How an Acoustic Sensor Can Catch a Gunman, 32 J. Marshall J. Info. Tech. & Privacy L. 211 (2016)

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Recommended Citation

HOW AN ACOUSTIC SENSOR CAN CATCH A GUNMAN

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INTRODUCTION

It was an early afternoon on a mid-July day when Sacramento Police were responding to shots fired near a local high school.[1] Reports state that three shots were fired, however, police did not arrive to the scene immediately because the dispatch center notified the officers after a 911 call came through.[2] Luckily no one was injured, but the gunman, or gunmen, were never found.[3]

It was a late Wednesday evening in Charleston, South Carolina.[4] People gathered at an African-American church for Bible study, when all of a sudden a gunman entered and killed eight victims at the scene.[5] The officers received information regarding this mass murder at 9:05 p.m.[6] The gunman was still at large the next morning.[7] It was not until that Thursday afternoon when police finally arrested the suspect.[8]

In February 2010, three shots were fired near an intersection in Boston, Massachusetts.[9] The difference between this story and the pre-

1.   Gamaliel Ortiz, *Shots Fired Near Grant Union HS; No Gunman Found*, KCRA (Jul. 22, 2015, 3:18 PM), http://www.kcra.com/news/shooting-prompts-lockdown-at-grant-union-hs/34301050.

2.   *Id.*

3.   *Id.*

4.   CNN Wire, *Nine Dead In Shooing Rampage Inside South Carolina Church; Gunman At Large*, KTLA NEWS (Jun. 17, 2015, 4:44 AM), http://ktla.com/2015/06/17/gunman-opens-fire-inside-church-in-charleston-south-carolina/.

5.   *Id.*

6.   *Id.*

7.   *Id.*

8.   Katie Zavadski, *Everything Known About Charleston Church Shooting Suspect Dylan Roof*, THE DAILY BEAST (Jun. 20, 2015, 5:29 PM), http://www.thedailybeast.com/articles/2015/06/18/everything-known-about-charleston-church-shooting-suspect-dylann-roof.html.

9.   Don Seiffert, *ShotSpotter Technology Keeps Boston, Mass. Police One Step Ahead*, WICKED LOCAL (Apr. 3, 2011, 3:11AM), http://www.wickedlocal.com/article/20110403/News/304039791.

vious two is that police in Boston were on the scene within seconds.[10] This immediate response was due to the city's implementation of ShotSpotter technology.[11] ShotSpotter creates an automatic alert within seconds after a gunman fires shots, sending the precise location of the gunfire to police headquarters.[12] Police were able to arrest both suspects in that case.[13]

An unknown shooter hit a seventeen-year-old Wisconsin girl with a life-threatening gunshot.[14] Again, with the ShotSpotter, police were able to locate the incident in real-time.[15] This allowed the officers and first responders to reach the scene approximately two minutes before the first 911 call came in.[16] Due to the quick response, the victim survived.[17] President Barack Obama said, "America should be ashamed of the 'off the charts' amount of gun violence in this country."[18] To help with this issue, ShotSpotter was introduced to the world. This gunfire detection system senses gunshots immediately, and within seconds police have the information to get to the scene, potentially before the shooter flees. [19] It also helps first responders get to victims quicker, giving them a fighting chance at survival.[20]

However, some individuals find that the ShotSpotter may be an invasion of privacy as they are worried that the sensors placed throughout the city will pick up private conversations. Nonetheless, conversations said in public do not have an expectation of privacy, and therefore, the ShotSpotter does not violate the right to privacy. This comment will address the following: a) ShotSpotter technology is a necessity in all neighborhoods; b) ShotSpotter does not violate an individual's expectation of privacy; c) the need for ShotSpotter outweighs the cost of the device; and e) regulations and economic solutions will allow cities to use ShotSpotter while still protecting the individual's privacy rights.

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10.   *Id.*

11.   *Id.*

12.   *Id.*

13.   *Id.*

14.   *First Responders Save or Assist 57 Gunshot Victims Using the ShotSpotter Gunshot Location System*, SST, INC., http://www.shotspotter.com/press-releases/article/first-responders-save-or-assist-57-gunshot-victims-using-the-shotspotter-gu (last visited Sept. 15, 2015)[hereinafter *57 Gunshot Victims*].

15.   *Id.*

16.   *Id.*

17.   *Id.*

18.   Katie Zezima, *Obama: America Should be Ashamed of Gun Violence*, THE WASHINGTON POST (Jun. 10, 2014), http://www.washingtonpost.com/news/post-politics/wp/2014/06/10/obama-america-should-be-ashamed-of-gun-violence/.

19.   *From the Leader in Gunshot Detection, Location and Analysis Technology*, SHOTSPOTTER, http://www.shotspotter.com/system/content-uploads/ShotSpotter-Flex-Datasheet.pdf (last visited Sept. 18, 2015)[hereinafter *Gunshot Detection*].

20.   *Id.*

BACKGROUND

Statistics show that nearly 80% of shootings go unreported.[21] The remaining 20% that do end with a 911 call typically provide law enforcement with inaccurate locations that result in a lack of resources to the victim and a waste of vulnerable time to the police.[22] As a result, law enforcements in some cities have recently turned to "ShotSpotter." [23] This relatively new technological advancement provides police with real-time data of gunshots and pinpoints the precise locations of the shooting.[24]

In 1996, Dr. Robert Showen created the company "ShotSpotter Inc." ("SST"). [25] SST created the device that offers instant, real-time data of shootings in progress to patrol cars, dispatch centers, and smart phones.[26] By receiving immediate notifications, police are able to quickly find and arrest the offenders, collect any evidence located at the scene, and notify first responders to help victims promptly.[27]

The ShotSpotter is comprised of acoustic sensors that "detect impulsive noises over wide coverage areas." [28] These noises include explosions and gunfire.[29] The datacenter then interprets that sound with "sophisticated mathematical techniques to accurately locate the source of specific gunfire incidents based on the acoustic telemetry provided by the sensors." [30] Expert reviewers then immediately receive the data at the SST Real-Time Incident Review Center (IRC) who confirm the gunfire, add any additional information such as number of weapons fired, and then send the alert to authorities.[31] This entire process happens in less than one minute.[32]

The acoustic sensors are capable of differentiating between real gunshots and loud noises such as fireworks and the misfiring of car en-

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21.   *Is gun violence a priority in your city?*, SST, INC., http://www.shotspotter.com/law-enforcement (last visited Sept. 18, 2015)[hereinafter *Gun Violence*].

22.   *Id.*

23.   *See ShotSpotter Gunshot Detection and Locations Service*, SST, INC., http://www.shotspotter.com (last visited Oct. 8, 2015)[hereinafter *Locations Service*].

24.   *Gun Violence*, *supra* note 21.

25.   *Company Overview*, SST, INC., www.shotspotter.com, http://www.shotspotter.com/company#history (last visited Sept. 18, 2015).

26.   *Gunshot Detection, supra* note 19.

27.   *Id.*

28.   *2013 National Gunfire Index*, SST, INC., 5 (2013), http://shotspotter.com/system/content-uploads/2013-NatGunfireIndex.pdf.

29.   *Id.*

30.   *Id.*

31.   *Id.*

32.   *Id.*

gines.[33] Although the backfiring of a car can sound extremely similar to a gunshot, the ShotSpotter system has "proprietary filtering software" which enables the device to distinguish between real gunshots and comparable sounds.[34] Thus, while the "sensors detect all ambient noise, recording only begins when an actual gunshot is fired."[35]

SST provides a "Wide Area Protection" system through ShotSpotter, creating more ground coverage than any other device.[36] Roughly fifteen to twenty acoustic sensors are placed per square mile.[37] The sensors contain: microphones, memory and processing, GPS, and cell capability.[38] Ralph Clark, CEO of ShotSpotter, explained that the sensors are positioned at a minimum twenty feet above ground.[39] The higher the sensors, the less likely the devices will capture ambient noise.[40] When a sensor picks up a gunshot sound, a report is sent to a "LocServer."[41] If the LocServer receives three or more acoustic sensors lining up in space and time, the server labels the noise as a "possible gunshot."[42] Only then is the audio downloaded from the sensors. [43] The datacenter then receives that audio, where humans listen, analyze, and review the recording, determining whether it was in fact a gunshot.[44] Once the analysis concludes that the sound is a gunshot, the center immediately alerts local police.[45]

Since the sensors are equipped to record and collect gunfire noises, many people question whether the ShotSpotter can pick up conversa-

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33.   Juan Ortega, *Broward Sherriff's Office installs sensors to detect where gunshots are fired,* SUN SENTINEL (April 14, 2010), http://articles.sun-sentinel.com/2010-04-14/news/fl-shotspotter-broward-sheriff-20100414_1_shotspotter-sound-sensors-gunshots.

34.   Marin Perez, *Shots fired: ShotSpotter gunfire detection system provides leg up on 911,* POLICE ONE (Sep. 25, 2007), http://www.policeone.com/police-products/police-technology/articles/1357787-Shots-fired-ShotSpotter-gunfire-detection-system-provides-leg-up-on-911/.

35.   *Id.*

36.   *Wide Area Protection of Neighborhoods and Cities,* SST, INC., http://www.shotspotter.com/wide-area-protection (last visited Nov. 7, 2015).

37.   Jay Stanley, *ShotSpotter CEO Answers Questions on Gunshot Detectors in Cities,* ACLU (May 5, 2015, 9:15 PM), https://www.aclu.org/blog/free-future/shotspotter-ceo-answers-questions-gunshot-detectors-cities.

38.   *Id.*

39.   *Id.*

40.   *Id.*

41.   *Id.*

42.   *Id.*

43.   *See* Jay Stanley, *ShotSpotter CEO Answers Questions on Gunshot Detectors in Cities,* ACLU (May 5, 2015, 9:15 PM), https://www.aclu.org/blog/free-future/shotspotter-ceo-answers-questions-gunshot-detectors-cities (The downloaded audio includes two seconds before the shots and four seconds after).

44.   *Id.*

45.   *Id.*

tions.[46] CEO Ralph Clark explained that even though the device continually records audio, the datacenter only receives reports of gunshot-like sounds.[47] The recordings are stored for "hours or days, not weeks… [then] overwritten on a rolling basis."[48] Thus, audio that is not recorded simply disappears. According to the company, ShotSpotter is only designed to detect impulsive sounds, not "live listening."[49] Likewise, the device does not have the capacity to listen to indoor communications.[50] Out of approximately three million gunfire incidents in the past ten years, there have only been three "extremely rare" cases of reported human voices.[51]

Not only does the ShotSpotter allow first responders to get to victims faster, it heightens officer safety by providing them with information regarding the possible number of shooters and their exact location before police reach the scene.[52] Information gathered by the ShotSpotter has become increasingly prevalent in cases and investigations.[53] There are more than fifty cases in seventeen states that have admitted ShotSpotter data as evidence, including federal courts.[54] It has also helped law enforcement in thousands of investigations.[55] As of today, approximately 70 cities in the United States use ShotSpotter.[56] This device is the new trend in crime prevention that has the potential to aid in fighting the war on guns. As such, this device should be seen as an overall safety measure.

This comment will address how ShotSpotter helps police protect citizens, as well as themselves, in today's gun epidemic. There are obstacles concerning a person's expectation of privacy, yet this comment will analyze how certain public conversations are not subject to privacy. The comment will conclude with proposed necessities for implementing ShotSpotter into the neighborhoods that will require notice to the residents that the new audio sensors are now in place and for their own

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46.   *Id.*

47.   *Id.*

48.   *Id*

49.   *Privacy Policy*, SST, INC., http://shotspotter.com/privacy-policy (last visited Sept. 18, 2015).

50.   *Id.*

51.   *Id.*

52.   *2013* National, *supra* note 28.

53.   *Id.*

54.   *Id.*

55.   *Id.*

56.   SST Inc., *Sensors Report Gunfire Directly to Police in 70 U.S. Cities, No 911 Call Needed*, SHOTSPOTTER (Aug. 8, 2013), http://www.shotspotter.com/news/article/sensors-report-gunfire-directly-to-police-in-70-u.s.-cities-no-911-call-nee.

safety.

ANALYSIS

SHOTSPOTTER TECHNOLOGY IS A NECESSITY IN ALL NEIGHBORHOODS.

Regardless of the level of violence in an area, all types of neighborhoods should implement ShotSpotter. Criminals will eventually notice a pattern in arrests and response times, learning of the new ShotSpotter system, only to reposition to another location. Thus, police departments should place the acoustic sensors all throughout cities to prevent this relocation from occurring, as well as provide the police with an additional sense of backup.

ShotSpotter Acts As A Second Pair of Police Ears.

ShotSpotter has the potential to benefit law enforcement. In 2014, gunfire claimed the lives of over forty police officers.[57] From January 1, 2015 through October 6, 2015, thirty officers lost their lives to firearm-related violence.[58] Law enforcement's motto is, "To Protect and to Serve."[59] However, this does not mean officers must defend citizens without protecting themselves. With new technology, police have the ability to detect bombs with remote controls, get an exclusive look at dangerous situations from 25 to 30 feet above ground, and even use iPads as a means to record statements and take notes on suspects and witnesses.[60] With ShotSpotter, police have inside information about the shooting well before anyone dials 911.[61] Police can now be 100% certain that a shot was fired before going into the crime scene, which means their strategic game plan can be specifically tailored to increase their

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57. Justin Wm. Moyer, *When cops get killed: 40 police officers felled by gunfire in 2014*, THE WASHINGTON POST (Dec. 22, 2014), http://www.washingtonpost.com/news/morning-mix/wp/2014/12/22/being-a-cop-is-dangerous-here-are-40-police-officers-killed-by-gunfire-in-2014/.

58. *Preliminary 2015 Law Enforcement Officer Fatalities*, NATIONAL LAW ENFORCEMENT OFFICERS MEMORIAL FUND, http://www.nleomf.org/facts/officer-fatalities-data/ (last visited Oct. 8, 2015).

59. *Origin of the LAPD Motto*, LAPD, http://www.lapdonline.org/history_of_the_lapd/content_basic_view/1128 (last visited Oct. 8, 2015).

60. Todd Weiss, *Cool cop tech: 5 new technologies helping police fight crime*, COMPUTER WORLD, 1-5 (Feb. 16, 2012, 6:00 AM), http://www.computerworld.com/article/2501178/government-it/cool-cop-tech--5-new-technologies-helping-police-fight-crime.html?page=1.

61. Allison Klein, *Gunshot Sensors Are Giving D.C. Police Jump on Suspects*, THE WASHINGTON POST (Oct. 22, 2006), http://www.washingtonpost.com/wp-dyn/content/article/2006/10/21/AR2006102100826.html.

chance for safety.[62]

Milwaukee Police Chief, Edward Flynn, explained that his city incorporated ShotSpotter "to ensure that it assisted us in accomplishing our mission. Which is to help people live in a safe neighborhood so they can raise their children and pursue the American dream."[63] ShotSpotter acts as another set of police ears before police even reach the scene of the crime. This creates an enormous safety advantage for officers because they now have "real-time access to maps of shooting locations and gunshot audio and actionable intelligence detailing the number of shooters and the number of shots fired" before even reaching the crime scene.[64]

ShotSpotter also helps police catch shooters relatively quickly.[65] Every minute that passes, a suspect becomes more difficult to find.[66] The chances of catching a suspect are heightened through the immediate information.[67] ShotSpotter helps close the time gap between the shooting and locating the gunman.[68] In early March 2015, New York City installed ShotSpotter technology throughout seven Bronx precincts with a plan to expand to Brooklyn.[69] Mayor de Blasio of New York City explained, "[ShotSpotter] increases the chances of catching the shooter. It increases the chances of recovering the weapon. It increases the chances of stopping further crime." [70]

Mayor de Blasio's analysis on ShotSpotter was seen in action in Peoria, Illinois. Peoria police were already on route to the scene where shots were discharged due to the ShotSpotter information well before dispatch radioed the officers that a female shooter opened fire on anoth-

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62.   Patrick Johnson, *ShotSpotter technology aids Springfield police gunshot investigations*, MASS LIVE (Nov. 15, 2010, 4:08 AM), http://www.masslive.com/news/index.ssf/2010/11/shotspotter_technology_aids_sp.html.

63.   SST Inc., *ShotSpotter Lets Police Pinpoint Exactly Where A Gun Was Fired*, SHOTSPOTTER, http://www.shotspotter.com/news/article/shotspotter-lets-police-pinpoint-exactly-where-a-gun-was-fired (last visited Nov. 20, 2015).

64.   *Gun Violence*, *supra* note 21.

65.   *Gunshot Detection, supra* note 19.

66.   *See* Amy R. Connolly, *Police end search for suspected gunman in New Orleans Wal-Mart*, UNITED PRESS INTERNATIONAL (Aug. 15, 2015, 12:23 PM), http://www.upi.com/Top_News/US/2015/08/15/Police-end-search-for-suspected-gunman-in-New-Orleans-Walmart/5031439653712/ (A gunman entered a New Orleans Wal-Mart, but hours after looking, police ended their search for the gunman).

67.   Rocco Parascandola and Oren Yaniv, *De Blasio, NYPD unveil $1.5M ShotSpotter system, detects gunshots via sensors around city and alerts police automatically*, DAILY NEWS (March 16, 2015, 11:43 PM), http://www.nydailynews.com/new-york/nypd-unveils-1-5m-shotspotter-system-bronx-article-1.2151679.

68.   *Id.*

69.   *Id.*

70.   *Id.*

er woman.[71] Only four minutes later, police found the suspect approximately one mile away with the handgun and arrested the shooter.[72]

Recovering evidence from a crime scene is a crucial part to any investigation.[73] The evidence helps law enforcement establish an understanding of what happened at that location.[74] Thus, collecting evidence is "critical to both solving and prosecuting violent crimes."[75] On one occurrence, in early 2015, a gunman shot an automatic pistol 24 times in Brooklyn. However, police only arrived to the scene due to the information sent by ShotSpotter. When asked why no one called 911, a resident of the neighborhood explained, "[she] hears gunshots all the time" and "people are dying left and right around here…and I don't want any harm coming to my kids."[76] Police were able to locate 24 shell casings from the scene.[77] In one year alone, the ShotSpotter technology located in Worcester allowed police to collect 180 shell casings, recover three weapons, and gather an additional 60 pieces of evidence.[78]

ShotSpotter's audio evidence also played a crucial part in a 2007 high-profile shooting where a fourteen-year old boy was shot and killed by an off duty D.C. officer.[79] The sensors were able to pick up and record gunshots from two individual sources, proving that someone other than the officer shot first.[80] This provided a defense for the police officer, and through review and analysis of the ShotSpotter audio, found that he did not disobey any department policy.[81] ShotSpotter also helps prosecutors

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71. Matt Buedel, *Peoria Police hear benefits of ShotSpotter system, double coverage area*, JOURNAL STAR (Feb. 28, 2015 at 4:41 PM), http://www.pjstar.com/article/20150228/NEWS/150229202/?Start=1.

72. *Id.*

73. *Crime Scene Response Guidelines: OVERVIEW*, CRIME SCENE INVESTIGATOR NETWORK, http://www.crime-scene-investigator.net/respon1.html (last visited Oct. 8, 2015).

74. *Id.*

75. *Id.*

76. Laura Bult & Rocco Parascandola, *NYPD uses ShotSpotter technology to detect Brooklyn Shooting after locals fail to call 911,* DAILY NEWS (April 2, 2015, 3:54 AM), http://www.nydailynews.com/new-york/nyc-crime/nypd-shotspotter-technology-detect-brooklyn-shooting-article-1.2170744.

77. *Id.*

78. Lindsay Corcoran, *Worcester's ShotSpotter system leads to 3 guns recovered, 9 arrests in first year*, MASS LIVE (June 2, 2015, 1:17 PM), http://www.masslive.com/news/worcester/index.ssf/2015/06/worcesters_shotspotter_system.html.

79. Andras Petho, David Fallis, and Dan Keating, *ShotSpotter detection system documents 39,000 shooting incidents in the District*, THE WASHINGTON POST (Nov. 2, 2013), https://www.washingtonpost.com/investigations/shotspotter-detection-system-documents-39000-shooting-incidents-in-the-district/2013/11/02/055f8e9c-2ab1-11e3-8ade-a1f23cda135e_story.html.

80. *Id.*

81. *Id.*

"establish the number or sequence of shots, the time of gunfire, and whether more than one gun was fired" as evidence in trials.[82] With the acoustic sensors implemented in cities, police can feel a sense of reassurance that there is always a second pair of ears acting as backup.

Shot Spotter Can Save Victims and Protect The Public

When dealing with gun violence, America is among the worst in the world.[83] Over a span of ten years, 335,609 people lost their lives due to gunfire.[84] A myth many people believe is that first responders receive information about a shooting immediately after it takes place.[85] However, that cannot be further from the truth. Typically, it takes about three to five minutes before police are even notified and dispatched, given that someone has actually called 911.[86] The information may often be conflicting or incomplete, delaying the first responders' arrival time.[87] Fortunately, "ShotSpotter helps law enforcement to save lives and improve community safety."[88] According to the company, in one year alone, first responders saved fifty-seven gunshot victims due to the quick response and aid from paramedics because they were able to reach the scene in a matter of minutes.[89] When gunshots are fired, every second counts in order to save a life.[90] Thus, once shots are fired in neighborhoods where ShotSpotter is implemented, first responders receive the shooting information within 30 to 45 seconds, long before any call is made to 911.[91]

One incident occurred in Beloit, Wisconsin when the police department received ShotSpotter data that there had been a shooting, and came to find that a seventeen-year-old girl was shot and fighting to stay

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82. *Id.*

83. Jon Greenberg, *Fox News' Eric Bolling misstates tie between gun laws and gun deaths internationally*, POLITIFACT (Sept. 1, 2015, 5:25 PM), http://www.politifact.com/punditfact/statements/2015/sep/01/eric-bolling/fox-news-bolling-misstates-tie-between-gun-laws-an/.

84. NBC News Staff, *Just the facts: Gun Violence in America*, NBC NEWS (Jan 16, 2013, 1:41 PM), http://usnews.nbcnews.com/_news/2013/01/16/16547690-just-the-facts-gun-violence-in-america?lite.

85. *SST Secure Campus: Active Shooter Alarm for Campus First Responders*, SHOTSPOTTER, http://www.shotspotter.com/secure-campus (last visited Oct. 8, 2015).

86. *Id.*

87. *Id.*

88. *Locations Service, supra* note 23.

89. *57 Gunshot Victims, supra* note 14.

90. Tenikka Hughes, *Action News Investigates: Technology providing quicker response times in active shooter cases*, CBS 47 NEWS (May 14, 2015, 5:40 PM), http://www.actionnewsjax.com/news/news/action-news-investigates-technology-providing-quic/nmD5t/.

91. *Id.*

alive.[92] Since the police and first responders received real-time and ex-
act location data, paramedics reached the scene two minutes before an-
yone called 911.[93] Due to this technology, the girl was able to have a
second chance at life.[94]

Another illustration where ShotSpotter saved lives comes from
Richmond, California.[95] Soon after the city implemented the system, the
device provided officers the exact location of shots fired, allowing them
to immediately respond to the scene.[96] The fast arrival helped save both
of the shooting victims.[97] Meanwhile, on the opposite coast, Bronx police
were alerted of a shooting, leading them to find a bleeding wounded-
man with gunshot injuries, and rushed him to the local hospital imme-
diately.[98] Implementing ShotSpotter nationwide can only help save even
more lives.

With ShotSpotter in place, not only are officers immediately on the
scene to help stop the shooter and preserve the crime scene, but first re-
sponders are there to help the victims. Every second a gunshot victim
bleeds out, their lives become more in danger and chances of survival
are diminished. Therefore, cities need ShotSpotter to get the infor-
mation to responders immediately, giving the victims a chance at life.

The Number of Gunshots Has Decreased Due to ShotSpotter

Since incorporating ShotSpotter in select cities and neighborhoods,
statistics show that gunshots have decreased.[99] One theory is that crim-
inals are starting to realize response times are faster due to ShotSpot-
ter, creating a higher chance of arrest and prosecution, which in turn
deters shootings in those specific locations.[100] In 2014, of the 28 cities
using ShotSpotter, 26 saw gunfire reductions compared to the previous

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92.   *57 Gunshot Victims, supra* note 14.

93.   *Id.*

94.   *Id.*

95.   *ShotSpotter, Inc. Momentum Increases with Recent Successes*, SST, INC.,
http://www.shotspotter.com/press-releases/article/shotspotter-inc-momentum-increases-
with-recent-successes (last visited Nov. 7, 2015).

96.   *Id.*

97.   *Id.*

98.   Thomas Tracy, *ShotSpotter gunfire-alert technology directs cops to wounded
man in the Bronx: NYPD*, DAILY NEWS (April 7, 2015, 2:53 PM),
http://www.nydailynews.com/new-york/nyc-crime/shotspotter-tech-helps-save-wounded-
man-bronx-nypd-article-1.2175930.

99.   Nick Selby, David Henderson, & Tara Tayyabkhan, *ShotSpotter: Gunshot Loca-
tion   System: Efficacy   Study,*   CSG   Analysis,   1,   13   (2011),
https://www.seattleprivacy.org/wp-
content/uploads/2014/05/shotspotter_efficacystudy_gls8_45p_let_2011-07-08_en.pdf.

100.   Mark Bullock, *Special Report: The Shot Spotter*, WSFA NEWS (Oct. 28, 2010,
11:14 PM), http://www.wsfa.com/Global/story.asp?S=13408247.

year.[101] Numbers show that in 2013, there was a reported 23,683 illegal gunshots in the 28 cities.[102] One year later in the same sample location, numbers dropped to 19,443 due to ShotSpotter.[103] Montgomery, Alabama implemented ShotSpotter in the device's early days, and after one year provided a remarkable amount of positive feedback.[104] A resident explained, "we don't hear any more shootings like we used to. We used to hear a lot."[105] The city reported at least 250 gunshots a month before ShotSpotter, and now, the device may have cut that number in half.[106] Due to the decrease, the city plans to expand the ShotSpotter radius to include more neighborhoods.[107]

Police have also found that they tend to trust ShotSpotter over 911 calls because of the more accurate and descriptive information as compared to witness statements.[108] "Knowing the precise information gives the officers the ability to make tactical decisions and approach situations in a safe manner." [109] Explained above, the 20% of shootings that do result in a 911 call typically provides law enforcement with inaccurate locations, resulting in a lack of resources to the victim and a waste of vulnerable time to the police.[110] New Haven, Connecticut Police Chief, Dean Esserman, explained that ShotSpotter is an essential 'citizen' in the neighborhood that can call 911 quicker than any ordinary citizen, providing even more accuracy and specificity.[111] In turn, this exact information can create a trust between the community and police.[112] Each year, gun violence in America kills an estimated 32,000 people.[113] Therefore, if there was ever a time for ShotSpotter in the United States, now would be that time.

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101.   *Top   4   Findings*,   NATIONAL   GUNFIRE   INDEX, http://www.shotspotter.com/2015NGI (last visited Oct. 8, 2015).

102.   *Id.*

103.   *Id.*

104.   *See* Bullock, *supra* note 100.

105.   *Id.*

106.   *Id.*

107.   *Id.*

108.   Selby, *supra* note 99.

109.   Gary Gemme, *ShotSpotter: A tool for a safety,* TELEGRAM (Oct. 29, 2013, 6:00 AM), http://www.telegram.com/article/20131029/NEWS/310299989/1020.

110.   *Gun Violence, supra* note 21.

111.   *ShotSpotter Reduces Crime & Honoring Air Force Cops*, LAW OFFICER (Feb. 5, 2015), http://lawofficer.com/2015/02/05/shotspotter-reduces-crime-honoring-air-force-cops/.

112.   *Id.*

113.   Dan Diamond, *More Young Americans Now Die From Guns Than Cars*, FORBES   (Aug,   26,   2015,   12:42   PM), http://www.forbes.com/sites/dandiamond/2015/08/26/americas-gun-violence-problem-in-three-charts/.

SHOTSPOTTER DOES NOT VIOLATE AN EXPECTATION OF PRIVACY

Some individuals worry that ShotSpotter will pick up and record conversations made in public and, thus, violate their expectation of privacy.[114] However, according to the Fourth Amendment, the goal is to protect people, not places.[115] To decide what type of protection is available, the first requirement is to establish what type of "place" the people are in.[116] To determine this, courts use a twofold test.[117] First, "a person [must] have exhibited an actual (subjective) expectation of privacy, and second, that the expectation be one that society is prepared to recognize as 'reasonable.'"[118] Therefore, a home, telephone booth, or public restroom is typically a place where a person has a reasonable expectation of privacy.[119] However, information that a person "knowingly exposes to the public, even in his own home or office, is not a subject of Fourth Amendment protection."[120] Thus, statements made in "plain view" that people do not intend to keep private, or conversations said in the open, are not subject to an expectation of privacy.[121] Under these circumstances, it is unreasonable to believe that those types of conversations would be subject to protection against being overheard in public.[122] Therefore, conversations between individuals while out in the public do not have an expectation of privacy.

To further determine what discussions are regarded as "private," the term must first be understood. Courts have ruled that "intent or reasonable expectations of the participants as manifested by the facts and circumstances of each case control whether a conversation is private."[123] Thus, the court, in *State v. Clark,* ruled that "private" is to be given its ordinary meaning: "belonging to one's self … intended for the

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114.   Rebecca McCray, *Privacy Advocates Worry New Police Mics Will Record Much More Than Gunshots*, TAKEPART (Mar. 18, 2015), http://www.takepart.com/article/2015/03/18/audio-detectors-will-record-gunshots-new-york-city-and-maybe-more.

115.   *Katz v. United States*, 389 U.S. 347, 351 (1967).

116.   *Id.* at 361.

117.   *Id.*

118.   *Id.*

119.   *Id.* at 359; *United States v. White*, 890 F.2d 1012, 1015 (8th Cir. 1989).

120.   *Katz*, 389 U.S. at 351.

121.   *Id.* at 361.

122.   *Id.*

123.   *State v. Clark*, 916 P.2d 384, 392 (Wash. 1996).

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persons involved (a conversation) … holding a confidential relationship to something … a secret message: a private communication … secretly: not open or in public."[124]

The Supreme Court in *Clark* had to decide whether a certain conversation recorded was inadmissible because the defendant considered it "private."[125] The court ruled in order to determine if a conversation is private, there must be an examination of the subjective intent of the parties in the discussions.[126] However, individuals will always suggest that their conversations are private; therefore, the court adds the second factor of evaluating the reasonable expectations along with the intent of the individuals.[127] The court continues by stating, "a conversation on a public thoroughfare in the presence of a third party and within the sight and hearing of passersby is not private." [128] Therefore, the Supreme Court held the conversation was not private because the parties had the discussion in public. [129]

The Court also held that a conversation does not receive privacy protections if it may be overheard by nearby people.[130] When comparing an average conversation discussed between individuals while on public sidewalks to *State v. Clark,* it is safe to say these types of conversations are not within the definition of "private," and therefore, do not have an expectation of privacy. Thus, ShotSpotter's audio recording cannot violate one's expectation of privacy.

In *Kee v. City of Rowlett, Texas*, two individuals sued police officers for violating their constitutional right to privacy by installing electronic wiretaps.[131] Plaintiffs related to two murdered children were attending the funeral and engaging in conversations and prayer.[132] Unbeknownst to them, two officers placed an electronic wiretap in an urn close to the children's gravesites to help further the investigation of the murders.[133] The device recorded the parties' conversation, and once the individuals realized the wiretap was recording their discussion, the plaintiffs alleged a violation of their right to privacy.[134]

The main issue involved in *Kee* was "whether the secret electronic

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124. *Id.*
125. *Id.* at 384.
126. *Id.* at 392.
127. *Id.*
128. *Id.*
129. *State v. Clark*, 916 P.2d at 392.
130. *When Private is Not Private: Privacy Expectations in the Brave New World,* FROSTBROWNTODD, LLC (Aug. 11, 2015), www.frostbrowntodd.com/resources-1837.html.
131. *See Kee v. City of Rowlett, Tex.*, 247 F.3d 206 (5th Cir. 2001).
132. *Id.* at 208.
133. *Id.*
134. *Id.* at 209.

recording of their private prayers and conversations directed at their deceased relatives violated their reasonable expectation of privacy."[135] Citing to the *Katz* standard, the court held that a person claiming a Fourth Amendment protection must "exhibit an actual expectation of privacy," which requires a person to attempt to keep the information private, and whether that expectation of privacy is "one that society is prepared to recognized as reasonable."[136] However, because of the public and outdoor nature of the gravesite, the court looked to other considerations to "evaluate the subjective expectations of privacy in oral communications in publicly accessible spaces."[137] These considerations include:

> 1) the volume of the communication or conversation; 2) the proximity or potential of other individuals to overhear the conversation; 3) the potential for communications to be reported; 4) the affirmative actions taken by the speakers to shield their privacy; 5) the need for technological enhancements to hear the communications; and 6) the place or location of the oral communications as it relates to the subjective expectations of the individuals who are communicating.[138]

The court held that the plaintiffs did not have a subjective expectation of privacy because they failed to provide sufficient evidence to argue the six considerations.[139] The two plaintiffs were unsuccessful in showing that they intended the conversations to remain private.[140] Likewise, they "[did] not assert that their oral statements were communicated free from possibility of eavesdroppers who might have been in close proximity to the gravesite."[141] The plaintiffs knew the ceremony was taking place outside, yet failed to take any precautionary steps to guarantee others from listening.[142] Thus, the plaintiffs did not meet the first *Katz* standard.

Similar to the electronic wiretap used in *Kee*, ShotSpotter's acoustic sensors record noises that it detects. The difference, however, is ShotSpotter is placed at a minimum of 25 feet above the ground, and only records loud gunshot like noises that are detected.[143] The police placed the urn within close proximity of the plaintiffs, which was constantly recording all audio, and the court still found the wiretap did not violate plaintiff's expectation of privacy.[144] Thus, because the Court

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135.   *Id.* at 211.
136.   *Id.* at 212 (quoting *Katz v. United States*, 389 U.S. 347, 361 (1967)).
137.   *Kee v. City of Rowlett, Tex.*, 247 F.3d at 215.
138.   *Id.* at 213-15.
139.   *Id.* at 217.
140.   *Id.* at 216-17.
141.   *Id.* at 216.
142.   *Id.* at 216-17.
143.   *Privacy Policy*, *supra* note 49.
144.   *See generally Kee v. City of Rowlett.*

found a wiretap that was recording an outside conversation without the participant's consent as legal and not in violation of the individuals' expectation of privacy, Courts can also find ShotSpotter sensors lawful.

While many people might be able to establish a subjective belief in an expectation of privacy, it is essential to prove that this belief is one that society objectively recognizes. Following the six court considerations, it would be hard for an individual having an ordinary conversation out on the public sidewalk to claim a Fourth Amendment right to privacy, especially those living in major, crowded cities. With people constantly walking around, it is hard to say that conversations had while out in public would go unheard by eavesdroppers or simply people passing by.

Illinois' Eavesdropping Law Now Allows Recordings That Are Not Made Surreptitiously

Under the Illinois Eavesdropping law, individuals still do not have that right to privacy for conversations stated while in public. At the end of Governor of Illinois Pat Quinn's term, he signed a new Illinois eavesdropping law in effect.[145] Prior to the new law, Illinois had an extremely strict eavesdropping statute.[146] In 1961, the Illinois General Assembly enacted the statute that prohibited any auditory recordings of communications without consent from all the parties involved.[147] However, the ACLU wanted to prevent Cook County from enforcing this statute, seeking an injunctive and declaratory relief, bringing rise to *ACLU v. Alvarez.*[148]

In *ACLU v. Alvarez,* the Seventh Circuit shut down the State's argument "that audio recordings are wholly unprotected by the First Amendment."[149] While the case centered around the issue of recording police officers on duty, it held that the prior Illinois Eavesdropping law was likely unconstitutional.[150] Thus, in 2014, former Illinois Governor Pat Quinn signed into law a new Illinois Eavesdropping Statute follow-

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145.   Christina Alam, *What's Wrong with Illinois' New Eavesdropping Law*, JURIST (Jan. 29, 2015, 9:00 AM), http://jurist.org/hotline/2015/01/jacob-huebert-eavesdropping-law.php.

146.   Kristen Berg, *Strict eavesdropping law ruled unconstitutional in Illinois case*, REPORTERS COMMITTEE (Sep. 16, 2011), https://www.rcfp.org/browse-media-law-resources/news/strict-eavesdropping-law-ruled-unconstitutional-illinois-case.

147.   Jordan M. Kielian & David J. Silverman, *Updating Eavesdropping: ACLU v. Alvarez and potential legislation*, THE PUBLIC SERVANT, https://www.isba.org/committees/governmentlawyers/newsletter/2012/10/updatingeavesdroppingacluvalvarezan (last visited Oct. 12, 2015).

148.   *Id.*

149.   *Id.*

150.   *Id.*

ing the Illinois Supreme Court decision. [151]

The new statute states, "All parties involved in a private conversation give their permission to be recorded."[152] There must be actual permission from both parties. For example, "it would be illegal for one worker to secretly record a colleague complaining about a boss over the phone."[153] However, it is legal to record that same conversation if it took place on a street.[154] This type of conversation is defined as "any oral communication between two or more people in which the parties have a 'reasonable expectation' the discussion will remain private." [155] Thus, if people are having a conversations loudly outside in the public, it would be legal to record that discussion.[156]

In addition, the law states that it is illegal to record private conversations without the consent of all parties involved *only* when it is made "'surreptitiously' and at least one party to the conversation has a 'reasonable expectation' of privacy."[157] Surreptitiously is defined as "obtained or made by stealth or deception, or executed through secrecy or concealment."[158] Therefore, since this comment has already discussed that public conversations are not subject to an expectation of privacy, and ShotSpotter does not record audio "surreptitiously," individuals may not use the Illinois Eavesdropping law as a protection.

It Is Extremely Rare For ShotSpotter To Record Conversations

Even though individuals do not have an expectation of privacy for their public conversations, it is important to note that it is extremely rare for ShotSpotter to record those conversations.[159] While courts have ruled that there is no expectation of privacy when individuals talk in public, SST wants to ensure that all privacy rights are strictly followed, "exceed[ing] federal law requirements and protect[ing] individual privacy.[160]

Firstly, SST designed ShotSpotter sensors to only pick up audio that is triggered by impulsive sounds; therefore, it is not intentionally

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151.   *See ACLU v. Alvarez,* 679 F.3D 583 (7th Cir. 2012).

152.   Monique Garcia, *Quinn signs new Illinois eavesdropping rules into law*, CHICAGO TRIBUNE (Dec. 30, 2014, 5:53 PM), http://www.chicagotribune.com/news/ct-quinn-signs-illinois-eavesdropping-law-met-1231-20141230-story.html.

153.   *Id.*

154.   *Id.*

155.   *Id.*

156.   *Id.*

157.   Alam, *supra* note 145.

158.   *Illinois Amends Eavesdropping Statute in Response to Recent Court Decisions*, MCDERMOTT, WILL, & EMERY (Jan. 29, 2015), http://www.mwe.com/Illinois-Amends-Eavesdropping-Statute-in-Response-to-Recent-Court-Decisions-01-29-2015/.

159.   *Privacy Policy*, *supra* note 49.

160.   *Id.*

"live-listening" to conversations.[161]   In other words, "[h]uman voices do not trigger ShotSpotter sensors."[162] SST places the sensors approximately 20 to 40 feet above ground to:

1) Maximize their ability to 'listen to the horizon' and thereby reduce the number of sensors required; 2) Minimize the background noise from cars and other street noises, thus also reducing the number or sensors required; and 3) Minimize the chance that a human voice will be intelligible, however briefly, in order to protect privacy.[163]

The constant reassurance that this device is not designed to capture and record voices proves that SST holds an individual's privacy to a high standard. ShotSpotter in no way has the ability to record indoor conversations.[164] The sensors are located at such an elevated height, that ShotSpotter does not even have the capability of hearing normal toned conversations on the street.[165]

While it is important to point out that there have been three rare incidents of voices recorded, it is equally important to show that it was only three out of approximately three million recorded events over the last ten years.[166]   In addition, the recording of the human voices were individuals yelling exceedingly loud outside at the specific gunshot scene both before and after the gun was fired, and was only heard for a few seconds. [167] To heighten the privacy policy after these three incidents, SST has reinforced that "unless someone is yelling loudly enough to be heard in public, and also doing so within two seconds before or four seconds after a loud, explosive, acoustic incident, the audio will be flushed from the sensor's buffer and overwritten."[168] While some may argue that the protection of the public greatly outweighs the individual's right to public privacy, SST ensures that both are equally as important.[169]

Even though ShotSpotter is not designed to record conversations, individuals who have public discussions do not have a reasonable expectation of privacy, thus ShotSpotter is protected from any privacy challenges. Therefore, this recording device used to help law enforcement is not only essential in communities, but it is constitutionally permissible.

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161.   *Id.*
162.   *Id.*
163.   *Id.*
164.   *Id.*
165.   *Privacy Policy*, *supra* note 49.
166.   *Id.*
167.   *Id.*
168.   *Id.*
169.   *Id.*

THE NEED FOR SHOTSPOTTER OUTWEIGHS THE COST

With more than 32,000 lives lost per year in America due to gun vi-olence, it is essential that cities position ShotSpotter throughout com-munities, no matter the cost.[170] However, coming to an estimated $100,000 per 1.5 square miles used, the ShotSpotter system may be costly for cities with smaller budgets.[171] To help the economic issue, SST provides funding consultants that can assist the agency in finding a suitable funding option.[172] The agency, such as the local police depart-ment, can then look at the following funding options: "federal competi-tive grants and formula funds" (such as HUD Public Housing Capital Fund, FEMA Urban Area Security Initiative, and USDOJ Smart Polic-ing Initiative Grant Program); "Asset Forfeiture Funds", "Community Public Safety Partners"; Public Housing Agencies; and Community Funds (business sponsorships).[173]

Unfortunately, grants, funding, and outside help are not enough for all cities. For example, in 2014, the Oakland, California Police De-partment had to make a decision if it was still possible to afford the sys-tem.[174] Spending an estimated $264,000 a year on the device seemed to be too expensive, and the department feared that the money might be needed elsewhere.[175] Dallas assistant police chiefs seem to also agree. Dallas was using ShotSpotter technology for a relatively substantial pe-riod of time, but decided to end the program because it was too expen-sive.[176] The officers explained that SST wanted "$50,000 per square mile of equipment, with a three-square-mile minimum."[177] However, CEO Ralph Clark now states that the system is "anywhere from $60,000 to $90,000 per square mile, depending on the terrain and amount of sen-sors needed."[178]

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170.   Marcus Hawkins, *Putting Gun Death Statistics in Perspective*, ABOUTNEWS, http://usconservatives.about.com/od/capitalpunishment/a/Putting-Gun-Death-Statistics-In-Perspective.htm (Last visited Nov. 18, 2015).

171.   *ShotSpotter Gunshot 'Listening' Technology Comes to Chicago Police Force*, HUFFINGTON   POST   (Oct.   26,   2012,   3:29   PM), http://www.huffingtonpost.com/2012/10/26/shotspotter-gunshot-liste_n_2025220.html.

172.   SST Inc., *Explore Funding Solutions with ShotSpotter*, SHOTSPOTTER, http://www.shotspotter.com/funding (last visited Nov. 7, 2015).

173.   *Id.*

174.   *Oakland Considers Dropping ShotSpotter Technology*, ABC 7 NEWS (March 14, 2014, 9:09 PM), http://abc7news.com/archive/9466568/.

175.   *Id.*

176.   Robert Wilonsky, *Years after flirting with sensors that detect gunshots, Dallas deems technology too expensive*, THE DALLAS MORNING NEWS (May 12, 2015, 3:00 PM), http://cityhallblog.dallasnews.com/2015/05/years-after-flirting-with-sensors-that-detect-gunshots-dallas-deems-technology-too-pricey.html/.

177.   *Id.*

178.   *Id.*

PROPOSAL

In order to remove any remaining privacy concerns with ShotSpotter, there should be a number of different requirements put in place. Some requirements stem from the proposed ACLU recommendations for the police body cameras that are now in place. To ensure that the government takes into consideration all precautions, the best way to protect an individual's public conversations, even though it is not subject to an expectation of privacy, is to establish regulations. There are two requirements that should be put into place: regulations for the use of ShotSpotter and economic funding. The elements of the regulations for the use of ShotSpotter are: 1) control over recordings; 2) notice to residents; and 3) reasonable retention length of audio recordings. In addition, economic funding entails an increase of tax revenues.

REGULATIONS TO USE SHOTSPOTTER

Control Over Recordings

In order to achieve the best quality from ShotSpotter, it is essential to regulate exactly who has control over the recordings, eliminating any doubt about tampering with the audio. This is both beneficial for the residents and law enforcement. Even though it is extremely rare for ShotSpotter to pick up human voices, it is vital that residents know the audio is under proper control. Likewise, with the overwhelming use of ShotSpotter recordings as evidence in trials, it is important for the jury, judge, parties, and courtroom to know that the audio is in its original state.

According to SST, the company manages and maintains all software and servers that are used to store, process, and protect the data recorded.[179] Police agencies that are subscribed to the company, or any customer for that matter, does not have any access to software, servers, sensors, "or any other means to circumvent SST's security and privacy measures."[180] However, these customers are entitled to the data information, which is essential in making a case or solving a crime, but SST does not discharge any data to any other entity.[181]

Tampering with any type of evidence is illegal under federal and state law.[182] Therefore, ShotSpotter takes exceptional measures to make

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179. SST, Inc*., Privacy Policy: Leveraging Technology to produce Societal Benefits*, SHOTSPOTTER, http://shotspotter.com/privacy-policy (last visited Oct. 12, 2015).

180. *Id.*

181. *Id.*

182. *Tampering With Evidence*, CRIMINAL DEFENSE LAWYER, http://www.criminaldefenselawyer.com/crime-penalties/federal/Tampering-with-

sure the company has sole control over all recordings. There have been incidents where police officers unfortunately tamper with evidence, hurting the prosecution's case.[183] To ensure this does not happen with ShotSpotter's recordings, SST designed specific security tactics "to prevent anyone or any entity from gaining unauthorized access to [its] system[.]"[184]

Likewise, with the sensors continuously recording, it creates less of an opportunity for a person to edit, delete, or add any type of audio recording, establishing a heightened accountability. Through the continuous recording, ShotSpotter will also record any police gunfire picked up within the sensors. Thus, with the increasing media attention on the "war on cops," ShotSpotter can also attest to any excessive shots by law enforcement at crime scenes. With that said, it is essential that police cannot edit those recordings to eradicate any shots from their guns, again creating a trust between police and citizens. With control over the recordings as one of the essential requirements for ShotSpotter, SST is heading in the right direction.

Notice to Residents

Although it has been established that individuals do not have a reasonable expectation of privacy in public conversations, SST should still notify residents when the police department places the new sensors in the towns for public awareness. Notifying residents that police are implementing ShotSpotter in the vicinity acts as a respectable warning. Most state laws permit recorded conversations when the source consents (known as "one-party consent" law) and "has full knowledge that the communication will be recorded." [185] Therefore, when the local law department notifies the public about its plan on placing sensors throughout the community, those residents that continue to live in that location provide an inference that consent is provided.

However, a simple, one time notification is not enough. With new residents moving into the area, in order for the local police to keep ShotSpotter active, the department must alert residents each year. This way, old occupants will have a refreshed memory that the system is in place, and new residents to the cities or neighborhoods receive the information in a timely fashion. Likewise, the communities must have

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evidence.htm (last visited Oct. 13 2015).

183.   *See Former Police Officer Charged with Tampering With Evidence*, PA HOMEPAGE (Nov. 18, 2014, 6:50 PM), http://www.pahomepage.com/news/former-police-officer-charged-with-tampering-with-evidence.

184.   *Leveraging Technology, supra* note 179.

185.   *Recording Phone Calls and Conversations*, DIGITAL MEDIAL LAW PROJECT, http://www.dmlp.org/legal-guide/recording-phone-calls-and-conversations (last visited Oct. 13, 2015).

constant reminders that ShotSpotter is working and a brief reminder of what the device does. This can consist of signs located throughout the community stating, "ShotSpotter In Operation: ShotSpotter is a sensor that detects and records gunfire, ensuring safety in the community." This simple sign allows residents and even individuals who are temporarily living or passing through the town to become aware that the device is recording, but it is really for their safety.

Some people might express concerns before living in an area with ShotSpotter, and that the device may be a deterrent when deciding on a location to live. Therefore, in addition to notifying residents, cities are to incorporate a statement on the towns homepage that the community uses a device known as ShotSpotter, what it does, and how recording human conversations while out in public is rare. Furthermore, real estate websites that give descriptive information about the living space and neighborhood should have a section providing details to the potential buyer that ShotSpotter is implemented throughout the town and exactly what it does. Therefore, every person moving into the neighborhood after the placement of ShotSpotter will know about the device well before moving in.

Notifying the residents of the device will provide an additional privacy reassurance that the individuals are aware the recording is taking place. Therefore, even though they have no expectation of privacy to public conversations, these residents will now have the knowledge and awareness of the devices when they are in public places.

Law Enforcement Should Only Retain ShotSpotter Audio Recordings
For A Reasonable Amount of Time Necessary

According to the ACLU, "data should be retained no longer than necessary for the purpose for which it was collected."[186] Law enforcement should only retain the ShotSpotter audio recordings for a reasonable amount of time. To keep the residents of the community at ease, unless the court identifies the audio as an important piece of evidence to prove any aspect of the shooting itself or the suspect, the datacenter should delete the recording immediately. If admitted as evidence for trial, the recording must be properly stored and go through a chain of custody to assure all parties secure the recording. Likewise, if the sensors detect a voice, the judge should omit the sound on the tape to the best of his or her ability, guaranteeing that the only noise the courtroom will hear is of the gunshot itself. Once the trial is over, and if the recording has any voices or otherwise compromising private information

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186.   Jay Stanley, *Police Body-Mounted Cameras: With Right Policies In Place, A Win For All*, ACLU (Oct. 2013), https://www.aclu.org/police-body-mounted-cameras-right-policies-place-win-all.

such as conversations, the datacenter must completely erase the audio. Otherwise, the gunshot recording can be stored as evidence for up to a year, upon which the recording is deleted.

TAX DOLLARS SHOULD FUND SHOTSPOTTER

While ShotSpotter does offer funding sources to agencies, some cities still have trouble finding means to afford the system. Therefore, resident tax dollars should go towards funding the sensors. The first type is through property taxes. Property taxes go towards local governments that fund counties, forest preserves, local airports, local township roads, park districts, schools, and police departments. Since law enforcement is already benefiting from property tax, many might argue that an increase is unwarranted. However, this only goes towards salary, benefits, and police cars to name a few.[187] Thus, with a slight increase directed specifically towards the towns' local police departments, with the help from the funding programs, the tax dollars can help the department purchase ShotSpotter. Because each municipality is different, creating one standard increase is unfair. Therefore, towns should raise property taxes accordingly, with enough to pay and maintain the ShotSpotter system. Many residents will oppose this option, but the end result of helping combat gun violence and heightening the city's safety justify the increase.

However, not everyone owns property so not everyone will contribute to the property tax. An alternative solution to ensure fairness for all residents in a town is to increase sales taxes on specialized items, such as firearms and alcohol and tobacco products. Sales taxes first go to the state to help fund public schools, courts, highways, medical programs, and state police.[188] The remaining revenue is distributed back to municipalities which allocate the money however they see fit.

Increasing tobacco and alcohol sales tax can also be a worthy solution. The main reason the local government should apply the tax increase to these two specialized products is because the increase of tax still does not fully deter individuals from purchasing the items. Whenever a state increases the tax on tobacco products, cigarette tax revenues are still substantially increased.[189] Even though smoking has sig-

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187.   Glen Craig, *What Do Your Property Taxes Pay For?*, FREE FROM BROKE (April 28, 2014), http://freefrombroke.com/what-do-your-property-taxes-pay-for/.

188.   Linda Brinson, *How State Sales Taxes Work*, HOWSTUFFWORKS http://money.howstuffworks.com/personal-finance/personal-income-taxes/state-sales-taxes.htm (last visited Nov. 8, 2015).

189.   *Tobacco Tax Increases Are A Reliable Source Of Substantial New State Revenue*, TOBACCO FREE KIDS, https://www.tobaccofreekids.org/research/factsheets/pdf/0303.pdf (last visited Nov. 8, 2015).

nificantly declined over the years, it still generates a sufficient amount of revenue.[190] Thus, the increase of alcohol and tobacco taxes can help generate the extra revenue needed to purchase ShotSpotter. Once again, because all towns are different, the percentage increase on alcohol and tobacco taxes will vary from city to city, but should at least be a one percent increase. Likewise, with fewer people turning to alcohol and tobacco in today's day in age, a final possible alternative would be to go straight to the source and increase tax on firearms and ammunition. Thus, with all firearms, there should be an additional five percent tax increase on top of the regular sales tax.

Using both the funding programs that ShotSpotter suggests, and the increase in property, tobacco, alcohol, or firearm taxes, all cities will have the opportunity of acquiring the ShotSpotter system. In the end, this slight increase to buy ShotSpotter can help cities save money in the future from not having to deal with long, unanswered investigations.

ShotSpotter is a new deceive that can entirely change the way police respond to the 'war on guns.' With statistics proving that gun-related crimes are declining in neighborhoods with ShotSpotter in place, it is only right for the system to become part of the American mission to end gun violence. However, it is important to note that police should not only implement ShotSpotter in high violent neighborhoods or communities. Once criminals begin to realize that their fired shots are recorded, and police can arrive on the scene before someone even has to call 911, they will essentially move to a new location with less surveillance. This is just moving the gun violence around. Therefore, police should place ShotSpotter in any town that can afford it, regardless of the level of violence in the area. It is always better to prevent the problem from happening rather than having to stop it once it has already become an issue.

CONCLUSION

ShotSpotter gun detection sensors are the new technological advancement within law enforcement. In order to always stay one step ahead of the criminals, it is important for the police to have the most recent crime fighting devices available. With ShotSpotter acting as the officer's second pair of ears, the police can now receive information regarding a shooting seconds after the bullet left the gun.[191] The constant recording enables ShotSpotter to catch any gunfire within the sensor's radius, allowing police to acquire a descriptive understanding of the

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190. *Id.*
191. *Gun Violence*, *supra* note 21.

shooting before stepping foot near the crime scene.[192] Unfortunately, because ShotSpotter is a recording device, privacy issues may arise.

Individuals are worried that ShotSpotter will pick up and record conversations made while walking the public streets, potentially violating their right to privacy. Fortunately for ShotSpotter, courts have ruled that statements made in "plain view" that do not intend to stay private, or conversations said in the open, are not subject to an expectation of privacy.[193]

However, it is important for individuals to accept and respect ShotSpotter. Therefore, to assure residents that their privacy is significantly respected, cities and towns must meet certain requirements to implement ShotSpotter. Through constant proper control over recordings, individuals can be reassured that tampering with the audio is nearly impossible. In addition, proper notification that ShotSpotter will be placed in the area, along with constant reminders through signs and community webpages, alerting the community that the sensors are recording is essential. Furthermore, those cities who may have trouble affording the system should turn to the funding programs ShotSpotter lists, as well as increase either property, tobacco, alcohol, or firearm taxes to assure that all neighborhoods, no matter the size or level of violence, receive the best protection.

ShotSpotter allows police to take a step in the right direction when trying to combat gun violence. "Within a minute of a discharged weapon, dispatchers can deploy officers with tactical knowledge of how many shots were fired, the approximate location of the discharged weapon, and a good idea of what type of weapon they're facing."[194] Not only does it protect officers, but it increases the chances of survival for victims, as well as creating a higher chance of catching suspects in shorter periods of time. When it comes to protecting communities, ShotSpotter can only help without violating any expectation of privacy.

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192.   *Gunshot Detection, supra* note 19.
193.   *Katz*, 389 U.S. at 350.
194.   Perez, *supra* note 34.