January 29, 2016

Dear House Education Committee Members,

I am formally submitting my opposition to HB 2486, an act concerning school districts; relating to capital improvements; creating the school district bond project review board; amending K.S.A. 2015 Supp. 75-2319 and repealing the existing section. In addition, I would oppose any additional bills based on the Bonding by Local School Districts recommendations listed in the Special Committee on K-12 Student Success's final report.

Sincerely,

Marcel Harmon, Ph.D., PE, LEED AP O+M
Vice President, Board of Education, USD #497

The intent of HB 2486 and the five Bonding by Local School District recommendations from the Student Success Committee's final report (listed below in the text box) are intended to a) reduce the amount of state aid allocated for bond and interest overall, b) reduce the dollar amount provided by the state on an individual project basis, c) reduce the number of requests made by individual districts to obtain capital improvement state aid and d) limit the types of projects that would be eligible for state aid. It appears the primary goal of the bill and these associated recommendations from the report is to reduce state spending, regardless of the impacts on public education and student success.

Bonding by Local School District recommendations from the Student Success Committee's final report

- The Legislature should repeal the current statute for state aid for the payment of principal and interest on bonds for capital improvements.
- A new state aid statute for bond and interest payments should be created to specifically define and limit what projects may be funded with state aid for capital improvement.
- The new state aid statute should be limited to a specific dollar amount each fiscal year to avoid unforeseen demands on the State General Fund.
- A State building architect and project manager should be used in any new building project to reduce the costs associated with the project.
- A special committee of the legislature should be created to oversee and approve any bond issue before the issuance is placed on a ballot before local voters, if the local school districts desires to obtain capital improvement state aid (bond and interest state aid).

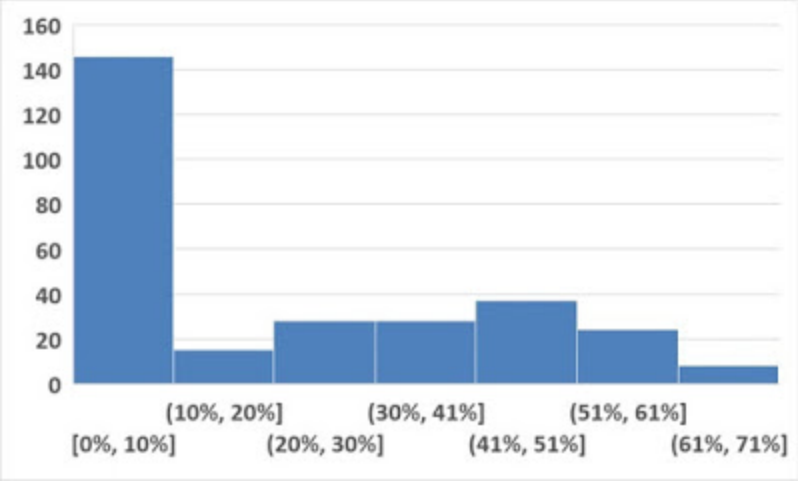
Increases in Inequity

This is unfortunate, given the amount of work that needs to be done to our nation's and Kansas's schools. A report from the Center for Green Schools (2013) estimated that as of 2008 there was $271 billion in deferred maintenance costs nationally just to get schools back to working order and comply with current laws. Modernizing them would take $542 billion over 10 years (starting in 2013), and it should be noted that new construction for enrollment growth was not included in these numbers.

The 21st Century School Fund estimated in 2008 that our nation had 6.6 billion square feet of PK-12 public school facility square footage (Center for Green Schools 2013). According to data made available by KASB, the 2004-2005 total PK-12 public school facility square footage in Kansas was just under 60.5 million. Using the ratio of Kansas/National square footage (0.009), we can estimate the cost to get Kansas schools back to working order at $2.48 billion and $4.96 billion to fully modernize.

Referring to statewide data made available by KASB here, 189 of the 286 districts had outstanding bond and interest on the books for the 2014-2015 school year. Total state aid for this year represented 29% of the total amount of bond and interest for the districts in this dataset. Of the 189 districts with bond and interest, 150 of them were making use of state aid. The percentage that state aid represented of their outstanding bond and interest ranged from 3% to 69%, with 100 of the districts over 30%.

Admittedly this is a somewhat simplistic analysis, but it nevertheless shows that state aid furnishes a significant percentage of the funding for capital improvements at many districts. And a reduction in state aid will disproportionately impact less wealthy communities who have a more difficult time generating the local taxes needed to make these improvements. It will increase the inequity in school building environments across the state.



Histogram of the percentage of bond and interest furnished by state aid; all districts are included (including those with 0%).

It should also be noted that 96 districts had no outstanding bond and interest on the books at all for the 2014-2015 school year. An interesting question to ask is how many of these districts still have significant deferred maintenance needs, and why aren't they being addressed? Does the current drive to reduce state spending and resulting reduction in public school funding that districts can use for general operations have anything to do with that?

Impacts on Building Operations and Students, Teachers & Staff

What does a reduction in the ability of a district to modernize its fleet of buildings mean exactly? Let's look at operational impacts first. During the 2008-2009 school year, approximately $50 billion was spent on the O&M (operations and maintenance) of U.S. school district facilities (Center for Green Schools 2013). The Environmental Protection Agency estimated that utilities accounted for approximately $8 billion of the $50 billion. Again applying the previous Kansas/National square footage ratio (0.009), the Kansas operations and maintenance costs are then estimated to have been $455 million for the 2008-2009 school year, with utility costs accounting for $72.8 million of the overall O&M costs.

Modernizing facilities and then eliminating the occurrences of subsequent deferred maintenance would reduce O&M costs over the long term. The constant band aid fixes and periodic major equipment failures/replacements would be greatly reduced and O&M staff would have a greater ability to operate in a proactive vs. reactive manner. This increase in operational efficiency also eases the stress on O&M personnel and custodians, who are often understaffed to begin with.

Modernization will also result in energy savings and reduced utility costs. For the purpose of this exercise, we'll assume an average of 30% utility savings across this state if every facility was fully modernized, though in actuality the design level savings would likely be greater. This would then calculate out to an estimated annual utility savings of $21.8 million for the state of Kansas. But this just scratches the surface in terms of increased efficiencies.

Decades of multi-disciplinary research have demonstrated the impacts the built environment have on building occupant productivity/performance and health. And a large body of that research has been

conducted within education environments. In the text box below is a brief summary of some of these impacts:

Sampling of Productivity/Performance & Health Research

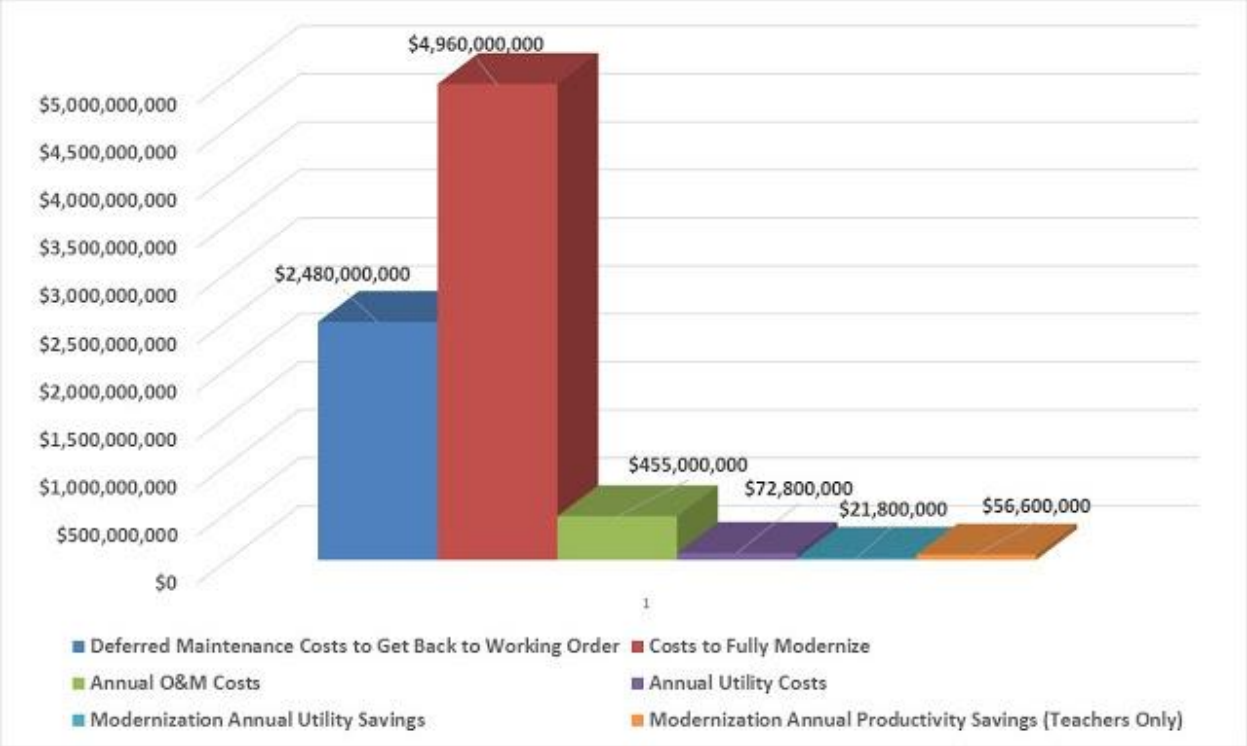
- A study of Chicago and Washington, DC schools found that better school facilities can add 3 to 4 percentage points to a school's standardized test scores, even after controlling for demographic factors (Schneider 2002).
- Based on actual improvements in design in green schools and based on a very substantial data set on productivity and test performance of healthier, more comfortable study and learning environments, a 3-5% improvement in learning ability and test scores in green schools appears reasonable and conservative (Kats 2006).
- Compared to little or no daylighting, classrooms with appropriate daylighting may increase the rate of student learning by a) 20% in math and b) 26% in reading (Heschong Mahone Group 1999).
- Office workers were found to perform 10% to 25% better on tests of mental function and memory recall when they had the best possible view versus those with no view (Heschong Mahone Group, Inc. 2003).
- Discomfort represented by non-optimal temperature ranges have been shown to decrease occupant performance / productivity on either side of the optimal temperature range (68OF – 72OF) by up to 9% (Seppänen et al. 2006, Wargocki and Seppänen 2006).
- Schools with high IAQ total scores and a high Healthy Greenness School Index (GSI) were more likely to have high student attendance rates (36% and 22% respectively) (Lin et al.).
- Schools with well-maintained air filters were also 42% more likely to have good 4th grade academic performance (Lin et al.).
- An analysis of two school districts in Illinois found that student attendance rose by 5% after incorporating cost effective indoor air quality improvements (Illinois Healthy Schools Campaign 2003).
- When conversational noise was reduced and speech privacy increased, a) the ability of office workers to focus on tasks improved by 48%, b) the performance of tasks relating to accuracy and memory improved by 10% and c) the physical symptoms of stress such as high blood pressure and increased heart rate were reduced by 27% (Sykes 2004).
- For acoustics and sound impacts, also see *Julian Treasure: Why architects need to use their ears*.
- Study of Taiwanese 8th graders found that the addition of visible, leafy plants at the back of the classroom (6% of floorplan area) resulted in a) significantly stronger self-reported feelings of preference, comfort, and friendliness and b) significantly fewer hours of sick leave and punishment records (+50% less) (Han 2008).
- Increasing one's degree of personal environmental control has been found to provide average measured workforce productivity gains of 7.1% for lighting control, 1.8% for ventilation control and 1.2% for temperature control (Kats et al. 2003).

With the additional distractions and hardships found in a poor physical environment greatly reduced, students have more of their mental and physical energies available to devote to learning. And these positive learning benefits are compounded year to year over the course of students' PK-12 careers, assuming that facilities are well maintained.

Whatever the overall average impact is on productivity/performance, for those students (or teachers/staff) more susceptible physically to various negative aspects of indoor environmental quality, the percentage improvement will be substantially greater. In addition, students who are minorities, in poverty, have special needs, etc. are disproportionately impacted by facilities in poor

condition, as their relative limited resources, limited outside support, physical challenges and/or psychological challenges already are a drain on their mental and physical energies to begin with.

Moving to the adults, let's look at the monetary impacts of this average 3% improvement in productivity/performance. Focusing just on teachers, according to summary reports provided by KSDE (Kansas State Department of Education), the average Kansas teacher salary (including salary + supplemental & summer school salaries + fringe benefits) for 2014-2015 was $54,907 (Average Salaries for Classroom Teachers) and the number of Kansas teachers for 2014-2015 was approximately 34,340, using FTE numbers (Certified Personnel Report). Using the 3% average impact and 2014-2015 data, full modernization is estimated to result in an increase in approximately $56.6 million worth of teacher productivity, statewide.



Obviously this doesn't represent dollars that districts can recover and use for other purposes, but it does represent salary dollars spent more "efficiently". Teachers are able to expend more of their mental and physical energies on their primary daily education tasks, as opposed to dealing with sub-par facilities and poor indoor environmental conditions. Adding the productivity savings to the estimated utility savings results in an estimated annual savings of $78.4 million, and this still excludes other classified staff, all non-classified staff, other facility O&M savings and health improvements. And the utility savings and average productivity/performance improvements used here are conservative estimates to begin with.

There are a lot of variables that impact student and teacher/staff productivity/performance and health. Relative to many of these other variables the impacts of the built environment are small on average, but there is a significant body of research confirming the impact is real. We can also address the built environment relatively easy compared to many other variables. Making it harder for districts to address facility deficiencies just doesn't make sense.

Bill Will Negatively Impact Public Schools

When all is said and done, HB 2486 and the Bond by Local School Districts recommendations are poorly thought through in terms of their impact on a) student learning, teacher effectiveness and everyone's health, b) energy and water consumption, c) associated annual utility costs, d) other operational costs and e) the increase in building quality inequity that will result across the state.

The recommendations hit school districts in multiple ways by increasing the difficulty in reducing both building O&M costs (including utilities) and negative environmental impacts on students and teachers. At the same time, as utilities and other O&M costs rise as a result of continued building deterioration, this becomes an additional hit on district budgets. The recommendations actually increase inefficiencies.

For these reasons I urge you to oppose this bill, and any subsequent bills based on the 5 bond recommendations in the Student Success Committee final report.

References

Center for Green Schools. 2013. State of Our Schools Report. U.S. Green Building Council.

Han, K. T. 2008. Influence of Limitedly Visible Leafy Indoor Plants on the Psychology, Behavior, and Health of Students at a Junior High School in Taiwan. Environment and Behavior 41(5): 658-692.

Heschong Mahone Group. 1999. Daylighting in Schools: An Investigation into the Relationship Between Daylight and Human Performance. Report submitted to Pacific Gas and Electric.

Heschong Mahone Group. 2003. Windows and offices: a study of student performance and the indoor environment. California Energy Commission: Sacramento, California.

Illinois Healthy Schools Campaign. 2003. "Apparently Size Doesn't Matter: Two Illinois School Districts Show Successful IAQ Management." School Health Watch, Summer 2003. Also see: US Environmental Protection Agency. "IAQ Tools for Schools," December 2000 (Second Edition).

Kats, G., L. Alevantis, A. Berman, E. Mills, and J. Perlman. 2003. The Costs and Financial Benefits of Green Building: A Report to California's Sustainable Building Task Force.

Kats, G. 2006. Greening America's Schools: Costs and Benefits. Capital E.

Lin, S., C. Kielb, A. Orsini & N. Muscatiello The Evaluation of Green School Building Attributes and Their Effect on the Health and Performance of Students and Teachers in New York State. Final Project Report - Proposal Number: #147 funded by the US Green Building Council.

Schneider, Mark 2002. "Public School Facilities and Teaching: Washington, DC and Chicago," November 2002. A Report Prepared for the Neighborhood Capital Budget Group (NCBG).

Seppänen, O., W. J. Fisk, and Q. H. Lei. 2006. Effect of Temperature on Task Performance in Office Environment. Publication No. LBNL-60946. Lawrence Berkeley National Laboratory, Berkeley, CA.

Sykes, D. M. 2004. Productivity: How Acoustics Affect Workers' Performance In Offices & Open Areas. Retrieved February 1, 2009, from Office Sound Masking Solutions, by Speech Privacy Systems.

Wargocki, P. and O. Seppänen, editors. 2006. Indoor Climate and Productivity in Offices, Guidebook No. 6. Rehva (Federation of European Heating and Air-Conditioning Associations), Brussels, Belgium.