



**REQUEST FOR CONFIDENTIAL TREATMENT**

**VIA ELECTRONIC SUBMISSION  
AND HAND DELIVERY**

April 23, 2014

Marlene H. Dortch, Secretary  
Federal Communications Commission  
445 12<sup>th</sup> Street, S.W., Room TW-A325  
Washington, DC 20554

Re: *Wireless E911 Location Accuracy Requirements*, PS Docket No. 07-114

Dear Ms. Dortch:

General Communication, Inc. (“GCI”) requests that, pursuant to Sections 0.457 and 0.459 of the Commission’s rules,<sup>1</sup> the Commission withhold from public inspection and accord confidential treatment to the identified portions of the attached Amended Petition for Waiver. These portions of the Petition contain sensitive commercial information that falls within Exemption 4 of the Freedom of Information Act (“FOIA”).<sup>2</sup>

Exemption 4 of FOIA provides that the public disclosure requirement of the statute “does not apply to matters that are...(4) trade secrets and commercial or financial information obtained from a person and privileged or confidential.”<sup>3</sup> Because GCI is voluntarily providing commercial information “of a kind that would not customarily be released to the public” as part of its request for a waiver of the Commission’s rules, this information is “confidential” under Exemption 4 of FOIA.<sup>4</sup>

In support of this request and pursuant to Section 0.459(b) of the Commission’s rules, GCI hereby states as follows:

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<sup>1</sup> 47 C.F.R. §§ 0.457 & 0.459.

<sup>2</sup> 5 U.S.C. § 552(b)(4).

<sup>3</sup> 5 U.S.C. § 552(b)(4).

<sup>4</sup> *See Critical Mass Energy Project v. NRC*, 975 F.2d 871, 879 (D.C. Cir. 1992).

## REQUEST FOR CONFIDENTIAL TREATMENT

**1. IDENTIFICATION OF THE SPECIFIC INFORMATION FOR WHICH CONFIDENTIAL TREATMENT IS SOUGHT<sup>5</sup>**

GCI seeks confidential treatment with respect to the portions of the Petition which contain confidential location accuracy data for GCI's CMRS services.

**2. DESCRIPTION OF CIRCUMSTANCES GIVING RISE TO THE SUBMISSION<sup>6</sup>**

The Commission's Second Report and Order (FCC 10-176) provides that carriers that cannot meet a particular location accuracy benchmark may petition for waivers. This is particularly appropriate for Tier III carriers such as GCI.

**3. EXPLANATION OF THE DEGREE TO WHICH THE INFORMATION IS COMMERCIAL OR FINANCIAL, OR CONTAINS A TRADE SECRET OR IS PRIVILEGED<sup>7</sup>**

The portions of the Petition for which confidential treatment is sought contain sensitive commercial information "which would customarily be guarded from competitors." 47 C.F.R. § 0.457. GCI does not make this information publicly available.

**4. EXPLANATION OF THE DEGREE TO WHICH THE INFORMATION CONCERNS A SERVICE THAT IS SUBJECT TO COMPETITION<sup>8</sup>**

The market for CMRS services is highly competitive.

**5. EXPLANATION OF HOW DISCLOSURE OF THE INFORMATION COULD RESULT IN SUBSTANTIAL COMPETITIVE HARM<sup>9</sup>**

Disclosure of this sensitive and closely-guarded information, not normally disclosed to the public, could enable a competitor to learn about GCI's network and market services in competition with GCI.

**6. IDENTIFICATION OF ANY MEASURES TAKEN BY THE SUBMITTING PARTY TO PREVENT UNAUTHORIZED DISCLOSURE<sup>10</sup>**

GCI does not distribute the information for which confidential treatment is sought without a non-disclosure agreement.

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<sup>5</sup> 47 C.F.R. § 0.459(b)(1).

<sup>6</sup> 47 C.F.R. § 0.459(b)(2).

<sup>7</sup> 47 C.F.R. § 0.459(b)(3).

<sup>8</sup> 47 C.F.R. § 0.459(b)(4).

<sup>9</sup> 47 C.F.R. § 0.459(b)(5).

<sup>10</sup> 47 C.F.R. § 0.459(b)(6).

## REQUEST FOR CONFIDENTIAL TREATMENT

7. **IDENTIFICATION OF WHETHER THE INFORMATION IS AVAILABLE TO THE PUBLIC AND THE EXTENT OF ANY PREVIOUS DISCLOSURE OF THE INFORMATION TO THIRD PARTIES**<sup>11</sup>

The redacted information in the Petition is not and has not previously been publicly disclosed.

Respectfully submitted,



Kristine Laudadio Devine  
*Counsel to General Communication, Inc.*

Attachment

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<sup>11</sup> 47 C.F.R. § 0.459(b)(7).

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

In the Matter of )  
 )  
Wireless E911 Location Accuracy ) PS Docket No. 07-114  
Requirements )

**AMENDED PETITION FOR WAIVER  
OF GENERAL COMMUNICATION, INC.**

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April 23, 2014

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**AMENDED PETITION FOR WAIVER OF GENERAL COMMUNICATION, INC.**

General Communication, Inc. (“GCI”), a Tier III wireless carrier, hereby amends its petition for waiver of the Phase II location accuracy benchmarks for network-based technologies, as required by 47 C.F.R. § 20.18(h)(1). Two years ago, GCI asked the Commission to waive its Phase II location accuracy benchmark schedule for network-based technologies until the sooner of two years or such time as handsets that are compliant with the A-GPS control plane protocols sufficiently penetrate GCI’s market to achieve the applicable accuracy benchmarks through blended accuracy reporting.<sup>1</sup> GCI has worked diligently over the past two years to improve its location accuracy and is now compliant with the accuracy requirements in the first Phase II location accuracy benchmark. But due to a number of factors, predominantly the accuracy of its network-based location algorithms (which in turn is due partly to low overall cell site densities), GCI will need additional time to comply with the second Phase II location accuracy benchmark. GCI therefore amends its petition for waiver, asking the Commission to waive the second Phase II location accuracy benchmark in order to allow it and its location technology vendor to continue their work deploying a feasible hybrid A-GPS + network-based location accuracy solution.

**I. INTRODUCTION AND SUMMARY**

GCI has made the Commission aware of the particular difficulties presented by both geography and population distribution in Alaska on the record in this docket. GCI’s record of participation in this docket is described in detail in GCI’s original petition,<sup>2</sup> as are the unique

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<sup>1</sup> Petition for Waiver of General Communication, Inc., PS Docket No. 07-114 (filed Jan. 18, 2012) (“GCI Petition”).

<sup>2</sup> *See id.* at 2-3.

difficulties it faces in improving location accuracy in Alaska.<sup>3</sup> Rather than repeat that background here, GCI will simply note that those unique conditions have not changed: Alaska's boroughs (equivalent to counties) are made up of vast, sparsely populated (or unpopulated) areas, difficult terrain, line-of-sight barriers, and public property ownership restrictions. And although the rules permit the exclusion of areas in which triangulation is not possible because of spacing between cell sites or other engineering reasons, GCI's compliance is made especially difficult by the small number of boroughs that have requested and implemented E911.<sup>4</sup> Within GCI's footprint, there are only seven such boroughs, only six of which have sufficient cell sites to triangulate a network-based location.

Accordingly, difficulty meeting the benchmarks in even just one or two boroughs results in an inability to meet the second location accuracy benchmarks in the requisite percentage of benchmarks and for the requisite percent of the population. In contrast, larger carriers, which serve more counties and less concentrated populations, can more easily meet these benchmarks simply because sub-par performance in even a relatively large number of counties is not as significant.

Other conditions cited in GCI's original petition, however, have changed, resulting in substantial improvement in location accuracy. First, GCI increased the number of standards-compliant A-GPS capable handsets available to its customers, achieving █████ percent A-GPS capable handset penetration as of January 2014. A-GPS location estimates are significantly more accurate than network-based location estimates. Second, GCI continues to work with Polaris

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<sup>3</sup> See *id.* at 5-8.

<sup>4</sup> The following boroughs have requested and implemented Phase II E911 service: Anchorage, Fairbanks, Juneau, Kenai, Matanuska-Susitna Valley, Ketchikan and Sitka. Of these, Sitka lacks sufficient cell sites to triangulate a network-based location.

Wireless (“Polaris”), its network-based location technology partner, to improve the network algorithms used to determine location. Third, GCI has continued deployment of macro network sites, as it indicated in its original petition.<sup>5</sup> These additional sites have had a marked effect on GCI’s location accuracy, most notably in the Fairbanks North Star Borough.

As a result of these efforts, GCI now meets the first location accuracy benchmark, achieving greater than 67 percent accuracy in 60 percent of counties and 70 percent of the population covered by its network.<sup>6</sup> GCI, however, is unable to meet the second Phase II location accuracy benchmarks, though it falls short by only a small margin. The second benchmark requires that GCI now be able to provide accuracy within 100 meters for 67 percent of calls in 70 percent of boroughs covering 80 percent of the population, and within 300 meters for 90 percent of calls in 60 percent of boroughs covering 70 percent of the population.<sup>7</sup> In both cases, the small number of boroughs that have Phase II E911 service makes it difficult for GCI to meet the percent of counties/populations requirements; in both cases, in the boroughs where GCI misses the accuracy standard, it does so by only a few percentage points.

Thus, for the 100 meter/67 percent standard, GCI meets the benchmark in five of seven boroughs (71 percent), but those boroughs only cover approximately 70 percent of the population rather than 80 percent, as specified in the benchmark; in the seventh borough, GCI provides location estimates accurate within 100 meters for ■■■ percent of calls, missing the benchmark by only ■■■ percent of calls. Similarly, GCI meets the 300 meter/90 percent standard in two boroughs (Anchorage and Kenai), covering more than 50 percent of the population, but it also

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<sup>5</sup> *Id.* at 11.

<sup>6</sup> *See* 47 C.F.R. § 20.18(h)(1)(i)(A).

<sup>7</sup> 47 C.F.R. § 20.18(h)(1)(i)(B), (ii)(A).

provides location estimates accurate within 300 meters for at least [REDACTED] percent of calls in the remaining five boroughs with Phase II E911 service—a difference of just [REDACTED] percent of calls. GCI expects that as it continues to roll out network upgrades and new cell sites, and as A-GPS capable handset penetration improves, it will be able to meet the third Phase II location accuracy benchmarks by January 18, 2016.

## II. LEGAL REQUIREMENTS

Section 1.925(b)(3)(ii) of the Commission’s Rules establish that a request for waiver may be granted when the “unique or unusual factual circumstances” at issue would render application of the rule “inequitable, unduly burdensome or contrary to the public interest, or [when] the applicant has no reasonable alternative.” The Commission further articulated its requirements for waivers in the E911 context in its *Fourth Memorandum Opinion and Order* on E911.<sup>8</sup> In that Order, the Commission noted that it expects E911 waiver requests to be “specific, focused and limited in scope, and with a clear path to full compliance.”<sup>9</sup> The Commission also required that requesting carriers “should undertake concrete steps necessary to come as close as possible to full compliance . . . and should document their efforts aimed at compliance in support of any waiver requests.”<sup>10</sup>

The Commission declined in the *Second Report and Order* to “adopt any changes to the Commission’s existing waiver criteria” and extend specific waiver criteria for Tier III carriers.<sup>11</sup>

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<sup>8</sup> *Revision Of The Commission's Rules To Ensure Compatibility With Enhanced 911 Emergency Calling Systems*, Fourth Memorandum Opinion and Order, FCC 00-326, 15 FCC Rcd. 17,442, 17,457-58 ¶¶ 42-45 (2000).

<sup>9</sup> *Id.* at 17,458 ¶ 44.

<sup>10</sup> *Id.*

<sup>11</sup> *Wireless E911 Location Accuracy Requirements*, Second Report and Order, FCC 10-176, 25 FCC Rcd. 18,909, 18,930 ¶ 56 (2010).

It noted that “carriers facing unique circumstances may seek waiver relief based on certain factors”<sup>12</sup> and that it would continue to address particular circumstances on a case-by-case basis.<sup>13</sup> The Commission specifically noted that it would take into account factors such as financial considerations<sup>14</sup> as well as a carrier’s particular circumstances and the potential impact to public safety<sup>15</sup> in a waiver request.

**III. GCI CONTINUES TO INVEST HEAVILY IN PHASE II COMPLIANCE EFFORTS.**

**A. Wider Adoption of A-GPS Capable Handsets by GCI Subscribers Will Enable GCI to Meet the Second and Subsequent Benchmarks.**

As it recognized in 2012, GCI can only meet the Phase II benchmarks by deploying a hybrid A-GPS + network-based solution. The hybrid solution, of course, requires that sufficient numbers of GCI subscribers obtain A-GPS capable phones to overcome the overall lower accuracy of Polaris Wireless’ Wireless Location Signatures (WLS) network-based solution (location engine) location fixes in areas where WLS is most challenged. In 2012, GCI faced significant difficulty obtaining A-GPS capable handsets and deploying those handsets to sufficient numbers of its subscribers to improve its location accuracy. Those issues, however, have been resolved.

First, GCI has succeeded in providing A-GPS capable phones to nearly half of its subscriber base. In 2012, GCI estimated that it would need to attain handset penetrations between 40 and 60 percent to meet the first location accuracy benchmark. As of January 2014,

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<sup>12</sup> *Id.* at 18,913 ¶ 12.

<sup>13</sup> *Id.* at 18,930 ¶ 56.

<sup>14</sup> *Id.* at 18,915 ¶ 16.

<sup>15</sup> *Id.* at 18,919 ¶ 27.

GCI has seen A-GPS handset penetration reach [REDACTED] percent. This effort contributed to the remarkable improvement GCI has seen in its location accuracy since 2012.

Second, GCI has begun to deploy a larger percentage of LTE capable smartphones to its subscriber base. These phones are being sourced domestically rather than from overseas, which has greatly enhanced GCI's location accuracy yield because these phones comply with emergency call location standards using the requisite control plane location methodology.

GCI is continuing its efforts to roll out A-GPS capable handsets, though those efforts are slowed by factors unique to GCI's service and location. Specifically, GCI continues to offer GSM and UMTS feature phones for pre-paid and Lifeline services, many of which do not have A-GPS chipsets and/or do not have A-GPS emergency call location capability. In the pre-paid market, there is little demand for smartphones with A-GPS capability, as those subscribers are looking for inexpensive devices used mostly for voice calls and basic texting. And because Lifeline benefits cannot today be used for data services, those subscribers almost exclusively activate feature phones. Today, GCI estimates that only approximately [REDACTED] percent of new devices activated on GCI's network currently are A-GPS capable, because of the relatively high percentage of pre-paid and Lifeline devices activated each month.

Though GCI has seen some interest in pre-paid data service that would require smartphones, that is a new market niche that is unlikely to have a significant impact on A-GPS handset penetration in the near future. Likewise, because GCI has the highest Lifeline subscriber base of any wireless carrier in Alaska, feature phones used by those subscribers will continue to be a significant percentage of the phones activated on its network. These factors will continue to have a significant impact on GCI's overall A-GPS capable handset penetration.

**B. GCI’s Location Accuracy Will Improve as Its Location Technology Vendor Implements Updates and Corrections.**

GCI retained Polaris as its location accuracy vendor in June 2008. Polaris’s software compares radio measurement values of a user’s handset with values in a pre-established and calibrated database and uses a proprietary algorithm to determine location. Though Polaris’s initial deployment of its solution was not successful in enabling GCI to meet the first Phase II location accuracy benchmark,<sup>16</sup> GCI has continued to work with Polaris over the past two years to refine and optimize Polaris’s implementation of its location algorithm in GCI’s network. These efforts have been aided by GCI’s addition of new cell sites, an increase in the number of GCI subscribers with A-GPS capable handsets, and general improvements by Polaris to its technology in response to the needs of its many customers. As a result, all of GCI’s markets have seen some improvement, and some have seen remarkable improvement. The following table lists the various accuracies in meters of the network-based solution for the five boroughs with Phase II E911 service that were not excluded in 2011 and 2013. (Note that the Ketchikan Gateway Borough had not launched Phase II E911 service in 2011):

WLS Results		67th Percentile, Error (meters)		90th Percentile, Error (meters)	
		2011	2013	2011	2013
Market	Anchorage	■	■	■	■
	Fairbanks	■	■	■	■
	Kenai	■	■	■	■
	Juneau	■	■	■	■
	Matanuska Susitna Valley	■	■	■	■
	Ketchikan		■		■

<sup>16</sup> See GCI Petition at 8-10.

These results show that all but one borough demonstrated improved network-based location accuracy from 2011 to 2013. This is due to increased cell density and/or improved RF signature algorithm performance.

**C. GCI’s Ongoing Addition of Macro Network Sites Will Drive Improvements in Location Accuracy.**

GCI has continued deployment of macro network sites, as it indicated in its original petition. The network-based location accuracy solution benefits from a combination of both RF signature analysis algorithm improvements and cell site density improvements; thus, the addition of cell sites generally improves the accuracy of that solution. Though GCI has not separately measured the effects of the added cell sites, both it and Polaris concur that at least some location accuracy improvement is due to increased cell site density.

**IV. DESPITE CONTINUING DIFFICULTIES, GCI HAS SEEN SIGNIFICANT IMPROVEMENT IN ITS PHASE II LOCATION ACCURACY.**

In 2012, despite its best efforts, GCI’s location accuracy fell far short of the first Phase II location accuracy benchmark. Though GCI cannot today meet the second Phase II benchmarks, it is missing those benchmarks by only a small margin in the relevant boroughs. Furthermore, those locations where GCI continues to have the most difficulty, shown in the table below, are boroughs that exemplify the geographic challenges for location accuracy in Alaska.

Market	67th Percentile Error (meters)	90th Percentile Error (meters)	Calls with <100m error	Calls with <300m error	% of POPs covered
Anchorage	█	█	█	█	42.8%
Fairbanks	█	█	█	█	14.2%
Kenai	█	█	█	█	7.8%
Juneau	█	█	█	█	4.6%
Matanuska Susitna Valley	█	█	█	█	12.8%
Ketchikan	█	█	█	█	1.9%
Sitka City and Borough*	n/a	n/a	n/a	n/a	1.3%

\* Sitka City and Borough is excluded from location accuracy estimates because of insufficient cell sites to achieve triangulation within any portion of the borough.

For instance, the Matanuska Susitna (“Mat-Su”) Valley Borough is a large county with very low population density. The Borough has an area of approximately 18,000 square miles (excluding over 7000 square miles of water) and a 2012 estimated population of about 94,000 people. This is an approximate average population density of five people per square mile of land. The Mat-Su Borough is very large, and much of it uninhabited, but even the portion that is inhabited has very low population density as compared, for instance, to Anchorage, Juneau, and Ketchikan. Similarly, Ketchikan is located in the Alaska Inside Passage island archipelago, situated on the water alongside a mountain. Its coverage is provided by, essentially, a “string of pearls” network geometry, with only one site across the Tongass Narrows waterway providing triangulation assistance.

Even Alaska’s “urban” communities, including Fairbanks, are not densely populated compared to the rest of the United States. Fairbanks is Alaska’s second largest city after Anchorage, and yet the city has a population of only 32,070. Fairbanks North Star Borough has only 100,000 residents and a population density of 13 persons per square mile. Lower population densities translate to lower cell site densities, which makes accurate location determination more difficult than in areas with higher cell site densities.<sup>17</sup> These very low populations—and low population densities as compared to the rest of the United States—do not result in “urban” population densities sufficient to support the number of cell sites that will produce the required accuracy for network-based solutions.

In addition, GCI’s ability to meet the Phase II location accuracy benchmarks on a statewide basis is hampered by the number of boroughs (and areas within boroughs) excluded

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<sup>17</sup> This is because location algorithms are able to determine distances to cell sites more easily in areas with strong cell site signal strengths, as measured by the handset.

from its analysis because triangulation is not technically possible.<sup>18</sup> As of the beginning of 2014, only seven boroughs in Alaska have at least one PSAP that has requested Phase II location information; only six of these are includable in its accuracy analysis,<sup>19</sup> forcing GCI to work with a very small sample size. This makes it difficult to draw any conclusions about GCI's overall location accuracy using a percentage of counties approach, as required by the rules. That is, each borough takes on undue significance as compared with a larger carrier serving many counties and a less concentrated population. Thus, failure to meet the benchmarks by fewer than four percent in just one borough means that GCI cannot meet the 100 meter/67 percent benchmark, and the failure to meet the benchmarks by fewer than five percent in just two boroughs means that GCI cannot meet the 300 meter/90 percent benchmark. Furthermore, because network-based yield will almost always be poorer in very remote areas, those boroughs with the lowest population density will almost always have the greatest difficulty achieving higher accuracies. In GCI's footprint, boroughs like Ketchikan and the Matanuska-Susitna Valley Borough will always be highly challenged because of very low population density, as well as geographic features such as hills and trees; network architectures ("string of pearls") providing weak triangulation ability; and, of course, low cell site density.

Improvements in the WLS location algorithm are expected to continue, particularly with GCI's plan to install new SMLC server hardware (which will enable use of an updated software version). But GCI believes that continuing improvements in A-GPS handset penetrations will be the key factor in ensuring that all includable boroughs meet the second Phase II location

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<sup>18</sup> See 47 C.F.R. § 20.18(h)(1)(vi) ("A carrier may exclude from compliance particular counties, or portions of counties, where triangulation is not technically possible, such as locations where at least three cell sites are not sufficiently visible to a handset.").

<sup>19</sup> Sitka City and Borough are excluded because triangulation is not possible in any portion of the borough. *See id.*

accuracy benchmark. GCI anticipates that it will achieve the necessary handset penetration within two years, if not sooner.

**V. CONCLUSION**

GCI has been working diligently to implement Phase II location accuracy in Alaska since 2008. Those efforts have included improving A-GPS capabilities throughout its network and increasing the number of subscribers with A-GPS capable handsets. GCI has made significant strides toward meeting the Phase II benchmarks. Despite GCI's heavy investment of time and money, GCI is just short of meeting the second benchmark for network-based solutions. In view of the foregoing, GCI respectfully amends its request for a waiver of the Phase II location accuracy benchmarks, asking the Commission to waive the second Phase II location accuracy benchmark until the sooner of two years or such time as handsets that are compliant with the A-GPS control plane protocols sufficiently penetrate GCI's market to achieve the applicable accuracy benchmarks through blended accuracy reporting.

Respectfully submitted,



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