
CYBERSECURITY & INFRASTRUCTURE SECURITY AGENCY

K-12 SCHOOL SECURITY GUIDE

3RD EDITION | 2022



MESSAGE

FROM
THE

EXECUTIVE ASSISTANT DIRECTOR

On a typical day, 56 million children head to schools across the country. These institutions serve as the setting for some of the most critical and poignant experiences in one's life, helping students establish a foundation for future educational and career aspirations, develop lifelong social and emotional skills, and forge critical connections with their peers and mentors.

Alongside this noble mission, school communities must also increasingly contend with an evolving and unique set of threats, hazards, and security challenges, including violence and crime-related incidents. Schools often face these threats with limited resources and experts, and the specificities and nature of risks can vary dramatically based on a school's geographic setting and campus characteristics. Every day, our kindergarten through grade 12 (K-12) schools must balance safety, teaching and learning, school operations and culture, and the surrounding community, creating a complex environment and set of priorities.

It is against this backdrop that the Cybersecurity and Infrastructure Security Agency (CISA), Infrastructure Security Division's School Safety Task Force embarked on the development of the 3rd edition of the *CISA K-12 School Security Guide*. Developed in consultation with subject matter experts and members of the school safety community, the guide outlines action-oriented security practices and options for consideration across the K-12 school community. Designed to be used in conjunction with the companion School Security Assessment Tool, it provides users with comprehensive and cost-effective solutions that complement and integrate with a school's protection and mitigation capabilities. It is intended to support the unique needs of each individual school, regardless of its geographical context and level of maturity when it comes to the school security planning process.

Above all, this guide demonstrates how **taking a systems-based approach to school physical security planning** can help schools create safe and secure learning environments – without requiring school staff to become security experts or compromising the broader educational mission.

This guide represents a critical step forward in CISA's efforts to provide our schools with actionable, practical, and cost-efficient resources and tools that enhance their safety and security postures. To our entire CISA team, there is no greater or more honorable cause than keeping our nation's students safe. We remain dedicated and committed to the pursuit of this goal, as we work towards protecting against today's threats, and building safer and more resilient school systems for the future.

Sincerely,

DR. DAVID MUSSINGTON

*Executive Assistant Director, CISA
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TABLE OF CONTENTS

Table of Contents	iii
Executive Summary	v
Introduction	v
Key Themes	v
Conclusion	vi
Introduction	1
1.1 Purpose of the Guide	1
1.2 Context	2
A Systems–Based Approach to Layered School Security	4
2.1 Implementing a Systems–Based Approach	5
2.2 The School Physical Security System: Strategies and Elements	7
2.3 Layers of the School Physical Security System	8
2.4 The Planning Process	10
The School Physical Security System Across Layers	15
3.1 Physical Security at the Grounds Perimeter Layer	15
3.2 Physical Security at the School Grounds Layer	16
3.3 Physical Security at the Building Perimeter Layer	18
3.4 Physical Security at the Building Interior Layer	21
3.5 Benefits of the System Across Layers	23
Common Challenges and Tradeoffs In School Physical Security Planning	24
4.1 Policies	24
4.2 Overview of Additional Challenges Related to School Physical Security	25
Conclusion	27
References	vii

TABLE OF CONTENTS

FIGURES

Figure 1.1 - The School Safety System	2
Box 2.1 - Thinking Through A School's Physical Security System	4
Figure 2.1 - Elements Within the School Physical Security System	7
Figure 2.2 - School Physical Security Layers	8
Figure 2.3 - Layered School Physical Security	9
Figure 2.4 - Steps in the School Security Physical Planning Process	11
Box 2.1 - Thinking Through A School's Physical Security System	11

TABLES

Table 2.1 - Physical Security Strategies	7
Table 3.1 - Summary Considerations: School Grounds Perimeter Layer	15
Table 3.2 - Summary Considerations: School Grounds Layer	16
Table 3.3 - Summary Considerations: Building Perimeter Layer	18
Table 3.4 - Summary Considerations: Building Interior Layer	21
Table 4.1 - Types of Physical Security Policies at the Federal, State, and Local Levels	23

ABBREVIATIONS

APL	Johns Hopkins University Applied Physics Laboratory
CCTV	Closed-Circuit Television
CPTED	Crime Prevention Through Environmental Design
K-12	Kindergarten Through 12th Grade
PA	Public Announcement System
SSO	School Safety Officer
SRO	School Resource Officer

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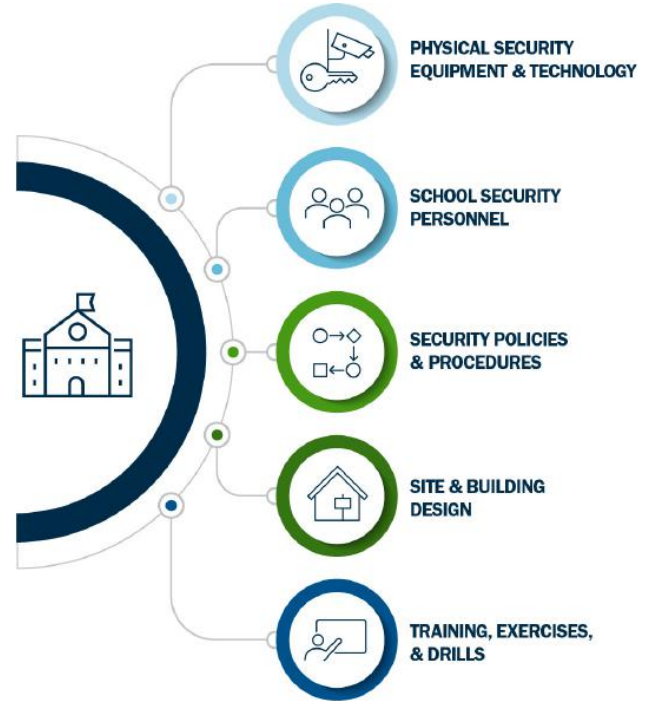
EXECUTIVE SUMMARY

INTRODUCTION

A core mission of kindergarten through 12th grade (K-12) schools throughout the United States is to create safe and secure environments to help promote the achievement of schools' education objectives. Our nation's schools are a precious resource and disruption to schools' educational mission by security threats would have debilitating impact on the Nation's public health and safety. Accordingly, CISA has developed this guide to help secure schools as a key part of the Nation's critical infrastructure. As schools strive to achieve this education mission, one of the challenges they face is minimizing the risk of acts of crime and violence. The 3rd edition of the *K-12 School Security Guide (guide)* is designed to help local education agencies across the United States adopt a systems-based approach to school physical security planning and implementation. This guide demonstrates how taking a systems-based approach to layered physical security can help schools create safe and secure learning environments without asking staff members to become security experts. The purpose of the guide is to provide guidance to local education agencies on how to plan for and implement this type of approach to school security.

It is intended to inform safety and security planning for the range of K-12 schools across the U.S., and is applicable to the diverse geographical contexts ranging from rural to urban, and schools at various levels of maturity in their security planning process. The guide specifically focuses on the most common incidents of crime and violence that K-12 schools in the United States face today.

The guide is designed and organized for local education agencies to employ in conjunction with the K-12 School Security Assessment Tool (SSAT), a web-based tool that provides further guidance on school physical security planning and implementation. Together, this guide and the companion tool outline action-oriented security practices and options for consideration across the K-12 school community.



KEY THEMES



Each school is unique, there is no one-size-fits-all approach to physical security



Taking a systems-based approach to physical security can help schools address their unique circumstances, and ensure that protection and mitigation measures complement measures to prevent violence, and respond to and recover from violent incidents



Taking a layered approach to physical security ensures that the system works in an integrated way to **detect, delay, and respond** to threats, and helps to prevent single points of failure



A layered, systems-based approach to physical security ensures that (1) physical security equipment and technology, (2) site and building design features, (3) personnel and staff, (4) policies and procedures, and (5) training programs work cohesively to provide security benefits



Schools should build a multi-disciplinary team that will lead the physical security planning process, to ensure that the needs of diverse stakeholders are met, and that response capabilities are enhanced

CONCLUSION

School crime and violence are complex phenomena that require local education agencies to approach school safety and security through a multidisciplinary lens; applying a systems-based approach to layered physical security can help them create safer environments that promote teaching and learning. The guide emphasizes three major takeaways for local education agencies to keep in mind as they plan work to improve physical security at their school campuses:



1.

School physical security is a system of interrelated elements that must work together.



2.

Local education agencies that take a layered approach to school physical security will better be able to detect, delay, and respond to threats.



3.

Physical security is a component of the broader school safety system, which also includes activities to prevent threats, and activities to respond to and recover from the consequences of a diverse set of safety incidents.

1.1 | PURPOSE OF THE GUIDE

A core mission of kindergarten through 12th grade (K-12) schools throughout the United States is to create safe and secure environments to help promote the achievement of schools' education objectives. Achieving this mission presents local education agencies with significant challenges, as they address a wide variety of threats ranging from weather-related natural hazards, to student fights in hallways, to violence involving the use of weapons. These and other types of school safety-related incidents are all significant cause for concern for local education agencies; they affect not just those involved, but the broader school community as well as members of the surrounding community.

Notably, the reality that no two schools across the United States are identical further complicates the challenge of creating safe and secure environments that promote teaching and learning. In fact, many individual school districts include a diverse set of student bodies and campus types. Tens of millions of students attend schools spread out across rural, suburban, and urban locations throughout the country (U.S. Department of Education, 2020). Student bodies vary in size, age, and demographics, among other factors, and school campuses and buildings come in various shapes and sizes. Some schools, for instance, share a building with local businesses, while others extend to encompass various buildings laid out over expansive campuses.

This guide demonstrates how taking a systems-based approach to layered security can help schools create safe and secure learning environments without requiring principals, assistant principals, facility managers, and other staff to become security experts. The purpose of the document

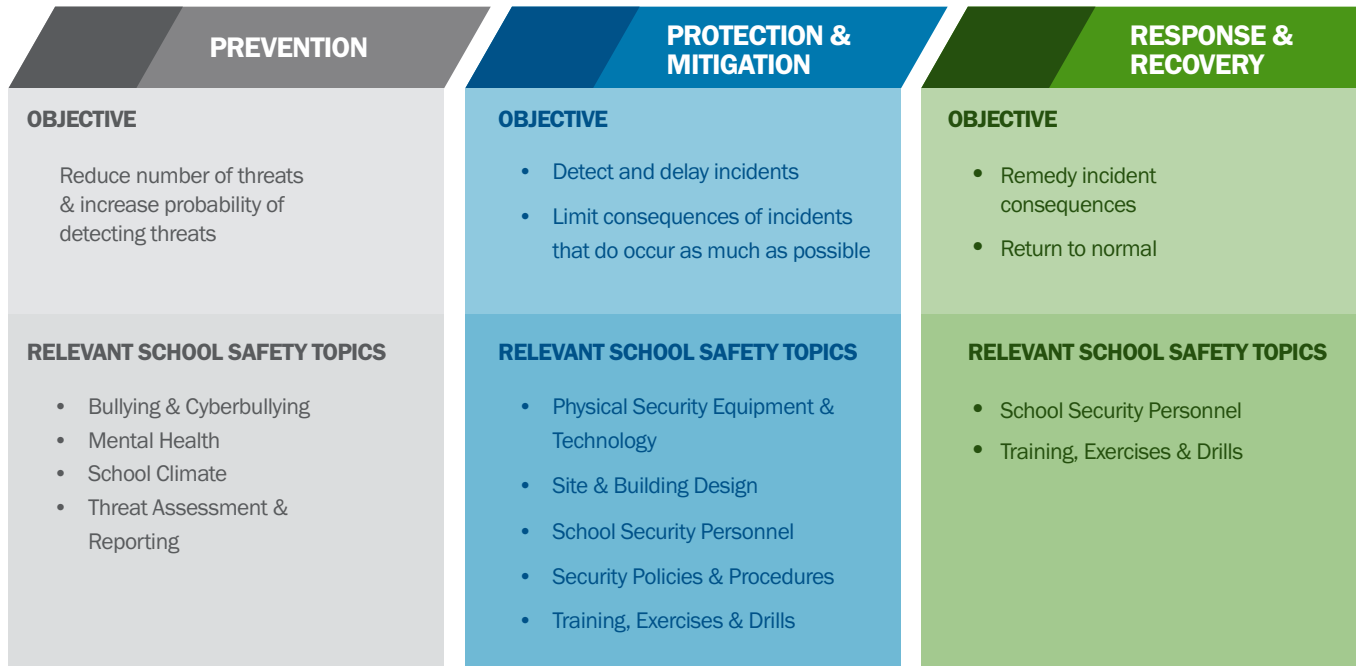
is to provide guidance to local education agencies on how to plan for and implement this type of approach to school security. It is intended to steer planning for the broad range of K-12 schools that exist across the U.S. and is applicable across pre-Kindergarten and Kindergarten through 12th-grade grade levels, diverse geographical contexts ranging from rural to urban, and schools at various levels of maturity in their security planning process. The guide does not take an all-hazards approach to school safety and security, but focuses instead on the most common incidents of crime and violence that K-12 schools in the United States face today.¹ A web-based companion product, the *K-12 School Security Assessment Tool (SSAT)*, is also available to further help schools define and approach their physical security needs. The tool's approach mirrors the guidance provided in this document, and the two products may be used in conjunction as local education agencies plan, implement, and refine their physical security systems.

The threat from diverse safety incidents requires schools to devote attention to the full spectrum of school safety, which encompasses prevention, protection and mitigation, and response and recovery.² The objectives and core capabilities that fall into each phase are depicted below along with relevant school safety topics (see [Figure 1.1](#)). While prevention and response and recovery are critical to effective emergency management, this guide focuses on considerations that fall under the phase of protection and mitigation: protection refers to keeping people and property safe from threats and emergencies, while mitigation entails reducing damage or harm caused by safety-related incidents when they occur.

¹ For specialized guidance on developing a comprehensive strategy to address natural hazards, local education agencies can refer to Federal Emergency Management Agency (FEMA) publication [Safer, Stronger, Smarter: A Guide to Improving School Natural Hazard Safety](#)

² See <https://www.schoolsafety.gov/>

FIGURE 1.1 - THE SCHOOL SAFETY SYSTEM



SOURCE: Moore et al., 2021.

1.2 | CONTEXT

Schools are complex environments that require balancing safety, teaching and learning, school operations and culture, and families and the surrounding community. School safety is just one piece of the puzzle, and a school cannot achieve its educational mission without all these elements working in concert.

According to the U.S. Department of Education, a “safe” school is one that rarely experiences negative incidents, such as bullying, fights in the hallways, or active-assailant threats (U.S. Department of Education, undated). While true, schools also need to create and sustain environments that are free from fear, intimidation, violence, and isolation if they are to further their educational mission (Eith and Trump, 2019). They must also be free of harassment (National Center on Safe Supportive Learning Environments, undated) and discrimination (U.S. Commission on Civil Rights, 2019). In other words, safe schools create and maintain an aura of inclusion and simultaneously work to ensure that all feel both welcome and protected (Osher, Moroney, and Williamson, 2018). They are aware of the critical connections that exist between physical security—assured through the installation of cameras, alarms, and security officers—and the social and emotional well-being of their students, staff, and broader population.

Crafting comprehensive safety plans that meet safety needs and do not inhibit the creation of a welcoming and inclusive environment is a significant challenge for local education agencies. Creating such a plan can be time-consuming and requires input and buy-in from stakeholders across the school community and broader community, including staff, families, and local law enforcement. The fact that local education agency leaders must focus on many other critical priorities that compete for their time and expertise compounds this challenge.

1.3 | HOW TO USE THIS GUIDE

This guide recognizes that the local education agency leaders who often bear responsibility for creating comprehensive school safety plans are generally not experts in physical security. As such, its purpose is to provide simple, at times step-by-step, guidance on what local education agencies should think through as they plan and implement physical security improvements to their schools, and how they can approach various complexities involved in the process.

SECTION 2

At a Glance

Readers can refer to Section 2 to learn more about what it means to think about layered physical security in a systems-based way, and to find out more about the discrete steps involved in assessing the physical security needs unique to their particular campuses and school buildings.

SECTION 3

At a Glance

In Section 3, users of this guide will find information about the various elements of a comprehensive school security system, including high-level overviews of physical security strategies at each layer of a school campus. This section also provides examples of the technologies and measures, personnel roles and responsibilities, policies and procedures, and training requirements that comprise a physical security system, as well as the tradeoffs they may encounter when implementing certain solutions.

SECTION 4

At a Glance

Readers can consult Section 4 of this guide to learn more about the common challenges that local education agencies face as they plan for and make physical security improvements and learn about strategies that have helped K-12 schools overcome these challenges in the past.

In the 2021-2022 school year, a series of short virtual training modules will also be made available to further educate local education agencies and other school safety stakeholders about how to implement a systems-based approach to physical security. The resource compendium included at the end of this guide also provides additional resources that users may seek to consult for further information about specific topics.

A SYSTEMS–BASED APPROACH TO LAYERED SCHOOL SECURITY

Taking a systems-based approach to school physical security means ensuring that various security measures across a school campus work together in an integrated way, and that planning also incorporates the relevant policies and training programs that must also be in place for the entire system to function effectively. First and foremost, a systems-based approach requires conceptualizing school physical security as a component of the broader school safety system. Referring back to Figure 1.1, school physical security—which exists within the protection and mitigation phase of the broader school safety enterprise—is essentially a “system within a system.” Protection and mitigation make up just one phase of a larger school safety system that also depends on successful prevention and response and recovery efforts.

By taking a systems-based approach to security and safety, local education agencies minimize the chance that measures in place to protect and mitigate against threats will constrain their ability to fulfill their broader educational mission by undermining the school climate or the educational experience of school and staff.

A “system” refers to a set of elements, measures, or procedures that work together as parts of a mechanism or interconnected network to produce outcomes, achieve desired results, and avoid undesired results. A “systems-based approach” is a holistic approach to analysis that focuses on how a system’s constituent parts are related to one another and work together within that system.

BOX 2.1 - THINKING THROUGH A SCHOOL'S PHYSICAL SECURITY SYSTEM

1.

Think about your school and your school community. School physical security systems should be tailored to provide protection and mitigation benefits based on a school’s specific circumstances. Local education agencies might ask themselves the following questions:

- » What grade levels does the school serve? What is the size of the school community (student and staff population, daily visitors, etc.)?
- » Where is the school located? Is it in a rural, suburban, or urban locale? How long does it take first responders such as police and emergency medical services (EMS) to reach the school in case of an emergency? Are students and staff at school outside of daylight hours?
- » Does the school share a building with other businesses or other schools, or does it have its own campus?
- » Are there multiple buildings spread out across campus, such as modular units? Are there athletic fields, playgrounds, and other amenities located on campus?
- » Does the school have dedicated security staff, such as a school safety officer (SSO) or a school resource officer (SRO)?

2.

Think about the various security layers that exist at the school: the school grounds perimeter layer, school grounds layer, building perimeter layer, and building interior layer:

- » What mandates are in place (district, municipality, or state) for annual drills and exercises?
- » What physical security measures are in place at each layer to help achieve the physical security strategies of detection, delay, and response?
- » How do various elements of the physical security system work together at each layer to detect, delay, and respond to threats?
- » What technologies are in place at each layer to detect, delay, and respond to threats?
- » What site and/or building design features are in place at each layer to detect, delay, and respond to threats?
- » What people/personnel are in place at each layer to detect, delay, and respond to threats?
- » Are there policies and procedures in place to ensure that security technologies are operated and maintained in a way that will maximize security benefits?
- » Are there policies and procedures in place to inform members of the school community (staff, students, visitors, etc.) of appropriate actions they should take in the case of specific emergencies?
- » Do members of the school community receive regular training on or regularly engage in drills and exercises to familiarize themselves with these policies and procedures?

3.

Now think about the school's broader approach to school safety: what activities and efforts fall under the scope of *Prevention* and *Response and Recovery*? How do the physical security measures in place across the school's security layers affect or otherwise connect with these efforts?

- » What activities and efforts fall under the scope of Prevention?
- » What activities and efforts fall under the scope of Response and Recovery?
- » How does the school's physical security system impact these activities and efforts?

2.1 | IMPLEMENTING A SYSTEMS-BASED APPROACH

As they begin to think about developing or improving a school's physical security system, local education agencies should first consider how they want the *protection* and *mitigation* component of school safety to fit into the broader school safety enterprise. They might therefore ask the following questions:

- » **How does physical security fit into efforts to prevent threats?** The objective of *prevention* activities is to reduce the number of threats and increase the probability of detecting them before they occur. Prevention prioritizes topics such as student well-being, school climate, and the prevention of bullying, harassment, and discrimination.

- » **How does physical security fit into efforts to respond to and recover from safety-related incidents?** The objective of response and recovery activities is to effectively stop or reduce harms from such incidents and restore a school's day-to-day operations in a way that meets the school community's needs into the future.

Activities that fall under the scope of *protection and mitigation*, the focus of this guide, work to detect and delay (and respond) to incidents as they occur and limit incidents' adverse consequences as much as possible. From Figure 1 above, it is clear that the benefits and impacts of activities in place to support individual phases of the broader school safety system will reach into other phases; the success of certain activities and efforts often depends on capabilities in place across other phases. For example, a school's robust threat assessment and reporting process (falling under *prevention*) depends on a functioning detection system (falling under *protection and mitigation*) to make school officials aware of problems before they develop into full-fledged incidents. The success of a threat assessment and reporting system also hinges on robust response capabilities: school personnel need to know how to intervene to stop a problem from escalating.

After considering how their school's physical security goals and objectives might fit with other efforts in support of prevention and response and recovery, local education agencies should think carefully about how these goals and objectives might interfere with those of efforts in place across other phases of the broader school safety system. The following set of questions might be relevant:

- 1. How might certain physical security measures already in place or under consideration negatively affect efforts to *prevent* threats from occurring? For instance, could highly visible and intrusive security measures such as indoor surveillance cameras or metal detectors work to elevate student fears of victimization and degrade school climate (Bachman, Randolph, and Brown, 2011)?**
- 2. How might certain physical security measures already in place or under consideration hinder efforts to *respond* to incidents and *recover* from their negative consequences? For instance, could certain measures such as automatic locks on classroom doors hinder response from law enforcement personnel and emergency responders?**

In sum, local education agencies should avoid narrowing the measure of physical security systems' success to any one area, which might otherwise lead to a disjointed approach to improving school safety. While CISA encourages schools to make investments in physical security, some physical measures may be inappropriate for all schools depending on the context. Where schools decline to use physical security assets, CISA strongly recommends that schools adjust their security plans accordingly and to use other security layers to achieve school safety.

2.2 | THE SCHOOL PHYSICAL SECURITY SYSTEM: STRATEGIES AND ELEMENTS

After taking this bird’s eye view of a school’s physical security system from the perspective of the broader school safety system, local education agencies can delve more deeply into thinking about how to better protect and mitigate against threats; i.e. how will they achieve the physical security strategies of *detection*, *delay*, and *response* on their campuses? Table 2.1 defines these three physical security strategies and provides examples of measures that contribute to achieving them.

TABLE 2.1 - PHYSICAL SECURITY STRATEGIES

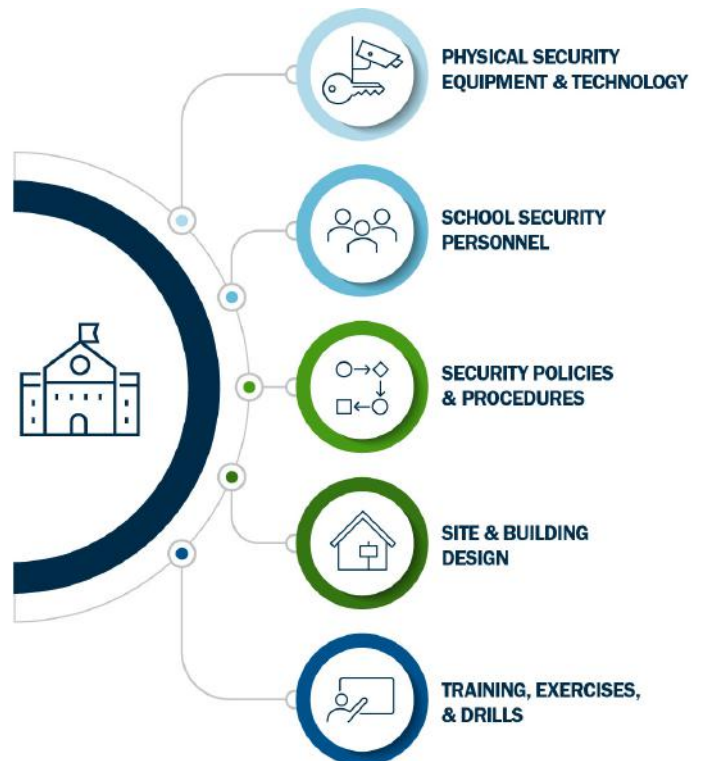
Physical Security Strategy	Measure Definition	Examples
Detection	Measures that communicate that a safety-related incident is occurring or about to occur	Monitored closed-circuit TV (CCTV); security guard patrols; open-sight designs allowing for natural surveillance
Delay	Measures that increase the level of effort, resources, and time necessary for a safety-related incident to occur	Fencing; reinforced windows or doors; staff patrols; automatic lock mechanisms at facility entrances
Response	Measures that contribute to overcoming a threat or limiting the damage caused by a threat	Security guards; communication & notification equipment; first aid kits

Importantly, there is no one-size-fits all approach to school physical security; different combinations of detection, delay, and response capabilities will provide different levels of security benefits across diverse K-12 campuses and schools. Moreover, different schools will take different approaches to physical security to ensure that they do not interfere with efforts they are taking to maintain a positive and welcoming school climate. The next step to implementing a systems-based approach to physical security therefore entails considering the different options available to schools. Here, local education agencies should think holistically: how do various pieces of security equipment, personnel assigned to security roles, policies dictating security procedures, etc. work together to effectively detect, delay, and respond to threats that might affect my school? How do these various measures impact or contribute to ongoing prevention and response and recovery efforts in place at the school?

A school’s physical security system consists of a combination of five elements:

- » Equipment and technology
- » Site and building design features
- » School Security Personnel
- » Policies and procedures
- » Training, exercises, and drills

FIGURE 2.1 - ELEMENTS WITHIN THE SCHOOL PHYSICAL SECURITY SYSTEM

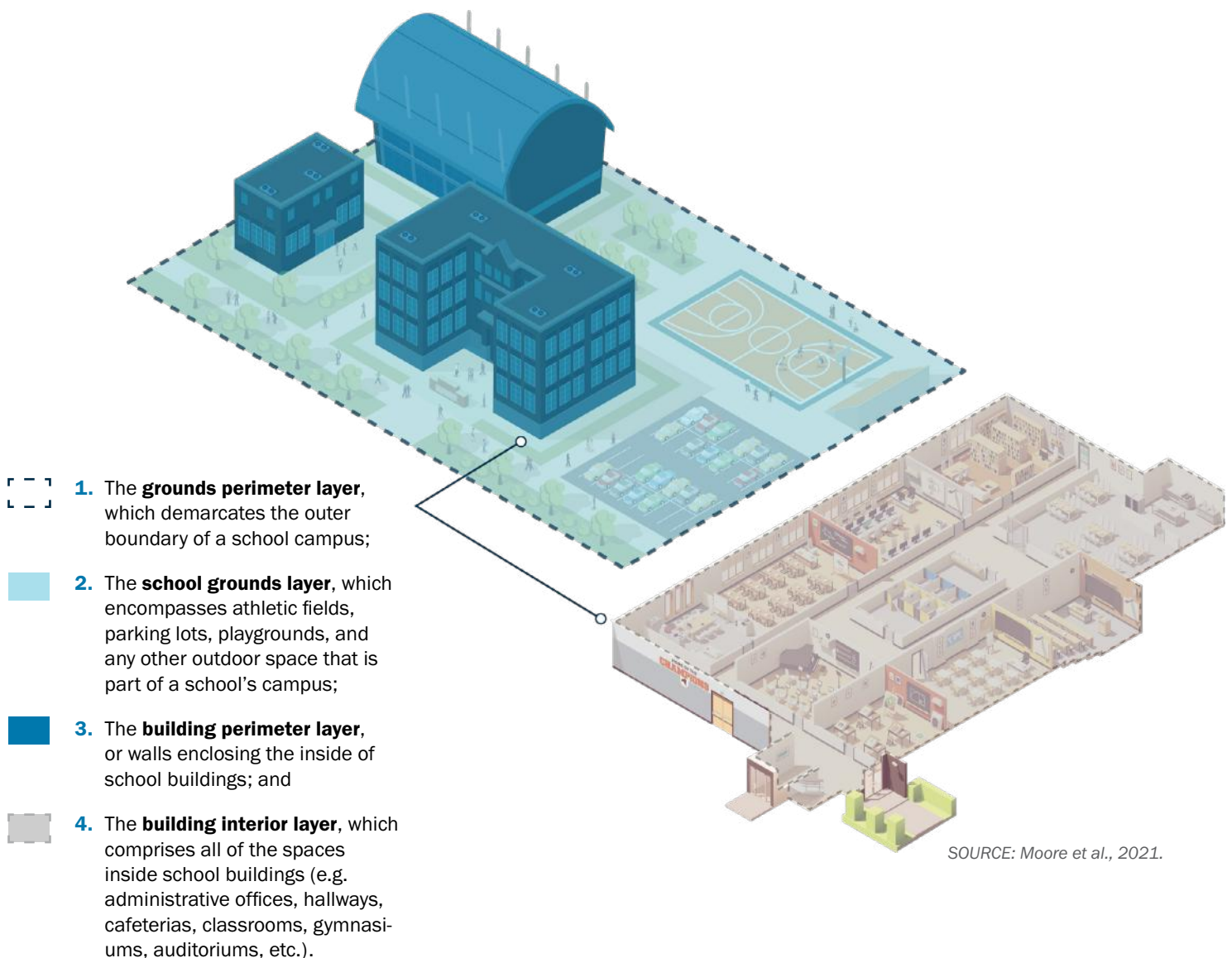


Physical security measures are most effective at providing protection and mitigation benefits when they are installed to function alongside and in concert with other measures as part of a system (Jackson and LaTourrette, 2015). For instance, entry screening technology such as I.D. card or badge readers might offer potent intruder detection capabilities at designated school entry points, but, if no one is manning school entry points, there is a smaller chance that the technology will delay or stop intruders from entering a building without authorization. Clear personnel roles, policies around operating and monitoring various technologies, and policies detailing what actions should follow the detection of a threat are therefore critical dependencies that ultimately determine the level of security benefits technologies and other measures will provide. Regular training provides school staff and personnel the opportunity to practice their roles in simulated emergencies, and increases preparedness for worst case scenarios. Thinking about how various measures, personnel roles, policies, and training programs work together to achieve the three physical security strategies of detection, delay, and response is critical to planning and building an effective school physical security system.

2.3 | LAYERS OF THE SCHOOL PHYSICAL SECURITY SYSTEM

Local education agencies should also consider how their physical security system is or will be distributed across a school’s campus. Different security measures perform their various functions of detecting, delaying, and responding to threats at specific “layers” of a school campus. There are four main layers that schools should think about when planning for physical security:

FIGURE 2.2 - SCHOOL PHYSICAL SECURITY LAYERS

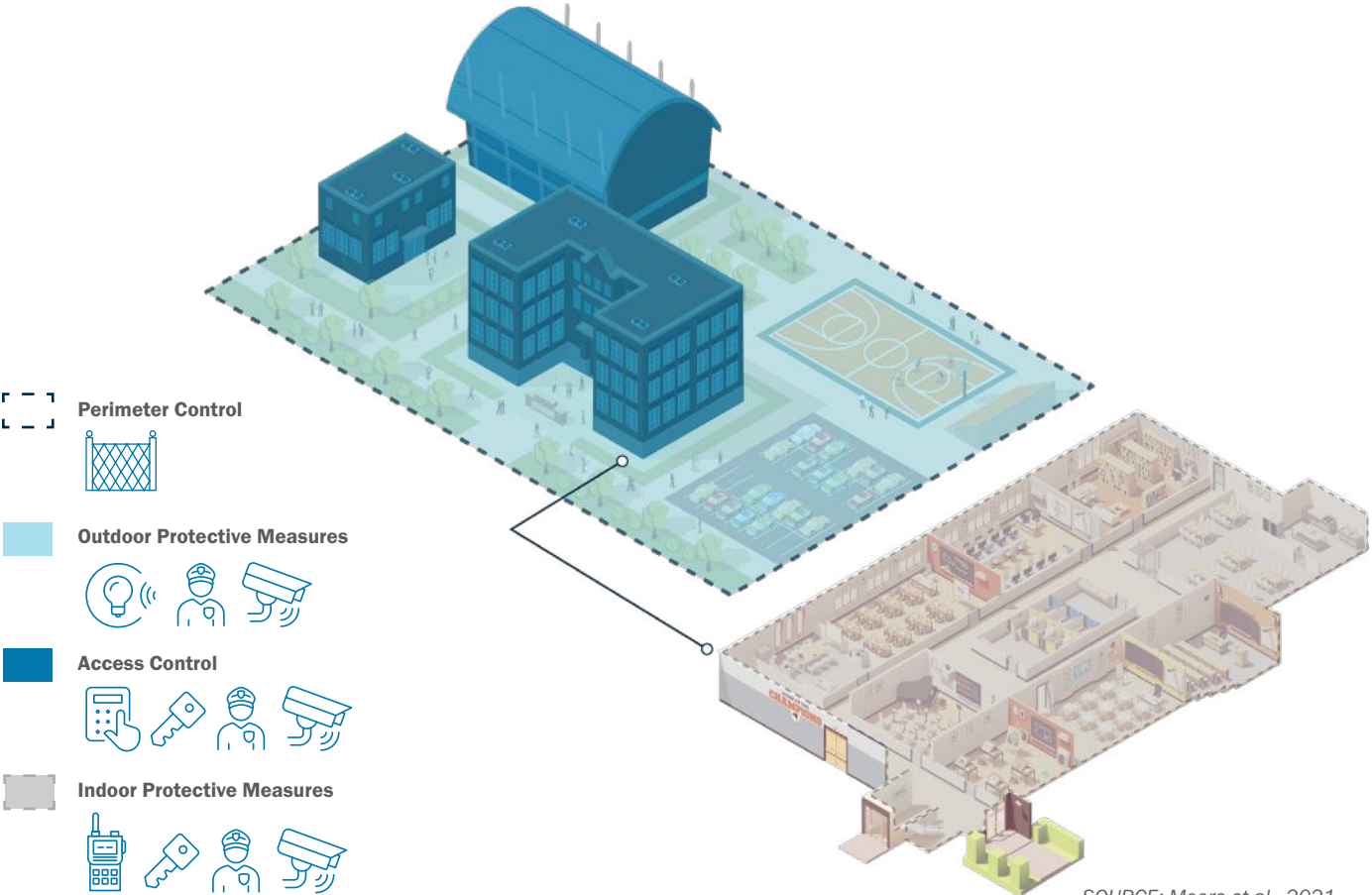


SOURCE: Moore et al., 2021.

A layered approach to school physical security prevents single points of failure within the system. Consider the example of an outside attacker attempting to enter a school with highly protected grounds to commit an attack. If the attacker successfully breaches a barrier such as a tall fence that surrounds school grounds (the school grounds perimeter layer), surveillance video from a CCTV system installed in the school parking lot (the school grounds layer) will alert security personnel monitoring the video feed in real time to their presence. Detection of the threat on school grounds can activate subsequent security measures at other layers, such as automatic door locks and lockdown procedures to protect both the building perimeter and building interior layers.

By organizing their physical security system into layers, local education agencies can better ensure that the system contains interconnected support elements that help avoid gaps in protection and mitigate against single points of failure. In layered systems, physical security technology, building or grounds design features, personnel, and policies all have specific functions based on whether they are in place to protect a school's outer perimeter (for example, designated vehicle and pedestrian entrances), the area within school grounds but outside school buildings (for example, athletic fields and other venues that might host outdoor events), the school building perimeter (for example, entrances into the main building and additional buildings), or areas within the school building, such as classrooms, hallways, and common spaces.

FIGURE 2.3 - LAYERED SCHOOL PHYSICAL SECURITY



SOURCE: Moore et al., 2021.

Because schools vary significantly, it is important to note the specific campus and school building layout for each school, as well as where the school is physically located; these factors should dictate the relevance of particular layers in providing security benefits. A school with an open campus and portable classrooms, for instance, would be forced to prioritize physical security at the school-grounds, building-perimeter, and building-interior layers since investing in measures designed to provide protection at the campus perimeter would be less viable. A closed-campus school might shift some resources away from securing its grounds in favor of investing in fencing, signage, and security cameras placed at entry points located at the campus-perimeter layer. Additionally, a school that allows community members to use its athletic fields outside of regular school hours and hosts large outdoor events such as musical or theatrical performances or sports games would also need to prioritize event protection measures at the school grounds layer.

In sum, local education agencies need to think about the following set of questions as they plan to implement or improve a layered physical security system:

- » What threats are likely to enter my school environment, and where are these threats likely to enter?
- » If a threat were to enter my campus, when would security measures already in place detect the presence of the threat?
- » How would existing policies and measures already in place across campus delay the threat, and for how long?
- » What policies and measures already in place across campus would allow enough time for responding to an incident?
- » The answers to these questions, for a particular local education agency's campus environment, define the starting point for considering ways to strengthen security.

2.4 | THE PLANNING PROCESS

Local education agencies should plan carefully as they prepare to implement or improve their physical security system. Planning is essentially a six-step process that begins with the **formation of a planning team**, follows with **gathering relevant local data**, and continues with conducting **threat and vulnerability analyses**. The last two steps involve conducting a **risk analysis**, which draws on results of the threat and vulnerability analyses, and the **development of a comprehensive security plan** that is unique to a particular school. Throughout the process, local education agencies should consult with local first responders to ensure that fire, police, and other emergency personnel are aware of any newly implemented security features, understand how they work, and confirm that they are not in violation of local codes or regulations. Importantly, care must be taken to avoid actions that impede access to egress and exit routes for students, teachers, and others with disabilities on the school grounds. Repeating this planning process on an annual basis can help local education agencies maximize the benefits of their security system over the long term.

A threat analysis determines what types of safety-related incidents are a concern to the school and how likely these are to occur. It is a key input to the complementary risk analysis, which examines the potential consequences of each type of incident for that specific school. Although school threat and risk analyses are beyond the scope of this guide, local education agencies should be aware that they are key parts of the process alongside a thorough vulnerability analysis. In the course of a vulnerability analysis, local education agencies take stock of the set of existing security measures in place at a specific school, and assess how these measures address threats a school has identified as relevant based on its local context. Local education agencies should use this guide to help them undertake a vulnerability analysis. The *K-12 School Security Assessment Tool*, which accompanies this guide, also walks users through a tailorable vulnerability analysis, and provides results and recommendations that local education agencies can integrate into revised physical security plans. Version 1.0 of the tool does not contain a threat or risk analysis component; local education agencies can refer to a number of other resources to help them through these steps of the planning process (see, e.g. Johns Hopkins University Applied Physics Laboratory, 2016; Ortiz, 2011).

FIGURE 2.4 - STEPS IN THE SCHOOL SECURITY PHYSICAL PLANNING PROCESS

STEP 1.

FORM A PHYSICAL SECURITY PLANNING TEAM

Identify and include relevant school staff and stakeholders, such as community organizations, local law enforcement, and families.

STEP 2.

GATHER RELEVANT LOCAL DATA

Gather local data about safety incidents at schools and the consequences of such events.

STEP 3.

THREAT ANALYSIS

What types of safety incidents are a concern for a school, and how likely are they to occur?

STEP 4.

VULNERABILITY ANALYSIS

What safety and security measures are already in place at the school?

STEP 5.

RISK ANALYSIS

What are the potential consequences of each of the identified safety incidents based on the security measures in place at the school? How do security measures reduce risk? What risk remains?

STEP 6.

CREATE A SECURITY PLAN

Which of those remaining risks are a concern, and what are the most practical and effective additional safety and security measures to address them?

SOURCE: Adapted from Steiner et al., 2021.

BOX 2.2 - THINKING THROUGH A SCHOOL'S PHYSICAL SECURITY SYSTEM

1.

FORM A PHYSICAL SECURITY PLANNING TEAM

When forming a team, think about which members of the school community should be engaged in the process given your security needs and local context. In addition to a wide variety of personnel internal to the school community, such as administrators, human resources personnel, facilities managers, union representatives, legal counsel, etc., consider involving:

- » **Community stakeholders** (such as organizations that provide after school care);
- » **Local first responders** (e.g., law enforcement, emergency responders);
- » **Consultants**; and
- » **Families.**

A planning team that is inclusive and efficient will ensure that the school's approach to security accounts for the needs of diverse groups (e.g., those with disabilities) and incorporates the advice of experts. The planning team should develop an approach for continuous engagement in subsequent steps of the physical security planning process, for instance to decide what local data to gather; identify and complete an appropriate threat and risk analysis; conduct a vulnerability analysis; and develop a comprehensive physical security plan.

2.

GATHER RELEVANT DATA

The planning team should gather available local data to inform the threat, vulnerability, and risk assessments; these are the next steps in the planning process. Data should be relevant to the local context and could include, for instance, community- and school-level data on incidents of crime and violence, but also relevant national-level data about the relative likelihood of various security incidents occurring in schools. Though local education agencies might have several years of local data to help gauge the likelihood of common events, such as student fights, they may lack data that would help to understand the likelihood of less common events, such as active assailant emergencies. The U.S. Department of Education's National Center for Education Statistics (NCES) maintains annual reports and data about school crime and violence. See <https://nces.ed.gov/> for more information.

3.

CONDUCT A THREAT ANALYSIS

Local education agencies will then use the data collected in Step 2 to conduct a threat analysis.³ A threat analysis determines what types of safety-related incidents are a concern to the school and how likely these are to occur. Using historical data to conduct the analysis ensures that school security planning is grounded in realistic events and not driven by stakeholder interests that may divert attention away from maximizing security benefits. The planning team should consider safety incidents that schools commonly face—such as student fights or bullying—as well as those that are less likely to occur, such as an active assailant.

³ Other resources provide similar frameworks and approaches to physical security planning in schools. See e.g. Johns Hopkins Applied Physics Laboratory (APL), 2016. The Readiness and Emergency Management for Schools Technical Assistance (REMS TA) Center also provides valuable resources for schools seeking to conduct threat, risk, and vulnerability assessments (see <https://rems.ed.gov/>).

4.

CONDUCT A VULNERABILITY ANALYSIS

In an ensuing vulnerability analysis, local education agencies will accomplish two main tasks. They will:

- » Take stock of the set of existing physical security measures in place at a school.
- » Determine whether existing physical security measures at each layer contribute to detecting, delaying, and responding to threats.

A vulnerability analysis should cover all layers of the school campus, beginning at the school grounds perimeter layer and working through the school grounds, building perimeter, and building interior layers.

5.

CONDUCT A RISK ASSESSMENT

Local education agencies will then use results from the threat and vulnerability analyses to conduct a risk analysis, which examines each incident type's potential consequences for the school in question. A risk analysis allows school security planning teams to gauge the potential consequences of likely events. Some common events, such as a fight between two students, will have relatively minor impacts beyond the students involved. Some unlikely events, such as an active assailant situation, are likely to have major or even catastrophic impacts. Ultimately, the measures that local education agencies select to integrate into their physical security system should address school-specific threats, and the risks that these threats pose to the school's environment based on its unique vulnerabilities (Rabkin et al, 2004; Philpott and Kuenstle, 2007; Schneider, 2010; Zhu et al., 2020).

Local education agencies will also accomplish the following tasks:

- » Assess how security measures identified in the vulnerability analysis reduce the risk of safety incidents and of those incidents' serious consequences;
- » Understand how much risk remains unaddressed by the security measures in place; and
- » Identify actions that they can take to further reduce the risk of harm at that school.

6.

CREATE A SECURITY PLAN

Having completed steps 1-5 above, local education agencies are ready to put together a new or revised security plan: a document that summarizes the physical security measures in a place at a school, the gaps that exist across all physical security layers, and a list of future actions the school will need to take to mitigate risks across these layers.

- » Action items might include adopting new physical security measures or improving the capacity of existing measures to detect, delay, and respond to threats across various layers of the school campus.
- » Plans could specify the need to provide staff with communications equipment, create policies to improve response to safety incidents and training staff on these policies, or conduct refresher trainings so that staff and students are aware of how they should respond if and when an incident is detected.
- » If the school has identified in its vulnerability analysis that it lacks measures to enable quick response from first responders in case of an emergency, a plan might specify what additional measures could be in place to speed that response.

Importantly, local education agencies should tailor their resulting physical security plan to an individual school's unique context. This means that local education agencies will need to ensure that threat, risk, and vulnerability analyses take into account a school's geographic location, the location and dispersion of school buildings across campus, characteristics of the student body and broader school population, and the extent to which

school spaces are used for events that occur outside of regular school hours, among many other factors.⁴

The resulting document should clearly state the status of existing measures and decisions taken to improve them, with an eye towards informing the next round of physical security planning. Ultimately, the output of the security planning process should guide local education agencies in the selection of physical security measures that will most effectively address the risks each unique school faces and provide enhanced detection, delay, and response capabilities. Local education agencies should then share their revised physical security plan with their local first responders, ensuring that they are brought up to speed on any security enhancements and ready to coordinate with the school in the event of an emergency.

⁴ For further reference, see: FEMA, 2013; Rabkin et al., 2004; Philpott and Kuenstle, 2007; Schneider, 2010; Zhu et al., 2020; Federal Commission on School Safety, 2018; The National Center for Spectator Sports Safety and Security, 2020.

THE SCHOOL PHYSICAL SECURITY SYSTEM ACROSS LAYERS

By taking a layered approach to improving school physical security systems, local education agencies will need to think through what measures, personnel, policies, and training requirements will apply across all areas of the school campus.

- » Working their way from the outside-in, local education agencies will begin by considering what is in place at a school's grounds perimeter layer and assess whether they are confident that capabilities at this layer enable schools to detect and delay threats, and prompt responses at subsequent layers inside the school perimeter.
- » They will then do the same across the school grounds layer, and move inwards to assess capabilities at the building perimeter and building interior layers.

Each measure that schools decide to put in place will come with potential tradeoffs; some might be expensive to purchase and install, others might require additional investments by school staff, who are usually already overburdened. Moreover, some security measures might have adverse impacts on a school's objective of maintaining a positive and welcoming school climate, or impede response and recovery efforts. By reading through this section of the guide, local education agencies will have a better idea of what to consider at each layer, and the questions and challenges that certain physical security solutions might raise.

3.1 | PHYSICAL SECURITY AT THE GROUNDS PERIMETER LAYER

A school's grounds perimeter layer is also its outermost security cordon; it works to delineate a clear boundary between what falls inside and outside of the school's physical campus. At this layer, the main physical security objective is to detect threats, and delay them to the best extent possible—when a school effectively protects its grounds perimeter layer with robust detection and delay capabilities, it is reducing the chance that threats will progress inward to affect other, subsequent layers of a school campus.

Local education agencies can approach protection at their grounds perimeter layer by putting in place various combinations of measures, and also ensuring that different elements of the physical security system—people, policies, and training—work in concert to provide the highest possible level of detection and delay capabilities.

A first step is to make sure that a perimeter barrier is in place to clearly demarcate the boundaries of a school's campus; barriers also make it more difficult for intruders to enter a campus. Exterior walls and fences are effective solutions in this regard, as are various landscaping features such as tall hedges.

Perimeter fencing is one possible measure to delay threats from entering the grounds. There is a wide range of perimeter fencing available to schools and tradeoffs for each option (Hanover Research, 2013). Hedges and landscaping are visually appealing, but costs to purchase and maintain this type of perimeter fencing could be prohibitive to local education agencies; geographic location may present additional challenges. Ornamental fencing allows for open lines of sight and some options are visually appealing, but the cost of this type of fencing can be high and durability varies. While chain link fencing is low-cost and maintains open lines of sight, there are several ways to breach this type of fence and enter the grounds. Concrete or cinder block fencing is another low-cost option and, compared to chain link, more challenging to breach. However, concrete fences are not visually appealing. To make concrete fencing more appealing, Parent Teacher Organizations, art classes, student artists, or community members and organizations can paint murals or other art to create a welcoming environment (ASIS, 2020). Crime Prevention Through Environmental Design (CPTED) principles can help schools think through how to implement effective security features across their campuses without degrading visual appeal and overall ambiance (see e.g. *Using Environmental Design to Prevent School Violence*, included in this guide's resource compendium).

Next, local education agencies should consider how to best manage flows of people into and out of a school’s campus. In this regard, ensuring that there is a single or small number of entry points along this outermost perimeter layer is important; when students, staff, visitors, and others are guided towards clearly identified points of entry, schools have more control over who crosses into their campus and therefore also have a higher chance of detecting unwanted intruders if staff or security personnel are present at those limited entry points. Well-lit entrances also help better detect threats, making perimeter lighting important. To further enhance detection capabilities, schools might also consider placing CCTVs at these single points of entry, as well as along other points across a perimeter barrier. They might also have security personnel or school staff patrol the length of a fence or other perimeter barrier to detect threats away from clearly designated points of entry.

The extent to which these and other security measures in place at the school grounds perimeter layer will provide tangible detection and delay benefits hinges on several other elements within the physical security system; namely:

- » The availability of staff and/or security personnel to operate and monitor specific technologies in place in real time, such as CCTV;
- » The implementation of policies and procedures that guide staff on how to monitor entry areas and CCTV video feeds, and also delineate the appropriate actions that staff should take when they detect a threat; and
- » The implementation of a regular training program through which relevant school staff and/or security personnel can practice detecting threats and taking actions that will delay threats.

School personnel should also consider the potential for various security measures to have unintended consequences; tall fencing around a school grounds perimeter, or the installation of security cameras at various entry points, might degrade an otherwise welcoming ambiance.

TABLE 3.1 - SUMMARY CONSIDERATIONS: SCHOOL GROUNDS PERIMETER LAYER

	Example Measure	Associated Dependencies	Potential Tradeoffs	Mitigating Tradeoffs
Detect	» Staff or security personnel patrols	» Policies requiring patrols at specific times of day	» Additional demands placed on school staff	» Implement rotating shifts to spread out responsibilities
	» CCTV at perimeter barrier/entry points	» Staff monitoring video feed	» Cameras reduce welcoming ambiance » Cameras are costly to operate & maintain	» Rely more on staff patrols to detect threats
Delay	» Perimeter barrier that is difficult to climb	» General maintenance or groundskeeping » Condition assessment	» Tall fences reduce welcoming ambiance	» Consider landscaping alternatives, such as tall hedges
	» Single or small number of entry point(s)	» Staff monitoring entry points at specific times of day » Policies specifying appropriate delay procedures	» Congestion at one/ small number of entry points at critical times during school day	» Consider staggered arrival/dismissal times » Additional staff at entry points to direct traffic

3.2 | PHYSICAL SECURITY AT THE SCHOOL GROUNDS LAYER

The school grounds layer comprises the space that falls inside a campus’ outer perimeter layer, but outside of school buildings themselves: it can include student, staff, and visitor parking lots, playgrounds, athletic fields, outside road and walkways, and any other areas that fall into this outdoor space. The main physical security strategies for local education agencies at this layer include detection, delay, and response.

Many of the measures that contribute to detecting threats at the grounds perimeter layer are also relevant at the school grounds layer.

- » Lighting dispersed across school grounds, for instance, can be a low-cost solution to increase the chance that members of the school community will see intruders outside of daylight hours.
- » Regular patrols across key areas of school grounds by school staff or security personnel—such as playgrounds, parking lots, and areas near campus entrances—also contribute to detection, as does the installation of CCTV, provided that someone on campus consistently monitors camera video feeds in real time.

- » In addition, certain CPTED principles, such as designing visibility across large spaces, create opportunities for natural surveillance and make it easier for staff and others to detect activities that appear out-of-place.

Whether these measures also work to delay threats at the school grounds layer depends on a number of complementary measures and elements. For instance, staff patrols can delay a threat occurring on school grounds if proper policies are in place to inform staff of what actions they should take in various types of situations. In some case, this might involve communicating a threat to someone inside the school office, who might send out a security guard to address the threat. In this instance, staff patrolling the school grounds must be equipped with communications devices—for example their own cell phones or radios—to effectively delay a threat. Additionally, regular training, drills, and exercises where school staff practice these actions makes delay capabilities even more robust.

There are tradeoffs to designing visibility into the layout of school grounds to improve security. For example, large, open spaces that improve natural surveillance can increase the chances of detecting threats as they occur on school grounds; but these spaces also leave students and staff, including those with disabilities, more vulnerable in the case of certain incidents, such as active-assailant situations. Moreover, redesigning school grounds to add open areas can be expensive; incorporating open sight design may therefore be a more appropriate option for local education agencies building new schools and campuses, rather than for those seeking to improve physical security at existing campuses. Various resources provide guidance on applying CPTED principles to improve school security; readers should consult the resource compendium for more information.

Staff and security personnel patrolling school grounds are also more likely to improve a school’s ability to respond to threats if they have functioning communications equipment at their disposal. The installation of emergency call boxes across a school’s campus, for instance at various locations in student and staff parking lots, can also contribute to quicker responses to threats. Call boxes can either connect callers directly to emergency personnel based outside the school, such as local police, or to school security personnel present on campus. If emergency call boxes are put in place, schools should ensure that members of the school community are aware of protocols guiding their use and trained on what to do when fielding a call from an emergency call box.

TABLE 3.2 - SUMMARY CONSIDERATIONS: SCHOOL GROUNDS LAYER

	Example Measure	Associated Dependencies	Potential Tradeoffs	Mitigating Tradeoffs
Detect	» Grounds lighting	» Staff or CCTV monitoring lighted areas	» Additional costs and maintenance associated with lighting	» Consider more efficient LED lighting
	» CCTV	» Staff monitoring video feed	» Cameras reduce welcoming ambiance » Cameras are costly to operate and maintain	» Rely more on staff patrols
Delay	» Staff/security personnel patrolling school grounds	» Policies on appropriate delay procedures » Training on policies	» Additional demands placed on school staff	» Implement rotating shifts to spread out responsibilities
Respond	» Staff/security personnel patrolling school grounds	» Functional communications equipment » Policies on appropriate response procedures » Training on policies	» Additional demands placed on school staff	» Implement rotating shifts to spread out staff responsibilities
	» Emergency call boxes	» Policies on use & appropriate response procedures » Training on policies	» Increased potential for false alarms/pranks	» Place in vicinity of CCTV or in well-lit areas to deter tampering

Lighting is a widely adopted and recommended solution to improving physical safety across school grounds (Shelton et al., 2009; Johns Hopkins University APL, 2016; Fennelly and Perry, 2014; Steiner et al., 2021). Well-lit grounds enhance safety for students, teachers, and the broader school community before, after, and during school hours. Lighting is important in geographic locations where there is less sunlight on school days during certain parts of the year. The number of lightening options available to local education agencies continues to expand, and the cost for this measure is ever-changing. For example, the cost to adopt and maintain solar lighting has declined over time. Costs associated with lighting can be further reduced or offset by rebates or incentives to implement solar technologies. Some experts also recommend use of LED bulbs in pre-existing light fixtures as a lower-cost means of enhancing lighting across school grounds.

3.3 | PHYSICAL SECURITY AT THE BUILDING PERIMETER LAYER

A school's building perimeter layer includes anything that surrounds a school's interior spaces: exterior walls and windows, as well as doors and entrances leading into school buildings from the school grounds layer. All three physical security strategies—**detection, delay, and response**—are relevant here, and the number of possible measures that local education agencies might consider in support of these strategies is vast. Generally speaking, measures designed to provide protection and mitigation benefits at the building perimeter layer fall into the categories of:



Surveillance



Access control devices



Screening systems



Barriers



Notification systems



Building design features

People—whether school staff and/or dedicated security personnel—are also critically relevant at this layer, as they are across all others.

To **detect** threats at a school's building perimeter layer, local education agencies have a variety of options.

- » As was the case at the two previous physical security layers, **lighting** installed around school buildings—at points of entry and at other locations along facility walls—increases the visibility of unwanted incidents, provided that school staff are also monitoring these lighted areas regularly.
- » **CCTV equipment** can also improve detection capabilities. However, this improvement is dependent on the extent that school staff play a role in operating and monitoring related equipment in real time.
- » As described in relation to planning for security at the school grounds perimeter layer, local education agencies should ensure that their school has a single or **small number of points of entry** into school buildings; this solution greatly increases the chance that threats will be detected as they attempt to cross into the building interior. School staff should be present at entry points during critical times—such as student arrival and dismissal—and certain screening technologies, such as ID card or badge readers, also help to detect threats. These can immediately flag the presence of an unauthorized individual, prompting a staff response if the appropriate policies are in place.

Local education agencies should also consider whether existing measures in place at a school can **delay** threats at the building perimeter layer. A first step is to ensure that building points of entry remain locked when they are not being monitored by staff; schools can install doors with automatic locks, but they will still need to ensure that school personnel adhere to policies mandating that all exterior doors remain closed outside of student arrival and dismissal times. Other access control measures, such as turnstiles and security vestibules, are also effective when it comes to delaying threats, insofar as they give school staff more time to interrupt the progression of a threat. Outside of designated points of entry, design features such as windows fitted with bullet resistant or shatter proof glass make it much more difficult for attackers to move beyond school grounds and into building interiors.

A number of measures should also be in place at the building perimeter layer to help schools **respond** to threats, including those that have progressed into active safety incidents.

- » **Notification systems**, such as motion detectors fitted with alarms, or door and window alarms that go off when these are left open, can provide immediate notification to school staff and prompt a quick response. Local education agencies should ensure that school staff are aware of relevant emergency protocols and trained on them regularly for these types of measures to enhance response capabilities.
- » **Public announcement (PA) systems** are another important tool for alerting members of the school community of ongoing emergencies. The effective use of PA systems in the case of emergencies requires that students and staff know what they are supposed to do when they hear specific announcements. A PA message announcing a lockdown emergency, for instance, should prompt students and staff to close and lock doors that remain open, and move to certain “safe” areas inside their classrooms.

Regular drills can help members of the school community practice these actions, and training programs should be implemented in age-appropriate ways that do not induce further trauma on students and staff alike.

TABLE 3.3 - **SUMMARY CONSIDERATIONS: BUILDING PERIMETER LAYER**

	Example Measure	Associated Dependencies	Potential Tradeoffs	Mitigating Tradeoffs
Detect	» CCTV w/motion detection warning system at entry	<ul style="list-style-type: none"> » Policies outlining response to triggered alarm » Training on policies 	<ul style="list-style-type: none"> » Potential for false alarms (e.g. presence of wildlife) 	<ul style="list-style-type: none"> » Install protective fencing to limit wildlife intrusions onto campus
	» Screening devices for people and/or personal items	<ul style="list-style-type: none"> » Staff to operate screening devices » Policies addressing appropriate responses to contraband » Training on policies 	<ul style="list-style-type: none"> » Decreased ambiance as a result of metal detectors and other screening technology at entry points » High cost of technology 	<ul style="list-style-type: none"> » Rely more on staff presence at entry points
Delay	» Automatic locks on exterior doors	<ul style="list-style-type: none"> » Policies mandating doors be kept closed 	<ul style="list-style-type: none"> » Could delay entry of emergency personnel during emergencies 	<ul style="list-style-type: none"> » Issue master key to local law enforcement & fire department
Respond	» School-wide PA system or intercom	<ul style="list-style-type: none"> » Policies outlining appropriate response protocols » Training on policies 	<ul style="list-style-type: none"> » School-wide intercom impractical for schools with many buildings 	<ul style="list-style-type: none"> » Consider long range radios for staff to ensure reception of community-wide announcements
	» Security guard stationed at building entrance	<ul style="list-style-type: none"> » Policies outlining security guard roles & responsibilities » Training on policies 	<ul style="list-style-type: none"> » Security guards can reduce a school's welcoming ambiance » High costs associated with security personnel 	<ul style="list-style-type: none"> » Place trained school staff such as teachers at school entrances in rotating shifts

Single points of entry allow schools to control when and how students, staff, families, and community members enter the building. This measure is often accompanied by electronic visitor management systems that allow schools to maintain a record of who enters the building. School staff scan forms of identification, such as driver's licenses and other state identification cards. While electronic management systems may offer efficiencies and protect against unauthorized visitors, these systems could also deter some family and community members from engaging with the school. Single points of entry combined with training about individuals who should not be permitted in the building can reduce risk while fostering a welcoming environment. Schools using electronic management systems could also implement policies that allow visitors to present alternative forms of identification, and also clearly communicate the allowable forms of identification to enter the building.

“One area where we could have done more thoughtful work is around our own internal department capacities to take on these new systems and make sure they are running and running well. It's time consuming to implement new systems and hard to do well. Are the card readers working correctly – that burden falls on someone and we didn't staff up. I'm more informed about it now and could get ahead of it a little better than I did last time but ended up being a bigger deal than we anticipated.”

- **Interview with school district representative**, Winter 2021

3.4 | PHYSICAL SECURITY AT THE BUILDING INTERIOR LAYER

The school building interior layer comprises everything that is within the walls of a school building: administrative office space, classrooms, bathrooms, gymnasiums, hallways, and large common areas such as student centers and cafeterias. Local education agencies should think about how a school will be able to **detect, delay, and respond** quickly and effectively in the event that a threat is present at this layer.

Many of the same measures used to **detect** threats across other layers of a school campus are also applicable to detecting threats inside school buildings. For example, a school can detect threats at critical times during the school day, such as passing times, lunch hours, and during arrival and dismissal by organizing a system of hallway monitors composed of trained teachers or volunteers. Dedicated security personnel, such as school security officers or school resource officers, can also contribute to detection in this regard, although this approach is likely to be higher-cost. Another alternative is to install CCTV cameras at various locations throughout a school building; local education agencies should be aware, however, of the risks inherent to this approach, insofar as cameras placed inside a school building—and anywhere across a school campus, for that matter—could infringe of the civil rights and liberties of individuals if their use is not appropriately delineated **in compliance with applicable federal, state, and local laws**.

Interior lighting and other building design features based on CPTED principles, such as windows that provide visibility from administrative offices and/or classrooms into hallways or other common spaces, can increase the chances of detecting threats inside school buildings. Some designs that improve natural surveillance, however, can also make students and staff more vulnerable to certain types of attacks; attackers will break into administrative offices or classrooms more easily if they are partially enclosed by windows that are not reinforced with bullet-resistant glass.

One approach to limiting the number of CCTV in the school building is a policy that requires teachers to stand in hallways before and after school, as well as during passing periods. The presence and supervision of teachers may prohibit students from engaging in unsafe or undesired behaviors. It also presents an opportunity to surveil the environment for unfamiliar or unauthorized visitors. That said, while fewer cameras could be perceived as a benefit for school climate, the policy may limit the time teachers have to address students' questions about content between classes or supervise students who enter the classroom before the start of class. Using teachers or volunteers as monitors also requires policies and procedures about how to respond in the case of a threat, with particular consideration around how to communicate the presence of a threat (e.g., free communications apps for cell phones, walkie talkies, classroom phones, panic buttons).

Local education agencies should further consider how measures in place inside school buildings will better prepare the community to **delay** threats at the building interior layer.

- » School personnel—whether they are dedicated security personnel, teachers, or other staff members—can stop or slow the progression of threats into full blown safety incidents provided they are aware of relevant policies that dictate how they should react in specific situations; they should also receive training on what to do in certain circumstances.
- » Security technologies might be another appropriate means of delaying threats inside school buildings: interior door locks, including automatic lock mechanisms, on classroom doors work to prevent intruders from entering populated spaces, and bullet-resistant or reinforced interior doors and windows further decrease the chances that intruders will successfully force their way into these spaces.
- » Certain building design features such as hallway separations can also make it more difficult for intruders to move around freely. As noted in reference to measures in place at other layers of a school campus, the benefit provided by many of these measures hinges on the existence of policies mandating certain practices: classroom doors, for example, need to remain closed during instruction time if they are to delay intruders.

Local education agencies need to think about what measures within their buildings promote a rapid and efficient **response** to threats they might face. In addition to detecting and delaying threats, school staff patrolling the hallways and monitoring common spaces such as the cafeteria can also be asked to respond to certain situations when they detect them; policies should clearly define what actions these staff should take, and staff should train on the policies through drills and exercises to ensure that their response would effectively stop an incident from progressing. Simple things such as posted signs can also enable quicker response to incidents, and serve as reminders of the actions students and staff need to take during certain emergencies. Signs can indicate evacuation routes and secure areas designed to provide shelter during certain types of events; they, too, are more likely to serve their intended purpose if students and staff practice response procedures at regular intervals during the school year.

Certain technologies can also better prepare schools to respond to incidents: PA systems, intercoms, and phone systems connecting classrooms, common areas, administrative offices, and other sections of a school building (or multiple buildings) allow school staff to communicate emergency messages widely and prompt a school-wide response. Duress alarms situated at strategic locations throughout a school building—for instance inside classrooms and administrative offices—can provide a direct connection to local law enforcement and emergency responders during an incident. Importantly, schools should ensure that emergency responders have the ability to enter a school building and individual sections of a building during an emergency. If a school installs automatic locks on classroom doors, they should provide emergency responders with a means of accessing all locked down areas; the office might therefore place master keys or key fobs in a safe but easily accessible location, or provide local authorities with a copy of these devices when first installing any new lock systems. These considerations emphasize the importance of integrating members of the first responder community into the school physical security planning process, so that firefighters, police, and other personnel know what is in place at the school and what types of security measures will aid their response during emergencies.

TABLE 3.4 - **SUMMARY CONSIDERATIONS: BUILDING INTERIOR LAYER**

	Example Measure	Associated Dependencies	Potential Tradeoffs	Mitigating Tradeoffs
Detect	» CCTV	» Staff to monitor	» Potential infringement on civil rights & liberties	» Install in approved locations » Define clear policies regulating use of video
	» Open sight design	» Regular maintenance or groundskeeping » Policies relating to accessibility	» Increased vulnerabilities during active assailant events	» Increased staff/volunteer monitors at busy times
Delay	» Automatic door locks	» Policies against door propping	» Limits access by emergency responders	» Provide law enforcement, EMS with master keys
	» Hallway partitions	» Policies relating to accessibility » Policies against removable partitions	» Slows flow through hallways during busy times	» Policies, signage directing flow of foot traffic through hallways
Respond	» Signage	» Policies specifying response protocols » Training in response protocols	» Not readable by younger students and/or students not proficient in English	» Include bilingual signs » Conduct age-appropriate response training with younger students
	» Emergency Alarms	» Clear policies on when to use alarms » Training on response to alarms	» Potential for false alarms	» Policies on alarm misuse » Staff monitors to deter tampering

3.5 | BENEFITS OF THE SYSTEM ACROSS LAYERS

When local education agencies take care to walk through and plan for security across all layers of a school campus—the grounds perimeter, school grounds, building perimeter, and building interior layers—they are more likely to prevent single points of failure across the broader physical security system, and therefore avoid serious fall-out from safety incidents.

Security measures installed at each layer of a school campus work individually at that layer, and also together across layers, to **detect, delay, and respond to threats**. As an example, consider the scenario of an armed intruder seeking to enter the school grounds to carry out an attack. As part of its physical security system, the school in question has a six-foot barrier surrounding its grounds, and staff, students, and visitors entering the school are routed to two clearly marked points of entry; one for vehicles and one for pedestrians. During school arrival and dismissal times, school staff and parent volunteers are posted at these points of entry and also walk around certain parts of the perimeter; they carry radios to communicate with staff located inside the school grounds or inside the school building itself. If the intruder were to attempt to scale the barrier, it is likely that staff would detect the attempt and confront the intruder to delay entry; they might also radio for help from additional staff and/or law enforcement located elsewhere on school grounds, activating security measures and protocols at subsequent physical security layers. For instance, if staff at the points of entry radioed the front office to report the presence of a suspicious person now on school grounds, the notification could prompt school security personnel to intercept the attacker on school grounds. Staff inside the school might also activate lock down procedures depending on the nature and progression of the threat, ensuring that no one is allowed into buildings until the threat has been addressed.

Fitting exercises and drills into an already busy school schedule is time-consuming and can become expensive if schools do not prioritize their needs. Training programs should be based on easy-to-learn, easy-to-remember, and easy-to-use strategies that promote a safe and secure learning environment, and also be tailored to the specific grade levels the school serves.

For a layered system to function in this way, local education agencies must ensure that schools have the right policies and procedures in place—school staff need to know what to do when they detect a threat, and the entire school community needs to know how to react when specific protocols are activated. Staff, students, and visitors should be well aware of visitor policies, and of procedures that are meant to keep the school community safe during various parts of the school day. Importantly, regular but simple drills on these policies are critical to keeping staff, students, and other members of the school community in the know about their roles and responsibilities when it comes to emergencies.

COMMON CHALLENGES AND TRADEOFFS IN SCHOOL PHYSICAL SECURITY PLANNING

Planning for and implementing a school physical security system is a complex undertaking, and local education agencies will need to navigate myriad challenges as they engage in the process. In addition to thinking through what is in place and what gaps exist at each layer, they will also need to think about things such as costs associated with various measures, the extent to which physical security measures adhere to code and comply with state- and local-level school safety policies, and how the measures they put in place might degrade an otherwise welcoming school climate or have differential impacts on diverse segments of their student body.

4.1 | POLICIES

Many policies, statutes, and regulations pertaining to school safety exist at the federal, state, and local levels; making sure that a school is adhering to them can be a challenge, especially for local education agencies who are not experts in security (Steiner et al., 2021).

TABLE 4.1 - TYPES OF PHYSICAL SECURITY POLICIES AT THE FEDERAL, STATE, AND LOCAL LEVELS

	Federal Policy	State Policy	Local Policy
Statutes and Regulations	✓	✓	✓
Guidance	✓	✓	✓
Funding	✓	✓	
Codes		✓	✓

SOURCE: Steiner et al., 2021.

At the federal level, a number of statutes and regulations exist to protect the rights of individuals. The Fourteenth Amendment, the Civil Rights Act (Pub. L. 88-352, 1964, as amended and codified), the Family Educational Rights and Privacy Act (FERPA) (Pub. L. 93-380, 1974, § 513), and the Americans with Disabilities Act (ADA) (Pub. L. 101-336, 1990) are all examples of federal laws that local education agencies should consider when planning, selecting, and implementing their physical security system. To avoid installing measures or putting in place measures that might violate the rights of individual students, teachers, and staff, schools should consider these and other regulations in their planning process. Carefully laid out policies and procedures to dictate the use of security measures, as well as communication with the school community about the use and intended purpose of measures, can work to mitigate against unintended adverse consequences in this area.

Regulations that govern school physical security are enacted largely at the state level, and there is considerable variance in policy across states (see e.g. Ehlenberger, 2002). States commonly develop guidance specific to these statutes and regulations, and many also outline best practices related to physical security. While they employ a range of strategies to disseminate this guidance, it is common for state-level agencies involved with school safety to host websites that point local education agencies to specific state-level requirements, as well as to guidance from the federal government, other states, or non-governmental agencies that they deem relevant and useful.

At the local level, entities such as the school board may place additional constraints on the selection and implementation of certain physical security measures, and district mandates might require that local education agencies consult legal counsel and insurers before putting certain measures into place. Building and fire codes, zoning laws, and environmental protections also exist at the local level and are important for local education agencies to keep in mind as they plan for physical security. Some local requirements may place additional constraints on a variety of physical security enhancements, from perimeter fencing to school grounds design and interior door lock systems.

“A lot of places don’t know that you can’t buy [aftermarket] measures.” Consultation with a local or state fire marshal could help schools avoid adopting measures—such as certain door barricades—that may not be code compliant.

- Interview with school safety and security specialist, Winter 2021

4.2 | OVERVIEW OF ADDITIONAL CHALLENGES RELATED TO SCHOOL PHYSICAL SECURITY

In addition to the complexity involved in navigating a host of policies and regulations, many local education agencies responsible for planning and implementing physical security systems will also face constraints when it comes to:

- » Funding security improvements;
- » Gathering enough information about the use and effectiveness of various measures; and
- » Identifying the physical limitations of their particular school campus or building.

Local education agencies may face additional challenges related to preventing biased implementation of security measures and maintaining a safe and welcoming environment.

Lacking the funds to purchase desired materials, equipment, and technology and to hire security personnel is a common problem for local education agencies.

- » School district budgets are limited, require school board approval, and funds are often allocated for required expenditures.
- » Discretionary spending is rare, which can make it difficult to allocate additional funds to meet physical security needs beyond those that are mandated by federal, state, or local policies.
- » Many local education agencies also find that the small amount of information that exists about the effectiveness of physical security measures is a key challenge because it limits their ability to make informed decisions about security on their campuses.

“Budget is always a factor. We want to make sure we are putting our money in the right places, and not with something fancy that doesn’t help while we ignore something the data does show we need to address.”

- Interview with school district representative, Winter 2021

Local education agencies are also often limited by physical features that exist on their campus or inside their school buildings. Retrofitting older buildings can be difficult if layouts do not provide optimal placement for measures such as security cameras, or if the spatial configuration of a campus makes it so that it is difficult to create single points of entry (Committee on Architecture for Education, undated; Schneider, 2010). Retrofits can also be challenging insofar as any additions or remodels to buildings require compliance with current federal guidance on disaster preparedness and local building codes and regulations; compliance can add significant costs to any planned work on buildings and other campus facilities (Northeast Security Solutions, undated).

Finally, local education agencies should ensure that their security plans do not in any way violate the privacy and civil liberties of students and school staff or aggravate existing racial biases in school discipline. Certain technologies—like

facial recognition or radio-frequency ID technology—pose more risk in this regard, and civil rights groups have already raised concerns that minority students are more likely than others to report attending a school with pervasive security measures (Steinka-Fry, Fisher, and Tanner-Smith, 2016). Moreover, the benefits of security staff, such as SROs, are contested in the literature on school safety and security. While in some contexts such personnel may serve as deterrents to violence, in others they can have detrimental effects on school climate and student perceptions of safety (Crawford and Burns, 2015; Gonzales et al., 2016). The impact of SROs may vary significantly across schools and depend on school and SRO-specific factors such as student demographics, student age, the quality of training received by SROs, and the way that a school manages and integrates the SRO role (Pentek and Eisenberg, 2018). Schools should take care to establish monitoring and evaluation programs and memoranda of understanding that identify clear roles and responsibilities for SROs and other security staff, in an effort to attenuate many of these challenges. Considering these types of implications adds complexity to the planning process but is critical to creating and fostering learning environments that are at once safe and inclusive.

Finally, it is worth noting that many schools integrate Crime Prevention Through Environmental Design (CPTED) approaches into their physical security systems. CPTED is intended to deter crime through the built-in, social, and administrative environments while also creating a safe and welcoming environment (International CPTED Association, undated), and offers a school multiple security and safety advantages without transforming it into a fortress. Fencing, for instance, can be installed in a way that does not diminish the aesthetics of the grounds, but still avoids attracting crime—like graffiti or other vandalism—and enables easy first-responder access to school grounds in the case of emergencies (Hanover Research, 2013). Other CPTED-informed solutions include integrating welcoming decor such as murals, student artwork, and bright color schemes to complement more traditional security features like electronic access-control systems, video intercoms, door hardware, and panic buttons (Fennelly and Perry, 2014). The appendix to this guide provides links to further CPTED resources relevant to the K-12 school environment.

CONCLUSION

School crime and violence are complex phenomena that require local education agencies to approach school safety and security through a multidisciplinary lens; applying a systems-based approach to layered physical security can create safer environments that promote teaching and learning. The guide emphasizes three major takeaways for local education agencies to keep in mind as they work to improve physical security at their school campuses:



1.

School physical security is a system of interrelated elements. It includes five core elements:



Physical security equipment and technology



Site and building design features



People and personnel



Policies and procedures



Associated training and exercise requirements

The equipment, technology, and design features that local education agencies have in place at their schools are all interrelated and have cost and other implications that local education agencies will need to consider. The security personnel, school staff, and others that local education agencies employ to provide security, and the related policies, procedures, and training programs in place all ensure that these interconnected technologies, equipment, and site and building design features work in concert to detect, delay, and respond to threats.



2.

Local education agencies that take a layered approach to school physical security will more efficiently detect, delay, and respond to threats. Measures in place at various layers of a school campus—the school grounds perimeter, school grounds, building perimeter, and building interior layers—provide incremental protection against threats and help prevent single points of failure. The extent to which local education agencies will need to prioritize specific layers over others will depend on each school's unique context, to include its surrounding neighborhood, campus and building layout details, the demographics and other characteristics of its student body, and its geographical location.



3.

Physical security is a component of the broader school safety system, which also includes activities to prevent threats, and activities to respond to and recover from the consequences of a diverse set of safety incidents. Measures that are in place to protect schools from threats and mitigate against the negative consequences of safety incidents affect and interact with efforts to prevent violence, such as mental health and school climate, as well as emergency response and recovery efforts.

As an additional resource, users of this guide can turn to the accompanying *K-12 School Security Assessment Tool (SSAT)*, a web-based program that walks local education agencies and other stakeholders involved in the school physical security planning process through a complete vulnerability analysis. The tool also provides associated recommendations for improving security at a specific school. In conjunction with this guide and the tool, we encourage users to complete associated training modules, which will be released later in the 2021-2022 school year and available to local education agencies online.

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FEDERAL RESOURCES on Active Shooter and School Security

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