

Review of ShotSpotter System

(recently changed company name to SoundThinking, Inc.)

Commander William Grisafe

October 23, 2023



10/23/2023
AR. 21



BACKGROUND

Police Department

- January of 2019, the City began to see a surge in gun violence that included an increased number of “Shots Fired” CFS and gun related crimes:
 - > Assaults using a firearm(s)
 - > Robberies utilizing a firearm(s)
 - > Illegal possession of a firearm(s)
 - > Felons in possession of a firearm(s)
 - > Possession of Ammunition
 - > Possession of silencer
- Gun violence resulted in 39 members of the Pasadena community either killed or injured (January 2019 – June 2021)
- The Pasadena Police Department seized almost 700 firearms





BACKGROUND

Police Department

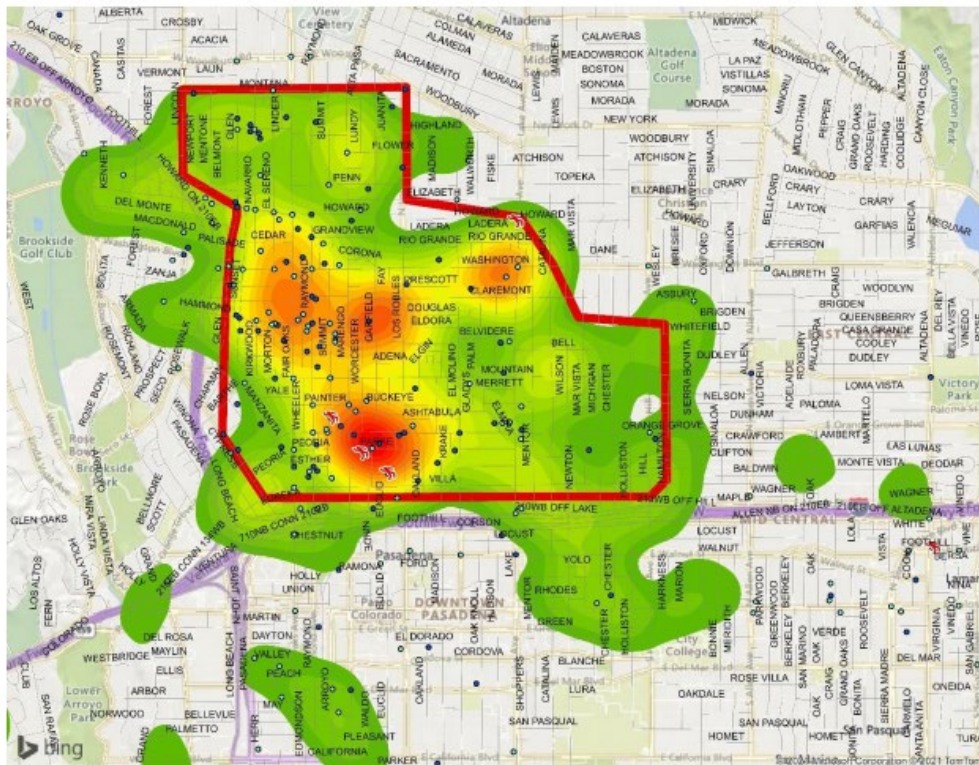
- Examined ShotSpotter system to determine if it could assist in reducing on-going violence
- ShotSpotter system is an acoustic gunshot detection, alert, and analysis system designed to enhance the Police Department's response & investigation into gun violence incidents
- Deterrent for would-be shooters while providing precise location for a rapid response by first responders
- System's core capabilities
 - > Detect – quickly locates gunfire incidents enabling a fast & precise response
 - > Protect – comprehensive information provides critical response information
 - > Connect – Rapid response by officers to communities impacted by gun violence
- Improves the reporting of shooting incidents



BACKGROUND

Police Department

- Provided ShotSpotter with 2 ½ years of gun related crime data
- Analysis of data determined location of sensors
- Proposed 3 square mile area of Pasadena community most impacted



Icon	Crime Type Definition	Quantity	Percentage of Totals
	Gun-related Homicides	4	66.7%
	Gun-related Aggravated Assaults	90	73.2%
	Weapons Law Violations	67	45.3%
Heat Map	Gun-related Calls for Shots Fired	184	55.4%

Figure 1: Proposed ShotSpotter Coverage Area = 3 square miles

PASADENA



BACKGROUND

Police Department

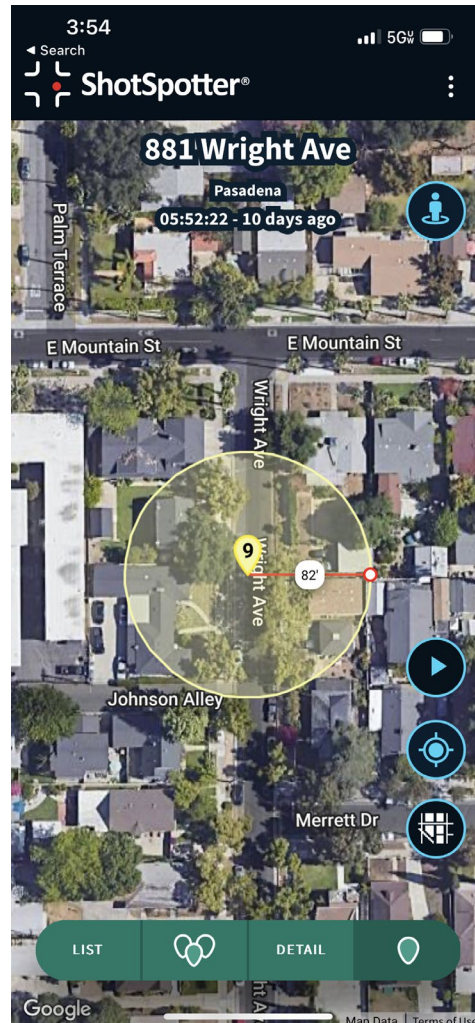
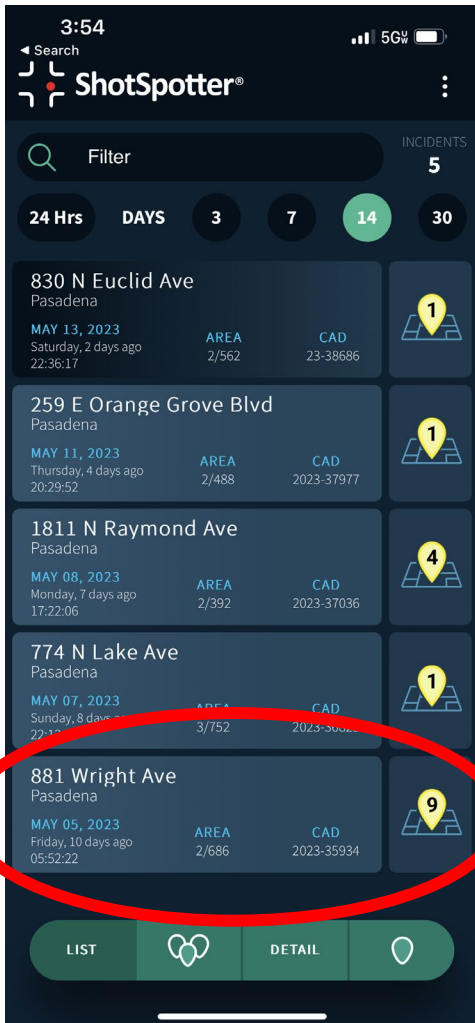
- ShotSpotter technicians installed various sensors throughout the proposed area
- The system listens for loud, impulsive sounds (i.e. gunshots) which generate an incident
- Sound triangulation determines shot location within an 82 ft. radius
- Smaller caliber firearms and guns fired from within a building or vehicle are not guaranteed to register on system
- 2 Phase review
 - > Artificial Intelligence software reviews and filters out any non-gunfire incidents
 - > ShotSpotter's Incident Review Center for verification by acoustic experts
- All confirmed gunfire incidents are sent out to users via app within 60 seconds or less



BACKGROUND

Police Department

How ShotSpotter System Works



Data Provided

1. Precise location
2. Date/Time Stamp
3. Multiple shooters
4. Automatic / high capacity
5. Short audio clip of shots

PASADENA



BENEFITS OF SYSTEM

Police Department

- Accurate location = faster response by first responders
 - > Life saving measures
 - > Preserve evidence
 - > Locate witnesses
 - > Locate/apprehend shooting suspect(s)
- Better information for officers
 - > Identifies multiple shooters and number of rounds
 - > Types of weapons – high capacity or fully automatic weapons
 - > Information provides critical information for a safer response
- Sound evidence can assist in criminal proceedings – “Where & When”
 - > Only a piece of the investigation – arrests not made solely on ShotSpotter evidence
 - > Sound evidence works in concert with other forensic evidence / detective investigation





REVIEW OF SYSTEM

Police Department

- ShotSpotter system was approved by Council September of 2021 and went live in Pasadena on February 9, 2022
- System Provides “Gunshot” or “Probable Gunshot” Alerts
 - > 2022 received 109 alerts
 - > 2023 received 145 alerts (Jan 1st – September 30th)
 - > Received only 59 correlating 9-1-1 calls for all 254 alerts
 - > 77% of shootings go unreported
 - > When an alert is received, if officers are unable to locate evidence, it is difficult to determine if it was an actual shooting



REVIEW OF SYSTEM

Police Department

Year	Shooting Investigations	Victims Injured or Killed
2020	59	28
2021	73	23
2022	49	14
2023	41 (YTD through September 30 th , 2023)	21

*Years 2020 & 2021 numbers do not capture unreported shootings



REVIEW OF SYSTEM

Significant Incidents

Police Department

- Highlights

- > **February 27, 2022** - A female victim shot multiple times after a physical altercation. Officers were on-scene in less than 2 minutes and immediately began to provide medical care.
- > **April 29, 2022** - ShotSpotter alerted officers to a single gunshot. Officers arrived at the identified location and contacted group of intoxicated individuals who admitted to firing a gun. 2 firearms were recovered, and arrests made.
- > **October 10, 2022** - Officers responded to a gunfire alert and approached a male who was in the immediate area of where ShotSpotter had directed them. The male fled on foot as officers contacted him and discarded a firearm while running away.
- > **January 8, 2023** – Officers arrived on scene of a shooting within 1 minute to provide life saving measures to male who had sustained multiple gunshots.



REVIEW OF SYSTEM

Significant Incidents

Police Department

- Highlights (cont.)
 - > **March 4, 2023** – Officers responded to a ShotSpotter alert and stopped a vehicle that was fleeing the area at a high rate of speed. The driver of the vehicle had sustained a minor gunshot injury and was found to possess a loaded firearm in his vehicle.
 - > **March 25, 2023** – Officers responded to a ShotSpotter alert and located several people in vehicles in the immediate area of where the gunshot was detected. Evidence of the shooting and a firearm was recovered from one of the involved vehicles.
 - > **September 1, 2023** – Officers responded to a ShotSpotter alert at the north end of Robinson Park and located video evidence that assisted in identifying a suspect vehicle. The vehicle was found approximately 1 hour later, and a stop of the vehicle was conducted. 2 firearms were recovered.



REVIEW OF SYSTEM

Significant Incidents

Police Department

- Shooting Incidents when ShotSpotter Performed Poorly
 - > **October 30, 2022** – Homicide investigation – sound was captured but no alert received
 - > **January 8, 2023** – The system mis-located the previously mentioned shooting by approximately 30 yards and failed to advise a fully automatic weapon was used during the shooting



SYSTEM'S EFFICACY

Police Department

- Deterrent results
 - > Significant decrease in shootings compared to years 2020 and 2021
 - > Decrease in number of individuals injured by gunfire
- Faster response by first responders to provide medical care and potentially save lives
- Precise information routinely assists with investigations
- Minimizes the reliance on residents from reporting violence
 - > Reluctance to report
 - > Diminished accuracy of information reported



FISCAL IMPACT

Police Department

- Year 1 - \$220,000 from unappropriated fund balance in the Supplemental Law Enforcement Fund 201
- Year 2 - \$210,000 Budgeted in the Public Safety Augmentation Fund 202
- Year 3 - \$210,000 Budgeted in the Public Safety Augmentation Fund 202