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Via ECFS

Marlene H. Dortch, Secretary
Office of the Secretary
Federal Communications Commission
445 12th Street, SW, Room TW-A325
Washington, DC 20554

Re: Custer Telephone Cooperative, Inc.
Initial Implementation Plan and First Progress Report
E911 Location Accuracy, PS Docket No. 07-114

Dear Ms. Dortch:

Pursuant to Section 20.18(i)(4)(i) and (ii) of the Commission's Rules, Custer Telephone Cooperative, Inc. ("Custer") hereby submits its initial implementation plan and first progress report on implementation of indoor location accuracy improvements.

Please contact the undersigned counsel should you have any questions.

Very truly yours,



D. Cary Mitchell
Its Counsel

Custer Telephone Cooperative, Inc.

Initial Implementation Plan and First Progress Report For Implementing Indoor Wireless E911 Location Accuracy Requirements

Introduction

Custer Telephone Cooperative, Inc. (“Custer” or the “Company”) is a Tier III CMRS service provider that provides service in the State of Idaho. The Company is a member of and provides mobile voice and data services in conjunction with the Rural Independent Network Alliance, LLC (“RINA”), which provides LTE Core hosting and CDMA switching for its member companies. In this document Custer describes its Implementation Plan (the “Plan”) and First Progress Report (the “Report”) toward meeting the extended location accuracy benchmarks for indoor 9-1-1 calls that the Federal Communications Commission (“FCC” or “Commission”) adopted in its *Fourth Report and Order* on Wireless E911 Location Accuracy Requirements (the “*Fourth R&O*”).¹

Custer notes that it is also a participant in the Verizon LTE in Rural America (or “LRA”) program, with switching/routing for its LRA system, including PSAP routing for 9-1-1 calls, provided by Verizon Wireless. Accordingly, the scope of this Plan and Report is limited to Custer’s independent CMRS operations, which operate through the RINA switch.

Custer’s independent CMRS operations currently provide voice and data services in central Idaho and the Company provides E911 services to requesting PSAPs in Butte County, Custer County and Lemhi County in conjunction with West Safety Services (West). As a very small Tier III service provider, Custer does not have the resources to participate in the standards and technology development process in the same way as Tier I and many Tier II companies, and we must rely on service providers such as West to develop, test and implement solutions that are consistent with industry standards and that allow us to timely meet the Commission’s E911 and indoor location benchmarks.

Indoor Location Requirements

In the *Fourth R&O*, the FCC adopted rules to improve indoor location accuracy by requiring CMRS providers to meet wireless 911 location accuracy metrics at periodic benchmarks. The substantive requirements are summarized below, and inform our company’s Implementation Plan.

Horizontal Location

With respect to horizontal location, the Commission’s rules require non-nationwide CMRS providers to provide (1) dispatchable location, or (2) x/y (horizontal) location within 50 meters, for the following percentages of wireless 911 calls within the following timeframes (measured from the **April 3, 2015** Effective Date of rules adopted in the *Fourth Report and Order*):

- Within 2 years (2017): 40 percent of all wireless 911 calls.
- Within 3 years (2018): 50 percent of all wireless 911 calls.

¹ Wireless E911 Location Accuracy Requirements, *Fourth Report and Order*, PS Docket No. 07-114, 30 FCC Rcd 1259 (2015) (*Fourth R&O*) and rules 47 C.F.R. § 20.18(i) et seq.

- Within 5 years (2020*): 70 percent of all wireless 911 calls.
- Within 6 years (2021*): 80 percent of all wireless 911 calls.

* NOTE: Regional, small, and rural providers are permitted extend the five and six-year deadlines based on the timing of VoLTE deployment in their networks.

Providers must file **compliance certifications** within 60 days from the compliance deadline (*i.e.*, by June 2nd of the relevant year).

Vertical Location

With respect to vertical location, the Commission's rules require non-nationwide CMRS providers to meet the following requirements: ²

- Within 3 years, all CMRS providers must make uncompensated barometric data available to PSAPs from any handset that has the capability to deliver barometric sensor data.
- Within 6 years, nationwide CMRS provides must deploy either (1) dispatchable location, or (2) z-axis technology that achieves the Commission-approved z-axis metric, in each of the top 25 CMAs:
 - The National Emergency Address Database (NEAD) must be populated with a total number of dispatchable location reference points in the CMA equal to 25 percent of the CMA population if dispatchable location is used.
 - CMRS providers must deploy z-axis technology to cover 80 percent of the CMA population if z-axis technology is used.
- Within 8 years, nationwide CMRS providers must deploy dispatchable location or z-axis technology in accordance with the above benchmarks in each of the top 50 CMAs.

To the extent they serve any of the top 25 or 50 CMAs, non-nationwide carriers will have an additional year to meet the latter two benchmarks (*i.e.*, relating to years 6 and 8). Providers must file **compliance certifications** within 60 days from the compliance deadline (*i.e.*, by October 2nd of the relevant year).

Filer's status: Since the Company does not currently provide service in any of the top 50 CMAs, the Company does not currently have any obligation to meet the dispatchable location or z-axis metric vertical location benchmarks.

Live 911 Call Data Reports

Quarterly reporting of live 911 data will begin no later than 18 months from the date the rules become effective (*i.e.*, February 3, 2017); CMRS providers will also provide quarterly live call data on a more granular basis that allows evaluation of the performance of individual location technologies within different morphologies (e.g., dense urban, urban, suburban, rural). Non-nationwide carriers report their aggregate live 911 call data on a semi-annual basis. Non-nationwide CMRS providers must file reports

² Compliance dates are calculated from an August 3, 2015 Effective Date.

every six months for the prior two calendar-year quarters, with each report due on the first business day of the second month after the six-month period for which data is reported. See Public Safety and Homeland Security Bureau Provides Guidance to CMRS Providers Regarding Submission of Periodic E911 Location Accuracy Live Call Data Reports, *Public Notice* DA 17-82.

Filer's Implementation Plan

Our Company's Implementation Plan for meeting the Commission's extended location accuracy benchmarks for indoor 9-1-1 calls as adopted in the *Fourth R&O* has been developed in conjunction with West Safety Services as our company's E911 technology solution and service provider. As a very small Tier III service provider, Custer does not have the resources to participate in the standards and technology development process in the same way as Tier I and many Tier II companies, and we must rely on service providers such as West to develop, test and implement solutions that are consistent with industry standards and that allow us to timely meet the Commission's E911 and indoor location benchmarks. An executive summary of West's Location Performance Management (LPM) suite of services is attached below and is offered as a description of capabilities that are, or that at an appropriate time will be, enabled in our company's network. Representatives of West (formerly known as Intrado, Inc.) have been involved in the implementation of the indoor 9-1-1 location accuracy test bed to evaluate location technologies and to assist equipment vendors, carriers and other stakeholders in determining compliance of the indoor test bed methodology. The wireless industry's 911 Location Accuracy Technologies Test Bed (Test Bed) LLC is actively evaluating 911 location accuracy solutions from wireless carriers and technology vendors in accordance with FCC rules and Alliance for Telecommunications Industry Solutions (ATIS) standards. Last fall, the 911 National Emergency Address Database (NEAD) LLC, an independent entity established by CTIA to implement a national database of access point (e.g., Wi-Fi hotspots) and beacon (e.g., Bluetooth Low Energy) location information, selected West to develop and operate the NEAD Platform. With a NEAD operator in place, the wireless industry remains on schedule to enhance indoor 911 location accuracy by harnessing commercial technologies.

Our Implementation Plan includes the following milestones:

Live 911 Call Data Reports - §20.18 (i)(3)(ii)

Feb 3, 2017 **Live 911 Call Data Reports – Non-Nationwide Providers** that do not provide coverage in any of the Test Cities must collect and report aggregate data based on the largest county within its footprint to APCO, NENA, and NASNA on the location technologies used for live 911 calls in those areas. RECURRING REPORT DUE EVERY SIX MONTHS

Horizontal Location - §20.18 (i)(2)(i)

April 3, 2017 For wireless 911 calls, **all CMRS providers** must provide: (1) dispatchable location; or (2) x/y location (*i.e.* Horizontal Location) within 50 meters for **40% of all wireless 911 calls**. (NOTE: Per §20.18 (i)(2)(i)(B)(1). Related compliance certification is due within 60 days of benchmark (*i.e.*, by June 2, 2017).

June 2, 2017 E911 Indoor Location Accuracy Compliance Certifications Due - **all CMRS providers** must provide: (1) dispatchable location; or (2) x/y location within 50 meters for **40% of all wireless 911 calls**.

[Live 911 Call Data Reports - §20.18 \(i\)\(3\)\(ii\) / DA 17-82](#)

Aug 1, 2017 **Live 911 Call Data Reports – Non-Nationwide Providers** that do not provide coverage in any of the Test Cities must collect and report aggregate data based on the largest county within its footprint to APCO, NENA, and NASNA on the location technologies used for live 911 calls in those areas.

[Indoor Location Accuracy for 911 – Plans and Reports filed in PS Docket No. 07-114](#)

Aug 3, 2017 E911 Indoor Location Accuracy Initial implementation plan / first progress reports due Aug. 3 – NOTE: **All CMRS providers** must submit an **Initial Implementation Plan** to FCC describing their plans for meeting the indoor location accuracy requirements of paragraph (i)(2) of this section / §20.18 (i)(4)(i); also **All CMRS providers** must submit **First Progress Report** on implementation of indoor location accuracy requirements to FCC / §20.18 (i)(4)(ii)

[Live 911 Call Data Reports - §20.18 \(i\)\(3\)\(ii\) / DA 17-82](#)

Feb 1, 2018 **Live 911 Call Data Reports – Non-Nationwide Providers** that do not provide coverage in any of the Test Cities must collect and report aggregate data based on the largest county within its footprint to APCO, NENA, and NASNA on the location technologies used for live 911 calls in those areas.

[Horizontal Location - §20.18 \(i\)\(2\)\(i\)](#)

April 3, 2018 For wireless 911 calls, **all CMRS providers** must provide: (1) dispatchable location; or (2) x/y location (*i.e.* Horizontal Location) within 50 meters for **50% of all wireless 911 calls**. (NOTE: Per §20.18 (i)(2)(i)(B)(2). Related compliance certification is due within 60 days of benchmark (*i.e.*, by June 2, 2018).

June 2, 2018 E911 Indoor Location Accuracy Compliance Certifications Due - **all CMRS providers** must provide: (1) dispatchable location; or (2) x/y location within 50 meters for **50% of all wireless 911 calls**.

[Live 911 Call Data Reports - §20.18 \(i\)\(3\)\(ii\) / DA 17-82](#)

Aug 1, 2018 **Live 911 Call Data Reports – Non-Nationwide Providers** that do not provide coverage in any of the Test Cities must collect and report aggregate data based on the largest county within its footprint to APCO, NENA, and NASNA on the location technologies used for live 911 calls in those areas.

[Indoor Location Accuracy for 911 – Plans and Reports filed in PS Docket No. 07-114](#)

Aug 3, 2018 E911 Indoor Location Accuracy second progress reports due Aug. 3 – NOTE: **All CMRS providers** must submit Progress Report on implementation of indoor location accuracy requirements to FCC detailing what progress the provider has made consistent with its implementation plan. / §20.18 (i)(4)(ii)

[Vertical Location - §20.18 \(i\)\(2\)\(ii\)](#)

Aug 3, 2018 **All CMRS providers** must make uncompensated barometric data (*i.e.*, Vertical Location) available to PSAPs from any handset capable of delivering barometric sensor data. (Per

§20.18 (i)(2)(ii)(A) NOTE: Related compliance certification is due within 60 days of benchmark (*i.e.*, by October 2, 2018).

Oct 2, 2018 E911 Indoor Location Accuracy Compliance Certifications Due - **All CMRS providers** must make uncompensated barometric data (*i.e.*, Vertical Location) available to PSAPs from any handset capable of delivering barometric sensor data.

Live 911 Call Data Reports - §20.18 (i)(3)(ii) / DA 17-82

Feb 1, 2019 **Live 911 Call Data Reports – Non-Nationwide Providers** that do not provide coverage in any of the Test Cities must collect and report aggregate data based on the largest county within its footprint to APCO, NENA, and NASNA on the location technologies used for live 911 calls in those areas.

Aug 1, 2019 **Live 911 Call Data Reports – Non-Nationwide Providers** that do not provide coverage in any of the Test Cities must collect and report aggregate data based on the largest county within its footprint to APCO, NENA, and NASNA on the location technologies used for live 911 calls in those areas.

Feb 3, 2020 **Live 911 Call Data Reports – Non-Nationwide Providers** that do not provide coverage in any of the Test Cities must collect and report aggregate data based on the largest county within its footprint to APCO, NENA, and NASNA on the location technologies used for live 911 calls in those areas.

Horizontal Location - §20.18 (i)(2)(i)

April 3, 2020 For wireless 911 calls, **all CMRS providers that offer commercial VoLTE service** must provide: (1) dispatchable location; or (2) x/y location (*i.e.* Horizontal Location) within 50 meters for **70% of all wireless 911 calls**. (NOTE: Per §20.18 (i)(2)(i)(B)(3). Related compliance certification is due within 60 days of benchmark (*i.e.*, by June 2, 2020). Others must comply with 70% benchmark within six months of deploying commercial VoLTE service.

June 2, 2020 E911 Indoor Location Accuracy Compliance Certifications Due - **all CMRS providers that offer commercial VoLTE service** must provide: (1) dispatchable location; or (2) x/y location within 50 meters for **70% of all wireless 911 calls**. Others must comply with 70% benchmark certification within six months + 60 days of deploying commercial VoLTE service.

Live 911 Call Data Reports - §20.18 (i)(3)(ii) / DA 17-82

Aug 3, 2020 **Live 911 Call Data Reports – Non-Nationwide Providers** that do not provide coverage in any of the Test Cities must collect and report aggregate data based on the largest county within its footprint to APCO, NENA, and NASNA on the location technologies used for live 911 calls in those areas.

Feb 1, 2021 **Live 911 Call Data Reports – Non-Nationwide Providers** that do not provide coverage in any of the Test Cities must collect and report aggregate data based on the largest county within its footprint to APCO, NENA, and NASNA on the location technologies used for live 911 calls in those areas.

[Horizontal Location - §20.18 \(i\)\(2\)\(i\)](#)

April 3, 2021 For wireless 911 calls, **all CMRS providers that offer commercial VoLTE service** must provide: (1) dispatchable location; or (2) x/y location (*i.e.* Horizontal Location) within 50 meters for **80% of all wireless 911 calls**. (NOTE: Per §20.18 (i)(2)(i)(B)(4). Related compliance certification is due within 60 days of benchmark (*i.e.*, by June 2, 2021). Others must comply with 80% benchmark within six months of deploying commercial VoLTE service.

June 2, 2021 E911 Indoor Location Accuracy Compliance Certifications Due - **all CMRS providers that offer commercial VoLTE service** must provide: (1) dispatchable location; or (2) x/y location within 50 meters for **80% of all wireless 911 calls**. Others must comply with 80% benchmark certification within six months + 60 days of deploying commercial VoLTE service.

[Live 911 Call Data Reports – §20.18 \(i\)\(3\)\(ii\) / DA 17-82](#)

Aug 2, 2021 **Live 911 Call Data Reports – Non-Nationwide Providers** that do not provide coverage in any of the Test Cities must collect and report aggregate data based on the largest county within its footprint to APCO, NENA, and NASNA on the location technologies used for live 911 calls in those areas.

Feb 1, 2022 **Live 911 Call Data Reports – Non-Nationwide Providers** that do not provide coverage in any of the Test Cities must collect and report aggregate data based on the largest county within its footprint to APCO, NENA, and NASNA on the location technologies used for live 911 calls in those areas.

[Vertical Location - §20.18 \(i\)\(2\)\(ii\)](#)

April 3, 2022 **Non-Nationwide CMRS providers that serve any of the top 25 CMAs and Nationwide CMRS Providers** must deploy either (1) dispatchable location, or (2) z-axis technology achieving Commission-approved z-axis metric in each of top 25 CMAs. / §20.18 (i)(2)(ii)(C) – Non-Nationwide given extra year per §20.18 (i)(2)(ii)(E).

June 2, 2022 E911 Indoor Location Accuracy Compliance Certifications Due - **Non-Nationwide CMRS providers that serve any of the top 25 CMAs** must deploy either (1) dispatchable location, or (2) z-axis technology achieving Commission-approved z-axis metric in each of top 25 CMAs.

[Live 911 Call Data Reports - §20.18 \(i\)\(3\)\(ii\) / DA 17-82](#)

Aug 1, 2022 **Live 911 Call Data Reports – Non-Nationwide Providers** that do not provide coverage in any of the Test Cities must collect and report aggregate data based on the largest county within its footprint to APCO, NENA, and NASNA on the location technologies used for live 911 calls in those areas.

Feb 1, 2023 **Live 911 Call Data Reports – Non-Nationwide Providers** that do not provide coverage in any of the Test Cities must collect and report aggregate data based on the largest county within its footprint to APCO, NENA, and NASNA on the location technologies used for live 911 calls in those areas.

Aug 1, 2023 **Live 911 Call Data Reports – Non-Nationwide Providers** that do not provide coverage in any of the Test Cities must collect and report aggregate data based on the largest county within its footprint to APCO, NENA, and NASNA on the location technologies used for live 911 calls in those areas.

Feb 1, 2024 **Live 911 Call Data Reports – Non-Nationwide Providers** that do not provide coverage in any of the Test Cities must collect and report aggregate data based on the largest county within its footprint to APCO, NENA, and NASNA on the location technologies used for live 911 calls in those areas.

Vertical Location - §20.18 (i)(2)(ii)

April 3, 2024 **Non-Nationwide CMRS providers that serve any of the top 50 CMAs and Nationwide CMRS Providers** must deploy either (1) dispatchable location, or (2) z-axis technology achieving Commission-approved z-axis metric in each of top 50 CMAs. / §20.18 (i)(2)(ii)(D) – Non-Nationwide given extra year per §20.18 (i)(2)(ii)(E).

June 2, 2024 E911 Indoor Location Accuracy Compliance Certifications Due - **Non-Nationwide CMRS providers that serve any of the top 50 CMAs** must deploy either (1) dispatchable location, or (2) z-axis technology achieving Commission-approved z-axis metric in each of top 50 CMAs.

ADDITIONAL REPORTING/COMPLIANCE

Latency: As of April 3, 2015, for purposes of measuring compliance with the location accuracy standards, a call will be deemed to satisfy the standard only if it provides the specified degree of location accuracy within a maximum latency period of 30 seconds, as measured from the time the user initiates the 911 call to the time the location fix appears to the location information center. [47 C.F.R. §20.18(h)(3)].

Confidence and Uncertainty Data (“C/U Data”): Upon a PSAP request, providers must submit for all wireless 911 calls (indoor/outdoor), x- and y-axis confidence and uncertainty information on a per-call basis, with a confidence level of 90%.

Provision of Live 911 Call Data for PSAPs: CMRS providers must record tracking data on all live 911 calls (including the positioning source method used to provide a location fix), along with the confidence and uncertainty data, which must be made available to PSAPs upon request and must be retained for 2 years. This requirement is separate from, and in addition to, the provisions for recurring reporting, as mentioned above. [47 C.F.R. §20.18(k)].

First Progress Report

Custer has made substantial progress in implementing E911 and meeting the indoor location benchmarks established in the Fourth R&O.

- We currently provide E911 service and deliver Automatic Location Information (ALI) data to PSAPs in Butte County, Custer County and Lemhi County in the State of Idaho.
- We entered into a services agreement with West Safety Services ("West") for communications infrastructure, systems and services to enable our company's network to provide E911 location data and caller information to E911-capable PSAPs. Custer uses a software package hosted by West called Location Performance Management (LPM) to validate the location accuracy of the Company's network.
- We have installed the necessary software and network upgrades to enable West's LPM suite of services.
- We are filing Live Call Data reports on a semi-annual basis.
- We have entered into an agreement with Test Bed, LLC to analyze our company's live 9-1-1 call data and to facilitate our network's compliance with the indoor accuracy requirements.
 - Based on a recent 50m Accuracy Report, our rural network is identifying the x/y (horizontal) location within 50 meters for more than 40% of all 9-1-1 calls.
- We are committed to timely meeting the increasingly stringent horizontal location accuracy benchmarks going forward.

Please direct any questions concerning this report to our counsel, Mr. Cary Mitchell, of the law firm of Blooston Mordkofsky Dickens Duffy & Prendergast, LLP. He can be reached by telephone at (202) 828-5538, or by email at cary@bloostonlaw.com.

7/25/17
Dated


Dennis L. Thornock

Custer Telephone Cooperative, Inc.
P.O. Box 324
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Location Performance Management (LPM) Executive Summary

Location Performance Management (LPM) Executive Summary

Location Performance Management (LPM) compiles and aggregates complex data sets to help proactively manage and report on location accuracy and network performance. LPM arms the carriers with key insights to help manage emergency 9-1-1 call locations so it is easier to identify areas for improvement.

With LPM, carriers can optimize their network to its highest accuracy and fastest time-to-first-location fix available and report accuracy compliance with the FCC's requirements.

There are two main modules to LPM: 1. PERFORMANCE MONITORING TOOL (PMT), and 2. ACCURACY ANALYSIS REPORTING (AAR)

LPM'S PERFORMANCE MONITORING TOOL provides a set features that enables the user to perform the following:

- Pinpointing location performance issues
- Optimizing network functionality to certify and trust location performance
- Performing proactive risk management of position determination issues
- Providing reports that allow for Auditing KPIs, call results, and analyzing location server performance

LPM'S ACCURACY ANALYSIS REPORTING provides a suite of reports that enables the user to perform the following:

- Reporting compliance with the FCC's location accuracy rules (Drive testing calls are needed to do this)
- Increasing location accuracy across your network
- Generating visual, data-rich, customizable reports
- Measuring baseline accuracy results in test areas

Aside from features stated above, West's Location Performance Management (LPM) tool suite also supports mobile wireless network optimization and provides reporting data for Phase II Location Accuracy requirements set forth by Federal Communications Commission (FCC) Fourth Report and Order on E9-1-1 Location Accuracy Requirements.¹

The West LPM solution utilizes data from a carrier's network to generate the following reports:

- **Live Call Data Report** – This report is provided on semi-annual basis and provides the Live Call Data yields by technology and morphology for any reporting county identified by the carrier.
- **50m Accuracy Report** – This report provides data for the largest county in a carrier's wireless network footprint. Additionally, this report weights the Indoor Test Bed data derived from Test Bed, LLC against a carrier's live 9-1-1 call distribution within the reporting area to determine a final location accuracy metric.

¹ PS Docket No. 07-114, Wireless E911 Location Accuracy Requirements, Fourth Report & Order.

- **PSAP Report** – This Report provides the total number of calls delivered to a specific Public Safety Answering Point (PSAP) and is can be generated on demand for a given period as needed.

The data compiled by West is consistent with the methodology described in the February 7, 2014 Alliance for Telecommunications Industry Solutions (ATIS) Document, “Considerations in Selecting Indoor Test Regions,” for testing of indoor location technologies, and further described in the June 2016 ATIS Standard 0500031 on Test Bed and Monitoring Regions Definition and Methodology.