Going it Alone

Can California's K-12 School Districts Adequately and Equitably Fund School Facilities?

Policy Research Working Paper

November 2015

Analysis of spending on K-12 public school facilities in California finds that, compared to industry standards, there is an ongoing, structural pattern of inadequate and inequitable spending in many school districts. This trend signals costly long-term consequences as accumulated facility needs risk becoming health and safety crises.

THE MAJORITY OF SCHOOL DISTRICTS UNDERSPEND ON FACILITIES
Almost 80% of students attend districts failing to meet minimum industry standard benchmarks for facilities maintenance and operations spending, capital renewal spending, or both.

WEALTHY DISTRICTS SPEND MORE ON FACILITIES, ESPECIALLY ON THE CAPITAL SIDE
Districts with more taxable property value (assessed value) per student raise, on average, more capital funds for facility needs than districts with less taxable property value per student.

DISTRICTS SERVING LOW-INCOME STUDENTS DISPROPORTIONATELY SPEND MORE PER STUDENT ON M&O FROM THEIR OPERATING BUDGETS TO FUND FACILITIES
Facility needs place higher budget burdens on school districts serving low income students.

A policy shift in the state-local partnership for public school facility funding that increases reliance on local funds, without addressing disparities in local ability to pay relative to local needs, will exacerbate inequalities across California and is inconsistent with the policy priorities of the new Local Control Funding Formula (LCFF).

CENTER FOR CITIES+SCHOOLS
UNIVERSITY OF CALIFORNIA BERKELEY

Jeffrey M. Vincent
Liz S. Jain

BERKELEY IURD INSTITUTE OF URBAN AND REGIONAL DEVELOPMENT

The Center for Cities + Schools in the Institute of Urban and Regional Development at the University of California, Berkeley works to create opportunity-rich places where young people can be successful in and out of school. CC+S conducts policy research, engages youth in urban planning, and cultivates collaboration between city and school leaders to strengthen all communities by harnessing the potential of urban planning to close the opportunity gap and improve education.

citiesandschools.berkeley.edu

UC Berkeley's Institute of Urban and Regional Development (IURD) conducts collaborative, interdisciplinary research and practical work that reveals the dynamics of communities, cities, and regions and informs public policy. IURD works to advance knowledge and practice in ways that make cities and regions economically robust, socially inclusive, and environmentally resourceful, now and in the future. Through collaborative, interdisciplinary research and praxis, IURD serves as a platform for students, faculty, and visiting scholars to critically investigate and help shape the processes and outcomes of dynamic growth and change of communities, cities, and regions throughout the world.

iurd.berkeley.edu

Funding support from the Center for Cities + Schools.

This report is part of a series of policy research papers by the University of California, Berkeley's Center for Cities + Schools on funding for California's public K-12 school facilities. The previous paper, "Guided by Principles: Shaping the State of California's Role in K-12 Public School Facility Funding," and others, can be found on our website: ***http://citiesandschools.berkeley.edu***.

Going it Alone

Can California's K-12 School Districts Adequately and Equitably Fund School Facilities?

Jeffrey M. Vincent[a]
Liz S. Jain[b]
University of California, Berkeley
November 2015

[a] Jeffrey M. Vincent, PhD, is deputy director of the Center for Cities + Schools in the Institute of Urban and Regional Development at the University of California-Berkeley. Contact: jvincent@berkeley.edu
[b] Liz S. Jain is a graduate student in the Goldman School of Public Policy at the University of California-Berkeley.

Executive Summary

After more than a decade of dedicated investment, state funding to assist local California school districts in the construction, modernization, and maintenance of their school facilities has come to a halt. As the Governor, the legislature, and other stakeholders debate the future of the state's K-12 school facility funding role, a big unknown exists: *Can all California school districts adequately and equitably maintain and modernize their school facilities without dedicated state funding*? The answer to this question should guide policy decisions about the state's school facility funding role.

FINDINGS. Analysis of facilities spending trends by California school districts shows that, compared to industry standards, there is an ongoing, structural pattern of inadequate and inequitable facility spending in many California public K-12 schools. This trend signals costly long-term consequences, as accumulated facility needs risk becoming a health and safety crisis.

THE MAJORITY OF SCHOOL DISTRICTS UNDERSPEND ON FACILITIES

The majority of school districts in California have not been meeting minimum annual facility expenditure benchmarks, even—in many cases—with state funding. Between 2008 and 2012, substantially more than half of districts (at least 57%) did not meet industry benchmarks for spending on capital renewals and more than 60% failed to meet the benchmark for basic maintenance and operations. In many cases, the same school districts are falling behind on both measures.

WEALTHY DISTRICTS SPEND MORE ON FACILITIES, ESPECIALLY ON THE CAPITAL SIDE

Districts with more taxable property value (as measured by assessed value, or AV) per student have, on average, raised more capital funds to pay for facility needs than districts with less taxable property value per student. In particular, districts with high AV per student spend more on the capital spending side.

DISTRICTS SERVING LOW-INCOME STUDENTS DISPROPORTIONATELY SPEND MORE PER STUDENT ON M&O FROM THEIR OPERATING BUDGETS TO FUND FACILITIES

School facility needs place higher budget burdens on school districts serving low income students. School districts with the most low income students (receiving Free and Reduced Price Meals, or FRPM) spent *less on capital outlay* per student and *more on maintenance and operations* per student than districts serving higher income students. Thus, districts with more low income students disproportionately draw more from general operating funds for M&O than districts serving higher income students. This means school building operations cost more in these poorer districts, leaving fewer dollars for education programs.

POLICY RECOMMENDATIONS. Given the ongoing underinvestment in school facilities that is occurring and the tremendous differences in local taxable property values per student across the state, California must bolster—not recede from—its role in the state-local funding partnership for K-12 school facilities. A policy shift in the state-local partnership for public school facility funding that increases reliance on local funds, without addressing disparities in local ability to pay relative to local needs, will exacerbate inequalities in facility conditions and facility spending across California and is inconsistent with the equity priorities of the new Local Control Funding Formula (LCFF). To reverse the pattern of inadequate and inequitable investment in K-12 public school facilities, four strategic policy reforms should be cornerstones to the approach:

- **Establish stable, dedicated state funds for K-12 school facilities.** Our findings suggests that few, if any, California school districts can go it alone and adequately fund their facilities across the spectrum from routine maintenance to major capital improvements like building replacement or new construction. Moving forward, the state's K-12 school facilities funding approach should ensure that all school districts can reasonably meet their facilities needs across both their operating and the capital budgets through an appropriate combination of local and state resources.
- **Distribute K-12 school facility funds equitably, adjusting for local wealth.** To promote adequacy and equity in spending on K-12 school facilities across all districts, the State's role, *at minimum*, should be to equalize the ability of all local districts to raise adequate capital dollars for their school facilities. Moving forward, California's formula(s) for providing school facility funds to local school districts should be weighted in favor of districts with limited local tax base and high percentages of low income students.
- **Improve standards for school facility planning and budgeting.** Following the LCFF's local control and accountability approach, school districts should have board-approved district-wide facility master plans that assess facility conditions and identify facility spending priorities to best support the education and health of their students and protect the facility assets.
- **Establish a California School Facility Database to guide spending.** The lack of a basic statewide inventory of all K-12 public school facilities, conditions assessments of those facilities, and full information on local school district facility spending is a major obstacle to fully understanding—and addressing—school facility needs in California. To uphold public accountability and realize adequate and equitable spending in all schools, consistent information sharing of public school facility data is essential.

Building a new school facilities funding program around these cornerstone reforms will move California to a more coherent system of school facility finance that better promotes adequacy, equity, public accountability and affordability in the long run.

I. Introduction: California's Uncertain K-12 School Facilities Funding

Every day, California's six million public school children sit in school facilities that shape their academic experience. The future of these learning environments—whether there is adequate and equitable funding to ensure they are safe, healthy and educationally appropriate—is uncertain. After more than a decade of dedicated investment, state funding to assist local California school districts in the construction, modernization, and maintenance of their school facilities has come to a halt.

Since 1998, the State of California has issued $35 billion in statewide general obligation bonds to fund the School Facility Program (SFP), providing grants to assist local school districts in financing the construction and modernization of public K-12 school facilities across the state.[1] Strong enrollment growth, extreme overcrowding, and aging buildings drove the state investment. These state dollars buttressed a strong partnership with local governments, leveraging another $100 billion in locally-sourced investment between 1998 and 2014—more than $90 billion in local school bonds and about $10 billion in local developer fees. Together, these state and local funds have built hundreds of needed new schools and upgraded thousands more across California.

Currently, however, the State has apportioned nearly all the $35 billion authorized since 1998, and there has not been a statewide school construction bond measure on the ballot since 2006. With no other state funds identified for the SFP and virtually no federal funds available for school facilities,[2] local school districts in California must now cover essentially all costs of construction, renovation and maintenance of their schools alone. While the Governor, members of the legislature and other stakeholders have identified concerns about the structure and viability of the SFP, they have yet to formulate a consensus or comprehensive proposal on the state role and responsibilities for funding school district facilities moving forward.[3] A key concern for the Brown Administration is the state's overall debt load, of which debt from previous statewide school bonds is more than $1.5 billion per year.[4] The Governor has suggested that the state reduce its school facilities funding role and locals increase theirs.

Can California school districts adequately and equitably maintain and modernize their school facilities without dedicated state funding?

At the center of this debate, there is a big unknown: *Can all California school districts adequately and equitably maintain and modernize their school facilities without dedicated state funding*? The answer to this question should guide decisions about the future of the state's school facility funding role.

Answering this question matters because underfunded school buildings have negative consequences on educational achievement and health, creating risk and cost for the state. Underfunded school buildings will, over time, undermine teacher performance and student achievement, cause or accentuate health problems among children, and have a shortened useful building life.[5] Student morale and effort are weakened by crowded and uncomfortable conditions in schools.[6] In particular, inadequate lighting and climate control, chronic noise, poor indoor air quality, and too little physical space all work against student concentration. The same factors that affect students also negatively affect teacher morale and effectiveness, and reduce teacher retention.[7] As these poor conditions cause or exacerbate health problems in children and adults, they lead to increased student and teacher absenteeism, which is linked to lower student achievement.[8] Additionally, building systems and components that are not regularly cleaned and maintained end up having a shorter useful life and need to be replaced sooner than expected—a reality that creates added expenditures down the road on district budgets. Most importantly—as many studies have found—low income and minority students are more likely to attend schools with poor physical conditions, which work to exacerbate educational inequities.[9]

Underspending on school facilities comes with great cost: student health and safety are risked, building functionality declines, useable building life is reduced, and educational program delivery is compromised.

When poor facility conditions disproportionately affect students and educators in low-wealth communities, they undermine the educational equity priorities that are fundamental in California's new educational finance system, the Local Control Funding Formula (LCFF). In enacting the LCFF, the Governor and Legislature established the principle that school districts with higher need students should get more state funding. The State of California has a fundamental interest in reducing risks and costs for children and taxpayers associated with underspending on school facilities, as well as a constitutional duty to ensure equal educational opportunity for all children.

When poor facility conditions disproportionately affect students and educators in low-wealth communities, it undermines California's educational equity goals in the Local Control Funding Formula (LCFF).

In our previous paper, ***Guided by Principles: Shaping the State of California's Role in K-12 Public School Facility Funding***, we identified core principles to guide policy decisions about the State of California's school facility funding role (see box).[10] In this paper, we build upon our previous work and conduct in-depth data analysis of facility spending by California school districts. The purpose of our paper is threefold:

1. First, to estimate the level of spending needed by California school districts to sustain the existing inventory of school facilities. This amount serves as a *minimum standard* to gauge upkeep of existing schools and allows us to contextualize and further assess K-12 facilities spending levels across the state. Applying this standard assumes there is zero backlog of deferred maintenance.

2. Second, to evaluate how well the current state-local partnership for funding facilities operations, maintenance and capital improvements meets the standards and achieves adequate and equitable spending levels to ensure healthy, safe and educationally appropriate facilities to all students.

3. Third, based on the findings, to identify important state policy reforms needed to promote adequate and equitable funding in California's state-local partnership for K-12 school facilities.

Our analysis utilizes school district level data on facility maintenance and operations expenditures, locally-sourced capital outlay, state funds for capital outlay, assessed valuation, and district demographic characteristics from a variety of sources, including the National Center for Education Statistics and the California Department of Education. The school districts in our dataset enroll 95% of California's public school students. Unless otherwise noted, all dollar figures are adjusted to 2014. See the Appendix for a detailed description of the data and methods used.

To assess the adequacy of investment in California's K-12 school facilities, we analyze recent years spending on facilities by California school districts against minimum annual facility expenditure standards. Using the standards, we calculate minimum annual expenditure benchmarks for each K-12 school district in the state, in two categories: facilities *maintenance and operations* (M&O) and *capital renewals* (both of these terms are defined in the next section). The benchmarks enable us to assess responsible stewardship and upkeep of these public facilities; they represent levels of spending that protect against environmental health hazards for occupants and reductions in the functionality of the facilities. These minimum standards do not address the need for new construction for crowding or enrollment growth, fully address accumulation of deferred maintenance, remove seismic and other deficiencies, or pay for major facility alterations needed for educational programming. Thus, fully meeting school facility needs would require even *greater* investment than these minimums.

Benchmarks enable us to assess responsible stewardship and upkeep of these public facilities; levels of spending that protect against environmental health hazards for occupants and do not reduce the functionality of the facilities.

To assess the equitable distribution of K-12 school facilities funding, we analyze facility spending in relation to two measures of local wealth—assessed valuation of local taxable property and the share of low income students in each school district. This analysis enables us to understand differences in local ability to raise facility funds and local student needs, and helps to understand reasons for disparities in school facility conditions that exist across the state.

Guided by Principles: *Shaping the State of California's Role in K-12 Public School Facility Funding*

The State of California's role in K-12 school facilities policy and funding should be based on shared principles that are research-informed. We propose five principles to guide the Governor and the State Legislature in debating the state's role. The principles aim to uphold the state responsibility for public education and state interests in ensuring good value in public spending.

Principle 1: Equity. The state's role should ensure equity in K-12 public school facility conditions and state facility funding allocations should be equitably distributed, guided by student, staff, and school needs.

Principle 2: Local District Effort and Accountability. State K-12 facility allocations should incentivize responsible local planning and investment for K-12 facilities.

Principle 3: Fiscal Stability and Predictability. State K-12 facility allocations should be stable in nature to promote sound local planning and sound investments that prioritizes health, safety, and educational suitability of learning environments.

Principle 4: Facilities Adequacy. State policies and funding allocation on K-12 facilities should strive to achieve adequate levels of combined state and local investment that best promote health, safety, and educational suitability.

Principle 5: Program Simplicity. State K-12 facility allocations should be transparent and easily understood and accessed.

Vincent, J.M. and L.S. Gross. (2015). Guided by Principles: Shaping the State of California's Role in K-12 Public School Facility Funding. Berkeley, CA: Center for Cities+Schools, Institute of Urban and Regional Development, University of California-Berkeley. http://citiesandschools.berkeley.edu/uploads/2015_Guided_by_Princples.pdf.

Based on our analysis, we find that there is an ongoing, structural pattern of underinvestment in California's K-12 public school facilities. This underinvestment is not experienced to the same degree by all students. Specifically we find that:

- The majority of school districts in California have not been meeting minimum annual facility expenditure benchmarks, even—in many cases—with state funding.
- Districts with more taxable property value (as measured by assessed value) per student have, on average, raised more capital funds to pay for facility needs than districts with less taxable property value per student; and measuring district wealth in terms of family income yields similar findings.
- Facility maintenance and operations is a higher budget burden in school districts serving low income students. Many of these districts are disproportionately drawing more from their general operating budgets to pay for M&O than districts serving higher income students. This fact means school buildings and their operations cost more in these poorer districts, leaving fewer dollars for education programs.

These findings suggest that many districts—particularly those serving high-need students—risk grossly underfunded facilities budgets, deteriorating schools, and declining educational outcomes if they are left on their own, without state support for capital needs.

We find that there is an ongoing, structural pattern of underinvestment in California's K-12 public school facilities.

Looking at the basic categories of school facility expenditures and their spending standards, we estimate minimum spending needed each year to achieve a steady state of conditions in K-12 school buildings across California. We then evaluate state and local spending on K-12 facilities against these minimum standards. From our findings, we then point to key policy reforms needed to achieve adequate and equitable school facility funding for California's K-12 public school children.

II. Calculating Minimum Annual School Facility Spending Needs

K-12 public school facilities—like all buildings—need regular annual spending to ensure occupant health and safety and to preserve the buildings' function. For schools, this means spending on facilities such that they provide students with safe and healthy learning environments that support the education program. Each year, school districts need to spend on daily custodial, basic and routine maintenance, utilities, and security of their buildings. Regular repairs are also required to respond to the natural aging of the existing buildings and the wear and tear from daily use. Capital investment is needed when building components, such as roofs or HVAC systems need replacing and when a district must build a new school, either to accommodate growing enrollment or to replace aged-out, unsuitable buildings. Under-spending on building upkeep is *cumulative*—today's unpatched roof leak becomes tomorrow's mold problem.

School districts typically spend money on their facilities from two separate budgets: the general district operating budget and the capital budget. Each has different funding streams. General operating funds largely come from local property tax and state transfers such as those through the LCFF. Capital budgets are largely funded by a combination of local general obligation bonds, statewide general obligation bonds, and locally imposed development fees. Bond funds accrue interest, which must be paid on top of the principal borrowed amount.

School district capital and operating budgets are separate, but they affect each other. Well-deployed capital funds can finance improvements that help reduce facility operating expenses. Additionally, a school with well-maintained facilities, for example, may be able to extend the life of their assets and spend less money on capital renewals. Regrettably, the converse is also true: some districts must use operating funds on facility repairs to compensate for capital shortfalls.

In Table 1, we identify and define the main categories of school facility spending by local school districts and identify whether spending in the category typically comes from the operating budget or the capital budget. The first two categories, *Facilities Operations* and *Routine Maintenance* (together commonly known as Maintenance and Operations, or "M&O") typically come from a district's general operating budget (which also funds teachers, educational materials, and district staff). The remaining four categories, *Capital Renewals*, *Major Modernizations*, *Obsolete Building Replacement*, and *New Construction*, come from the capital budget. Our study looks at district spending in the first three categories: *Facilities Operations*, *Routine Maintenance*, and *Capital Renewals*.

For the categories of *Facilities Operations*, *Routine Maintenance*, and *Capital Renewals* there are commonly used standards for gauging whether or not actual spending is adequate, calculated as a percentage of the buildings' current replacement value (CRV),

which are also shown in Table 1. These adequacy standards are utilized by many national organizations and in previous studies, including the National Research Council, the Council of Great City Schools, the 21st Century School Fund, Bello and Loftness (2010), and Arsen and Davis (2008).[11] From these standards, spending benchmarks can be calculated. They are most valid as a budget guide for a large inventory of buildings with useful lives of 25 years or more, and are a reasonable estimate for the stocks of school buildings examined here.

Table 1: Major Categories of K-12 School Facilities Annual Expenditure Needs

General Category	Specific Facility Expenditure Category	Best Practice Annual Minimum Estimated Investment
Funded with the general operating budget		
M&O	1. Facility Operations[a]	1% of CRV[g]
M&O	2. Routine Maintenance[b]	1.5-2% of CRV
Funded with the capital budget		
Modernization	3. Capital Renewal[c]	1.5-2% of CRV
Modernization	4. Major Modernization[d]	Depends on building condition
New Construction	5. Obsolete Building Replacement[e]	Depends on building condition
New Construction	6. New Construction for Growth[f]	Depends on enrollment growth

[a] **Facility Operations:** The services required to keep a facility clean, sanitary, and tidy, so that its occupants are comfortable, healthy and productive. Operations include utilities such as fuel, electricity, water and sewer; support services to assist occupants; security; and custodial services.

[b] **Routine Maintenance:** Routine recurring work (preventive and emergent) required to ensure expected life and functions of a facility. Work includes scheduled inspections, record keeping, equipment servicing, replacement of lamps and filters, replacement of failed equipment components such as motors, pumps and switches, responding to calls for emergency repairs, patching holes, and repairing furniture and fixtures.

[c] **Capital Renewal:** Major repair, alteration, and replacement of building systems, equipment, and components that will sustain or extend the useful life of the entire facility campus (school). Work includes roadway and drainage improvements, playing field replacement, roofs, HVAC, windows, doors, structural repairs, building refurbishments, minor additions, modernization projects, and replacement or provision of long life assets to a facility campus such as portable classrooms and furniture, fixture and equipment.

[d] **Major Modernization:** Major alteration of entire building(s). Projects typically involve design changes and/or educational suitability alterations of building(s).

[e] **Obsolete Building Replacement:** Complete or partial building replacement based on determination that it is more cost effective to fully replace building(s) rather than do major modernization.

[f] **New Construction for Growth:** Additional capacity needed to keep up with growth in enrollment.

[g] **Current Replacement Value (CRV):** The total value of the building asset, as estimated by the cost to rebuild the facility in today's construction economy.

Applying the spending standards to California's public K-12 facilities, we calculate the following:

- Each year, California's school districts should be spending, as an operating expense, at minimum an estimated $5.2 to $6.2 billion (2.5%-3% of CRV, 2014$) in total on *facility operations* and *routine maintenance* (i.e., M&O), or between $876 and $1,051 per student on average.

- Each year, California's school districts should also be spending, as a capital expense, at minimum an estimated $3.1-$4.1 billion (1.5%-2% of CRV, 2014$) in total on *capital renewals*, or between $525 and $700 per student on average.

Meeting both of these benchmarks (3% of CRV for M&O and 2% of CRV for capital renewal) will keep school buildings clean, safe and functional, minimize lifecycle costs, and ensure facilities do not deteriorate prematurely *if, and only if, there is zero deferred maintenance*. These minimum standards of annual operating and capital expenditures will simply keep existing school facilities in a steady state of repair.

III. Findings on the Adequacy and Equity of California's K-12 School Facility Spending

We now present our findings on the adequacy and equity of California's state-local partnership for funding school facilities in meeting the two expenditure benchmarks for all school districts. Overall, we find wide variation among districts in in their facilities spending, with about half of districts facing gaps between actual spending and minimum spending benchmarks. We first assess which districts are and are not meeting the benchmarks, and then look at those patterns in relation to local wealth.

Less Than Half of Districts Met the M&O Spending Benchmark

Looking at M&O spending for the years 2008-2012, California school districts collectively spent $5.7 billion per year. However, more than half (62%) of districts did not meet the 3% of CRV benchmark for annual M&O spending, as shown in Table 2. Districts meeting the benchmark averaged spending $1,571 per student per year, while those not meeting the benchmark averaged spending $822 per student per year. We estimate it would take at least an additional $775 million per year in operating funds to meet the M&O standard in districts falling short.

Table 2: Characteristics of School Districts Spending Above and Below the 3% of CRV Annual M&O Spending Benchmark, 2008-2012 (2014$)

Districts with Avg Annual M&O Spending:	Number of School Districts	Total Enrollment, 2014	Avg Annual M&O $ per Student	Avg AV per Student	Avg FRPM
ABOVE 3% of CRV	332 (38%)	1,803,753	$1,571	$3,032,912	59%
BELOW 3% of CRV	547 (62%)	4,106,309	$822	$1,030,594	54%

Interestingly, we find that the ability to raise local capital outlay dollars, as seen in assessed values (AV), is dramatically different between districts above and below the M&O benchmark. Districts that did not meet the M&O benchmark have, on average, only one-third the AV per student as districts that did meet the benchmark. We explore possible explanations for this relationship later in the paper.

We also see that districts meeting the M&O benchmark are more likely to be serving somewhat greater shares of low income students (students who receive free and reduced priced meals, FRPM). This relationship between student poverty and spending on basic maintenance and operations is somewhat counter-intuitive and will be examined later in the paper.

Less Than Half of Districts Met the Capital Renewal Benchmark

For the years 2008 through 2012, California school districts collectively spent just over $6 billion per year in capital outlay from local sources. However, about half of these dollars funded costs associated with new school construction, not renovations.[12] Even with this new construction spending being counted, we find that at least 57% of school districts could not have met the 2% capital renewal benchmark for minimum spending in 2008-2012 from local sources *even if* all of their capital expenditures were for capital renewals and no part of them had been for new construction or other capital projects. These districts enroll almost half (2.8 million) of California's K-12 students.

Dividing districts into two groups, the first being the 57% whose total capital expense from local sources was less than 2% of CRV, and the second being the districts whose total capital expenses from local sources exceeded that amount, we see their distinctive characteristics in Table 3. Most notably, the 57% of districts not meeting the 2% of CRV capital spending benchmark spent far less per student in locally-sourced funds than districts meeting the benchmark—$231 per student per year of locally-sourced funds compared to $1,998 per student per year in locally-sourced funds.

Table 3: Characteristics of School Districts Spending Above and Below the 2% of CRV Annual Capital Renewal Benchmark, 2008-2012 (2014$)

Districts with Avg Annual Capital Spending:	Number of School Districts	Total Enrollment, 2014	Avg Annual Local Capital $ per Student	Avg AV per Student	Avg FRPM	Avg Annual State Capital $ per Student
ABOVE 2% of CRV	382 (43%)	3,106,402	$1,998	$2,610,402	55%	$467
BELOW 2% of CRV	497 (57%)	2,803,660	$231	$1,153,900	57%	$295

As seen in relation to patterns of M&O spending, a dramatic difference between these two groups of districts is their assessed value (AV), which sets the amount of local capital funds can raise. Districts whose total capital expenses from local sources exceeded 2% of CRV, have on average, more than twice as much AV per student as districts that did not meet the spending benchmark.

Another notable difference between these two groups of school districts is the capital funding received from the state. As with the local spending, state funds were not evenly distributed across districts. Districts whose total capital expenses from local sources exceeded 2% of CRV received more state facility funds per student each year, on average, than the districts that did not meet the 2% benchmark. As Table 3 shows,

districts spending local funds in excess of 2% of CRV received an average of $467 per student each year in state capital funds, whereas districts not meeting the benchmark report received $295 per student each year on average. For districts not meeting the 2% benchmark, state facility funds made up a much larger share of their total capital outlay (56%, compared to just 19% in high spending districts). This finding points to an equity-promoting aspect of California's SFP. However, it also shows that these districts would have been dramatically worse off without state facility funding.

As the findings above show, even with the limitations in our data, it is clear that a very substantial proportion of California school districts are failing to meet the industry standard benchmark on capital renewal spending. These findings draw us to reasonably conclude that a substantial number of districts, well beyond the 57% mentioned above, could not have met the 2% capital renewal benchmark from local funds without making substantial reductions to their new construction and other capital programs. Because this benchmark is *only* for maintaining the current state of repair, the true need for additional capital spending is much larger.

Nearly 40% of District Fall Short on Both Spending Benchmarks; These Districts Have Much Lower Assessed Value

Nearly 40% (335) of California school districts did not, on average, meet *either* annual facility spending benchmark, as shown in Table 4. In other words, the majority of districts short on one measure are also short on the other. More than one-third of California public school students (2,280,042) attend these schools.

Table 4: Characteristics of School Districts Failing to Meet Either Spending Benchmark, 2008-2012 (2014$)

	Number of School Districts	Total Enrollment, 2014	Avg Annual M&O $ per Student	Avg Annual Local Capital Outlay $ per Student[a]	Avg AV per Student	Avg FRPM	Avg Annual State Capital $
Districts Meeting at Least One of the Benchmarks	544 (62%)	3,630,020	$1,287	$1,459	$2,346,441	57%	$428
Districts Failing to Meet Both Benchmarks	335 (38%)	2,280,042	$810	$251	$878,202	55%	$ 276

[a] Includes capital renewal plus new construction and other capital spending

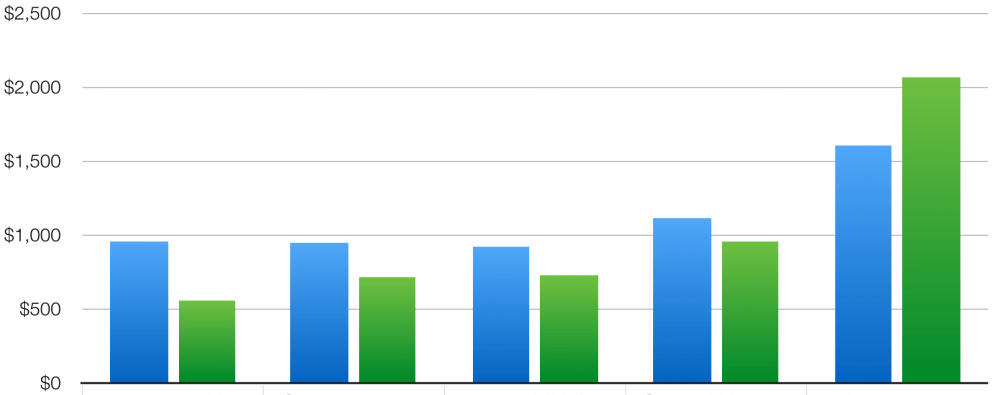
Yet again, the differences between the districts that did not meet either benchmark and all other districts are stark with regard to the local tax base. The districts not meeting either spending benchmark have, on average, only about one-third (37%) the assessed value per student of all other districts.

Districts with High Assessed Value Spent More on School Facilities

Next, we look more closely at the local wealth and school facility spending. As our findings above show, there are substantial differences among school districts in local *property wealth*, but less so in the *family income* of students between districts meeting or not meeting the facility spending benchmarks. To investigate in more detail, we divide school districts into quintiles by two measures of local wealth: 1) local assessed value (AV) per student and 2) family income of students (percentage of students in the district qualifying for free or reduced priced meals (FRPM)). Both factors appear to be important predictors of facilities spending (see box).

Taxable property wealth in the district is strongly related to overall facility spending, both in capital outlay and in M&O expenditures. Dividing all school districts into quintiles of local assessed value, from low to high, we find a distinct relationship with M&O spending and capital outlay. The districts with the highest AV outspent all others—nearly 4 times more per student on capital outlay and 1.5 times more on M&O than districts with the lowest AV, as shown in Figure 1.

Figure 1: Average Annual School District Expenditures on Capital Outlay and M&O by Assessed Value Quintiles, 2008-2012 (2014$)



	Lowest AV (less than $435,000)	Second Lowest ($435,000 to $699,000)	In the Middle ($699,000 to $1,084,000)	Second Highest ($1,084,000 to $1,857,000)	Highest AV (More than $1,857,000)
Average Annual Maintenance & Operations per Student	$955	$946	$916	$1,112	$1,598
Average Annual Local Capital Outlay per Student	$556	$706	$718	$952	$2,067

In addition to the difference in overall levels of M&O and capital spending across the quintiles, the mix of how the districts spent in these categories was different in high AV districts than in low AV districts. In districts with the highest levels of AV per student, M&O accounted for 44% of local facilities spending, on average. Where AV per student was the lowest, M&O spending accounted for 63% of local facilities spending, on average. In other words, high AV districts spent more on everything facilities-related, but they ramped up capital spending the most.

Two Measures of Local Wealth: Assessed Value and Student Poverty

We examine local school facility spending using two different measures of local economic condition—assessed value (AV) of property per student and share of students on free/reduced priced meals (FRPM). AV reflects *property taxbase wealth*, which determines a district's ability to raise capital dollars for facilities through local general obligation bonds. The taxable property may belong to families with children enrolled in the school district, by residents without children in the schools, or by commercial and industrial owners. FRPM, on the other hand, measures the share of students enrolled in the district who are in poverty. FRPM is a predictor of educational needs within a district and key factor used by the State of California in the Local Control Funding Formula.

Thus, while many high AV districts also have low shares of students receiving free and reduced meals, this connection is far from universal. The table below shows the percentage of districts that fall into each quintile of FRPM and AV. (Cells with a relatively larger number of districts are more darkly shaded.) Looking at the farthest right hand column, 21% of the districts in the quintile with the greatest share of students on FRPM are also in one of the two highest quintiles for AV. Districts in this category tend to be small rural districts such as Los Nietos, Bellevue Union Elementary, Taft City, Centinela Valley Union High, and El Monte Union High.

Number of Districts in Each Grouping

		Low Student Poverty				High Student Poverty
		1	2	3	4	5
Low AV	1	6	16	30	46	78
	2	20	30	41	44	41
	3	28	51	38	41	18
	4	47	49	35	25	20
High AV	5	75	30	32	20	18

= 21% of high-poverty districts

For more information on the benefits and limitations of FRPM as a measure of student poverty in California, see Danielson, C. (2015). "Low-Income Students and School Meal Programs in California." San Francisco: Public Policy Institute of California.

School Facility Needs Place Higher Budget Burdens on Districts Serving More Low Income Students

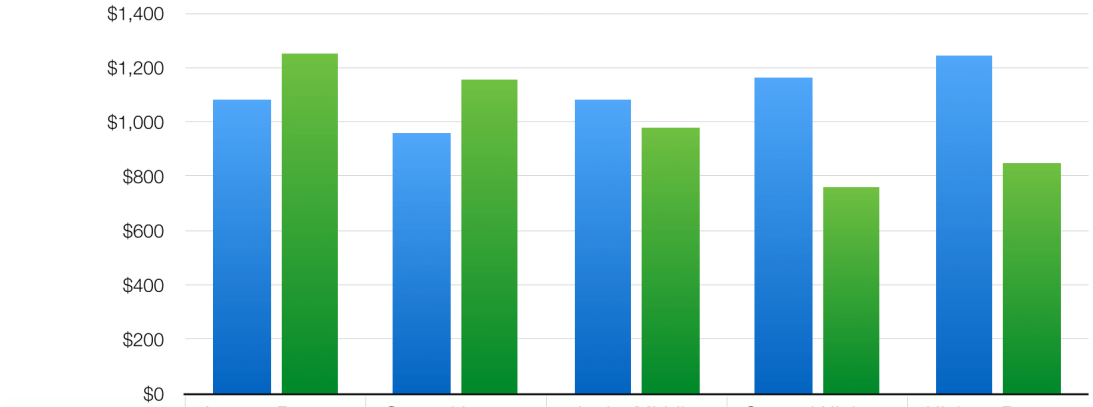
To look at facility spending in relation to the economic condition of students, we divide all school districts into quintiles based on the percentage of their enrollment qualifying for FRPM. We find that how districts spend on facilities varies significantly with FRPM.

School districts with the most low income students (where more than 81.3% of students qualify for FRPM) spent *less on capital outlay* per student and *more on M&O* per student than districts serving higher income students, as shown in Figure 2.

Communities and school districts serving low income students are more often underinvesting on the capital budget side, and then having to over-compensate out of their district operating budget. This takes dollars away from academic programs serving low income students.

To understand the implications of this pattern, remember that inadequate capital renewal spending leads to expensive critical and emergency repairs. Schools that operate with obsolete or worn out systems, components, and equipment require more attention to maintenance and repair.[13] Communities and school districts serving low income students are more often under spending on capital needs, then over-compensating with higher M&O spending out of their operating budget. This means building operations cost more in these poorer districts, leaving fewer dollars for education programs.

Figure 2: Average Annual School District Expenditures on M&O and Capital Outlay by Family Income Quintiles, 2008-2012 (2014$)



	Lowest Poverty (0-31% FRPM)	Second Lowest (31-51% FRPM)	In the Middle (51-66% FRPM)	Second Highest (66-81% FRPM)	Highest Poverty (81-100% FRPM)
Average Annual Maintenance & Operations per Student	$1,082	$959	$1,078	$1,161	$1,246
Average Annual Local Capital Outlay per Student	$1,251	$1,153	$980	$761	$848

IV. Policy Reforms to Increase Adequacy and Equity in California's State-Local Partnership for K-12 School Facilities

As policy leaders in California debate the future of the state's role in funding K-12 school facilities, our findings of inadequate and inequitable school facility spending trends across the state should raise flags for educators, parents, and state lawmakers. About 80% of California's students are attending schools that are failing to meet minimum industry standard benchmarks for maintenance and operations spending, capital renewal spending, or both. This trend signals costly long-term consequences for the state as accumulated facility needs risk become a health and safety crisis, buildings deteriorate, and student achievement degrades. A policy shift in the state-local partnership for public school facility funding that increases reliance on local funds, without addressing disparities in local ability to pay relative to local needs, will exacerbate inequalities in facility spending across California and is inconsistent with the objectives of the new Local Control Funding Formula (LCFF).

A policy shift in the state-local partnership for public school facility funding that increases reliance on local funds, without addressing disparities in local ability to pay relative to local needs, will exacerbate inequalities in facility spending across California and is inconsistent with the objectives of the new Local Control Funding Formula (LCFF).

Given the ongoing underinvestment in school facilities that is occurring and the tremendous differences in local taxable property values per student across the state, California must bolster—not recede from—its role in the state-local funding partnership for K-12 school facilities. The task for state lawmakers, then, is to devise an approach that balances concerns about the wall of debt with concerns about the growing spread of deterioration in K-12 school facilities.

To reverse the pattern of inadequate and inequitable investment in K-12 public school facilities, we recommend four strategic policy reforms that should be cornerstones to the approach:

Establish stable, dedicated state funds for K-12 school facilities

The widespread problem of under spending on K-12 school facilities identified in our study suggests that few California school districts can go it alone and adequately fund their facilities across the spectrum from routine M&O to major capital investments like building replacement or new construction. Particularly disquieting is the apparent tendency of many districts with low capital outlays to

spend more per student out of their general operating budgets on facilities maintenance (which, we presume, is likely going toward needs like emergency repairs in addition to more routine maintenance). Moving forward, the state should ensure that all school districts can reasonably meet both maintenance and capital investment needs through an appropriate combination of local resources combined with stable and predictable state funding.

State funds for K-12 facilities may come from statewide general obligation bonds and/or other sources. California is one of the few states that rely almost solely on statewide general obligation bonds to fund capital needs in school facilities. Examples of dedicated school facilities revenue sources in other states include: a 1% sales tax in Massachusetts and Iowa, a state-wide property tax in South Carolina, oil and gas revenues in New Mexico and Wyoming, and general fund proceeds in other states, including Colorado, New York and Washington.[14]

How much money the state should strive for each year is up for lawmakers to debate. But, in this paper, we have shown how the current replacement value (CRV) of buildings can be used to estimate the amount of total spending needed across the state. We estimate it would take at least $1.4 billion (2014$) of additional funds per year to bring all districts up to the spending benchmark in both M&O and capital renewals.[15] This estimate is based on conservative assumptions about square footage per student, costs per square foot and the share of capital expenditures that must go to new construction, and hence this estimate should be taken as an absolute minimum. Moreover, efforts to go beyond a basic standard of repair—to fully modernize, expand, and/or build new facilities—will require significant additional funds.

Knowing this bare minimum estimate, state lawmakers can work towards an amount that best leverages locally-sourced funds toward adequacy in all aspects of facility spending each year. Reaffirming the state role in K-12 facilities will likely increase voter support for local school construction bonds through the promise of state matching funds, mitigate uncertainty for local districts as they plan and budget for their facility needs, and keep district operating dollars appropriately focused on teaching and learning rather than emergency repairs.

Distribute K-12 school facility funds equitably by adjusting for local wealth

To promote adequacy and equity in spending on K-12 school facilities across all districts, the State's role, *at minimum*, should be to equalize the ability of local districts to raise sufficient capital dollars for their school facilities. Over the past few decades, local failures to adequately invest in facilities have been exacerbated by a state facility program that provided funding primarily to

districts that can already raise local capital revenue and did little to remedy local wealth disparities. Moving forward, California should utilize formula(s) for school facility funds that are weighted in favor of districts with limited local tax base and high percentages of low income students or local households. At least 23 states adjust for local wealth in their school facility funding formulas.[16] By adopting this policy, California will better align its school facilities funding approach with its recently revamped and more equitable education program funding approach under LCFF.

Improve standards for school facility planning and budgeting

State leaders should improve facility budgeting standards/guidelines to more accurately reflect the true drivers of facility spending needs. Under current state policy, districts receiving state SFP funds must commit 3% of their unrestricted general operating budget into a Routine Restricted Maintenance Account.[17] However, a percentage of a district's operating budget has no direct relation to its facility needs. As we have shown in this report, far better guidelines for facility spending are 3% of current replacement value (CRV) on M&O and a simultaneous 2% of CRV on capital renewals. (See Appendix for a discussion on the CRV-based standards). We find that, on average, 3% of a districts general operating budget is less than one third of estimated CRV per student. Thus, the current requirements do little to address the scale of facilities needs—a state policy that contributes to widespread under spending on facilities. Moving forward, school facility spending standards should be informed by facility conditions assessments and based on CRV of buildings rather than a district's operating budget.

Improved standards will better support local school facilities planning and budgeting. While the Governor and State Board of Education have made more robust, participatory, and transparent local school district operational planning and budgeting a core aspect of the LCFF, the same should be done for school facilities planning and budgeting, with local flexibility and accountability paramount. A sound planning process that is guided by up-to-date local needs and information is a key element of a well-managed and efficient capital facilities program.[18] As a condition of receiving state funding, school districts should have a board-approved district-wide facility master plan that includes inventory and conditions assessments of all facilities, enrollment forecasts, and locally identified priorities for maintenance, capital renewals, modernization, and new construction. As part of this planning process, districts can identify the facility conditions that will support the education and health of their students and protect the facility assets, then establish spending targets (detailed in a capital budget plan) for M&O, capital renewals, major modernization, and new

construction to realize these conditions. Local spending in relation to these standards displays maintenance of effort.

Establish a California School Facility Database to Guide Spending

The lack of a basic statewide inventory of all K-12 public school facilities, conditions assessments of those facilities, or full information on local school district facility spending is a major obstacle to fully understanding—and addressing—school facility needs in California. The adoption of consistent and adequate information sharing on public school facilities data to uphold public accountability is essential. Past efforts have been stymied. The California Community College system and many other states regularly collect this information and use it to inform how facility funds are prioritized—an approach that should be adopted for K-12 facilities. The improved local facility planning and budgeting standards described above can be the information source for the database. With this information, state and local leaders can best strive for adequate and equitable spending in all schools and identify important priorities.

Anchoring a new school facilities funding program around these cornerstone strategic reforms will move California to a more coherent system of school facility finance. These reforms do not, however, solve all of the problems California faces with its K-12 school facilities—the Governor, the State Legislature, and stakeholders across the state will have to work together to address many unresolved details. For example, county offices of education and charter schools face unique facility challenges, which we have not addressed here. We also do not address an important issue raised by Governor Brown; reforms to access untapped local resources for school facilities. While there is much left to further understand about local ability—and public will—to pay for school facilities needs, it is imperative to explore ways to raise local dollars, particularly in locales where taxpayers have untapped bonding capacity. California also needs an informed policy discussion about the appropriate role of developer fees within the overall mix of state and local resources for K-12 facilities.

Despite these continued questions, knowing the best practice school facility spending benchmarks presented in this paper enables California policy makers—and the public—to know minimum funding targets to strive for. The result will be a school facility funding approach that is responsive to facility and student needs, promotes adequacy and equity statewide, increases public accountability, and is affordable in the long run.

Acknowledgements

Several collaborators assisted us in this research to whom we are extremely grateful. Mary Filardo and the 21st Century School helped with compiling and analyzing the school district reported data from 1998-2012 available from the National Center for Education Statistics described below. The methods we use herein draw heavily on previous work by the 21st Century School Fund to analyze school facilities spending trends across the country.[19] We also worked with Bill Savidge of the California State Allocation Board and Fred Yeager of the California Department of Education's School Facilities and Transportation Services Division to compile assessed valuation data and school district demographics.

Preliminary findings from this research were presented to an invited group of state agency officials, state legislative staff, and selected school facility stakeholders at a meeting in Sacramento on May 8, 2015, facilitated in partnership with Stanford University's PACE (Policy Analysis for California Education). We thank the attendees for providing valuable feedback on the analysis, findings, and recommendations. Finally, we thank the many individuals who provided comments on drafts of this paper, some of whom also attended the May 8 event: Brooks Allen, Stephen English, Bruce Fuller, Patti Herrera, Mike Kirst, Brandon, Kitagawa, Robert Hickey, Deborah McKoy, Kathleen Moore, Feliza Ortiz-Licon, David Plank, Carolina Reid, David Sapp, Bill Savidge, Laura Tobben, Cynthia Uline and Fred Yeager. The authors alone are responsible for the accuracy, integrity and assumptions included in the final analysis and paper.

Appendix: Data, Methods and Analytic Approach

In this study, we make use of available data on K-12 public school facility expenditures in California and draw on the facility expenditure standards in the building management field. Our approach offers a simple and replicable way to assess patterns of K-12 school facility spending statewide, to provide a better basis for policy decision making. This approach is especially useful when detailed statewide data on school facility conditions is not available, as is the case in California.

School District Data

School district data were compiled from multiple sources, as listed in Table 6. Complete data were available for 93% (879) of the 949 conventional K-12 districts in California (elementary school districts (ESD), high school districts (HSD), and unified school districts (USD)). County Offices of Education and other, smaller types of education providers (e.g., State Special Schools, Statewide Benefit Charters, Non-school Locations, or Regional Occupation Centers) were excluded. The districts in our study enroll 95% of California's public school students.

Central to our analysis is the use of school district revenue and expenditure data reported in the National Center for Education Statistics (NCES), Common Core of Data (CCD). These data are collected through the Local Education Agency Finance Survey (F-33), which collects revenue, expenditure, and debt data for all school districts in the country each year. We use the data reported for "operations and maintenance of plant" defined in the survey as "expenditures for buildings services (heating, electricity, air conditioning, property insurance), care and upkeep of grounds and equipment, nonstudent transportation vehicle operation and maintenance, and security services.)" and "capital outlay expenditures," defined in the survey as "expenditures for construction of fixed assets; purchasing fixed assets including land and existing buildings and grounds; and equipment."[20] To determine locally-sourced capital outlay, we subtract F-33 Part I, Section B, Line 9 "Capital outlay and debt service programs from state sources" total from the total Capital Outlay Expenditures reported in Part III.

To account for yearly fluctuations in facilities spending that occur and to control for district size, we adjust for inflation and average the most recent five years of F-33 data that are available (2008-2012) in these two categories. Unless otherwise specified, we have adjusted all dollar figures to 2014 dollars. Operations and maintenance of plant data were adjusted to 2014 dollars using the Consumer Price Index (CPI). Capital outlay data were adjusted to 2014 dollars using the Turner Construction Index (TCI).

Table 6: School District Data Used in Analysis

	Year(s)	Source
School District Enrollment	2014	California Department of Education
Family Income (Free/Reduced Priced Meals)	2014	California Department of Education
Percent Non-White Students in School District	2014	California Department of Education
School District Locale Type[21]	2014	National Center for Education Statistics, Common Core of Data
School District Assessed Value (AV)	2014	Eastshore Consulting[22]
School District Bonding Capacity	2014	Computed based on AV and statutory limits
School District Operational Budget	1998-2012	Local Education Agency (School District) Finance Survey (F-33) published by National Center for Education Statistics (NCES) in the Common Core of Data (CCD).
School District M&O Spending	1998-2012	Local Education Agency (School District) Finance Survey (F-33) published by National Center for Education Statistics (NCES) in the Common Core of Data (CCD)
School District Capital Outlay	1998-2012	Local Education Agency (School District) Finance Survey (F-33) published by National Center for Education Statistics (NCES) in the Common Core of Data (CCD)
School District Debt Outstanding[23]	2012	Local Education Agency (School District) Finance Survey (F-33) published by National Center for Education Statistics (NCES) in the Common Core of Data (CCD)
School District SFP Allocations	1998-2014	California Office of Public School Construction
Estimated School District Square Footage	2014	Computed based on enrollment and square feet per student standards

Descriptive Statistics for Key Data

Basic descriptive statistics illustrate the underlying variation in our dataset on K-12 school facility expenditures in California. In all categories of the finance data, the mean is higher than the median, reflecting the fact that some districts have especially high outliers. Thus, while the average across districts in many categories is high, a majority of districts have significantly lower values.

	Mean	Median	25th percent	75th percent
M&O, per student	$1,105	$917	$795	$1,133
Local Capital Outlay, per student	$999	$555	$233	$1,173
State Capital Outlay, per student	$370	$1	$0	$282
Assessed Valuation, per student	$1,786,873	$862,497	$495,170	$1,616,282
Share of Students on FRPM	56%	59%	37%	78%
Total Enrollment	6,724	2,095	409	6,831

Determining Public School Facility Spending Benchmarks

The facility spending benchmarks are drawn from commonly used expenditure standards in the field. One of the most widely cited sources comes from the National Research Council's 1990 report, "Committing to the Cost of Ownership: Maintenance and Repair of Public Buildings.[24] According to the report,

> *An appropriate budget allocation for routine M&R (maintenance and repair) for a substantial inventory of facilities will typically be in the range of 2 to 4 percent of the aggregate current replacement value of those facilities (excluding land and major associated infrastructure). In the absence of specific information upon which to base the M&R budget, this funding level should be used as an absolute minimum value. Where neglect of maintenance has caused a backlog of needed repairs to accumulate, spending must exceed this minimum level until the backlog has been eliminated (pg xii).*

Additional sources recommending and/or utilizing the benchmarks include The Council of the Great City Schools' 2014 report, "Reversing the Cycle of Deterioration in the Nation's Public School Buildings"[25] and the State of Washington, Office of the Superintendent of Public Instruction's 2010 report, "Facilities Maintenance and Operations."[26] The Council of the Great City Schools 2014 report states,

> *… owners spend between 2 percent and 4 percent of the current replacement value of a building every year on maintenance, with maintenance including routine and preventive maintenance and repairs, as well as capital replacements and renewals of major systems as they reach their expected life. A 2 percent spend rate assumes the facility has a 50-year life expectancy, and a 4 percent spend rate assumes the facility has a 25-year life expectancy.*
>
> *Where school facilities are well maintained, a district allocates operating budget funds of 1.5 percent to 2 percent of the current replacement value of assets for preventive and routine maintenance and minor repairs. In addition to operating budget expenditures for facilities maintenance and repair, a well-managed school district will allocate another 1 percent-2 percent for systems replacements and even entire school replacement if it is determined that replacing a facility may be more cost effective than modernizing it (pg 16).*

Academic researchers have also utilized these benchmarks in their studies of school facilities, including Arsen and Davis (2008) and Bello and Loftness (2010).[27]

Method for Evaluating School Facility Spending Against the Benchmarks

Spending benchmarks used in the facilities literature are calculated as an annual percentage of the value of the building asset. Statewide data on the value and square footage of California's school buildings does not exist. To develop district level benchmarks that can be compared against actual spending, the Current Replacement Value (CRV) for each school district's school facilities portfolio is estimated as follows:

$$CRV = [\textit{Total school facilities square feet in district}] \times [\textit{New construction cost per square foot}] \quad (1)$$

Where

Total school facilities square feet in district = [2014 enrollment] x [77 square feet for each K-5 elementary school student, 87 square feet for each 6-8 middle school student, and 103 square feet for each 9-12 high school student][28]

New construction cost per square foot = ($375 per square foot for elementary schools, $390 per square foot for middle schools, and $439 per square foot for high schools].[29]

Based on this estimation technique, we conclude the following:

- California's statewide total public K-12 school facility square footage is, *minimally*, between 520-575 million square feet
- The total Current Replacement Value (CRV) for California's public K-12 school facilities is, *minimally*, between $208-$230 billion (2014$)

These calculations allow us to estimate how spending compares to needs in each district, as shown in Table 1.

For each school district, we define benchmark levels of minimum required investments in facilities using the following analysis:

- *Maintenance and Operations (M&O)* spending compared to a 3% of CRV benchmark (that includes facility operations at 1% of CRV and Routine Maintenance at 2% of CRV), as previously shown in Table 1
- *Capital Outlay* compared to a 2% of CRV benchmark for Capital Renewal, as previously shown in Table 1

Measuring Actual Spending and Estimating Needs

The methods described above produce sound estimates on facilities spending and needed investment levels in the absence of more complete data on district finances and facility conditions. In making the necessary assumptions to produce these estimates, we focused on developing conservative benchmarks that show significant needs exist, *even in a best-case scenario*. Given this approach, however, we are concerned that the data overstate the levels of actual district spending on M&O and capital renewals and thus, our spending adequacy analysis underestimates the actual gap in spending. This data limitation is essential to keep in mind as state and local policy leaders look to set spending targets.

Our measures of M&O and capital renewals from NCES both include spending on items that should not count toward the 3% of CRV and 2% of CRV benchmarks. The data do not enable these to be taken out. For example, the "maintenance and operations of

plant" data include expenditures on utilities and security. Expenses on these two categories can vary widely from district to district. And, much effort is often put into getting needed expenditures on these categories lower, not higher (e.g., install more efficient lighting and other fixtures to reduce electricity consumption).

Similarly, our data on capital outlay include both new construction and expenditures on existing school facilities, which most certainly means our analysis *overstates* district spending on capital renewals. The Office of Public School Construction reports that about more than 50% of its allocations for the years 2008-2012 were for school district new construction, which means there was substantial new construction capital spending by local districts occurring across the state during this time. Further, the capital outlay data also includes spending on "land and existing structures," "equipment," and "other." If we were able to subtract out spending in each of these categories (that should not count toward the 2% of CRV benchmark) to consider only actual capital spending on existing facilities, the more precise capital renewal spending gap on existing facilities is likely to be closer to $1.2-$1.5 billion.

Lastly, two conservative assumptions within our current replacement value (CRV) estimate also lead us to underestimate the spending gap. Our square feet per student estimates (77 square feet for each K-5 elementary school student, 87 square feet for each 6-8 middle school student, and 103 square feet for each 9-12 high school student) are based on analysis of recent years new school construction projects across the state, but researchers looking at other states have found much larger per student averages. Therefore, it is highly likely that California's averages are also larger. Similarly, our estimates for new construction "hard capital" cost per square foot are also arguably conservative ($375 per square foot for elementary schools, $390 per square foot for middle schools, and $439 per square foot for high schools), and will change from year to year.

Endnotes

[1] Summary data in this paragraph were obtained from Bill Savidge, Assistant Executive Officer, California State Allocation Board, April 2015. For additional information on funding totals since 1998, see Vincent, J.M. (2012). California's K-12 Educational Infrastructure Investments: Leveraging the State's Role for Quality School Facilities in Sustainable Communities. Berkeley: Center for Cities+Schools, Institute of Urban and Regional Development, University of California-Berkeley.

[2] 21st Century School Fund. (2010). Federal Funding for PK-12 School Facilities. Washington, DC: 21csf. Available online: http://21csf.org/best-home/docuploads/pub/222_FederalSpendingonPK12PublicSchoolFacilities2010.pdf.

[3] A variety of proposals have been presented in Sacramento, including: those outlined in the Governor's budget (http://www.ebudget.ca.gov/2015-16/pdf/BudgetSummary/Kthru12Education.pdf). In the FY2016 budget proposal, Governor Brown presented a highly scaled back vision of the state's role in funding facilities—providing about $650 million ($273.4 million toward the Emergency Repair Program; about $300 million for the Proposition 39 energy efficiency projects in schools; and about $100 for technology upgrades)—that includes no funding for conventional New Construction or Modernization. See also: Senate Bill 114 (Liu); Assembly Bill 148 (Holden); and the Legislative Analyst's Office 2015–16 Budget: Rethinking How the State Funds School Facilities. http://www.lao.ca.gov/reports/2015/budget/school-facilities/school-facilities-021715.pdf; and a ballot initiative sponsored by CASH and the California Building Industry Association (see http://californiansforqualityschools.com/).

[4] As of 2015, the State of California owes more than $50 billion in principle and interest on school bonds dating back to 1998. According to the State Treasurer, the state will pay an average of $1.7 billion in general fund revenue annually until outstanding debt is paid off (expected 2044). For California debt information, see: 2015-16 Governor's Budget Summary, Schedule 11 (http://www.ebudget.ca.gov/fullbudgetsummary.pdf); State of California 2014, Debt Affordability Report (http://www.treasurer.ca.gov/publications/2014dar.pdf).

[5] For reviews of the research on the relationships between school facilities and health and education outcomes, see: Cheryan, S., S.A. Ziegler, V.C Plaut, and A. N. Meltzoff. (2014). Designing Classrooms to Maximize Student Achievement. *Policy Insights from the Behavioral and Brain Sciences* 1(1): 4–12; U.S. Department of Education, Office of Civil Rights. October 1, 2014. Dear Colleague Letter: Resource Compatibility. Washington, DC: U.S. Department of Education, Office of Civil Rights. Available online: http://www2.ed.gov/about/offices/list/ocr/letters/colleague-resourcecomp-201410.pdf; Baker, L. and H. Bernstein. (2012). The Impact of School Buildings on Student Health and Performance. Washington, DC: The McGraw-Hill Research Foundation and the Center for Green Schools; Uline, C. (editor). (2009). Special Issue: Building high quality schools for learners and communities. *Journal of Educational Administration* 47(3); Higgins S., E. Hall, K. Wall, P. Woolner and C. McCaughey (2005). The Impact of School Environments: A literature review. The Centre for Learning and Teaching, School of Education, Communication and Language Science, University of Newcastle. Available online: http://www.cfbt.com/PDF/91085.pdf; Earthman, G.I. (2004). Prioritization of 31 Criteria for School Building Adequacy. American Civil Liberties Union Foundation of Maryland. Available online: http://www.aclu- md.org/aTop%20Issues/Education%20Reform/EarthmanFinal10504.pdf; Earthman, G.I. (2002). School Facility Conditions and Student Academic Achievement. Williams Watch Series: Investigating the Claims of Williams v. State of California. Los Angeles: Los Angeles: UCLA's Institute for Democracy, Education, and Access; and Schneider, M. (2002). "Do School Facilities Affect Academic Outcomes?" Washington, DC: National Clearinghouse for Educational Facilities.

[6] Uline, C. & M. Tschannen-Moran. (2008). The Walls Speak: Facilities and school climate. *Journal of Educational Administration* 46: 55-73.

[7] See note #5. Also: Buckley, J., M. Schneider, and Y. Shang. (2004). "The Effects of School Facility Quality on Teacher Retention in Urban School Districts" Washington, DC: National Clearinghouse for Educational Facilities. http://www.edfacilities.org/pubs/teacherretention.html.

[8] For example, see: New York State Department of Health. (2008). "Asthma and the School Environment in New York State." Albany: New York State Department of Health. Available online: http://www.health.ny.gov/diseases/asthma/docs/asthma_in_schools.pdf; Lamb, A. (2009). "Asthma and Indoor Air Quality in Schools." Oakland, CA: Public Health Institute. http://www.phi.org/uploads/application/files/j2971grmkpejzj8m2hk8svxhb07tdti9yvd7nu2adx8898z3zz.pdf; Schneider, M. (2002). "Do school facilities affect academic outcomes?" Washington, DC: National Clearinghouse for Educational Facilities.

[9] U.S. Department of Education, Office of Civil Rights. October 1, 2014. Dear Colleague Letter: Resource Compatibility. Washington, DC: U.S. Department of Education, Office of Civil Rights. Available online: http://www2.ed.gov/about/offices/list/ocr/letters/colleague-resourcecomp-201410.pdf.

[10] See: Vincent, J.M. and L.S. Gross. (2015). Guided by Principles: Shaping the State of California's Role in K-12 Public School Facility Funding. Berkeley, CA: Center for Cities+Schools, Institute of Urban and Regional Development, University of California-Berkeley. http://citiesandschools.berkeley.edu/uploads/2015_Guided_by_Princples.pdf.

[11] National Research Council. (1990). "Committing to the Cost of Ownership: Maintenance and Repair of Public Buildings. Committee on Advanced Maintenance Concepts for Buildings, Building Research Board. Washington, DC: National Academy Press; The Council of the Great City Schools 2014. Reversing the Cycle of Deterioration in the Nation's Public School Buildings. Washington, DC: The Council of the Great City Schools. Available online: http://www.cgcs.org/cms/lib/DC00001581/Centricity/Domain/87/FacilitiesReport2014.pdf; 21st Century School Fund and National Clearinghouse for Educational Facilities. 2010. State Capital Spending on PK-12 School Facilities. Washington, DC: 21st Century School Fund and NCEF. Available online: http://21csf.org/best-home/docuploads/pub/221_StateCapitalSpendingonPK-12SchoolFacilitiesReportNov302010Final.pdf; and Center for Green Schools. 2013. State of Our Schools Report. Washington, DC: US Green Building Council. Available online: http://www.centerforgreenschools.org/sites/default/files/resource-files/2013%20State%20of%20Our%20Schools%20Report%20FINAL.pdf. For use in academic studies, see: D. Arsen and T. Davis. (2008). Taj Mahals or Decaying Shacks: Patterns in Local School Capital Stock and Unmet Capital Need. *Peabody Journal of Education* 81(4): 1-22; and Bello, M. and V. Loftness. (2010). Addressing Inadequate Investment in School Facility Maintenance. College of Fine Arts at Research Showcase, Carnegie Mellon University. Available online: http://repository.cmu.edu/cgi/viewcontent.cgi?article=1050&context=architecture. See Appendix for a discussion of these sources and the use of the standards to calculate benchmarks.

[12] Although our data do not distinguish between capital spending on new construction and capital spending on existing school facilities, we can infer that at least half (probably more) of local capital spending went towards new construction projects by looking at state allocation data reported by the Office of Public School Construction (OPSC). The OPSC reports total allocations in the School Facility Program (SFP) of nearly $9 billion for the years 2008-2012, with about $6 billion allocated for New Construction program and almost $3 billion allocated for Modernization program. It would be possible to painstakingly extract district level expenditures for capital renewals and district level expenditures for other kinds of capital projects, by obtaining spending records from California's nearly 1,000 school districts, but that process was not practical within our time and resource constraints.

[13] National Research Council. (1990). "Committing to the Cost of Ownership: Maintenance and Repair of Public Buildings. Committee on Advanced Maintenance Concepts for Buildings, Building Research Board. Washington, DC: National Academy Press

[14] 21st Century School Fund. (2010). State Capital Spending on PK-12 School Facilities. Washington, D.C.: 21csf. Available online: http://www.21csf.org/csf-home/Documents/FederalStateSpendingNov2010/StateCapitalSpendingPK-12SchoolFacilitiesReportNov302010.pdf

[15] The needed investment reflects the combination of the gap in M&O and the gap in local capital outlay. At the high end, we take the total gap between actual M&O and the benchmark for all districts where there was a gap ($789 million) and add the gap for local capital outlay ($932 million). Some of these districts, however, will have a gap in one area but be above the benchmark in the other. Because it is possible for districts to "shift" facilities spending across categories—avoiding some deferred maintenance after making a major renovation, for example—we include a low estimate of the net gap in both categories. We calculate this by combining M&O and local capital outlay, and comparing this total with the combined benchmark (2% plus 3% of CRV).

[16] Vincent, J.M. (2012). California's K-12 Educational Infrastructure Investments: Leveraging the State's Role for Quality School Facilities in Sustainable Communities. Berkeley: Center for Cities+Schools, Institute of Urban and Regional Development, University of California-Berkeley.

[17] Cuts in M&O by local school districts in recent years is worth a deeper investigation than we are able to do in this paper. A 2012 survey by the Legislative Analyst's Office found that categorical flexibility of deferred maintenance resulted in a massive disinvestment in M&O funding in many school districts. The survey found that more than 70% of districts shifted their deferred maintenance funds away from M&O in 2011-12, and that 31% of districts shifted all of their deferred maintenance funds. (See: Legislative Analyst's Office. (2012). Year-Three Survey: Update on school District Finance in California. Sacramento, CA: LAO). These findings raise fundamental concerns about the statewide levels of deferred maintenance. The cuts came on the heels of the state legislature's decision to "flex" the previous requirement that school districts deposit 3% of their unrestricted general fund into RRMA (routine restricted maintenance account). The 2015-16 state budget extended that flexibility (which would have sunsetted on June 30, 2015), with a phased in requirement back to the 3% RRMA by 2020 (See *California Education Code* §17070.75).

[18] U.S. General Accounting Office. (1998). Leading Practices in Capital Decision-Making (GAO/AIMD-99-32). Washington, DC: US GAO. Available online: http://www.gao.gov/assets/80/76425.pdf; 21st Century School Fund, Scientex Corporation, and the World Bank. (1999). Basic Elements of a Well-Managed K-12 Capital Improvement Program. Washington, DC: 21csf. Available online: http://www.21csf.org/csf-home/publications/publicschools/PublicSchoolCapitalImprovementPrograms.pdf; and Dowall, D.E. and R. Reid. (2008). Improving California's Infrastructure Services: the California Infrastructure Initiative. Working Paper 2008-06. Berkeley: Institute of Urban and Regional Development, University of California-Berkeley. Available online: http://iurd.berkeley.edu/wp/2008-06.pdf.

[19] See: 21st Century School Fund and National Clearinghouse for Educational Facilities. (2010). State Capital Spending on PK-12 School Facilities. Washington, DC: 21st Century School Fund and NCEF. Available online: http://21csf.org/best-home/docuploads/pub/221_StateCapitalSpendingonPK-12SchoolFacilitiesReportNov302010Final.pdf; Building Educational Success Together. (2011). Fact Sheet on PK-12 Public School Facility Infrastructure. Washington, DC: BEST and 21st Century School Fund. Available online: http://21csf.org/best-home/docuploads/pub/236_PK-12PublicSchoolInfrastructureFactSheet21CSF-BEST.pdf; and Center for Green Schools. 2013. State of Our Schools Report. Washington, DC: US Green Building Council. Available online: http://www.centerforgreenschools.org/sites/default/files/resource-files/2013%20State%20of%20Our%20Schools%20Report%20FINAL.pdf.

[20] The 2013 F-33 survey instrument can be found here: http://www2.census.gov/govs/forms/2013/13f33.pdf. Refer to http://nces.ed.gov/ccd/pdf/sdf11_1a_gen.pdf for NCES definition of M&O. See also: S.Q. Cornman,

Documentation for the NCES Common Core of Data School District Finance Survey (F-33), School Year 2010–11 (Fiscal Year 2011), Provisional File Version 1a (NCES 2014-345) (National Center for Education Statistics, Institute of Education Sciences, U.S. Department of Education, 2014), 7. Additional information on the F-33 data can be found here: http://nces.ed.gov/ccd/f33agency.asp.

[21] School district locale designation was obtained, which measures a district's location relative to populous areas. Local code designation provided by the National Center for Education Statistics, Common Core of Data: http://nces.ed.gov/ccd/ccdLocaleCodeDistrict.asp; http://nces.ed.gov/ccd/rural_locales.asp.

[22] EastShore Consulting. "Preliminary Analysis of Assessed Value and Bonding Capacity per Enrolled Student," October 29, 2014. http://www.eastshoreconsulting.com/index.html).

[23] School district long term includes *bonded indebtedness and any other school district interest-bearing debt with a term of more than one year. Include general obligation bonds, revenue bonds, refunding bonds, and certificates of participation. Do not include lease purchase agreements, compensated absences, accounts payable, or any noninterest-bearing obligations.* This measure is cumulative, rather than annual, so does not need to be averaged over time.

[24] National Research Council. (1990). "Committing to the Cost of Ownership: Maintenance and Repair of Public Buildings. Committee on Advanced Maintenance Concepts for Buildings, Building Research Board. Washington, DC: National Academy Press.

[25] The Council of the Great City Schools (2014). Reversing the Cycle of Deterioration in the Nation's Public School Buildings. Washington, DC: The Council of the Great City Schools. See also: The Council of the Great City Schools. (2013). Managing for Results. See chapter on Maintenance and Operations. Washington, DC: The Council of the Great City Schools. Available online: http://www.cgcs.org/cms/lib/DC00001581/Centricity/Domain/87/Managing%20for%20Results%202013--Final.pdf.

[26] State of Washington, Office of the Superintendent of Public Instruction. (2010). Facilities Maintenance and Operations report. http://www.k12.wa.us/schfacilities/publications/pubdocs/facilitiesmaintenance.pdf.

[27] D. Arsen. and T. Davis. (2008). Taj Mahals or Decaying Shacks: Patterns in Local School Capital Stock and Unmet Capital Need. *Peabody Journal of Education* 81(4): 1-22; Bello, M. and V. Loftness. (2010). Addressing Inadequate Investment in School Facility Maintenance. College of Fine Arts at Research Showcase, Carnegie Mellon University. Available online: http://repository.cmu.edu/cgi/viewcontent.cgi?article=1050&context=architecture.

[28] Square footage per student metrics based on California Department of Education School Facilities and Transportation Division analysis of recent years new school construction projects approved by the department. For example, see: California Department of Education. (2007). Complete Schools Report. Available online: http://www.cde.ca.gov/ls/fa/sf/completesch.asp)

[29] Cost estimates are based on recent years school construction costs reported in the Project Information Worksheets (PIW) submitted to the California Office of Public School Construction (OPSC).