

AUGUST 2020

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Improving K–12 School Facilities in California



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SUMMARY

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Technical appendices to this report are available on the PPIC website. The COVID-19 pandemic has highlighted the need for safe school facilities that protect the health of children and staff. With the first day of school just weeks away, most K–12 schools are likely to rely on distance learning for the start of the academic year. When schools do reopen, adhering to current guidelines on physical distancing, cleaning, and hygiene will require schools to use and operate facilities differently—an added pressure considering many schools were in need of important facilities improvements before the pandemic. In this report, we provide the first statewide evidence on the conditions of K–12 school facilities, based on data collected prior to the outbreak. We find:

- Statewide, 38 percent of students go to schools that do not meet the minimum facility standards. A quarter of students attend schools with damaged floors, walls, or ceilings, and 14 percent go to schools with malfunctioning electrical systems. Fifteen percent of students attend schools that have at least one extreme deficiency, with underlying issues like gas leaks, power failures, and structural damage. Districts with lower capital spending and smaller tax bases report higher levels of deficiencies.
- Between 2015–16 and 2018–19, 108 schools in 60 districts had to close temporarily due to poor facility conditions. Reasons for closure included broken water pipes, mold, pest infestations, heating system failures, and water contamination. The number of cancelled days ranged from 1 to 116, with an average of three lost school days per year.
- Facility needs go beyond basic building functionality. Many schools face capacity constraints due to student enrollment growth and lack the technological infrastructure to support digital learning. Schools also often need major renovations to address deferred maintenance, upgrade aging buildings, plan for natural disasters, improve energy efficiency, and ensure adequate accommodations for people with disabilities.
- COVID-19 has brought additional challenges. Many schools do not have sufficient building space to comply with federal and state reopening guidelines on smaller class sizes. In addition, significant construction, upgrades, and repairs may be necessary to improve ventilation systems, create larger classrooms, and reduce the risk of transmission in shared spaces like restrooms. Schools may also need to hire additional custodial staff and purchase extra supplies to allow for more frequent and thorough cleanings.

Accurate accounting of school facility conditions is essential to reopening schools in a safe and effective manner. Unfortunately, existing data on facility conditions are limited and likely understate schools' needs. We recommend that the state begin collecting data to assess building capacity and needs, disaster preparedness, accessibility accommodations, and energy efficiency. Comprehensive data would also enable the state to allocate funds for school facilities in a more equitable and efficient manner—for example, by tying funding to districts' capacity to raise local funds and prioritizing districts with the most urgent needs, as opposed to the current first-come, first-serve system.

Maintaining and improving California's K–12 school facilities will involve significant new and ongoing costs—one estimate suggests more than \$100 billion over the next decade. Yet in March 2020, voters rejected the largest school construction bond in the state's history, along with many local construction bonds, and the state now faces the largest budget deficit since the Great Recession. The unpredictable nature of bond issuances has meant that state and local funding for facilities has been inconsistent over time. As policymakers explore ways to fund and improve school facilities, stable funding streams will be essential to help ensure that California's schools provide students a safe and effective learning environment.

Introduction

California's public K–12 system serves more than 6 million students spread across 10,500 schools containing roughly 300,000 classrooms. The physical condition of these schools varies widely. Many buildings are relatively new and were constructed in the last two decades, following a considerable increase in spending on school facilities (Brunner and Vincent 2018). However, other buildings are quite old and need substantial renovation. About 30 percent of schools were built more than 50 years ago, and roughly 10 percent were built more than 70 years ago (Vincent 2012). Recent statewide estimates show that districts need to spend \$3.1 to \$4.1 billion annually to maintain current facilities (Vincent and Jain 2015). Estimates of the total amount needed for maintenance, modernization, and new construction amount to more than \$100 billion over the next decade (Brunner and Vincent 2018; Lopes and Ugo 2017).

The COVID-19 pandemic has placed dramatic new stresses on school facilities. Many schools will remain closed at the start of the 2020–21 school year amid a spike in coronavirus cases. The state's new reopening guidelines allow counties to open middle and high schools only if they have been off the state's monitoring list for 14 days; elementary schools can open if they get approval from local health officers (California Department of Public Health 2020). Nevertheless, access to safe, clean, and functional buildings will be essential when schools do reopen. To allow for social distancing and to meet safety requirements, schools will need to adjust how they currently use their physical spaces, thoroughly clean and disinfect school buildings, and improve ventilation and air quality (Centers for Disease Control and Prevention 2020; California Department of Public Health 2020). However, these requirements will present new challenges. For example, physical distancing will be difficult for schools with limited building capacity, particularly those that are overcrowded.

This added pressure comes at a time of uncertain funding for school facilities. For the first time in over two decades, California voters rejected a statewide bond for public school construction. In the March 2020 election, local voters also rejected over 60 percent of school bond initiatives, which have historically passed at a much higher rate. The state's fiscal and economic uncertainties may have weighed on voters' minds, as 78 percent of voters expect bad economic times over the next 12 months (Baldassare et al. 2020). Voters may also be increasingly cautious about tax increases and additional state debt, or they may be skeptical of the efficacy of new spending on school buildings.

Despite the importance of safe and functional school buildings—and the magnitude of the investments needed there is little readily accessible information on the current physical condition of our state's schools. To fill this void, in this report we present the first statewide data on school facility conditions. We draw on facility assessments reported on 2018–19 School Accountability Report Cards. Our research is based on the self-reported assessments of over 7,200 schools, covering roughly 72 percent of student enrollment, and provides new information on the condition of schools along several dimensions.

In the first section of this report, we describe the landscape of school facility funding in California and the data used in our research. We then provide a brief overview of statewide facility conditions and analyze differences in facility conditions across schools based on demographics, funding, and geographic location. We also examine the most common deficiencies reported by schools and the prevalence of school closures due to poor facility conditions. Next, drawing on a review of local district facility master plans, we explore additional facility needs that go beyond the basic functionality addressed in the limited statewide data. Finally, we discuss additional facility needs that have emerged as a result of the COVID-19 pandemic. We conclude with policy considerations and recommendations.

School Facility Funding and Data in California

School construction and facility improvements in California are primarily funded through state and local bonds. From 2007 to 2015, 65 percent of facility funding came from locally issued bonds, with another 19 percent coming from state bond apportionments (Brunner and Vincent 2018). The state provides financial support through the School Facility Program (SFP), which was established in 1998 to fund new construction, modernization, and other facility needs. Funding for SFP comes exclusively from statewide general obligation bonds approved by the voters. While bond revenues provide support for school construction and modernization projects, funds for maintaining and operating school facilities are drawn from general operating revenues, which may crowd out spending on other needs—such as teachers, support staff, and classroom materials—when facilities become costly to repair and maintain (Vincent and Jain 2015). This means that differences in the local property tax bases, local voter sentiment, and the ability of a district to successfully navigate the state bond program are key drivers of a school district's facility funding—and ultimately the condition of its buildings.

Facility Inspection Tool

California schools are required to report annually on the condition of their buildings using Facility Inspection Tool (FIT) evaluations. This tool was adopted by the state in 2007 following the settlement of the *Williams* lawsuit, which alleged that the state failed in its responsibility to provide all students with equal access to the basic resources needed to learn.¹ The results of these facility inspections are presented in School Accountability Report Cards (SARCs), which are publicly available to parents and other interested parties.

The FIT is designed to identify areas of a school site that are in need of repair based on a visual inspection. A facility in "good repair" has met the minimum standards of being clean, safe, and functional. The FIT specifies 15 sections for facility inspection. Districts are required to assess their schools annually on each of the 15 sections and note the number of good repairs (i.e., no deficiency), deficiencies, and extreme deficiencies in each section.² The 15 sections are further grouped into eight broad categories in SARC reporting. The textbox below includes illustrative examples of FIT standards for each of these eight categories.³

After the site inspection, an overall school score is determined by computing the average percentage rating for the eight categories; this scoring system means schools with high overall ratings may still have deficiencies and need repair. In addition, our analysis found inconsistencies that suggest schools and/or districts may have approached ratings differently. For these reasons, we do not emphasize schools' overall ratings in this report.⁴

We built a web scraper in Python to download all available 2018–19 SARC reports and used natural language processing tools to process and extract FIT data. This gave us more than 7,200 SARC files with complete FIT data, which in total cover 72 percent of the state's K–12 student population.⁵ We then merged the FIT data with school and district characteristics, including student enrollment, geographic location, share of high-need students

¹ The litigation ended in a settlement in 2004, resulting in new standards, funding, and accountability requirements for schools. The settlement required that districts perform self-evaluations to ensure that schools meet requirements to provide sufficient instructional materials, schools in good repair, and qualified educators. Per the *Williams* settlement, the legislature passed Assembly Bill 607, establishing permanent standards of good repair and a ranking and scoring system to evaluate the conditions of schools. The resulting Facility Inspection Tool (FIT) was adopted by the State Allocation Board on June 27, 2007.

² The inspections can be performed by any qualified person either within the organization or outside the organization. All school districts and county offices of

education must use the FIT to determine their facility status, and many use the FIT guidebook developed by the Coalition for Adequate School Housing (CASH).

³ A more detailed description for all 15 categories is included in Technical Appendix A.

⁴ Results for overall ratings are reported in Technical Appendix Figure B1.

⁵ We downloaded nearly 9,000 SARCs, 8,355 of which have non-missing FIT data and 7,385 have non-missing data for all eight FIT categories. Results using 8,355 SARCs are qualitatively similar. In 2018–19, there are 10,521 public K–12 schools in California.

(English Learners, low-income students, and students who are homeless or in foster care), capital expenditure, and district assessed value.⁶

There are important caveats when interpreting FIT data. First, the FIT standards represent a very low bar, specifying the *minimum* functional standards of school facilities. For instance, FIT assessments do not address needs related to loading capacity (i.e., how many students can attend the school without crowding), modernization, parking, and energy efficiency. Second, because the assessment relies on a one-time visual inspection, it may miss deficiencies that are not visually evident on the day of inspection. Last, some schools may not have or may not report the most recent FIT data. It is impossible to know the prevalence of this problem because the state does not collect data on facility assessments. However, a recent federal study suggests that while most districts evaluated their facilities to determine conditions, an estimated 35 percent of districts had not conducted a comprehensive assessment of school facility conditions in the last 10 years or it was unknown if the district had done so. California is among the 21 states that do not conduct or require districts to conduct comprehensive facility assessments that go beyond the visual inspection required in the FIT tool (Government Accountability Office 2020). For these reasons, it is likely that FIT data underestimate schools' overall facility needs.

⁶ This methodology for compiling data from the SARC documents is analogous to the one used in Gao and Lafortune (2019). For more information on data sources and methods, see Technical Appendix A.

| Examples of FIT standards | | | | | | | | |
|---|---|--|--|--|--|--|--|--|
| FIT category | Not deficient (good repair) | Deficient (fair) | Extremely Deficient (poor) | | | | | |
| Cleanliness | Facilities have been cleaned regularly | Drinking fountains and food preparation or serving areas are not clean | Major pest or vermin infestation | | | | | |
| Electrical | Electrical System Lig working properly | | Power failure; exposed electrical wires | | | | | |
| External | No safety or security risk | Cracks, trip hazards, and holes | Broken glass | | | | | |
| Interior surfaces | Clean, safe, and functional | Hazards from missing tiles, holes | Hazards from tears and holes; water damage | | | | | |
| Restrooms/ Fountains | Cleaned regularly | Not stocked with toilet paper, soap, and paper towels | Water leaks | | | | | |
| Safety | No hazardous materials | Paint peeling, chipping, or cracking | Emergency alarms not functional | | | | | |
| Structural | No structural damage | Cracks | Ceiling and floors sloping | | | | | |
| Systems | HVAC functional and unobstructed | Facilities not ventilated | Gas leak; gas pipes are broken | | | | | |
| Source: Office of Public School Construction, 2020. | | | | | | | | |

Four in Ten Students Attend Schools with Deficient Facilities

As mentioned in the previous section, the FIT assessments include scores for eight categories and an overall rating. We focus on the specific category scores to enable consistent comparisons across schools and districts.⁷ We use two primary measures: the number of categories in which a school is rated as deficient or extremely deficient (i.e., in "fair" or "poor" condition) and whether a school is rated as extremely deficient in any category.

Overall, 38 percent of California K–12 students attend a school with at least one deficiency (Table 1). The most recent national analysis finds similar results: about 30 percent of schools in the US have at least one building system or feature in "fair" or "poor" condition (Alexander and Lewis 2014). In California, 19 percent of students go to schools with two or more deficiencies, and 9 percent are in schools with three or more of the eight categories rated as deficient or extremely deficient. Moreover, 15 percent of students are in schools that have at least one extreme deficiency.

Rates of deficiencies are higher in schools in suburban (40%) and small town (42%) districts than in city (36%) or rural (36%) districts.⁸ Extreme deficiencies are particularly common in towns, with 22 percent of students in towns going to schools that have at least one extreme deficiency, compared to just 13 percent in suburban districts.

TABLE 1

Many students attend schools that are deficient or extremely deficient in one or more major categories

| | Overall | City | Suburb | Town | Rural | Small District (<500) | Charter |
|------------------------|---------|-------|--------|-------|-------|--------------------------|---------|
| 1+ deficiencies | 38.0% | 36.0% | 40.0% | 41.9% | 35.6% | 28.0% | 23.7% |
| 2+ deficiencies | 19.1% | 16.7% | 21.2% | 23.1% | 22.9% | 16.5% | 11.8% |
| 3+ deficiencies | 9.2% | 7.6% | 10.4% | 14.2% | 10.3% | 9.3% | 6.5% |
| Any extreme deficiency | 15.3% | 16.1% | 13.3% | 22.1% | 17.8% | 8.4% | 3.8% |

SOURCES: FIT assessment results, 2018–19 SARC report cards; authors' calculations.

NOTES: Data are weighted by student enrollment. Unweighted results are qualitatively similar (Technical Appendix Table B2). For instance, 37 percent of schools have at least one deficiency; and 14 percent have extreme deficiencies.

These geographic differences likely reflect significant variation in local wealth, spending, management, and other factors. While many examples of poor school conditions are cited in urban areas (Richmond 2019), districts in suburbs and towns have spent less per student on capital projects over the last decade and have smaller local property tax bases from which to draw upon for new construction and modernization (Brunner and Vincent 2018). Both spending and assessed value are correlated with facility conditions as reported on the FIT assessments: districts with lower capital spending and smaller tax bases report higher levels of deficiencies across all measures, particularly when comparing the highest- and lowest-spending districts (Technical Appendix Table B1).

Table 1 also shows that charter schools have much lower rates of deficiencies. Only 24 percent of students attending charters go to schools with any deficiencies, and 3.8 percent of students attending charters go to schools

⁷ See Technical Appendix A for more information. Technical Appendix Figure B1 shows the results on the "overall" score.

⁸ Based on NCES locale codes.

with one or more extreme deficiencies (compared with 38% and 15%, respectively, for all students). Importantly, the FIT assessment is not mandatory for charter schools, and most of the 960 charters included in the data are run by districts. Nevertheless, charter schools report better school facility conditions than traditional schools even within the same district, on average. There are several reasons this could be the case. First, charters often lease new school facilities, which are generally in better condition. Second, charter schools must continually compete for student enrollment, meaning that a greater priority may be placed on facility conditions—especially what is visually apparent. Further research that includes all charter schools, both district-operated and independent, would be necessary to fully understand these differences.

Small Differences by Student Demographics

Recent research in California has shown that districts with lower property wealth and lower household incomes are able to raise less revenue to support school facility construction and modernization (Brunner and Vincent 2018). Moreover, the most recent national survey of school facility conditions shows that schools with higher shares of low-income students have somewhat higher rates of physical deficiencies (Alexander and Lewis 2014). These differences suggest that disadvantaged students in California may face systematically worse school conditions.

However, the FIT assessment results show that differences in reported deficiency rates are small, and that, if anything, high-need students, on average, attend schools that are in slightly better condition (Figure 1). Thirtyseven percent of high-need students attend a school with any deficiency, compared to 39 percent of their peers. Differences across racial and ethnic groups are also relatively small. Forty percent of African American and white students attend schools with any deficiency, compared to 37 percent of Latino students and 34 percent of Asian students. Rates of students attending schools with any extreme deficiency are also similar across racial and ethnic groups, ranging from 13 percent (Asian students) to 17 percent (African American students).



FIGURE 1 Facility conditions do not vary much by student demographics

These small differences may be attributable to the fact that county offices of education must review the FIT assessments of schools in the bottom 10 percent of academic performance, and evidence suggests that districts give greater priority to repairs at those schools (ACLU 2013). Moreover, many disadvantaged students attend

SOURCE: FIT assessment results, 2018–19 SARC report cards; authors' calculations. NOTE: Each column reports the share deficient or extremely deficient for the average student in a particular demographic group.

school in urban areas with relatively high local tax bases that have also seen large investments in recent years; for example, Los Angeles Unified School District has spent over \$25 billion in the last two decades constructing new schools and modernizing existing schools (Lafortune and Schönholzer 2020).

These findings do not necessarily mean students of different racial and socioeconomic backgrounds have access to school facilities of equal quality. The FIT assessments only capture whether a building has any visually apparent deficiencies. It does not discern whether facilities are adequate in other ways, such as whether the building capacity is sufficient for the number of enrolled students.

Deficient Interiors, Restrooms, and Electrical Infrastructure Are Common

School interiors, which include floors, walls, and ceilings, have the highest rates of deficiency (25%). Common problems include hazards from tears and holes in the walls, missing floor or ceiling tiles, water damage, and water stains. Electrical components and school restrooms/water fountains also have deficiency rates above 10 percent. Conversely, few students go to schools that report deficiencies in systems, such as gas pipes, sewage, and heating and cooling (HVAC). Deficiencies in some of these systems—such as HVAC, which is of particular concern now due to the pandemic—may be difficult to assess visually. Deficiencies may also not be apparent during the assessment (e.g., a broken HVAC system may not be apparent on a temperate day). Thus the FIT is likely to understate the true rate of any such deficiencies.

Similarly, FIT assessments rarely cite cleanliness as an issue; fewer than 2.5 percent of students attend schools rated as deficient in cleanliness. However, meeting FIT standards for cleanliness does not necessarily mean that students have an adequate learning environment, or that schools will be able to meet the rigorous safety and health guidelines for reopening amid the coronavirus pandemic. First, the "good repair" standards for overall cleanliness are low (e.g., the standards indicate that facilities should appear to be cleaned regularly). In fact, a state survey shows that about a quarter of middle and high school students do not think their schools are clean and tidy (California Department of Education 2020a). Second, it is relatively easy and inexpensive to maintain basic cleanliness, while other deficiencies might require major renovations to address. Third, schools may conduct the FIT inspection after summer cleaning and before students arrive, although we lack information on when the FIT inspections occurred. Anecdotally, some schools do a "pre-FIT" inspection and cleaning, which may mean what is reported in FIT is better than the typical condition during the school year.

FIGURE 2

One-quarter of students attend schools with deficient interiors



SOURCE: FIT assessment results, 2018–19 SARC report cards; authors' calculations. NOTE: Data are weighted by student enrollment. Unweighted results are reported in Technical Appendix Figure B2 and are very similar.

Poor Facilities Can Cause School Closures

Between the 2015–16 and 2018–19 fiscal years, 108 schools in 60 districts were closed at least once due to poor facility conditions, including gas leaks, heating system failures, broken water pipes, pest infestations, and mold, asbestos, and lead contamination. The majority of these districts (41) are high-need districts, in which more than 55 percent of students are low income, English Learners, experiencing homelessness, or foster youth. The lost instructional days ranged from 1 to 116, with an average of 3.2 days per year. In 2016, one school was closed for 116 days due to mold/fungal contamination. Six districts closed multiple times during this period. There was no significant difference between urban and rural districts.⁹

Schools Have Facility Needs beyond FIT Standards

Because the FIT assessment relies on a walk-through survey, it provides a specific point-in-time view of the physical deficiencies in school buildings. FIT standards and assessments do not consider service life expectancies, replacement needs, or preventive maintenance. The standards also do not provide guidance and recommendations for high-performance building systems. For instance, FIT standards require the HVAC system be functional and unobstructed, with no additional specifications concerning air quality, energy and efficiency standards, or ventilation post-COVID. A recent national study estimates that HVAC is a particularly common problem for schools, noting that 41 percent of districts currently need to replace the HVAC system in at least half of their schools (Government Accountability Office 2020). A case study involving 104 California classrooms with retrofitted HVAC units further found that only 15 percent of classrooms met indoor air quality and energy efficiency standards (Chan et al. 2020). The quality of HVAC systems is an especially urgent issue now due to the importance of proper ventilation amid the COVID-19 pandemic. The state's reopening guidelines require districts to replace and check air filter and filtration systems to ensure optimal air quality (California Department of Public

⁹ Unfortunately, due to data limitations we cannot conduct school-level analyses about school closures.

Health 2020). Other preexisting facility challenges—such as building capacity constraints—have also taken on a new significance in the current environment, as discussed further below.

Although most (62%) schools meet the minimum conditions specified in FIT guidelines, these limitations suggest there may be significant facility needs that go beyond the eight FIT categories. The state does not conduct a statewide needs assessment for schools, nor does it require districts to develop a facility master plan, so there is a lack of comprehensive data on facility conditions and needs. To gain a better understanding of these needs, we reviewed 52 district facility master plans (FMPs) created between 2011 and 2020. These districts are diverse in enrollment size, geographic location, and their shares of high-need students.¹⁰ Our review identified many common needs, which we summarize below. Importantly, the plans predate the onset of the COVID-19 pandemic; further below, we discuss some of the additional facility needs required to safely operate schools in the midst of the pandemic.

Construction and Modernization

Many districts have school buildings of various ages, and many schools face increasing costs for the maintenance and modernization of aging facilities. The quality of school facilities can also vary depending on the type of building materials and operating equipment used (e.g., some buildings may have less durable roofing materials or HVAC systems than other buildings).¹¹ Furthermore, a considerable backlog of deferred maintenance and the increasing use of technology in schools have led to soaring costs for these repairs. Older buildings with significant deficiencies and deferred maintenance may need to be replaced with newly constructed buildings; for many aging facilities, full replacement is more cost effective than repair and modernization (Vincent 2012).

Capacity Constraints

Prior to the pandemic, the California Department of Education's guidelines recommended that schools have 71 square feet per pupil for grades K–6, and 87 square feet for students in grades 7–8. The state also assumes an average of 25 students per classroom for elementary school and 27 students for middle school.¹² While enrollment is declining statewide, roughly 40 percent of students are in districts that have seen enrollment growth over the past five years (Warren and Lafortune 2020). Many of these districts are likely to see continued growth and will need to construct new facilities or rehabilitate existing facilities to accommodate additional enrollment. Before the pandemic, 16 percent of middle and high school students reported having overcrowded classrooms (California Department of Education 2020a).

Technology

About 70 percent of schools are over 25 years old (Lopes and Ugo 2017); these classrooms were not designed with laptops, mobile devices, or internet connections in mind. Nevertheless, before the pandemic, nearly one in five teachers nationwide often assigned technology-based homework and an additional 28 percent reported doing so sometimes (Gray and Lewis 2020). An overwhelming majority of teachers (85%), principals (96%), and administrators (96%) support the increased use of digital learning tools in their schools (Gallup 2019).

COVID-19 may accelerate this trend, despite the hasty nature of the massive transition online. Based on the state's reopening guidelines, a mix of distance learning and in-class instruction is expected throughout the 2020–21 school year (California Department of Education 2020b). To do this effectively, many schools will

¹⁰ Collected FMPs were gathered from individual districts and, though diverse, are not intended to be representative of all districts across the state. We thank Jeff Vincent for sharing these plans.

¹¹ The Office of Public School Construction provides a general guideline for the anticipated life expectancy of school facility components in the *State Deferred Maintenance Program Handbook*.

¹² The state uses this number to determine eligibility in the School Facility Program.

need to upgrade their technology infrastructure in the coming years. Some examples include installing additional projection screens, power outlets, and ceiling mounts for LCD screens, as well as improving video-conferencing capacities.

Disaster Planning

Natural hazards can endanger a school facility and its service to the community. Buildings not constructed to withstand hazards are particularly vulnerable. During the 2018–19 fiscal year, 2,829 schools in 398 districts were closed due to natural disasters and severe weather, representing a tenfold increase from 2015–16. The days of closure range from 1 to 110, with an average of 3 days. During 2017–18, one of the worst fire seasons in the state's history, more than 300 schools were closed for over one week. These experiences highlight the importance of developing an emergency facility plan to prepare, respond, and recover from future emergencies. A high-quality plan requires schools to improve structural safety (e.g., retrofitting buildings for earthquake safety) and non-structural safety (e.g., fire prevention and safety), as well as mitigate environmental impacts (e.g., air pollutants) (US Department of Education 2013).

Americans with Disabilities Act (ADA) Compliance

The Americans with Disabilities Act (1990) requires public accommodations for individuals with disabilities to access school buildings. However, some school buildings and facilities were built before 1990s, and their drop-off sites, drinking fountains, and classrooms are not ADA-compliant. Alterations to older buildings may be needed to ensure site accessibility and comply with legal requirements.

Energy Efficiency

In many school districts, energy costs are second only to salaries, exceeding the costs of supplies and books. At least a quarter of energy costs could be saved through improvements to existing buildings and better energy management, which would result in significant cost savings (National Renewable Energy Laboratory 2020). Most districts have incorporated energy performance goals into capital projects, such as updating the "building envelope" (which includes the foundation, roofs, walls, and windows) and HVAC, monitoring energy usage, managing lighting control, and installing solar panels.

COVID-19 Brings Additional Facility Needs

Schools play an important role in preventing the introduction and spread of COVID-19 into local communities. The escalating costs associated with ensuring a safe and healthy reopening—including maintaining safe physical distance, frequently cleaning and disinfecting buildings and surfaces, and reinforcing healthy hygiene practices— come at a time when the state anticipates significant revenue declines.

Adequate Space to Accommodate Physical Distancing

As noted above, the state assumes an average of 25 students per classroom for elementary school and 27 students for middle school. However, federal, state, and local health guidelines recommend a much smaller class size so that people can maintain six feet of distance from each other. For example, the Los Angeles County Office of Education suggests classes each have fewer than 16 students. Other countries have typically divided classes in halves or thirds. California does not have a statewide inventory of school buildings, but an earlier assessment done in 2005 as part of the *Williams* settlement suggests that most schools—especially those that faced

overcrowding due to capacity constraints before the pandemic—simply do not have enough building space to accommodate classes of that size.¹³

Regular Deep Cleaning and Disinfection

To reduce the risk of viral transmission, schools will need to routinely clean and disinfect surfaces, equipment, and objects that are frequently touched (e.g., doorknobs, sink handles, desks, and lab equipment). Schools will also need to clean out storage areas, which may contain long unused materials, books, and equipment, before custodians can conduct deep cleanings and disinfection. However, schools may lack sufficient custodial staff to maintain the level of cleaning required according to new state guidance. In addition to increased staff time, other costs will come from the need for more cleaning supplies and personal protective equipment (PPE). Schools with preexisting deficiencies in cleanliness may face particular challenges in meeting these more rigorous standards.

Additional Facility Improvements

Schools may need to undertake substantial construction and renovation projects to meet the health and safety requirements for reopening. For instance, schools may need to install new restroom fixtures and drinking fountains to minimize the risk of hand-to-hand transmission. They may also need to set up hand-sanitation stations to reinforce healthy hygiene practices, redesign existing structures to allow for more instructional space, and install higher-quality HVAC systems to ensure proper ventilation. Pre-pandemic cost pressures (e.g., pensions, special education, and declining enrollment) and the uncertainty over funding for future capital projects after the defeat of most bond measures in the March 2020 election will compound the financial difficulties of addressing COVID-19, particularly among those 150 districts that were already financially distressed (Warren and Lafortune 2020; Legislative Analyst's Office 2020; Sharfstein and Morphew 2020).

Policy Implications

A safe and functional school environment is essential to student learning under any circumstances.¹⁴ In the midst of the COVID-19 pandemic, well-functioning facilities and new modes of operating will be crucial for schools to safely and effectively reopen. Our analysis shows that 38 percent of students attend schools with deficient facilities, and many schools need improvements beyond basic building functionality. However, the need for K–12 facility improvements comes at a time when political support for school construction bonds is decreasing, and the state faces the worst budget deficit since the Great Recession. As state policymakers consider ways to improve school facility conditions, we recommend the following:

Collect more comprehensive data to assess facility needs. This means going beyond the FIT categories to include facility needs related to construction and modernization, student growth, disaster planning, ADA compliance, and energy efficiency. Maintaining school facilities is a continuous process, and a system for standards and inspection needs to be in place to ensure that ongoing maintenance will occur. The state should expand efforts to collect, report, and evaluate comprehensive data on school facility conditions that allow for

¹³ We thank Fred Yeager for providing the underlying data.

¹⁴ The quantitative research literature on the effects of school facility spending on student achievement is mixed, but studies generally show positive effects (see Jackson 2018 for a review of the literature). Studies that specifically link students to new and improved school buildings find significant positive effects on student achievement and attendance (Neilson and Zimmerman 2014; Lafortune and Schönholzer 2020). Specific facility components, such as air conditioning and climate control, have also been shown to be important determinants of student outcomes (see Goodman et al. 2018). Studies that rely on district-level average performance have generally found small and insignificant effects of capital expenditures over the short term, but these do not connect student performance to the specific schools that were built/improved (see Martorell, Stange, and McFarlin Jr. 2016; Ceillini, Ferreira and Rothstein 2010; Conlin and Thompson 2017). More generally, studies of school finance reforms across states—many of which were dedicated to capital expenditures—have been shown to improve student achievement (Lafortune, Rothstein, and Schanzenbach 2018).

comparisons across districts and over time. Even simple statistics like the age and square footage of school buildings are unavailable statewide.

Without a system of checks and balances that includes improved standards, assistance, and oversight, the likelihood of facilities becoming a low funding priority is high. County offices of education are well-positioned to provide guidance to counties regarding improvements that address local facility needs and constraints. In fact, implementation of the *Williams* settlement shows that additional review, site visits, and oversight from the county offices of education has led to progress among schools with the lowest academic performance (ACLU 2013).

Direct state resources where they are needed most. Existing evidence suggests that the School Facility Program's funding for modernization appears to reinforce disparities in district wealth in that wealthier and larger districts disproportionately benefit from the first-come, first-serve nature of the program (Brunner and Vincent 2018). The failed statewide bond in the March 2020 election included language to address these inequities. To ensure that funds are well targeted, future state funding should base SFP grants on districts' capacity to raise local funds and the percentage of high-need students. The state should also recognize that smaller districts may lack the capacity and expertise necessary to compete in the current system, which tends to reward districts that apply more quickly or have more resources (Legislative Analyst's Office 2015; Vincent 2018). Furthermore, collecting and analyzing data on school conditions across the state can help identify districts and schools that need the funds the most so that the state can target funds accordingly. Prioritizing needs that are more urgent (e.g., basic functionality) may also help encourage broader support among voters concerned with affordability and economic conditions.

Implement a consistent approach to funding school facilities. Because the state finances its share of school facility funding through statewide bonds, the unpredictable nature of bonds has led to dramatic ups and downs in state funding over the years (Brunner and Vincent 2018). The recent defeat of the statewide school construction bond means a significant decrease in state spending in this area, yet many schools still need to address deficiencies in their facilities. The instability in state funding also makes it difficult for districts to plan for long-term facility improvements, which was evident in our review of district facility plans. Because of budget limitations and lack of funding, districts may choose to defer maintenance, which can increase the significance and severity of deficiencies down the road. To address these issues, the state should provide more consistent facility funding to ensure basic infrastructure needs are not neglected. One option would be to provide annual grants adjusted by local wealth and earmarked for facility purposes; in return, districts would need to develop a facility plan and document actions and expenditures to improve school facilities.

Comprehensive data collection and reliable funding are difficult in any fiscal context. They present a particular challenge in the current environment, as schools face a backlog of deferred construction and modernization projects while confronting new and urgent needs for facility improvements due to the COVID-19 pandemic. Indeed, the pandemic has highlighted the dangers of neglecting longstanding facility needs. Many of the facility improvements identified in our analysis are costly, yet political support for school construction bonds has declined and the state faces a significant budget deficit. Nevertheless, improved data and funding structures are critical to accurately assessing facility conditions, identifying needs, effectively targeting scarce public resources, and ultimately ensuring that all students have access to safe and high-quality learning environments.

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ACKNOWLEDGMENTS

This report benefited from valuable feedback by Jeff Vincent, Fred Yeager, Laura Hill, Lynette Ubois, and Jacob Jackson. We are grateful to Jeff Vincent, Fred Yeager, and Shawna Shepley for providing data on district assessed values, SFP funding, and J13 school closures. We also appreciate very helpful comments from Brooks Allen and Jema Estrella; excellent editorial support from Vicki Hsieh; and production assistance from Becky Morgan.

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