Location Tracking and Battery Life

Do location-enabled features use battery? Yes! Testing and real-world use show that active location tracking can use a significant amount of a device's battery charge. Let's discuss the impacts of location features on battery and the benefit of using battery life for safety features.

Benefits of Location Tracking

Safety Connection available in Everbridge's Apps allows you to protect your people – wherever they are. Employees are more and more mobile, some continually in motion, and modern threats know no boundaries. Everbridge Safety Connection enables you to quickly locate people at risk, immediately alert them, and keep them updated when a critical event occurs.

- **SOS button:** alerts your emergency call centers and automatically live streams video and audio when pressed. Locations are tracked only when permission is expressively given, ensuring end-user control and full privacy.
- **Chaperone:** Offer employees virtual escorting through the Safe Corridor feature. Once activated the employee will leave breadcrumbs of their locations. They will be required to check in on a regular basis and if they don't, an SOS will automatically be triggered which can be used to trigger and emergency request.
- **Incident Zones:** A shape-created geofence that designates an area of activity. Using GPS data, notifications and alerts are automatically triggered when a device with the app enters the incident zone.
- **Auto Check-in:** Employees' or travelers can automatically send their last known location to the server to be displayed on the map. By continuously cross-checking data from the app among other sources, the device user can be notified if a risk event occurs.

How GPS works and uses battery life

GPS tracks your location using a network of navigation satellites (30+) orbiting Earth. The GPS satellites are constantly sending out signals. A device's GPS receiver listens for these signals. Once the GPS receiver calculates its distance from four or more GPS satellites, it can figure out where you are. This constant process requires constant power, which can use significant battery life.

Having location tracking active, especially during tasks like navigation in Maps apps, or active location-aware Safety Connection features in the Everbridge app(s), means your device is *always* working to receive signals, measure distance, determine location, and maintain data connection(s) to upload the location updates through cellular and/or Wi-Fi.

In areas where the signal is weak or cell/Wi-Fi reception is poor, the device may have to work even harder to determine location. During this time, the device is active, consuming battery power, even if the screen is off. That means the longer it takes to determine and send a location update, the more battery the app will use.

What other signals determine location

Modern device operating systems use a combination of GPS, Wi-Fi, cellular network, and Bluetooth to determine the precise location. Enabling and accessing these signals uses battery life.

Here are some references with more details:

- **Apple iOS:** https://support.apple.com/en-us/102515#:~:text=With%20your%20permission%2C%20Location%20Services,determine%20your%20approximate%20location5
- **Google Android:** https://support.google.com/accounts/answer/3467281?hl=en
- **Windows 10:** https://support.microsoft.com/en-us/windows/windows-location-service-and-privacy-3a8eee0a-5b0b-dc07-eede-2a5ca1c49088#WindowsVersion=Windows_10
- **Windows 11:** https://support.microsoft.com/en-us/windows/windows-location-service-and-privacy-3a8eee0a-5b0b-dc07-eede-2a5ca1c49088#WindowsVersion=Windows_11
- **Mac:** https://support.apple.com/en-nz/guide/mac-help/mh35873/mac

What about Geo-fences

The Incident Zones feature and location tracking use Geo-fences to regularly refresh device location to determine when they enter or exit defined areas. This constant refreshing can prevent a phone from conserving battery life or entering sleep mode.

Will the device show the blue location tracking indicator

Yes. Most modern device operating systems have made it common practice to prominently display and disclose the use of location tracking features. While the app has always been doing the same thing to determine and track location, device OS have made it more and more prominent to increase transparency into this privacy matter.

Battery-Efficient Location Sharing

The app must refresh the location and geo-fence periodically to ensure accurate location data. It is a delicate balance between using battery for the location processing and risking slow or inaccurate tracking data. Consider any battery uses for other apps or features, screen time, frequent changes in location, poor signal, and the age of the battery – and the battery life needed for determining location may be significant.

Will Everbridge's app use the device battery?

Yes. It's important to balance between safety features and battery life. However, our app(s) are designed to:

- Determine location as efficiently as possible.
    - Using the device OS location services to leverage Wi-Fi networks, Bluetooth, and cell towers to supplement GPS data, reducing the use of satellite signals and conserving battery.
- Offer adjustable location update settings, allowing you to control how much movement is required before your device triggers an update and reports its location.
    - To save battery, configure it to require more movement to trigger an update. This will help ensure the phone isn't updating as often and for significant changes only, allowing the device to conserve battery.
    - To receive more frequent updates, configure it less movement to trigger an update.
- Leverage motion detection using additional hardware sensors such as an accelerometer to help the app decide when to update location. This will help the device determine when it has been moved, allowing the device to conserve battery when it hasn't been moved.

While the app still needs battery, the app efficiently uses the device OS location services and offers settings to minimize battery use. An interesting comparison is how much battery Maps apps use while navigating and actively using the device location.

Suggestions:

- In app settings for location, require more motion to trigger an update.
- Also in app settings, enable motion detection and allow the motion permission from health and wellness.
- Check other apps battery usage and battery health
    - Most device operating systems have a Battery section in settings
- Limit the number of apps installed and running on the device
- Enable the device OS Low Power Mode (to reduce how much battery the device is using overall)
- Reduce screen time (the amount of time the screen is on and in-use)
    - Turn down screen brightness
    - Turn off alerts and notifications that cause the screen to come on
    - Ensure the auto-lock / screen-timeout is set to turn off the screen after a short period of inactivity