

The overall intent of the Facilities Strategic Initiative is to evaluate the current building infrastructure and develop a plan for the future aligned with the mission and vision of the Avon Grove School District. The plan shall include best uses for the existing facilities and sites to meet the needs of students, based on the strategic plan, the educational programs and enrollment projections. In addition, the plan shall include renovation and maintenance needs for the current buildings as well as the potential for future expansion of district facilities based upon the educational goals of the district.

[Quoted from the district's strategic plan website](#)

What is meant by a "modernized" school?

Why do school facilities need to be modernized?

How do facilities impact students?

How do facilities impact teachers?

How do modern facilities impact the community?

What are the costs?

Research Conclusions.

What is the Facilities Input Group (FIG)/FIG recommendation?

Who are the FIG members?

What is meant by a “modernized” school? There are three terms often associated with construction projects on schools: **rehabilitation**, **remodeling** and **modernization**.

Rehabilitation focuses on replacing worn out items and restoring a building to the condition it was in when it was first built. **Remodeling** not only replaces or repairs parts of the school that have worn out, but it also allows for the reshaping and reconfiguration of rooms within a school. Finally, **modernization** of a school building means that the facility is brought up to the current standards for structure, education and environment (Castaldi, 1994, p. 378). Research points to modernization as being the preferred way to improve an old school building as an educational tool. In some cases, modernizing a building may be more difficult and more expensive than building a new building, so districts have to weigh the costs and benefits of each approach (Cash & Twiford, 2010). To be sure, rehabilitation and remodeling may also be good choices depending upon the goals of the school district and the age and condition of the school facilities.

Why do school facilities need to be modernized? Schools should be thought of as workplaces for students and teachers rather than being held to their own, different standards. Just as workers are more productive in better work environments, data supports that teachers and students have

higher morale and are also more productive in better work environments. In fact, some sources went as far as to say that providing insufficient work environments for teachers “would be considered intolerable in another profession” (Earthman, 2002). Indeed, at construction, school buildings are only intended to be used about 30 years, which can be extended to 50 years with extensive renovation (Cash & Twiford, 2010). The following research attempts to elucidate what constitutes a “better” school environment.

- **Compliance with Current Safety and Health Standards.** Building codes change over time, meaning that school facilities that have not had a major renovation may not be American with Disabilities Act (ADA) compliant and may not meet current building codes to ensure minimal indoor air quality standards (Young, 2003; Lyons, 2002).
 - Not only do buildings need to be updated in order to be ADA compliant, but HVAC systems also play an important role in maintaining the safety and health of the students. Ventilation systems, particularly those from the 1970s, are inadequate by current standards. Due to the energy crisis, buildings were sealed tightly, but forced ventilation was not updated to adequately ensure enough air circulation to reduce pollutants from students, cleaning agents and science labs among others (Lyons, 2002). While these systems may have boasted efficiency at one time, they are operating at 1/3 of the minimum standards, which suggest at least 15-20 cubic feet of fresh air per person for modern buildings (Schneider, 2002). Proper indoor air quality is essential for the health of children who breathe in more air relative to their bodyweight and can suffer from asthma, headaches, nausea, respiratory infections and increased absenteeism when the air quality is not up to standards (Schneider, 2002; Young, 2003). In fact, a 1999 Lanham study showed that after socioeconomic status, air conditioning had the largest impact on student achievement (Earthman, 2002). Because air conditioning is not only part of thermal comfort, it’s also related to the HVAC system and therefore air quality, ensuring proper indoor air quality should be a top priority in school renovations. Interestingly, some studies have found that the longer students attend schools that are properly air conditioned, the higher their achievement will be over time (The Abbell Foundation, 2010).
- **Improve Student Achievement.** Most studies agree that modernizing lighting, HVAC systems, and reducing noise improve student achievement and teacher quality (Schneider, 2002; Young, 2003; McGowen, 2007). However, it should be noted, that there are some studies that have not found a correlation between building features and student achievement (Bowers & Urick, 2011). Read more for additional information on this phenomenon.
 - Student achievement, which is typically defined as improvement in test scores, is difficult to study because it can be difficult to separate from other variables such as socioeconomic status, parent involvement and teacher quality that are also known to influence student success. Some studies are better able to control for these factors than others. In fact, there is strong evidence among those studies that control for external variables to suggest that the condition of the facilities does play an important role on students’ ability to learn (McGowen, 2007). The points around which most of the agreement can be found have to do with the roles of air

quality, lighting and noise reduction. Air quality, as discussed under “compliance with current safety and health standards” impacts student achievement because it has been linked to increased rates of absenteeism among students and teachers. If the students and teachers miss school, then the learning process can be impeded (Schneider, 2002). Lighting is another area in which most studies can find an impact on student learning. Students learn better in an environment with natural light – they have lower rates of stress and absenteeism (Young, 2003). These results are echoed in studies focusing on labor and industry, which have found that workers are more productive when exposed to full-spectrum lighting (Young, 2003). Finally, reducing noise in the classroom can be important for students because it improves their ability to focus. Children have a hard time distinguishing between background noises and target sounds, so reducing as much background noise as possible has been shown to be beneficial to student achievement in the classroom (Schneider, 2002; Young, 2003). One particular study found that when districts provided newer, more modern, undercapacity buildings, students from lower socioeconomic backgrounds scored significantly better on tests than their counterparts in overcrowded, older, and non-renovated buildings (Rivera-Batiz & Marti, 1995). The same study found inconclusive results when looking at the students from higher socioeconomic backgrounds, which the authors hypothesized was due to wealthier families seeking out high achieving schools (Rivera-Batiz & Marti, 1995). The result was that the schools were overcrowded, but their achievement was likely the source of their overcrowding rather than overcrowding affecting achievement. In sum, research indicates that achievement suffers in poor quality buildings due to student and teacher absenteeism and dissatisfaction. Those effects may be even more pronounced for students from lower socioeconomic backgrounds.

- **Address Overcrowding.** *“School sites must be of adequate size to provide for the safety of students and provide outdoor play areas, bus loading and unloading, parking facilities for students, staff and visitors.” (Gilbert Associates, March 2015)* The buildings must be able to comfortably fit the school population in a way that enables teachers to take advantage of the most current teaching techniques. In short, overcapacity buildings are under increased population pressures that result in increased wear and tear on facilities as compared to properly utilized facilities (Earthman, 2002). By reducing unnecessary wear and tear on buildings, communities can protect their investment in the facilities.
 - Schools are one of the most densely populated work places, housing up to four times as many people per square feet as compared to office spaces. Consequently, they suffer a lot of wear and tear (Schneider, 2002). Not only are school buildings used all day by more people per floor space than a typical work building, but they are often utilized after hours for community groups (Schneider, 2002). For these reasons, they need to be maintained and updated regularly and should be of durable construction (Stevenson, 2002). Further strains on building capacity are related to current education standards, which have focused on reducing class sizes, thereby necessitating additional classrooms (Stevenson, 2002; Rivera-Batiz & Marti, 1995). Another important factor to consider when addressing overcrowding is enrollment. A new or modernized school needs to be capable of

absorbing increased enrollments. Enrollment, once fairly predictable when public schools were the only education option, has become much less predictable with the advent of school choice, immigration and waves of development (Stevenson, 2002; Vincent, 2006). This means that the public school now has multiple variables beyond live birth rates to consider when predicting future enrollment populations. Importantly, because the school is public, it must absorb any and all resident children who choose to attend. This means that if a charter school closes down, enrollment may soar or vice versa - if a charter school is created, enrollment may suddenly fall. A modern school building needs to be able to address these waves of enrollment in ways that are efficient and economical. When a building becomes overcrowded, there are both temporary and permanent solutions to consider. If trend data shows that the population growth has been sustained, districts may need to consider more permanent solutions. For example, if trailers were brought in as a temporary solution, research supports renovating the existing school building to accommodate children when buildings are consistently overcapacity (Lyons, 2002). Long-term use of trailers is problematic because they are often intended only to be temporary structures and thus deteriorate when subjected for heavy use for an extended period of time. Research shows that they may also off-gas formaldehyde and require high levels of maintenance, driving up costs for a school district (Lyons, 2002). Additionally, they are often placed on a parking lot or field that has not been prepared for a longstanding structure (Lyons, 2002). While few would argue against the utility of trailers in the short-term, portable classrooms are ill-suited to dealing with long-term enrollment increases.

- The impacts of overcrowding on students and particularly those of low socioeconomic status are particularly striking. While studies are inconclusive about the impact of crowding on those students of high socioeconomic status (Rivera-Batiz & Marti, 1995), the effects of overcrowding on students with low socioeconomic background are much more clear (Earthman, 2002). Studies have shown that poor students in buildings that are 130% overcapacity do much worse than poor students in buildings that are underutilized or at capacity (Rivera-Batiz & Marti, 1995). Consequently, the most vulnerable students are the most affected, with regards to student achievement, by a lack of space in buildings. Importantly, studies make a distinction between student achievement and student and teacher quality of life. While studies focusing on the effects of buildings wealthier students show inconclusive results, **all** students, regardless of their socioeconomic status, report a reduced quality of life in overcrowded buildings. They complain of an inability to concentrate in class, to find adequate study space and a lack of desire to return to school the following year (Rivera-Batiz & Marti, 1995). This survey demonstrates that buildings have an enormous impact on students' and teachers' attitudes that can manifest itself in things like reduced graduation rates and reduced teacher quality (Lyons, 2002; Rivera-Batiz & Marti, 1995). Additionally, some teachers indicated that due to overcrowding, they had to hold classes in areas that were ill-suited to instruction such as in hallways, storage rooms and cafeterias (Young, 2003). Similarly, there are serious concerns

in the literature with regards to overcrowded, aged buildings providing adequate space for innovative and contemporary teaching techniques. These techniques may include needs for increased technology and flexible seating space to support increased group work and interdisciplinary ventures (Lyons, 2002). Indeed, teachers reported that overcrowding was a significant concern and that it impacted teaching techniques and class activities (Rivera-Batiz & Marti, 1995). When teachers face increased stress and decreased morale due to overcrowding, teacher retention rates consequently suffer (Rivera-Batiz & Marti, 1995).

- Finally, a building feature often cited as being important for student achievement is acoustics (Schneider, 2002; Earthman, 2002) ([see also “student impacts”](#)). When a classroom is overcrowded, the acoustics may not be ideal for students, who, biologically, have a harder time distinguishing background noises from the lesson at hand (Lyons, 2002). Building renovations should take into consideration the noise pollution caused by overcrowding (Earthman, 2002). Namely, noise pollution increases when students are sitting in a room that is not properly sized for them with hard walls and a hard floor, causing background noises to echo.
- **Support Current Teaching Techniques.** *“Flexibility, including spaces to provide for the various teaching/learning styles, is essential to the modern school.” (Gilbert Associates, March 2015).*

As the world evolves and the needs of the global workplace evolve, so too do the teaching techniques used to prepare students to meet these new challenges. Therefore, a building may not just need to have its appearances updated, but may need more physical renovation to accommodate these new trends in teaching (Stevenson, 2002).

- These trends are often referred to as “21st century learning” and while there is no one definition of this term, it describes teaching styles that not only place more emphasis on incorporating technology (smartboards, interactive videos and computers) in the classroom, but also on the physical layout of the space. With regards to the demands that 21st century learning places on the structure of the building, new teaching techniques could involve anything from enhancing classrooms to be optimized for technology to better equipped science labs to more spacious classrooms that allow for flexible seating in support of collaborative group work (Rivera-Batiz & Marti, 1995; Stevenson, 2002; Lyons, 2002). This may mean that a modern school building will need a variety of classrooms to support these different teaching styles and techniques. Specifically, some rooms may need to have reduced glare and cooling for technology centers while other classrooms may need a spacious shape conducive to interdisciplinary group work (Stevenson, 2002). Additionally, common areas may need to change as teaching techniques evolve with the technology that’s available. For example, libraries may need to be designed differently from 20 years ago because there is currently a higher reliance on digital media as compared to books (Stevenson, 2002). In sum, research supports modernizing buildings, stating that poor quality facilities greatly impact teacher performance, which, in turn, impacts student achievement (Earthman, 2002). Teachers, likewise, confirmed that small, poorly organized

teaching spaces negatively influenced learning outcomes (Earthman, 2002). Surveys of teachers reported increased stress, dissatisfaction and inefficiencies when schools were overcrowded and of poor quality (Rivera-Batiz & Marti, 1995). This leads to reduced retention rates and reduced teaching quality ([see also “teacher impacts”](#)).

How do facilities impact students?

“A school may symbolize opportunity, hope, stability, and a safe haven in a world of insecurity and transience or, to someone else, the school structure may symbolize failure and oppressive authority.” (Young, 2003)

Building conditions have been used as a predictor for student attendance and achievement (Cash & Twiford, 2010). While studies are divided to the extent to which student achievement is impacted by facilities, there is important agreement around several factors. Namely, indoor air quality (ventilation systems), noise levels and access to daylight in the classrooms, are well-supported in studies as key features to student achievement and attitude as measured by test scores and surveys.

- **Indoor Air Quality and Safety.** Many studies have shown that older school buildings have poor indoor air quality (IAQ), which increases absenteeism and decreases attention spans among students and teachers and has been directly linked to student achievement (Young, 2003).
 - For older buildings, ventilation systems, wiring and plumbing are often in need of repair or replacement. In the 1970s, ventilation systems were built to be more efficient to address the needs of the energy crisis; however, by today’s standards, these systems fail to deliver adequate ventilation to school buildings (Schneider, 2002; Young, 2003) ([see also “why modernize”](#)).
- **Lighting.** Access to natural daylight not only improves attitudes and behaviors, but a number of studies have also found that there are also measurable improvements to students’ test scores when classrooms have more natural light (Schneider, 2002).
 - It should be noted that studies support the benefits of natural light, but that full-spectrum lights, often used as a costly substitute for natural light, do not result in similar benefits (Schneider, 2002).
- **Noise Levels/Acoustics.** Studies consistently have shown that reducing noise levels in a school can increase student concentration and achievement, while decreasing distractions and student stress (Schneider, 2002; Earthman, 2002) ([see also “why modernize”](#)).
- **Student Achievement.** A number of studies from the 1970s to the 1990s were able to link improved test scores with “better buildings” which were defined as newer and including better lighting, thermal control, air quality, labs and libraries (Schneider, 2002).

- This suggests that modernizing buildings is essential to keep up with the changing needs of the education system. It should also be noted that student achievement does fall temporarily during the renovation phase (Schneider, 2002). However, benefits are noted upon the completion of renovation when noise levels and classroom disruptions are reduced.
- Modern buildings are linked to reduced absenteeism, which is related to student achievement (The Abbell Foundation, 2010). Students who are not present at school cannot learn the concepts being taught and therefore fare less well on tests.
- Studies have found that schools that had better science laboratories were associated with increased student achievement (Young, 2003).
- **Better Attitudes and Behavior.** Modern buildings may also be linked to better behavior in students, such as decreased vandalism, suspensions, expulsions, etc.
 - However, the studies are mixed in this regard with some studies citing higher instances of behavior problems, which some have hypothesized may be due to higher standards of behavior in new or newly renovated buildings (Schneider, 2002).
 - The condition of schools also sends a message of self-worth to students and indicates to them their value in a community (Young, 2003).

How do facilities impact teachers?

School buildings are the workplaces of teachers and their condition is often linked with teacher satisfaction or dissatisfaction. Workplace studies have shown that improvements in ventilation, lighting and space lead to increased productivity, work satisfaction and better morale (Young, 2003). Surveys of teachers in overcrowded buildings echoed studies coming out of labor and industry fields when they complained of affected efficiency and decreased morale in the face of overcrowding (Rivera-Batiz & Marti, 1995)

- The adage that a good teacher can teach anywhere may be true, but only in part according to research. There is some research to suggest that even the best teacher sees improvement when his/her working conditions improve. For example, when facilities are inadequate and overcrowded, teachers report that they spend more class time maintaining order and managing noise (Earthman, 2002). Indeed, sources indicated that reducing noise levels in a school can **increase teacher efficiency** while **decreasing teacher stress**, a factor in teacher retention (Schneider, 2002). Overcrowding has additional implications on the quality of education students receive. Specifically, educational quality suffers in overcrowded schools because teachers report that they only have time to cover the basics (Earthman, 2002). Consequently, when districts invest in school facilities, **teaching quality improves**, because the attitudes and relationships between students and teachers also improve (Schneider, 2002; Cash & Twiford, 2010). To attract and keep the best

teachers, school districts should provide good quality work environments for them (The Abbell Foundation, 2010).

How do modern facilities impact the community?

- **Impart Sense of Community Pride.** The state of the educational facilities in a district can be an important way for the community to demonstrate to the teachers and the students who live there just how important and valuable they are to the wider community(The Abbell Foundation, 2010). Studies have shown that modernized schools benefit from greater community support and modern facilities improve people’s perceptions of those schools (Young, 2003). The state of our school buildings is a reflection of the community as a whole and its relationship with education (Young, 2003). Indeed, a well-maintained, updated building school is a reflection of a community that is thriving (The Abbell Foundation, 2010). Consequently, polls show that people tend to associate school quality and performance with the perceived quality of the school building itself (Young, 2003). In essence, how the building looks on the outside determines how the community understands the quality of education that happens on the inside (Cash & Twiford, 2010).
- **Protect Community Investment.** Ultimately, every community wants to ensure that its tax dollars are being spent responsibly and efficiently, but as a Tennessee governmental report indicated, tax dollars may not be spent efficiently if the facilities undermine rather than support the learning process (Young, 2003). In essence, modernizing and maintaining schools is a way of protecting community investment.
- **Convey Values of a Community.** A school building that has spacious, well-equipped science rooms may emphasize the importance of science in a community. If the school has a large gym relative to other common spaces, this may signal to occupants that the community values athletics. Therefore, the internal structure of a building can convey community values to both the students and the teachers (McGowen, 2007).
- **Use of Facilities.** Community groups often benefit from being able to use school buildings and fields after hours for community sports or adult education programs. Therefore, school buildings have the potential to be important community installations for community activities, sports and programs.
- **Increase Graduation Rates.** Drop-out rates are higher when schools are poorly maintained or inadequately updated(The Abbell Foundation, 2010). High drop-out rates are associated with increased crime rates; therefore, investing in schools has important community implications and is often a cheaper investment than managing increased crime.

- **Impart Social Values.** Not only are schools a place of academic teaching, but they also serve as a means of passing on important social norms and cultural values in the community to the next generation.

What are the costs?

- **Rebuild vs. Modernization.** Because school buildings are typically only built to last 30 years or up to 50 with major renovation, it may actually be cheaper to rebuild a school rather than to attempt to properly renovate a building (Cash & Twiford, 2010; McGowen, 2007).
 - As buildings age, the cost of maintaining aging and potentially inefficient systems may further support a rebuild over a renovation. However, rebuilds are typically not done either because the community opposes them thinking that it's more costly or because the community attaches value and cultural symbolism to the facility (McGowen, 2007). However, each building project is unique and some building features that are directly linked to student achievement, such as natural lighting, may not actually be more expensive to add to building (Cash & Twiford, 2010).
 - In general, research indicates that when modernizing a building, care should be taken to do it well because quick and cheap upgrades and retrofitting could result in having to revisit and renovate much more quickly than if it's done properly the first time (Earthman, 2002). A well-done renovation could also mean a reduction in utility bills while temporarily creating local construction jobs (The Abbell Foundation, 2010).

Research Conclusions.

While there is some controversy with regard to the state of facilities on things like student achievement, the evidence overwhelmingly supports modernizing facilities to support the current educational needs of a student body. Some aspects of modernizing a facility may be more straight-forward (e.g. paint) and others may place additional demands on a building, such as changing classroom shapes. While student achievement remains somewhat debated, most studies agree that a poor school environment is detrimental to the students and teachers, but there is little evidence that there is much of a difference between a modern, well-maintained school and a top-notch, state-of-the-art school (Schneider, 2002; Young, 2003). In other words, spending excessively is not supported by the data, but spending enough so the building supports the learning process is vital for protecting the investment of the students, teachers and community. Perhaps the best argument for updating schools is that while there are a number of factors influencing student achievement, such as socioeconomic levels, changing the physical appearance and configuration of the building is a tangible step, which can be taken by a district and has measurable benefits to students and teachers alike. A community's most vulnerable

population may stand to benefit the most from changes made to aging buildings, especially with regards to health and alleviating overcrowding. Ultimately, every community wants to ensure that their tax dollars are being spent responsibly and efficiently, but as a Tennessee governmental report indicated, tax dollars may not be spent efficiently if the facilities undermine rather than support the learning process (Young, 2003). In essence, modernizing and maintaining schools is a way of protecting community investment.

Some parents in a study stated that they couldn't imagine having to work in an environment as poor as that of the school their children attended (Young, 2003). Schools are the workplaces of teacher, staff and students. Communities need to begin thinking of them as such and demanding that the environments be positive and productive additions to the larger community. The adage that a good teacher can teach anywhere and a good student can learn anywhere may be true in part, but what is not well understood is whether that good teacher and good student are reaching their full potential when the learning environment is not supportive of the most current trends in education. Studies support that facilities are a tool in the learning process that affect everything from student achievement to attitudes and behaviors.

What is the Facilities Input Group (FIG)? This effort started in 2014 with a study of the current facilities by [Gilbert Architects](#). [This study](#) was provided to the board in 2015 and it contains a detailed analysis of enrollment, current facility capacity and current facility maintenance. Additionally, the study included several options for solving previously identified problems, such as capacity strains, for the secondary and primary campuses. These options were intended as starting points for discussion rather than a final set of solutions.

At the time of the study, the board and the administration were juggling several strategic initiatives including communication improvements, full-day kindergarten, and the new High School bell schedule. Consequently, the discussion regarding facilities was tabled until early 2016.

In early 2016, the board decided to form a community input group called the FIG or Facilities Input Group. The FIG was structured to involve multiple stakeholders from the community such as parents, board members, administration officials and community members.

The FIG initially met monthly beginning in May of 2016. While the first few meetings focused on establishing a process for the FIG, beginning in August of 2016 the real work of education began. This included learning about the curriculum roadmaps of each of the schools in conjunction with detailed tours of the buildings. Some of the committee members also took advantage of special tours of the secondary buildings given by students during the school day. These tours enabled members to see firsthand how the facilities are being utilized.

Early in 2017 the FIG was given the opportunity to tour several neighboring districts. The tours included everything from renovated buildings to varying levels of new builds. During these tours, the FIG held discussions with administration officials from each of the buildings regarding

why they performed the upgrades, *how* they financed them, *how* they planned them, and *what* lessons were learned.

On August 23, 2017, the FIG voted to recommend that a new Middle School be built on the Sunnyside property, purchased by the district nearly ten years ago. The old Middle School and High School will then be renovated inside and out. The two buildings will be joined with an addition that will house common space such as a cafeteria and auditorium.

The recommendation resulting from the upcoming FIG discussions is due to the board in September 14, 2017. This recommendation will represent the non-binding direction the community would like to see taken for each of the issues under analysis. These recommendations will be mindful of the district's financial ability to carry out any given solution while balancing the need for financial responsibility to taxpayers. This recommendation will NOT include detailed, specific actions for the board to take; instead, it will provide guidance and direction from the community to the board.

The board will then need to consider these recommendations and subsequently form their own plan to address the strategic initiative regarding facilities. A decision from the board is not expected prior to December 2017.

Who are the FIG members?

The following people are the members of the FIG:

- Dan Carsley, Business Manager/FIG Project Manager
- Ed Farina, Board Liaison/Facilities Chair
- Jeff Billig, Facilities Committee Member
- Patrick Walker, Facilities Committee Member
- Matt Crockett, Facilities Manager
- Carolyn Hammerschmidt, Elementary Parent (PLE)
- Aundrea Young, Elementary Parent (PLE)
- Richard Eagles, Elementary Parent (AGI)
- Matt Przywara, Elementary Parent (AGI)
- Andrea Danucalov, Secondary Parent (MS)
- Nicole Morley, Secondary Parent (MS)
- Neil Huber, Secondary Parent (HS)
- Uwe Beuscher, Secondary Parent (HS)
- Dennis Gerber, Community Member
- Bob Ruddy, Community Member
- John T. Auerbach, Community Member
- Bob Weidenmuller, Community Member

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