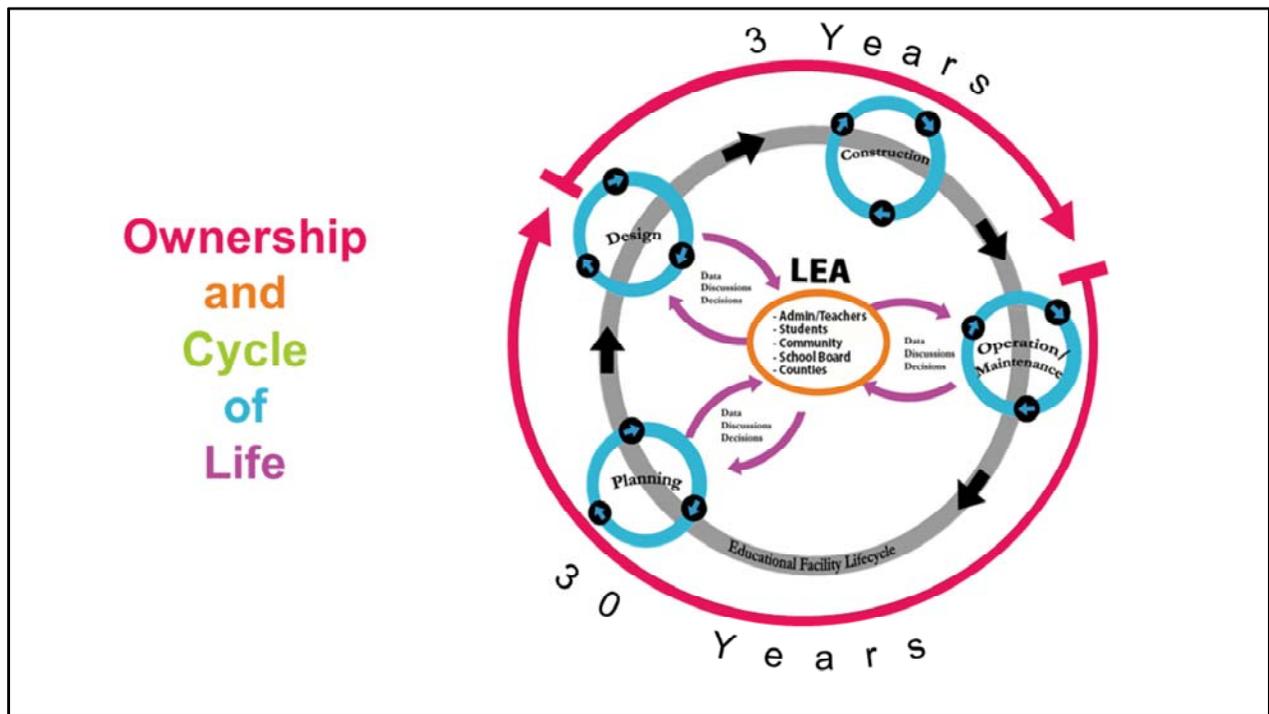




BOB: Welcome and thank you for participating in this webinar. I'm Bob Gorrell, Executive Director of the Maryland Interagency Commission on School Construction. I will be joined in presenting this webinar by IAC staff members Alex Donahue and Arabia Davis. Today, it is our privilege to present foundational information to the public and to Maryland's stakeholders that we believe will strengthen the understanding of many concepts that will be discussed at length in the upcoming meetings of the Workgroup on the Assessment and Funding of K-12 School Facilities. This webinar is the second of four and describes how and why managing the total cost of ownership of a facility and of a portfolio of facilities is essential to fiscal sustainability.

QUESTIONS: We encourage your questions and you may submit them throughout the presentation. If you click on the blue Q&A icon, you will see a white box to the right of your screen with Q&A at the top. Please enter your questions there and we will attempt to answer them with the presentation material, or we will try to consolidate similar questions and answer them at the end of the presentation. We will answer questions until we have addressed them all or up to 3PM at which time we will hard stop.



**BOB:** As we stated in the first webinar, “Managing a Portfolio of Facilities,” school facilities are not set-and-forget assets. There are four primary phases of a facilities cycle of life and the National Council on School Facilities has developed definitions that can allow cost accounting to best understand the “Total Cost of Ownership,” which this presentation covers. We know a lot of about the phases associated with funding that are most visible to the public, and they are the design and construction phases. However, these two phases occur for only a short period of time in a facility’s cycle of life, usually 3-5 years, while Operations and Maintenance are ongoing. Together with initial cost of building a facility, Operations and Maintenance make up the bulk of the Total Cost of Ownership, with the Maintenance, and Capital Maintenance specifically, being a large portion of the post occupancy costs.

Operations covers the heating, cooling, cleaning, and custodial work needed to ensure healthy and welcoming environments; and Maintenance, which we will cover in detail in the next webinar, covers the routine and capital work and expenditures that allow education to be delivered. The National Council on School Facilities’ definition of maintenance is “the work required to ensure that the school

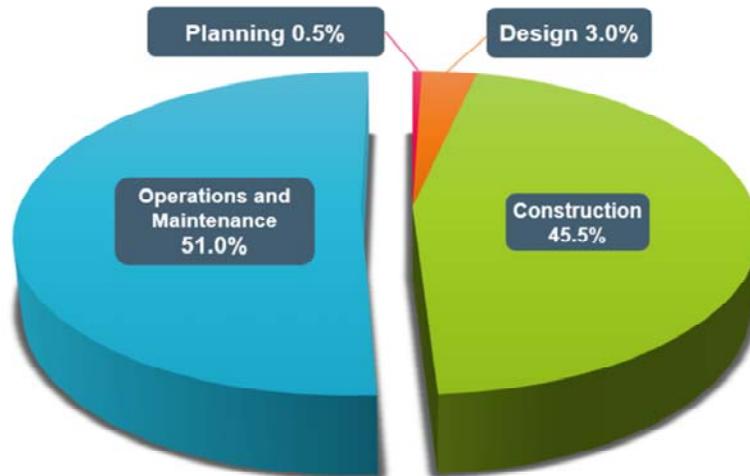
facility is kept in such condition that it may be fully functional and continuously utilized for its expected lifespan, for its intended purpose, and at its maximum energy efficiency”. Together, the cost of maintenance and operations over 30 years is just about the same again as the initial design and construction cost.

Planning is also ongoing, and this work, as well as maintenance, must increase, or should be, as a facility approaches the point in its life when—both functionally and economically—the facility should be replaced or renewed. To be effective, planning depends upon good comparable data. We covered this need in the first webinar, and the data should lead to extended discussions with stakeholders and Operations/Maintenance to continually improve the cost effectiveness of ownership and the delivery of educational programs of the entire LEA facilities portfolio.

The funding expended for Planning, Design, Construction, and Operations & Maintenance together represent the Total Cost of Ownership for each school facility.  
=> Arabia

# Total Cost of Facility

Average Percentage Over 30 Years



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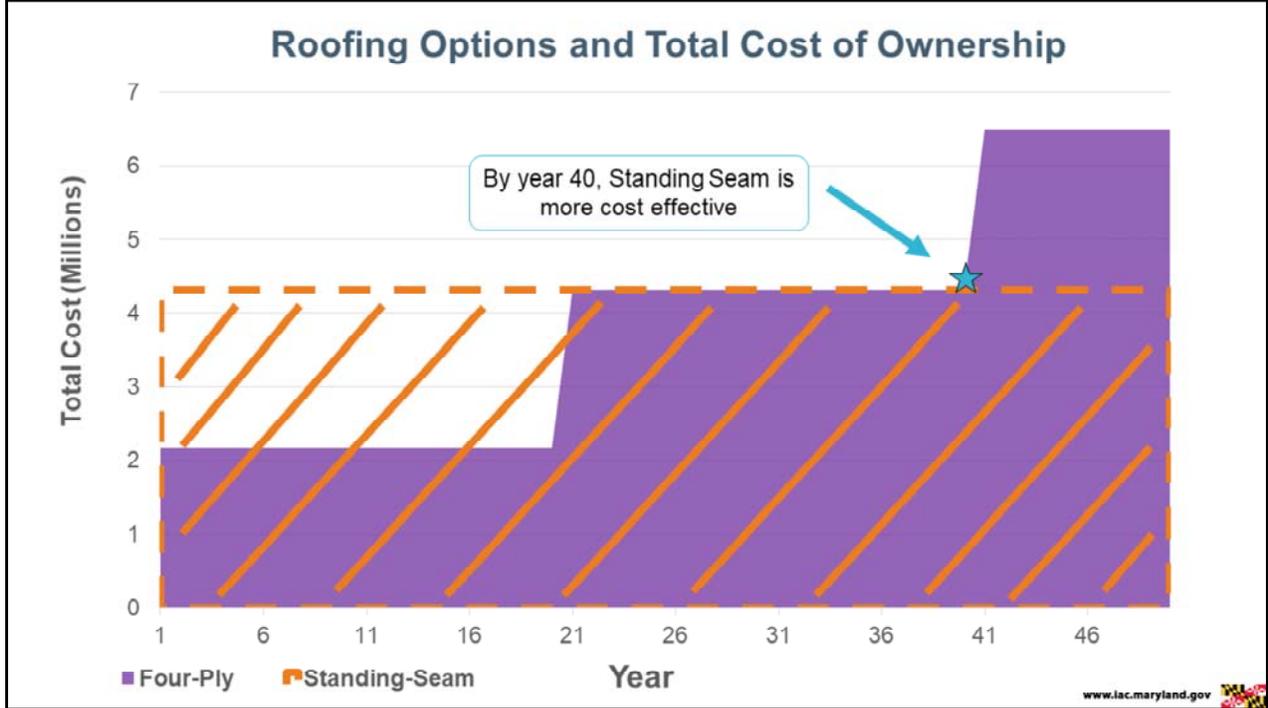
**ARABIA:** The approximate costs associated with each phase are represented in this slide. It's important to look at each phase's relative cost compared to the total cost of ownership. For our purposes here, we will leave the acquisition of a facility's site (meaning, the land) out of the calculation because it can vary so widely from zero in the case of a site already owned by the LEA to a meaningful percentage in the case of a new school being built on newly purchased land in a high-cost area. Planning, which can include demographic studies, community involvement, charrettes, and coordination with other public agencies, generally only amounts to a fraction of a percent. Design, however can include architectural and engineering services, interior design, and landscape design, may add up to another 3%. Construction, which can include site development, permitting, furniture, fixtures, and equipment, is clearly a large component of total cost.

However, the largest component by far is Operations & Maintenance over the 30 years during which a facility should serve its intended purposes before needing a major renovation. Operations & maintenance, which includes all of the activities summarized in Webinar #1, and will be described in depth in Webinar #3, can make up more than HALF of the total cost of ownership over those 30 years.

## *Total Cost of Ownership Within a Portfolio*



**ARABIA:** No facility is an island. To deliver education services and programs and support its students, each Maryland school district must maintain a set of school facilities matched to its local needs. Those needs are ever changing as the populations in the district's neighborhoods change. As discussed in the first webinar, having a portfolio of schools gives each school district the opportunity for some economies of scale to manage the ebbs and flows of not only enrollments, but also changes in educational programs. Managing school facilities as a portfolio, versus reacting to each facility as being separate, provides opportunities to free up dollars for program uses. One way in which an LEA can reduce total cost of ownership is to maximize the utilization of facilities through adjusting students' school assignments. Take for example a district with three old school facilities and an uneven distribution of students. It might cost less over 30 years to build a brand new but larger school on a central site and eliminate two outlying and underutilized facilities than it would cost to renovate and continue to operate three smaller schools.



**ARABIA:** In design, decisions about what materials to use and which building systems to install can significantly affect the long term cost of ownership. Every building system has the potential to add to or subtract from the total cost of ownership through attributes such as its size/fit/appropriateness to its application, its build quality, its maintenance and potential repair costs, and its energy efficiency. For example, a standing-seam metal roof can cost twice as much as a 4-ply roof but can last 3 – 4 times longer, thereby reducing the total cost of ownership over the course of a 50-year facility lifespan. >>>Alex

# The Power of Early Decisions

## 30-Year Cost

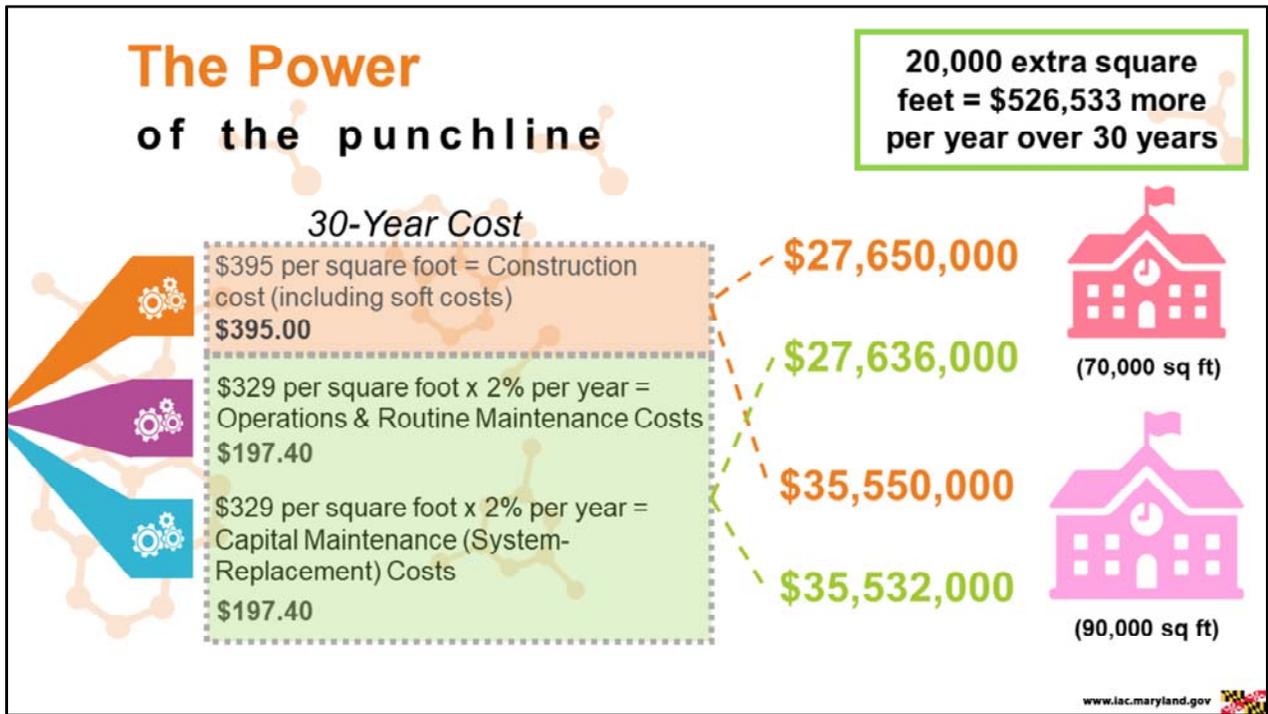


$$\begin{aligned}
 &(70,000 \times \$395) \\
 &+ (70,000 \times \$329 \times .02 \times 30) \\
 &+ (70,000 \times \$329 \times .02 \times 30) \\
 &= \mathbf{\$55,286,000 \text{ Total Cost}} \\
 &\quad \$27,650,000 \text{ up front} \\
 &\quad + \$921,200 \text{ per year}
 \end{aligned}$$

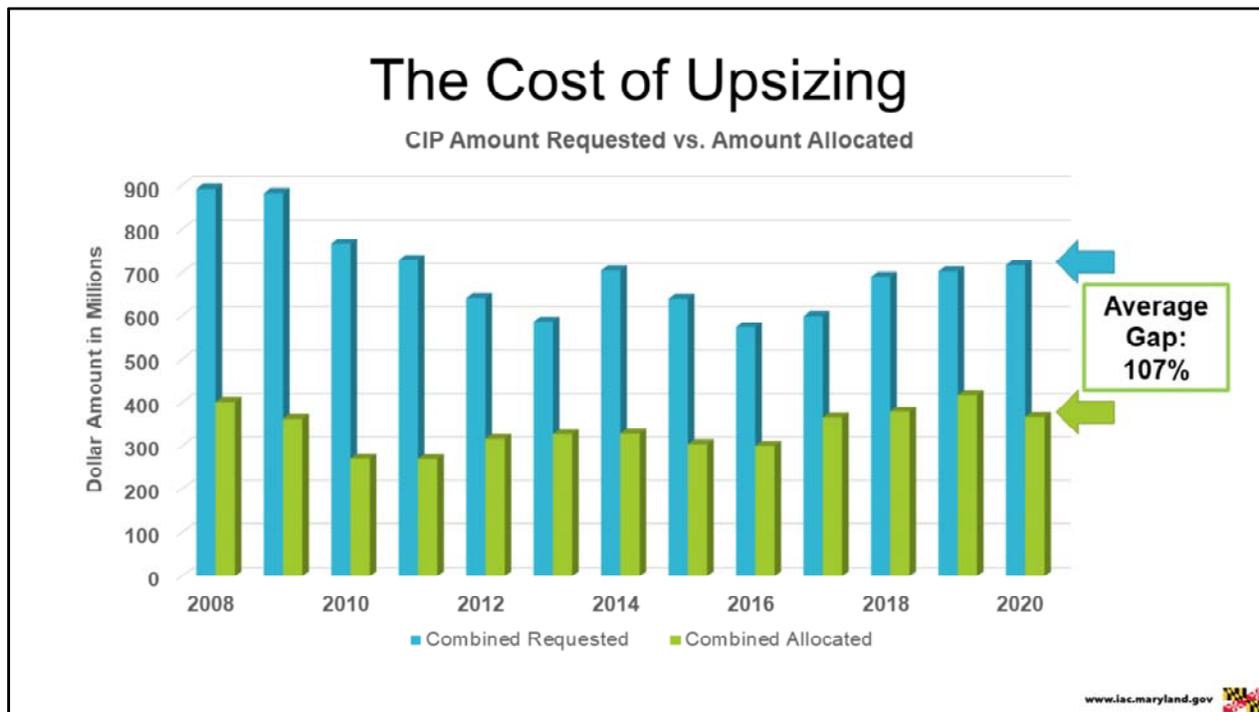


$$\begin{aligned}
 &(90,000 \times \$395) \\
 &+ (90,000 \times \$329 \times .02 \times 30) \\
 &+ (90,000 \times \$329 \times .02 \times 30) \\
 &= \mathbf{\$71,082,000 \text{ Total Cost}} \\
 &\quad \$35,550,000 \text{ up front} \\
 &\quad + \$1,184,400 \text{ per year}
 \end{aligned}$$

**ALEX:** If you attended the first webinar, you saw this and the next slide, but we cannot overemphasize the importance of early decisions in achieving fiscal sustainability. Decisions made during the Planning and Design phases at the beginning of a facility’s life cycle—such as its location, shape, size, and functional relationships—can have significant consequences and constrain future generations. When considering a facility’s educational specifications, perhaps the most consequential decision is the total square footage of the facility. At current average construction costs, each gross square foot of additional space above baseline requirements translates into nearly \$400 of **additional cost of ownership after the first cost of construction**, over 30 years because the LEA must spend money to operate and maintain that space. For example, at recent average construction prices, building an extra 20,000 gross square feet above the baseline will cost about \$8 million.



**ALEX:** But that's not all. In addition to the \$8 million construction-cost premium, the 30-year cost of maintaining and operating the extra 20,000 gross square feet is ANOTHER almost \$8 million. On an annual basis for 30 years, the combined \$15.8 million equates to more than a half million dollars per year that could have gone into educational programs or other services.



**ALEX:** Regardless of which taxpayer pocket—State or local—the \$15.8 million comes from, upsizing of this nature across a portfolio can, in the aggregate, have a huge effect on the fiscal sustainability of that portfolio. The effect on the LEA will be to crowd out other needed projects in both the short and long terms. The effect on the State will be to reduce the number of local projects in which the State can participate, and not just for one year, but for many years. Over the course of the last 13 CIP cycles, the total local requests to the State for funding – shown here in blue -- were on average more than DOUBLE the State’s allocations – shown here in green. So, we know that there are unmet needs out there that are consistently not being addressed. And we know that the LEAs’ requests do not represent their total need. In October 2018, the IAC surveyed the LEAs to roughly understand their perception of backlogged needs and the total was a staggering \$26 billion.

Of course, it’s neither feasible nor desirable to bring every single school to a like-new condition and keep it there from year to year. The strategy of portfolio management requires that we manage each dollar for each project today to bring down its total cost of ownership so that, collectively, the cost of ownership our portfolio goes from increasing at approximately 1.6% per year (which has been our

average GSF increase over 45 years) to decreasing at this rate or more. With this strategy, we will eventually achieve equilibrium with available funds and the expected conditions and functions of our school facilities portfolio(s).

# The IAC's Total-Cost-of-Ownership Tools for Planning



## Educational Facilities Sufficiency Standards

Help identify high-priority deficiencies in existing facilities



## Gross Area Baselines

Describe reasonable outer boundaries of facility size

Support LEA discretion in facility design



## TCO Comparison Tool

Helps LEAs compare the estimated total costs of ownership of various design options



## Life-cycle Cost Estimator (*planned*)

Helps LEAs project the cost of a building's systems using current age & condition

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**ALEX:** The fiscal sustainability of Maryland's portfolio depends upon the fiscal sustainability of each LEA's portfolio. And the fiscal sustainability of each LEA's portfolio is directly affected by the fiscal sustainability of each facility that the LEA owns. For this reason, the IAC is working to support all LEAs in their efforts to estimate and manage the total cost of ownership of every facility, both existing and planned. Towards this end, the IAC is developing a stable of tools to support optimizing the total cost of ownership of facilities. This stable includes [list on slide].

First, the Sufficiency Standards help LEAs identify high-priority deficiencies in existing facilities so that they can obtain the most bang for their improvement dollars.

Second, the Gross Area Baselines help LEAs design new facilities that can both meet their needs and support a fiscally sustainable portfolio.

Third, the Total Cost of Ownership Comparison Tool helps LEAs compare the estimated total costs of ownership of various design options long before they select a specific solution and lock their future generations of taxpayers into the long-term costs that will come with a given design. In light of the competing needs within each portfolio, doing this sort of estimating up front is essential for overall

sustainability.

Fourth, the IAC is working on building a tool that will help project the costs of each major building system in a facility over the upcoming years, based upon both its actual condition and its predicted and actual life-cycle costs.

## Estimated Required Annual Spending to Sustain Maryland's Portfolio



### Capital Maintenance

2% of Construction Cost (with soft costs) per year

$$.02 \times \$395/\text{GSF} \times 140\text{M GSF} = \$1.106 \text{ Billion per year}$$

$$\$1.106 \text{ Billion} + \$1.106 \text{ Billion} = \$2.212 \text{ Billion per year}$$

### Operations and Routine Maintenance

2% of Construction Cost (with soft costs) per year

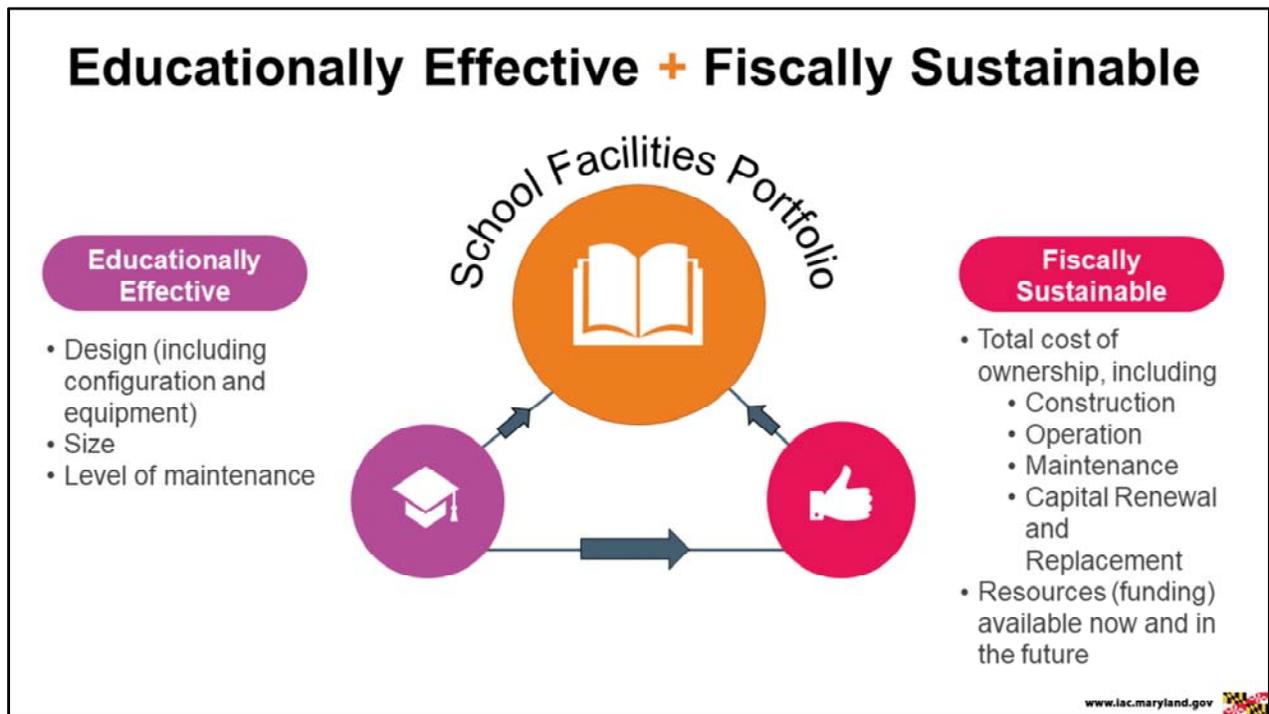
$$.02 \times \$395/\text{GSF} \times 140\text{M GSF} = \$1.106 \text{ Billion per year}$$

*Industry Standards For Investment*

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**Arabia:** As was noted in the first webinar, when aggregated to the entire State portfolio level, just the operations and maintenance ongoing costs of ownership are staggering. The level of spending effort **to maintain and sustain our existing conditions of our existing portfolio**, based upon industry standards, should be about TWO AND A QUARTER BILLION DOLLARS a year. As we have seen, the average age of the square footage of our school facilities continues to rise. As the IAC Funding Programs Manager, I have seen, and the longitudinal record shows, that the demand for systemic spending continues to rise each year. Within the school systems, we hear that custodial and maintenance staffs have shrunk, yet the total square footage has doubled since the early 1970s. The continued operation of our schools attests to phenomenal efforts made by our school districts' maintenance and operations staffs. However, **if our goal is to maintain steady conditions from decade to decade, it does not appear that we are doing that.**

## Educationally Effective + Fiscally Sustainable



**BOB:** Our objective must be to achieve a statewide portfolio of facilities that is educationally effective and fiscally sustainable over time. Achieving fiscal sustainability requires applying available resources to the needs as efficiently and effectively as possible. We must become focused on the long game and we get there by also focusing on the now. Two concepts are central to this work: A **portfolio-management** approach, and, a full understanding the **total cost of ownership** of each facility over time. This is why we have covered these two topics in our first two webinars.



**... A healthy, safe, and educationally sufficient learning environment for every child in every seat in Maryland.**



**Questions?**

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**BOB:** Ultimately, we all agree that we need a healthy, safe, and educationally sufficient learning environment for every child in every seat in Maryland. Together, the State and the local jurisdictions are building the capacity to better provide this learning environment.

Now, we will answer the unanswered questions received during the webinar and we will take any additional questions. We will keep the webinar open for 2-3 minutes after the last question received or up until 3PM when we are scheduled to end – whichever occurs first. If you have questions after we sign-off today, please send them to the address on the slide. If you have colleagues that were not able to attend today, please send them to our website where we will publish the recording of this webinar, all follow-up questions, and our the slide deck with our notes.

Prior to ending today's webinar, we will put up a slide informing you of the next webinars that precede the August 28 Assessment and Funding Workgroup scheduled to begin at 9AM in the Senate Building. Thank you again for participating in today's webinar.



*Up next...*

## Facility Maintenance and Maintenance Effectiveness



**In preparation for the  
Workgroup on  
Assessment & Funding  
of School Facilities**

**Webinar 3 of 4**  
August 12<sup>th</sup>, 2019  
12:00 – 1:00 PM

**Webinar 4 of 4**  
August 20<sup>th</sup>, 2019  
12:00 – 1:00 PM

**Workgroup Meeting**  
August 28<sup>th</sup>, 2019  
9:00 – 1:00 PM

[www.iac.maryland.gov](http://www.iac.maryland.gov)