



August 26, 2024

The Honorable J. Allen Joines
Mayor, City of Winston-Salem
101 N Main Street, Suite 150
Winston-Salem, NC 27101

The Honorable Denise D. Adams
Mayor Pro Tempore, City of Winston-Salem
3661 Marlowe Avenue
Winston-Salem, NC 27106

W. Patrick Pate
City Manager, City of Winston-Salem
101 N Main Street, Suite 170
Winston Salem, NC 2710

Chief William H. Penn, Jr.
Chief of Police, City of Winston-Salem
725 North Cherry Street
Winston-Salem, NC 27101

Dear Mayor Joines, Mayor Pro Tempore Adams, City Manager Pate, and Chief Penn:

I write in response to comments included within a media report, released by WGHP (FOX8) News on August 2, 2024, and subsequent public statements by the Winston-Salem Police Department (“WSPD”) indicating that WSPD will not renew its contract with SoundThinking for ShotSpotter.¹ The relationship between SoundThinking—the company that created ShotSpotter—and the City of Winston-Salem (“Winston-Salem” or the “City”) dates back to August 2021, and is a partnership that SoundThinking takes great pride in due to ShotSpotter’s track record of helping to save lives and reduce violence. Over the past three years, our relationship with the City has been strong, and as a result, we were surprised and disappointed to learn that WSPD intends to not renew its relationship with SoundThinking came in the form of the August 2 media report. More troubling, though, is the news report and related statements that contain inaccuracies and mischaracterizations made by media outlets regarding the positive impact our services have had in Winston-Salem.

According to the news report, the justification for WSPD terminating its contract with SoundThinking is based on “the department[’s] feel[ing that] the return on investment isn’t there.”² However, there is overwhelming evidence to the contrary. In fact, independent academic analysis, objective media reporting, prior statements by WSPD officers and City officials, and feedback from the residents of Winston-Salem repeatedly confirm the following:

- (1) ShotSpotter helps **saves lives**;
- (2) ShotSpotter contributes to reducing **crime**;
- (3) ShotSpotter **provides a strong evidentiary tool** for WSPD;

¹ Winston-Salem police will no longer use ShotSpotter,
<https://myfox8.com/news/north-carolina/winston-salem/winston-salem-police-will-no-longer-use-shotspotter/>.

² Ibid.

- (4) ShotSpotter **saves the City an estimated \$8.4 to \$8.8 million annually** (a \$26 return for each dollar invested); and
- (5) ShotSpotter can be **a powerful force multiplier** for drone policing programs.

It is an undeniable fact that ShotSpotter saves lives, helps deter violence, helps solve crimes, and saves cities money. It is for this reason *that between 2023 and 2024 year to date, approximately 40 new municipalities deployed ShotSpotter within their communities, 136 existing municipalities across the country renewed their ShotSpotter contract, and 25 of those existing municipalities expanded their coverage areas.*

SoundThinking has prepared the below report for the City, which provides a robust, factual, and comprehensive overview of the ways that ShotSpotter has repeatedly benefited Winston-Salem.

While we believe that the information included herein is on its own enough to justify ShotSpotter's continued deployment in Winston-Salem, in the spirit of transparency, we would very much appreciate the opportunity to further discuss the points raised in this report with you directly, and are pleased to invite you to tour our Incident Review Center so that you are able to see in person how ShotSpotter works in real time and the impact we have on the communities we are privileged to serve. In the meantime, we look forward to continuing to work with WSPD and City officials to do everything possible to help address gun violence and keep Winston-Salem residents safe.

Sincerely,



Ralph A. Clark
President and CEO
SoundThinking, Inc.

CC:

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Winston-Salem, NC 27101

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The Honorable Robert C. Clark
Council Member, City of Winston-Salem
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EXECUTIVE SUMMARY

- (1) In Winston-Salem, fewer than 20% of gunfire incidents result in a corresponding call being made to 911 (the “911 Reporting Gap”).
- (2) ShotSpotter fills the 911 Reporting Gap, providing an alert to WSPD within 60 seconds to nearly all outdoor gunfire that takes place within ShotSpotter’s coverage area in Winston-Salem.
- (3) ShotSpotter enables first responders to arrive to the scene of a gunfire incident quickly, allowing them to render aid to victims which saves lives.
- (4) Evidence of ShotSpotter’s success in Winston-Salem includes:
 - o The collection of 1,372 shell casings and the recovery of 139 firearms;
 - o A five-minute reduction in police response times to gunfire incidents;
 - o 102 arrests related to gunfire incidents;
 - o A 24% reduction in assaults and homicides (i.e., 87 fewer per year);
 - o \$8.4 to \$8.8 million in annual savings for the City; and
 - o \$26 return on investment for each \$1 invested in the ShotSpotter program.
- (5) ShotSpotter is a valuable force multiplier for the use of drones in policing:
 - o ShotSpotter “hears” gunfire, allowing drones to quickly be directed to the location of a gunfire incident.
 - o Without this awareness, drone programs have diminished utility and a reduced benefit relative to their cost.

“As a firefighter with City of Winston-Salem, I have personally witnessed the many benefits of this program. The number of lives this system has saved are countless. These victims of gun violence are getting help so much faster now due to officers getting the alert and immediately investigating and finding many of these gunshot victims in the streets and off the roadways. As emergency responders we have very accurate information on where these shootings originate so we know exact areas to stage away until police secure the scene. This keeps us out of harms away and makes it much safer for everyone. Funding needs to be allocated to continue supporting this program to keep us all safer while saving many lives by expediting response.”

- M.C.

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I. How ShotSpotter Works and Drives Equitable Public Safety Outcomes

While the purpose of this report is to share the overwhelming evidence in support of each of these facts, to best understand ShotSpotter's importance in helping WSPD mitigate the pernicious effects of criminal gunfire, it is important to understand how ShotSpotter works.

ShotSpotter is an acoustic gunshot detection system that uses an arrayed network of sensors to "listen" for loud, impulsive sounds—pops, booms, and bangs—that may be gunfire, and pinpoint the point of origination of the sound via triangulation. That sound is then filtered through a computer to dismiss noises that are clearly not attributable to gunfire. Immediately thereafter, the remaining sounds are sent to, and reviewed by, highly trained acoustic reviewers at ShotSpotter's Incident Review Centers who play back the recorded sound, analyze the audio waveforms, and assess numerous other points of data to see if they match the typical pattern for gunfire. From there, the acoustic reviewers either publish the incident to police as gunfire or dismiss the sounds as non-gunfire events. The pairing of technological sophistication with human expertise is a distinctive feature of ShotSpotter. It is important to note that the ShotSpotter system has a contractually guaranteed 90% accuracy rate for detecting, classifying, and publishing outdoor gunfire incidents, with financial penalties to SoundThinking for underperformance. A description of how ShotSpotter works is graphically depicted in **Exhibit 1**.

Even more important than knowing how ShotSpotter works is understanding the reason why the technology was created. According to the Brookings Institution, more than 80 percent of gunfire incidents go unreported to 911.³ Unfortunately, that statistic holds true in Winston-Salem. An independent research report authored by Professor Dennis Mares at the Center for Crime Science and Violence Prevention at Southern Illinois University Edwardsville, titled "*The Impact of ShotSpotter Deployment in Winston-Salem, NC*" (the "CCSVP Report"), reveals that "fewer than one in five (19.2%) of ShotSpotter alerts [in Winston-Salem] also receive[] a call [to 911] from residents."⁴ Obviously, each unreported gunfire incident deprives WSPD of the opportunity to dispatch first responders to render aid to victims, catch perpetrators, collect forensic evidence, speak with witnesses, and reassure the community.

ShotSpotter exists to bridge this glaring deficiency in 911 response. In incidents where lives may hang in the balance, ShotSpotter alerts police to virtually all gunfire in a community's coverage area within 60 seconds. Since ShotSpotter has been deployed, "nearly 3,700 ShotSpotter alerts received a response by Winston-Salem Police."⁵ Without ShotSpotter, per the rate at which Winston-Salem residents report gunfire incidents, only approximately 710 incidents of gun violence would have been reported—leaving approximately 3,000 incidents unreported and uninvestigated. ***The cost to Winston-Salem of this difference is not best measured in dollars and cents; instead, it's measured in evidence not collected, illegal guns not recovered, criminals not apprehended, and lives not saved.***

³ "The geography, incidence, and underreporting of gun violence: New evidence using ShotSpotter data," Jillian B. Carr and Jennifer L. Doleac, The Brookings Institution, April 27, 2016, <https://www.brookings.edu/articles/the-geography-incidence-and-underreporting-of-gun-violence-new-evidence-using-shotspotter-data/>.

⁴ The Impact of ShotSpotter Deployment in Winston-Salem, NC, Updated Results, 2024.

⁵ Ibid.

II. ShotSpotter Saves Lives

When assessing any technology or tool designed to aid law enforcement in their fight against gun violence, the most important means to evaluate success is the degree to which that tool helps save lives. According to this metric, ShotSpotter is an unequivocal success.

A driving force in ShotSpotter's ability to help save lives is its ability to accurately pinpoint the location of gunfire, enabling law enforcement to respond to the scene of a crime faster than they would from a traditional 911 call—assuming a 911 call is placed at all. Typically, when an individual calls 911 to report gunfire, they are inside. Being within an enclosed structure deprives even the most well-intentioned caller of critical information about a shooting, including where the shooting occurred and how many shots were fired. However, since ShotSpotter is deployed in outdoor environments, its sensors are specifically designed and calibrated to accurately triangulate the location of fire and count the number of rounds discharged. This means that responding officers have a much more precise location of where to respond and the gravity of the potential scene to which they are responding.

As the CCSVP Report makes clear, when it comes to dispatching officers to reports of gunfire, “ShotSpotter alerts get dispatched almost two minutes faster than calls by residents, which is statistically significant.”⁶ Importantly, the CCSVP Report does not only assess response times in the three-square-mile area of the City where ShotSpotter is currently deployed, but compares those response times to areas of Winston-Salem where ShotSpotter sensors are not presently located (the control area), in order to objectively evaluate ShotSpotter's efficacy. Notably, the CCSVP Report concludes that “results of response times indicate that implementation of ShotSpotter significantly reduced the time it takes police to respond to gunfire related calls for service...[and that] [t]hese results stand in contrast to the comparison area, which saw the exact opposite.”⁷ More specifically, “[w]here prior to ShotSpotter, dispatch times [across the current ShotSpotter deployment area and the control area] were within a minute of each other...after implementation, the ShotSpotter area delivered calls for service in nearly half the time, or four minutes faster.”⁸

As you might suspect, the reason why reduced response times are so critical is because the quicker that first responders can arrive to the scene of a shooting, the quicker they can begin administering medical aid to any injured victims. In 2019, a study published in the *Journal of Trauma and Acute Care Surgery*, and profiled by the National Institutes of Health, explored if ShotSpotter played a meaningful role in improving the likelihood that a gunshot victim would survive.⁹ The study's findings are particularly instructive. The study cited research that “[s]horter prehospital time in patients sustaining penetrating trauma has shown to be associated with improved survival...[and that] [l]iterature has also demonstrated that police transport (vs. Emergency Medical Services [EMS]) shortens transport times to a trauma center.”¹⁰ As a result, since ShotSpotter alerts are routed to police officers, allowing

⁶ CCSVP Report.

⁷ Ibid.

⁸ Ibid.

⁹ Use of ShotSpotter detection technology decreases prehospital time for patients sustaining gunshot wounds, <https://pubmed.ncbi.nlm.nih.gov/31425474/>.

¹⁰ Ibid.

them to arrive on scene before EMS personnel, the study found that “ShotSpotter technology increased the likelihood of police transport of gunshot victims...[and] the use of this technology resulted in shorter response times as well as transport times for both police and EMS.”¹¹ Therefore, the study concluded “[ShotSpotter] technology may be beneficial in enhancing the care of victims of penetrating trauma [e.g., gunshot wounds].”¹²

Most importantly, these outcomes have borne out in very real-life gunshot incidents in Winston-Salem. In the three years since ShotSpotter has been deployed in the City, ShotSpotter alerts directed first responders to **27 gunshot victims** who were then able to receive medical aid.¹³ One of the most poignant examples of ShotSpotter’s role in aiding gunshot victims was recounted by Officer Bradley Schafer of WSPD.¹⁴ An unedited transcript of Officer Schafer recounting a gunfire incident where a ShotSpotter alert resulted in life-saving aid being rendered to a gunshot victim is excerpted below:

“We initially got dispatched to a shooting victim on Old Royal Hall Road.

I was about the third on scene. There was already two officers with the victim.

When I went back to my car, I had noticed that we had a ShotSpotter alert that came out around 11 o'clock p.m.

I called communications to verify if it got handled. They said no, it didn't. Can we show you enroute? Sure, I'll go.

Parked my car about where it's parked right now, uh, because ShotSpotter was indicating that it happened somewhere in this field.

I walked across the street as I was walking up that embankment right over here, I got almost to the top, and I heard somebody go, ‘Help me.’

And I saw a gentleman laying in the field. So I ran over there.

Right here, I believe, uh, he was laying in the field.

Um, and as soon as I showed up, uh, I obviously saw that he was a shooting victim. He was covered in blood.

Um, I notified KLS that I had a shooting victim. Sergeant Thompson and Corporal Leach were the first two officers that arrived.

¹¹ Ibid.

¹² Ibid.

¹³ Winston-Salem Police Department Saves Lives and Takes Firearms off the Streets, <https://www.soundthinking.com/success-story/winston-salem-police-department-saves-lives-and-takes-firearms-off-the-street/s/>.

¹⁴ Winston-Salem Police Department Aids Gunshot Victims with the Help of ShotSpotter, <https://www.youtube.com/watch?v=9kI7fNEva6Q&t=1s>.

Once they did, they were able to hold him down. I applied a tourniquet, we called EMS, EMS showed up, they did their thing and took the gentleman to the hospital.

We get a circle, an 82-foot diameter circle, of where they think the ShotSpotter alert is at.

The gentleman happened to be laying on the dot, if it was on my computer, pretty much exactly in the middle of the circle.

He had gotten shot at approximately 2300 hours, 11 pm. I showed up at about 2340 hours.

If it would have been a normal discharge of firearms where somebody calls in and says, 'Hey, I heard three shots in my area, but I didn't see anything. I didn't, I didn't hear anything else,' he would have bled out and died.'"¹⁵

Officer Schafer credits the fact that ***“ShotSpotter sends us right to the location of incident”*** as the critical element to the technology’s proven success in saving lives. He notes that ShotSpotter “keep[s] us safer because we’re going to be responding to a known location of where something’s happening,” concluding that, for law enforcement and public safety, ShotSpotter is “a game changer.”¹⁶

Officer Schafer’s account is mirrored by other instances where ShotSpotter is credited for directing first responders to gunshot victims in Winston-Salem, including:

- On May 31, 2023, after receiving a ShotSpotter alert just after midnight, WSPD officers responded to the 1900 block of E. 24th Street where they “found a child, 7, shot twice, once in the torso and hand.” Police “rendered aid to the child until fire and EMS personnel arrived on the scene and took over.” The child “was taken to the hospital where they [underwent] surgery.”¹⁷ “[J]ust before 6 a.m., [police] received word she was out of surgery and starting the recovery process. Her injuries [were] critical, but she [was] stable.” A 12-year-old also was injured in the same shooting and taken to the hospital with less severe injuries and subsequently released.¹⁸
- On June 23, 2023, WSPD responded to a ShotSpotter alert on the 1100 block of North Cameron Avenue where “officers found 32-year-old Harry Draper at a home with gunshots to both of his legs.” First responders then transported Draper to the hospital for treatment.¹⁹

The role that ShotSpotter has played in saving the lives of victims of gun violence across Winston-Salem is well-recognized by WSPD leadership. As the CCSVP Report details, “WSPD has

¹⁵ Ibid.

¹⁶ Ibid.

¹⁷ Winston-Salem police: Child, 7, shot twice overnight, <https://www.wxii12.com/article/north-carolina-winston-salem-child-7-shot-twice/44047113>.

¹⁸ 2 Children, 7 and 12, hurt after shooting on E 24th St in Winston-Salem, police say, <https://myfox8.com/news/north-carolina/winston-salem/7-year-old-girl-hit-by-gunfire-winston-salem-police-say/>.

¹⁹ Man shot in both legs in Winston-Salem, <https://www.wfmynews2.com/article/news/local/man-injured-after-being-shot-in-both-legs-in-winston-salem/83-9f1ca330-8ba5-4eec-9eef-23eae36e1ac0>.

identified several cases in which victims received faster medical care that according to medical professionals likely saved their lives.”²⁰ More sobering is the acknowledgement that “in some of these cases only a ShotSpotter alert led police to detect a victim.”²¹

WSPD’s own report on ShotSpotter (the “WSPD Report”) is even more blunt, stating:

- ***“In two instances, had the ShotSpotter system not alerted law enforcement to the shooting, the victims would most likely have died,*** since neither of these incidents were reported by citizen 911 calls. When officers responded to the ShotSpotter alerts, they were able to render aid and request EMS, which ensured both victims were transported to a local hospital, where the person was treated for (and survived) life-threatening injuries.”²²
- WSPD Captain Amy Gauldin has said that “[w]hen we’re looking at saving somebody’s life or looking at getting to a victim quickly to render aid...[ShotSpotter]’s invaluable to us.”²³ After just one year of being in operation, Captain Gauldin acknowledged that “in the time the program has been live...police have saved two lives thanks to information provided by ShotSpotter.”²⁴ For that reason, she noted “[i]t’s expensive...[b]u if we’re taking guns off the streets and we’re saving lives, I think it’s a win-win for everybody.”²⁵

Of course, what Captain Gauldin is saying is what all of us already know: You cannot put a price on a life saved.

²⁰ CCSVP Report.

²¹ Ibid.

²² 2019 Crime Gun Intelligence Center Grant Final Analysis Report, <https://crimegunintelcenters.org/wp-content/uploads/2024/05/2019-CGIC-Grant-Final-Analysis-Report-Final.pdf>.

²³ ShotSpotter system serves as valuable asset to Winston-Salem police in recent shootings, <https://myfox8.com/news/north-carolina/winston-salem/shotspotter-system-serves-as-valuable-asset-to-winston-salem-police-in-recent-shootings/>.

²⁴ Winston-Salem police share results of gunfire detecting program, <https://www.wxii12.com/article/winston-salem-police-gunfire-detecting-program/41603076/>.

²⁵ Winston-Salem Police Department’s ShotSpotter helps officers get guns off street, save lives, <https://myfox8.com/news/north-carolina/winston-salem/winston-salem-police-departments-shotspotter-helps-officers-get-guns-off-street-save-lives/>.

III. ShotSpotter Reduces Crime

While ShotSpotter’s role in saving lives is the most compelling benefit it confers to Winston-Salem, the reduction in crime associated with its deployment is also significant and very meaningful. In the area of the City where ShotSpotter is deployed, *there was a 24% reduction* in “aggravated assaults and homicides after ShotSpotter” implementation. This is particularly noteworthy given that “[b]y contrast the comparison area (and the remainder of Winston-Salem) display[ed] an initial growth in assaults...(+2%)” during the same period.²⁶ In other words, in the area of the city where ShotSpotter is located, the most violent categories of crime fell by nearly a quarter; whereas, in the area of the city where ShotSpotter is *not* located, the most violent categories of crime increased. Importantly, when determining if ShotSpotter is to credit for the disparity in assaultive crime reduction, the researchers note that “the 24% proportionate reduction is statistically significant, meaning these results are more consistent with actual changes than random chance.”²⁷

ShotSpotter has also had an observable impact in reducing two other categories of criminal activity. While robberies have been trending downward since 2021 across Winston-Salem, “the relative decline was the greatest in the ShotSpotter area (-19%).”²⁸ Similarly, “[c]harges for illegal carrying [of] firearms...were reduced by about 5% in the ShotSpotter area after the detection system became active, but increased by 17% in the comparison area.”²⁹ Considering one of the most pernicious trends in crime is a spike in gun-related violence, the fact that ShotSpotter is helping reduce the illegal carrying of firearms means that the technology is helping tackle one of the greatest challenges law enforcement faces in keeping communities safe. Numerically, ShotSpotter alerts have led to the recovery of at least 139 firearms,³⁰ preventing an incalculable number of future violent crimes.

While there is no lack of statistical evidence as to ShotSpotter’s effectiveness in helping to reduce crime, there is an additional—albeit intangible—contributing factor to consider: how ShotSpotter improves community engagement between police and residents. In the wake of the 2020 protests following the murder of George Floyd, the stark reality is—in some of the communities most plagued by gun violence—a fundamental distrust and misalignment between law enforcement and community members exists. This is such a serious problem that the United States Department of Justice launched the “Strengthening Police and Community Partnerships” initiative to “engage[] local law enforcement and community leaders in a dialogue to identify and collaboratively develop solutions that improve police-community partnerships...[in order to] help local leaders address longstanding community distrust and other historical barriers which impact police-community partnerships.”³¹ This is in line with WSPD’s own belief that “Community Engagement is a fundamental tenet within the guiding philosophy of the Winston-Salem Police Department.”³²

²⁶ CCSVP Report.

²⁷ Ibid.

²⁸ Ibid.

²⁹ Ibid.

³⁰ Ibid.

³¹ Strengthening Police and Community Partnerships, <https://www.justice.gov/crs/our-work/facilitation/strengthening-police-community-partnerships>.

³² WSPD Report.

A harsh reality in some neighborhoods most adversely impacted by gun violence is that gun violence becomes “normalized,” and residents become so accustomed to gunfire, it goes unreported to police. Obviously, when community members observe chronic criminality (gun violence) with a corresponding lack of police response, their faith in law enforcement erodes. Fortunately, the deployment of ShotSpotter is helping repair these frayed relationships. The WSPD Report states that “[w]ith the integration of ShotSpotter, officers are now promptly informed of gunfire in the coverage area, which means a significant increase in police responsiveness, approximately 80% more responses than before.”³³

The WSPD Report goes on to conclude that “[c]onsequently, residents who may have hesitated to report gunfire are witnessing a greater police presence each time such incidents are detected...[and that] officers, upon response, are actively engaging with residents by exiting their vehicles and initiating discussions about the incidents.”³⁴ Unsurprisingly, this change in dynamics “has led to a notable upswing in positive police-citizen interactions during times of heightened gun violence in the community.”³⁵ Considering an “extremely beneficial component of community policing is its effectiveness at reducing the crime rate,”³⁶ it is reasonable to infer that ShotSpotter’s positive impact on improving relations between WSPD and the community it protects will lead to longer-term reductions in crime.

³³ Ibid.

³⁴ Ibid.

³⁵ Ibid.

³⁶ 5 Reasons Why Community Policing is Effective, <https://www.lesniakinstitute.org/5-reasons-why-community-policing-is-effective/>.

IV. ShotSpotter Provides a Strong Evidentiary Tool

Although ShotSpotter has had a positive impact on reducing crime in Winston-Salem, criminality still exists. For that reason, the instrumental role ShotSpotter plays in helping WSPD gather key evidence for apprehending and prosecuting perpetrators is a third notable benefit of the technology.

ShotSpotter's precision and accuracy are the leading reasons why it has become a strong evidentiary tool for prosecutors in their fight against gun violence. Each time a ShotSpotter alert picks up gunfire, it creates digital evidence of the incident, which then can be introduced during criminal proceedings, both by the prosecution and defense. ShotSpotter's forensic evidence has been formally accepted in over 340 cases across 24 states, and prosecutors have repeatedly prevailed in dozens of *Frye* and *Daubert* challenges where defendants have sought to exclude ShotSpotter evidence. Scores of state and federal judges have assessed ShotSpotter's reliability under rigorous evidentiary standards.

The evidentiary value conferred by ShotSpotter in Winston-Salem has been well documented by WSPD, independent analysis, and the media. For example, "[r]eports in recent years indicate that there is a correlation between police having a more exact location and both the retrieval of shell cases and the ability to perform link analysis of firearms." To this end, WSPD has noted that "ShotSpotter's technology of 'pointing' to where shots are fired has made it easier to locate ballistic evidence," and "[t]he increase in evidence collection also resulted in more N[ational] I[ntegrated] B[allistic] I[nformation] N[etwork] leads and [the] connecting [of] incidents that would not have been linked without the evidence."³⁷

What is most impressive is the scale of ShotSpotter's impact on evidence collection. In the period since ShotSpotter has been deployed, 3,476 shell casings have been recovered.³⁸ While, on its own, this is an impressive statistic, even more astonishing is that "the number of casings recovered by responding to ShotSpotter alerts (3 sqm) almost matches the entire 3,597 casings found by responding to calls for service from the community in the entire city (134 sqm)."³⁹ Mathematically, this means that evidence recovery from ShotSpotter alerts is 4,400% more effective than from 911 calls.

Therefore, we should not be surprised that ShotSpotter is leading to violent criminals being apprehended and prosecuted. Examples of this impact across Winston-Salem include the following:

- On December 18, 2023, Tywon Walker "was taken into custody by the United States Marshal's Task Force in Union County, New Jersey" after WSPD obtained a warrant for his arrest. Walker was "charged in connection to the death of Gevontae Morrison, 26, who was killed on Sept. 11 at Burke Village Apartments on Burke Village Lane." WSPD noted that "officers responded to a ShotSpotter alert and found Morrison suffering from a gunshot wound."⁴⁰

³⁷ WSPD Report.

³⁸ CCSVP Report.

³⁹ Ibid.

⁴⁰ Winston-Salem police: Suspect in custody for September homicide, <https://www.wxii12.com/article/north-carolina-winston-salem-police-suspect-arrested-september-homicide/46147972>.

- On September 26, 2023, WSPD “arrested two people for shooting a firearm during an argument.” WSPD stated “they responded to the 1400 block of Bethlehem Lane...[after] they were originally dispatched by a ShotSpotter [a]lert.”⁴¹
- On March 4, 2023, Jarod Hall was sentenced to “21 to 28 years in prison for a series of gun crimes across Winston-Salem” that took place on May 15, 2022.⁴² The firearm-related crimes to which Hall pled guilty were:
 - Five counts of discharging a firearm into occupied property;
 - Four counts of assault with a deadly weapon intent to kill inflicting serious injury;
 - Two counts of discharging a firearm from within an enclosure;
 - Two counts of assault with a deadly weapon inflicting serious injury;
 - Two counts of possession of a stolen firearm;
 - Robbery with a dangerous weapon; and
 - Possession of a firearm by a convicted felon.

In reporting on the felon’s conviction, the media noted part of the evidence implicating Hall was an “alert from [WSPD’s] ShotSpotter system that gunshots were heard a mile away from Bethlehem Avenue on East 25th Street,” and that upon arriving on scene “police found a number of shell casings.”⁴³ Critically, upon apprehending Hall, the article notes that “[o]fficers said they found shell casings inside [his] vehicle that matched the shootings from May 15, 2022.”⁴⁴

ShotSpotter’s success in helping WSPD locate, apprehend, and convict violent criminals has earned it praise from leaders across the department. Captain Gauldin has described ShotSpotter as “invaluable” when it comes to findings evidence that can be used to successfully prosecute a case.⁴⁵ She also has stated that ShotSpotter “helps us connect more crimes...generate investigative leads, which ultimately helps us to solve more crime and put the people responsible for this kind of violence in our community in jail.”⁴⁶

Perhaps the most salient comments concerning ShotSpotter’s value in assisting WSPD, however, were made by Chief Penn himself. Speaking on the use of technology-based policing, Chief Penn noted “[w]e’ve had to make cases solely on the technology because we’ve had zero witness cooperation.”⁴⁷ Forsyth County District Attorney Jim O’Neill echoed Chief Penn’s comments in stating that in the

⁴¹ Winston-Salem police say 2 people facing charges after shots fired incident, <https://www.wxii12.com/article/winston-salem-police-say-2-people-facing-charges-after-shots-fired-incident/45335237#>.

⁴² Man sentenced to 21-28 years in prison after series of gun crimes in Winston-Salem, <https://www.wxii12.com/article/man-sentenced-to-21-28-years-in-prison-after-series-of-gun-crimes-in-winston-salem/43194548>.

⁴³ Ibid.

⁴⁴ Ibid.

⁴⁵ ShotSpotter system serves as valuable asset to Winston-Salem police in recent shootings.

⁴⁶ Winston-Salem Police Department’s ShotSpotter helps officers get guns off street, save lives.

⁴⁷ Winston-Salem officers use technology to solve homicides, prosecute offenders, <https://myfox8.com/news/north-carolina/winston-salem/winston-salem-officers-use-technology-to-solve-homicides-prosecute-offenders/>.

absence witness cooperation, “the increasing amount of [technology-generated] hard evidence can now supplement eyewitnesses coming forward.”⁴⁸ Stated differently, much in the same way that ShotSpotter makes up for deficiencies in residents reporting gun violence incidents, it also helps close the evidentiary gap that exists when prosecuting the perpetrators of said violence.

⁴⁸ Ibid.

V. ShotSpotter saves Winston-Salem an Estimated \$8.4 to \$8.8 million Annually (a \$26 return for each dollar invested)

The ample evidence that ShotSpotter saves lives, lowers crime, and provides evidence resulting in criminal arrests and convictions should, itself, completely validate the technology's value as a crime-fighting tool. But considering the announced rationale for WSPD declining to renew the contract with ShotSpotter is an unrealized return on investment, we urge you to consider the following objective data and information demonstrating the exact opposite to be true: ShotSpotter is a strong investment for Winston-Salem, delivering a financial return many multiples greater than its cost.

Utilizing commonly accepted economic and statistical analysis, the CCSVP Report determines the “costs,” on a localized-to-Winston-Salem basis for a series of violent crimes that ShotSpotter has shown evidence of reducing within the City. Relying on data from the non-profit, non-partisan research organization RAND, the CCSVP Report notes the estimated additive cost of an aggravated assault in Winston-Salem is \$104,826.11 per incident.⁴⁹

The CCSVP Report goes on to state that “[u]sing the pre-ShotSpotter monthly number of aggravated assaults in the ShotSpotter area between July 2019 and July 2021 (30.24) and factoring in the crime reductions achieved in the Difference-in-Differences model (-24% or 7.26 fewer monthly incidents) this represents a reduction of about 87 aggravated assaults per year, or an annual cost-savings of about \$9,129,000.”⁵⁰ A similar outcome is observed using the Willingness-to-Pay model. Under that model, estimated cost of a serious assault within Winston-Salem is \$100,863.54 per occurrence. Using the aforementioned calculation methodology, \$8,775,000 in savings to the City can be attributed to ShotSpotter under the WTP model. As such, across multiple models, we can determine that ShotSpotter saves the City between \$8,775,000 and \$9,129,000 per year from reductions in assaults.

The report then goes on to weigh these “savings” against ShotSpotter’s actual and estimated costs for Winston-Salem. This includes the contract cost (\$219,500/year), the wear-and-tear costs on vehicles responding to ShotSpotter alerts (\$25,000/year), and the cost of the investigations that stem from processing evidence recovered at the crime scene of ShotSpotter alerts (\$120,000/year).⁵¹ In sum, this totals to \$364,500 annual costs for ShotSpotter.

Assessed against the savings, ShotSpotter’s annual return on investment is a net positive \$8,410,500 to \$8,764,500 per year, or a financial return to Winston-Salem of \$23 to \$24 per dollar spent. Even more significant is that this return has increased over time. Per the WSPD Report, in 2022—two years before the data referenced above was available—“savings would be a return between \$15 and \$25 for each dollar spent.”⁵² So, not only is ShotSpotter conferring a net financial benefit to Winston-Salem that is many multiples above its cost, this multiple is growing year-over-year.

⁴⁹ CCSVP Report.

⁵⁰ Ibid.

⁵¹ Ibid.

⁵² WSPD Report.

To be clear, these are savings—or financial returns—to Winston-Salem even before accounting for the category of crime that ShotSpotter is most-designed to prevent—gun-related homicides. During a City Council meeting held on September 11, 2023, Captain Gauldin cited research from Giffords Law Center which estimates that the cost of each-gun related homicide is approximately \$800,000 per victim.⁵³ Although data similar to the reduction in assaults pre- versus post-ShotSpotter deployment does not exist for homicides, WSPD has come out and said that they credit, at minimum, ShotSpotter with saving two residents’ lives. Accordingly, even using this incredibly conservative estimate, an additional \$1,600,000 in costs to Winston-Salem have been saved due to ShotSpotter. If you add this total to the net positive returns above, the return on investment increases from the current spread of \$23 to \$24 per dollar spent to \$27 to \$28 per dollar spent, *or an average of \$26 per dollar spent across both models*. Of course, this assumes that you can place *any* dollar value on a life saved.

In short, ShotSpotter consistently reaffirms its value to the City and its residents across the most applicable metrics by which one would assess the technology: lives saved, crimes reduced, convictions obtained, and costs saved. **Exhibit 2** contains a comprehensive list of media reports underscoring the benefits that ShotSpotter has delivered to Winston-Salem.

Since ShotSpotter has been so successful within Winston-Salem, it is unsurprising that the City’s elected officials have publicly expressed their support for the program. During the City Council’s Public Safety Committee meeting held on August 14, 2023, Council Member Annette Scippio stated, “I hate that we even have to use ShotSpotter, but I’m glad it’s a tool that we have in our tool belt to be more efficient and effective.”⁵⁴ During the same meeting, Council Member Kevin Mundy noted that ShotSpotter “is...a lifesaving tool...if there is a victim, it allows you to find that victim almost immediately rather than searching around and seconds can make a difference in saving a life, so I think that’s another plus to this program...we want to consider what is the cost of one our citizen’s li[fe]?”⁵⁵ And Mayor Pro Tempore Adams herself correctly recognized that in the face of declining WSPD manpower, ShotSpotter “is our alternative to what we don’t have, which are other eyes and ears and hands to help make a safe city.”⁵⁶

The positive sentiment of Winston-Salem’s elected officials towards ShotSpotter is unsurprising in light of the fact that these officials represent their constituents, and residents across the City champion

⁵³ City of Winston-Salem City Council Public Safety Commission meeting September 11, 2023, https://app.govspend.com/agencyMeetingDetails/652481543d9cfcf8ec3efc70?criteria=eJylkkFPwzAMhf9LzmVC4tYbl3ECiTPawUvd1pAmke2IVdP-Ow4qMKRNbEI5RHmxX75nZe_EjziBax0MGP38iKgUB9e4N5xN9UyKTGCCzhINGTiVbMfXR LG2xc4OfqTOMZrws186t8A_TQqDPBfk2aSeMHSmrev-UN1W9yHUWiv6NHhPXA tkTC05qOHYbYAtBtfeNq4jUYjefO8OmyOOao478OraHoLgofli6SmYiVwf4jfzXGME8kyFEEjVy74d87L0M8RPKWI_6JY3o6LzzfTaQxliGKfISuluJlyTXDdFM4aXDCMja0PzizloA&time=3244&sharedPublicLinkKey=sharedPublicLink%3A6658b8e947f40609ace6d046%3AagencyMeeting%3A831129e69b9cc.

⁵⁴ City of Winston-Salem City Council Public Safety Commission meeting August 14, 2023, https://app.govspend.com/login?nextUrl=https%3A%2F%2Fapp.govspend.com%2FagencyMeetingDetails%2F64df6c697ecc5117b02473%3Fcriteria%3DeJylkkFPwzAMhf9LzmVC4tYbl3ECiTPawUvd1pAmke2IVdP-Ow4qMKRNbEI5RHmxX75nZe_EjziBax0MGP38iKgUB9e4N5xN9UyKTGCCzhINGTiVbMfXR LG2xc4OfqTOMZrws186t8A_TQqDPBfk2aSeMHSmrev-UN1W9yHUWiv6NHhPXA tkTC05qOHYbYAtBtfeNq4jUYjefO8OmyOOao478OraHoLgofli6SmYiVwf4jfzXGME8kyFEEjVy74d87L0M8RPKWI_6JY3o6LzzfTaQxliGKfISuluJlyTXDdFM4aXDCMja0PzizloA%26time%3D538

⁵⁵ Ibid.

⁵⁶ Ibid.

ShotSpotter and the value it delivers. **Exhibit 3** provides a sampling of comments from Winston-Salem community members who have taken to Facebook to very publicly register their support for the technology in the City's fight against.⁵⁷

⁵⁷ Do you support rapid response to gunfire in Winston-Salem, NC?

https://go.soundthinking.com/winston-salem-support-gunshot-detection?utm_campaign=Winston+Salem+-+Simple+Support+Form&utm_source=facebook&utm_medium=paid&hsa_acc=903891846894308&hsa_cam=120211790147960365&hsa_grp=120211790148000365&hsa_ad=120211792017700365&hsa_src=fb&hsa_net=facebook&hsa_ver=3&fbclid=IwZXh0bgNhZW0BMAABHUZCtnmW0Q9t2ZyyEsQDag0YU4R3IduhpBVTbWo3s8hT8nVFG2nBvM51AA_aem_deknohJxY_dBv41xVYu5wA&utm_id=120211790147960365&utm_content=120211792017700365&utm_term=120211790148000365.

VI. ShotSpotter as a Powerful Force Multiplier for Drone Policing Programs

We would be remiss if we didn't acknowledge that the WGHP report indicated that WSPD will be redirecting the funds currently used to pay for ShotSpotter to "new technology like first responder drones."⁵⁸ While SoundThinking has no interest in second guessing WSPD's determination that drones can help best police the City, we think it's important to share that the evidence proves drones work best when they are paired with an acoustic tool, such as ShotSpotter. Intuitively, this makes sense: if drones are the "eyes" of policing, ShotSpotter is the "ears," and we all know that senses work best when they work in tandem. However, this is not just our belief—it is borne out in real-life applications.

For example, prior to being sworn in as Sheriff of Las Vegas Metropolitan Police Department, Kevin McMahon outlined his plan "to position scores of drones around...problem areas and link them to ShotSpotter sensor networks that detect and alert police to gunfire."⁵⁹ Similarly, in May 2024, the New York Police Department announced that it was rolling out a drone program in which "drones will respond to ShotSpotter alerts...to enhance situational awareness, officer safety, and resource deployment efficiency."⁶⁰ And North Chicago—which already deploys ShotSpotter to combat gun violence—is weighing adding drones to complement the capabilities conferred by ShotSpotter.⁶¹

Without knowing when and where to send a drone, the investment in camera technology can never be maximized to its fullest potential. We know this from our significant experience using both technologies in tandem in Cape Town, South Africa, an area that experiences some of the highest levels of gun violence in the world.

As such, if WSPD intends to integrate drones into its broader policing strategy, it provides *all the more reason* for the City to continue utilizing (and expanding) ShotSpotter, as the technology's acoustic capabilities will help ensure that Winston-Salem realizes the greatest return on its drone investment. Also, it is important to acknowledge that Smith Reynolds Airport ("INT") is located just outside the three-square-mile area where ShotSpotter is currently deployed (see **Exhibit 4**, outlining ShotSpotter's area of coverage and tagging INT). Obviously, operating drones in close proximity to a public airport presents operational difficulties, which raises the question as to whether drones can effectively meet the policing requirements in the area where ShotSpotter's sensors are currently located.

⁵⁸ Winston-Salem police will no longer use ShotSpotter.

⁵⁹ Las Vegas sheriff plans drone fleet as immediate responders to gun violence, <https://dronedj.com/2022/10/28/las-vegas-sheriff-drone/>.

⁶⁰ How Police Drones Help Keep Communities Safer Across America, <https://www.dslrpros.com/dslrpros-blog/how-police-drones-help-keep-communities-safe-across-america/>.

⁶¹ North Chicago officials say ShotSpotter is making the city safer; 'This shows the benefits of using technology and better equipment,' <https://www.chicagotribune.com/2024/06/04/north-chicago-officials-say-shotspotter-is-making-the-city-safer-this-shows-the-benefit-of-using-technology-and-better-equipment/>

EXHIBIT 1 (Graphic Overview of ShotSpotter Functionality)

How ShotSpotter Works

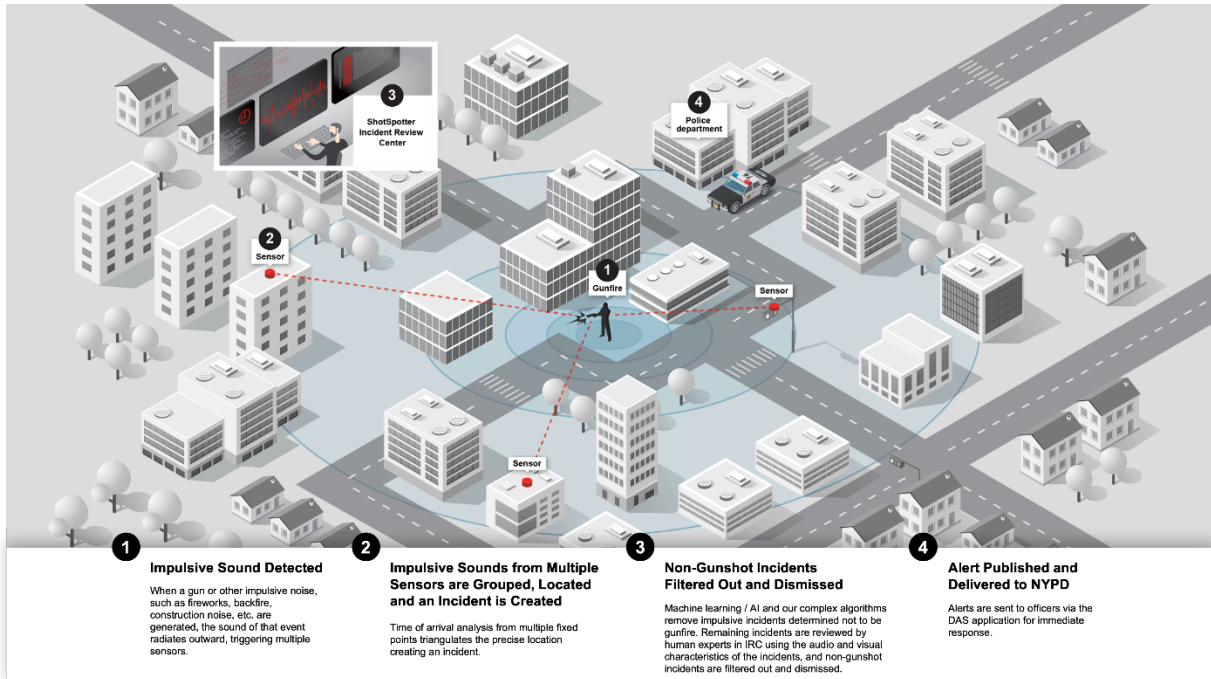



EXHIBIT 2 (Winston-Salem Media Stories Covering ShotSpotter)

1. [Man Shot in Both Legs Found by Winston-Salem Police after ShotSpotter Alert](#)
2. [Real Time Crime Center in Winston-Salem revolutionizes crime fighting using ShotSpotter](#)
3. [Suspect in Custody for September Homicide Discovered by ShotSpotter Alert](#)
4. [Winston-Salem officers use ShotSpotter technology to solve homicides, prosecute offenders](#)
5. [2 people face charges after Winston-Salem shots fired incident, discovered by ShotSpotter alert](#)
6. [ShotSpotter system serves as valuable asset to Winston-Salem police in recent shootings](#)
7. [What is ShotSpotter? | Winston-Salem police use program for quicker crime response](#)
8. [Winston-Salem Police find child, 7, shot twice overnight after ShotSpotter alert](#)
9. [Winston-Salem Police Department Aids Gunshot Victims with the Help of ShotSpotter](#)
10. [Winston-Salem police discover man shot at a KFC restaurant after ShotSpotter alert](#)
11. [Winston-Salem man sentenced after series of gun crimes, discovered by ShotSpotter](#)
12. [A Cost-Benefit Analysis of ShotSpotter in Winston-Salem, NC](#)
13. [Police find one dead, two injured in Peachtree Street shooting after ShotSpotter alert](#)
14. [Winston-Salem police share results of gunfire detecting program](#)
15. [Winston-Salem PD Provides Quick Aid to 27 Gunshot Victims from ShotSpotter Alert](#)
16. [Winston-Salem Police Department's ShotSpotter helps officers get guns off street, save lives](#)
17. [Winston-Salem police say victims of Highway 52 shooting, reported by ShotSpotter, were not targeted](#)
18. [Winston-Salem Police Department launches ShotSpotter technology in effort to reduce gun violence](#)

EXHIBIT 3 (Winston-Salem Residents Expressing Their Support for ShotSpotter Via Facebook)

SoundThinking Inc.
August 2 at 4:05 PM · 🌐

Do you support rapid response to gunfire in Winston-Salem, NC?



GO.SOUNDTHINKING.COM
Log Support to Keep ShotSpotter
The city of Winston-Salem has scheduled to decommission the gun d... [Learn more](#)

📣 Boost this post to reach up to 12277 more people if you spend \$80. [Boost post](#)

👍❤️ 46 17 comments 3 shares



Bill Corlett Sr
Absolutely

6d



Mark Cormack
Yep

1d



Katherine Piazza
Yes

1d



James Adams
Well yes!!!

5d



Kay Shouse Brown
Yes

1d



Cathie Guarantano
What? Of course

5d



Lorraine Jensen
Is this really a question. Duh

6d



Collette Hardy
Absolutely

2d



Rodricaus Hicks
Yes

5d



Greg Vernon
Yes most definitely.

5d



Debbie Millirons
Yes

5d



Romie Miller
Yes

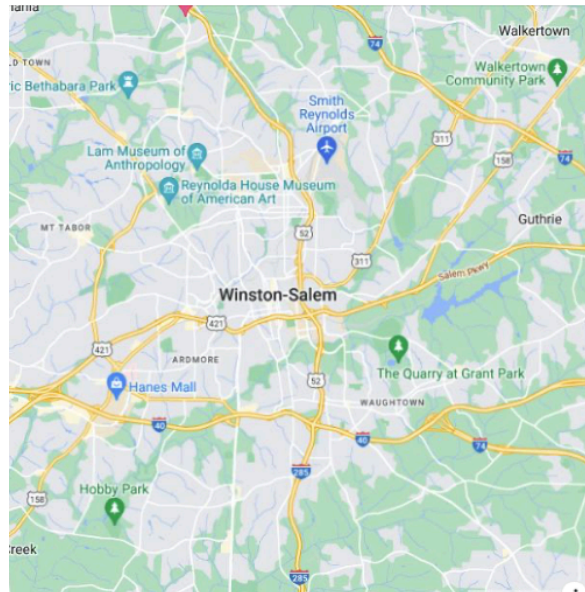
1w



SoundThinking Inc.
August 2 at 4:05 PM · 🌐

...

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The city of Winston-Salem has scheduled to decommission the gun d...

[Learn more](#)

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[Boost post](#)

👍❤️ 51

44 comments 4 shares



Natividad Alicea
Yes

1d



Liz Yarro
Yes!

21h



Kathy Slatton Helms
Yes.

1w



Allan Caporuscio
Yes

6d



Judy Robbins
Of course.....they could save a life!

4d



Teresa Edwards
Yes

3d



Michael Green
I do now!

6d



Kathy Slatton Helms
Yes!!! Of course,!!!!

6d

(Responses to this post continued on next page)



Zachary E Sharp

I do actually! I'm tired of hearing gunshots go off in my neighborhood. I'm hoping a stray bullet doesn't decide to hit my kids or wife one day and take them out of this world. It's insane people think it is ok to do that in a heavily populated neighborhood. Not to mention they would catch a big felony charge if caught and convicted.

1w



Andrea Ross
Yes

...

1h



Kathy Langdon Schneider

It's been effective in other cities

20h



Hiram Lora
Yes!

4d



Terri Ziglar

YES I DO SUPPORT IT 100 PERCENT!!!!!!

1w



Debra Pyles Shipman
Yes!!

1w



Cynthia F. Key
Yes

4d



Stu Miller
Yes

5d



Teresa Edwards
Yes

3d



Melanie Nachlas
Yes, yes, yes!

3d



Tom Aamland
Yes

3d



Marlon Williams
Yes I'll support it.

6d



SoundThinking Inc.
August 2 at 4:05 PM · 🌐

...

Do you support rapid response to gunfire in Winston-Salem, NC?



GO.SOUNDTHINKING.COM

Log Support to Keep ShotSpotter

The city of Winston-Salem has scheduled to decommission the gun d...

[Learn more](#)

📣 Boost this post to reach up to 12277 more people if you spend \$80.

[Boost post](#)

👍👎👉 20

11 comments 3 shares



Orson Abbott
YES, Get Here

1w



Rick Hunter
Yep. I support it.

1w



SoundThinking Inc.
August 9 at 11:46 AM · 🌐

...

Do you support rapid response to gunfire in Winston-Salem, NC?



GO.SOUNDTHINKING.COM

Log Support to Keep ShotSpotter

ShotSpotter and Winston-Salem have been working together to quickly r...

[Learn more](#)

👤 Boost this post to reach up to 9081 more people if you spend \$70.

[Boost post](#)

👍❤️ 45

27 comments 4 shares



Susan Johnson



2d



Jimmy Boyd



1w



Joseph Herron



2w



Elizabeth Donahoe

Absolutely needs to be every where these days and times

2w 2👍

**EXHIBIT 4 (Existing ShotSpotter Coverage Area (red boundary) in Relation to Smith Reynolds
Airport (red pin))**

