED] of the statewide population.

In parallel, AWN plans to build out [REDACTED]  
[REDACTED].

Beginning in 2018, AWN will begin even broader build out of the 700 MHz spectrum throughout rural Alaska. AWN intends to use the spectrum to provide additional capacity,

augmenting existing AWS deployments, and to provide additional and improved indoor coverage, especially as AWN deploys VoLTE.

***Request 2*** — *Provide polygons in an ESRI shapefile format representing geographic coverage for AWN, including each mobile broadband network technology (e.g., CDMA, EV-DO, EV-DO Rev. A, GSM, EDGE, UMTS, HSPA, HSPA+, LTE) deployed in each frequency band (e.g., Lower 700 MHz, Cellular, AWS-1, PCS). Provide all assumptions, methodology (e.g., propagation, projection, field measurements), calculations (including link budgets), tools (e.g., predictive and field measurements) and data (e.g., terrain, morphology, buildings) used in the production of the polygons, and identify the propagation tool used, the propagation model used within that tool, including but not limited to, the coefficients used in the model and any additions, corrections or modifications made to the model.*

ESRI shapefiles are included as Exhibit 1.

In computing these contours, AWN utilized a wireless network and design planning software tool designed and maintained by InfoVista called Mentum Planet to generate its signal strength and throughput values. Signal strength ( $E_c$ ) and signal to interference ( $E_c/(I_o+N_o)$ ) values are predicted at intervals equal to the resolution of the DEM and clutter data along radials (0 to 359 degrees) out to a terminal distance using an appropriate propagation model (see below). These values are then used to determine the extents of voice coverage and data throughputs of 200 kbps on the down (forward) link and 50 kbps on the up (reverse) link. Assumptions are made with respect to the noise figure of the user equipment (UE). The noise figure of the base station (NodeB) receive chain has been calculated using values provided by the manufacturer in order to effectively calculate the signal-to-interference measurement previously identified. An assumption of a mean UE height of 5 feet (1.52 meters) AGL has been used for all predictions. Sufficient margin has been allocated in the forward and reverse link budgets to allow for the fading effects and the uncertainties of the RF modeling process.

The propagation model used for these predictions is CRC Predict, which is a propagation model that was originally developed by the Communications Research Center in Ottawa Canada. This is a deterministic model that utilizes Huygens's principle of physical optics. In this way the diffraction, attenuation, and absorption effects of both clutter and terrain are taken into account in a manner consistent with the clutter present at any given point along the calculation radials. This provides a more accurate prediction of the field strength values at a given point than non-deterministic or point-slope models that rely upon empirical methods such as curve fitting to predict the field strength. The optimization/fine tuning parameters for the model include clutter height, clutter separation, clutter absorption, and ground type for each clutter classification. Further, the diffraction factor, maximum scatter radius, and fraction of incident power scattered have been adjusted to reflect the regional morphology.

***Request 3*** — *The Mobile Spectrum Holdings Report and Order requires, where an entity acquiring below-1-GHz spectrum already holds approximately one-third or more of the below-1-GHz spectrum in a particular market, that the demonstration of the public interest benefits of the proposed transaction will need to clearly outweigh the potential public interest harms. In Bethel borough, the Company already holds 50 megahertz of below-1-GHz spectrum and, as a result of the Proposed Transaction, would increase its holdings to 62 megahertz of such spectrum in this borough. Provide a detailed explanation why this additional concentration of spectrum clearly outweighs the public interest harms associated with such concentration of below-1-GHz spectrum, irrespective of other factors, i.e., potentially lessening the ability of rival service providers to offer competitive responses. For instance, explain in detail how the Company is maximizing use of its spectrum and how the proposed transaction is necessary to maintain, enhance, or expand mobile telephony/broadband services provided to consumers. Provide all documents relied on in preparing the response.*

AWN is today the only company that has made the investments needed to serve the community of Bethel, Alaska. Even so, it controls only a fraction of the available spectrum there. Demand for AWN's services in that borough and, with it, AWN's spectrum utilization, is high, especially in sub-1 GHz spectrum. Of the 50 MHz of sub-1 GHz spectrum that AWN holds

today, [REDACTED]<sup>1</sup> is currently devoted to GSM, and another [REDACTED] are used for UMTS/HSPA, for a total of [REDACTED] of the available 50 MHz currently used for mobile broadband, or [REDACTED].

This makes Bethel by far the market where AWN’s low-band spectrum is most utilized—in the market where AWN’s low-band spectrum utilization is next highest, Anchorage, AWN currently uses [REDACTED] of the available 25 MHz, or [REDACTED]. This reflects the fact that no other carrier has decided to invest in facilities-based service to consumers in the Bethel market, likely because of its small size and remote location. Moreover, this high degree of low-band spectrum utilization reflects the fact that low-band spectrum is far more economical to deploy in Bethel than higher frequencies, even more so than in other markets.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED] The acquisition of additional low-band spectrum, however, could allow us to expand and improve service, including possibly introducing LTE service, in a way that accounts for these challenges, and consistent with the unique characteristics of the Bethel market.

Importantly, adequate spectrum remains to support competition if another company decides to invest in service to Bethel’s consumers. And a lack of available spectrum does not appear to be the reason that this investment has not taken place. Triad 700, LLC, for example, held the license that is the subject of the proposed transaction for nearly six years, but did not find it economical to deploy this spectrum in Bethel. Similarly, public records indicate that

---

<sup>1</sup> All bandwidth utilization statistics reflect duplex bandwidth.

AT&T, Verizon, Sprint, and DISH each also hold significant amounts of low-band spectrum in the Bethel market, and significant additional higher-band spectrum. None, however, has chosen to deploy any of this spectrum to deliver wireless broadband service to Bethel’s consumers. Any of these carriers could enter the market to compete with AWN in the Bethel market if they choose to, as could T-Mobile following this transaction using its remaining higher-band spectrum resources. In the meantime, the proposed transaction will allow AWN to continue serving the needs of Bethel residents and to compete with the nationwide carriers elsewhere in the state where they offer service.

Thus, approval of the proposed transaction would facilitate AWN’s efforts to meet consumers’ demand for wireless broadband without meaningfully restricting other carriers’ ability to compete in that market.

***Request 4*** — *On page 3 of the Public Interest Statement, the Applicants claim that “AWN is uniquely positioned to maximize use of this [700 MHz] spectrum” because of its “longstanding familiarity with the unique demands of the Alaskan marketplace and environment [and] its deep resources in Alaska.” Explain, and describe in detail, how AWN is uniquely positioned to maximize use of this spectrum, as well as the “unique demands” of the Alaskan marketplace. For each Relevant Area, provide a detailed discussion of how the Proposed Transaction promotes and preserves meaningful competition, would still allow rival service providers and potential new entrants to provide an effective competitive constraint, and how it would allow the Company to become a more effective competitor. Provide all documents relied on in preparing the response.*

AWN is uniquely positioned to realize the potential of 700 MHz spectrum in three different respects.

First, AWN has invested heavily in wireless infrastructure throughout Alaska. This means that if AWN were to acquire the spectrum that is the subject of this proposed transaction, it will have a network of already existing cell sites, fiber and microwave links for backhaul, and

an LTE core ready to support consumers in this new band. This will likely enable Awn to bring the spectrum into operation far more rapidly than any other carrier. In many communities, such as Bethel, Awn suspects that it is the *only* company that could use this spectrum because of the challenges of servicing small Alaskan villages.

Second, and relatedly, Alaska provides a unique and challenging operating environment for a wireless carrier. Most obviously, Alaska weather complicates the logistics of any construction project in Alaska with bitter cold, high winds, ice, and other hazardous conditions. Building a network in Alaska also requires familiarity with construction in arctic and sub-arctic soils, which requires specialized skills, experience, and equipment. To compound these logistical challenges, soil, weather, and available sunlight restrict the building season in Alaska to only three months each summer. Network construction and operation in Alaska also requires familiarity with Alaska's permitting and other legal requirements. Awn has built a local, highly experienced legal, engineering, and project management staff based in Anchorage that can meet each of these challenges.

Finally, 700 MHz spectrum is especially valuable for Awn because Awn, unlike other carriers, is focused exclusively on building out a network in rural Alaska where the properties of this spectrum are most beneficial. Due to 700 MHz spectrum's superior propagation characteristics, Awn has found that 700 MHz delivers higher quality service with greater economic and spectral efficiency [REDACTED]. Compared to 2100 MHz AWS spectrum, for example, 700 MHz spectrum typically [REDACTED] [REDACTED]. Coupled with the significantly increased costs of building cell sites in Alaska, this benefit is especially dramatic. Thus, although other bands offer the right economics for an urban, or dense urban

deployment, 700 MHz spectrum is vastly superior to higher-band spectrum in serving non-urban areas. Put simply, there are no dense urban areas in the entire state of Alaska, and there are only a few square miles in Alaska's three or four largest cities that would generally be considered to be urban. The overwhelming majority of the remainder of the state would be considered rural, or even wilderness, with only scattered community centers reaching suburban densities. However, as discussed below, AT&T and Verizon both hold—and would continue to hold after the proposed transaction—more 700 MHz spectrum (which is solely used for LTE deployments) than AWN in the Alaska market, presenting a significant competitive challenge as wireless carriers evolve their networks to LTE and all-IP infrastructures.

While AWN believes that it is the company with the best ability to use this spectrum for consumers, the Alaska market remains competitive. As the Commission explained in its recent AT&T/Plateau order, the Commission considers the following factors in assessing the potential for competitive harm:

- (1) the number of competing service providers,
- (2) the number of competing firms that can offer competitive service plans,
- (3) the coverage of the firms' respective networks and the technologies used,
- (4) competitors' market shares,
- (5) the combined entity's post-transaction market share and how that share changes as a result of the transaction,
- (6) the amount of spectrum suitable for the provision of mobile telephony/broadband services controlled by the combined entity, and

(7) the spectrum holdings of each of the rival service providers.<sup>2</sup>

The proposed transaction plainly will have no effect on the first two factors: the total number of rival service providers, and the number of rival service providers that can offer competitive service plans. The current holder of the spectrum at issue, T-Mobile, has not found it economically efficient to deploy service in this band in Alaska. Likewise, under factors 3, 4, and 5, the proposed transaction also will not change the coverage area of AWN’s competitors, competitors’ market shares, or AWN’s market share (because the proposed transaction does not include the transfer of any facilities or customers).

Under factors 6 and 7, while the proposed transaction would cause AWN to exceed the spectrum screen by a small amount in a very limited area, AWN’s competitors will continue to retain sufficient spectrum resources to compete meaningfully. In its recent AT&T/Club 42 decision, the Commission authorized a secondary market transaction resulting in AT&T’s exceeding the low-band spectrum screen by approximately the same amount as AWN would as a result of the proposed transaction. The proposed transaction presents the FCC with even less spectrum-screen impact than AT&T’s recently approved transaction. In this case, AWN would only exceed the low-band spectrum screen in Bethel, Alaska, a community home to approximately 10,000 people. But after the approved Club 42 decision, AT&T now exceeds the screen in CA12-Kings and CA5-San Luis Obispo, home to a total of 423,000 people.<sup>3</sup> As AT&T did in AT&T/Club 42, AWN faces a number of competitors with both significant financial and

---

<sup>2</sup> *Applications of AT&T Inc., E.N.M.R. Tel. Coop., Plateau Telecommunications, Inc., New Mexico RSA 4 East Ltd. P’ship, and Texas RSA 3 Ltd. P’ship*, Memorandum Opinion and Order, FCC 15-53, 30 FCC Rcd. 5107, ¶ 29 (2015) (“AT&T/Plateau”).

<sup>3</sup> *Application of AT&T Mobility Spectrum LLC and Club 42CM Limited Partnership*, Memorandum Opinion and Order, FCC 15-150 ¶¶ 35-37 (2015) (“AT&T/Club 42”).

spectral resources—including low-band holdings.<sup>4</sup> As discussed above, each of the nationwide carriers holds a significant amount of spectrum—including 850 MHz, 700 MHz, SMR, PCS, and AWS spectrum—statewide, and Alaska is also home to several smaller, local carriers.

AT&T holds a comparable amount of spectrum to AWN throughout Alaska, including low-band spectrum, with other carriers not far behind.<sup>5</sup> Both AT&T and Verizon currently hold more 700 MHz spectrum than AWN throughout Alaska. These two national carriers compete vigorously with AWN, especially in Alaska’s more urban markets, with robust LTE deployments. Thus, while AWN believes that it has a particular dedication to putting this spectrum to use for rural Alaska, other carriers can and do compete successfully with AWN in markets all across the state where they choose to offer service. Therefore, the proposed transaction, far from stifling wireless broadband in Alaska, is essential to maintaining AWN’s status as a meaningful competitive constraint on the national carriers, while simultaneously facilitating AWN’s efforts to expand and improve wireless broadband in Alaska’s many un- or underserved communities.

---

<sup>4</sup> See AT&T/Club 42 ¶ 35.

<sup>5</sup> See AT&T/Club 42 ¶ 38 (noting, as in this transaction, that “post-transaction, the three other nationwide service providers all hold low-band spectrum”).

### Table of Exhibits

<b>Ex.1</b>	Request 1	Custodian: Brian Demarco	<i>700 MHz Build-Out Capital Project Approval Request</i>
<b>Ex.2</b>	Request 1,4	Custodian: Gene Strid	<i>AWS v. 700 MHz Spectrum Propagation Analysis</i>
<b>Ex.3</b>	Request 2	Custodian: Mark Schott	<i>AWN Coverage Shapefiles by Technology and Band</i>
<b>Ex.4</b>	Request 3	Custodian: Gene Strid	<i>Spectrum Utilization Overview</i>

Exhibit 1

**700 MHz Build-Out Capital Project Approval Request**



Exhibit 2

**AWS v. 700 MHz Spectrum Propagation Analysis**

REDACTED – FOR PUBLIC INSPECTION  
Highly Confidential Information Redacted

Exhibit 3

**ESRI Shapefiles**

**[Provided Electronically on CD-ROM — Highly Confidential]**

Exhibit 4

**Spectrum Utilization Overview**

# Spectrum Utilization Overview

Prepared in Response to FCC  
Information Request

REDACTED – FOR PUBLIC INSPECTION  
Highly Confidential Information Redacted

AWN023

REDACTED – FOR PUBLIC INSPECTION  
Highly Confidential Information Redacted

AWN024

REDACTED – FOR PUBLIC INSPECTION  
Highly Confidential Information Redacted

REDACTED – FOR PUBLIC INSPECTION  
Highly Confidential Information Redacted

AWN026