



POLICE DEPARTMENT

# Review of ShotSpotter System

(recently changed company name to SoundThinking, Inc.)

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October 16, 2023





# 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

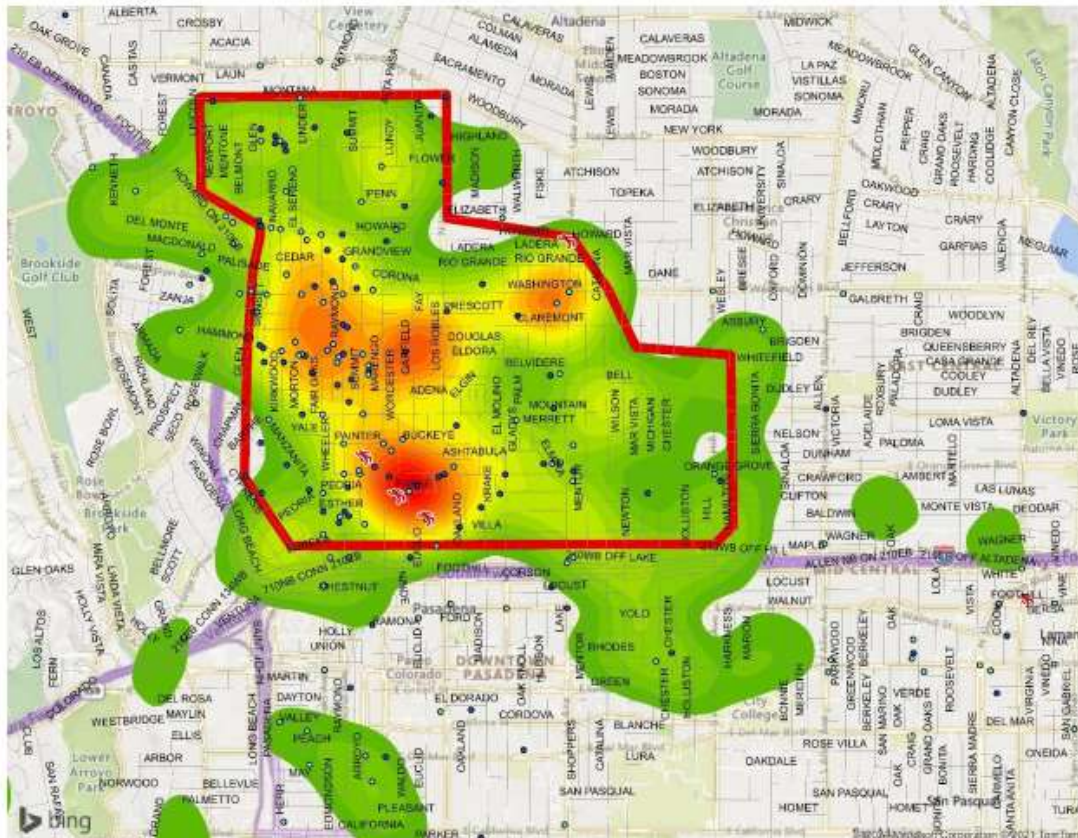
- Examined ShotSpotter system to determine if it could assist in reducing on-going violence
- ShotSpotter system is an acoustic gunshot detection, alert, and analysis system designed to enhance the Police Department's response & investigation into gun violence incidents
- Deterrent for would-be shooters 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

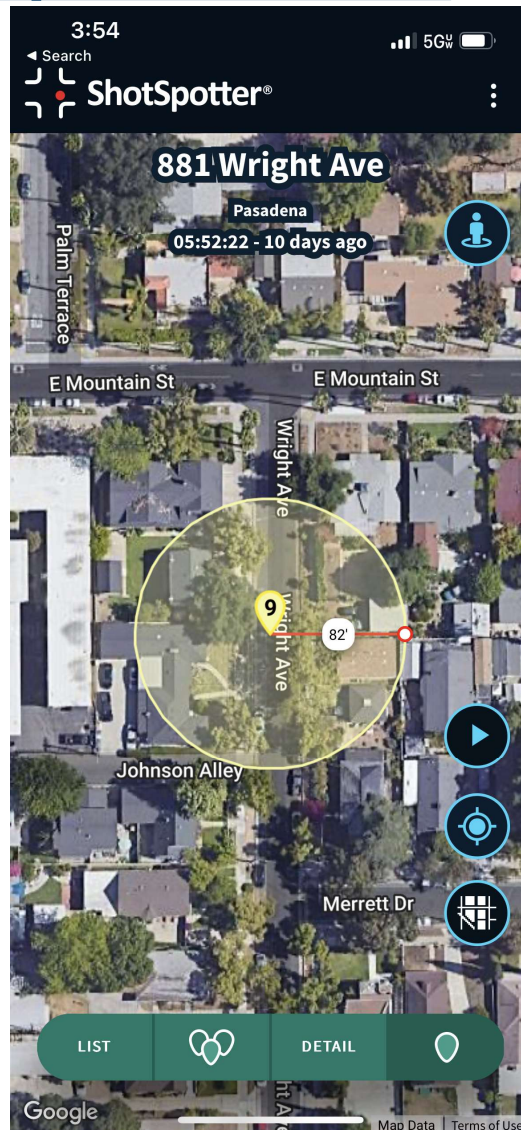
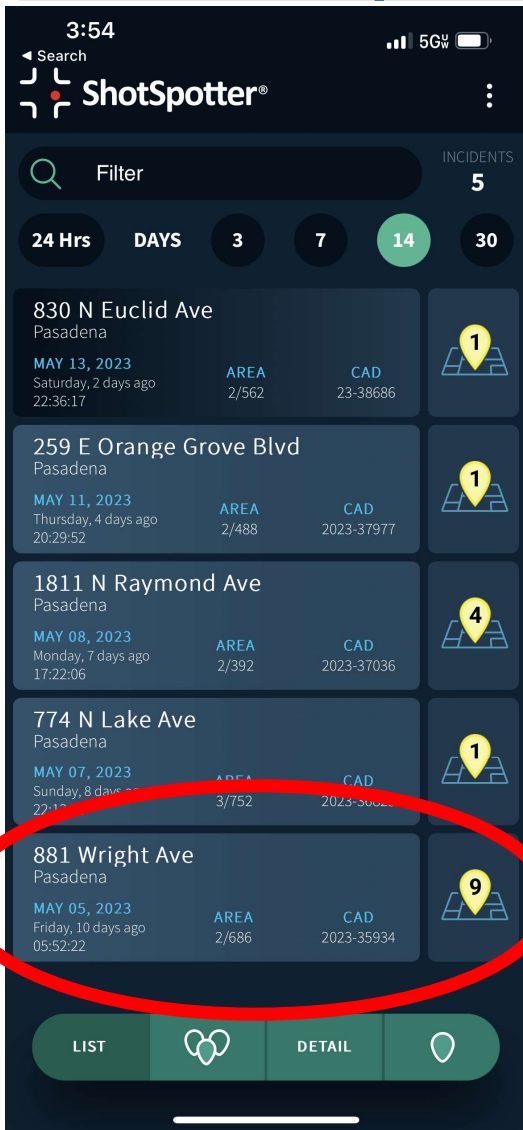
- ShotSpotter technicians installed various sensors throughout the proposed area
- The system listens for loud, impulsive sounds (i.e. gunshots) which generate an incident
- Sound triangulation determines shot location within an 82 ft. radius
- Smaller caliber firearms and guns fired from within a building 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 incident 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 1<sup>st</sup> – September 30<sup>th</sup>)
  - > 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 <sup>th</sup> , 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