

**Columbia Town Center
School Analysis
Attachment to the
June 2014 Feasibility Study**

Written and Prepared by
HCPSS Office of School Planning

Reviewed by and Developed in Consultation with
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I. Introduction

In February 2010, the Howard County Council adopted a General Plan Amendment for Downtown Columbia, also known as the Downtown Columbia Plan. In the two years preceding adoption, the review of this plan included discussion about the need for schools. Student yield analysis studies based on existing apartment and condominium (condo) buildings in Howard County showed that there would be some need, but also raised questions about whether students generated from future housing in Downtown Columbia would occur to the same extent given that the type of planned housing there (new high rise apartments and condos in a mixed use environment) is unique and doesn't currently exist in Howard County.

The adoption of this plan came when the HCPSS had only just begun the process of realigning the long-term capital facilities plan and redistricting to respond to growing needs in the eastern part of the county. The HCPSS had just opened facilities in the west (Bushy Park ES) and northeast (Veterans ES). The only new planned capacity in the east at that time that was not associated with the full-day kindergarten mandate was the expansion of Elkridge ES. Planning for expansion of Bellows Spring ES was in discussion. Incorporating Downtown Columbia growth into future capital plans would require consensus about the anticipated impact of that growth.

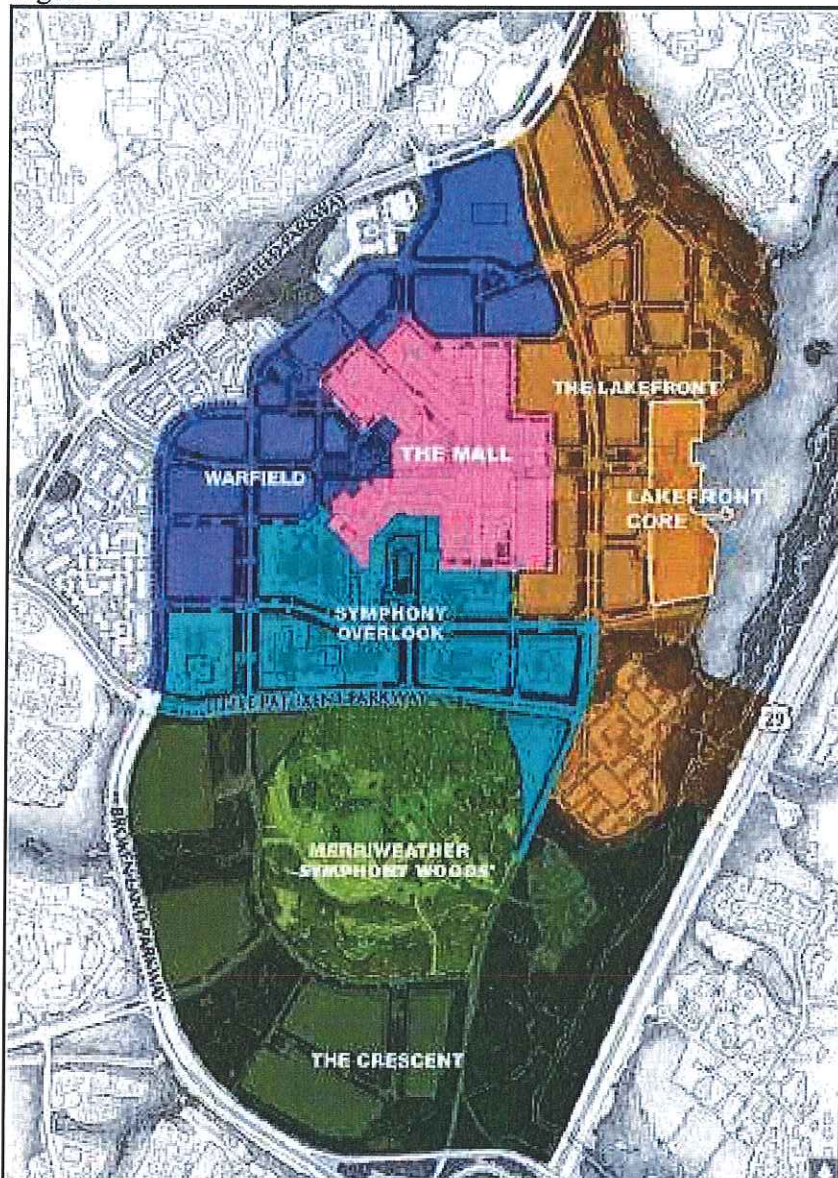
The planned revitalization of Downtown Columbia intends to bring mixed-use development to Downtown in the form of six neighborhoods. The residential element of these mixed-use neighborhoods will consist of 5,500 new multi-family residential units, including both condo and rental.

Figure 1



The image in Figure 2 is an aerial illustration representing a conceptual rendering of the future redevelopment of Downtown Columbia. The existing mall remains central but it will be surrounded with new mixed-use neighborhoods to be built around it over the next 20 to 30 years.

Figure 2



The new neighborhoods identified in the Downtown Columbia Plan are shown to the left (Exhibit E of the General Plan Amendment). The first residential projects are currently under construction in Warfield located north and west of the mall and shown in purple. Initial plans for The Crescent were recently submitted to the Department of Planning and Zoning.

In the discussions that led to the approval of the Downtown Columbia Plan the question of school needs arose. The minutes of the Board of Education meeting on December 17, 2009 indicate that the Board members agreed that it would be prudent to expect a minimum of one school site for the Downtown Columbia development. On the other side of that concern was a belief that the downtown units would be of a higher value and incorporated into a mixed-use community and therefore tend to attract occupants with fewer children. Some have cited comparable developments in Montgomery County and Northern Virginia, where pupil yields are fairly low. Pupil yields in the existing apartments in Downtown Columbia are also very low, but at the time it wasn't possible to be certain what the pupil generation rates would be for the new development, so decision making checkpoints were put into the Plan stipulating further analysis

when measurable yield data became available during the initial construction phases. A further component of this perspective is that the Rouse Company had provided nearby school sites in the early stages of development in Columbia several decades ago which are still available to serve enrollment growth with new schools.

The approval of the Downtown Columbia Plan included adoption of timed or triggered commitments called Community Enhancements, Programs, and Public Amenities (CEPPAs). The CEPPA relevant to the school system is #17 which states, “GGP¹ shall, if deemed necessary by the Board of Education, reserve an adequate school site or provide an equivalent location within Downtown Columbia.” This CEPPA must be satisfied by the Downtown Columbia developer prior to the approval of the site development plan for the 1,375th new residential unit. (25 percent of the total 5,500 units)

In anticipation of CEPPA #17, the Educational Facilities section of the Downtown Columbia Plan first calls for the HCPSS and Department of Planning and Zoning (DPZ) to study all available options for school system needs and characterize the best options for a range of possible pupil yields in a Columbia Town Center School Analysis. This analysis, which is provided here, must be approved by the Board of Education. Later, when 10 percent of the new residential units planned for Downtown Columbia (550 units of the total 5,500) are built and occupied, the Plan stipulates that HCPSS will consider updated enrollments and, subject to Board of Education approval, select the most appropriate yield ratio and associated option outlined in the Columbia Town Center School Analysis for implementation. This is followed by the application of CEPPA #17 stated above at the 25 percent unit threshold.

Since the Feasibility Study is a long-range planning document, it is well suited to host this Columbia Town Center School Analysis as an addendum. The goal of this analysis is to lay out the options for dealing with a range of enrollment growth estimates associated with Downtown Columbia development.

II. Current Development Status in Downtown Columbia

Construction has begun in Downtown Columbia in the Warfield neighborhood adjacent to the Columbia Mall. A 380 rental apartment complex known as The Metropolitan (Figure 3) is currently being built and is expected to be completed and ready for occupancy at the end of 2014 or early 2015. This mixed-use building also includes retail space on the ground floor. There are two other mixed use buildings still under plan review in the Warfield neighborhood that will be located adjacent to this first building. One of these buildings will include 267 residential units and the other 170 residential units. Both will also include retail space on their ground floors. It is anticipated that these two buildings will be ready for occupancy in 2017. The total for all three buildings includes 817 residential units.

¹ General Growth Properties was the successor to the Rouse Company. The land development unit was later divested and now called Howard Hughes Company.

Figure 3



Construction of “The Metropolitan” seen from this vehicular entrance to the mall helps to illustrate the changes coming to Downtown Columbia

A second Downtown Columbia neighborhood, called The Crescent, is also at the beginning of the planning stages. The Neighborhood Design Guidelines for this project just recently went to the Department of Planning and Zoning’s Design Advisory Panel for initial review in May 2014. The Final Development Plan (FDP) for this neighborhood was recently submitted to DPZ in the first week of June. This FDP includes 2,300 residential units with construction phased over the next 10 years. Site development plan approvals, the last plan approval stage required prior to the issuance of building permits, for the various portions of The Crescent neighborhood will then be submitted for review.

In addition to development in these two neighborhoods, there is a 160 unit residential condo building planned in The Lakefront neighborhood. This building was known as the WCI Tower, and was approved back in 2006, but faced a lengthy appeals process and the company has since undergone bankruptcy. There is now a new owner of that site, which is now referred to as Little Patuxent Square. In addition to the residential units, Little Patuxent Square also includes office and retail space. Exact timing of construction of this building is currently uncertain. This plan

is not included in the 5,500 units given it had been grandfathered prior to the adoption of the Downtown Columbia Plan.

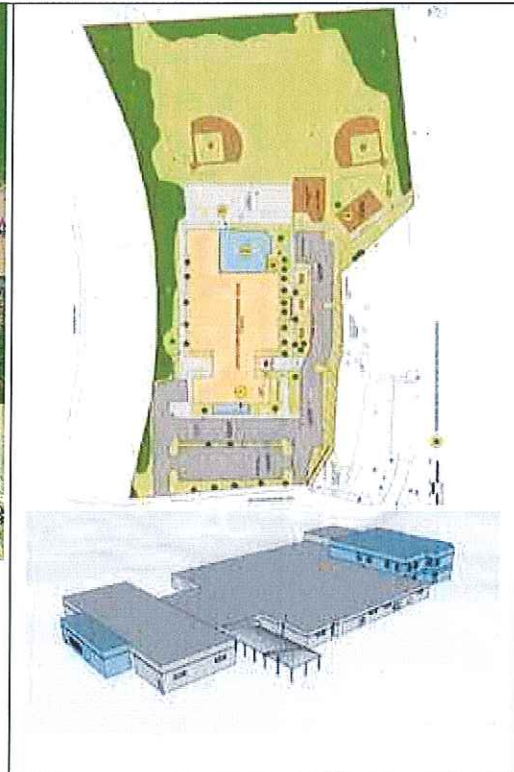
Other recent development activity in Downtown Columbia, including recently completed, under construction, or in the planning stages include the redevelopment of Merriweather-Symphony Woods, a retail expansion in The Mall, the Merrill Lynch Building renovation, the Howard Hughes headquarters building renovation which will include Whole Foods and a fitness center, the renovation of Clyde's Restaurant, and the addition of the new Petit Louis Bistro restaurant. All of these projects do not contain a residential component, but clearly show that the redevelopment of Downtown Columbia is well under way.

III. Existing Facilities

A. Running Brook Elementary School

Running Brook ES is located at 5215 West Running Brook. This school was constructed in 1970 and has been renovated three times since then to maintain the facility, increase capacity, and respond to changes in program delivery. The current capacity of the facility is 405 seats (K–5), with separate space dedicated to Prekindergarten and early childhood programming.

Figure 4

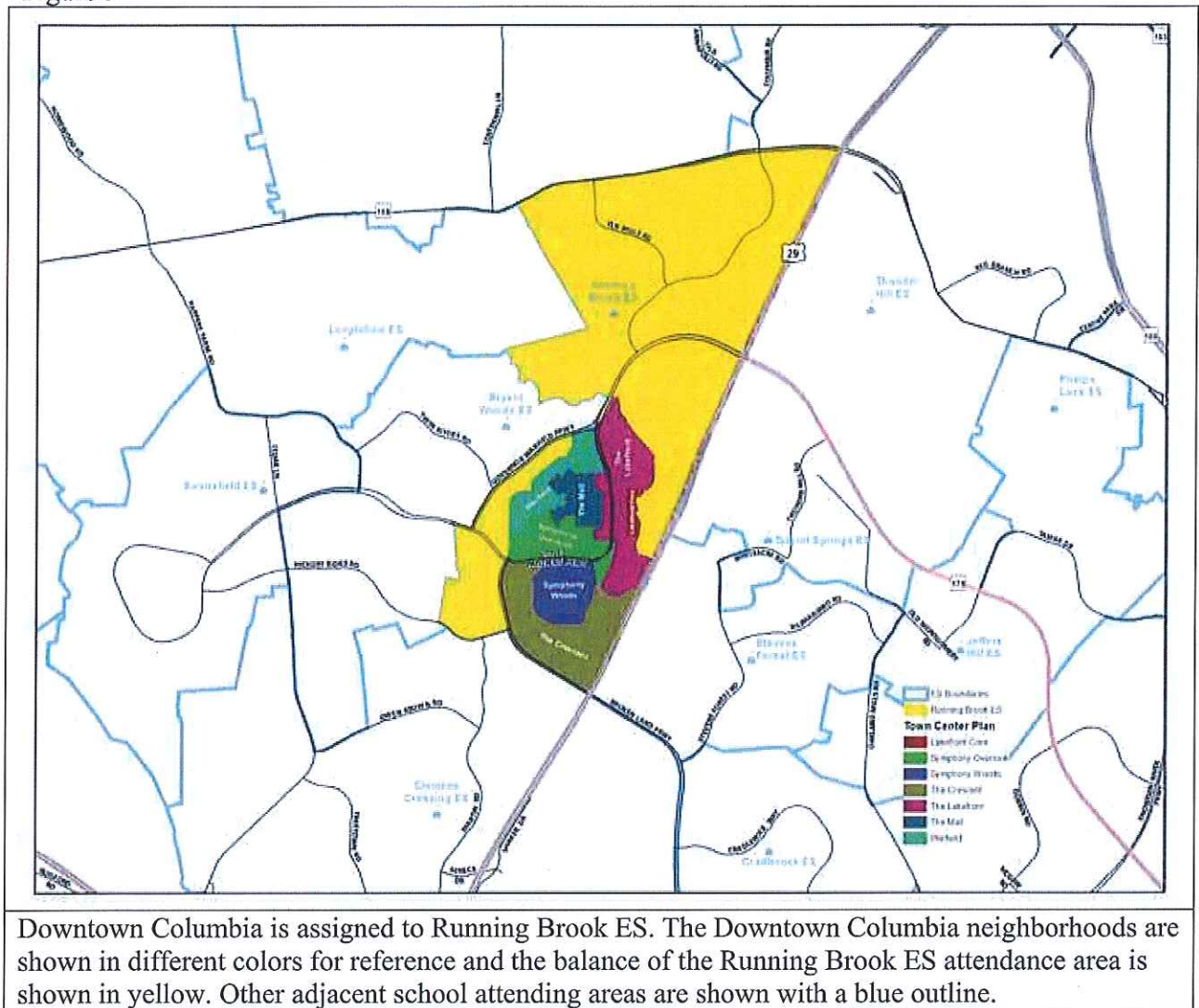


An aerial view of Running Brook ES as presently configured is shown above. The project includes a cafetorium expansion in the front and a two-story classroom addition in the rear as shown in the pictures to the right (photo from pictometry, illustrative drawings from SMG Architects).

On September 30, 2013, the annual official enrollment report submitted to the state reported 462 students in Grades K–5 and 30 students in Prekindergarten which represents significant overcrowding based upon the current capacity of 405 students. A systemwide analysis of school facilities² conducted in 2009 determined that this facility possessed about 66 percent of the net square footage required by the 1994 elementary educational facility specifications. The required educational program is being delivered at this facility with the aid of six relocatable classroom facilities, but additional permanent capacity was necessary.

A \$6.2 million dollar addition to Running Brook ES is underway to address the existing deficiencies and continued population growth in the Columbia West school region. The project will provide an estimated 100 seats of additional classroom space by adding a two-story classroom addition, a cafetorium expansion, and additional core infrastructure space necessary to operate effectively as a larger school. This expansion will also improve the utility and effectiveness of the existing academic support spaces. As reported in the monthly construction report presented to the Board of Education this past April, the project was approximately 34 percent complete and will be ready for occupancy in August 2014.

Figure 5



Downtown Columbia is assigned to Running Brook ES. The Downtown Columbia neighborhoods are shown in different colors for reference and the balance of the Running Brook ES attendance area is shown in yellow. Other adjacent school attending areas are shown with a blue outline.

Figure 6



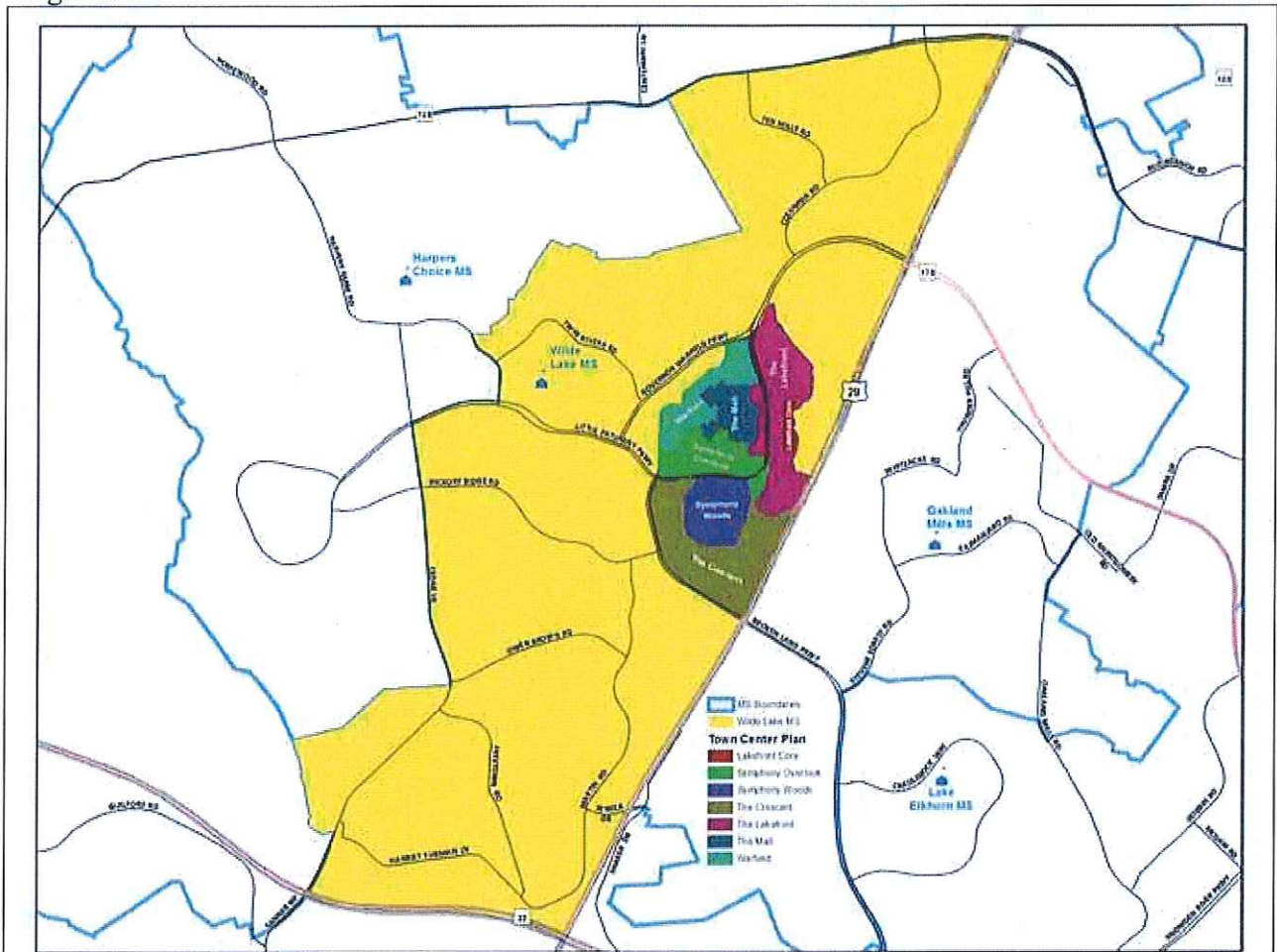
Running Brook ES is presently surrounded by a mix of housing types.

The Running Brook ES attending area is presently made up of 70 percent multi-family housing of either condos or rental apartments. The balance of existing housing stock is 20 percent town home and 10 percent single-family detached. The only new units in the Running Brook ES attendance area will be those in the Downtown Columbia Plan.

B. Wilde Lake MS

Wilde Lake MS is located at 10481 Cross Fox Lane. The school is set in a campus with Wilde Lake HS adjacent to the Wilde Lake Village Center. This single-story school building with masonry exterior wall construction was constructed in 1969 with an open classroom design. The school has been renovated two times since then to maintain the facility and respond to changes in program delivery. The current capacity of the facility is 467 seats (Grades 6–8).

Figure 7



Downtown Columbia is assigned to Wilde Lake MS. The Downtown Columbia neighborhoods are shown in different colors for reference and the balance of the Wilde Lake MS attendance area is shown in yellow. Other adjacent school attending areas are shown with a blue outline.

Figure 8



An aerial view of Wilde Lake MS today is shown above left. HCPSS considered expanding the school during a renovation but the Board of Education adopted a plan to replace this school with a new building on the same site and then raze the existing building. The picture to the right illustrates the adopted school replacement strategy with the new building set in the rear of the site. Parking, circulation and playfields for the new building would be built where the existing building is now sited (photo from pictometry, illustrative drawing from TCA Architects).

On September 30, 2013, the annual official enrollment report submitted to the state reported 546 students in Grades 6–8. A system wide analysis of school facilities³ determined that this facility possessed about 77 percent of the net square footage required by the 1994 middle school educational facility specifications. The required educational program is being delivered at this facility with the aid of four relocatable classroom facilities. The June 2014 Feasibility Study indicates that when the significantly larger Wilde Lake MS replacement school is completed in 2017, it will open at near capacity.

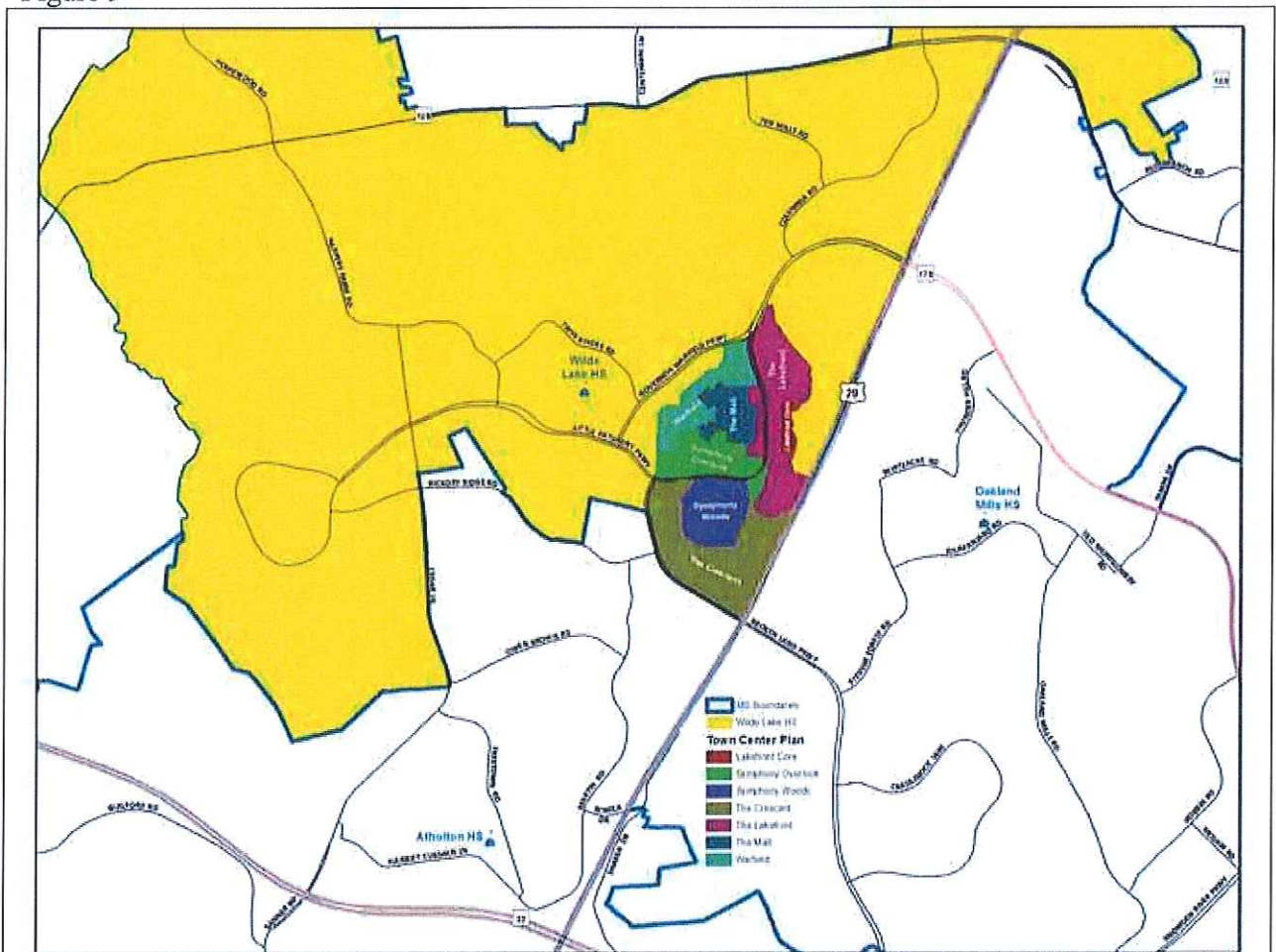
The Wilde Lake MS attending area is presently made up of 51 percent multi-family housing of either condos or rental apartments. The balance of existing housing stock is 21 percent town home and 28 percent single family detached. Very few new single family or town home units are anticipated and all of the new residential communities of Downtown Columbia like Warfield will feed into Wilde Lake MS. The new multi-family development at Wilde Lake Village Center is also included in the projection. At the “build-out condition” when all anticipated development is built, the attending area is projected to consist of 70 percent multi-family units.

³Gilbert Architects Inc. August 2008 and May 2013

C. Wilde Lake High School

Wilde Lake HS is located at 5460 Trumpeter Road. This school was originally constructed in 1971 and was replaced in 1996. The current capacity of the facility is 1,424 seats (Grades 9–12). On September 30, 2014 the annual official enrollment report submitted to the state reported 1,259 students in Grades 9–12. The facility is not overcrowded per rated capacity at this time, and was built to the same prototype design standards as many of the HCPSS’s newer high schools. Wilde Lake HS is projected to remain under 110 percent capacity utilization until 2018 based on the current feasibility study.

Figure 9



Downtown Columbia is assigned to Wilde Lake HS. The Downtown Columbia neighborhoods are shown in different colors for reference and the balance of the Wilde Lake HS attendance area is shown in yellow. Other adjacent school attending areas are shown with a blue outline.

Figure 10



An aerial view of Wilde Lake HS today. Fields are shown in the foreground with the school in the center of the picture. Wilde Lake MS is not in view but located to the left. The Wilde Lake Interfaith Center is the building with the darker roof in the background. To the left of that is the Wilde Lake Village Center and the indoor aquatics facility (photo from pictometry).

The Wilde Lake HS attending area is presently made up of 44 percent multi-family housing of either condos or rental apartments. The balance of existing housing stock is 28 percent town home and 28 percent single-family detached. No new single-family or town home units are anticipated and all of the new residential communities of Town Center like Warfield will feed into Wilde Lake HS. The new multi-family development at Wilde Lake Village Center is also included in the projection. At the “build-out condition” when all anticipated development is built, the attending area is projected to consist of 59 percent multi-family units.

D. Other Facilities

Other elementary facilities in the Columbia West area include Bryant Woods ES, Clemens Crossing ES, Longfellow ES, and Swansfield ES. With Running Brook ES, these schools serve

the Columbia West region. The combined capacity of the Columbia West elementary schools will keep this region below 110 percent utilization until 2019 based on the current feasibility study. Like Running Brook ES the other facilities are significantly smaller than the newer 600 student prototype school design. They have limited room for expansion and are using relocatable classrooms. A comprehensive renovation of Longfellow ES renovation is under way (scheduled to be completed in August 2015) and a renovation and 100-seat addition for Swansfield ES is in the planning stages.

The elementary schools in Oakland Mills Village are nearby but on the east side of MD 29. They include Talbott Springs ES, Thunder Hill ES, and Stevens Forest ES. These schools are all near or within target utilization and cannot be used to balance schools in West Columbia.

Harpers Choice MS is the only other middle school in the Columbia West region and it is projected to exceed 110 percent capacity utilization in 2015 based on the current feasibility study. The combined capacity of the Columbia West middle schools will be above 110 percent utilization next school year. The HCPSS owns a school site which is located at Marriottsville Road and Rt. 40 that could someday provide relief to the Columbia West region if a new middle school were opened at that site in the future, but there is no funding placeholder in the capital improvement program at this time.

As noted before in this report, both facilities are smaller than is expected in the 1994 educational specification. After installations planned this summer, the region will host 38 relocatable classrooms, providing approximately 525 additional seats of temporary capacity. While about half of this capacity is intended to provide swing space during the renovation of Running Brook ES and replacement of Wilde Lake MS, the rest helps off-set buildings built to older designs before current programming needs were anticipated.

Wilde Lake HS is the only high school serving Columbia West. The nearest available high school capacity exists at River Hill HS and Oakland Mills HS. There are no present plans for redistricting between these schools.

IV. Vacant Sites

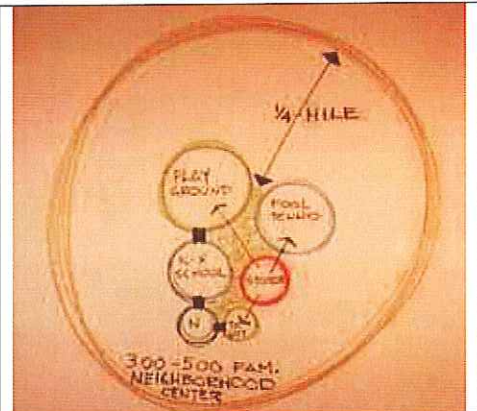
A. Faulkner Ridge

Faulkner Ridge is located at 10598 Marble Faun Lane. Faulkner Ridge was one of the early Columbia school sites and opened in 1969. The school was closed in 1983 due to low enrollment. After the school was closed, administrative functions were moved into the building and it was used in this way until 2010. The building is currently being used for storage. If the site were used for a school again, the existing building would need to be replaced with a school that meets current educational specifications.

Figure 11



The Faulkner Ridge school site is a part of the neighborhood center.



Rouse Company planning diagram of neighborhood center.

The site remains an excellent location for a future school. The Rouse Company planned schools as part of its vision for neighborhood centers and the other two Wilde Lake neighborhood centers host operating schools (Running Brook ES and Bryant Woods ES). The diagram above on the right shows the land use components of the neighborhood center which all remain except the store which was converted to a day care center. This site is within a mile of the center of Downtown and is closer to Warfield, The Mall, and the northern part of The Lakefront than sites in Hawthorn and Clary's Forest (described further below). The 2011 Feasibility Study demonstrated that opening a school at the Faulkner Ridge site in 2019 or later could be done with redistricting to include nearby schools, Bryant Woods ES and Swansfield ES. With some local redistricting, a school with the HCPSS's current educational specification would serve to keep utilization within target through the middle of the next decade.

B. Hickory Ridge Village Sites

Like Wilde Lake Village, Hickory Ridge Village was designed with three neighborhood centers, Clary's Forest, Hawthorn, and Clemens Crossing. Unlike Wilde Lake's three neighborhoods, only one of the Hickory Ridge Village neighborhood centers have been used to build a school, the Clemens Crossing ES location. Two others exist and they are in reasonable proximity to the Columbia Downtown.

Figure 12

Hawthorn Neighborhood Center (Sunny Spring Site)



A school was never built in the Hawthorn Neighborhood Center. HCPSS owns the field and forested area behind the community center which is at 6175 Sunny Spring. The site is approximately ten acres in size and about 1.5 miles from the center of Downtown Columbia. The land is made available for community use, as are all operating schools.

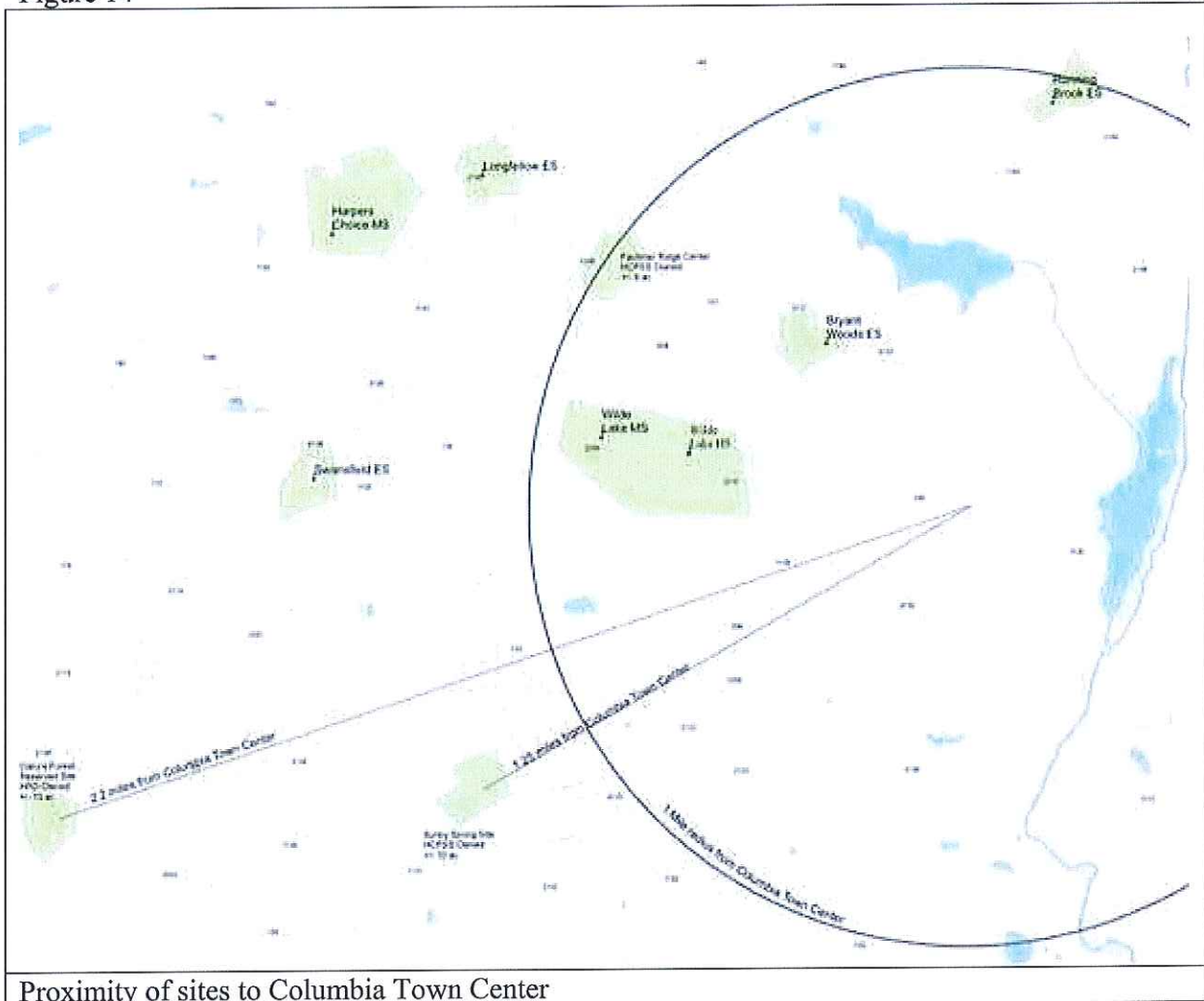
Figure 13

Clary's Forest Neighborhood Center



A school was never built in the Clary's Forest Neighborhood Center. The vacant land is adjacent to the community center which is at 11615 Little Patuxent Parkway. The site has not been transferred to the HCPSS and is currently owned by Howard Research and Development, a subsidiary of Howard Hughes. The site is 9.75 acres in size and about 2.5 miles from the center of Downtown Columbia. The site is unused.

Figure 14



V. Projections

A. Elementary School Level Enrollment Projections

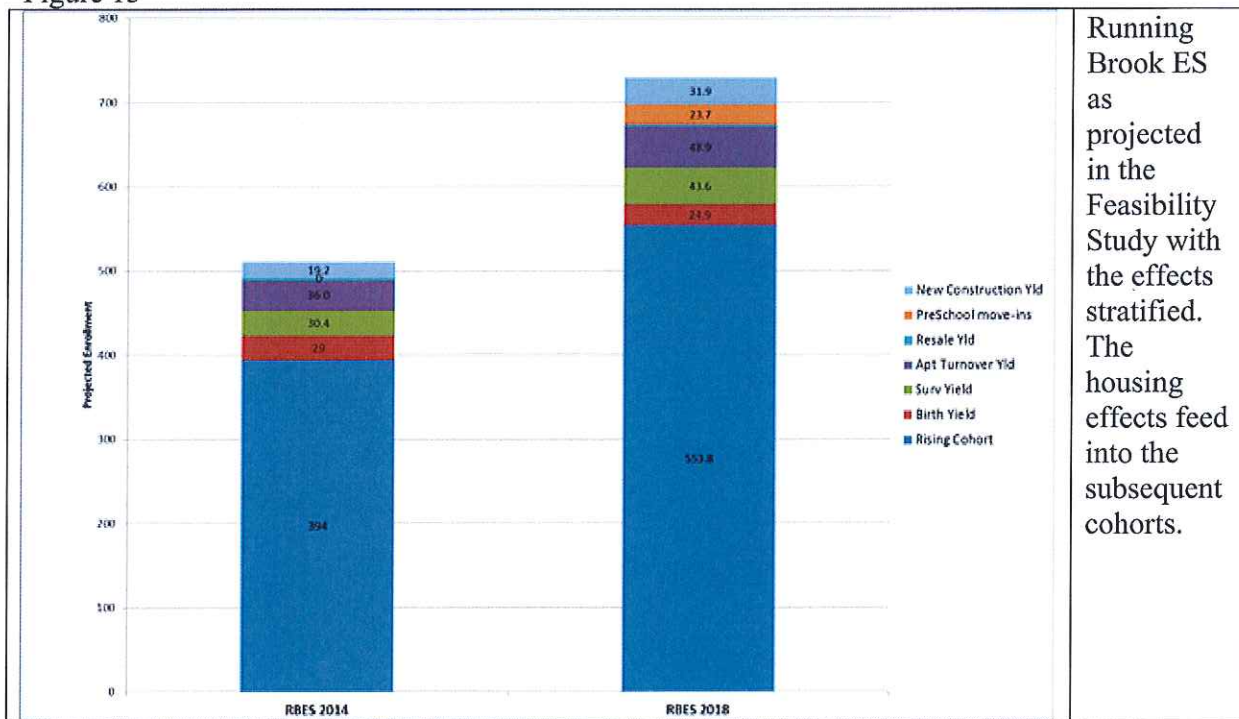
The June 2014 Feasibility Study report provides individual projections for each school in the system. The projection model and methodology used in the report is based on historic cohort survival ratios, and projects the number of students that “survive” from one grade level (cohort) to the next. Then the effects of new housing yields and the net effects of resale of existing housing stock and apartment turnover are added to the projection.

The projection indicates that Running Brook ES will remain below 110 percent capacity utilization until 2016. Enrollment will grow from the present enrollment of 492 to a peak of 1,263 in 2035. The methodology is based on cohort survival but housing factors like the effects of new housing yields or the net effect of the resale of existing housing stock are also included.

The model starts with a cohort of students being born and then increases or decreases the cohort based upon grade succession and housing factors at each grade based upon school history. The effects are reapplied to the rising cohort each year.

Some parameters are specifically relevant to multi-family. Existing housing is used to calculate net student yield from turnover of apartments from one lease to the next. DPZ provides a projection of total future housing spread over future years for each school attending area. The projected number of units is multiplied by the yield for new housing of that in each year of the projection to get yield from new housing. Net yield increases as units accumulate in accord with the DPZ projection. The figure below helps to show all factors in a stacked format contrasting two years.

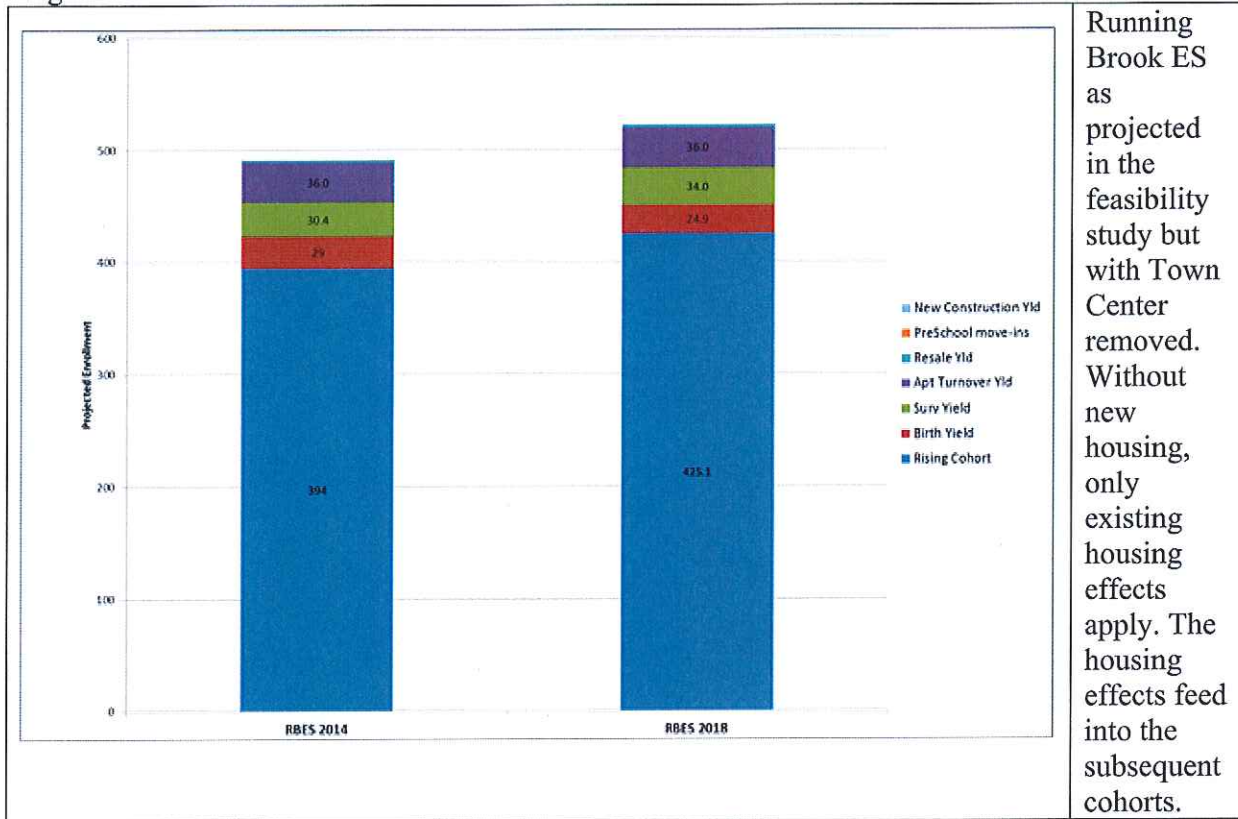
Figure 15



Running Brook ES as projected in the Feasibility Study with the effects stratified. The housing effects feed into the subsequent cohorts.

Having considered the factors in the projection, this study seeks to adjust the factors for multi-family housing based upon observed differences found in the standing yield study. In the figure below the factors are entirely removed. It can be seen that growth coming from other factors is much less intense.

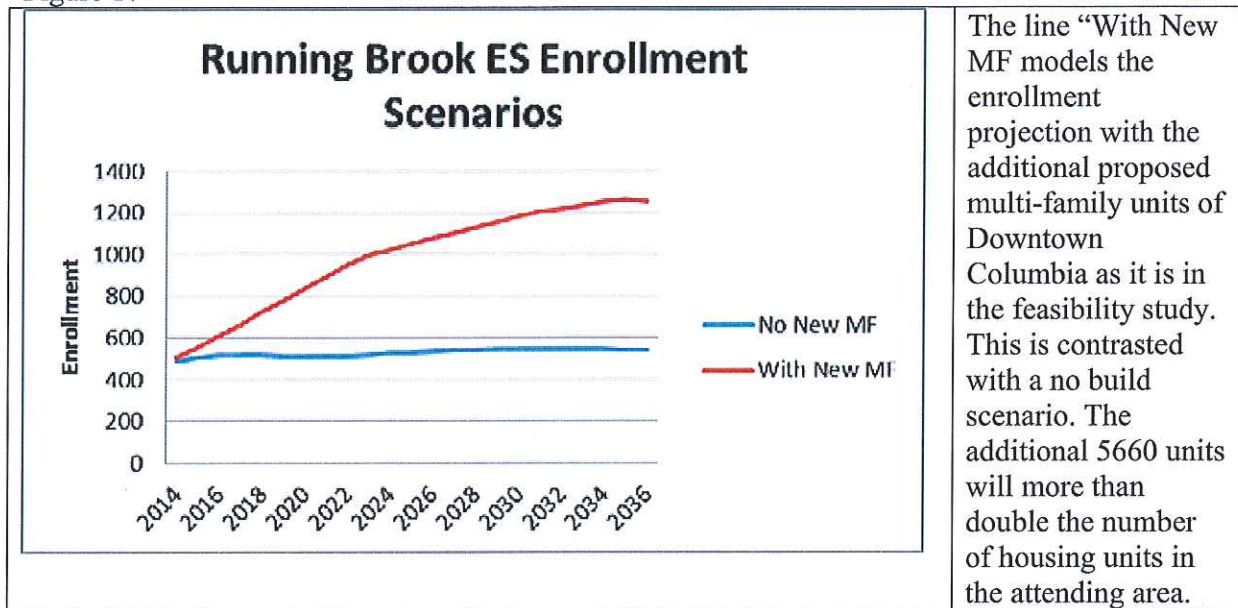
Figure 16



Running Brook ES as projected in the feasibility study but with Town Center removed. Without new housing, only existing housing effects apply. The housing effects feed into the subsequent cohorts.

The future housing number comes from a housing projection developed by the Department of Planning and Zoning. This projection takes into account all development allowed by the General Plan including recently approved projects, development plans that are currently being reviewed, and future development based on zoning capacity. The accumulation of future units is guided by known phasing and what would be permitted further in the future annually under current growth management law. As it happens, the Running Brook ES attending area housing projection is only made up of the Downtown Columbia development. It is important to also remember that other effects are modeled in the projection like births and survival rates but the specific effects which are relevant to the projected development. That can be illustrated by removing them from the projection and graphing the difference.

Figure 17

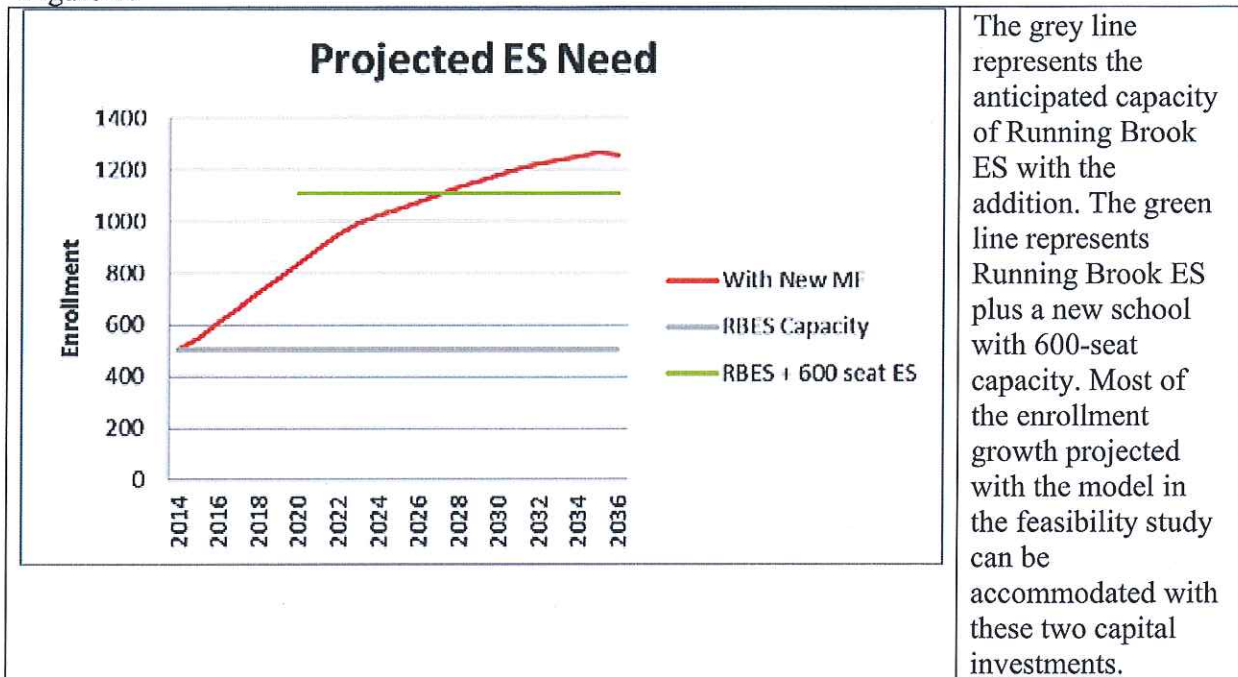


The scenario with new multi-family units shows enrollment is expected to double in the next decade and triple in the following decade. Removing the future multi-family development from the model produces modest enrollment growth of 7 percent in the next decade and 11 percent in the following decade.

The above chart shows enrollment but when the projection is presented in the feasibility study it is expressed as capacity utilization. This measure shows the effect of the enrollment growth on existing capacity. The feasibility study includes a planned 100 seat addition to Running Brook ES scheduled to open in August 2014 which would raise the capacity to at least 505 seats. The feasibility study indicates capacity utilization will be almost 200 percent in a decade and peak at 250 percent utilization. Removing the Columbia Town Center future development results in projected capacity utilization no higher than 108 percent. This scenario could be easily accommodated by the existing building with the new addition.

The additional capacity needed based on the above analysis is 600 seats to serve the Running Brook attending area alone. This capacity happens to match the current educational specification of a school like Ducketts Lane ES. No such school is presently in the capital improvement program (CIP). If such a school were added, the combined capacity would keep capacity utilization under 115 percent throughout the projection. This is illustrated in Figure 18.

Figure 18

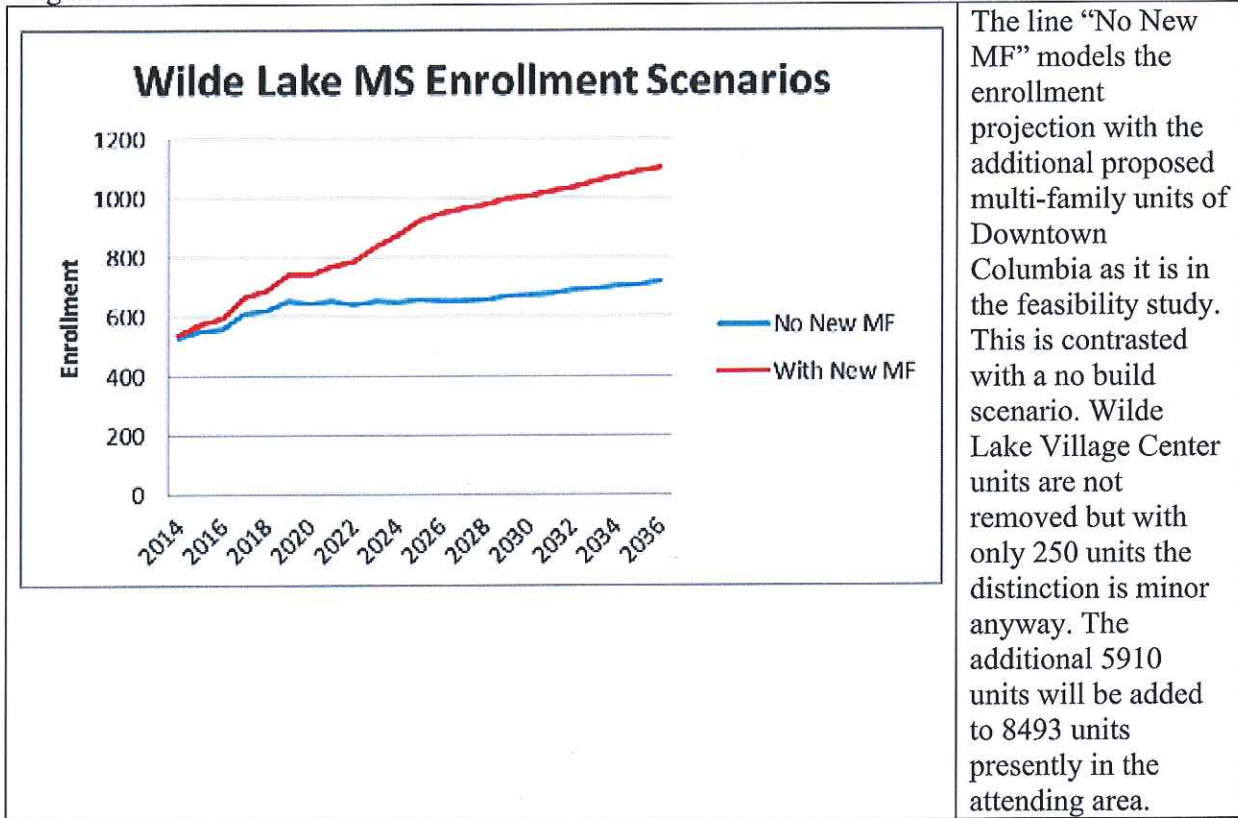


B. Middle School Level Enrollment Projections

The projection indicates that the Wilde Lake MS replacement school will remain below 110 percent capacity utilization until 2019. Enrollment will grow from the present enrollment of 546 to a peak of 1,104 in 2035.

The relevant new housing yields and the net effect of the resale of existing housing stock are incorporated as well as the accumulation of future units projected by DPZ for this attendance area. These include Downtown Columbia and Wilde Lake Village Center. While this report is focused upon Downtown Columbia, the Wilde Lake Village Center phasing is only a minor contribution. The effect of Downtown Columbia can be illustrated by also removing that from the projection and graphing the difference.

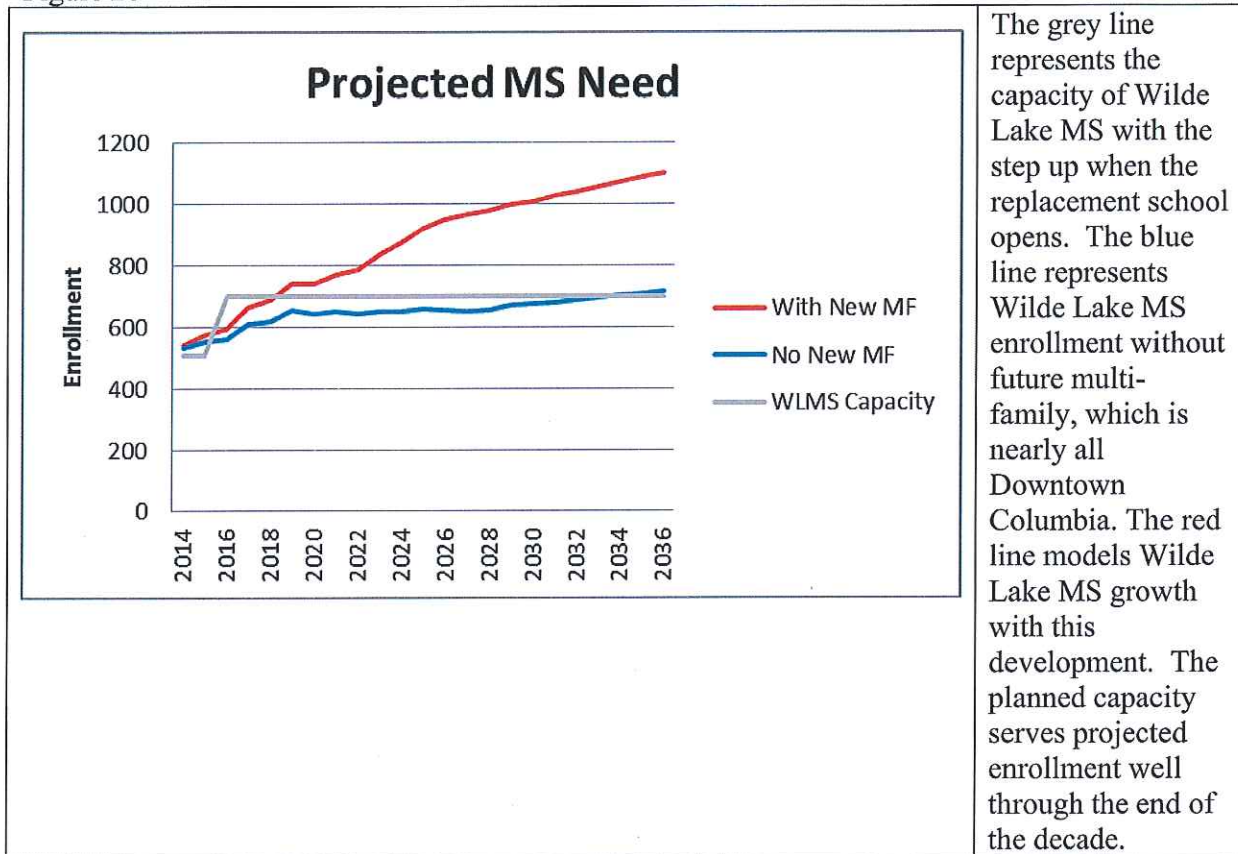
Figure 19



The line “No New MF” models the enrollment projection with the additional proposed multi-family units of Downtown Columbia as it is in the feasibility study. This is contrasted with a no build scenario. Wilde Lake Village Center units are not removed but with only 250 units the distinction is minor anyway. The additional 5910 units will be added to 8493 units presently in the attending area.

The scenario with new multi-family units shows enrollment is expected to increase by 38 percent in the next decade and will have nearly doubled by the following decade. Removing the future multi-family development from the model produces modest enrollment growth of 6.5 percent in the next decade and 11 percent in the following decade. The feasibility study indicates capacity utilization will be almost 134 percent in a decade and peak at 177 percent utilization. Without the Columbia Town Center development capacity utilization would be no higher than 116 percent. Figure 20 illustrates capacity needs with and without Columbia Town Center Development.

Figure 20

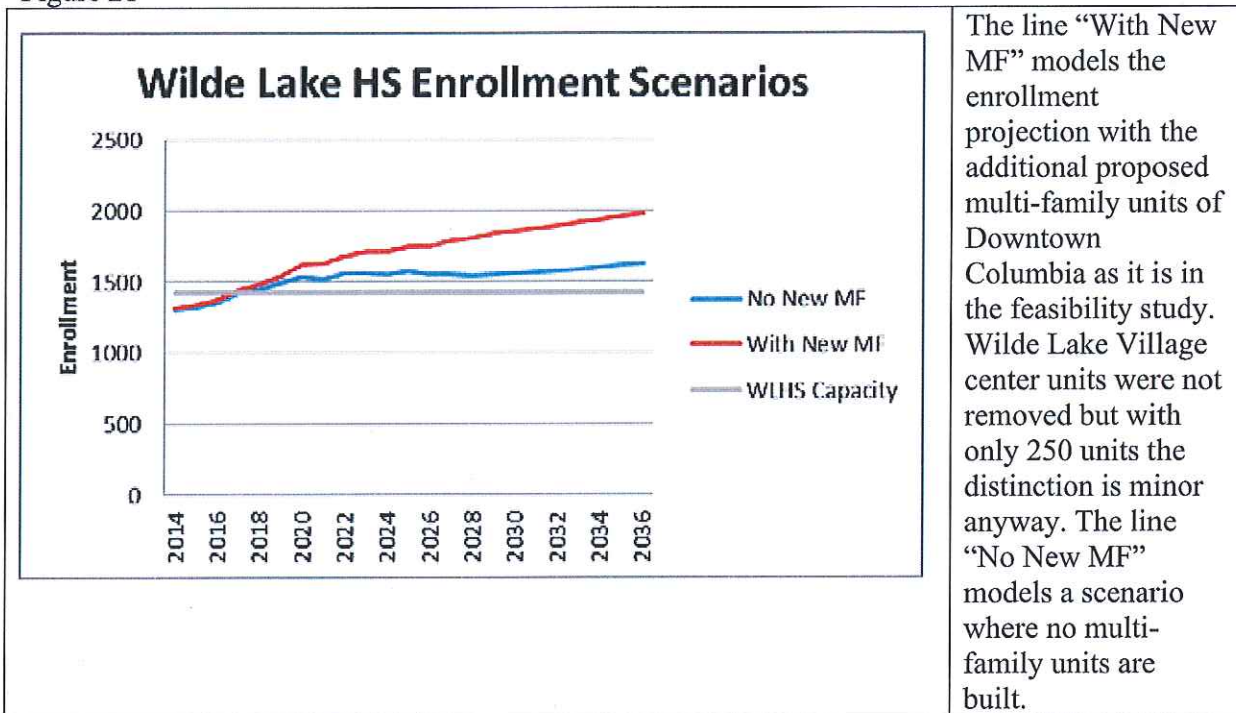


For the next few years growth can be accommodated by the replacement school with some temporary capacity. The ultimate additional capacity which is needed is 440 seats. It is reasonable to believe about 150 seats could eventually be added to Harpers Choice MS but this falls significantly short of the ultimate needs for capacity. HCPSS owns a school site which is located at Marriottsville Road and Rt. 40 (between the Harpers Choice MS and Mount View MS attending area) that could someday provide relief to the Columbia West region if a new middle school were opened at that site in the future, but there is no funding placeholder in the CIP at this time.

C. High School Level Enrollment Projections

The projection indicates that Wilde Lake HS will remain below 110 percent capacity utilization until 2020. Enrollment will grow from the present enrollment of 1,255 to a peak of 2036 in 2040. New housing yields and the net effect of the resale of existing housing stock are incorporated in the projection. As noted above, the accumulation of future units projected by DPZ for this attendance area includes Columbia Town Center and Wilde Lake Village Center.

Figure 21

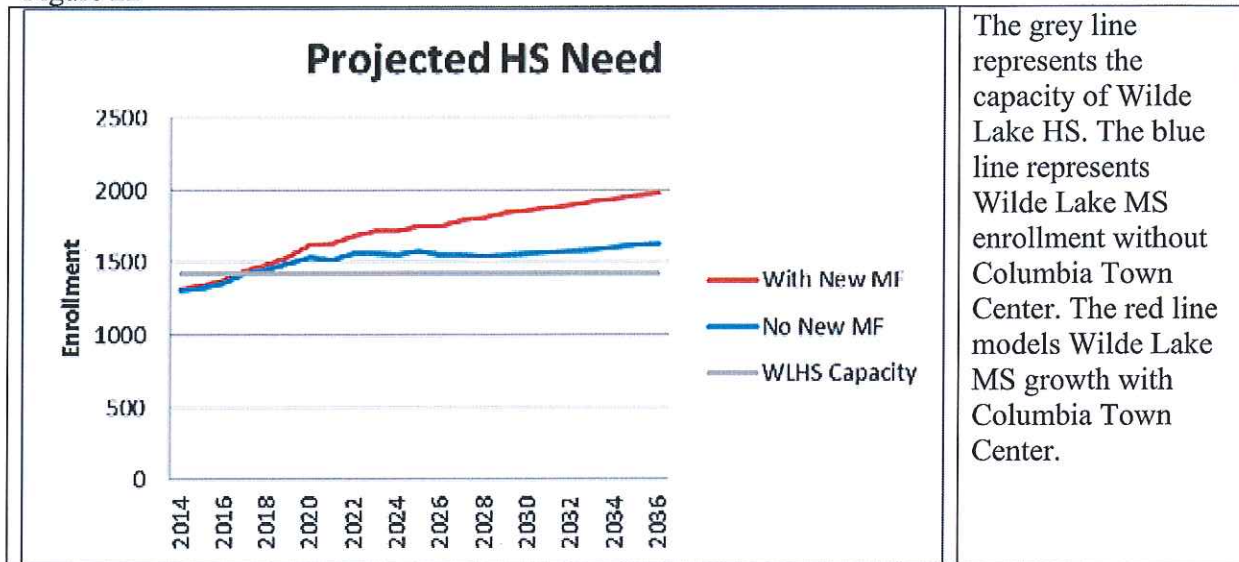


The line “With New MF” models the enrollment projection with the additional proposed multi-family units of Downtown Columbia as it is in the feasibility study. Wilde Lake Village center units were not removed but with only 250 units the distinction is minor anyway. The line “No New MF” models a scenario where no multi-family units are built.

The scenario with new multi-family units shows enrollment is expected to increase by 30 percent in the next decade and 47 percent after the following decade. Removing the future multi-family development from the model produces modest enrollment growth of 19 percent in the next decade and 22 percent in the following decade.

The feasibility study indicates capacity utilization will be almost 122 percent in a decade and peak at 146 percent utilization. Without Columbia Town Center, development results in capacity utilization no higher than 114 percent. Figure 22 illustrates capacity needs with and without Columbia Town Center Development.

Figure 22



For the next few years growth can be accommodated by the existing school, but the ultimate additional capacity needed is 666 seats. The high school educational specification would not readily support this size addition. The best way to address this need would be in the context of opening HS #13 which is shown later in the CIP.

VI. Alternative Pupil Generation

The projected needs based upon the model in the feasibility study seem urgent. A continuing theme since the plan amendment was adopted has been a belief that the downtown units would be of a higher value and built within a mixed-use environment and, therefore, tend to attract occupants with fewer children. DPZ staff has cited comparable developments in Montgomery County and Northern Virginia, where pupil yields are fairly low. For this reason the feasibility study projections have been questioned because it relies upon countywide data which may not include comparable units.

The current enrollment projection method was developed in 2003 in-house on the heels of a 2002 consultant produced projection developed by the DeJong Richter firm. Staff observed that the consultant was using a standard cohort survival methodology. The best advantage to cohort survival is that the method is rooted in student data, the data staff knows well and can control. The cohort projection methodology also includes birth data to help determine new kindergartener's entering the system. Demographers also modify cohort survival with other components like housing effects. The HCPSS methodology modifies the cohort projection with additional considerations including net new students generated from future residential development and resale and rental turnover of existing homes.

Residential development can yield students differently. Different age families are attracted to different types of units. The HCPSS method treats all multi-family units the same. This means

that a variety of units including condos, tall elevator buildings, and walk-up garden rental apartments are all averaged into one yield. Combining the types was a reasonable design for the model because the majority of housing in Howard County is single family (detached or town home) and multi-family pupil generation rates are so much lower than that of other units that the distinctions didn't really matter. Furthermore, the HCPSS did not have detailed information of the type of multi-family housing.

In order to develop a pupil generation rate, enrollment history is required. The HCPSS collects five-year histories for yields from new apartments and net yield from turnover of existing apartments. Sometimes at the school district level, however, there is not any new apartment construction yield history in the past five years. In some cases it is a school where there are no multi-family units. In other cases it is a school where multi-family units exist but are older than five years. In these circumstances countywide rates for new multi-family construction are used. For this reason for the Downtown Columbia area in the feasibility report the projection is using countywide averages of new multi-family yields. The net apartment turnover and condo resale measures do use local school district data because it is available. The use of countywide new construction yield data has been questioned in modeling Downtown Columbia on the theory that multi-family in other areas may generate at different rates.

As an alternative to utilizing countywide averages, staff concluded it was necessary to analyze the potential of new development in Downtown Columbia by looking at more detailed yield data from existing multifamily units in Howard County. Staff knows from yield studies conducted by nearby jurisdictions⁴ that pupil generation rates tend to vary by the number of stories and condo vs. rental. They are generally lower for condos and high rise buildings and higher for rental units and lower rise garden style structures. So staff analyzed all the multi-family units in Howard County and classified them by four types: 1) 1 to 4 story rentals, 2) 5 stories and higher rentals, 3) 1 to 4 story condos, and 4) 5 story and higher condos. Department of Planning and Zoning (DPZ) staff developed this information in the form of a GIS layer.⁵ The sample was countywide and it included a total of 25,538 multifamily units. Three quarters of the units were apartments and one quarter were condos, with most units being in buildings of four stories or less. Only two percent of the sample was apartments of five stories or more. Less than one percent of the sample was condos of five stories or more. These smaller samples are probably less significant but the goal of this analysis was to examine local data. Staff took this data and geocoded ten years of student enrollment history to the polygons and summarized the results to acquire rates by multi-family type.

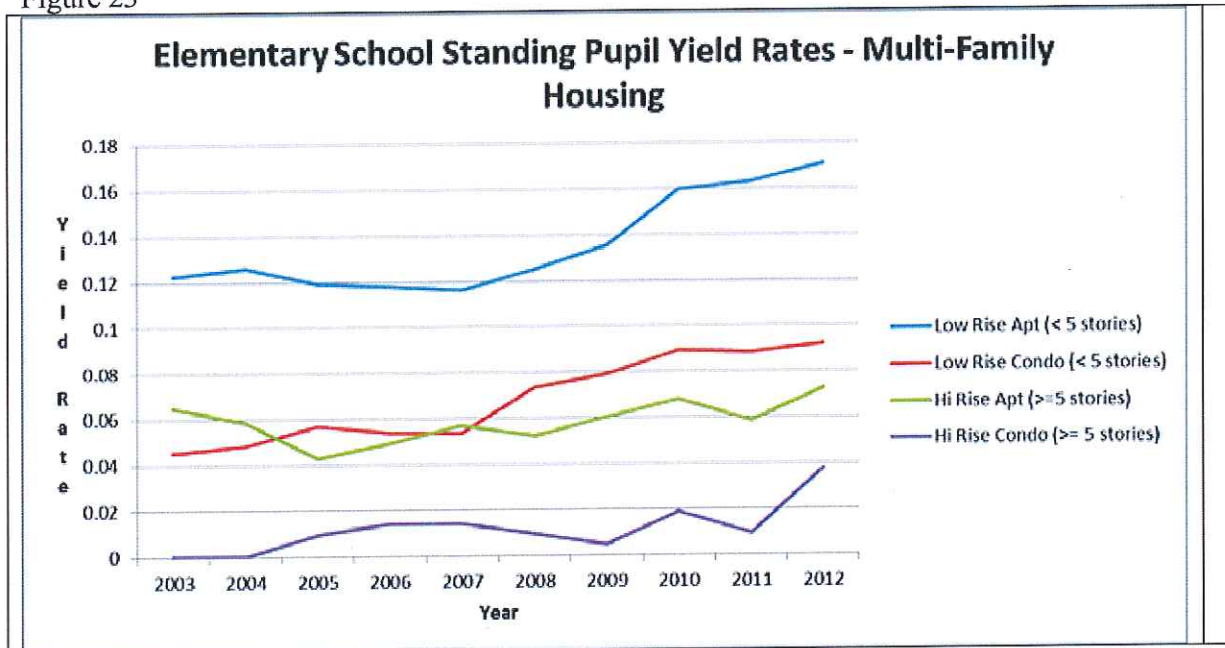
A. Elementary School Chart

The following graph shows standing pupil generation rates by multi-family housing type over time for the elementary level. Low-rise rental units produce the most students and high-rise condo units produce the least. This study shows the same trend staff has seen in the feasibility study projection that multi-family pupil generation rates have been increasing.

⁴ Alexandria, VA, Baltimore County, MD, Fairfax County, VA and Montgomery County, MD.

⁵ They have not yet been able to do the same for single family housing.

Figure 23



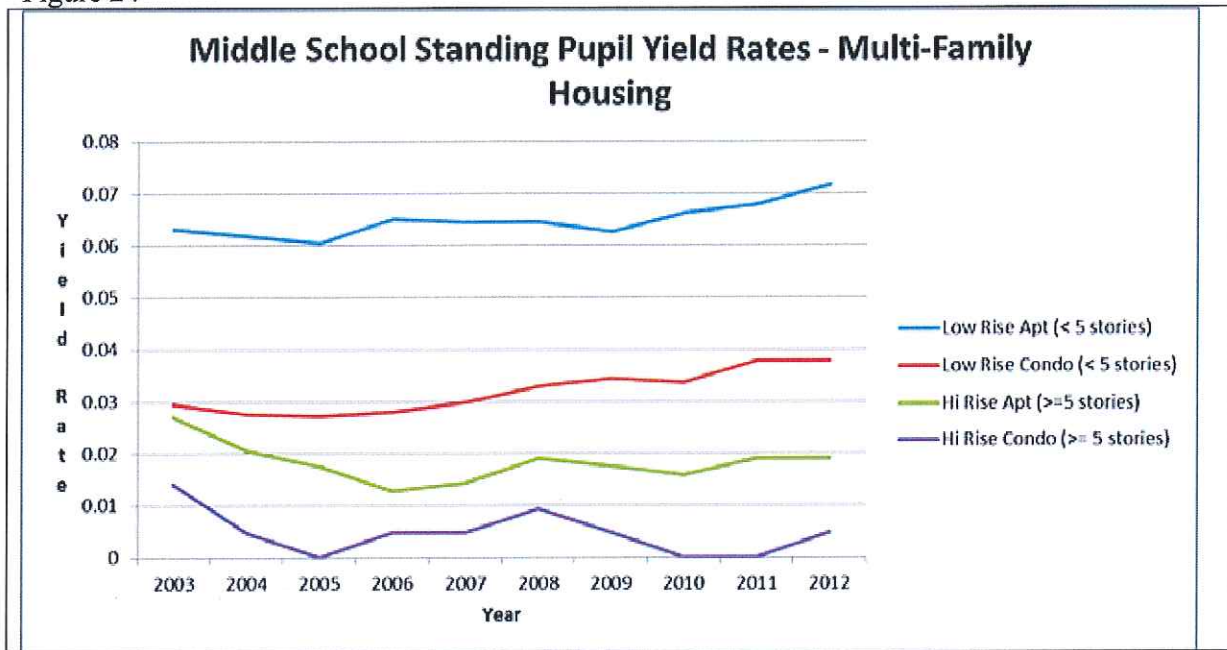
Since the Feasibility Study projection for Running Brook ES projection did not have new multi-family units in the last five years, staff chose the countywide average, which per the HCPSS’s methodology, is done for all school districts that do not have any recent history from new development. This countywide rate was 0.101 (elementary students per unit). The standing yield study suggests in recent years that low-rise apartments exceed this average and low-rise condos approach this average. High-rise apartments are lower at about 0.07. High-rise condos are close to 0.04, but it should be noted that there is only a small sample of these types of units. The next report is required when 10 percent of the Downtown Columbia units have been constructed and occupied. All are planned to be high-rise rental and condo so this will provide a larger sample to determine pupil yields.

B. Middle School Chart

The following graph shows pupil generation rates by multi-family housing type over time for middle schools. The middle school pupil generation rates are lower as would be expected since it consists of only half as many cohorts. Staff also expects that as families’ children age they tend to seek larger housing units which are often townhomes or single-family detached units. Similar to elementary school students, low-rise rental units produce the most middle students and high-rise condominium units produce the least.

This study supports increasing utilization rates. In the feasibility study staff has chosen the countywide average for Wilde Lake MS because there were no new units in the last five years. This rate of 0.045 is only half the low-rise apartment standing yield rate and closer to existing rates for high-rise apartments and condos.

Figure 24

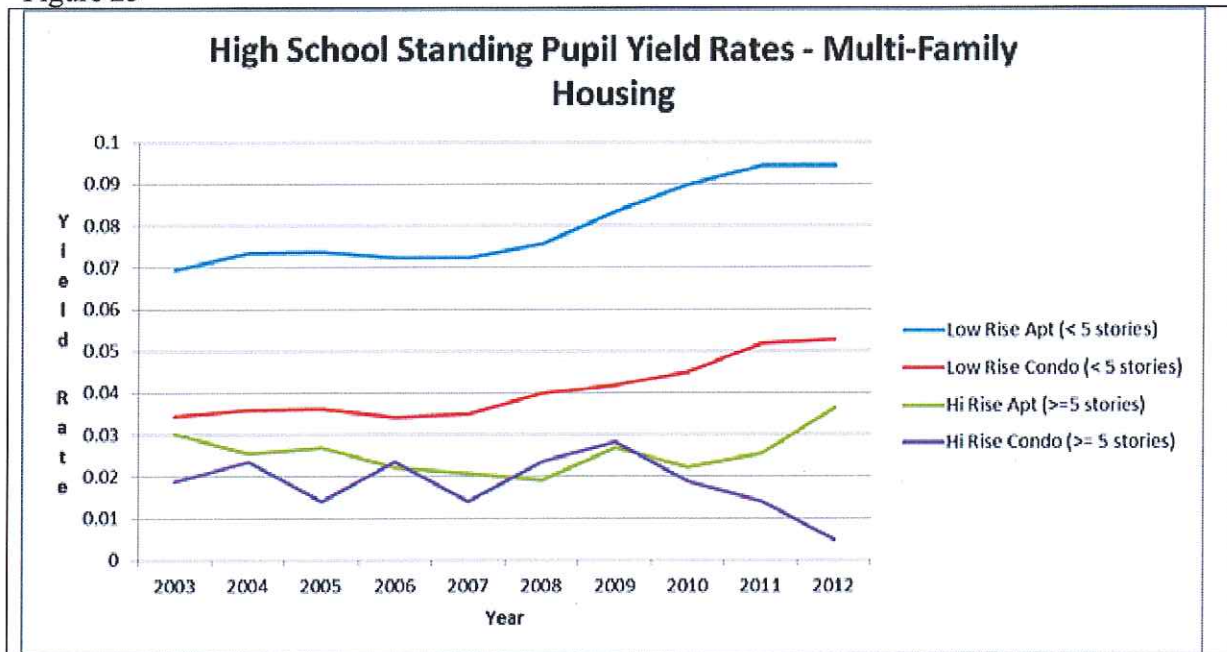


C. High School Chart

The following graph shows pupil generation rates by multi-family housing type over time for high school. Most high school pupil generation rates are lower than elementary as would be expected since it consists of only two thirds the number of cohorts. Low-rise rental units again produce the most students and high-rise condo units produce the least.

This study supports increasing utilization rates. In the feasibility study staff has chosen the countywide average for Wilde Lake HS because there were no new units in the last five years. This rate of 0.036 would not be out of place on this graph where the rates are ranging between 0.005 and 0.09.

Figure 25



A number of conclusions can be drawn from this standing yield study. The first is that the ten-year standing yields by unit type are not dramatically different from the combined multi-family yields presently used in the HCPSS's methodology. Combining the unit type does not appear to have been detracting from the results. It is also clear from the data above that high-rise rental and condo units have lower yields than low-rise units.

The concern that future yields are higher than the yields from the new units that will be built in Downtown Columbia has validity. Most existing multi-family units in Howard County are low-rise walk up apartments and very few are high-rise five stories or higher. Prices were not studied but it is reasonable to assume many of these existing units are modest in price, making them affordable to young families. In contrast, the first multi-family project in Downtown Columbia, The Metropolitan, will be a five and six story complex including a parking garage, interior clubhouse, and courtyard with pool, and have retail on the first floor. Potential units and rents were reported in the Baltimore Sun to be, "lofts, one-, two- and three-bedroom apartments ranging from \$1,500 to \$2,800 in monthly rents⁶."

There are some problems with adopting the hypothesis that all 5,660 Downtown Columbia units over the next twenty years will all be high end units. This is not what has occurred in the last fifty years. In the early years of Columbia, early advertisements appealed to business people in the New York City market who might relocate their companies to Columbia and chose to live in the new community as well, but luxury apartments were not specifically referenced. Furthermore, following this initial marketing effort, the economy stagnated under the burden of inflation. Ads in Columbia for apartments and condos then emphasized good price and

⁶ Luke Lavoie, "Developers break ground on \$100 million apartments in downtown Columbia." *Baltimore Sun*, February 11, 2013

convenience, not luxury. The result in Columbia has many appealing features but it is not equivalent to places like Bethesda Row in Montgomery County or the features cited for The Metropolitan. More like The Metropolitan are likely, but it is hard to say over a long span of time what the market will bear.

Another factor to consider is the rising trend for families to live in multi-family units. While higher income families typically choose single family options, demographers are finding the next generation to rear children, millennials (18-33) are less inclined to marry⁷ and more inclined to rent⁸. Should they retain these preferences as they begin to raise children, a supply of new high quality apartments in a county with a well-regarded school system may be an attractive draw.

Successful communities have unique features that attract new residents. The school system is a primary attraction in Howard County for new residents. New housing in Downtown will initially be marketed to singles and empty nesters. Ideally their presence will sustain new investments in Downtown businesses and other activities. The result could be a community which is more desirable to a wider range of new residents, including families. This will probably influence later phases of Downtown. There is no requirement that Howard Hughes Company build only luxury apartments and no prohibition on families.

There are a variety of avenues for future analysis. Given the available data and the task at hand it seems best to try to apply these findings to the current projection model and see if that changes staff's perception of future needs. The sample for high-rise apartments and condos that currently exist in Howard County is too small to draw statistical conclusions. This leaves the contrast between low-rise apartments and low-rise condos. The existing stock of low-rise condos is definitely more luxury in nature than the existing stock of low rise apartments. So it would seem that low-rise condo rates are a reasonable proxy for future luxury units which may be rental or condo. The average pupil generation rate over the 10 year standing yield analysis in this study for low-rise apartments is 0.136 elementary students per unit. The average pupil generation rate is half of that for low-rise condos at 0.068 students per unit for all instructional levels. In comparison the average low-rise condo rate is lower at the elementary and middle level but it is higher for high school. All values are summarized in the following table:

Table 1

Comparison of Multi-family Yield Rates			
	Countywide Multi-family rate (Feasibility Study)	Average low rise apartment rate	Average low rise condo rate
Elementary	0.101	0.136	0.068
Middle	0.045	0.065	0.032
High	0.036	0.080	0.041

In examining the generation rates recorded in other communities, staff took notice of a Baltimore County report which included a survey of pupil generation rates conducted in 2009⁹ by the

⁷ Pew Research Center, *Millennials in Adulthood*, (Washington, DC: March 7, 2014)

⁸ Pew Research Center, *Young Adults After The Recession Fewer Homes Fewer Cars Less Debt*, (Washington DC: February 21, 2013)

⁹ Baltimore County Public School System, *Pupil Yield Study*, (Towson, MD: 2009)

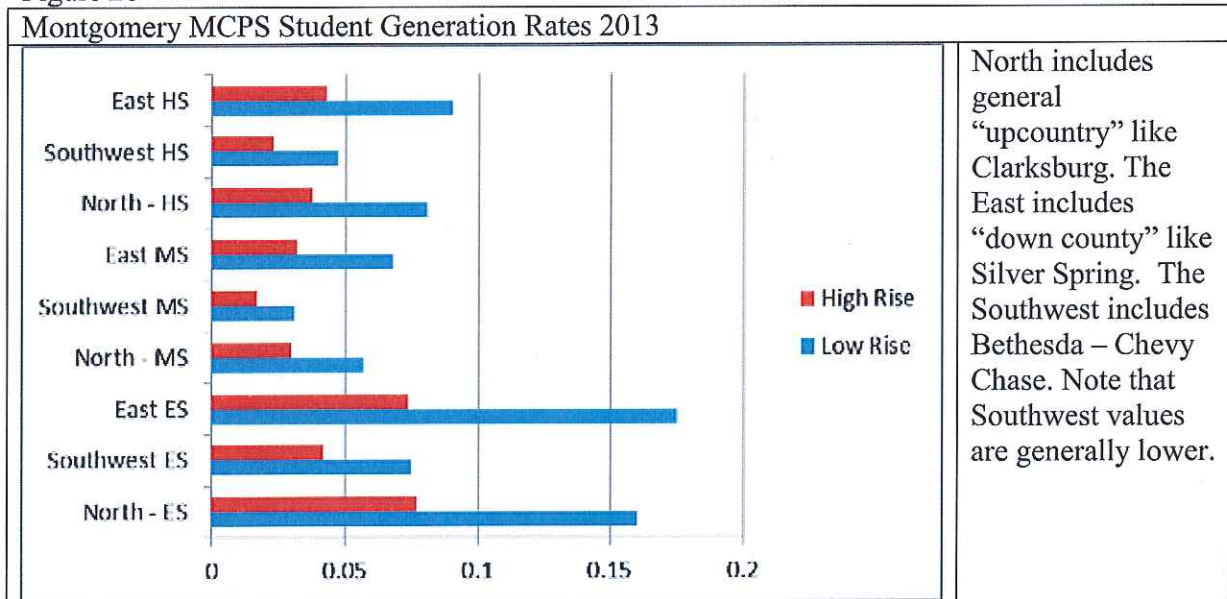
Baltimore Metropolitan Council and a residential forecast study in 2012 by the Sage Policy Group / Cropper GIS. In the 2009 study multi-family units were broken out into owned and rented. Geography is listed by election district. The 2012 study focuses on Districts 2, 3, & 4 because this is an area of significant residential growth. District 2 and 4 incorporate the multifamily development near the Owings Mills Mall which is relevant to a discussion of Downtown Columbia future growth. These areas have some similar existing development and plans for town center redevelopment. The following table presents the multifamily rates for these two districts:

Table 2

Selected Baltimore County Multi-family Yield Rates 2005-2007						
	Elementary		Middle		High	
	Rent	Own	Rent	Own	Rent	Own
District 2	0.091	0.068	.035	.030	0.049	0.040
District 4	0.16	0.049	.071	0.025	.079	0.031

Montgomery County, Maryland is an adjacent jurisdiction with a variety of multi-family housing types of different ages. They track generation rates by school level, height of building, and region.

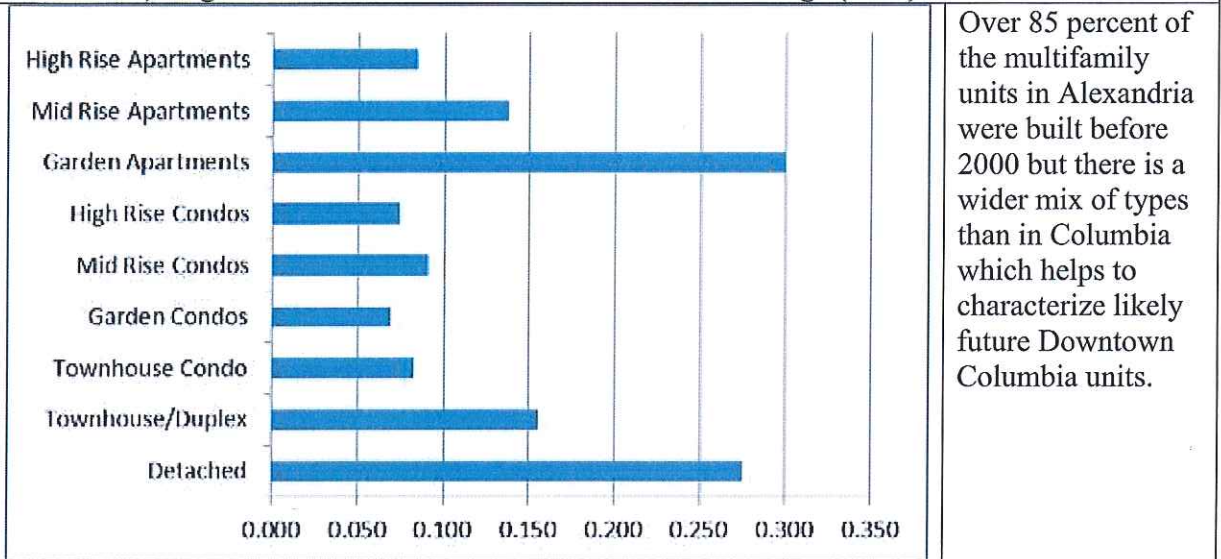
Figure 26



While the existing pupil generation rates tend to compare to Montgomery County's North and East regions, the types of housing proposed in Downtown Columbia may have comparable examples in the Southwest region. These lower rates are in the same range as the observed standing yield in Howard County. One of the more urbanized areas in the region which possesses a mixture of multi-family housing types is Alexandria, Virginia. Most units predate 2000 and their studies show that pupil generation rates increase with the age of the facility.

Figure 27

Alexandria, Virginia PS Student Generation Rates 3-Year Average (2012)



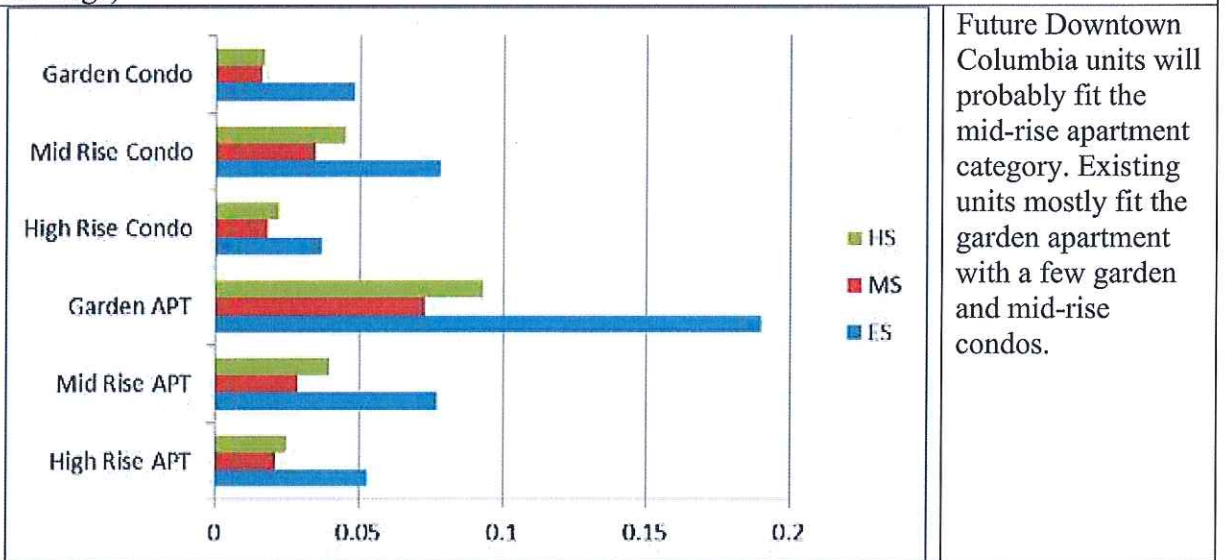
Over 85 percent of the multifamily units in Alexandria were built before 2000 but there is a wider mix of types than in Columbia which helps to characterize likely future Downtown Columbia units.

Note: Housing Authority and Cooperative Garden apartment yields are removed. These types happened to have much higher pupil generation rates but they are unlikely in Howard County.

In developments which were built in 2000 and later, there are some specific circumstances worth noting.

Figure 28

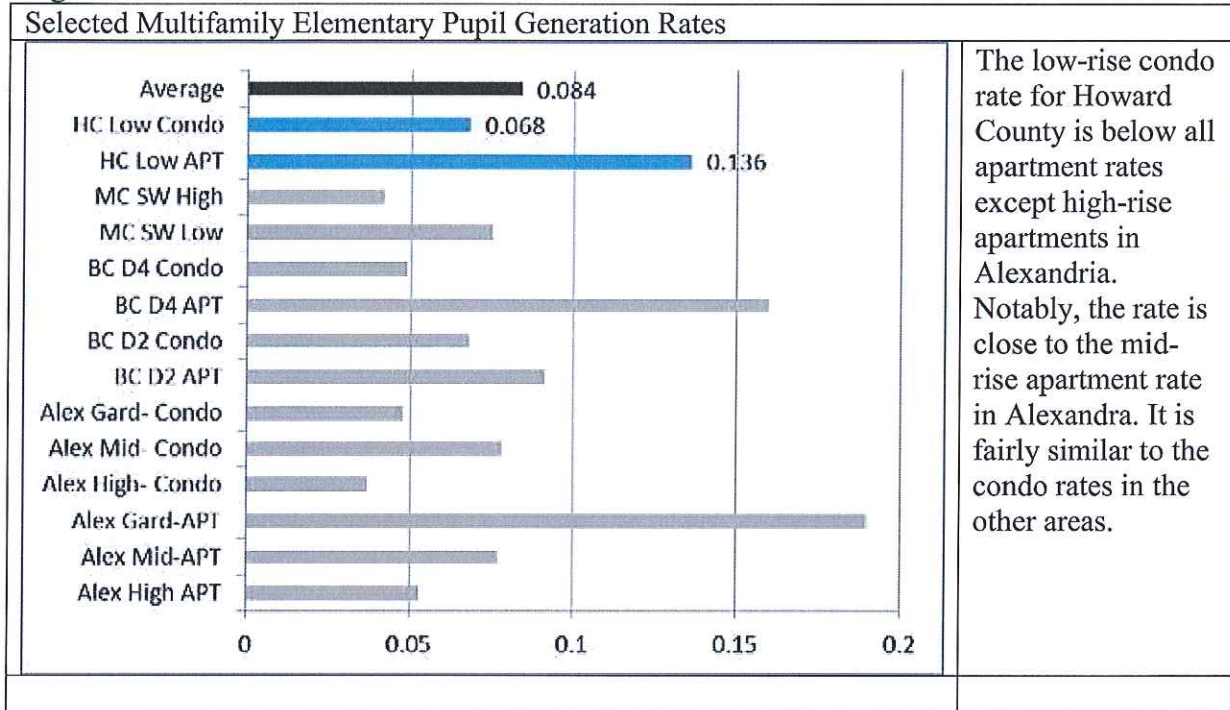
Alexandria, Virginia PS Student Generation Rates Post 2000 Housing (2011-2012 2-year Average)



Future Downtown Columbia units will probably fit the mid-rise apartment category. Existing units mostly fit the garden apartment with a few garden and mid-rise condos.

To put this selected data in context the following chart places the observed Howard County standing yield rates in the context of selected rates from Baltimore County, Montgomery County, and Alexandria, Virginia. Since elementary rates are the highest, they are presented to simplify the number of values on the chart.

Figure 29

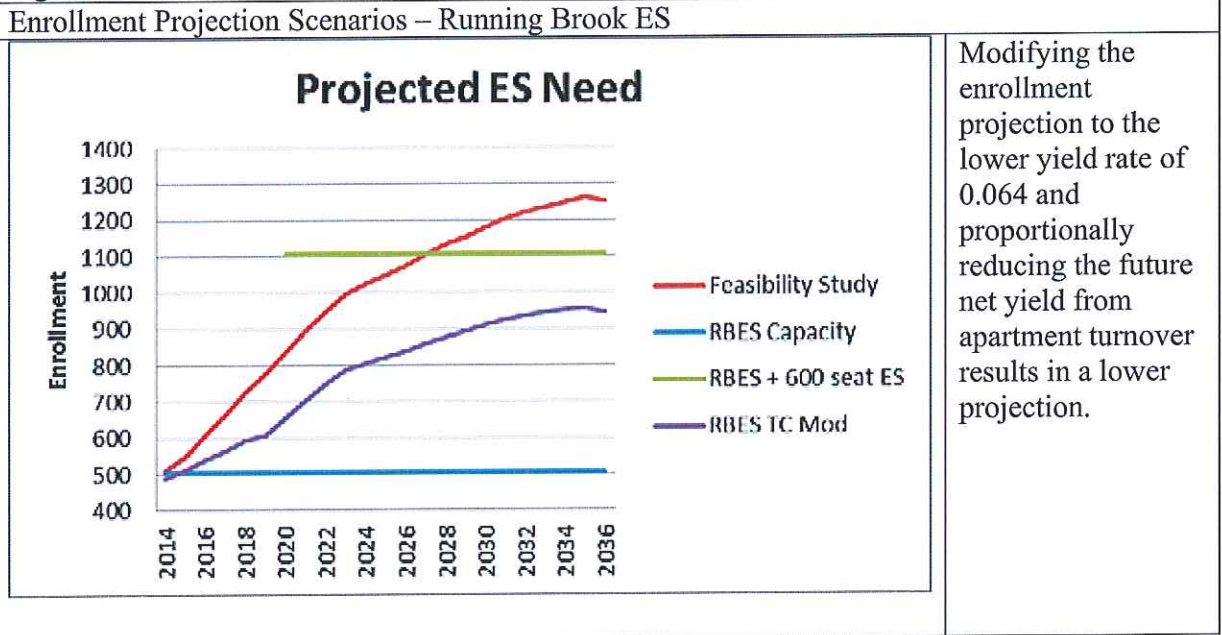


While there is no perfect way to model future development in Downtown Columbia, these values provide some context. Choosing the standing yield rate measured for Howard County condominiums as a proxy for future multifamily units in Howard County seems to be a reasonable choice given the pupil yield performance in other jurisdictions shown in Figure 29. One of the better comparisons in this chart for luxury units above four stories seems to be the Montgomery County Southwest region (Bethesda Chevy Chase area). Howard County's condo rate is higher than their high rise rate of 0.042 (5 stories or higher) but it is lower than their low rise rate of 0.075. When the next report addresses conditions following 10 percent build out of Downtown Columbia a slightly more conservative choice like 0.042 could be warranted, if staff were to use Bethesda Chevy Chase area as a guide. In the charts that follow the projection is adjusted with the low rise condo rate replacing the countywide multi-family yield rate at the elementary and middle school level. This rate is also proportionally applied to future year net yield from apartment turnover. Since the low rise condo rate is actually lower than the countywide multifamily average at the high school level no change is made. However the high school chart is adjusted for the elementary and middle school rising student effects.

D. Elementary Modification

The following graph shows enrollment projections at Running Brook ES under two scenarios. The red line shows the projected enrollment from the feasibility study projection, which uses the countywide average rate of 0.101 at the elementary school level. The purple line indicates the modification which substitutes the low rise condo rate (0.064) rather than the countywide multi-family yield rate. This rate is also proportionally applied to future year net yield from apartment turnover, reducing yield rates by a third. For reference current capacity is shown in blue and capacity for a new school meeting current education specifications is shown in a green line.

Figure 30



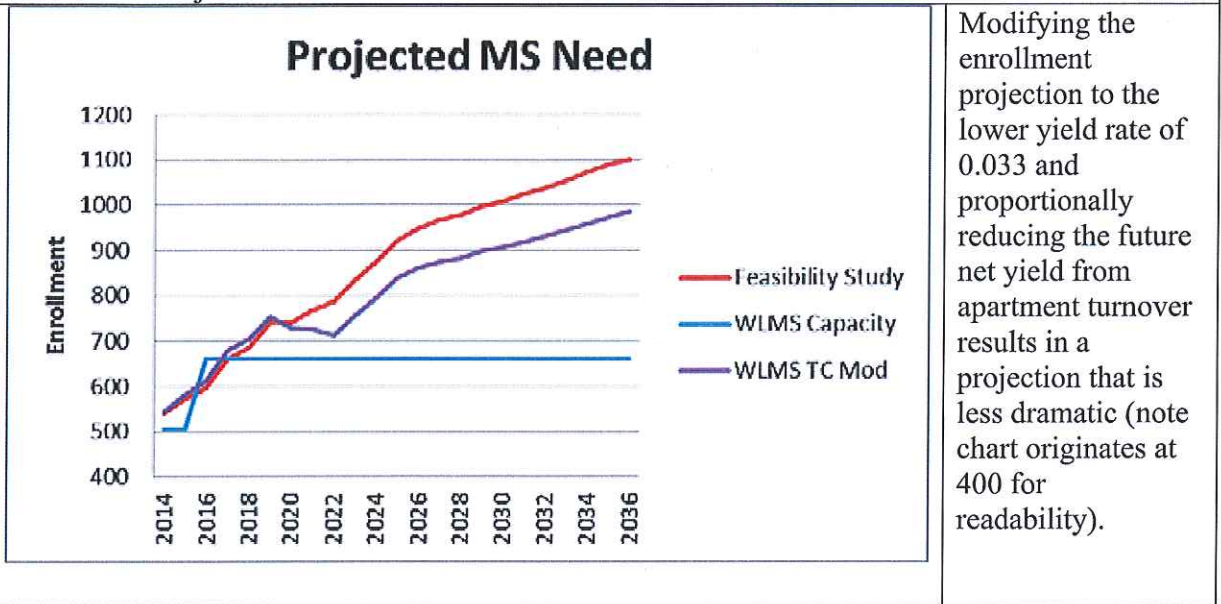
The projections shown above provide a range of possible outcomes useful in planning for what choice may be considered after 10% of the units are constructed and occupied, and yields can be evaluated. The first insight seems to be that one school site is definitely necessary for elementary needs.

E. Middle Modification

Figure 31 shows enrollment projections at Wilde Lake MS under two scenarios. The red line shows the projected enrollment from the feasibility study projection. The purple line indicates the modification which substitutes the low rise middle school condo rate (0.032) for the reasons discussed after figure 29, for the countywide multi-family yield rate (0.045). This rate is also proportionally applied to future year net yield from apartment turnover, reducing yield rates by about 30 percent. For reference, Wilde Lake MS capacity is shown in blue with a change reflecting the Wilde Lake MS replacement.

Figure 31

Enrollment Projection Scenarios – Wilde Lake MS



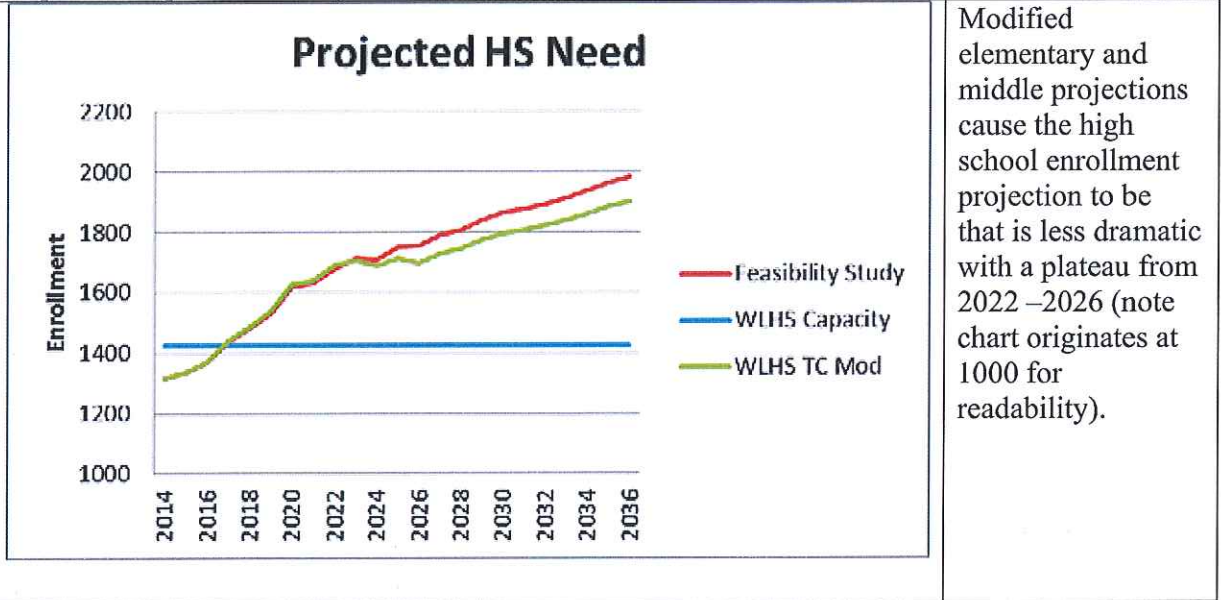
At the middle school level the modification to the trend suggests that a combination of redistricting and expansion of a nearby school like Harpers Choice MS will accommodate growth over the next ten years. The longer term need can be rationalized into a fraction of land using HCPSS Policy 6000 Site Selection and Acquisition as a guide. This policy suggests a desirable size in usable acres for a middle school beginning at 20 acres. The long-term need for approximately 300 seats is 0.45 the prototype middle school capacity of 662, or 20 acres multiplied by 0.45 is 9.1 acres. Alternatively the fraction in average middle school floor area is approximately 25,128 square feet.

F. Impact to High School Projection

The following graph shows enrollment projections at Wilde Lake HS with the Wilde Lake MS and Running Brook ES feeds reduced to reflect modified pupil generation rates. Interestingly the standing yield rate for low rise condos exceeds the current average pupil yield rates for multi-family countywide. It is too early to tell if this is an indication of a trend. For this reason the new apartment yield rate was not adjusted nor was there a change to the future year net yield from apartment turnover. A change still occurs because of the effect from the feeds that were subjected to modification. Also note that the larger attending area and capacity makes any high school less sensitive to one specific development.

Figure 32

Impact to High School Projection– Wilde Lake HS



At the high school level the modification of the feeders lowers the long term enrollment trend. Temporary capacity could be considered at Wilde Lake HS in the short term, and as plans for a new high school relieving the Northeast and Southeast Regions evolve, a plan could consider redistricting options.

This need can be rationalized into a fraction of land using HCPSS Policy 6000 as a guide. This policy suggests a desirable size in usable acres for a high school beginning at 30 acres. The long-term need for approximately 450 seats is 0.31 the average high school capacity of 1,429, or 30 acres multiplied by 0.31 is 9.4 acres. Alternatively the fraction in average high school floor area is approximately 70,000 square feet.

VII. Options for School System Needs

The conventional options for HCPSS to resolve K– 12 capacity needs are temporary capacity, expansion of existing buildings, new buildings, and redistricting.

A. Temporary Capacity

Temporary capacity is already being used at the elementary and middle facilities in this area to support current academic programming needs. There are some disadvantages to temporary capacity, including negative impacts to parking and recess space, increased maintenance requirements, and security vulnerabilities. The advantage to temporary capacity is that it allows the system to react to short-term needs at a relatively low cost. System wide temporary capacity needs are evaluated annually and may be adjusted to accommodate the needs of the Columbia West region. Policy 6010 School Attendance Areas dictates that temporary capacity may not count toward capacity in any HCPSS capital planning or redistricting feasibility studies.

B. Construction of Additions

Construction of new wings to existing schools has historically been done to address enrollment growth, but only to the limits of the largest educational specification at that instructional level (788 students in elementary, 700 students in middle, and 1,400 at the high school level). Regardless of these practices, the smaller Columbia elementary buildings and sites are only capable of a limited amount of expansion. Specifically the Running Brook ES site will have reached the limits of its core capacity following the completion of the current addition. Some of the other schools in this region may be able to host small additions, but these improvements will not significantly address the long term needs.

C. New Schools

This report underscores the need for a new elementary school and fractions of both a middle and high school. This need is calculated after the model was modified to suppress pupil generation rates to better capture proposed development. Past history has proven the Faulkner Ridge site can serve the elementary need with a new school, and if capital funding for construction is made available. Obtaining land bank sites that are consistent with the secondary needs is an option. Another option would be for the developer to provide Class A office space which could be used for either administrative offices or regional Pre-K centers.

D. Redistricting

Redistricting can access available capacity within the system by shrinking the attending area of crowded schools and enlarging the attending area of schools with available capacity. Future feasibility studies can examine redistricting as needed. The weakness of redistricting plans affecting Columbia is that the available capacity may be too distant to take advantage of.

VIII. Recommendations

1. **Prepare to monitor enrollment in Columbia Downtown** – A follow up report is due when 10% of units are permitted and occupied. This report may require an additional standing yield analysis or other studies. In the interim continue to evaluate comparable growth in surrounding jurisdictions.
2. **Retain Faulkner Ridge Site** – The Faulkner Ridge site is closest to Town Center and should be considered a primary option for construction of a future elementary school.
3. **Retain Hawthorn Site** – This site is still relatively close to Town Center and a valuable location for future prekindergarten, elementary, or middle school needs.
4. **Obtain Clary's Forest Site** – The Faulkner Ridge and Hawthorn sites alone do not resolve future needs. When middle and high school needs as fractions of typical schools were rationalized to the land requirement, they each called for a site of that size. While the Clary's Forest site is most distant of the three sites, owning it gives HCPSS future flexibility in responding to future prekindergarten, elementary, or middle school needs.
5. **Since other tracts of land are not available, Seek opportunities for office space within a downtown building** - Approximately 35,000 square feet of space would be

equivalent to the HCPSS leased space in the Ascend One building plus Central Office staff space at the ARL building. That size space could also serve the need for regional early childhood education. Either of such uses would actually be very complimentary to the mixed use development, either bringing services to residents or patronization of retail.