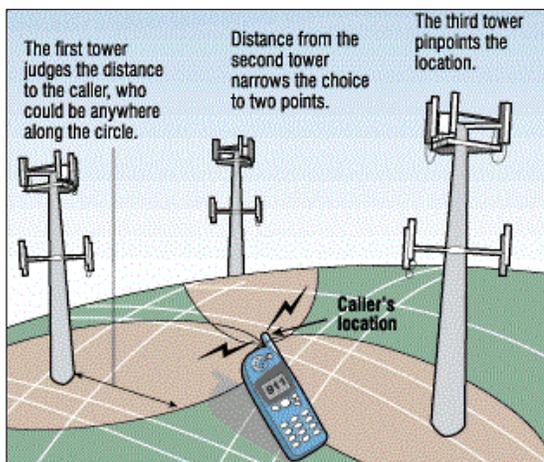


# GIS, PSAPs & Wireless Communications

Wireless communication technology is very popular today. This technology comes in many different formats. Today, cellular is a type of wireless communication that is most familiar to mobile phone users. It's called cellular because the system uses many base stations to divide a service area into multiple 'cells.' Cellular calls are transferred from base station to base station as a user travels from cell to cell.<sup>1</sup> Cellular service providers, under Federal mandate are making cell phones even more valuable in emergencies by adding what is sometimes known as E911 service. This is a technology that would allow rescue teams and public safety personnel to electronically track the location of the cell phone in the event it's used to summon help.

A wireless phone is actually a radio with a transmitter and a receiver that uses radio frequencies or channels -- instead of telephone wire -- to connect callers. Because wireless phones are by their very nature mobile, they are not associated with one fixed location or address. A caller using a wireless phone could be calling from anywhere. While the location of the cell tower used to carry a 911 call may provide a very general indication of the location of the caller, that information is not usually specific enough for rescue personnel to deliver assistance to the caller quickly. Wireless phone calls make up approx 45% of all 911 calls in the Twin City metropolitan area. This number of wireless calls for 911 will continue to increase as the wireless technology becomes more widespread.

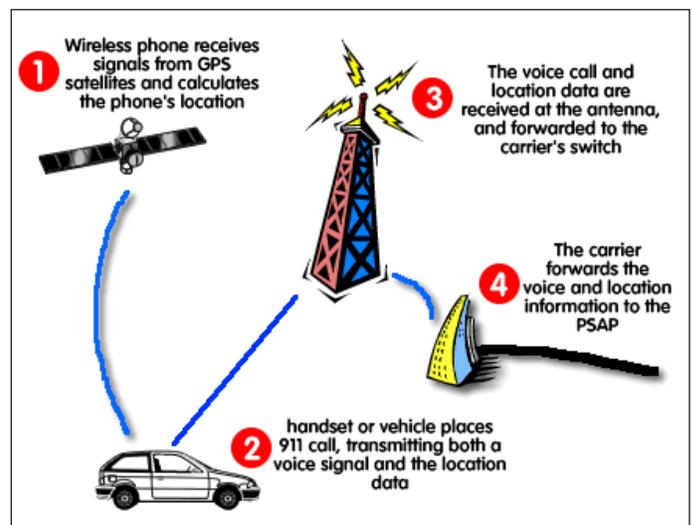


Cellular tower triangulation

E911 technology works in one of two ways: **Triangulation** tracks a cell phone's location relative to the location of the ground-based cellular transmission towers. A **Global Positioning System (GPS)** uses satellites to track a cell phone that has a small GPS chip within it. The cell phone transmits its GPS coordinates when ever the phone is used. These two methods allow rescue workers to respond accurately and quickly to locate a cellular caller. April, 2000 was the deadline for being Phase 1 compliant, set by the FCC, for PSAPs and wireless carriers to be able to receive and transmit Automated Number Identifications (ANI) and pseudo-Automated Location Identification (ALI). Besides transmitting the caller's wireless phone number to the PSAP, wireless carriers must

also send the address/location of the receiving antenna site, to assist in locating the caller. Wireless phase II calls are defined as Public Safety Answering Points (PSAPs) and wireless carriers being able to receive and send the address/location of the actual caller location using latitude and longitude coordinates. The deadline for being in phase II compliance is December 31, 2005

A Geographic Information Systems (GIS) combines layers of data or information about a place to give you a better understanding of that place. In the case of an E911 application, a call taker may receive a call from a wireless caller. This call will have either a phase I or phase II capability. Phase I status will indicate the location of a cell tower and what sector (direction the tower is facing) and plots



Global Positioning System (GPS)

a point on a map on the computer screen at the PSAP and this allows the call taker to narrow the caller's location. Phase II status, a GIS will allow the call taker to see the actual caller's location as a point on a map. This allows the call taker immediate knowledge of where to send resources for a more efficient response.

For more information on:

Wireless communications go to <http://www.wirelessadvisor.com/>

Geographic Information Systems (GIS) go to <http://www.gis.com>

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<sup>1</sup> Wireless Communication Glossary (<http://www.wirelessadvisor.com/>)