OnGuard™
Complete School Safety Solution

1. FIRSTSIGHT™ INTELLIGENT SOCIAL MEDIA MONITORING
2. SCHOOL BUS STOP-ARM VIOLATION ENFORCEMENT & MOBILE LPR MONITORING
3. PARKING LOT VEHICLE ACCESS MONITORING

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School administrators face persistent and increasing threats, both physical and digital, to the well-being and safety of students and staff. Schools need to ensure that the protective measures they implement can make a difference in mitigating negative outcomes, while not hardening the physical surroundings to a prison-like environment.

Violent incidents and threats of violence involving schools are increasing across all types of communities. 2018 recorded the highest number of incidents in the last 48 years, and the number of K-12 shooting incidents in 2019, through July, has exceeded the average for the last ten years.¹

Each incident of violence not only has lasting ramifications on the impacted school’s community, but indirectly impacts schools, staff, parents, and students overall, as history has shown that threats of violence rise after each major violent incident.

There is an expectation of school districts, administrators, and school staff to address security challenges and keep students safe. The majority of parents do not feel confident that their children are protected at school. Likewise, teenagers are worried that a shooting could happen at their school. Parents and students are looking to their schools, local and national leaders, and law enforcement for new, effective solutions to address today’s security challenges and provide enhanced protection.

Rekor, an industry leading provider of artificial intelligence (AI) and machine learning public safety and vehicle recognition systems, has recently launched OnGuard, a new comprehensive security solution designed specifically to help protect schools. OnGuard tools are powered by AI and machine learning, and include three solutions to help reduce violence in schools and protect students by using a layered security approach:

- Vehicle Access Monitoring
- School Bus Stop-Arm Violation Enforcement
- FIRSTSight™ Protective Intelligence Monitoring for Social Media

¹ Center for Homeland Defense and Security at the Naval Postgraduate School. Includes every instance "a gun is brandished, is fired, or a bullet hits school property for any reason, regardless of the number of victims, time, day of the week, or reason (e.g., planned attack, accidental, domestic violence, gang-related)."
The Problem

Gun Violence at Schools

Since the 1999 Columbine High School Massacre, over 228,000 students have experienced gun violence at school.3

It is important to note that incidents involving guns at schools are not contained to certain communities, and have occurred in rural, suburban, and urban schools. In addition, according to the Educator’s School Safety Network, “threats and incidents of violence impact all schools, either directly or indirectly.” and incidents of violence impact all schools, either directly or indirectly.”

As an example, during the 2017-2018 school year, 35% of all school-based threats, and 27% of all school-based violent incidents occurred in the 30 days after the shooting at Marjory Stoneman Douglas High School in Parkland, FL.4 This implies that when a threat is successful, it tends to encourage additional, copycat violent incidents.

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2 Center for Homeland Defense and Security at the Naval Postgraduate School. Includes every instance “a gun is brandished, is fired, or a bullet hits school property for any reason, regardless of the number of victims, time, day of the week, or reason (e.g., planned attack, accidental, domestic violence, gang-related).”
4 The Educator’s School Safety Network, Fall 2018 Mid-Year Update, 2019. “Violent incidents” and “threats of violence” defined as those with potential for loss of life.
Violent incidents, in general, have risen at schools over the last three years. From the fall of 2017 to the fall of 2018, violent incidents rose by 118%. Threats of violence also grew, increasing 63%, and just over 29% of those threats were related to a shooting or a gun.5

**Digital and Social Media Threats**

Threats to students go beyond those that are gun-related.

Social media is the most common source of violent threats for schools. Over 39% of threats during the 2017-2018 school year, and 40% of threats during the 2016-2017 school year, came from social media.7

The U.S. Secret Service report on enhancing school safety notes that “targeted attacks at school are rarely sudden or impulsive acts of violence.”8 In 81% of school attack incidents, another person was aware of what the student was thinking or planning.9 Sixty-three percent of active shooters were students of the school, while another 17% were former students.10

Cyberbullying also presents a growing threat to students and their well-being. In April 2019, over 36% of teenagers ages 12-17 reported having been cyberbullied, a number that has doubled since 2007.12 Cyberbullying is often tied to bullying at school, and 64% of those cyberbullied said that “it affects their ability to learn and feel safe at school.”13

**Students who feel unsafe at school are more likely to engage in risky behaviors against themselves or others, and have lower test scores.**14

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6 Center for Homeland Defense and Security at the Naval Postgraduate School.
7 Ibid.
9 Ibid. 
10 Center for Homeland Defense and Security at the Naval Postgraduate School, 2019. Active Shooter meets the FBI definition of an individual actively engaged in killing or attempting to kill people in a populated area.
12 Cyberbullying Research Center, 2019.
13 Ibid.
Rising Safety Concerns for Parents and Students

Research by John Hopkins University on school safety concluded that there is “a societal belief that schools are dangerous places.”15 According to a recent AP-Norc poll, the majority of parents of K-12 students think that schools are less safe than 20 years ago.16

Only 35% of parents feel very confident that their children are safe at school.17

Similarly, PDK Poll’s 50th annual survey on attitudes toward education found that the number of parents who fear for the safety of their children at school has nearly tripled since 2013.18

Students also have significant concerns about their safety. A 2019 survey by Safe and Sound Schools found that 51% of students agreed strongly with the statement, “My school has a false sense of security.”19 Additionally, their State of School Safety Report 2019 indicates that the number one safety threat concern identified by both parents and students is that of an ‘Active Shooter.’20

Parents and students face additional security challenges related to student safety. For example, The National Center for Missing & Exploited Children (NCMEC) reports that strangers are most likely to attempt to abduct a school-age child as they head to or from school.22 Overall, 24% of child abductions are by strangers.23

- 38% of attempted abductions by strangers occurred while a child was heading to or from school, walking to or from school, riding a school bus or riding a bicycle.

- 4% of all child abductions take place near the child’s school and 5% occur while waiting at the child’s bus stop.

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17 Ibid.
18 PDK Poll, 50th annual PDK Poll of the Public’s Attitudes Toward the Public Schools, 2018.
20 Ibid.
22 National Center for Missing & Exploited Children.
23 Federal Bureau of Investigation, National Crime Information Center.
Access Monitoring and Management

Tech & Learning magazine notes that monitoring visitor access on the property and while inside the school is “one of the areas of highest concern when it comes to school safety...this is an area of high vulnerability that’s difficult to address.”24 A study by Campus Safety magazine found that K-12 schools rate visitor management as their top security challenge.25 Schools are typically designed to be open and inviting, with a steady flow of visitors, including parents and volunteers.

To tackle this challenge, the number one safety and security measure taken to date is controlling access to school buildings.26

- Over 88% of schools have controlled access into their building.27
- Over 90% of K-12 schools report having security cameras and video surveillance equipment installed on campuses.28

School Bus Stop-Arm Enforcement

In all 50 states, it is illegal to pass a school bus that is stopped with its red lights and stop-arm extended to load or unload students. Nineteen states have enacted School Bus Stop-Arm Camera Laws that permit cameras to be installed on the outside of the school bus to record illegal passings for citations.30

The 2019 National Stop Arm Violation Count tallied over 95,000 vehicles passing buses illegally on a single day, suggesting that over 17 million violations occur annually.31

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24 Tech & Learning, March 2019.
28 Safe and Sound Schools, 2017.
The National School Bus Loading and Unloading Survey reports that since 1970, nearly 39% of student fatalities while boarding or departing the school bus were caused by drivers who illegally passed a stopped school bus with its red lights flashing and top-arm extended, and then struck and killed children in the roadway.33

From August 2018 through the end of March 2019, 12 children were killed and 47 were injured while attempting to board or disembark their school bus.34

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34 School Transportation News, April 2019.
K-12 Safety and Security Trends

The Department of Homeland Security, Federal Commission on School Safety, the Partner Alliance for Safer Schools (PASS), and other security experts all recommend that the best approach to school security is a layered approach to threat detection and deterrence. PASS advises that “a layered approach is essential to addressing a broad range of threats, as each successive layer provides specific components to deter, detect or delay adversarial behaviors in the event that other layers are bypassed or breached.”

PASS has developed a four-tier continuum of best practices for increasing school security, with each tier further enhancing the security layers. Tier 4 represents the most comprehensive approach to securing a facility. Among the recommended Tier 4 video surveillance technologies for school security is automatic license plate recognition (ALPR) and data integration. ALPR helps to strengthen the parking lot perimeter layer of schools by providing potential early warnings to school administration. Depending upon local laws and regulations, license plate data can be processed through criminal and sexual offender databases.

Technology innovations are helping to advance overall public safety and security, and these advancements can also be applied to further protect schools. The most significant public safety-related technology advancements include AI, machine learning, and the Internet of Things (IoT). Through advancements in AI and machine learning, technology can be used to reduce the reliance on people to monitor and analyze an ever-increasing amount of information and data.

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36 Ibid.
The Solution
OnGuard - a Viable and Cost-Effective Solution

Overview

OnGuard, Rekor’s new comprehensive, protective, security solution, powered by AI and machine learning, adds a protective layer to any school campus. This solution has been designed to support school administration and staff, with smart automation and highly experienced resource support.

OnGuard’s powerful capabilities target prevention through advanced threat detection that expands the perimeter layer of protection for schools. The solution mitigates risks by providing monitoring, assessment, and forensics built upon ALPR and public social media data. Additionally, in states that permit automatic enforcement of certain motor vehicle moving violations, citations can be automatically issued while not diverting school resources and funding from education.

OnGuard incorporates the latest security trends to provide a new, comprehensive, protective solution to help mitigate safety and security challenges impacting school communities today.

Vehicle Access Monitoring & Management

OnGuard expands a school’s access management through the installation of ALPR cameras at school property entrances and exits. The OnGuard system provides vehicle access monitoring for parking lots and online management for parking permits. The access monitoring can be easily customized, including uploading approved or blacklisted cars to provide automated notifications that can be sent to school administrators. Suspicious movement patterns, such as excessive idling or circling, can also be detected and communicated.

OnGuard’s vehicle access monitoring adds a security buffer and further protective layer that may detect potential safety threats earlier than by solely monitoring building entry.
School Bus Stop-Arm Enforcement

OnGuard provides an end-to-end solution to enable enforcement of school bus stop-arm laws and protect school children. Its cameras capture 180-degree video clips of violations. Each violation is captured and identified separately, then automatically routed to law enforcement for issuing citations. Tracking radar enables precise detection of movement and passing distance from the bus, and AI can analyze the particular stopped school bus situation dependent on the number of travel lanes and median type, if any, thus identifying and capturing violations based on state-specific regulations.

OnGuard includes Rekor’s industry-leading OpenALPR software, powered by AI and machine learning. OpenALPR provides unmatched levels of accuracy for license plate reading and vehicle recognition (color, make, model, and body type).

The video captured through the school bus stop-arm cameras can also be utilized for threat detection. The ALPR cameras have the functionality to support the detection of vehicles associated with Amber Alerts, sexual offenders who may be stalking children around school buses, or other law enforcement ‘hot list’. Alerts could be provided directly to school administration and/or law enforcement when the camera software detects vehicles on watch lists. Usage of this capability depends on local and/or state laws and regulations.

OnGuard provides an automated solution for school bus stop-arm enforcement that helps address the persistent and pervasive threat to student safety from motorists every school day.

FIRSTSight™ - Applying Protective Intelligence to Social Media

Reviewing social media posts has the potential to identify otherwise unknown threats. Reports from both the Federal Commission on School Safety\textsuperscript{37} and the Marjory Stoneman Douglas High School Public Safety Commission\textsuperscript{38} recommend increased data collection and digital surveillance, including social media monitoring as steps that schools can take to further provide a safer environment for students.

\textsuperscript{38} Marjory Stoneman Douglas High School Public Safety Commission, January 2019.
OnGuard’s protective intelligence monitoring solution, FIRSTSight, strives to identify threatening or concerning social media posts and intervene before a negative outcome occurs.

FIRSTSight combines AI, 24/7 human monitoring and the expertise of highly-skilled intelligence analysts to support student safety and well-being.

FIRSTSight includes a partnership between Rekor and ZeroFOX, an industry leader in digital risk protection. Using its early warning threat detection capabilities, including AI and machine learning, FIRSTSight monitors public, open-source social media postings, and provides critical and continuous visibility of threats of violence, behaviors of concern, and cyberbullying.

FIRSTSight adds the expertise of former U.S. Secret Service special agents to proactively identify potential threats and intervene, when necessary, to provide guidance on recommended actions, based upon the nature of the post, and the program’s approach reflects the threat assessment model defined by the Secret Service in its Enhancing School Safety Using A Threat Assessment Model.39

FIRSTSight supports creating safe, constructive learning environments by providing an automated way to gain visibility and protect school communities from physical threats, cyberbullying, and behaviors of concern.

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The OnGuard Difference

Violent incidents and threats are increasing. The security challenges of schools require new solutions to increase the protection of their entire school communities.

OnGuard’s deep machine learning software solutions, powered by AI, build a safety net to increase security. OnGuard expands the perimeter rings of protection around schools and students, increasing school security without physical barriers or overt deterrence methods.

• OnGuard helps schools address their top security challenge of visitor management by managing and monitoring the flow of vehicles coming on and off school campuses, providing intelligence to act in real-time to potential threats.

• Students are protected as they head to or from school on the bus. OnGuard detects motorists that are violating school bus stop laws and enables citations, tackling a persistent long-term risk to student safety.

• OnGuard’s protective intelligence monitoring solution addresses the number one source of violent threats against schools. OnGuard provides schools not only with 24/7 human monitoring, but also the analysis of identified, concerning posts and situation specific recommendations, as needed, from highly trained intelligence analysts.

Cost-Neutral Model for Schools

Rekor has designed OnGuard’s pricing to have the potential to be cost-neutral for schools. OnGuard’s comprehensive school safety program can be funded through school bus stop-arm violations in states which allow auto-enforcement. Thus, OnGuard can be paid for by those who would violate the safety of school students - increasing protection and security for schools without diverting funds from supporting children’s education.