ShotSpotter Frequently Asked Questions

1. What is ShotSpotter?

ShotSpotter is gunshot detection technology that uses sophisticated acoustic sensors to detect, locate and alert law enforcement agencies and security personnel about illegal gunfire incidents in real-time. The digital alerts include a precise location on a map (latitude/longitude) with corresponding data such as the address, number of rounds fired, type of gunfire, etc. delivered to any browser-enabled smartphone or mobile laptop device as well as police vehicle MDC or desktop. This information is key to better protecting officers by providing them with increased tactical awareness. It also enables law enforcement agencies to better connect with their communities and bolsters their mission to protect and serve.

2. Who uses ShotSpotter and what types of cities use it?

ShotSpotter is used in more than 85 cities across the United States and one city in South Africa. It is highly regarded by law enforcement agencies as a critical component in their gun violence prevention and reduction strategies. The customer base for ShotSpotter includes a diverse set of cities -- by size, geography and socio-economic standards. Police departments and security personnel are the primary users of ShotSpotter, while the data has proven to be valuable to prosecutors in court cases and to elected city officials for community engagement and smart city initiatives.

3. How does ShotSpotter work?

ShotSpotter uses acoustic sensors that are strategically placed in an array of approximately 20 sensors per square mile. These sensors are connected wirelessly to ShotSpotter's centralized, cloud-based application to reliably detect and accurately triangulate (locate) gunshots. Each acoustic sensor captures the precise time and audio associated with impulsive sounds that may represent gunfire. This data, from multiple sensors, is used to locate the incident, which is then filtered by sophisticated machine algorithms to classify the event as a potential gunshot. Expertly trained acoustic analysts, who are located and staffed in ShotSpotter's 24x7 Incident Review Center, then further qualify those highlighted incidents. These analysts ensure and confirm that the events are in fact gunfire. In addition, the analysts can append the alert with other critical intelligence such as whether a full automatic weapon was fired and whether the shooter is on the move. This process typically takes no more than 45 seconds from the time of the actual shooting to the digital alert (with the precise location identified as a dot on a map) popping onto a screen of a computer in the 911 Call Center or on a police officer's smartphone or mobile laptop.

4. How does ShotSpotter help law enforcement?

ShotSpotter helps protect officers by rapidly notifying them of gunshot crimes in progress with real-time data delivered to dispatch centers, patrol cars and even smartphones and tablets. Nearly eight out of ten gunfire events go unreported to 911. Police cannot respond effectively if unaware of an incident. Having a ShotSpotter alert come in with contextual information

enhances officer safety and effectiveness with critical intelligence such as: real-time access to maps of shooting locations and gunshot audio; actionable intelligence detailing the number of shooters and the number of shots fired; accurate and precise locations for first responders who are aiding victims; and searching for evidence and interviewing witnesses.

With ShotSpotter, officers can more quickly arrive at the scene of a crime with an increased level of safety because they know exactly where the gunfire took place. In many cases, an officer can arrive with the shooter still at the crime scene or if the criminal has fled, shell casings and/or other evidence can be recovered and used for investigative and potential prosecution purposes and key witnesses can be interviewed at the crime scene.

5. Does ShotSpotter replace police officers?

This investment in technology should not be considered an either/or decision. The fact is, police departments need both manpower *and* technology. ShotSpotter is a tool that augments and enhances the existing manpower as a force multiplier to improve both the timeliness and quality of response. By pinpointing the precise location of gunshot incidents, and by more accurately tracking geographic patterns underlying gun violence, limited law enforcement resources can be deployed more effectively and more proactively. This technology is capable of something that no amount of manpower can accomplish, which is to comprehensively report in real-time all outdoor illegal gunfire occurring in a ShotSpotter coverage area.

6. I heard ShotSpotter failed in a couple of cities. Is this true?

There has never been a single city where ShotSpotter did not technically work (i.e. - detecting, locating and alerting on illegal gunfire).

ShotSpotter has gained valuable experience in more than 85 cities across the United States and one city in South Africa, and with proven best practices has shown that integrating ShotSpotter into an overall gunfire reduction strategy with other policing programs works. We also know that cities that do *not* implement standard best practices do not have the highest success rate. The bottom line is that cities following best practices experience a positive outcome in their gunfire reduction strategies and often achieve measurable year-over-year reductions in gunfire activity.

The very few cities **that did not** have a positive experience had suboptimal deployment strategies and poor practices around the following:

- too small a deployment area to effectively drive the procedural change management necessary to have a meaningful impact;

- Failure to respond to ShotSpotter gunfire alerts when they come into the PD and not responding to the precise location (the “dot on map”) that ShotSpotter indicated;

- Not including ShotSpotter data as part of an overall gunfire intelligence and crime reduction program; and

- Lack of community engagement – The most successful deployments have engaged communities to educate residents on the benefits of improved police response, working together to help reduce crime and empowering community members to feel safe in their own neighborhoods.

In particular, here is a sampling of cities that have been successful in their overall gunfire crime reduction strategies, and have ***expanded*** their ShotSpotter service after initial deployment:

- **Birmingham, AL** – expanded from 8 to 16 square miles
- **Camden, NJ** – expanded from 2.5 to 7 square miles
- **Chicago**, **IL** – expanded four times from 3 to more than 60 square miles
- **Denver, CO** – expanded twice from 3 to 11.5 square miles
- **Fresno, CA** – expanded twice to cover 12 square miles
- **Hartford, CT** – expanded from 3 to 11.25 square miles
- **Milwaukee, WI** – expanded twice from 1 square mile to 3 to over 11
- **Nassau County, NY** – expanded from 3 to 7 square miles
- **New York City**, **NY** – expanded to cover 60 square miles after a 15-mile initial deployment
- **Oakland, CA** – expanded three times, from 6 to 16 square miles
- **Peoria, IL** – expanded from 3 to 6 square miles
- **Sacramento, CA** – expanded 2 times from 3 to 6.2 square miles
- **San Francisco, CA** – expanded 3 times to 13 square miles
- **Springfield, MA** – expanded from 3 to 6 square miles
- **Wilmington, NC** – expanded from 3 to 6 square miles

7. How does ShotSpotter provide value to its customers?

Saving lives and improving the quality of life in neighborhoods, while improving officer safety, is our number one mission. Furthermore, the health care costs of treating gunshot injuries cost nearly $630 million in 2010 with American society collectively paying these costs. In 2010, the total firearm assault injury costs were just under $630 million (Howell and Abraham 2013). Gun violence leads to higher associated costs across the criminal justice system because of prevention, investigation, court, and prison costs. All these factors translate into monetary costs for which the public and society at large pay.

At ShotSpotter, we believe that we will be able to measurably reduce gun violence and improve public safety, and in the process, enhance the resiliency of the communities we serve. In the long term, the positive impact of improved public safety is reflected in better social and economic outcomes. For these reasons, we believe ShotSpotter is well worth the money.

8. How much does ShotSpotter cost?

ShotSpotter is a cloud-based subscription service. The cost for ShotSpotter is $65-90k per square mile per year, with a $10K per square mile one-time Service Initiation fee. A ShotSpotter subscription includes:

- **Incident Review Center** – Staffed 24/7/365 by trained acoustic analysts who review and classify gunfire in mere seconds by distinguishing gunshots from other impulsive sounds. Included is additional contextual information such as multiple shooters, full automatic weapons, or moving shooter alerts;
- **ShotSpotter Integration Services** – Enables customers to export ShotSpotter data to other law enforcement agency systems;
- **Data Analytics** – Provides valuable information for Proactive Policing;
- **ShotSpotter Forensic Products** – Supports customer investigation efforts and strengthens court cases, including: Forensic Audio Search, Enhanced Incident Reports, Detailed Forensic Reports, Expert Testimony for court cases;
- **Technical Support** – 24/7/365 – available to provide assistance;
- **Best Practices** – a team of law enforcement consultants, analysts and trainers are available as part of the ongoing subscription to assist the agency in adopting best practices to maximize the efficacy of the ShotSpotter solution.

9. What is a city missing without ShotSpotter?

The communities most affected by gunfire are least likely to call in when they hear gunshots. With fewer than 1 in 5 shooting incidents reported to 911, gun crime is vastly underreported. When 911 calls are made, the location information provided is typically inaccurate. Without knowing exactly where to respond, police waste valuable time and resources driving block by block looking for evidence as criminals escape the scene. **In addition, dispatching officers to an active shooting without all available intelligence is a threat to officer safety** and needlessly **places the public and the officers at risk**. Without ShotSpotter, a city may be missing many gunshot incidents and as a result, may not have the opportunity to respond to save victims and apprehend shooters in the act.

10. Where else is ShotSpotter deployed and has it been successful there?

ShotSpotter is deployed in more than 85 cities in the United States, deployed across 23 states and the District of Columbia, covering more than 500 square miles. In addition, ShotSpotter is deployed in Cape Town, South Africa. Here is a sample of our successes:

- **New York City**: Deployed ShotSpotter in March 2015. In 2017, it was reported by Jessica Tisch, the NYPD deputy Commissioner of Information Technology, that only 16% of ShotSpotter alerts have 911 calls associated with them. Tisch said 1,740 shootings were detected and Police responding to the detections had seized 31 guns and made 61 arrests, according to the *Wall Street Journal* – August 3, 2017

- **Chicago, IL**: From 2014 to March 2017, ShotSpotter sensors alerted police to 1,600 gunshots in the Englewood district. "This technology doesn't supplant what our officers do, it supports what our officers are already doing," said Mayor Rahm Emanuel. "CPD's smart policing strategy helps officers be more effective, proactive and professional while working toward our one goal to get more police on our streets and get gangs, guns and drugs off our streets."

- **Denver, CO:** Since the technology was installed in January 2015, police say it is tied to 100 arrests (Denver channel 7, March 29, 2017). "60% of shots fired in Denver go without a call to the police, and with ShotSpotter, police are getting notified within 40 seconds of the gunshots and responding to within 25 feet of the actual crime scene," according to Lt. Aaron Sanchez (9/21/16, KUSA).

- **Sacramento, CA:** ShotSpotter detected 1,096 gunshot incidents from June 15, 2015 to May 31, 2017, and of these incidents only 272 times was there an accompanying citizen call to 911. In that timeframe, information captured by ShotSpotter led to the arrest of almost 90 people and the seizure of 90 guns, according to the *Sacramento Bee*.

- **Fresno, CA:** There is a 98.5% accuracy of not missing gunfire or alerts from ShotSpotter or a corresponding 911 call. Police response time from a ShotSpotter alert is 4 minutes or less, whereas from a citizen call it's 8 minutes or less. 70% of ShotSpotter alerts did not receive a phone call to 911, said Fresno Police Chief Jerry Dyer.

- **San Diego, CA**: According to the San Diego Police Department, in 2017 only 23% of the overall activations were called in to the Dispatch Center. "By using ShotSpotter, we are notified and respond 100% of the time and to a more precise location."

- **Louisville, KY:** After the first two weeks of being implemented in Louisville, ShotSpotter technology enabled police officers to respond to 89 shootings that might not otherwise have been reported, and one gang-related arrest, LMPD Major Josh Juda said. "Most of these were incidents that we wouldn't have responded to anyway," said Juda. In addition, ShotSpotter has been integrated into the Real Time Crime Center. Real Time Crime Center director Jennifer Corum said "Our analysts keep ShotSpotter on their desktops with the notifications and sound on at all times…it has become an integral part of our organization."

- **Kruger National Park, SA:** ShotSpotter has potential other benefits besides urban communities. With only a very small proof of concept deployment, ShotSpotter detected two poaching events that led to the capture and prosecution of several poachers as well as the recovery of a baby rhino (named Dot) whose mother rhino was poached.

11. Does ShotSpotter have video monitoring capability?

No. ShotSpotter is an acoustic based system. The sensors do not have any optical capability and cannot produce images of any kind. However, ShotSpotter can integrate with video systems by sending an alert to a video management system, which can then separately pan, tilt and zoom an IP addressable camera in the appropriate area or direction. By combining these technologies, ShotSpotter enables law enforcement agencies to benefit from the best in video monitoring technology, while also benefiting from the best in acoustic gunshot detection and location technology.

12. Does ShotSpotter catch shooters?

There are many cases in cities where the ShotSpotter alert has led to the arrest of a criminal. Critical forensic evidence such as shell casings are often retrieved from a scene, resulting in recovering key investigative data, which led to the introduction or arrest of a shooter. Local DA agencies also rely on ShotSpotter to prosecute some of the toughest criminals in our country. Currently, federal homicide prosecutors are using ShotSpotter analysis and evidence to determine if a gunshot has occurred and the precise location of the shooting. ShotSpotter has been deemed admissible in court cases in 17 states and the District of Columbia, as well as in federal court. But keep in mind our primary goal is to prevent shooting incidents, so deterring the gunfire is more valuable than capturing the trigger puller.

13. Do you have any supporting data to show that your technology helps to reduce gunfire in coverage areas?

Today, ShotSpotter is highly regarded as a critical component of any comprehensive gun violence reduction strategy and is playing an active part in making communities safer for future generations. ShotSpotter technology is helping communities and law enforcement agencies work together to prevent gun violence on a global level.

The ShotSpotter National Gunfire Index (NGI) reports that law enforcement agencies and cities which have adopted ShotSpotter solutions, along with best practices, have experienced up to an 80% reduction in gunfire and as much as a 40% reduction in related violent crime and homicides. The Company is becoming a recognized thought leader in the annual published **National Gunfire Index Report (see 2016 National Gunfire Index - http://www.shotspotter.com/2016NGI),** which details a comprehensive analysis and overview of instances of gun violence.

14. How is ShotSpotter data being used in court?

District attorneys and federal prosecutors rely on ShotSpotter evidence to assist them in prosecuting gun crimes. ShotSpotter provides Detailed Forensic Reports as evidentiary documents which include precision positioning calculations of each gunshot, exact timing of shots, and map placements of firing locations for every shot fired. This evidence has received favorable rulings in Daubert and Frye challenges, and as a result has been used in trials at both the local and federal level. ShotSpotter Inc. provides expert witnesses to present the data at trial; to date they have testified in 17 states and the District of Columbia.

15. What access to data does a ShotSpotter subscription give users?

The City where ShotSpotter is deployed is considered the subscriber. Subscribers have unrestricted use of their data, with the ability to integrate with internal systems, such as video management and reporting, which provides the greatest value for the data. ShotSpotter only limits the export of detailed electronic data to outside entities such as research institutions or other agencies that would use the data for derivative products.

16. Will ShotSpotter violate my privacy? Can it record conversations?

No. ShotSpotter uses acoustic sensors designed to detect, locate and alert on gunfire – not record conversations. The acoustic sensors are located on top of buildings, rooftops and poles, roughly 30 feet or more above street level. The sensors are designed to trigger (or activate) on very loud, impulsive noises, such as when a gun is fired. The sensors are designed to record seconds of the gunfire. For more information please check out the ACLU's review of ShotSpotter here: https://www.aclu.org/blog/privacy-technology/surveillance-technologies/shotspotter-ceo-answers-questions-gunshot

17. Does ShotSpotter detect gunshots from gun silencers?

"Silencers" are more accurately called suppressors as they suppress the impulsive sound of gunfire, they do not wholly eliminate it.

ShotSpotter has successfully, if not inadvertently, detected confirmed suppressed gunfire within our existing deployments in some cases. Although we have not formally tested our system to measure our detection rate of suppressed gunfire, we intend to do some targeted testing in the near future. Were there to be demand to detect suppressed gunfire, we believe our technology would present a number of options, ranging from increasing the density of our sensor array, to developing new software/firmware.

18. Does ShotSpotter work on school campuses?

Yes, ShotSpotter works on school campuses and is in use by leading colleges and universities of all sizes. ShotSpotter can detect gunfire accurately, provide increased situational awareness to first responders, and integrate seamlessly with existing security systems for enhanced campus/facility security. Our real-time active shooter alerts are critical so that first responders can arrive almost instantaneously to the proper location with improved situational awareness. Schools, colleges, and places of business are often targets of gun violence with statistics showing, on average, more than one incident per month in the U.S. Average active shooter incidents are shown to last 12 minutes or less, and the first calls to 911 don't typically don't come in for several minutes, so ShotSpotter's real-time detection is particularly valuable in these situations.

Campuses and universities are particularly vulnerable to shootings both on and off campus. ShotSpotter has been successful at helping campus police, as well as city police, when shootings have occurred near or on a campus. Recently, a late-night shooting incident happened in a popular bar area near a world-class west coast university and ShotSpotter helped to swiftly contain the incident, read about it here: http://www.shotspotter.com/system/content-uploads/106SST-university-case-study-online.pdf