What are the high priority needs of the district?

The priorities reflected here are those identified in collaboration between the district and the Facilities Input Group (FIG). In no particular order, parties agreed that the highest priorities with regards to facilities needs were overcrowding, realigning middle school to be grades 6, 7, & 8, creating flexibility of space to support 21st century learning, and ensuring that the high school is an asset that can be used by the community. Each of these points is discussed in detail below.

- **Overcrowding.** As a point of comparison, AGSD students have on average 127 square feet per student compared to an average of between 180 and 184 square feet for students in neighboring school districts (Avon Grove School District, August 8, 2017; Avon Grove School District, July 25, 2017). The Avon Grove School District in 2017 has trailers at Penn London Elementary, Fred S. Engle Middle and Avon Grove High Schools. While trailers are often viewed as
an adequate solution to a temporary population boom, all evidence suggests that the enrollment increases have been permanent. Below, we’ll investigate capacity, enrollment, trailers and physical space as structural components important for providing a productive learning environment.

- **Capacity.** When discussing overcrowding, there are two ways of discussing building capacity. Pennsylvania Department of Education (PDE) capacity refers to how many kids can sit in a class room, while functional capacity refers to how a building is used to meet educational goals (Avon Grove School District, August 9, 2016). It is recommended that buildings be at 85-90% capacity utilization (Avon Grove School District, 2017). All school buildings in the district are currently over capacity, with the high school functioning at 142% capacity (Avon Grove School District, 2017).

- **Enrollment.** The enrollment figures taken from the Pennsylvania Department of Education show that the student population has grown dramatically since the 1990s and has remained at an elevated level. While the district did experience a slight decrease in enrollment with the advent of the Charter school, it, nevertheless, has remained high and not changed much from its peak (Pennsylvania Department of Education, 2016). For example, the high school’s population has been relatively steady since its peak, fluctuating only about 2.5% since 2010 (Pennsylvania Department of Education, 2016). For a full look at historical enrollment see enrollment research. In fact, district enrollment is expected to increase in future projections based on the addition of full-day kindergarten. Indeed, the district has already begun to see evidence of enrollment growth. After the district announced that FDK would be implemented for the 2017-2018 school year, enrollment for 2016-2017 increased from the previous year in anticipation of the new full-day program (Avon Grove School District, August 9, 2016).

- **Trailers.** While research indicates that trailers are an adequate fix when a population surge is temporary, they often are deficient in dealing with a permanent enrollment increase (Lyons, 2002). The fact that some of the trailers, have been longstanding (some for more than 20 years), coupled with a relatively flat enrollment graph suggests that the buildings are over capacity and have been for quite some time (Avon Grove School District, October 11, 2016). Research indicates that when a building is consistently overcapacity, it should be renovated to accommodate the students, because trailers deteriorate quickly and require high levels of maintenance as compared to more permanent structures (Lyons, 2002). Indeed, the oldest trailers at the middle school date back to 1985 and have rotting floors and boardwalks (Avon Grove School District, October 11, 2016). Additionally, the insulation in the trailers will need to be replaced as noise can easily travel from class to class (Avon Grove School District, October 11, 2016). Studies have found that decreasing background noise has been an important factor in increasing student
achievement as noise serves as a considerable distraction for students (Schneider, 2002; Young, 2003). The high school trailers face similar deterioration with damaged vinyl that’s allowing moisture to reach the foundation (Gilbert Associates, March 2015).

- **Physical Constraints.** Because the buildings were not created for the student bodies they house, the middle school and high school face a myriad of storage, movement and class flexibility problems. In the middle school, class changes are staggered because the corridors are too narrow for students to adequately pass all at the same time – a different schedule is run daily (Gilbert Associates, March 2015). The middle school can house two grades, but it’s just too physically small to adequately house a third grade and even at two grades its cafeteria and lack of auditorium pose significant obstacles for the students (Avon Grove School District, October 11, 2016). Another important physical consideration when discussing overcrowding is the extra wear and tear on school buildings and fields when they are overused. For example, the high school auditorium is used for study hall and performances, which has placed considerable strain on the aging structure. The auditorium seats about 700 students, but due to broken chairs that are too outdated to be replaced, only about 650 seats are functioning (Avon Grove School District, November 9-10, 2016). This increased use of the facility has caused its deterioration to be more rapid. The fields are another example of an overused facility at the schools. The sports teams also must coordinate and use a rotating schedule to ensure that all athletic needs are met. Because the fields are inadequate for the gym classes and the after school sports teams they serve, community members only have limited access to these resources as they must be protected from too much wear and tear (Avon Grove School District, October 11, 2016).

- **Safety.** A school that is overcrowded has the potential for breaches in security as per the recommended standards of security. For example, the trailers at the middle school do not meet current standards for security and there are reports of high schoolers traveling outside of the building between classes to avoid congestion (Gilbert Associates, March 2015).

- **Impacts on teaching environment and academic offerings.** Research suggests that larger space with more flexibility for introducing innovative teaching styles can improve teaching quality and the learning experience (Cash & Twiford, 2010; Rivera-Batiz & Marti, 1995; Schneider, 2002). The trailers at the middle school and high school are smaller than the typical classrooms and therefore do not offer the same flexibility for collaborative work inherent in 21st century learning models (Avon Grove School District, October 11, 2016; Avon Grove School District, November 9-10, 2016). Not only do the trailers create obstacles to teaching, but a general lack of space and flexibility throughout the high school also means that the school must offer fewer sections of
classes. This means that high schoolers end up in study halls instead of academic classes (Avon Grove School District, November 9-10, 2016). These electives that they could be taking are intended to be a way for students to explore their interests and career or tertiary educational options. If students are unable to take the classes they want or need, this could have impacts on student attitudes at school as well as on their applications for colleges where Advanced Placement and foreign language classes are often viewed as an asset (Harvard College, 2017; The College Board, 2017; Penn State, 2017; Koebler, 2012).

- **Realigning Middle School: 6, 7, 8.** The district and the FIG have identified realigning the middle school to reflect grades 6, 7, and 8 to be the best educational practice for promoting the social, emotional and academic development of our students (Avon Grove School District, June 27, 2017).
  - When sixth graders share a school with 7th and 8th graders they have more opportunities for world language acquisition (Avon Grove School District, October 11, 2016). Foreign language should be an important component to any program focusing on 21st-century skills. Twenty-first century learning is intended to prepare students to compete in a global, interdisciplinary and technological workplace. In support of the district goals of 21st century learning, exposing students to foreign language even just one grade earlier could have important benefits. Sixth graders are not only missing out on earlier exposure to world languages, but classes such as health and physical education are more greatly emphasized in the middle and high schools (Avon Grove School District, October 11, 2016). Finally, moving sixth grade to the middle school is important for giving students more time to explore new areas of study in greater depth before having to transition to high school. Transitioning to high school after only two years can be stressful for students (Avon Grove School District, October 11, 2016). It should be noted that realigning the middle school to reflect a more traditional model, including three grades, means creating additional space as the building is over capacity with just two grades. Rehabilitation of the current building would not suffice as there is not enough physical space to support an increased student body.
  - It should also be noted that the research, with regards to whether sixth grade is best suited for elementary or middle school, is inconclusive. There is research that supports keeping 6th graders in elementary school, stating that they typically have more supervision due to fewer class changes. They also tend to have better behavior and test scores (Chen, 2017; Duke Today, 2007; Cook, MacCoun, Muschkin, & Vigor, July 2006). However, the other research indicates that sixth graders fare better in middle school where they are more independent and have access to more challenging, in-depth or innovative work and better resources (Chen, 2017). Currently, 6th grade in middle school is the educational norm with about 75% of all middle schools in the United
States running grades 6-8 (Cook, MacCoun, Muschkin, & Vigor, July 2006). Because the research is split about what to do with 6th grade, the special circumstances of AGSD are particularly important in understanding why 6th grade is being targeted for alignment with 7th and 8th. The district has noted that AGSD sixth graders’ test scores take a dip in the elementary schools (Pennsylvania Department of Education, 2016), which may suggest that AGSD students would fare better academically if they had more challenges. Further, the district confirms that there are different opportunities for middle schoolers such as world languages and more in-depth classes on health and physical education from which sixth graders could benefit (Avon Grove School District, October 11, 2016). There is certainly research to support that 6th graders have more resources including access to extracurricular activities that they do not typically have in an elementary school setting (Chen, 2017). Finally, research strongly supports the notion that transitioning between schools is a stressful time for students (Akos, 2002; Public Schools of North Carolina; Alspaugh, 1998). While moving 6th grade to middle school would not change the number of transitions between schools in the district, it would give students another year to adapt before having to transition again. Indeed, transitioning between elementary school and middle school has been identified as a particularly stressful transition period as students trade a more structured elementary school environment for an environment that requires increased independence and responsibility (Akos, 2002). As it currently stands, students transition into middle school in 7th only to transition out again in 8th, leaving little time to adapt to the stress of transition in between. Given the specific needs of the district, there is plenty of research to support that realigning 6th grade in middle school will be beneficial to the students in terms of access to different resources and easing the stress of transition. As for student achievement measured by test scores, AGSD shows a drop of 2-3% in math and English between 5th and 6th grades (Pennsylvania Department of Education, 2016). Therefore, AGSD does not seem to reflect the studies suggesting test scores are better when sixth grade is in elementary school. In fact, there have been efforts made to introduce more challenging work to the sixth graders at Avon Grove Intermediate, such as a 2010 pre-algebra pilot program aimed at bringing higher level math to 6th graders (Barber, 2010). Attempts to introduce more challenging classes to 6th graders further suggests that they may need more academic challenges better served at the middle school level. Therefore, as it pertains to AGSD, keeping 6th grade in elementary school may not have achievement benefits and may not be worth the loss of the other benefits students would gain by moving it to middle school.
The idea of flexible physical space in a school building is related to allowing for 21st century learning techniques to be applied. Twenty-first century learning 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.

- A building structure can support these teaching techniques with its physical space. For example, a building can allow for better equipped science rooms or larger classrooms so that seating is flexible and able to accommodate collaborative work (Rivera-Batiz & Marti, 1995; Stevenson, 2002; Lyons, 2002). Schools that support 21st century learning also have more open instructional space or Large Group Instructional areas to form hubs of innovation (Avon Grove School District, November 9-10, 2016). In other words, 21st century learning involves the application of innovative teaching techniques with the objective of teaching students skills, such as collaborative, independent, interdisciplinary work, so that they may be better equipped to enter a global, interdisciplinary and technology-driven workforce.

- When schools are overcrowded, flexibility of classroom space can be hindered. At Avon Grove High School (AGHS), the sizes of the classrooms vary considerably with world language rooms being noticeably smaller than other classrooms (Avon Grove School District, November 9-10, 2016). Consequently, in these settings, teachers may not be able to apply innovative teaching techniques, because they don’t have the physical space to support them. For example, foreign language classes often rely on group work and practice dialogues to reinforce new vocabulary and verb tenses. Having the ability to rearrange class furniture into groupings for smaller collaborative work may be particularly important in aiding language development. Science classrooms are also hindered by a lack of space at AGHS and the middle school. Lab space and storage are limited, which prevents the students’ ability to participate in certain experiments (Avon Grove School District, November 9-10, 2016). Indeed, having well-equipped science rooms has been found to be an important indicator for student achievement (Young, 2003). Additionally, in order to support the interdisciplinary nature of 21st century learning, teachers may need dedicated meeting space to work collaboratively with other departments (Avon Grove School District, November 9-10, 2016).

The district views the schools as an asset to be used by community groups, thereby emphasizing the importance of maintaining and updating the buildings (Gilbert Associates, March 2015; Avon Grove School District, November 9-10, 2016).

- However, due to overcrowding in the high school and the fact that the middle school and high school must share a limited number of fields, the natural turf fields are not available for community use during the
What is the FIG recommendation?

- In order to come to an agreement with regards to a recommendation for the board, the Facilities Input Group (FIG) identified priorities, reviewed a number of options and narrowed those down to a final selection. Their decision was based on the cumulative information they had absorbed over about 16 months. A super majority (60%) of FIG members were required to pass a recommendation (Avon Grove School District, July 25, 2017). During this process, members agreed that this was the right time to be evaluating and addressing facility needs. Additionally, most members felt that overcrowding affected education, the middle school should include three grades and new construction in some form was necessary (Avon Grove School District, June 27, 2017). On August 23, 2017, the FIG voted to build a new middle school on the property at Sunnyside. They also voted to connect the old middle school with the high school to create an expanded high school. The FIG presented this recommendation to the school board in a presentation on September 14, 2017.

How will the proposal be financed?

- The school district has taken steps to ensure that if building is recommended, the district is eligible for reimbursement from the state through a program referred to as PlanCon (Avon Grove School District, August 8, 2017). The details of the finances required for the FIG recommendation was presented on September 14, 2017 and can be viewed here.
- The school district has also taken standard financial planning and debt restructuring steps to plan for capital improvements so the additional debt service required does not need to be fully added to the budget. The result of this is that money allocated for the current high school and middle school can be moved from the current five year capital improvements plan since it will no longer be needed. In addition, $55,300,000 in debt service is built into the budget which we are not fully utilizing. Therefore, the costs and impacts highlighted in the FIG’s September 14, 2017 would be the worst case scenario estimate (Avon Grove School District, July 11, 2017).

Conclusions: Evaluating rehabilitation, remodeling or modernization.
When the research and FIG identified priorities are taken altogether, which is more appropriate for AGSD: rehabilitation, remodeling or modernization? Based on the research on facilities and AGSD needs, research supports modernization for Avon Grove School District (AGSD) buildings, primarily the high school and middle school. If rehabilitation is defined as replacing the parts of the building that are worn-out to restore it to its original state (Castaldi, 1994), this would fail to address overcrowding, realignment of middle school grades and flexibility of space to promote 21st century learning. Additionally, because overcrowding overtaxes the fields and common areas in the schools, the desire for the school building to be a hub of activity for the community cannot be met. Therefore, rehabilitation does not meet district and FIG priorities and is not a realistic way to address AGSD facility needs.

If remodeling is defined as reshaping and reconfiguring rooms (Castaldi, 1994), then while it might address some of the needs of 21st century learning, it still fails to meet the priorities of overcrowding and realignment of the middle school.

Modernization, which is updating a building to meet the current standards for structure, education and environment (Castaldi, 1994), is the only option that addresses all four of the aforementioned priority areas for the district. Structurally, the buildings, to varying degrees, all need to meet Americans with Disabilities Act requirements. There are also other building codes that were met at the time the schools were built, but would no longer be sufficient by today's standards and should be updated (Gilbert Associates, March 2015). Other aspects of the buildings have deteriorated due to age and overuse caused by population strain. For example, the auditorium in AGHS is showing additional wear due to overuse because it serves both as a study hall and a performance center.

The building studies on AGSD suggest that the current structure is insufficient to support current standards in education. Current standards require the flexibility of space to promote 21st century learning as well as aligning grades 6, 7, and 8 into a middle school. Trailers, which are smaller than the classrooms, serve as obstacles to allowing for the use of collaborative, flexible seating. Overcrowding in AGHS also has important implications for education and teaching quality. For example, students are being assigned to study hall when the master schedule is unable to accommodate their chosen electives due to a lack of space. Insufficient space limits the variety of classes and the number of sections offered.

In the middle school, educational development for students would be enhanced if sixth grade were moved from the primary schools to the middle school. In order to do this, additional building space is needed as no amount of reconfiguration can increase a footprint that struggles to support two grades let alone three. Therefore, in order to meet the current educational standards and needs of the student body, new construction may be necessary to provide
adequate space for programs and to relieve accelerated wear and tear on AGSD facilities.

The final piece of modernization is related to the environment. When buildings are redone and additions or new builds are completed, more efficient technologies for climate control, lighting, etc. can be applied with the potential for financial savings in utility costs. Consequently, new construction in some form is strongly supported by the research and important for the educational needs of the student population.

Additionally, it should be noted that building new (either an addition or entire building) can sometimes be cheaper in the long-term due to design efficiencies and the expense of completely redoing electrical and plumbing, but retrofitting is often more popular (McGowen, 2007; Cash & Twiford, 2010). In terms of AGSD, the data would indicate that retrofitting without new construction is simply not possible given the limited footprints of the middle school and high school. If the district merely invests in rehabilitation or remodeling without addressing the core issues of overcrowding and space flexibility, the district may be required to revisit the need for new construction in the very near future despite all the money spent on renovations. If solutions to overcrowding are postponed, costs for construction are likely to be higher due to inflation and rising interest rates. In this case, protecting taxpayers' investment may very well mean investing in fixing the district buildings efficiently and properly the first time. Furthermore, a careful decision now means that the district will have the possibility to relieve overpopulation strains on Penn London Elementary school without requiring a major renovation on that campus. If overpopulation strain is removed from buildings that typically accommodate about four times the amount of people as a standard office building (Schneider, 2002), we can expect the wear and tear on the buildings to slow and community investment in the facilities to be better protected.

Currently, based on all of the available data, the building is dictating the education available to the students rather than allowing for a variety of teaching and learning styles to be dictated by the educational needs of the students the building should serve. The research is clear, facilities do play an important role in the learning process and periodically require updates to support students, teachers, and the community.

References


