Title
Building Pressure: Modeling the Fiscal Future of California K-12 School Facilities

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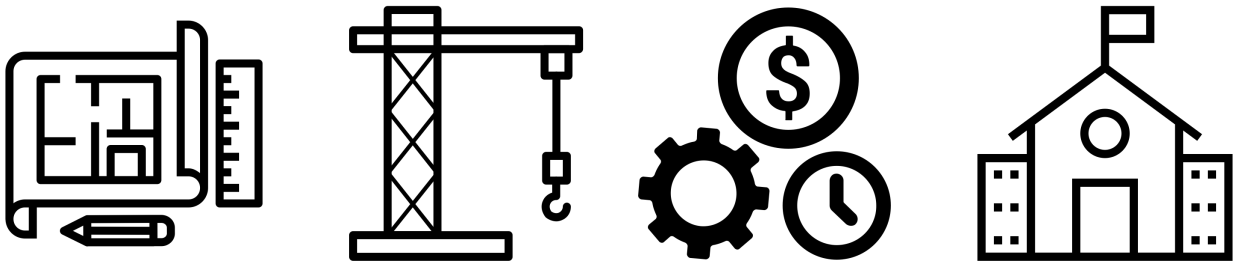

CENTER FOR CITIES+SCHOOLS
UNIVERSITY OF CALIFORNIA BERKELEY

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BERKELEY IURD INSTITUTE OF URBAN AND REGIONAL DEVELOPMENT

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Executive Summary

Building Pressure: Modeling the Fiscal Future of California School Facilities

Liz S. Jain and Jeffrey M. Vincent
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Public school districts across California, particularly those in low-wealth areas, experience significant funding shortfalls for their facilities. Industry benchmarks suggest the state's K-12 school districts should spend nearly $18 billion a year to maintain their inventory, ensure buildings are up-to-date, and to build new spaces to handle enrollment growth. Actual spending often falls far below this level. For example, school districts spent just $12 billion on such needs in 2013.

Amidst this trend of widespread underinvestment in California's K-12 public school facilities, state funds to aid school districts in facility construction and modernization projects are depleted. These grants directed several billion dollars a year to local public school facilities across the state during the 2000s. Now, California public school districts are fully reliant on local funds to maintain existing facilities and build new ones as needed.

The Nov. 8, 2016 ballot contains California's first statewide bond measure in a decade (Proposition 51), one that if approved will authorize $7 billion for K-12 public school construction, and another $2 billion for community colleges. If defeated, policymakers will likely look for alternatives. Gov. Jerry Brown has expressed support for a more limited state investment, focusing on low-wealth districts and increased local revenue-generating capacity for those districts.

Whether the 2016 statewide ballot measure passes or fails, state lawmakers are likely to face continued pressures to meet the vast infrastructure needs of public K-12 facilities. Providing sufficient K-12 school facilities to the state's more than 6 million school children will remain an ongoing, long-term challenge for Californians. In years to come, the public and state lawmakers will need to consider the impact of a range of policy options.

Analyzing the Impact of State Funding Options

With this study, the UC Berkeley's Center for Cities + Schools aims to inform voters and to provide broad guidance for policymakers regarding the relative merits of various long-term state funding approaches for public K-12 school facilities.

Based on California's historical experience, the scale of current needs for K-12 infrastructure investment, and examples from other states, we identify four policy scenarios applicable in the Golden State's current political climate (Scenario 1: *No State Support*; Scenario 2: *State Competitive Grant Matching Program*;

Scenario 3: *Small State Role Targeted to High-Need Districts*; and Scenario 4: *Equity-Focused State Grant Formula*).

We then estimate available facility funding resources for each of the state's more than 1,000 school districts under each scenario. We assess the relative potential impacts in terms of achieving *adequacy* (ensuring sufficient investment in all school buildings), *equity* (ensuring access to full facilities funding for all districts), and *affordability* (limiting state costs, complexity, and legal concerns) for the four scenarios.

Several key findings emerge from the analysis:

- State programs can reduce—but probably not entirely eliminate—unmet school facilities needs in California. Under alternate scenarios those needs are reduced from $7 billion/yr to $4.9 billion/yr.
- The November 2016 statewide measure (Scenario 2) addresses immediate needs and reduces the level of unmet needs compared to no state action at all (Scenario 1). Such state support would be clearly preferable to funding construction and modernization entirely at the local level in terms of short-run adequacy, statewide equity, and long-term risks to school districts, particularly given current constraints on local revenue generation. Compared to other funding scenarios, though, Scenario 2 does not generate the most adequate, equitable or cost-effective outcomes.
- Programs with a limited but targeted state role and greater flexibility around local facilities spending (Scenario 3) can improve overall adequacy at a lower cost to the state. Meanwhile, a larger program equalizing resources on an annual basis (Scenario 4) better achieves adequacy and most reduces disparities between high- and low-wealth districts, but is costlier to state taxpayers.

Informing Future Policy Choices and Funding Priorities

The evidence in this study suggest that moving forward in California with no additional funding for local K-12 school facilities is problematic and risky, particularly from the perspectives of school facility adequacy and equity. Not only would unmet facility needs be high, the consequences would be disproportionately borne by the poorest children in the state—students attending school districts in the lowest quintile of property wealth would see a facility funding gap nearly three times as large as children attending districts in the wealthiest quintile.

The findings of this study suggest that California needs a principled, long-term program for public school facilities funding. The ideal state approach would likely draw pieces from multiple scenarios examined in this analysis and include strategies to enhance local flexibility, target resources more effectively, improve predictability, and reduce inequities caused by variations in district wealth. Through these types of reforms, state policymakers can provide a facilities program that is more adequate, more equitable, and—in the long-run—more affordable.

California's K-12 Facilities at a Crossroads: A Challenge of Adequacy, Equity, and Affordability

Ensuring safe and educationally adequate K-12 school facilities for all public school students in California presents an immense policy and fiscal challenge. In many districts across the state, the need for investments to ensure safe and educationally adequate school buildings dwarfs the resources available for this purpose. For example, in San Juan Unified School District, outside of Sacramento, facilities managers announced deferred maintenance and repair costs of more than $140 million. Under current budget allocations, these necessary repairs will take 28 years to address.[1] Across the state, San Diego Unified School District has issued two local school bonds and spent $1 billion on capital projects since 2008, only to have staff encounter more than that amount in previously unknown deterioration in the process.[2] In Los Angeles Unified School District, the Chief Facilities Executive recently reported to the school board that it would take $40 billion—ten times the current funding—to implement the necessary modernizations for all of their schools.[3] These examples, and others across the state, illustrate the great need for appropriate funding for critical maintenance and construction projects to ensure health, safety, and educational adequacy.

The gap in local school facilities funding is a budgetary problem, but the implications are achingly tangible—leaking roofs and deteriorating walls, poorly lit or overcrowded spaces. Moreover, these issues of school building quality impact a variety of educational, health, and community outcomes. Previous empirical studies have found a relationship between poor school facility condition and a range of negative outcomes, including: increased asthma, higher rates of absenteeism, lower academic performance, higher suspension rates, more negative teacher attitudes, lower teacher retention, poor social climate, lower neighborhood home prices, and decreased community pride.[4] Thus, chronic underinvestment in school facilities comes with great risks and costs. [5]

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[1] Mitchell, B. (2016, March 29). "Getting Local: Facilities Needs in a Northern California School District." Center for Cities and Schools blog. http://citiesandschools.berkeley.edu/blog/getting-local-facilities-needs-in-a-northern-california-school-district

[2] McGlone. A. (2016, March 2). "Several Years and $1 Billion Later, San Diego Schools Are Actually in Worse Shape." *Voice of San Diego.*

[3] LA School Report (2014, December 11). "Cost to modernize every LAUSD school? Think $40 billion." *LA School Report.* http://laschoolreport.com/cost-to-modernize-every-lausd-school-think-80-billion/

[4] See: Earthman, G. I. (2002). School facility conditions and student academic achievement. *UCLA's Institute for Democracy, Education, & Access*; Cheng, G., English, S., & Filardo, M. (2011). Facilities: Fairness and Effects: Evidence and recommendations concerning the impact of school facilities on civil rights and student achievement. Washington, DC: 21st Century School Fund. http://www.21csf.org/csf-home/publications/impactschoolfacilitiescivilrightsaug2011.pdf; Boese, S., & Shaw, J. (2005). New York State School Facilities and Student Health, Achievement, and Attendance: A Data Analysis Report. *Healthy Schools Network, Inc.;* Buckley, J., Schneider, M., & Shang, Y. (2005). Fix it & they might stay: School facility quality and teacher retention in Washington, D.C. *Teachers College Press*, 107, 1107-1123.; Cellini, S. R., Ferreira, F., & Rothstein, J. (2010). The value of school facility investments: Evidence from a dynamic regression discontinuity design. *Quarterly Journal of Economics*, *125*(1); Neilson, C. A., & Zimmerman, S. D. (2014). The effect of school construction on test scores, school enrollment, and home prices. *Journal of Public Economics*, 120, 18-31; and

Policymakers have long debated how to best address California's school facilities funding needs. Since 1998, a state grant program called the School Facility Program (SFP) bolstered local investment. Funds for the program largely ran out in 2012, and there has not been a statewide vote to approve additional state resources since 2006.[6] The Governor has indicated interest in reforming the program in his past two state budget proposals (2015 and 2016), but no concrete changes or funding have come out of Sacramento thus far.

In response to the lack of state government action, Californians for Quality Schools, a coalition of school districts, developers, and advocates collected signatures to put a measure on the November 2016 statewide ballot that would provide $7 billion in state grants for K-12 public school facilities—divided as $3 billion for New Construction, $3 billion for Modernization, $500 million for charter schools and $500 million to provide space for Career Technical Education.[7] The measure—designated as Proposition 51—also provides another $2 billion for community college facilities, for a total of $9 billion in bonding authority going on the ballot.[8] Under Proposition 51, the funds would come from the sale of general obligation bonds.

The measure is controversial. On the one hand, it has garnered wide support, including an op-ed from the current and former State Superintendents of Public Instruction and endorsement from the San Francisco Chronicle.[9] On the other hand, Governor Brown and others have expressed reservations about the proposal. The Los Angeles Times and the Sacramento Bee, for example, both oppose the measure.[10] In no uncertain terms, the Governor called the initiative "a blunderbuss effort that promotes sprawl and squanders

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Maxwell, L. E. (2016). School building condition, social climate, student attendance and academic achievement: A mediation model. *Journal of Environmental Psychology* 46: 206-216.

[5] For a review of the literature, see United States Department Of Education, Office For Civil Rights (2014). "Dear Colleague Letter: Resource Comparability." http://www2.ed.gov/about/offices/list/ocr/letters/colleague-resourcecomp-201410.pdf

[6] Districts continue to apply to the program. In November 2012, the State Allocation Board (SAB) began placing projects on a series of unfunded lists to await future state investment. There is a $1.5 billion backlog of unfunded applications. SAB is now facing pressure from school districts to officially declare the funds depleted, which would free up additional ability to levy developer fees, up to the full cost of new construction projects. Office of Public School Construction, "Applications Received Beyond Bond Authority List." As of March 31, 2016. http://www.dgs.ca.gov/opsc/Resources/ApplicationsReceivedBeyondBondAuthority.aspx

[7] Key members of Californians for School Quality include the Coalition for Adequate School Housing (C.A.S.H.) and the California Building Industry Association (C.B.I.A.), whose members have been involved in similar policy debates for decades. Supporters of the initiative reached the necessary 400,000 signatures to put the bond on the ballot in September 2015. Secretary of State (2015, September 18). "New Measure Eligible for California's November 2016 Ballot." Press Release. http://www.sos.ca.gov/administration/news-releases-and-advisories/2015-news-releases-and-advisories/new-measure-eligible-californias-november-2016-ballot/

[8] See: Alex Padilla, California Secretary of State. Qualified Statewide Ballot Measures, November 8, 2016, Statewide Ballot Measures. http://www.sos.ca.gov/elections/ballot-measures/qualified-ballot-measures/; https://oag.ca.gov/system/files/initiatives/pdfs/15-0005%20(Education%20Bond%20Act).pdf

[9] Tom Torlakson and Jack O'Connell. (2016, January 6). "California needs to invest in school facilities." *San Francisco Chronicle.* Opinion; San Francisco Chronicle Editorial Board. (September 9, 2016). Chronicle recommends: Yes on Prop. 51. *San Francisco Chronicle*.

[10] Los Angeles Times Editorial Board. (September 22, 2016). No more school bonds until California fixes its system for funding school construction: No on Prop 51. *Los Angeles Times*; Sacramento Bee Editorial Board. (September 22, 2016). Yes, we need schools, but not the Prop. 51 $9 billion school bond. *Sacramento Bee*.

money that would be far better spent in low-income communities."[11] In general, voter support for school facilities bonds has been strong throughout the past 50 years.[12] Early polling reported a comfortable margin of support for the current measure.[13]

Whether voters approve Proposition 51 in 2016 or not, providing sufficient K-12 school facilities to the state's more than 6 million school children will remain an ongoing, long-term challenge for Californians. As such, state policymakers must look beyond the 2016 ballot measure to consider future options to meet this challenge. Both the short- and long-run decisions will impact the ability of local school districts to adequately and equitably house their students. Current funding in many districts is likely inadequate to meet even basic maintenance requirements when relying on local funds alone.[14] Past state funding for facilities has helped (as we discuss later in the report), but has also contributed to the state's debt burden and has not fully addressed the inequities across the state in school facility quality or funding. Choices in the months and years to come will shape the future role of the state government in funding K-12 school infrastructure.

In the context of these pressures and the ongoing needs for K-12 facilities investment, this study aims to inform the immediate decision Californians have to make in November 2016, and to provide longer-term, strategic guidance to California policymakers and the public about the relative merits of different state funding approaches to public school facilities. We first consider the historical experience of California and the scale of current needs for K-12 facility investment. Building on this review and examples of other states' fund approaches, we identify four policy scenarios applicable to California's current political and fiscal climate—two representing the options facing voters and two showing alternative directions for the future. We then develop a model to calculate the estimated resources available in more than 1,000 school districts and assess the relative potential impacts of each option in terms of three outcomes: the *adequacy* of total funding to meet local school facility needs, the *equity* of facility funding levels between school districts, and the *affordability* of the school facility funding program for the state.

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[11] Fensterwald, J. (2016, February 12). "No compromise reached Governor opposes California school bond." *EdSource*. https://edsource.org/2016/no-compromise-reached-governor-opposes-california-school-bond/94690

[12] The four statewide school facilities bonds that funded the SFP passed and only in 2004 was the election close. In the fifty years before the SFP, all but three out of 24 statewide measures related to school construction and renovation passed. Cohen, J. (1999). A History of the Role of the State Allocation Board and Options for the Distribution of Proposition 1A Funds. California Research Bureau. https://www.library.ca.gov/crb/99/01/99001.pdf

[13] Further complicating the situation, the facilities bond will share the November ballot with an initiative extending Proposition 30, which would continue the funding that supports the Local Control Funding Formula (LCFF)—the cornerstone of Brown's education policy. Both see high levels of current support. Baldassare, M., Bonner, D., Kordus, D., & Lopes, L. (2016). "Californians & Education." Public Policy Institute of California. http://www.ppic.org/main/publication.asp?i=1149

[14] Vincent, J. M., & Jain, L. S. (2015). Going it Alone: Can California's K-12 School Districts Adequately and Equitably Fund School Facilities? Policy Research Working Paper. Berkeley: Center for Cities + Schools, University of California. http://citiesandschools.berkeley.edu/uploads/Vincent__Jain_2015_Going_it_Alone_final.pdf.

The Context: K-12 School Facility Needs and Changes in the State Role

This section explores the scale of the K-12 infrastructure challenge in California. Using methods developed in previous studies, we estimate the level of investment needed to fully ensure safe, educationally appropriate school buildings for all students in California public schools. We then briefly review historical facilities spending to contextualize these needs.

Benchmarking annual facilities investment needs

School buildings—like all infrastructure—require regular maintenance and upkeep to ensure they are safe and functional. They also need periodic and more large-scale modernizations to appropriately support the educational program, incorporate new technologies, and/or replace old building systems. As the enrollments rise, new facilities need to be built if and when existing facilities cannot absorb the growth. The main categories of facilities need, and the budgets that they come from, are summarized in Table 1. School districts spend money to meet these needs using two separate budgets: the general district operating budget and the capital budget.

Building science and construction industry standards provide guidelines for the level of spending necessary on each of these categories. Most of these are calculated as a share of the current replacement value (CRV) of the buildings, defined as the cost of rebuilding the facility from scratch. As described in Table 1, districts need to invest in new construction to meet enrollment growth and avoid overcrowding. Regardless of growth, it is recommended that facilities managers spend 5 percent of CRV every year on modernization of existing buildings and 3 percent of CRV on routine maintenance and operations.[15]

Of course, the exact amounts needed vary by building condition, but these standards serve as guidelines to building managers and school district leaders to plan and budget accordingly based on the industry's knowledge and experience with typical building deterioration schedules. They also enable us to measure the overall adequacy of spending across the state.

[15] See Filardo, M. (2016). State of Our Schools: America's K–12 Facilities 2016. Washington, D.C.: 21st Century School Fund and Center for Green Schools. http://www.21csf.org/best-home/docuploads/pub/331_StateofOurSchools2016.pdf. To get the 5 percent benchmark, we combine the industry standards for annual modernizations (3 percent of CRV) and capital renewals (2 percent of CRV). Given the lack of comprehensive square-footage data in California, this estimate is calculated using enrollment data and assumptions about square footages and cost per student. See Appendix for full details.

Table 1: Key Components of Industry Standard K-12 Facilities Spending

Budget	Item	Annual Benchmark Spending Level
Capital Budget	New Construction[16]	Based on enrollment growth, cost of land and construction
	Modernization of Existing Buildings[17]	5% of Current Replacement Value (CRV)
Operating Budget	Facility Maintenance and Operations[18]	3% of CRV

Taken together, these benchmarks suggest that the more than 1,000 school districts in California should collectively spend about $17.7 billion per year (about $2,850 per pupil) on their facilities, drawing on local and state.[19] For comparison, total annual per-pupil state and local education spending was $9,595 in California in 2014.[20] Figure 1 shows the breakdown of California's estimated annual K-12 facility needs.

[16] New construction provides additional capacity needed to keep up with growth in enrollment or changing needs across school sites.

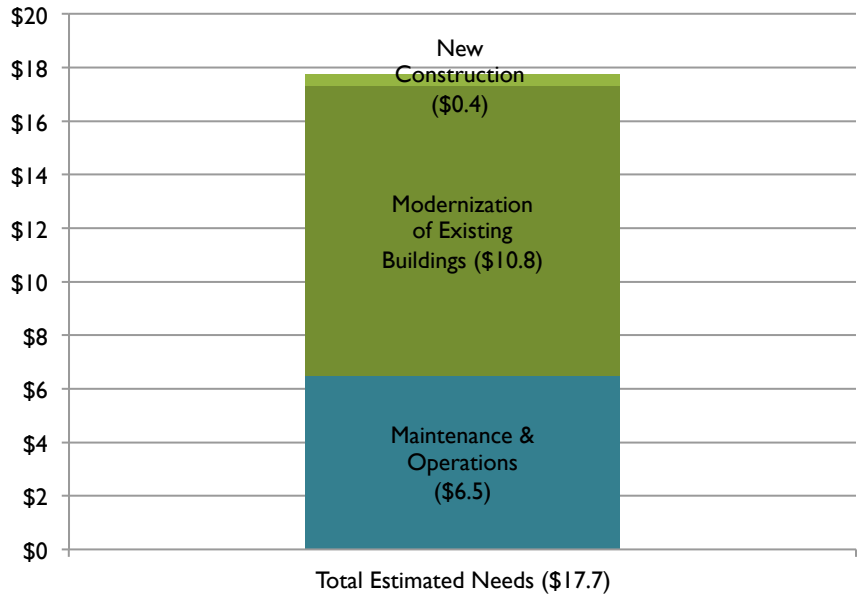
[17] Modernization includes the major alteration, repair, and refurbishment of entire building(s) and building systems. Projects typically may be intended to ensure educational suitability, extend the useful life of assets, or replace buildings when that becomes the most cost effective option. More information on the activities included in this category is in the Methods Appendix.

[18] Operations are services required to keep a facility clean, sanitary, and tidy, so that its occupants are comfortable, healthy and productive. Routine maintenance involves recurring work (preventive and emergent) required to ensure expected life and functions of a facility. The data we use on operations spending also includes utility costs and security operations, which can be significant expenditures for local school districts. More information on the activities included in this category is in the Methods Appendix.

[19] Our analysis ignores the small share of school facilities funding that comes from federal sources. Less than one tenth of one percent of the total capital outlay for school facilities is paid for with federal grant funds. Source: Filardo, M. and S. O'Donnell. (2010). Federal Spending on PK-12 School Facilities. Washington, DC: 21st Century School Fund. http://www.21csf.org/best-home/docuploads/pub/222_FederalSpendingonPK12PublicSchoolFacilities2010.pdf.

[20] Education Spending Per Student By State. *Governing*. http://www.governing.com/gov-data/education-data/state-education-spending-per-pupil-data.html

Figure 1: Estimated annual K-12 facility investment needed to align with industry benchmarks in all California school districts (in billions of 2014 $)



Our methods draw on those used in previous state and national reports, yielding similar results in terms of the overall level of need across the state.[21] For example, a 2015 UC Berkeley study estimated that California's school districts should be spending, at minimum, $5.2 to $6.2 billion a year on operations and routine maintenance as well as $3.1to $4.1 billion on regular capital renewals, just to keep all of the state's school facilities in a steady state of repair.[22] The "State of our Schools 2016" profile on California, estimated that California's school districts should be spending $7.4 billion a year on maintenance and operations and $9.9 billion on capital investments in existing buildings – this estimate included the costs of reducing the accumulation of deferred maintenance across the state.[23]

[21] These adequacy standards are utilized by many national organizations and in previous studies, including the 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; Filardo, M, (2016). State of Our Schools: America's K–12 Facilities 2016. Washington, D.C.: 21st Century School Fund and Center for Green Schools. 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; Bello, M. and V. Loftness. (2010). Addressing Inadequate Investment in School Facility Maintenance. College of Fine Arts at Research Showcase, Carnegie Mellon University; and Vincent and Jain (2015) See Appendix for a discussion of these sources and the use of the standards to calculate benchmarks.

[22] Vincent & Jain. (2015).

[23] Filardo. (2016).

Sidebar: Understanding how California school facilities are funded

Local capital spending is the cornerstone of school facilities funding in California. Capital outlays from local sources were $5.2 billion in 2013, the most recent year for which data are available. Over the past two decades, these funds have ranged from $3.7 billion in 1995 to a peak of $10.2 billion in 2005. Revenues for capital spending are primarily raised through general obligation bonds, which are repaid through local property taxes. Since 1983, school districts have held nearly 2,000 bond elections, about two-thirds of which have passed.[24]

In addition to general obligation bonds, school districts are also able to levy developer fees or set up special taxing districts for new developments, in order to defray the costs of school construction associated with related population growth.[25] State grants account for a significant, but inconsistent, portion of capital costs (as will be discussed throughout this report). There are almost no federal funds for facility expenses.[26]

Capital resources vary widely across school districts. In general, this reflects local public demand for school spending, but property wealth fundamentally shapes the ability to issue local bonds and spend on capital. Because of the direct connection to the property tax, districts with low assessed property values have more difficulty raising needed funds for facilities. The inequities can be dramatic. In recent years, *local capital spending per pupil was nearly four times higher among the highest wealth districts than it was among the lowest 20 percent.*[27] Low wealth districts can choose to tax property at a higher rate to make up for their lower base, but limitations on property tax and bonding cap local revenue raising ability and equity issues arise from divergent levels of effort.

Districts also spend on regular maintenance and operation (M&O) of their buildings. This spending comes out of the district's operating budget, the same pool of funds used to pay teachers and run academic programs.[28] In 2013, total maintenance and operations spending amounted to $5.6 billion.[29] Here, too, districts with high property wealth spend more—1.5 times as much as the districts with the lowest property wealth.[30]

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[24] Author's Analysis of EdSource Local Revenue Elections data, available through the Education Data Partnership: California Department of Education (CDE), EdSource and Fiscal Crisis & Management Assistance Team.

[25] Developer fees are about 10 percent of capital funds. Special taxing districts, even less. Gorsen, M.F. et al. (2006). *California School Facilities Planning: A Guide to Laws and Procedures for Funding, Siting, Design, and Construction*. Point Arena, CA: Solano Press Books.

[26] Federal funds account for just .02 percent of facilities spending from 2010 to 2014. Filardo, M. and S. O'Donnell. (2010). Federal Spending on PK-12 School Facilities. Washington, DC: 21st Century School Fund. http://www.21csf.org/best-home/docuploads/pub/222_FederalSpendingonPK12PublicSchoolFacilities2010.pdf.

[27] Vincent & Jain, (2015).

[28] M&O levels may be affected by changes in operating budgets under the 2013 Local Control Funding Formula (LCFF) that directed funds to schools with greater needs. With more resources available, maintenance spending may increase. Reporting requirements and restrictions on the use of some funds for high-need students, however, may shift administrators' focus even more toward classroom programs. For a discussion, see: Cabral, E., & Chu, C. (2013). "Updated: An Overview of the Local Control Funding Formula." Legislative Analyst's Office. http://www.lao.ca.gov/reports/2013/edu/lcff/lcff-072913.pdf

[29] Author's analysis of Local Education Agency (School District) Finance Survey (F-33) published by National Center for Education Statistics. Common Core of Data. http://nces.ed.gov/ccd/f33agency.asp.

[30] For a full description of the inequities related to maintenance spending, see Vincent & Jain (2015).

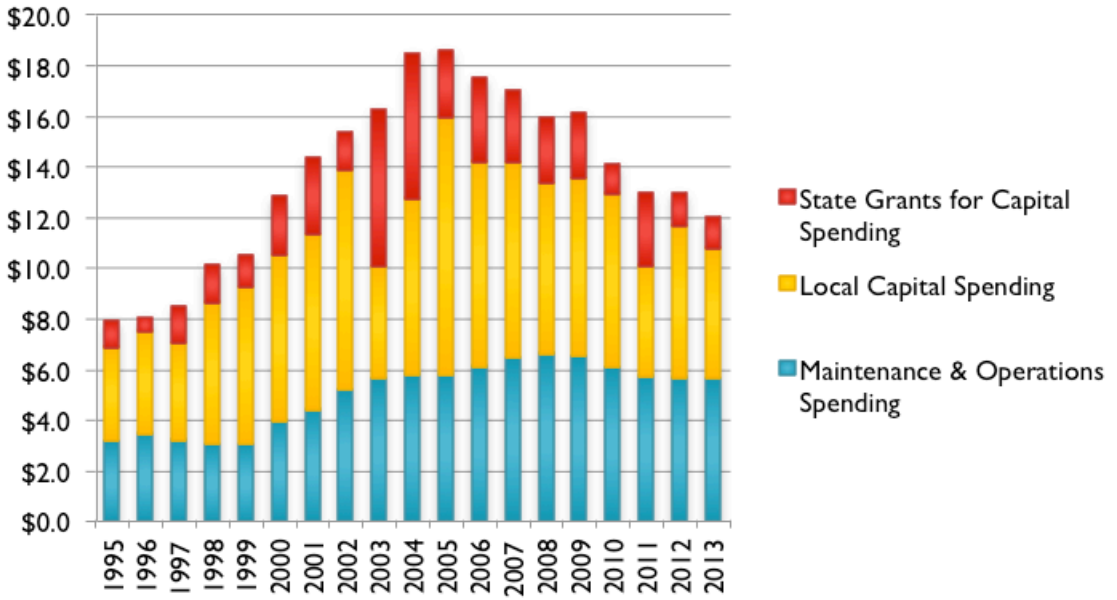
Inadequate and inequitable investment

Analysis of recent years' school facility investments by California school districts raises concerns about patterns of inadequate and inequitable spending across the state. Over the past several years, combined state and local resources for facilities have frequently fallen short of industry benchmark levels described above. According to the most recent data from 2013, school districts collectively spent just $12 billion in these areas.[31] A 2016 national study estimated spending in California at just 65% percent of what was needed to achieve adequacy.[32] Another study of California school districts found that 62 percent failed to achieve industry benchmark levels of spending on maintenance and operations between 2008 and 2012. Meanwhile, the majority of districts were spending well below the level of local capital outlay that would be necessary to modernize and repair existing buildings, let alone the funds to construct new buildings to accommodate growth.[33]

Looking back at the past two decades, California has seen investment in school facilities rise and fall, with the past several years seeing an overall decline (see Figure 2). In the years where total resources were most robust, enrollment was growing rapidly and the state played a strong role in providing districts with additional funding.[34] Fiscal conditions have worsened since the Great Recession – budget cuts at the state and local level, as well as reductions in home values following the foreclosure crisis all corrode districts' ability to generate facility resources locally via bond referenda. Moreover, the immediate financial struggles amidst the recession may have discouraged the kind of long-term planning and investment necessary to ensure high-quality school buildings. State and school district budgets in California were among the hardest hit by the Great Recession, with schools primarily serving low-income communities experiencing the most drastic shortfalls.[35] Overall spending on K-12 facilities in California will have to increase to achieve the spending levels suggested by industry standards for all districts for the years to come.

[31] Author's analysis of Local Education Agency (School District) Finance Survey (F-33) published by National Center for Education Statistics. Common Core of Data. http://nces.ed.gov/ccd/f33agency.asp.
[32] Filardo, M, (2016). State of Our Schools: America's K–12 Facilities 2016. Washington, D.C.: 21st Century School Fund. http://www.21csf.org/best-home/docuploads/pub/331_StateofOurSchools2016.pdf
[33] Fifty-seven percent of districts spent less than 2 percent of CRV on average from their local capital budgets—not even enough to cover recurring capital renewal needs. See Vincent & Jain (2015).
[34] Author's analysis of Local Education Agency (School District) Finance Survey (F-33) published by National Center for Education Statistics. Common Core of Data. http://nces.ed.gov/ccd/f33agency.asp.
[35] Freelon, R., Bertrand, M, & Rogers, J. (2012). "Overburdened & Underfunded: California Public Schools Amidst the Great Recession." *REMIE - Multidisciplinary Journal of Educational Research,* Vol. 2 Issue 2, p152.

Figure 2: K-12 public school facilities spending in California by category, 1995-2013 (2014 $)



Source: Analysis of National Center for Education Statistics, Local Education Agency Finance Survey (F-33) Data

The gap from the standard is far from even across school districts; those serving low-wealth communities are more likely to fall below the benchmark.[36] A 2015 study that districts with high property values spent significantly more per pupil on both capital and maintenance for their facilities than their low-wealth peers between 2008 and 2012. Additionally, districts serving poor students were found to spend disproportionately more from their operating budget on facilities maintenance and operations, than higher-wealth districts.[37] The disparities continued in 2013, as districts with assessed values below $1,000,000 per pupil spent about $1,000 less per student on maintenance and capital than those with property wealth higher than that amount.[38]

Similar findings emerge looking at high-need schools in terms of academic achievement. Three quarters of schools with the lowest Academic Performance Index (API) scores had one or more "good repair" deficiencies—signifying that many of these schools may not be "clean, safe and functional" as per state standards.[39]

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[36] These inequities are certainly not a new phenomenon. Similar concerns regarding California schools were found in 2001 in Brunner, E. J., & Rueben, K. (2001). Financing New School Construction and Modernization: Evidence from California. *National Tax Journal*, *54*(3), 527–539. Around the same time, reporting and testimony on pockets of extremely poor and overcrowded conditions were a major source of evidence in *Williams v. California*, a lawsuit brought by civil rights groups charging that the state had failed to provide the conditions necessary for a basic education to all students.

[37] Vincent & Jain (2015)

[38] Author's analysis of Local Education Agency (School District) Finance Survey (F-33) published by National Center for Education Statistics. Common Core of Data. http://nces.ed.gov/ccd/f33agency.asp and Eastshore Consulting data on Assessed Valuation compiled by OPSC.

[39] "Good Repair" refers to the conditions defined in California Education Code 17002. Chung, S. (2013). "Williams V. California: Lessons from Nine Years of Implementation." *ACLU Foundation of Southern California.* https://www.aclusocal.org/cases/williams-v-california/nineyears/

The recent decline in state funding for school infrastructure

School facilities in California have been financed through a state-local partnership for the past several decades, but the future of the state role is uncertain. The state first became involved in school facilities funding in 1947, operating various loan and lease-purchase programs for school construction projects through the 1990s.[40] The modern era of school facilities finance in California began in 1998 with establishment of the School Facility Program (SFP). Under the SFP the state allocated $35 billion to districts, funded through statewide bonds in 1998, 2002, 2004 and 2006.[41] Over the past two decades, SFP funds reached 4.3 million students across more than 850 districts.[42] The SFP consists of two primary funding programs: grants for New Construction matched 50-50 by school districts, and grants for Modernization where the state provides 60 percent of allowable project costs. More than half of SFP money—$17.8 billion—was spent on New Construction. Modernization is the next largest share, representing 34 percent of all funds or $11.4 billion.[43] The SFP also included other small pots of funds for capital costs of facilities projects – many of these were "add-on" costs to projects such as making them joint use facilities or supporting Career Technical Education (CTE).[44] Lastly, the SFP also included Financial Hardship grants that cover up to 100 percent of a project for districts that qualify based on demonstrated effort and limited resources. Facility Hardship grants accounted for about 10 percent of all grant funds through the life of the SFP.

As mentioned above, SFP funds effectively ran out in 2012. After unsuccessful legislative attempts in recent years, a group of school districts, advocates and developers qualified a bond for the statewide November 2016 ballot that would essentially restart the SFP program and provide billions in new grant funding. Meanwhile, the Governor and the Legislature continue a broader debate over the best approach to—and even the primary goals of—state involvement in funding K-12 school facilities. Amid this uncertainty about the future of the state funding role, local needs continue to accumulate and pressure is building.

[40] For the full history of California state facilities funding policy, see Cohen (1999); Gorsen, et. al. (2006).
[41] Office of Public School Construction (2015). "School Facility Program Overview." Prepared for the California Senate Assembly Education Committee hearing on February 11, 2015. http://aedn.assembly.ca.gov/sites/aedn.assembly.ca.gov/files/hearings/SFP%20Overview%20for%20Assembly%20Ed%202-2015%20V%2011.pdf
[42] Author's analysis of OPSC data on district level School Facility Program allocations.
[43] Author's analysis of OPSC data on district level School Facility Program allocations.
[44] For a full list of SFP funding categories and their amounts, see: California State Allocation Board, School Facility Program Review Subcommittee. (October 24, 2012). School Facility Program: Overview. http://www.documents.dgs.ca.gov/opsc/SAB_Agenda_Items/SFP_Review_SubComm/10242012_SFP_Review_SubComm_Agenda.pdf.

California's Choices: Four State Funding Scenarios

Looking at the November 2016 election and the years that follow, there are many possible policy directions in which the state could go with regard to capital funding for K-12 facilities. The state can determine the amount of money to make available and the sources of those revenues. Policymakers can also set the way that those funds are distributed to the local level and the match rate under these schemes, which can vary with program type or district and project characteristics. The rules around how districts become eligible to participate in each portion of the program are also within state control, as well as the prioritization rules that determine the order in which districts can access the state funds. Finally, the state sets a number of policies that govern local ability to raise funds—most notably, debt and taxation limits.

Programs in other states provide direction on how California could combine these policy components. Across the 50 states, there are examples of how school districts fare under different policy scenarios, many that California could pursue in the coming years. Two-thirds of all states take some sort of active role in funding local school facilities, while the remaining states leave the responsibility entirely up to local governments.[45] Among states that are involved, many are like California, where school districts apply for funding, usually a matching grant. When it comes to the grant amounts, though, California is in the minority of states that provide uniform grants to districts—many take local wealth and other factors into consideration when allocating funds. Finally, while most states have an application driven program similar to California, a number of others provide recurring funding to districts on an annual basis.[46]

In the coming years, voters and policymakers in California could change any or all of these program elements. To illustrate the impact of these policy choices on the provision of adequate and equitable school facilities across districts, this analysis focuses on four possible scenarios, shown in Table 2 and described below.

[45] Filardo, M., Cheng, S., Allen, M., Bar, M., & Ulsoy, J. (2010). State Capital Spending on PK-12 School Facilities. Washington, DC: 21st Century School Fund. http://www.21csf.org/best-home/docuploads/pub/221_StateCapitalSpendingonPK-12SchoolFacilitiesReportNov302010Final.pdf.

[46] See descriptions of state programs from Vincent, J. M. (2014). "State Funding for K-12 School Facilities: A Survey of the States." Berkeley: Center for Cities and Schools, University of California. http://citiesandschools.berkeley.edu/reports/Vincent_2014_State_K12%20fac_funding_final.pdf

Table 2: Four scenarios illustrate future funding alternatives for California

Scenario 1: No State Support	Scenario 2: State Competitive Grant Matching Program	Scenario 3: Small State Role Targeted to High-Need Districts	Scenario 4: Equity-Focused State Grant Formula
No bond passes. There are no significant additional state level resources. Facilities funded entirely with local funds.	Voters approve a measure like Prop 51, authorizing up to $6.5 billion in bonds for new and existing K-12 schools, preserving the SFP's competitive matching grant program.	California develops and approves an alternative bond for $3 billion that provides a higher targeted match rate for low capacity districts and increases local debt limits.	California develops an alternative formula-based program where districts receive annual grants to equalize funding capacity (for example, at $1,250 per pupil).

These scenarios are based on policy options that have been discussed within California and those in place in other states. All of them are simplified for the sake of making clear comparisons between them; they are not exact representations of the full complexity of each alternative. In selecting these scenarios, we assume that certain conditions—local spending and voter support, for example—will be in accordance with recent years.

Scenario 1: No state support

Scenario 1 assumes the November 2016 ballot initiative fails and there are no new significant state funds for school construction and modernization in the coming years. In this case, the current reality of local-only investment would continue.

If Californians choose not to reestablish the state funding role at all, the past two years provide a glimpse into the strategies school districts may take to fund facilities on their own and the equity concerns that may arise. In the absence of state funding, many districts have begun taking matters into their own hands. In 2014, voters were presented with a record number of local bond measures for school construction—113 measures for a total of $11.6 billion.[47] Opponents of the bond are concerned about state debt levels, but debt also accrues at the local level. Between 1999 and 2010, inflation adjusted local long-term debt quadrupled, from $14.2 billion to $57.1 billion.[48] Local debt levels stayed fairly constant through 2013, the last year for which data is available, suggesting limited investment during the recession.

The pre-SFP era also provides some insight into what the distribution of funding might look like. California school facilities in the 1990s were notorious for their poor conditions, overcrowding, and reliance on portable classrooms. Underfunding in that era was significant,

[47] Chin, T. (2014, October 30) "California Schools Ask for $11.6B of Bonds." *The Bond Buyer*. http://www.bondbuyer.com/news/regionalnews/california-schools-ask-for-11b-of-bonds-1067461-1.html

[48] Author's analysis of Local Education Agency (School District) Finance Survey (F-33) published by National Center for Education Statistics. Common Core of Data. http://nces.ed.gov/ccd/f33agency.asp.

with total capital spending 30 percent below the national average.[49] Schools serving poor communities, students receiving free and reduced price meals, and English-language learners were particularly burdened by poor facilities conditions—one of the major claims of the *Williams* lawsuit, a statewide civil rights case that was settled in 2000.[50] Achieving equal conditions at the local level would require higher taxes and debt burdens in the poorest districts, a situation that presents constitutional challenges of its own.[51]

Much has changed in the past two decades, though, and local governments now have more flexibility. Proposition 39 in 2000, for example, lowered the vote threshold to 55 percent for school district bonds that follow a certain set of requirements. These have been much more successful than previous bond elections that required a two-thirds majority and nearly all bonds in recent years have followed Prop 39.[52] With no state program, lawmakers may also take some small steps that would alleviate the pressure, such as allowing school districts to charge higher development fees.[53] Many districts may now be better positioned to raise capital funds primarily at the local level than they were in the 1980s and 1990s, but equity concerns likely would remain.

Scenario 2: State competitive matching grant program

Scenario 2 assumes that the bond initiative will pass in November 2016, continuing the major elements of the SFP.

The proposed measure would generate $7 billion for K-12 school facilities ($3 billion designated for new construction, $3 billion for modernization, $500 million for charter school facilities, and $500 million for career technical education projects).[54] The bond would also generate an additional $2 billion for community college facilities, for a total of $9 billion. In order to translate the proposed bond into a policy scenario that we can comparably model, we do note include the Career Technical Education (CTE) or community college funds. CTE is a specific program, with its own application process, applies only to some

[49] Cellini, Ferreira, & Rothstein (2010).
[50] For a full description of *Williams v. California,* the evidence used in the case, and the provisions put in place following the settlement, see Oakes (2002).
[51] The 1971 *Serrano v. Priest* lawsuit, and the subsequent affirmations of the case, established that such higher tax rates would be a violation of the equal protection clause. For a full description in the context of school facilities, see Brunner, E. J. (2006). *Financing school facilities in California*. Governor's Committee on Education Excellence.
[52] Analysis of EdSource Local Revenue Elections data, available through the Education Data Partnership: California Department of Education (CDE), EdSource and Fiscal Crisis & Management Assistance Team (FCMAT). www.ed-data.org
[53] At the May 2016 meeting, the State Allocation Board (SAB) declared the funds truly exhausted, a designation they have held off on despite the near total spend down of bond funds. The decision triggered a provision allowing school districts to charge home builders 100 percent of new construction costs through developer fees. The move provides additional local flexibility, but construction industry leaders have expressed concern about the economic impacts. Chorneau, T. (2016, May 31). "Developer fees for school building OK'd, impacts abound." Capital Report. https://www.cabinetreport.com/facilities/developer-fees-for-school-building-okd-impacts-abound.
[54] Career Technical Education is a specific program, with its own application process, applies only to some schools, and is difficult to replicate in Scenarios 3 and 4. Community College facilities, while critical, are outside the scope of this analysis.

schools, and is difficult to replicate in Scenarios 3 and 4. Community College facilities, while critical, are outside the scope of this analysis. Thus, we model a total grant size of $6.5 billion for Scenario 2.

Notably, the initiative directly references the statutory language from the SFP (chapter 12.5 of Part 10 of Division 1 of Title 1) and expressly continues provisions of the past program, including the new construction and modernization eligibility determinations, the match rate, and the prioritization for how districts receive funds.[55] Under California's initiative process, because the bond would be voter-approved, any changes would have to go back to the voters for approval in the first few years after passage. Thus, the bond would constrain the legislature's jurisdiction to make significant policy changes in how state funds are allocated to districts and across program areas without going back to the voters.

The state's Legislative Analyst and Director of Finance have estimated that the full $9 billion bond will cost state taxpayers $17.6 billion to pay off over a 35 year term, with annual payments averaging $500 million.[56] The general obligation bonds would be repaid through the full force of the state's general taxing power.

Scenario 3: Small state role, targeted to high-need districts

Scenario 3 assumes that in place of either option on the table in November 2016, the legislature instead puts forth a smaller funding vehicle for school construction and modernization that directs higher levels of funding to less wealthy districts.

Under this scenario, voters approve a bond about half the size of the one proposed on the November 2016 ballot ($3 billion total). That smaller pool of resources would be directed primarily towards the districts with greatest need. Need will be measured by *local net capacity*, defined as the amount of legal bonding capacity remaining for a school district given the current debt already on the books. This approach primarily adjusts for local ability to pay, but also takes into account significant local effort in districts that have already issued large amounts of facilities bonds. To do this, the state would first set a threshold level of net capacity and then assess each district against it. The thresholds and match rates we use here are based on recent policy discussions among state leaders and simplified for our model. If local net capacity is *below* the threshold level, which we set at $15,000 of net capacity to issue debt per pupil, the state provides a 66 percent match (i.e., one dollar of local funding is matched with two dollars from the state). *Above* the threshold, the match shifts to a 33 percent match.[57] To make up for the smaller total amount of state funding, the program

[55] Full text of the ballot initiative is available on the Californian's for Quality Schools website, http://www.californiansforqualityschools.com/read-bond/

[56] Secretary of State (2015).

[57] With just one strict and dramatic benchmark, Scenario 3 could result in equity concerns and unforeseen incentives for those school districts near the threshold. A very small difference in resource capacity results in a significant increase in state funding. The single threshold is used to demonstrate a simple version of this program in our model, but policymakers could implement multiple thresholds, funding bands, or phase-outs to address these concerns.

would increase local bonding capacity limits from 2.5 percent to 4 percent of assessed property values, allowing districts to issue more local debt.[58]

While these changes represent a significant departure from the uniform match under the SFP, the proposal maintains much of the basic infrastructure including the application process, program eligibility, and the reliance on matching grants.

Scenario 4: Equity-focused state grant formula

Under Scenario 4 the state provides annual wealth-adjusted per-pupil grants to school districts for facilities construction and modernization to equalize the ability of local school districts to raise funds for facilities. Districts receive these grants regardless of their local capital spending.

In this case, policymakers make a more distinct departure from the SFP. In 2015, the Legislative Analyst's Office recommended an annual grant to ensure regular investment, with a sliding scale to adjust for differences in the local ability to raise revenue.[59] Despite this recommendation, the idea of providing funding on an annual basis through such a formula has been largely absent from the discussion of the future of state facilities finance. This scenario could enhance stability and equity, bringing the capital budget in line with the philosophy of the LCFF, which has directed additional operating resources to high-need districts since 2013. This scenario presents a hypothetical version of a state program based on these goals, to demonstrate relative impact.

Scenario 4 aims to ensure that all districts have the ability to spend at least $1,250 per student per year to invest in capital expenses, which could be applied toward regular capital repairs/renewals and/or larger construction/modernization projects.[60] Local ability to pay would be determined based on property wealth and the revenue that could be hypothetically raised through a one percent tax on assessed values. This formula provides a proxy for ability to pay without creating unintended incentives for districts to underspend. State funds would then be distributed to fill in the difference between the benchmark and the one percent level of effort. The goal is to ensure that all districts can achieve this level of investment without requiring extreme differences in tax rates across districts. While the formula focuses on equalizing resources, it does not force local spending and cannot guarantee the full elimination of all unmet needs.

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[58] A similar proposal to raise local bonding limits, AB 2429, was introduced late in the 2016 legislative session. http://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201520160AB2429

[59] Naqvi, J. (2015). "The 2015-2016 Budget: Rethinking How the State Funds School Facilities." Sacramento, CA: The Legislative Analyst's Office. http://www.lao.ca.gov/reports/2015/budget/school-facilities/school-facilities-021715.aspx The office made a similar recommendation in a 2001 report: Hill, E. G. (2001). "A New Blueprint for California School Facility Finance." Sacramento, CA: The Legislative Analyst's Office. http://www.lao.ca.gov/2001/school_facilities/050101_school_facilities.pdf

[60] This analysis sets the equalization level at $1,250 per pupil to cover a significant share of facilities needs while keeping the total cost to the state somewhat manageable. Policymakers could set a different level, noting that our model predicts every $50 increase in the per pupil level will increase total state cost by about $1 billion.

Table 3: Key differences between state policies in each of four state funding scenarios

	Scenario 1: No State Support	Scenario 2: State Competitive Grant Matching Program	Scenario 3: Small State Role Targeted to High-Need Districts	Scenario 4: Equity-Focused State Grant Formula
Bond Size	$0	$6.5 billion (half new construction, half for modernization)	$3 billion (half new construction, half for modernization)	As needed, up to $1,250 per pupil per year.
Debt Limits	2.5% for USDs	2.5% for USDs	4% for USDs	2.5% for USDs
Match Rates	*NA*	50% for new construction, 60% for modernization	66% for low-capacity districts, 33% for high-capacity districts	*NA*
Equalization	No	No	No	Up to $1,250 per student to equalize funds from a 1% property tax.
Eligibility	*NA*	Based on population growth and estimated replacement rate[61]	Based on population growth and estimated replacement rate	Based on assessed property values
Prioritization	*NA*	First-come, first-served (modeled as random)	First-come, first-served (modeled as random)	By formula

[61] The model used in this study assumes that buildings are eligible for modernization after 25 years and schools are built evenly across time. Therefore, in any given year we assume 4 percent of all buildings will be eligible for the grants.

Desired Outcomes: Adequacy, Equity, and Affordability

As Californians weigh the options before them in November and beyond, they will be confronted by complex policy choices in order to effectively meet K-12 school facility funding needs. Seemingly minor details of program design can have fiscal impacts in the billions of dollars and dramatic effects on the quality of school conditions for many thousands of children. To determine which of these alternatives is best, stakeholders must first decide how relative benefits and costs should be measured and valued.

The ideal state facilities program addresses multiple goals—ensuring safe and healthy conditions for all students including those who are most vulnerable, while minimizing costs amid a complex and constrained budgetary environment. State officials have expressed these competing demands. In his January budget proposal, Governor Brown noted: "California needs a new school facilities program…that focuses on districts with the greatest needs, while providing substantial new flexibility for districts to raise the necessary resources for their facilities."[62] A few weeks later, while announcing his support for the November bond, State Superintendent of Public Instruction Tom Torlakson described his goals for the measure: "It is our responsibility to advocate for policies that help ensure every child has access to a high-quality learning environment."[63]

To better understand the implications of the policy decisions facing Californians on the ballot and further down the road, this study will focus on three key dimensions to assessed the four scenarios examined: the resulting statewide adequacy of facilities investment, the ability for all districts to equitably conduct necessary maintenance and construction, and the total cost of the program for the state, including issues of bureaucratic complexity and legality. Within each of these categories, performance can be measured in multiple ways. Additionally, as the goals are interrelated, moving towards one tends to affect the other two.

Adequacy: Ensure sufficient investment in all school buildings

Ensuring the provision of safe and healthy conditions is the primary goal of school facilities policies. Perhaps the clearest measure of adequacy is the level of unmet need—the gap between industry recommended benchmark spending levels and total resources designated for facilities. The greater the size of this gap, the more likely that districts will forgo critical repairs, go without up-to-date classrooms, or cram students into overcrowded buildings and portables, all of which can have negative impacts on student and staff performance and health. In addition to the aggregate level of unmet need, we will also look at the average unmet need per pupil across districts and the number of districts facing at least some unmet need. A state program that reduces need a little bit for all districts will perform differently

[62] Brown, E. G. (2016). Governor's Proposed Budget Summary 2016-17. http://www.ebudget.ca.gov/2016-17/pdf/BudgetSummary/FullBudgetSummary.pdf

[63] Torlakson & O'Connell. (2016).

on these measures than one that makes large investments in a subset of districts and smaller—or no—investment in others. Finally, understanding adequacy requires looking at the unmet needs within each type of spending, including new construction, modernization, capital renewals, and maintenance.

Equity: Ensure access to full facilities funding for all districts

State programs can also be judged by the degree to which they enable all districts to provide quality facilities for their students without placing disproportionate tax burdens on the poorest communities. This study measures the equity across districts as the degree to which the program reduces unmet need in low-wealth districts, as well as the difference between the outcomes in the wealthiest and the poorest districts.

In addition to this main equity concern, there are also equity issues involved in ensuring that funds are distributed through a fair and transparent process, through which similarly situated districts are equally able to access funds. Finally, stability of the program over time can be thought of as the equitable distribution of funds over time. By allowing district leaders to anticipate a predictable level of funding, this stability promotes even distributions of investment and local costs.

Affordability: Limit state costs, complexity, and legal concerns

Lastly, the program should not place an unsustainable burden on the state in terms of cost and administrative effort. The total cost to state taxpayers and the impact on overall state general obligation debt levels is a prime concern of the Governor (and others). In addition to minimizing overall costs to repay bonds, the ideal program should not be unduly complicated to administer, particularly during a period of time in which state level policymaking in education is entrenched in the development and implementation of a new accountability system (LCFF), a new state testing regime (SBAC), and compliance with a new federal education bill (ESSA).

Along with these immediate costs, our study considers the potential legality of state options. In 2014, the U.S. Department of Education's Office of Civil Rights issued a Dear Colleague letter reminding states of the imperative to continue to support equal access to educational resources, including the built environment.[64] In California, previous lawsuits (including *Williams v. California, Godinez et. al. v. Davis et. al.,* and *Serrano v. Priest*) have shaped the conversation about current policy.[65] Our study is not a legal analysis and does not deeply consider the full legal implications of each option, but we do make note of possible concerns. Leaving the state vulnerable to obvious legal challenges not only leaves children in potentially harmful situations, but also opens up the state to significant long-term costs.

Finally, considering costs requires an eye to the long-term consequences of each policy choice. Investment in maintenance today can generate savings in the future. Delaying repairs can result in increasingly expensive preventative and corrective fixes, more common and costly emergency repairs and replacements, and a greater likelihood that replacing or

[64] United States Department Of Education, Office For Civil Rights (2014).
[65] Brunner (2006).

closing an entire school facility becomes the only cost-effective option. In addition to these direct construction costs, short-term savings also must be weighed against the potential long-term costs of diminished student health and educational attainment in facilities that provide poor learning environments and cannot keep up with changing educational standards and technology. Providing high quality facilities should be done with cost-effectiveness in mind, but those costs should be thoughtfully defined.

Weighing the options between various scenarios with these criteria in mind provides a framework for understanding their relative merits. Some stakeholders will weigh certain factors more heavily than others, of course, but these criteria can at least serve to shape the conversation more productively. This process also helps ensure that the state pursues a facilities program that is in line with key guiding principles, such as those suggested by a 2015 UC Berkeley report: equity, local district accountability, fiscal stability and predictability, facility adequacy, and program simplicity.[66]

Methods: Modeling Outcomes of Four State Funding Scenarios

The remainder of this report illustrates the likely impacts of the four scenarios using a model to calculate unmet need in each school district across California. In this section, we describe our goals, basic methodology, data sources, and limitations of this approach. In the following section, we report the results and discuss implications for California policy. For full detail on the data and assumptions used in this model, see the Appendix.

Our simplified model of the school facility financing choices facing each of California's one thousand school districts provides an opportunity to build on previous studies.[67] By generating quantifiable estimates of adequacy, equity, and cost, we calculate the relative outcomes of state policy scenarios under a given set of assumptions. The model also allows us to vary assumptions and determine whether the performance of each scenario is consistent across different conditions.

Tracking state and local funding decisions

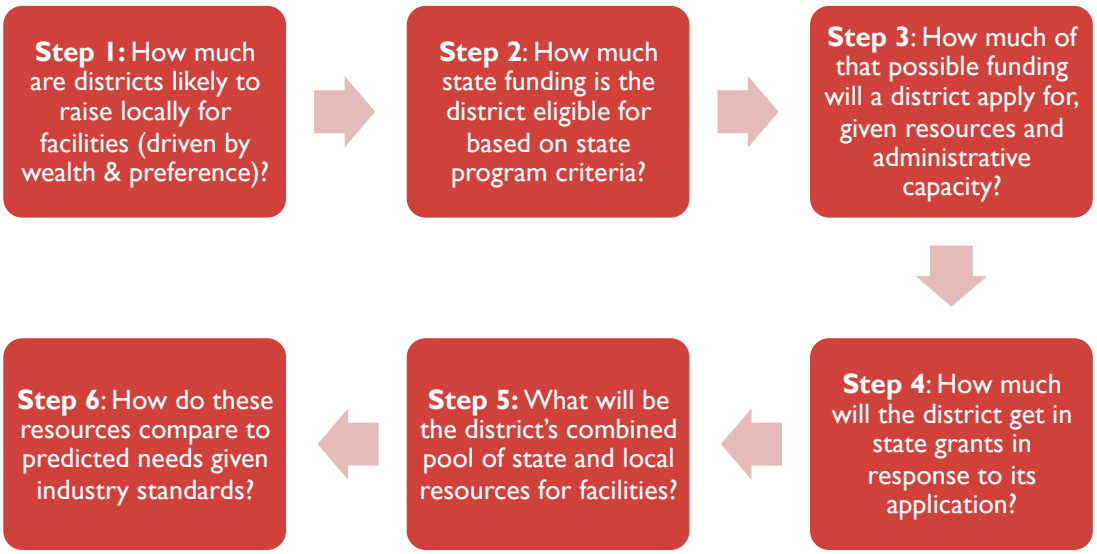
The model calculates unmet need and resources in six stages that illustrate the facilities funding process, as shown in Figure 3. The majority of this process focuses on spending that occurs on the capital side of a school district's budget. Decisions about this spending involve complex local questions about issuing local debt and applying for state funding, as well as factors outside of the district's control that can determine whether or not they get state support. The model also includes local decisions to fund facility maintenance and operations, which pulls from a district's general operating budget.

[66] Vincent, J. M. & Gross, L. S. (2015). "Guided by Principles Shaping the State of California's Role in K-12 Public School Facility Funding." Policy Research Working Paper. *Center for Cities and Schools*. University of California, Berkeley. http://citiesandschools.berkeley.edu/uploads/2015_Guided_by_Princples.pdf

[67] See, for example, Brunner, E. J. and Rueben, K. (2001). Financing New School Construction and Modernization: Evidence From California. *National Tax Journal* 54(3): 527-39 and Arsen & Davis (2008).

The model is constructed using data on enrollment, enrollment growth projections, assessed valuation, historical school finance, bond elections and issuances, past grants under the SFP, and information from LCFF allocations. All dollar amounts are adjusted to 2014 dollars for comparability. The compiled dataset covers the overwhelming majority of California school districts and students: 1,003 districts whose enrollment accounts for more than 99 percent of all public school students in California. A detailed description of all data sources and availability is presented in the Methods Appendix.

Figure 3: Key decision points that determine unmet facilities needs



In Step 1, the model assumes that, for each district, there is an underlying amount that could feasibly be spent on local capital programs. This amount is estimated using districts' history of local capital spending.[68] In addition to the limitations of local ability and preference that shape this spending, school districts also face legal limits under state policy. Because the majority of facilities funding comes from local general obligation bonds, we assume that a district can only use local resources to the extent that they have remaining bonding capacity beyond their current debt outstanding.

Step 2 calculates how much and what kinds of state funding the district would be eligible for. This is a function of district characteristics (i.e., how fast the population is growing, if the buildings are old enough to warrant modernization or repair, etc.) as well as the policies set by the state to determine eligibility and measure those characteristics.

The amount of local capital available (estimated in Step 1) and the total eligibility (determined in Step 2) both limit the amount of state funding for which districts can actually apply. Districts may also choose not to apply for their full eligible amount. There is a significant amount of local effort involved in applying for the state program and raising the

[68] Comparable spending data from the common core of data covers the years between 1995 and 2013. Our analysis calculates the 75th percentile of spending during these years as an estimate for feasible local capital spending. See the full discussion of this assumption in the Methods Appendix.

local capital to match state funding. For example, a district with a small number of staff or limited knowledge of the procedures and common challenges may reasonably be somewhat less likely to apply.[69] Step 3 adjusts for these considerations to determine how much of the eligible state funding the local district will apply to access. See the Methods appendix for a description of how these adjustments are calculated.

Having predicted each school district's decision to apply for the state program, Step 4 calculates the amount of state funding they will get in response. Here is where most of the variation across policy scenarios comes into play. The total amount of state grants received depends on the match rate, the order in which districts access funds, and the total amount of funding available.

Step 5 adds the various components of spending on facilities that the district is expected to have at its disposal. This includes state grants, local matching funds from the capital budget, other local capital revenues, and maintenance and operation of plant spending from the operating budget. State grants and local matching funds have already been predicted. Most districts have additional capacity to raise capital funds beyond the local match. The model makes a fairly optimistic assumption that a generous amount of those other local capacities will yield funds that can be spent on facilities, but also assumes that, if they can do so while maintaining the local match, districts will scale back local spending in response to the state grant to some degree.[70]

In addition to local spending from the capital budget, Step 5 also takes into account resources predicted for facility maintenance and operations activities. Although maintenance spending comes from a separate budget and is largely outside of the state policy conversation about state funding for local school construction and modernization, the local commitment to regular upkeep is critical to providing safe and healthy facilities. Unmet maintenance needs can manifest later as costly capital replacements. In recent years, maintenance spending has averaged about 10 percent of district operating budgets. Our model assumes that districts continue to dedicate about one tenth of operating funds to maintenance cost. Adding these local operating resources to state grants and local capital outlay yields the total resource calculation for each school district.

Lastly, in Step 6, the model compares how the calculation for total resources compares to the benchmark level of need for each district. As a reminder, the industry standard benchmarks are calculated as a share of the current replacement value (CRV) of all buildings in the district, plus new construction to meet enrollment growth. The key output of the model is the calculation of expected need that will be unmet under each of our four scenarios. Calculating unmet need for each district can be measured in multiple ways to show program adequacy, including: the aggregate adequacy of facilities spending, the average unmet need per pupil, and the average share of needs that go unmet. These metrics allow us to explore the variation across spending types and the equity across groups of districts, particularly high- and low-property wealth districts.

[69] See the Methods Appendix for a full description of these adjustments.
[70] For a full discussion of this effect, see the Methods Appendix.

Findings: Predictions Show High Unmet Needs and the Importance of State Program Design

The model illustrates the statewide scale of school facilities funding need and suggests the importance of a well-designed state program in meeting those needs with both state and local funds. Next, we report the model results—summarized in Table 4 below—and explore the relative performance of the four scenarios. The findings illuminate how each scenario reduces unmet needs overall, improves the equity of facilities funding, and maintains affordability for the state—all important outcomes to California lawmakers.

Table 4: Summary of comparative 4-year outcomes from our model of resources and needs

	Scenario 1 No State Support	**Scenario 2** State Competitive Grant Matching Program	**Scenario 3** Small State Role Targeted to High-Need Districts	**Scenario 4** Equity-Focused State Grant Formula
Adequacy				
Remaining total unmet needs (billions)	$28.0	$26.0	$19.7	$20.6
Unmet capital needs (billions)	$21.4	$19.3	$13.1	$14.0
Unmet maintenance needs (billions)	$6.6	$6.6	$6.6	$6.6
Avg per pupil unmet need	$4,224	$4,015	$3,625	$3,073
Equity				
Low wealth to high wealth unmet needs	3.0 to 1	3.0 to 1	2.6 to 1	1.7 to 1
Average unmet need per pupil, low-wealth districts	$5,608	$5,288	$4,373	$3,179
Costs				
State expenditures (billions)	$0	$3.8	$2.2	$12.7
Local expenditures (billions)	$44.0	$42.3	$51.2	$39.0
Total facilities resources (billions)	$44.0	$46.2	$53.3	$51.6
Bureaucratic complexity	Lower	Constant	Higher	Higher
Legality concerns	Potential	Unlikely	Unlikely	Unlikely

We find that California faces a challenge of significant scale with its K-12 facility needs, as shown in Table 4. Unmet needs range from $20 billion to $28 billion (or between $4.9 billion and $7 billion per year) and other measures of adequacy reflect a similar picture. Measures of the distributional equity of outcomes also show that, in all cases there are gaps between the wealthiest and the least wealthy school districts in terms of unaddressed facilities needs. This suggests there are large challenges regardless of the funding approach used by the state.

Still, the differences between these policy choices are important; the four scenarios explored in this model generate decidedly different results on all three criteria (adequacy of funds, equity of the distribution, and program affordability). The results also show that often, these criteria are interconnected: programs that reduce the level of unmet need inherently come with increased costs at either the state or local level.

Comparative outcomes show differences between scenarios

To further understand the results of this analysis, the rest of this section provides additional detail on each scenario and how they compare.

Unmet needs will be largest in Scenario 1, with no state involvement

A four-year model with moderate assumptions[71] estimates that Scenario 1 would result in unmet need of $28 billion.[72] This translates into $4,224 of unmet facility need per student in the average district—more than $1,000 per student per year—with the vast majority of districts facing some amount of unmet need.[73] There are large disparities in per pupil unmet needs: districts in the lowest quintile of assessed value experience a gap nearly three times the size of those in the wealthiest quintile.

Scenario 1 costs the state nothing in terms of program costs and requires little administrative effort from state government officials. Considered more broadly, however, this scenario is not without costs. While the state contributes nothing from the state General Fund, school districts and their local taxpayers spend $35.6 billion in local funds. Additionally, the state potentially leaves itself more vulnerable to legal challenges as delayed and deferred investment in school buildings accumulates, particularly in low-wealth communities, or as residents in poor districts wind up paying higher tax rates than their wealthy neighbors (i.e., a *Serrano* violation). Such lawsuits are highly disruptive to the school finance system and even the threat of legal action can generate uncertainty.

Continuing the SFP under Scenario 2 is better than no program at all

Relative to Scenario 1, the adequacy of school facilities funding improves if voters pass a bond essentially continuing the provisions of the SFP (like Proposition 51). This policy alternative reduces aggregate unmet need by more than $2 billion over the four-year period of the model. While most districts still see unmet needs, there is a reduction—about $200 less—in the average level of unmet need per pupil.

The improvements in facilities adequacy (as well as the overall cost of the program) would be even higher, but the division of funding by program type in the November 2016 bond is misaligned with underlying trends in statewide facility needs. School-age population growth is low or declining in many counties across the state, but half of the funding authorized

[71] For details on these assumptions, see the Methods Appendix.
[72] Across all of these results, overall unmet need is calculated as the sum of unmet capital need and unmet operating need. In practice, some districts may find ways to at least partially compensate across these two sides of the budget. This assumption may slightly overstate unmet needs, but it has no effect on the relative performance of the scenarios studied.
[73] 945 districts (94%) have unmet needs under Scenario 1 on either the capital or the operating side of the budget.

under the bond program—$3 billion—is allocated for New Construction.[74] On the Modernization side, demand exceeds supply of grant funds within the four-year timeframe and there are some districts that do get the state funds that they apply for, as the money has already run out. With New Construction, however, the majority of funds go unspent over four years because most districts do not meet the eligibility requirements for these funds in our model because they do not have the enrollment growth to be eligible. Because of limitations on where the money can go, districts apply for and receive less than $590 million of the state funds set aside for New Construction.

Scenario 2 would also continue a pattern of largely inequitable distribution and availability of resources for school facilities. The difference between rich and poor districts (as measured by property wealth) remains large, with low-wealth districts still facing close to three times the gap that high-wealth districts do. This is a marginal improvement over Scenario 1, with equity gains largely attributable to Financial Hardship supplemental grants. Additionally, given the improvements in adequacy, low wealth districts are better off in absolute terms than in Scenario 1—unmet needs are now more than $300 lower per student in these districts.

In terms of affordability, Scenario 2 would require $3.8 billion in state grant payments over the course of four years.[75] Local level spending would still make up the majority of investments, at a very similar level to the local spending predicted under Scenario 1. In addition to the direct grant amounts, the SAB and OPSC will need to continue the work of implementing and administering the eligibility determination and funding authorization for state grants. While this represents a continued cost, the infrastructure is already in place and no new statutes or regulations need to be written. Meanwhile, passing the bond likely puts the state on sturdier legal ground with students less likely to be in grossly inadequate buildings. The SFP has avoided major legal issues since the *Godinez* suit in 2002.[76]

[74] We also assume that half of the $500 million for charter schools is also used for new construction projects in those schools.

[75] This analysis includes the nominal value of the bond authorization, not the full cost to repay with interest. The full cost to repay bonds sold depends on a number of factors at the time of bond issuances. The Legislative Analyst's Office estimated that repaying Propositions 51's $9 billion bond authorization (which includes $2 billion for community college facilities), would require $17.6 billion over 35 years. Legislative Analyst's Office (2016, May 18). "Overview of 2016 School Facility Bond Measure." Presented to: Joint Hearing of Assembly Education, Senate Education, and Assembly Higher Education Committees. http://www.lao.ca.gov/handouts/education/2016/Overview-School-Facilities-Bond-Measure-051816.pdf

[76] The *Godinez* lawsuit in 2002 challenged the first-come, first-served policy of the SFP. See Gorsen, et. al. (2006) for detail on the case and its resolution.

Scenario 3 shifts burden to the local level, reduces unmet need

Of the four scenarios, Scenario 3 most reduces aggregate unmet need statewide by raising limits on local spending and directing state grants to the highest need school districts. Total unmet need is reduced by $8.4 billion relative to Scenario 1, and by $6.3 billion more than under Scenario 2. The average unmet need per pupil under Scenario 3 also improves relative to both Scenario 1 and Scenario 2, falling to $3,625.

Under Scenario 3, fewer districts experience very high levels of unmet facility need than in the previous two scenarios. One reason districts may have very high unmet need is if they have already issued debt up to their legal limit and cannot generate additional resources even if they would be expected to be able to commit to school facilities given past behavior. Raising the local bonding limit would allow these districts to potentially tap additional local resources.

Still, many districts face gaps because they lack sufficient property wealth to support adequate capital investments. The grants that the state provides under Scenario 3 are highly targeted to those districts. By using net capacity to determine which districts receive the higher match, the state would direct funds to districts that either have low bonding capacity to begin with because of low property wealth or to those districts that have already issued a lot of debt. Most districts eligible for the higher match rate are the former. Of the 433 districts that have net capacity less than $15,000 per pupil, 315 of them—73 percent—have full bonding capacity less than that amount and are eligible for the higher match rate regardless of their outstanding debt.

As with Scenario 2, splitting the available state funds equally between New Construction and Modernization limits the overall effectiveness of the program at reducing unmet needs. All authorized Modernization funds are claimed, and even with the smaller total bond of $1.5 billion, the majority of New Construction authorization does not get used within four years, again because too few districts have the population growth to be eligible.

In addition to increasing overall facility funding adequacy, Scenario 3 improves conditions for low-wealth districts. While the average unmet need per pupil across all districts is fairly similar to Scenario 2, the least wealthy districts see a more significant change. While their unmet needs are still higher than in other districts, the difference between this group and the highest wealth districts has shrunk.

Scenario 3's improvements in facility funding equity across districts are the result of a progressive, and necessarily uneven, distribution of state funds. With larger grants going to some districts and less funding overall, the grant funds run out faster than in Scenario 2. As a result, districts receive very different amounts from the state, with almost half of the districts that apply for state funds (469 out of 935) getting no grants at all. Of course, policymakers would need to be aware of the potentially problematic situation that arises where districts with just over $15,000 in net capacity per pupil receive significantly less than similarly positioned peers on the other side of the net capacity threshold. Further policy design, such as additional intermediate match rates or a phase-out, could mitigate the

inequities between districts on either side of the threshold. Still, the end result is a more equitable statewide distribution of the burden of unmet facilities needs overall.

Scenario 3 also comes at a relatively low cost to the state, at least in the short term. The $8.4 billion reduction in unmet need (relative to Scenario 1) requires just $2.2 billion in state grants. The program would likely require some additional administrative changes for state officials. Much of the existing agency structure could be maintained, with the SAB and OPSC continuing their approval and monitoring roles, but new rules and processes would have to be put in place to manage the varying match rates and the higher bond limit. Most of these costs would accrue in the initial phase of the program—with the exception of continuing to monitor information about net capacity to issue debt in order to determine the match rate. Given that programs like this have been put in place in other states as the response to lawsuits over inequities or inadequacies, it is unlikely that legal threats will be an issue under this scenario, though California has no direct experience with a program like this. And, of course, even though available state funds are more equitably distributed, Scenario 3 still leaves a gap in funding—although the overall adequacy gap is the smallest of all the scenarios.

Scenario 3 may appeal to state policymakers interested in reducing the most severe cases of underinvestment. The extent to which that will happen under Scenario 3, also depends on local resources increasing by $1.8 billion per year relative to Scenario 1 for a total of $12.8 billion in combined maintenance and capital spending. This is somewhat high, but not out of the norm. For example, from 2000 to 2010, inflation-adjusted spending by California school districts in these two categories averaged just over that amount at $12.9 billion per year. In recent years, however, maintenance and capital spending has been decidedly lower, averaging $10.8 billion between 2011 and 2013. The dip in more recent years may be a result of the Great Recession, the housing crisis, and/or state budget cuts that affected grants to local governments. If, however, the dip signifies a longer-term downward trend in local ability (or public will) to pay for facilities, it threatens the viability of Scenario 3.

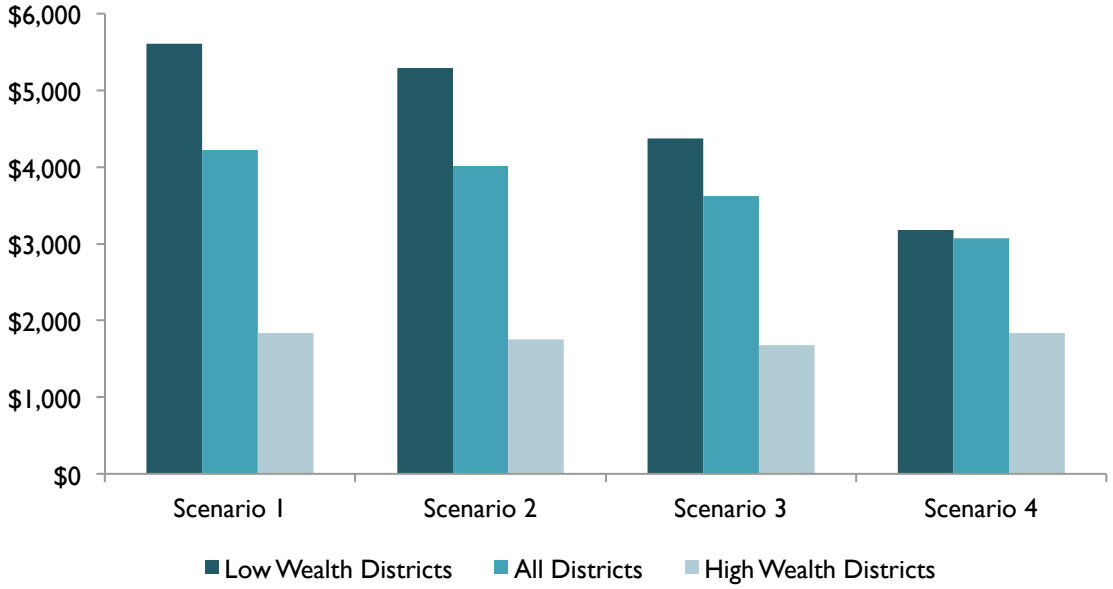
Scenario 4 provides the greatest equity gains, but at a higher state cost

Finally, the direct equalization program in Scenario 4 provides the most significant improvements in equity and district-level adequacy, but comes with significant near-term costs to the state. In aggregate terms, Scenario 4 results in $20.6 billion of unmet need over the four years modeled. These results are a clear improvement over the unmet needs that accrue with no state involvement (Scenario 1) and more than $5 billion less than if the November 2016 bond (or similar) is passed (Scenario 2). On the other hand, Scenario 4 results in about $1 billion more in total unmet facilities need than under Scenario 3. While the program in Scenario 4 is designed to equalize local ability to pay (at least up to $1,250 per pupil per year), it does not guarantee that all school districts actually spend at that level.[77]

[77] We chose the $1,250 per pupil level to cover a significant share of facilities needs while keeping the total cost to the state somewhat manageable, but policymakers could vary this parameter.

Most districts, though, do see an improvement in adequacy under Scenario 4. The average unmet need per pupil drops in Scenario 4, to $3,073 (compared to $4,173 under Scenario 1).

Figure 4: Unmet need per pupil under each scenario (4-year model)



Scenario 4 also most substantially improves equity between high-wealth and low-wealth districts. The unmet need per pupil in the lowest quintile of property wealth ($3,179) is just 60 percent of what it was with no state involvement or in Scenario 2. The difference between low- and high-wealth districts is also reduced in this scenario (see Figure 4). Moreover, unmet needs in moderately low-wealth districts (quintiles 2 and 3) are essentially as low as they are for the wealthiest districts in the state. These improvements in equity are an almost automatic result of the state effort to equalize ability to pay. The equity effects of Scenario 4 are somewhat limited by the cap on per pupil grants at $1,250 per pupil, as some districts could benefit from even more robust state assistance to ensure full funding of facilities.

Undoubtedly, there are political and fiscal challenges in moving to a state funding system based on equalization grants. The improvements in adequacy and equity under Scenario 4 come at a $12.7 billion cost to state taxpayers, many of who will not see any increase in state funding for facilities in their own school districts. In Scenario 4, the state costs are more than twice as high as in any other scenario, but less than the $14.5 billion in state SFP grants allocated over just 3 years from 2003 to 2005. Still, the repairs and construction these grants fund will need to be addressed sooner or later.

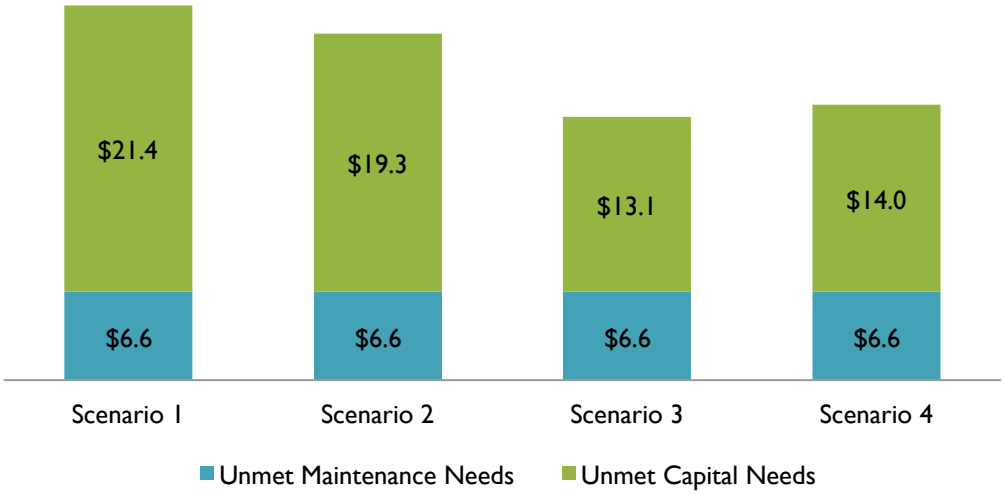
Moving to a grant equalization system also has its own bureaucratic complexity that state lawmakers would need to address. A new or revamped system would be needed to regularly track the taxing power of each local school district, set the per pupil equalization level, distribute the funding, and establish some kind of accountability system to verify that funds are in fact spent on necessary construction and maintenance projects, possibly as part

of the district's annual audit. While there may be significant up-front administrative investment needed, it is possible that a recurring annual grant program may prove easier to administer than the application and review process that currently exists under the SFP and provide greater predictability and ease for the districts receiving the funds.

Unmet needs remain substantial in all cases

In every scenario, the need for school facilities investment statewide outstrips available resources over a four-year time frame. Given construction industry standards, California school districts face $71 billion in needed construction, repairs, and maintenance over the next four years. For context, total annual operating spending for all districts was just over $57 billion in 2013.[78] Under every policy scenario, at least some unmet need remains. (See Figure 5.) While this gap is large, it is not necessarily surprising given past trends in facilities spending and is in line with other estimates.[79]

Figure 5: Over 4 years, unmet needs are pervasive on both sides of the K-12 facilities budget ($ billions)



The remaining unmet needs across the four scenarios include gaps on both the capital and operating sides of school facilities budget. The total amount of unmet need for capital outlays—generally used to construct new buildings or undertake major repairs or renovations—varies with the policy changes in our model. The estimated unmet need for maintenance spending from districts' operating budgets, by contrast, is constant across the scenarios in our model.[80] The gap between industry standards and predicted resources for

[78] Author's analysis of Local Education Agency (School District) Finance Survey (F-33) published by National Center for Education Statistics. Common Core of Data. http://nces.ed.gov/ccd/f33agency.asp.
[79] Filardo. (2016).
[80] While theoretically separate, in reality there is some grey area between capital and operating expenses for facilities when it comes to regular repairs. More importantly, spending on ongoing maintenance plays a vital role in averting more expensive capital projects. Our model does not vary maintenance spending based on capital spending, but it is plausible to think that maintenance costs (and unmet needs) would increase when there are larger unmet capital needs. For a discussion of how the overall results are impacted by variation in maintenance and operations spending, see the Methods Appendix.

maintenance—$6.6 billion over four years—is largely a problem for local leaders, who have the primary authority to allocate operating funds. While outside of traditional state facilities programs, reducing the maintenance gap will be critical for ensuring adequate and equitable conditions for all students.

It is important to note that our model also predicts a fairly high level of local capital spending by school districts. In most years over the past two decades, most school districts did not spend as much as this model predicts. Thus, estimates of the level of total unmet need in the coming years are likely conservative. Without a major increase in spending patterns relative to the past several decades from either local governments or the state, many California school districts risk falling short on health and safety standards. Likely, both local and state levels of government will need to step up their efforts to truly close the gap for all children in California.

Sidebar: The limitations of modeling state funding scenarios

While our model can provide policymakers with a better understanding of the impact of different state program choices, there are also important limitations of this approach. The first—and the largest—point of caution with this analysis regards uncertainty in predicting the actions of school districts. It is nearly impossible to accurately reflect the true preferences, resource constraints, and political dynamics that comprise the full experience of all 1,000 school districts. The uncertainty increases at the individual district level; our results are most useful on an aggregate statewide basis. Even aggregate results should be taken as an illustration of the potential impacts of state programs, and do not represent a fiscal impact study or precise prediction of the future.

Additionally, our analysis ignores some of the true complexities involved in school facilities finance. We consider the main programs at the state and local level, but not a number of smaller revenue sources (e.g. Prop 39 energy efficiency funds or federal Qualified Zone Academy Bonds (QZABS)[81]). Our analysis is largely focused on general obligation bonds, at both the state and local level. While these have served as the primary vehicle for funding facilities in California to date, other states have taken alternative approaches, which utilize other revenue sources, and a thorough policy discussion should consider the potential benefits of such options.[82]

On the cost side, the model focuses on the direct costs of constructing and maintaining facilities, and does not include additional costs that may be incurred. For example, many districts, particularly those lacking in staff and resources, contract out to the private sector for assistance applying for state grants and issuing bonds.[83] Districts in poor fiscal health may face steeper than average costs when issuing bonds, entering into more complex debt arrangements with payments that grow over time, such as Capital Appreciation Bonds (CABs).[84] Some districts may have extreme cases of environmental hazards that need remediated in facilities or land. Lastly, this model does not penalize delayed investment. Forgoing regular maintenance and repair can translate into much higher costs down the road, as leaky faucets turn into flooded basements.[85]

Another limitation of this approach comes from the lack of detailed statewide information on California's school buildings. When estimating need, ideally the number of unhoused pupils and the number of buildings eligible for modernization would be determined using information about current square footage, building age, and condition of good repair. None of this information is available, thus, the model must rely on logical estimates, which inherently minimize the true variation in need across districts. There is also no information for all districts on the variation in facilities investment that may occur between schools within the same district.

[81] See http://www.energy.ca.gov/efficiency/proposition39/ and http://www.cde.ca.gov/ls/fa/qz/

[82] For a 50 state review of PK-12 school facility capital funding approaches, see Filardo, M., Cheng, S., Allen, M., Bar, M., & Ulsoy, J. (2010). State Capital Spending on PK-12 School Facilities. Washington, DC: 21st Century School Fund. http://www.21csf.org/best-home/docuploads/pub/221_StateCapitalSpendingonPK-12SchoolFacilitiesReportNov302010Final.pdf.

[83] Rivera, M. D. (2016) "Inequity and Privatization in School District Facilities Financing: A Mixed Methods Study." UC Berkeley Graduate School of Education Doctoral Dissertation.

[84] County of Orange, California Grand Jury (2013-14). "School Bonds – The Untold Story of Assessed Values."

[85] Council of the Great City Schools. (2014).

Policy Implications: Applying Model Results to California's Choices

Our study provides lessons for the policy debates about K-12 school facilities that will inevitably continue for years to come, in California and across the country. In the immediate term, the results of the model yield important findings related to the choices facing California voters and the legislature over the next several months. Our findings show that while any state role is better for reducing unmet needs than no program at all, there are significant potential improvements to be realized over the 2016 bond with regard to the three important criteria: adequacy, equity, and affordability. Over the longer term, preferred policy options will depend on how policymakers prioritize criteria like equity or current costs to the state.

Proposition 51 is imperfect, but helps address immediate needs

Passing the proposed bond authorization on California's statewide ballot in November 2016 is clearly better for the adequacy and equity of school facilities than having no state funding at all. Under Scenario 2, in which voters pass a measure modeled off of Proposition 51 and continue a state competitive matching grant program very similar to the SFP, adequacy and equity improve relative to the alternative of no state involvement (Scenario 1). State level costs in terms of the grant payments and bureaucratic effort are, of course, higher than in Scenario 1, at least in the short term.

While Proposition 51 will reduce a share of unmet needs, it is still less effective, equitable and cost-efficient than the two hypothetical alternative scenarios—or a program designed with the best aspects of each—could be. Scenario 3—a smaller state role targeted to high-need districts—presents an alternative policy that could achieve greater reductions in overall unmet need at a lower cost to the state. These benefits are dependent on local governments with capital resources substantially increasing their investment in school facilities. Meanwhile Scenario 4—an equity-focused state grant formula—is the best option for average district-level adequacy. By committing to equalize the ability to pay for all districts, the state would acknowledge the reality that regular investments are needed in K-12 school facilities. Such a large-scale investment does come with significant near-term costs (but arguably does much to address escalation of future costs).

Other states show the consequences of going without state funds

Moving forward with no state funding (Scenario 1) poses risks for student health, safety, and educational attainment—and is highly susceptible to legal challenges.

Michigan provides an example of what California could look like without a state-local funding partnership for K-12 facilities. Several reports on school facilities across districts in that state show significant disparities related to district wealth and other characteristics. A study on spending in the 1990s showed that higher capital spending by a school district was linked to higher local property values, and that the likelihood of passing a bond increased

when districts had already passed a bond before.[86] Other researchers found similar inequities in Michigan local bond elections between 1998 and 2006: bonds are less likely to pass when the share of poor students is high, voter education is low, or the district is rural.[87] Yet another study verified these patterns of unequal spending—noting that where property values are low, school districts tend to tax themselves at higher rates and struggle to raise anywhere near the facilities resources available to their wealthy neighbors.[88]

Nevada has also had essentially no state support for school facilities. Relying solely on local funding has resulted in significant inadequacies across the state. While there has not been an audit of total statewide needs, unfunded facilities costs have been estimated at $7.3 billion in Clark County School District, which includes Las Vegas.[89] These costs are daunting—18 times as much as the district's facilities budget for 2014. Rural areas have also faced significant deferred maintenance, exacerbated by their much smaller tax bases. Outdated rural schools in the state are now a $450 million liability.[90]

The experiences of states like these two without some kind of state support for K-12 facility needs highlight the difficulty of achieving adequacy without state funds and the particularly troubling inequitable results for communities most in need.

California history shows benefits and pitfalls of a competitive bond program

Meanwhile, California's past experience under the SFP shows the potential impacts of passing the November 2016 ballot measure. Overall, SFP funds spurred an era of increased investment by local communities and helped districts across the state address critical unmet needs and provide space for a rapidly growing student population. Still, large differences in local ability to pay for facilities persist, exacerbated in part by some aspects of the program design.

This fundamental structural disparity would likely continue under provisions of Proposition 51, which makes virtually no changes to the SFP funding allocation framework. First, in order to access funds at all, local districts have to contribute with a matching grant, posing challenges for districts with low wealth or low political will.[91] Second, funds are distributed through a first-come, first-served process that benefits larger, high capacity districts.[92] Lastly,

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[86] Sielke, C. C. (1998). Michigan School Facilities, Equity Issues, and Voter Response to Bond Issues Following Finance Reform. *Journal of Education Finance* 23(3): 309- 322.
[87] Bowers, A. J., Metzger, S. A., & Militello, M. (2010). Knowing What Matters: An Expanded Study of School Bond Elections in Michigan, 1998–2006, *Journal of Education Finance* 35(4): 374-396.
[88] Arsen, D. and Plank, D.N. (2004). Michigan School Finance under Proposal A: State Control, Local Consequences. *State Tax Notes* (March 15): 903–922.
[89] The Kenny C. Guinn Center for Public Policy Priorities in Nevada (2015). "Expanding Financing Options for Nevada's K-12 Facilities." Las Vegas: The Guinn Center. http://guinncenter.org/wp-content/uploads/2015/02/Guinn-Center-K-12-Education-Facilities-Policy-FINAL.pdf
[90] Ibid.
[91] Gorsen et al. (2006)
[92] In 2002, the state added a priority points system in response to a legal charge (*Godinez v. Davis*) that claimed a need-based program had been replaced with a fundamentally unfair race to get in line first. The priority points system gave preference to districts with unhoused pupils. While this law is still technically on the books,

while simpler than past programs, the SFP is still a complex, multi-step process, and many districts need additional capacity through full-time staff or private consultants to determine eligibility, develop an application, and generally navigate the facilities financing process. These services, which range from planning and design work to detailed financial analysis, transaction administration, and legal support, often carry high costs. In fact, a 2016 study found that small California districts as well as those serving lower-income communities (as measured by median household income), paid significantly higher financial transaction fees associated with local capital financing (general obligation bonds), compared to larger and wealthier districts.[93]

Given concerns about adequacy, equity, and legal challenges under Scenario 1, it appears that going forward with no state funding over the long-term would be clearly worse for school facility adequacy and equity than passing Proposition 51 in 2016. If Proposition 51 fails, inequity and inadequacy would almost certainly increase, as seen in Scenario 1. In California, the lack of state support for K-12 facilities appears increasingly incongruous in the context of the LCFF's focus on ensuring a high-quality education for all students, particularly those with the greatest need.

The state needs a principled, long-term K-12 facilities approach

Regardless of how voters decide in November, leaders in Sacramento have a responsibility to build upon the program or design a new one for the future. While the details of the state-local funding partnership can—and should—evolve to align with the current context, state involvement is as critical for facilities as it is for any other area of education finance.

Ideally, the state should engage in a thorough process to develop a principle-driven, long-term approach to funding facilities that meet the needs that California schools face today, one that balances the goals of adequacy, equity, and affordability. Results from Scenarios 3 (a smaller state role targeted to high-need districts) and 4 (an equity-focused state grant formula) demonstrate the potential for future improvements. While much of the administrative infrastructure can be borrowed from the SFP, it will still take policy reforms to fully articulate a program that is adequate, equitable, not unduly complicated, predictable for local school districts, and encourages the good-faith effort of local communities to appropriately raise local funds according to their ability.[94] To do so, the program should include:

- Clear strategies to remedy the inequities caused by districts' varying ability to pay. These may include variable matching rates, district-by-district equalization, and/or or a funding prioritization for low-wealth or high-need districts;
- Provisions to increase the predictability of funds in a given year, such as a purposeful prioritization order or a guaranteed annual allocation;

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it included an inoperative clause, and today the first-come, first-served principle is still critical to receiving full funding.

[93] Rivera (2016).

[94] Vincent & Gross (2015).

- Total and per-pupil funding allocations that are large enough to be impactful, given the scale and type of overall needs, and to avoid undermining other program goals;
- Supports for local investment, such as removing legal barriers, providing services and/or other technical assistance to reduce local costs, or enforcing accountability and reporting policies.

Moreover, these program components should be combined thoughtfully, with specific principles in mind. There is no one perfect program that fully addresses the multiple, competing goals state and local officials have in mind. The fact that equity, adequacy, and cost are interrelated makes this even more significant. A program that fully reduces all unmet need or fully equalizes ability to pay for facilities will necessarily come at a high cost to the state, school districts, or both. Successful program design will require full consideration of values and goals, and then careful calibration of program elements to align with those principles.

Making use of the state-local match rate

The match rate is a key tool for altering the distribution of funds across districts and over time. Even if the state applies the same funding rate to all projects, the level at which that rate is set will have an important impact on adequacy in each year after the program starts. A high match rate—say $1.50 in state funds for every dollar of local capital spending—would improve the adequacy of total resources in the first few years of the grant program, but the money would run out faster, prompting more severe gaps between needs and resources in the later year of the program if additional funds are not secured. A more modest grant, on the other hand, will stretch the same size bond over multiple years, but may not ever provide enough support to achieve adequacy relative to industry best practices in most districts. Of course, state lawmakers can look to future revenue sources other than the tool that has conventionally been used in California—general obligation bonds. Many other states provide their state match from their general fund or special taxes in a pay-as-you-go program.

Varying the matching rates across programs could spur particular kinds of investment of interest to state policymakers. For example in the SFP, the state provided a higher match rate for Modernization (60/40) than for New Construction (50/50).[95] The intent, in part, was to better incentivize modernization projects. The much smaller per pupil grant in the modernization program, however, reduces that incentive as many grants were insufficient to cover true modernization costs.[96]

[95] Gorsen et al. (2006).

[96] It is important to consider the per-pupil grant size set by SAB along with the match rate. The per-pupil grant effectively acts as a cap on the amount of local resources that the matching grant will be applied to. If that amount is enough to cover the full project costs, then the effective state match is the same as the stated match rate. Currently, however, SAB grants provide only about $10,000 per student for New Construction and about $4,000 per student for Modernization. In recent years, school districts have typically spent about $40,000 per student in capital projects tracked by OPSC. Under a 50-50 match with current per-pupil grant amounts, projects being completed would address 20-50 percent of the needs suggested by industry benchmarks. If districts are actually meeting industry benchmark levels of per pupil spending, the state is effectively only providing 25 percent of the funding for a new construction project. While there were more

The match rate can also be set to direct funds to low-wealth or low-capacity districts. The modeled outputs of the state scenarios illustrate the potential impact of varying the match rate with assessed values. Having the same match rate for all districts leaves low-wealth districts facing nearly three times the gap that high-wealth peers do. Uniform matching grants, like those in Scenario 2, essentially maintain the ratio between unmet need in the highest and in the lowest wealth districts as in the baseline of no state involvement at all. There is no reason to think that low-resource districts are more likely to apply for state grants than their wealthier peers—in fact, under a first-come, first-served program, the opposite may even be expected. If all districts are equally likely to apply, then grants will simply double resources for all districts, but leave the relative level of resources unchanged.

By contrast, if the State of California varies its K-12 facility funding by local district wealth, a greater portion of the state bonds will be granted to high-need districts, effectively reducing the gap in ability to pay. In Scenario 3, for example, all districts with less than $15,000 per pupil in net capacity receive a two-thirds match, while all other districts receive a one-third match.[97] This policy option may be less advantageous for those districts that fall in the middle of the wealth distribution; they are "too rich" to get the highest state match but still lack the resources to fill the gap with local funds the way that the wealthiest districts can. This will be an important challenge for state policymakers to address. Annual grants equalizing ability to pay—like those in Scenario 4—can also be thought of as a sort of matching grant, but one that varies with the wealth of each and every district.

A number of states use similar need-based matching grants to balance costs and equity concerns.[98] Many of these states were required to establish wealth-adjusted programs as the result of education finance lawsuits.[99] New Jersey's program is a prime example of a variable match rate designed, by court order, to even out past disparities in school funding. Put in place as part of the *Abbott* decision—a broad set of rulings from 1985 through the 1990s that also addressed inequities in operating funds, curriculum standards, and pre-school access—facilities projects in low-wealth districts are funded at 100 percent of

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Modernization projects than New Construction projects over the life of the SFP, more total state funding went to New Construction. 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). Per pupil grant amounts from the Office of Public School Construction (2015). Annual adjustment to school facility program grants. State Allocation Board Meeting, April 15, 2015. http://www.documents.dgs.ca.gov/opsc/attachments/Annual_Adj_Grants.pdf

[97] Another potential effect of the variable match rates could be to affect district behavior and encourage some districts to be more or less likely to apply for the state grants. While we do not include this behavior shift directly in our model, it may provide an added benefit for low-wealth districts and warrants additional consideration.

[98] For a 50 state review of PK-12 school facility capital funding approaches, see Filardo, M., Cheng, S., Allen, M., Bar, M., & Ulsoy, J. (2010). State Capital Spending on PK-12 School Facilities. Washington, DC: 21st Century School Fund. http://www.21csf.org/best-home/docuploads/pub/221_StateCapitalSpendingonPK-12SchoolFacilitiesReportNov302010Final.pdf.

[99] Sciarra, D.G., Bell, K.L., and Kenyon, S. 2006. Safe and Adequate: Using Litigation to Address Inadequate K-12 School Facilities. Newark: New Jersey Education Law Center. http://www.edlawcenter.org/assets/files/pdfs/publications/Safe_and_Adequate.pdf.

project costs, while other districts receive a 40 percent match.[100] The approach has had powerful effects, with overall construction funding generally even across low-, middle- and high-income districts in the state.[101]

In Arkansas, the Partnership Program for new construction projects (also the result of litigation) prioritizes funding based on wealth and enrollment growth. Overall, it seems effective. With the program in place, high- and low-wealth districts see similar overall levels of construction spending, but more of the funds come from local debt in the former and from state grants in the latter. Challenges remain, though, for districts with declining population and for low wealth districts still unable to raise a very small match.[102]

In Texas, the Instructional Facilities Allotment (IFA) program, a wealth-based grant formula for reducing local debt costs, was successful at increasing capital spending, particularly in low-wealth districts. The middle 60 percent of districts, however, struggled to generate sufficient resources, unable to take advantage of state programs for the poorest districts or increase taxes with the same success as their richest peers.[103] These experiences suggest that while there is reason to believe that this kind of variable matching based on wealth can improve the equity of state programs, the match rates and cut-points need to be determined carefully to ensure effectiveness for all districts.

Other states have had experience with equalization programs that provide grants across districts to directly equalize the ability to pay for facilities. Colorado's Building Excellent Schools Today (BEST) program uses information about past effort and local capacity to determine the match rate for each district.[104] New Mexico established an equalization-focused funding formula in 2003 after the *Zuni* lawsuit. The formula has largely performed well but equity concerns remain, where high wealth districts continue to be better able to pay for facilities than districts (often rural) with low property wealth.[105] Similarly, the New York Building Aid Program also showed the potential limitations of open-ended matching grants, including the tendency for districts in poor fiscal health to continue to not take advantage of even a very high match.[106] The evidence from these programs is encouraging in some ways, but also suggests that equalization is not a panacea either.

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[100] Vincent (2014).
[101] Filardo, M.W., Vincent, J. M., Sung, P., and Stein, T. (2006), Growth and Disparity: A Decade of U.S. Public School Construction, 21st Century School Fund. http://eric.ed.gov/?id=ED498100.
[102] Arkansas Bureau of Legislative Research (2015) Academic Facilities Funding, Expenditures and Distress. Prepared for House Interim Committee on Education and the Senate Interim Committee on Education. http://www.arkleg.state.ar.us/assembly/2015/Meeting%20Attachments/410/113974/Academic%20Facilities%20Funding%20Expenditures%20Distress.pdf
[103] Plummer, E. (2006). The effects of state funding on property tax rates and school construction. *Economics of Education Review*, *25*(5), 532-542.
[104] Vincent (2014).
[105] Aldrich, G., Baca, J., & Mitchell, J. (2015). An Assessment of New Mexico's Public School Capital Outlay Funding Formula. Bureau of Business & Economic Research, The University of New Mexico.
[106] Wang, W., Duncombe, W. D., & Yinger, J. (2010). School district responses to matching aid programs for capital facilities: A case study of New York's building aid program. http://ssrn.com/abstract=1669922

Ensuring predictable funding

The eligibility criteria and prioritization order have not been major points of discussion in the debate over California's November 2016 school construction bond. Still, in this model, both can have a significant impact on the funds received by an individual district and the overall distributional performance of the program.

Eligibility criteria determine which districts are able to apply for and receive grants. These rules set clear bounds on the types of projects that the state will be involved in, and thus—at least to the extent that the state match is motivating—the types of projects districts will focus their efforts on. In the modeled scenarios, eligibility forms a hard line between getting a boost of state resources and local districts going it alone.

The districts that eventually receive state funding, though, are a subset of all the districts eligible for grants that apply in time to get funds before all the bond funds are used. In California, the process for determining which eligible districts get grants first is essentially first-come, first-served. Other states have taken different approaches, though, to ensure certain districts—often high-need ones—have access to funding. The importance of prioritization has been demonstrated most dramatically by districts that submitted applications for SFP grants after funding for the major programs ran out in 2012. There is no real difference between the districts on the unfunded lists and those that applied just a few years before, yet the latter were fully matched while the former could be waiting for those funds indefinitely. In the model as well, the random order applied to simulate a first-come, first-served process results in some districts getting state grants and very similar peers getting nothing. This impact is more profound when the bond is small or the time frame modeled is long.

The state could ease some of these issues by including additional rules about the order in which districts have access to funding based on observable district characteristics. In Massachusetts, for example, the state conducts a regular assessment of facility need across schools and addresses issues in an established order.[107] An equalization program like the one modeled in Scenario 4 can also improve the predictability of state funding. Because all districts get funding based on their underlying characteristics, there is no uncertainty about the funding available in a given year.

Sizing the amount to meet program goals

The total amount of state bonds authorized are one—but not the only—driver of adequacy. The total size on the bond acts as a limit on the overall impact of the program in terms of adequacy and equity.[108] A state program with well-designed match rates, eligibility criteria and prioritization order can still prove inadequate if there is simply not the funding to provide resources to all districts that meet the criteria.

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[107] Vincent (2014).

[108] While we refer to bond funds in this section, it is important to note that K-12 facility funding at the state level, could be established through revenue sources other than general obligation bonds, such as statewide sales taxes. Future research needs to investigate the feasibility of different options, an important task that is outside the scope of our study.

Additionally, total resource availability is not directly dependent on the size of the grant alone. The bonds must also be distributed effectively across program priorities. Looking ahead, California school districts face much greater demand for modernization and capital renewal than they do for construction of new buildings and classrooms. No matter how much the state sets aside in New Construction bonds, the overall change in unmet need will not change if there is not additional eligibility for the funding. In the scenarios that designate bond funds by program area, most state grants for New Construction go unspent.

Moreover, all state funding programs for school facilities that have been proposed in recent years address only the capital side of the budget. Given the separation between operating and capital funds in school budgets, state grants for capital cannot be used for necessary recurring maintenance. While high levels of investment in up to date construction can minimize the need for repairs and daily upkeep, the majority of district needs for maintenance remain a local issue, unaffected by the state bond. These unmet needs are substantial, amounting to nearly $5 billion over four years.

Reducing barriers and promoting accountability for local investment

Regardless of the outcome in November 2016 and the shape of the future state funding program for K-12 facilities, local investments will still be the primary source of funding for school construction and maintenance. In addition to developing a state grant program, California policymakers can also reduce the amount of unmet needs by reducing obstacles to local effort. This can take the form of removing legal barriers to local spending and providing services to reduce the costs of local borrowing. Additionally, the state can incentivize local investment through accountability and reporting policies, particularly to ensure continued local maintenance spending.

First, the state has an important role to play in revising limits and reducing additional costs that serve as impediments to local spending on facilities. There are a number of limitations on local debt that affect school districts' ability to raise capital funds. Districts are prevented from issuing cumulative debt in excess of 2.5 percent of total assessed value for unified school districts or 1.25 percent of total assessed value for elementary school districts and high school districts.[109] Some districts have applied for and been granted waivers to go beyond this limit, but for others this rule serves as a barrier. This is particularly true in low-wealth districts where 2.5 percent of all property wealth buys far fewer new or modernized classrooms than it does in other communities. In addition to this limit, Prop 39 limits the tax used to make debt service payments to $60 per $100,000 of assessed value.[110] The layering of these restrictions increases the importance of assessing the feasibility of lifting local debt limits where possible for districts where local wealth is a potential limiting factor. In addition, the state also controls the rules governing the amounts and limits on local developer fees, which in some communities has been a sizable source of K-12 capital funding.

[109] Naqvi, J. (2015).
[110] Gorsen et al. (2006).

In our modeled scenarios, raising local bonding limits improves adequacy, but shifts the increased costs to local school districts. Raising the limit to 4 percent for USDs (2 percent for other districts) increases local capital spending by $8.3 billion over the four years modeled, or about 15 percent of total local facilities spending. While this provides a significant boost towards adequacy, taking on additional debt may come with additional cost for districts that may also be borne disproportionately by low wealth communities where debts are larger relative to the local economy. Limits can serve a valuable purpose, preventing over-indebtedness and keeping local tax bills low, but the current level may also be a barrier to needed investments.

In addition to removing legal hurdles, the state could provide support and consulting services to low-wealth districts that would help avoid high and unnecessary costs of navigating the complex process of issuing debt. A third of the school districts in California—348—have never passed a local bond. Many of these are in rural areas and more than half have assessed values per student that are below average.[111] Local bond elections are complex and often come with additional costs from consultants or debt arrangements with increasing long-term repayments. The state has the benefit of a massive economy of scale in terms of administrative capacity, procedural knowledge, and past experience. Establishing state-level support systems to build local capacity and providing short-term consultants to districts—particularly low-wealth districts—could lower the overall cost and make current investments more effective and impactful.[112]

The state can also positively influence local district effort on facility funding through accountability and reporting systems. For example, the state could establish a statewide inventory of K-12 facilities qualities and conditions. This database could house basic information on California's school buildings—such as square footage, building age and information on conditions generated during existing audits of school facilities as part of the *Williams* settlement. Even this simple compilation of data could improve transparency and understanding of the variance in overcrowding and building conditions across the state, potentially spurring local action in areas that are lagging behind and helping policymakers to direct support to the areas of greatest need.

The state should also ensure that school facilities are a part of the broader educational accountability system. Under the LCFF, all districts have to generate annual Local Control and Accountability Plans (LCAPs) documenting how they have spent state funds and what goals they hope to achieve in the coming year. "Good Repair" is one of many data points that district leaders are required to report on in the LCAP.[113] Over the past year, however, the State Board of Education has been in the process of creating a new state accountability system that will be used to assess LCAPs. (The Board will vote on a final system in September 2016.)

[111] Author's analysis of EdSource Local Revenue Elections data.
[112] Rivera (2016).
[113] Cabral & Chu (2013).

Facilities condition has been notably absent from these conversations. A state system that ignores the physical environment could disincentivize spending on facility maintenance and operations needs, particularly as other programmatic expenses come under closer scrutiny. This is particularly critical given that the least wealthy districts already spend less on facilities maintenance and struggle to balance the costs of academic programs and the costs of providing safe and healthy school environment.[114] The state should use the accountability system as an opportunity to signal the continued importance of facilities conditions in supporting local district fiscal prudency, educational performance, and student health.

Comprehensive, detail-oriented program design matters

Each of the program elements described above can alter the level of unmet need across school districts, but the greatest improvements will come from considering state facilities programs as comprehensive packages of many elements. As has already been noted in the descriptions of the individual effects, there are complex interactions between the elements of state programs.

Overall design must combine these elements thoughtfully, with clear end goals in mind. For example, if policymakers care about equity and alter the match rate, but not the prioritization process or the bond size, the effects will be limited. Likewise, raising the overall size of the bond to improve adequacy will be impractical if the per-pupil grants are not large enough or the eligibility criteria are too strict. In other words, the funds may be spread too thin to be impactful. Even when thinking about the state program from a cost perspective, combining elements can be challenging. Programs that provide low costs to the state in the short term, such as issuing no additional bonds, may come with significant legal and emergency repair costs down the road. As part of this more comprehensive design process, it will also be important to fully account for the administrative and logistical challenges that both state and district offices will face in carrying out the program.

[114] Vincent & Jain (2015).

Conclusion

The evidence of past experiences and the results of our model indicate that moving forward in California with no additional funding for local K-12 school facilities, while simultaneously maintaining the current limits on school district local revenue generation, is problematic and risky. Not only would unmet facility needs be high, the consequences would be unfairly borne by the poorest children in the state—students attending school districts in the lowest quintile of property wealth would see a facility funding gap nearly three times as large as children attending districts in the wealthiest quintile. Given the established benefits of attending a school with high quality facilities, tangible issues of student health, academic achievement, teacher satisfaction, and community vitality are at stake. With pressures building over years of underinvestment relative to needs, funds from the November 2016 statewide ballot measure (Proposition 51) would provide near-term relief in the face of current practical and political constraints.

Proposition 51, however, should be the beginning, not the end, of a new discussion on how to best fund K-12 school facility needs across the state. Even if Proposition 51 passes, unmet facilities needs will be substantial for large numbers of schools across the state, due at least in part to the structure of the competitive matching grants that California has relied on for decades. The need for regular investment in K-12 school facilities is—by nature—ongoing and long-term. The solutions to provide this funding will ultimately need to take an equally comprehensive view.

Future research can aid policymakers and the public about decisions on public K-12 infrastructure. For example, research is needed on ways to improve oversight and accountability in local and state K-12 facility spending and on ways to ensure sound facility planning processes that are participatory, transparent and informed by accurate facility information. Research is also needed to better understand the costs/benefits of local and state debt levels (and debt instruments) in relation to facility needs. Regular analysis should continually inform our understanding of local school facility conditions, such that the scale, scope, and distribution of needs is clear.

Our findings suggest that moving forward, state policymakers can provide a more adequate, more equitable, and—in the long-run—more affordable facilities program through a series of reforms. A policy approach like Scenario 4 that guarantees funding and directly addresses the differences in local ability to pay could help ensure that all schools are able to meet baseline standards of appropriate annual investment in their facilities. Alternatively, a policy like Scenario 3, with increased local flexibility and grants targeted to resource-strapped schools could achieve relatively high levels of adequacy at a relatively low cost to the state in the short-run. Ideally, though, California can learn from all of these options. In particular, the benefits of local flexibility, targeting resources, predictability in funds, and direct equalization are not mutually exclusive. Whether Proposition 51 on the November 2016 ballot passes or fails, lawmakers are likely to be confronted with facilities finance again over the next several years. When that happens, they should consider these options and learn to draw on the strengths of each.

Methods Appendix

This study relies on a model to estimate future resources and needs for California's K-12 school facilities. The methods used to build the model are presented in the following four sections. First, we describe the data used. Next, we outline the methods used to calculate facility needs for all school districts in California. Third, we describe the method to calculate assumed future facility revenues for each school district. Lastly, we discuss key assumptions used in the model and what impact they have on overall outcomes.

Data

We compiled data from multiple sources:

- **School district counts and enrollment data** from the California Department of Education. This file includes all local education agencies in the state as of 2015. The number of districts changes somewhat over time due to consolidations and annexations.[115]

- **County level population growth projections** from the California Department of Finance Demographic Research Unit. The data file contains estimates of the population age 5-17 in each California county in 2010 and 2020. We use the percentage growth over this period, divided by 10, as an estimate of annual growth in the school age population for districts in each county. School district level enrollment projections were not available.[116]

- **Assessed value** for all properties in the school district (2014) from a report prepared for state officials.[117]

- **Education finance data** from the Local Education Agency (School District) Finance Survey (F-33) published by National Center for Education Statistics (NCES) in the Common Core of Data (CCD).[118] This annual survey 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

[115] See http://www.cde.ca.gov/ds/si/ds/pubschls.asp for downloadable data on school counts and http://www.cde.ca.gov/ds/sd/sd/filesenr.asp for data on enrollment.
[116] See http://www.dof.ca.gov/research/demographic/reports/projections/P-1/ for downloadable data.
[117] EastShore Consulting. "Preliminary Analysis of Assessed Value and Bonding Capacity per Enrolled Student," October 29, 2014. http://www.eastshoreconsulting.com/index.html.
[118] Downloadable data and additional information on the F-33 data can be found here: http://nces.ed.gov/ccd/f33agency.asp. 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 spending and revenue categories.

assets; purchasing fixed assets including land and existing buildings and grounds; and equipment." To determine locally-sourced capital outlay, we subtract the "Capital outlay and debt service programs from state sources" total from the "Capital Outlay Expenditures" total. Data covering the period from 1995 to 2013. All data have been adjusted to 2014 dollars, unless otherwise noted. Capital outlay data were adjusted using the Turner Construction Index (TCI). All other data were adjusted using the Consumer Price Index (CPI).

- **Local bond elections data** from EdSource Local Revenue Elections data, available through the Education Data Partnership: a collaboration between California Department of Education (CDE), EdSource and Fiscal Crisis & Management Assistance Team (FCMAT).[119] These data cover the election and bond information for all school bond elections, the vast majority for school facilities, held between 1983 and 2015. All dollar amounts have been inflation adjusted to 2014 dollars, using the Consumer Price Index (CPI).

- **SFP grant allocations to school districts** obtained from the Office of Public School Construction (OPSC). This file includes a record of the State Allocation Board (SAB) grant approvals to school districts from the start of program allocations in 1999 to January 2014.

- **LCFF funding allocations** from the California Department of Education for 2015. The data include number of unduplicated pupils (low-income, English Learners, and foster youth), the amounts of base, supplemental and concentration grant funding received, and local operating spending. Dollar amounts are adjusted to 2014 dollars, using the Consumer Price Index (CPI).

- **Locale codes** from the National Center for Education Statistics, Common Core of Data, which group districts into urban, suburb, town and rural locales.[120]

Data were assembled into a single file using the unique CDS and NCES codes assigned to all districts by the state of California and the federal Education Department, respectively. The compiled dataset covers 1,003 local education agencies (i.e., school district), which include 77 high school districts, 527 elementary school districts, 343 unified school districts, and 56 county offices of education. These districts represent 94 percent of local education agencies and enroll more than 99 percent of all public school students in California. Where there was missing data, the model used assumed levels to calculate resources in that district.[121]

[119] Explore bond and local revenue elections data at http://www.ed-data.org/. Contact the Ed-Data partnership for access to a full download of the data.
[120] Download the data at http://nces.ed.gov/ccd/ccdLocaleCodeDistrict.asp.
[121] Of the 1,003 districts in the study, a small minority have missing data for some variables: 88 have missing assessed value data (56 are County Offices of Education), 72 have missing SFP application data (56 are County Offices of Education), 9 have missing school finance data, 57 (56 are County Offices of Education) have missing LCFF funding data, and 16 have missing locale code data.

Estimating need

Estimating K-12 school facility needs is difficult in California because the state does not have a comprehensive database on even the most basic information about school building conditions, such as building age and square footage. Therefore, our study relies on industry standard benchmarks to estimate the level of investment needed to maintain basic operations and upkeep of buildings as well as ensure the provision of modernized facilities. A widely cited source for these benchmarks is the National Research Council's 1990 report, "Committing to the Cost of Ownership: Maintenance and Repair of Public Buildings," which suggests facility managers spend between 2 and 4 percent of their building's current replacement value (CRV) on maintenance and operations and a similar amount on regular capital renewals. This approach was further developed in Vincent (2012), Vincent and Jain (2015), and Filardo et. al. (2016), which elaborated on the CRV-based determination of needed investments to include suggestions for modernization and new construction.

Synthesizing these previous examples, our study uses the following methods to estimate annual facility needs for each school district:

- **New Construction:** Needed investment based on California Department of Finance projected enrollment growth and estimated cost of new construction per square foot
- **Modernization of Existing Buildings:** 5 percent of current replacement value (CRV) of existing stock of K-12 facilities per year
- **Facility Maintenance and operations:** 3 percent of CRV of existing stock of K-12 facilities per year.

New Construction includes building new facilities to accommodate local population growth. In this study, we estimate the need for new construction using countywide projections of the growth in the population aged 5 to 17 from the California Department of Finance as a proxy enrollment growth for districts within the county. For example, the California Department of Finance projected a statewide net decline of 1 percent of the population aged 5-17 between 2010 and 2020. Needs may be somewhat different if there is wide within-county variations. Actual needs would also vary based on current levels of overcrowding.

Modernization of Existing Buildings involves activities typically included in the facilities literature as "modernizations" and those classified as "capital renewals." Industry standards suggest spending 3 percent of CRV on modernization, defined as: the major alteration of entire building(s) to improve design or educational suitability, as well as complete or partial building replacement based on determination that it is more cost effective to fully replace building(s) rather than do major modernization. We add to this the recommended 2 percent of CRV per year that should be spent on regular capital renewals. Capital renewals are the 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), such as: roofs, HVAC, windows, doors, structural repairs, building refurbishments, minor additions, modernization projects, roadway and drainage improvements, playing field replacement, and replacement or provision of long life assets to a facility campus such as

portable classrooms and furniture, fixture and equipment. Together these two categories account for the investments in existing buildings made using *capital outlays*.

Finally, Facility Maintenance and Operations are the routine services required to keep a facility clean, sanitary, and tidy, so that its occupants are comfortable, healthy and productive. Routine maintenance involves 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, minor repair jobs, and repairing furniture and fixtures. The data we use on facility maintenance and operations spending also includes utility costs and security operations, which can be significant expenditures for local school districts. Typically, routine facility maintenance and operations comes out of a school district's operating budget, not its capital budget.

To calculate current replacement value (CRV) of buildings and obtain estimates of need in dollar terms, we use average square footages from recent Project Information Worksheets (PIW) obtained from the Office of Public School Construction (OPSC) to estimate total building square footages for each school district in California. Square footages are then multiplied by average cost per square foot new construction amounts obtained from the PIWs.

- **High school:** 103 square feet per student X $439 per square foot
- **Middle school:** 87 square feet per student X $390 per square foot
- **Elementary school:** 77 square feet per student X $375 per square foot

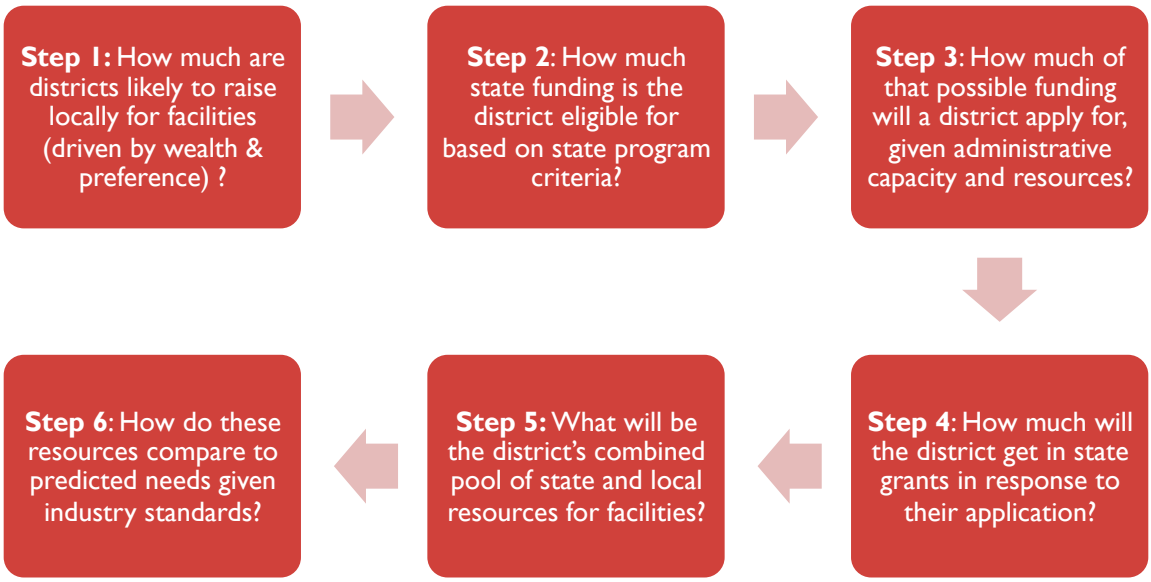
Thus, for all school districts in California, we calculate total building square footage and CRV. We calculate the statewide total public school facility CRV to be $216 billion for the 1,003 school districts in our dataset. Using this information and population growth projections, we estimate annual need for each district in each of the four categories of facilities investment. Across all school districts, aggregate annual facilities need is estimated to be $17.7 billion.

Estimating school facility funding resources at the local level

The model used in this study estimates future unmet need and resources in six stages that illustrate the facilities funding process. Throughout this process, the model relies on information about past behavior in each district, including how much they have spent on capital and maintenance & operations, whether they attempted a local bond, and whether they participated in the SFP. While past behavior is obviously not a perfect predictor of the future, it best captures information about district and community underlying preferences and willingness and their likely behavior going forward. The majority of this process concerns spending on the capital side of the budget, but also covers maintenance and operations spending from the operating budget. Using these factors, the model generates quantifiable estimates of: adequacy (does each school district meet minimum annual facility spending standards?); equity (are annual facility spending patterns between districts equitable?); and cost (how much will different state funding programs cost at the state and

local level?). Looking at these three outcomes together enables state lawmakers and the public to understand the relative impacts of different policy scenarios.

Figure A1: Key decision points that determine unmet facilities needs



The general descriptions of the six steps in the process of estimating unmet need are described in Figure A1, copied from the main report. To provide more detail on the full methods used in this process, the specific calculations are described below.

Step 1: How much are districts likely to raise at the local level?

To begin, this model assumes that, for each district, there is an underlying amount that could be spent on local capital programs, given local property wealth and other characteristics. Historical school finance data from California, as well as examples from other states, show that the level of capital spending is highly variable across districts and over time. As shown above, district characteristics—particularly those related to ability to pay and preferences for facilities spending—predict that variation. The simplest prediction of these factors is the district's past capital spending. In the model, we use the 75th percentile of local capital spending between 1995 and 2013 for predicted local capital outlay.

In addition to the limitations of local ability and preference, school districts also face legal limits under state policy. Most notably, each district is only allowed to issue debt up to a given portion of its assessed value (total taxable property wealth)—currently 2.5 percent for unified school districts. Because the majority of facilities funding comes from local general obligation bonds, we assume that a district can only use local resources to the extent that they have remaining bonding capacity beyond their current debt outstanding. This step can be summarized as:

$$Local\ Capital\ Resources = Lesser\ of\ (Predicted\ Capital, Net\ Capacity\ to\ Issue\ Debt)$$

Step 2: Are districts eligible for state programs?

The next step is to calculate how much and what kinds of state funding in the SFP the district would be eligible for. This is a function of district characteristics (i.e., how fast the population is growing, if the buildings are old enough to warrant repairs) as well as the policies set at the state level to determine eligibility and measure those characteristics. Given the lack of data on building conditions, the model must rely on an assumption about the share of buildings eligible for modernization funds. The true demand for replacing outdated buildings will be more heterogenous than this estimate, but over a longer time horizon this matters less. In general:

$$Eligibility = (New\ Enrollment\ Growth * New\ Construction\ Grant\ per\ Pupil) + (Students\ in\ Buildings\ Older\ than\ 25\ Years * Modernization\ Grant\ per\ Pupil)$$

Under Scenario 2, some districts will also be eligible for Financial Hardship funds if they meet a set of criteria related to local resources and past effort. In this model, one of those criteria—whether a district has debt outstanding that exceeds 60 percent of bonding capacity—is used as a proxy for the more complex, multi-dimensional determination.[122]

Step 3: How much do districts apply for?

The first two steps of the model calculate local capital resources and the total funding that districts would be eligible for—both of which limit the amount of state funding that districts can actually apply for, given the requirement to match with local funds.

Not all districts, however, will apply for every dollar of state grants possible. The true heterogeneity of interest is difficult to predict, but one factor that appears to be connected to the decision to apply for the state program is the level of local administrative capacity.[123] There is a significant amount of effort involved in applying for the state program and raising the local capital funds to match. A school district with a small number of staff or limited knowledge of the procedures and common challenges would reasonably be less likely to apply. In this model, administrative capacity is calculated as an index of three factors: the size of the district (small districts generally have smaller, less specialized staff), whether they have ever received SFP grants, and whether the district has ever passed a bond. Small districts are less likely to have specialized staff and other resources. Our analysis of the data shows that only about half of the districts with less than 250 students got any SFP funds, compared to almost 90 percent of districts larger than that. The last two are measures of institutional memory; districts that have done so in the past are more likely to have staff and systems in place to apply or pass a bond again. These patterns emerge in our data and throughout the school facilities literature. The index of these three factors serves as a

[122] This somewhat overstates the number of districts that would qualify, and thus slightly understates unmet need in this scenario. For a full description of the criteria required, see p. 71-72 of the Office of Public School Construction, *School Facility Program Handbook* (2007), http://www.documents.dgs.ca.gov/OPSC/Publications/Handbooks/SFP_Hdbk.pdf

[123] Vincent, J. M. (2012). *California's K-12 Educational Infrastructure Investments: Leveraging the State's Role for Quality School Facilities in Sustainable Communities*. Center for Cities & Schools, University of California. http://citiesandschools.berkeley.edu/reports/CCS2012CAK12facilities.pdf

proxy for administrative capacity and reduces the amount that districts are estimated to apply for. Thus, the amount of local money set aside for applying to the state grant program can be summarized as:

$$\begin{aligned} &Local\ Used\ to\ Get\ State\ Match \\ &\quad = Lesser\ of(Local\ Capital\ Resources, Eligibility) \\ &\quad * \ Administrative\ Capacity\ Effect \end{aligned}$$

Step 4: How much do districts get in state grants?

The next step in the model calculates the amount of state funding that districts receive. This is the step in which almost all of the policy variables that define the four scenarios are included and applied to the model. The one exception is the state limit on bonding capacity—raised in Scenario 3—which is included in Step 1. The total amount of state grants received depends on the match rate, whether the program includes equalization or Financial Hardship grants, the order in which districts access funds, and the total amount of funding authorized under the program. In Scenario 1, there is no state funding, so the state match is simply 0 percent and total state grants is equal to zero for all districts.

In Scenarios 2 and 3 in this analysis, districts get funds on a first-come, first-served basis, modeled as a random order. Given the total size of the bond, and the amount of funds requested by all districts that came before them in the order, there will be some level of funds remaining until the full bond is depleted. Districts continue to have their applications granted so long as funds are available. Generally, this can be described as:

$$\begin{aligned} Total\ State\ Grants = Lesser\ of(&Local\ Used\ to\ Get\ State\ Match * Match\ Rate, \\ &State\ Funds\ Not\ Yet\ Spent) \end{aligned}$$

Scenario 2 also includes a Financial Hardship program. In the model of this scenario, districts that qualify for Financial Hardship but do not have enough local capital to apply for the full match will get state grants to fill in the difference. For districts eligible for Financial Hardship:

$$\begin{aligned} &Total\ State\ Grants = Minimum(State\ Funds\ Not\ Yet\ Spent, \\ &Eligibility * (1 + Match\ Rate) - Local\ Used\ to\ Get\ State\ Match) \end{aligned}$$

Finally, in Scenario 4, the state provides a per pupil grant for all students who need it, based on ability to raise revenues through a one-percent property tax. The budget is determined based on estimated need, not the given constraint of a specific statewide bond. Thus, in this case, the order does not matter. For Scenario 4, the general calculation can be described based on the calculation to equalize effort:

$$\begin{aligned} &Total\ State\ Grants \\ &\quad = (Benchmark\ Spending\ Level - 1\%\ of\ Assessed\ Value\ per\ Pupil) \\ &\quad * \ Total\ Enrollment \end{aligned}$$[124]

[124] If the one percent estimated tax is greater than the benchmark spending level, total state grants are 0 (this amount is never negative).

Step 5: What is the total amount of resources allocated towards school facilities?

This next step adds the various components of spending on facilities that the district is expected to have at their disposal. This includes state grants, local matching funds from the capital budget, other local-source capital revenues, and maintenance and operation of plant spending from the operating budget. (State grants have already been predicted.)

$$\begin{aligned} &Total\ Resources \\ &\quad = Maintenance\ \&\ Operations + Total\ State\ Grants \\ &\quad + Local\ Capital\ Resources - Local\ Capital\ Displaced \end{aligned}$$

Most districts have additional capacity to raise capital funds beyond the local match. Districts will use some or all of that money on additional facilities costs—such as repairs not covered by the state program or costs that exceed the established per pupil grant amounts designated by the SAB. This model assumes that districts will prefer to spend money on facilities if they have the resources. In reality, other items in school district budgets may take precedence.

Once districts have met the mandated local match, some may choose to scale back other local spending in response to the state grant. There is significant debate in the public finance literature regarding this phenomenon. Traditional economic theory suggests that local governments would reallocate local spending when they receive state grants. Getting $1 million for school facilities means they have $1 million in local resources to spend on other areas. Empirical studies show that targeted intergovernmental grants actually do tend to increase total funding on that area, though to varying degrees. One dollar in state grants has been shown to raise total resources by anywhere from $0.25 to the full $1.[125] For example, a study of school districts in Missouri showed an increase of $0.58 in total spending per dollar of state operating grants.[126] This model assumes that for every $1 of state grants received, districts will scale back on $0.50 of capital spending beyond the amount required to apply for the program.[127] It is difficult to know the true size of this impact, but policymakers should be aware that at least some local spending will likely be reduced. It is also worth noting, that this is not necessarily a bad thing, if the money is then more efficiently allocated to address local needs and preferences while maintaining good repair.

Finally, the model takes into account resources predicted for maintenance and operations activities. These funds, which come from the operating budget of the school district, vary across districts and over time. However, spending in this category has, on average, fairly consistently comprised 10 percent of local district operating budgets over the past few decades. Of course, much has changed about the local operating budget since the passage of LCFF in 2013. Still, our model assumes that districts continue to dedicate about one tenth

[125] Hines, J. R., & Thaler, R. H. (1995). Anomalies: The flypaper effect. *The Journal of Economic Perspectives*, *9*(4), 217-226.
[126] Olmsted, G. M., Denzau, A. T., & Roberts, J. A. (1993). We voted for this?: Institutions and educational spending. *Journal of Public Economics*, *52*(3), 363-376.
[127] Alternate assumptions are explored in the last section of this appendix.

of operating funds to maintenance cost. Adding these operating resources to the capital budget (state and local) yields the total resource calculation.

Local spending is also capped so that districts do not spend more than 120 percent of their predicted need, as calculated in step 6. This adjustment does not reduce the amount of state grants received.

Step 6: How do resources compare to needs in each school district?

Finally, the model compares how this calculation for total resources compares to the benchmark level of need for each district. As a reminder, these industry standard benchmarks are calculated as a share of the current replacement value of all buildings in the district, plus new construction to meet enrollment growth.

$$\begin{aligned} Need = {} & New\ Construction\ Need\ (Enrollment\ Growth * Cost\ per\ Student) \\ & + Modernization\ Need\ (3\%\ of\ CRV\ per\ year) \\ & + Capital\ Renewals\ Need\ (2\%\ of\ CRV\ per\ year) \\ & + Maintenance\ and\ Operations\ Need\ (3\%\ of\ CRV\ per\ year) \end{aligned}$$

The key output of the model is the calculation of expected need that will be unmet given resources, illustrated by this simple subtraction:

$$Unmet\ Need = Total\ Need - Total\ Resources, if\ Total\ Resouces < Total\ Need$$

Calculating unmet need for each district can show the aggregate adequacy of facilities spending, the average amount of unmet need per pupil, the count of districts with unmet need, and the average proportion of needs that go unmet—all of which demonstrate various dimensions of program "success." Unmet need also allows us to explore the variation across spending types and the equity across groups of districts, particularly high and low wealth districts.

Key assumptions in the model

Our model incorporates a set of assumptions, both about the design of the scenarios, and about the general conditions that govern the environment for all models.

Each scenario is a simplified version of actual potential policy choices. The defining characteristics, or parameters, of each scenario, which drive the differences in outcomes in the model, are listed in Table A1. These are described in the "California's Choices" section of the main report, and quantified directly for the model as listed above.

Table A1: Parameters defining the policy differences across scenarios

	Scenario 1 No State Support	Scenario 2 State Competitive Matching Grant Program	Scenario 3 Small State Role Targeted to High-Need Districts	Scenario 4 Equity-Focused State Grant Formula
New Construction authorization	0	$3.25 B	$1.5 B	By need
Modernization authorization	0	$3.25 B	$1.5 B	By need
Bonding limit for USDs	2.5%	2.5%	4%	2.5%
New Construction match rate	NA	50%	NA	NA
Modernization match rate	NA	60%	NA	NA
Site acquisition multiplier for New Construction	NA	1.13	1.13	NA
Uses wealth matching?	No	No	Yes	No
Low wealth match rate	NA	NA	66.7%	NA
High wealth match rate	NA	NA	33.3%	NA
Wealth match rate cut off (net capacity per pupil)	NA	NA	$15,000	NA
Using equalization?	No	No	No	Yes
Minimum spending equalized	NA	NA	NA	$1,250
Using Financial Hardship?	No	Yes	No	No

There are also important shared assumptions across all four scenarios. Varying these assumptions affects the *absolute results* of the model, but rarely affects the *relative ranking* of each scenario in terms of the major criteria (adequacy, equity, and cost). These assumptions include:

- The model shows four years of results in order to minimize the potential distortion from the highly heterogeneous nature of facilities spending over time. In general, this model treats all time periods as having the same value and does not discount future costs or benefits.
- Districts will likely raise local revenues equal to the 75th percentile of local capital spending per pupil recorded in the F-33 survey between 1995 and 2013. This is done to assume a high level of spending, but not pull in potentially distorting outliers. Districts with missing data for capital outlays are assumed to spend $500 per pupil.
- This model assumes that all buildings are eligible for Modernization 25 years after they are built. Because we do not know building age for all school buildings in the

state, we assume that schools have been constructed at an even rate over time, meaning 4 percent in each year. Thus, we estimate 4 percent of students in each district are eligible for modernization grants in a given year.

- Administrative capacity is a strong barrier to applying for state funds. Districts with low administrative capacity, defined as an index of district size, previous SFP applications and previous bond elections, are assumed to reduce applications for SFP funding by 75 percent to mimic the fact that many of these districts do not get state funding despite likely eligibility.
- The order in which districts apply for state grants in the model is completely random. This is designed to mimic the inherent randomness in a first-come, first-served policy. In reality, the order in which districts apply for funds would likely be correlated with district wealth, administrative capacity and other factors. Thus, from an equity perspective, this is a fairly optimistic assumption.
- State grants will continue to be allocated using the per-pupil grant amounts set by SAB in their most recent publication ($10,345 - $13,923 for New Construction and $3,939 to $5455 for Modernization).
- Intergovernmental grants displace a portion of local facilities investment. Based on a review of the "flypaper effect" in education and other contexts, We chose a middle of the road assumption of the displacement, suggesting that districts scale back $0.50 for every $1 of state grants received (as long as they can still afford the local match).
- School districts spend 10 percent of their operating budget on maintenance and operations. Historically, this has been fairly consistent across a wide range of districts (more so than for capital outlays). While the LCFF has brought large changes to local operating budgets, we assume this trend still holds in percentage terms. When districts are missing data on operating spending and the 10 percent level therefore cannot be calculated, we assume spending of $900 per pupil—an average level of spending in recent years.

How changing three critical assumptions effects overall results

Three assumptions are particularly critical to both the outcomes of the model and the theoretical understanding of state and local financing behaviors. This section varies the assumptions used for these three key points and reports the results.

Assuming greater local resources reduces unmet need

We test four options for varying the amount of local capital outlays spent by school districts. The default in the model (75th percentile) predicts that district will spend at a high, but not the highest ever, rate relative to what they have spent on facilities in the past (1995-2013). Alternately, the model could set spending at the mean level over that period, the maximum historical spending in that period, or at the level spent in 2013 (the last year for which data was available).

In each case, the overall unmet facility needs that districts face can vary significantly. Looking at Scenario 1, where there is no additional state funding, provides an illustration of the impact of this assumption on unmet needs. At the 75th percentile of past spending, unmet

needs over four years are $28 billion. If districts will in fact spend more, the overall unmet needs are more than $5 billion less—$22.5 billion. On the other hand, if spending is at historical average levels, the unmet needs rise to $33 billion. Most alarmingly, if districts continued to spend what they did in 2013 on capital outlays, overall need would be $39.1 billion. Looking at the other scenarios, the effects on magnitude are similar. The biggest effects are on Scenario 3, because of the increased reliance on local spending. This scenario sees unmet needs range from $12.3 billion to $30.1 billion depending on the local spending estimate. The relative rankings in terms of overall adequacy remain fairly constant, except when using average or 2013 spending levels. In that case, Scenario 4—and not Scenario 3—most reduced overall unmet need.

Assuming less displacement improves the impact of state grants

As discussed above, there is a wide debate in the public finance literature about the relationship between intergovernmental grants and local spending.

Variation in this assumption, by definition, has no effect on Scenario 1 where there is no additional state funding. Looking at Scenario 2, the continuation of the SFP, shows the scale of impact on unmet need. In the baseline, unmet needs are $26 billion over four years. If no local funding is displaced, the state grants go further, reducing unmet need to $24.7 billion. To the extent that state grants correct for inequities, the impact on the distribution of unmet needs improves when state money does not displace local funds. This is especially true in Scenario 4, which directly equalizes local resources. With no displacement, this scenario performs best on reducing total unmet needs. Conversely, if all state funding is displaced needs rise to $27.2 billion under Scenario 2 and there are few equity gains. Scenario 3 performs best in this case; there is less difference between the remaining unmet needs in Scenario 1, 2, and 4. Overall, the impact of this assumption is large, but not as large as the local capital assumption.

Assuming increased M&O spending reduces unmet need, to a point

Finally, a large portion of the unmet needs per person (about $6.6 billion over four years) is the result of under-investment in M&O. The amount of maintenance and operations spending available is estimated to be 10 percent of total operating spending, which has been a fairly consistent historical average across districts. Varying this assumption alters total unmet needs. Under Scenario 1, unmet needs increase from $28 billion to $37.7 billion if districts are assumed to only spend 5 percent of their budget on M&O. If instead, districts increase their spending to 15 percent of the operating budget, needs fall to $22.4 billion. There is a limit on the adequacy improvements, though. Spending 30 percent of the budget on M&O only reduced unmet need by another $500 million relative to spending 15 percent. Because this spending is calculated as a percent of the overall budget and wealthy districts tend to spend more overall, as districts spend a greater share of their budgets on M&O, the differences between high- and low-wealth districts become more exaggerated.

Changing all assumptions amplifies the effects

The factors also interact with one another. Varying all three assumptions allows a look at the most extreme cases of need. Table A2 shows these outcomes of dramatic variation in assumptions over a four-year period.

Table A2: Unmet needs in billions (4-year model) under various assumptions

	High local spending assumptions (Maximum capital, 0% displacement, 15% M&O)	**Low local spending assumptions** (2013 capital, 100% displacement, 5% M&O)
Scenario 1	$16.9	$48.7
Scenario 2	$14.2	$47.1
Scenario 3	$6.4	$45.0
Scenario 4	$8.5	$41.7

If all the assumptions are calibrated to suggest the highest levels of local spending (high capital spending, high M&O spending, no displacement of state grants), unmet need can be as low as $6.4 billion over the course of four years, with most districts seeing no unmet need. In this setting, there are also very large differences between different policy options, with Scenario 3 seeing more than $10 billion—62 percent—less in unmet need than Scenario 1. In other words, state policy choices have strong potential to reduce unmet need across the state.

Alternately, if assumptions about local spending suggest fewer local resources (low capital spending, low M&O spending, and complete displacement of state grants), the level of unmet need is vast. Additionally, there is somewhat less difference between state policies. Scenario 4, which is not dependent on local effort, performs the best under these assumptions. In every case, though, unmet needs are over $40 billion during the four-year period. Thus, if there is limited local appetite and state spending displaces local effort, there is little that can actually be done at the state level to solve this issue. In other words, the combined effect of both state and local funds seems important.