The scenario is quite different in a dense area, especially in a city. There, a circle with an approximate 500-foot radius might contain several blocks, dozens of residences and parts of eight or more separate streets. Some of the buildings may be multi-level or contain multiple units or apartments. A 9-1-1 caller unable to verbally convey a location might never be found in time in a scenario where the transmitted location is off by 150 meters in a trailer park or urban residential area. Fortunately, call takers have tools to gather more and better location data when it is needed. In these worst-case scenarios, they are dealing with a caller on a wireless device, unable to communicate, or a dropped call or hang-up where the caller doesn't answer a call-back. Whether the initial call registered as a Phase I call (tower and sector location information) or a Phase II call (coordinates of phone that placed the call via handset or network solution), the call taker can rebid it by requesting that the network re-determine the call location and retransmit that revised location through the network. The goal is a Phase II call of high confidence paired with low uncertainty. The call can be rebid every 15 to 30 seconds depending on the system. Each rebid generates new ALI information so that each can be mapped separately.

accuracy of this location cannot be guaranteed by maintaining clean addressing and a clean MSAG, as can the accuracy of a landline call. The FCC standards, which have been updated as technology improves, are currently fairly lenient. However, it is our experience that few 9-1-1 personnel fully understand them and thus may use mapping applications incorrectly in pinpointing emergency locations.

The FCC standards differ according to how the caller's location is resolved. Under current standing rules, for cellular providers using radiolocation—or the *network* solution—95 percent of calls must be within 300 meters of true location, and 67 percent within 100 meters. For providers using the GPS chip on the cellular device itself—known as the *handset* solution—95 percent of calls must be within 150 meters of true location, and 67 percent must be within 50 meters.

These standards have been updated so that for handset solutions 67 percent of calls must meet the 50-meter criteria, but only 90 percent fall within 150 meters. These standards will apply to all PSAPs and counties. For the network solution, only 90 percent of calls must fall within 300 meters, and only for 85 percent of all PSAPs and counties. This allows some extremely rural PSAPs and counties with inadequate wireless tower coverage to be exempted from the accuracy standards. Unfortunately, this does not benefit these PSAPs.

In 2017, as in the several years previous, the vast majority of 9-1-1 calls were placed using mobile phones. Call takers answered these calls and used whatever resources available to locate the callers. In all or nearly all cases where the caller could verbally communicate, the call taker tried to verify the caller's location by requesting that location—preferably by civic address or otherwise by intersection, common place name, highway mile marker or even a location description. While speaking with a caller, the call taker checks the dispatch mapping application, as well as the class of service as reported in CAD or the call-taking software.

Wireless 9-1-1 calls generally show a class of service of WRLS or WPH1 for a Phase I call and WPH2 for a Phase II call. A Phase I call reports the tower address and sector direction; only the caller's position was not solved when the data was transmitted. A Phase II call contains coordinate information for the caller —the latitude and longitude in decimal degrees, carried out to up to six decimal places—along with uncertainty and confidence factors representing the system's calculations of how accurate that position is.

All this in 30 seconds.

So, our dispatcher is talking with a potentially distressed, injured, ill or possibly hysterical caller, checking the class of service on one or two of the up to six monitors on her desk, checking the mapping for a location, especially if the caller hasn't been able to verbally pinpoint where she is. If the call came in as Phase I, and a better location is still needed, or the caller is in a vehicle and her position has changed since the call was answered, the dispatcher rebids the