

# **NEPC Review: Assessing the National Landscape of Capital Expenditures for Public School Districts (Urban Institute, January 2023)**



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**April 2023**

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## Acknowledgements

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**Suggested Citation:** Vincent, J.M. (2023). *NEPC Review: Assessing the national landscape of capital expenditures for public school districts*. Boulder, CO: National Education Policy Center. Retrieved [date] from <http://nepc.colorado.edu/thinktank/capital>

**Funding:** This review was made possible in part by funding from the Great Lakes Center for Educational Research and Practice.

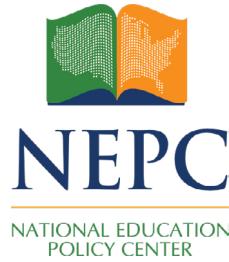


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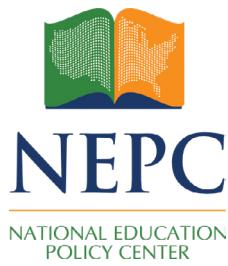
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### Summary

Across the U.S. there are nearly 100,000 public schools with about 8.1 billion gross square feet of buildings. There is substantial annual public investment in this infrastructure, driven primarily by local and state spending, with very little federal funding. Expanding federal funding for local public school capital needs has received increased attention in Washington in recent years. Building on that interest, *Assessing the National Landscape of Capital Expenditures for Public School Districts*, released by the Urban Institute, analyzes equity patterns of school capital investment. The report relies primarily on school district annual capital outlay data reported in the U.S. Department of Education's Common Core of Data. It also examines which state policies may promote more progressive investment patterns. Confirming other studies, it finds that school district capital expenditures vary from year to year and from state to state, each state has a unique approach and mix of policies governing state support for local capital outlay, and capital outlay is rarely equal or progressive. The report also finds that states with policies that aim to equalize capital spending are more likely to provide more or equal capital outlay for students from low-income backgrounds. These findings are all well-supported, and the report's recommendations provide useful insights for state and federal policy that will promote more progressive capital spending.



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## I. Introduction

Across the U.S. there are nearly 100,000 public K-12 schools. The physical infrastructure of the U.S. public school system encompasses an estimated 8.1 billion gross square feet of buildings.<sup>1</sup> Not surprisingly, there is substantial public investment in this infrastructure each year. In fact, elementary and secondary public education is the second largest sector nationally for state and local construction capital outlay, second only to highways.<sup>2</sup> This investment is entirely driven by local and state spending, with very little federal funding. Local funding sources make up the majority (82%) of average annual capital outlay in the education sector.<sup>3</sup>

In recent years, the expansion of federal funding to address public school capital needs has received increased attention in Washington. School capital funding was proposed in both the Obama and Biden administration infrastructure investment plans. The Rebuild America's School Act of 2019 (116<sup>th</sup> Congress) proposed \$100 billion for public school capital needs. Providing useful insights to these policy discussions, Kristin Blagg, Fanny Terrones, and Victoria Nelson at the Urban Institute analyze the state of the field in a January 2023 report, *Assessing the National Landscape of Capital Expenditures for Public School Districts*.<sup>4</sup> The analysis aims to understand equity patterns of school capital investment—whether or not low-income schools are receiving more or less funding than high-income schools. From there, they look at which state policies may promote more progressive investment patterns.

Attending to inequities in investment patterns is important because when there is under-investment, deferred maintenance grows and school facility conditions decline.<sup>5</sup> This decline has consequences for school quality, the health of occupants, and education outcomes. Studies find significant correlations between poor structural, conditional, and aesthetic at-

tributes of school buildings and low student learning and achievement.<sup>6</sup> Poor school facility conditions can hinder the basic delivery of education and the implementation of any school reform or specialized curriculum.<sup>7</sup>

## II. Findings and Conclusions of the Report

The report finds that poor school building conditions (especially poor indoor air quality) can negatively impact students, particularly low-income and minority students who are more likely to be exposed to unhealthy environments within their schools and/or educationally unsuitable facilities. The report also presents inflation-adjusted annual per-pupil spending on capital outlay nationally and by state, with trends revealing great variation among the states and volatility within states.

The report also builds a ratio, within state, of the average total capital expenditure that a student from a household at or below the federal poverty level experiences within their school district relative to the average capital expenditure for a student from a household above the federal poverty level.<sup>8</sup> It presents results that show that some states have consistently seen more spending on construction and renovation in districts with relatively more affluent students.

Because school district revenue for capital expenditures is heavily reliant on local wealth (especially property values) and local wealth can vary significantly from school district to school district, the report presents the main policy levers used by states to equalize local capital spending differences.<sup>9</sup> It finds that states that allocate no (or very little) capital funding have less capital outlay for low-income students. States that have policies that aim to equalize capital spending are more likely to have progressive capital outlay patterns that benefit students from low-income backgrounds. The report also attempts to connect state policy choices to equity patterns of capital expenditures. To do so, it includes policies for each state along seven dimensions.<sup>10</sup> Results indicate that state policies aimed at equalizing or mitigating disparities in resources for capital spending are more likely to actually allocate capital expenditures at a level that provides equal or more funding for students from households below the federal poverty level.

The report finds that the level and shape of state funding for capital expenditures affects local school district spending patterns. “States that have policies that aim to equalize capital spending—particularly those equalizing around area income or student need, rather than only property wealth—are more likely to provide more or equal capital outlay for students from low-income backgrounds.”<sup>11</sup> In other words, state policy specifics—and not just state money—matters.

Based on these findings, the report provides three recommendations for state policy:

- Ensure that all school facilities are assessed for building condition;
- Consider increasing (or initiating) state funding support for capital expenditures; and
- In addition to property wealth, account for student economic need in allocations.

It provides three recommendations for federal policy:

- Continue to produce data on building quality and student demographics;
- Consider targeting federal grants to improve student health and outcomes; and
- Encourage states to remedy disparities in property tax revenue across districts.

### **III. The Report's Rationale for Its Findings and Conclusions**

The underlying argument in the report is that unequal/inequitable capital spending is the result of a heavy emphasis on local funding sources, coupled with state policies that do too little to remedy disparities in local funding. Within this system, the federal government provides little to no support to promote capital outlay equity in the way that it does for broader education operating funding. The report asserts that states and the federal government can implement policies that mitigate this inequity and promote increased school capital outlay (and thus healthier and more educationally suitable school buildings) for students from low-income households.

### **IV. The Report's Use of Research Literature**

The report does not provide a lengthy discussion of the research literature, but the summary of the general research findings in the field is accurate. For example, Harvard School of Public Health researchers concluded that, “The evidence is unambiguous - the school building impacts student health, thinking, and performance.”<sup>12</sup>

The report’s exploration of how school building environments affect student well-being and academic success focuses almost exclusively on issues related to indoor air quality. This issue has been well documented in the research literature.<sup>13</sup> However, the report would have benefited from considering research on other issues inside schools that make up the broader indoor environmental quality (IEQ), many of which factors have also been shown to impact student well-being and achievement.<sup>14</sup>

The section examining how investment in capital spending affects student outcomes focuses on causal research on the effects of local bond referenda on student achievement. Findings are mixed.<sup>15</sup> However, some of these studies look at total capital funds spent instead of looking at whether or not building improvements were made with these expenditures that may positively affect student well-being or experience. For example, capital upgrades such as ADA compliance, repairing roofs, or plumbing upgrades are all necessary, common, and expensive projects but are unlikely to result in improved student test scores. So, it is no surprise that some of these studies find little or no student achievement effect from capital spending—the measurement is imprecise.

To examine which students are exposed to poor-quality facilities, the report cites two major national studies that have addressed this question in recent years: one by the National

Center for Education Statistics and another by the U.S. Government Accountability Office.<sup>16</sup> However, the report fails to cite the most recent comprehensive national study looking at school district capital expenditures.<sup>17</sup>

## **V. Review of the Report’s Methods**

The report models the distribution of capital funding for school facilities to provide insight on equity in local school facility conditions. The report relies primarily on school district annual capital outlay data as reported in the U.S. Department of Education’s Common Core of Data.<sup>18</sup> District expenditures are averaged over five years to account for year-to-year variation (i.e., “lumpiness”) in capital spending and presented by state.

Capital expenditures are an imperfect proxy for school facility condition, but there is no national dataset on the physical qualities of public school facilities.<sup>19</sup> The report adjusts the expenditure data differently than other studies.<sup>20</sup>

To look at spending patterns in relation to student poverty, the report develops the aforementioned ratio to compare capital outlay for low-income students and higher-income students. A weighted average per student is computed and the ratio between the two averages serves as the equity measure. A ratio of “1” indicates equality in spending per student; a ratio less than “1” indicates regressive spending, and a ratio greater than “1” indicates progressive spending. This is an elegant and straightforward method to compare spending. The results are easy to read in simple map graphs that show each state’s results.

The report also provides descriptive policy information for each state, classifying each state’s approach to specific policies of interest (e.g., state funding share, state prioritization, equalization measures, etc.). These are set up as binaries (yes/no) to analyze which state policies seem to lead to more progressive capital expenditure patterns. Again, this is a straightforward and sound approach. However, the binary characterization of state policy likely oversimplifies the actual nuance in policy and the differences between states. California, for example, is characterized as having property wealth equalization (“yes”), but in reality, California’s approach to this is very minor and mainly targeted to very small school districts.<sup>21</sup>

## **VI. Review of the Validity of the Findings and Conclusions**

Overall, the report’s findings and conclusions are strong and valid.

The report confirms findings from other studies: School district capital expenditures vary from year to year and from state to state; each state has a unique approach and mix of policies governing state support for local capital outlay; and capital outlay is rarely equalized or progressive. Very few states demonstrate consistent multi-year progressive expenditure patterns.

The report finds that the level and shape of state funding for capital expenditures affects local school district spending patterns. The report focuses more on equalization rather than equity. As others in the field have shown, equal funding will not remedy long-standing inequities in school facility funding and/or facility conditions.<sup>22</sup> Some schools were built well, designed well, and kept up well over time—these facilities likely need lower levels of regular capital investment going forward. Other schools were built cheaply, and/or not designed well, and/or not upkeep and never modernized—these schools need significant renovations and upgrades. Therefore, to achieve equity, some schools will need much more investment to reach modern conditions that foster student health and well-being and are educationally suitable.

Relatedly, the concern around school facilities is about disparities in physical conditions, not in disparities in spending. School capital expenditures are merely a proxy for school facility condition/quality; it is the actual local condition, quality, and suitability of the school facilities that impact students. In a 2014 Dear Colleague letter to state educational agencies, the U.S. Department of Education Office for Civil Rights (OCR) reminded states that school facility inequalities are an important educational equity issue and that it is each state's responsibility to ensure facility quality and equity.<sup>23</sup> The findings and recommendations from this report illustrate capital funding policies available to states that will likely, in turn, promote equity in school facility conditions.

## **VII. Usefulness of the Report for Guidance of Policy and Practice**

The report's recommendations for state and federal policy stem logically from its findings. The findings show that state policies aimed at equalizing capital funding based on local household income and/or student need, rather than only using local property wealth, do lead to more progressive outcomes. But also, as the report's findings suggest, these policies should go beyond equalization and aim to remedy long-standing school facility conditions disparities through progressive and equitable funding prioritization schemes. The report recommendations provide useful insights for how state and federal policy can move toward more progressive funding approaches.

## Notes and References

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- 1 Filardo, M. (2021). *State of our schools 2021: America's PK-12 public school facilities*. 21st Century School Fund, International WELL Building Institute, and National Council on School Facilities. Retrieved February 24, 2023, from <http://stateofourschools2021.org>
- 2 Filardo, M. (2021). *State of our schools 2021: America's PK-12 public school facilities..* 21st Century School Fund, International WELL Building Institute, and National Council on School Facilities. Retrieved February 24, 2023, from <http://stateofourschools2021.org>
- 3 Filardo, M. (2021). *State of our schools 2021: America's PK-12 public school facilities..* 21st Century School Fund, International WELL Building Institute, and National Council on School Facilities. Retrieved February 24, 2023, from <http://stateofourschools2021.org>
- 4 Blagg, K., Terrones, F., & Nelson, V. (2023, January). *Assessing the national landscape of capital expenditures for public school districts*. Urban Institute. Retrieved February 1, 2023, from <https://www.urban.org/research/publication/assessing-national-landscape-capital-expenditures-public-school-districts>
- 5 Filardo, M., & Vincent, J.M. (2017). *Adequate & equitable U.S. PK-12 infrastructure: Priority actions for systemic reform*. 21st Century School Fund, Center for Cities + Schools, National Council on School Facilities, and Center for Green Schools. Retrieved February 24, 2023, from [https://citiesandschools.berkeley.edu/uploads/PK12\\_Infrastructure\\_Priority\\_Actions\\_Report\\_06152017.pdf](https://citiesandschools.berkeley.edu/uploads/PK12_Infrastructure_Priority_Actions_Report_06152017.pdf)
- 6 Maxwell, L.E. (2016). School building condition, social climate, student attendance and academic achievement: A mediation model. *Journal of Environmental Psychology*, 46, 206-216.
- 7 Office for Civil Rights. (2014). *Dear colleague letter: Resource comparability*. United States Department of Education. Retrieved February 24, 2023, from <https://www2.ed.gov/about/offices/list/ocr/letters/colleague-resourcecomp-201410.pdf>
- 8 For the ratio, a value of "1" means no difference, or perfect parity, while a value below "1" means that students from low-income households received less funding.
- 9 Reviewing each state's policy approach, the report identified six key facets of capital outlay: whether voter approval is needed; the state funding share or type; state prioritization or approval; facility assessment or survey requirements; equity/equality measure; and types of projects considered.
- 10 1) whether the state provides any support for capital expenditures; 2) whether state support includes substantial funding, such as grants or subsidies, that do not need to be repaid; 3) whether state support is aimed at property wealth equalization; 4) whether state support adjusts for local district income data or sales tax revenue; 5) whether state support includes direct support or consideration for students from low-income families; 6) whether state funding is provided for other types of need (including rural or small schools or indirect measures of student socioeconomic status); and 7) whether the state requires any form of facilities assessment.
- 11 Blagg, K., Terrones, F., & Nelson, V. (2023, January). *Assessing the national landscape of capital expenditures for public school districts* (p. 16). Urban Institute. Retrieved February 10, 2023, from <https://www.urban.org/research/publication/assessing-national-landscape-capital-expenditures-public-school-districts>
- 12 Eitland, E., Klingensmith, L., MacNaughton, P., Cedeno Laurent, J., Spengler, J., Bernstein, A., & Allen, J.G. (2019). *Foundations for student success: How school buildings influence student health, thinking, and performance* (Schools For Health). Healthy Buildings Program, Harvard T.H. Chan School of Public Health. Retrieved February 24, 2023, from [https://forhealth.org/Harvard.Schools\\_For\\_Health.Foundations\\_for\\_](https://forhealth.org/Harvard.Schools_For_Health.Foundations_for_)

Student\_Success.pdf

13 See Fisk, W.J. (2017). The ventilation problem in schools: Literature review. *Indoor Air*, 27(6), 1039-1051. Retrieved February 24, 2023, from <https://doi.org/10.1111/ina.12403>

Fisk, W.J., Paulson, J.A., Kolbe, L.J., & Barnett, C.L. (2016). Significance of the school physical environment – A commentary. *Journal of School Health*, 86(7), 483-487. Retrieved February 24, 2023, from <https://doi.org/10.1111/josh.12400>

14 These include all the factors that influence occupants' sensory experiences including thermal comfort, IAQ, lighting, views, and acoustics as well as aspects of the spatial environment, including design characteristics, educational suitability, and facility operations and maintenance functions. See: NetZED Laboratory. (2021). *The impact of school facilities on student learning and engagement*. College of Design, School of Architecture & Environment, University of Oregon. Retrieved February 24, 2023, from <https://netzedlab.uoregon.edu/impact-of-school-facilities-on-student-engagement-and-learning/>

15 See Hong, K. & Zimmer, R. (2016). Does investing in school capital infrastructure improve student achievement? *Economics of Education Review*, 53, 143-158. Retrieved April 4, 2023, from <https://doi.org/10.1016/j.econedurev.2016.05.007>

Lafortune, J. & Schönholzer, D. (2022). The impact of school facility investments on students and homeowners: Evidence from Los Angeles. *American Economic Journal: Applied Economics*, 14(3), 254-289. Retrieved February 24, 2023, from <https://doi.org/10.1257/app.20200467>

Martorell, P., Stange, K., & McFarlin, I. (2016). Investing in schools: Capital spending, facility conditions, and student achievement. *Journal of Public Economics*, 140, 13-29. Retrieved February 24, 2023, from <https://doi.org/10.1016/j.jpubeco.2016.05.002>

16 The NCES study finds that schools with higher shares of low-income and/or nonwhite students are more likely to attend school in buildings that need facility repairs.

Alexander, D., Lewis, L., & Ralph, J. (2014). *Condition of America's public school facilities: 2012-13* (NCES 2014-022) (p. 61). National Center for Education Statistics. Retrieved February 24, 2023, from <https://nces.ed.gov/pubs2014/2014022.pdf>

The GAO study found that about half of school districts in the U.S. need to update or replace multiple systems like heating, ventilation, and air conditioning (HVAC) or plumbing and an estimated one-third of schools need HVAC system updates.

U. S. Government Accountability Office. (2020). *K-12 education: School districts frequently identified multiple building systems needing updates or replacement* (GAO-20-494). U.S. Government Accountability Office. Retrieved February 24, 2023, from <https://www.gao.gov/products/gao-20-494>

17 Filardo, M. (2021). *State of our schools 2021: America's PK-12 public school facilities*. 21st Century School Fund, International WELL Building Institute, and National Council on School Facilities. Retrieved February 24, 2023, from <http://stateofourschools2021.org>

18 Data are collected annually through the F-33 School Finance Survey

19 Filardo, M. & Vincent, J.M. (2017). *Adequate & equitable U.S. PK-12 Infrastructure: Priority actions for systemic reform*. 21st Century School Fund, Center for Cities + Schools, National Council on School Facilities, and Center for Green Schools. Retrieved February 24, 2023, from [https://citiesandschools.berkeley.edu/uploads/PK12\\_Infrastructure\\_Priority\\_Actions\\_Report\\_06152017.pdf](https://citiesandschools.berkeley.edu/uploads/PK12_Infrastructure_Priority_Actions_Report_06152017.pdf)

20 The report adds together local capital expenditures for “construction,” “land and existing structures,” “instructional equipment,” and “other nonspecified equipment.” Other studies have only used expenditures for “construction,” because other categories (e.g., land) can vary widely from one community to the next. The

report also adjusts for inflation by using the consumer price index (CPI) instead of a construction specific price index.

- 21 Brunner, E.J. & Vincent, J.M. (2018). *Financing school facilities in California: A ten-year perspective* (Getting Down to Facts II, Stanford University, p. 80). Stanford University. Retrieved February 24, 2023, from [https://gettingdowntofacts.com/sites/default/files/2018-09/GDTFII\\_Report\\_Brunner-Vincent.pdf](https://gettingdowntofacts.com/sites/default/files/2018-09/GDTFII_Report_Brunner-Vincent.pdf)
- 22 Filardo, M., Vincent, J., & Sullivan, K. (2019, April 29). How crumbling school facilities perpetuate inequality [Phi Delta Kappan]. *Kappanonline.Org*. Retrieved February 24, 2023, from <https://kappanonline.org/how-crumbling-school-facilities-perpetuate-inequality-filardo-vincent-sullivan/>
- 23 Office for Civil Rights. (2014). *Dear colleague letter: Resource comparability*. United States Department of Education. Retrieved February 24, 2023, from <https://www2.ed.gov/about/offices/list/ocr/letters/colleague-resourcecomp-201410.pdf>