

What is Wireless E911?

In most areas of North America, citizens have at least basic or enhanced 911 service for their wireline phone in their home or workplace. If a jurisdiction has basic 911, the 911 center, or public safety answering point (PSAP), will receive no location or identifying information with the call. This information must be communicated by the calling party to the PSAP. In areas with Enhanced 911, the PSAP will receive location and telephone number information with the 911 call. Having this information allows the PSAP to more quickly dispatch emergency help, even if the caller is not able to communicate their location or the nature of their emergency.

Wireless E911 enables citizens to call 911 on their wireless phones. There are three phases of Wireless E911. The most basic of these is “Wireless Phase 0.” This means that when a person calls 911 from their wireless device, the PSAP in a city or county, possibly up to hundreds of miles away from the caller, may receive the call, but not receive the telephone number of the wireless device or the location of the caller. This presents potentially life threatening issues due to lost response time if caller is unable to speak, doesn't know where they are, doesn't know their wireless telephone number, or if the call is dropped.

When “Wireless Phase I” 911 has been implemented, a wireless call will come into the PSAP with the wireless device's telephone number and the location of the wireless cellular tower that received the call. This allows the PSAP to determine the general location of the calling party, usually within a few square miles. This is important in the event the call is dropped. This information may assist PSAP employees in working with the wireless carrier to identify the wireless subscriber's name.

When “Wireless Phase II” 911 has been implemented by local 911 systems and wireless carriers, it allows the PSAP to receive both the wireless caller's telephone number and their specific location by latitude and longitude.

There are two types of wireless location technologies available to identify the specific location of a wireless caller, network-based or handset-based. Of the carriers offering service in Nebraska, Cricket, Sprint Nextel, US Cellular and Verizon utilize a handset-based solution. AT&T/Cingular, iWireless, Pinpoint Wireless, T-Mobile and Viaero utilize a network-based solution.

When a wireless phone is turned on, whether or not it is in use, it periodically transmits signals to the wireless network so the wireless network knows which cellular towers to deliver calls to if the device is used. With the network-based solution, special radio intercept equipment is installed on cellular towers to accomplish the location task. When a wireless call is placed, the towers can compare signals from any active wireless device and pinpoint the call using triangulation (the difference in time between the arrival of the signal at different receiving stations or by the signal's angle of arrival at each tower). It takes at least three towers to get an accurate location. This solution is called network-based because the signal measurements and location calculations are performed in the wireless network.

The handset-based solution utilizes a wireless device equipped with Global Positioning System (GPS) equipment that can measure the time of arrival of signals transmitted from GPS satellites in order to calculate its position.

Wireless carriers that use network-based technologies are required to provide location information that is accurate to within 100 meters 67% of the time and accurate within 300 meters 95% of the time. Wireless carriers that use handset-based technologies must provide greater location accuracy, within 50 meters 67% of the time and 150 meters 95% of the time.