Facility condition, capacity and educational adequacy in Orange County and Chapel Hill-Carrboro City School Districts

2023

STATE OF FACILITIES REPORT

ORANGE COUNTY
NORTH CAROLINA

CHAPEL HILL-CARRBORO CITY SCHOOLS

Orange County Schools

WOOLPERT

November 22, 2023

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While currently in good to average condition, without significant investments, Orange County's aging educational facilities will degrade to below-average to poor condition in the next ten years.

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EXECUTIVE SUMMARY

Orange County engaged Woolpert to lead an assessment and master planning program for Chapel-Hill Carrboro City Schools (CHCCS) and Orange County Schools (OCS). Facility condition assessments provide the baseline for school district master planning to effectively prioritize capital improvement projects that maximize return on investment and the student environment. Studies have found that the condition of the learning environment has a direct impact on student performance. Cool, warm, safe, and dry educational facilities are important to student success.

CAPACITY ANALYSIS

The utilization of a school is determined by dividing the current enrollment by the calculated capacity of a facility. The utilization of individual schools varies across the districts and by school type. Industry best practices suggest an ideal school utilization between 80 and 100 percent. At CHCCS, on average, elementary schools are 82 percent utilized, middle schools 96 percent utilized, and high schools 103 percent utilized (Figure ES-1). At OCS, on average, elementary schools are 80 percent utilized, middle schools 70 percent utilized and high schools 90 percent utilized (Figure ES-2). While the average utilization generally falls within the ideal range, individual school utilization falls outside that range. See Appendix A and Appendix B for the utilization rates per school.

Figure ES-1: CHCCS Utilization

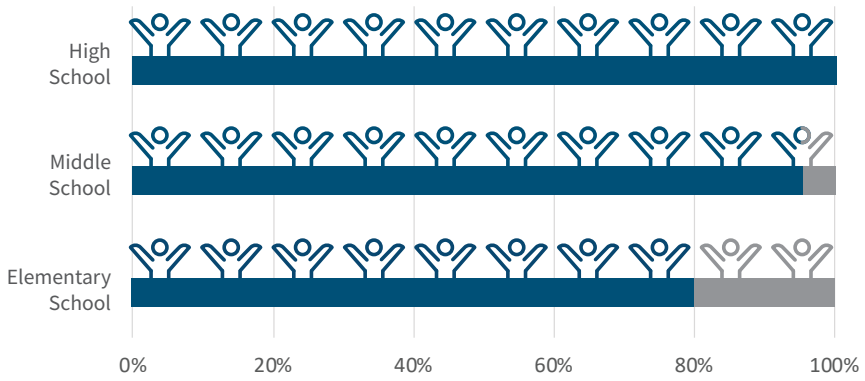
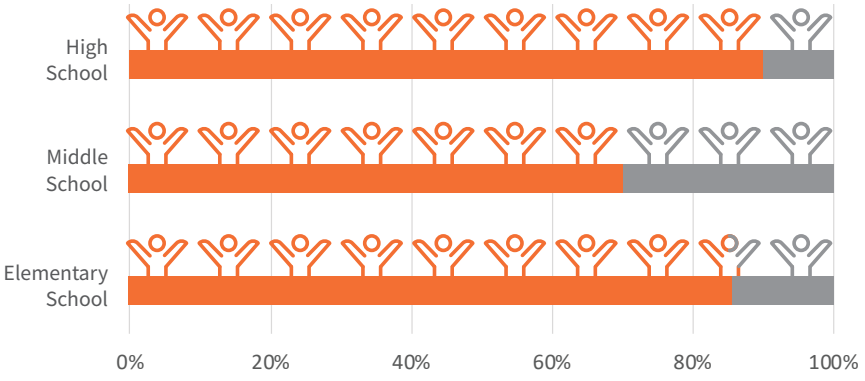


Figure ES-2: OCS Utilization



EDUCATIONAL ADEQUACY

The space analysis indicates that in general most schools have the space types required; however, many of the spaces are undersized. At CHCCS over 70 percent of the exceptional children's classrooms and over 50 percent of core classrooms are undersized based on today's standards. At OCS, approximately 70 percent of the exceptional children's classrooms, over 20 percent of the core classrooms at the elementary and middle schools, and over 50 percent at the high schools are undersized. These are understandable findings, given the average age of the facilities.

FACILITY CONDITION ASSESSMENT

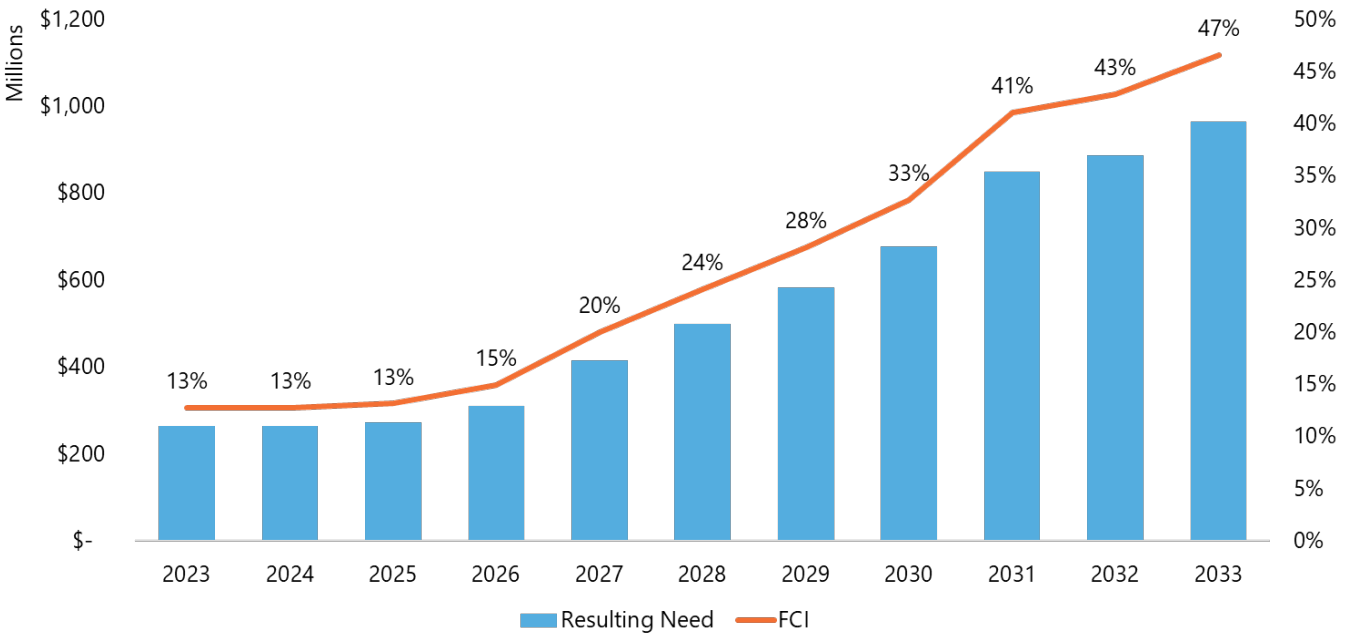
Over the next five years, identified deficiencies and life cycle renewal needs are expected to reach more than $498.5 million. Facility condition assessments revealed $262.9 million of current facility deficiency costs and the projected five-year life cycle renewal needs are estimated to be $235.7 million. Considering CHCCS and OCS average campus age is 46 years, many of the building systems are nearing or have exceeded the end of their useful lives.

FACILITY CONDITION INDEX

The Facility Condition Index (FCI) is an industry recognized formula that provides a way to understand the condition of the facility rather than the total need of that facility. The FCI provides a metric to compare dissimilar facilities across a portfolio. A five-year FCI was calculated by combining the current deficiencies and five-year needs to anticipate the overall condition of facilities. The five-year FCI at both CHCCS and OCS indicates that most of the schools are in good to average condition.

A ten-year FCI was calculated by combining the current deficiencies and ten-year needs to anticipate the overall condition of facilities in the long-term. The ten-year FCI shows how the facilities will continue to degrade in the future. While in the next five years, schools are in generally good to average condition, in ten years facilities are anticipated to be in below-average to poor, with some replacement candidates (Figure ES-3).

Figure ES-3: Increase in FCI over the next ten years relative to the anticipated capital renewal costs



CONCLUSION

Data collected during the assessments is used in the master planning efforts for CHCCS and OCS. Developing decisions based on prioritization and categorization of collected data allows for an objective, data-driven plan for the future. Combining assessment data with enrollment projections, capacity, school utilization, and district goals facilitates the development of an achievable Long-Range Facilities Optimization Plan that serves all the students in Orange County.

The comprehensive assessment identified:

- Surplus space at the CHCCS elementary schools and OCS middle schools
- Maximized capacity at CHCCS and OCS high schools
- Undersized educational spaces at both CHCCS and OCS
- Good/average condition facilities in the next five years; however, in ten years the facilities degrade to below-average to poor condition

The assessment findings reflect the average age of the portfolio and level of past investment in facilities. Increases in facility investment are necessary to avoid failing building systems and components that could impact the ability of schools to remain functional. Additionally, older schools have smaller, less educationally adequate facilities and require strategic and significant renovations to bring these spaces into modern learning environments.

Proven methods for data collection and estimating costs drive Woolpert's Comprehensive Assessment Process

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INTRODUCTION AND METHODOLOGY

Orange County engaged Woolpert to lead an assessment and master planning program for Chapel-Hill Carrboro City Schools (CHCCS) and Orange County Schools (OCS). The assessment included the facility condition and educational adequacy of 39 educational and administrative facilities in CHCCS and OCS. Facility condition assessments and master planning is important for school districts to effectively prioritize capital improvement projects to maximize the return on investment and student environments over the long-term. Studies have shown that the condition of the learning environment has a direct impact on student performance. Cool, warm, safe, and dry educational facilities are an important factor to successful student outcomes.

This State of Facilities document summarizes the results of the assessments that will be used in developing the Long-Range Facilities Optimization Plan. The components of the study include a facility condition assessment, educational adequacy assessment, and capacity analysis.

The facility condition assessment findings contain detailed information associated with each building component, including the overall condition of school facilities, as well as life cycle forecasting information that attempts to identify future building and system needs. Information collected during the educational program space assessment includes an inventory of facility features that support the learning environment and an inventory of space types and sizes.

Assessment teams evaluated 39 educational and administrative facilities in CHCCS and OCS for facility condition and educational adequacy.

Orange County is currently responsible for more than 3.8 million square feet of facilities across CHCCS and OCS campuses.

METHODOLOGY

DATA COLLECTION

The assessment team updated OCS and CHCCS's facility portfolios, assessed the current condition of school district facilities, evaluated the educational adequacy of school district facilities, analyzed school capacity, and prepared a ten-year life cycle forecast. Data was collected in the field in June-August 2023 using hand-held data-collection tools and reviewed in office for quality control. The team combined data to formulate total district-wide investment needs for the next five and ten years, which Orange County can use to forecast future funding requirements and develop a Long-Range Facilities Optimization Plan.

The facility condition assessment collected information associated with each building system, including size, capacity, and remaining useful life to estimate future facility needs.

The educational adequacy assessment gathered space types; space sizes; and selected features that support the learning environment and compared these to OCS and CHCCS standards.

ESTIMATING COSTS

Woolpert used industry standards and local market knowledge to develop rough order magnitude cost (ROM) estimates for current and future building component replacements. For planning purposes, these cost estimates contain allowances for additional costs above and beyond the labor and materials required to complete the work. These allowances include escalation, administrative fees, and professional services fees. Because ROM cost estimates are budgetary in nature, the actual cost of repairs may vary at the time of construction.

Woolpert also calculated a theoretical replacement cost for each facility to estimate the Facility Condition Index (FCI). The replacement cost was calculated by applying a cost per square foot to the actual building area. These replacement costs do not include site procurement, furniture, fixtures, or equipment, and may not represent the actual cost of acquiring and constructing a brand-new facility.

NEXT STEPS

Data collected during the assessments is used in the master planning efforts for OCS and CHCCS. Developing decisions based on prioritization and categorization of data collected allows for an objective, data-driven plan for the future. Combining assessment data with enrollment projections, capacity, school utilization and district goals facilities the development of an achievable master plan that serves all the students in Orange County. Options identified in the plan may include, renovations, new construction, school consolidation, or possible facility closures. All options are considered, final recommendations are presented in the Long-Range Facilities Optimization Plan.

COMPREHENSIVE ASSESSMENT PROCESS

This report summarizes the results for each component of the facility assessment that ultimately supports the Long-Range Facilities Optimization Plan.

FACILITY CONDITION ASSESSMENT

A facility condition assessment identifies and evaluates the condition of building components and systems. Findings from the assessment are prioritized to support master planning and other facility-related decisions. The assessment team included architectural, mechanical, and electrical engineering professionals, who performed a visual observation of facility components and systems. This assessment did not include intrusive measures, destructive investigations, or testing. The assessment also incorporated input from school or facility staff, if available.

At the conclusion of the condition assessment, the team compiled findings to develop the current deficiency costs and anticipated future life cycle needs for each facility. Additionally, the findings from the assessment are prioritized based on the importance of the building system to the operation of the facility. This prioritization helps in determining which needs should be addressed first.

CURRENT DEFICIENCY COSTS

Current deficiency costs are the expenses associated with replacing building systems or components with equivalent, like-for-like replacements. Current deficiency costs are incurred when the systems or components are considered obsolete, have exceeded their useful life, or are no longer functioning as intended.

10-YEAR LIFE CYCLE

Life cycle renewal data involves the estimation of future capital replacements for building systems or components based on their expected remaining useful life. This approach enables a proactive and informed approach to facility planning and management.

FACILITY PORTFOLIO

The gross square feet and age of campuses and buildings are critical elements in facility condition assessment calculations.

CAPACITY ANALYSIS

The capacity analysis was conducted based on the space inventory conducted during the educational adequacy assessment. Applying the NCDPI standards to the spaces identified the capacity of each school to understand the number of students a facility can support. It is important to note that this analysis does not necessarily reflect how the spaces are currently being used.

EDUCATIONAL ADEQUACY ASSESSMENT

The educational adequacy assessment evaluates educational space types and sizes relative to current North Carolina and other industry standards or best practices. The review also evaluates the ability of spaces to support current educational programs. The educational program assessment also included understanding the learning tools within spaces needed for modern schools. Examples of space requirements measured include electrical outlets, writable surfaces, natural light, and projection.

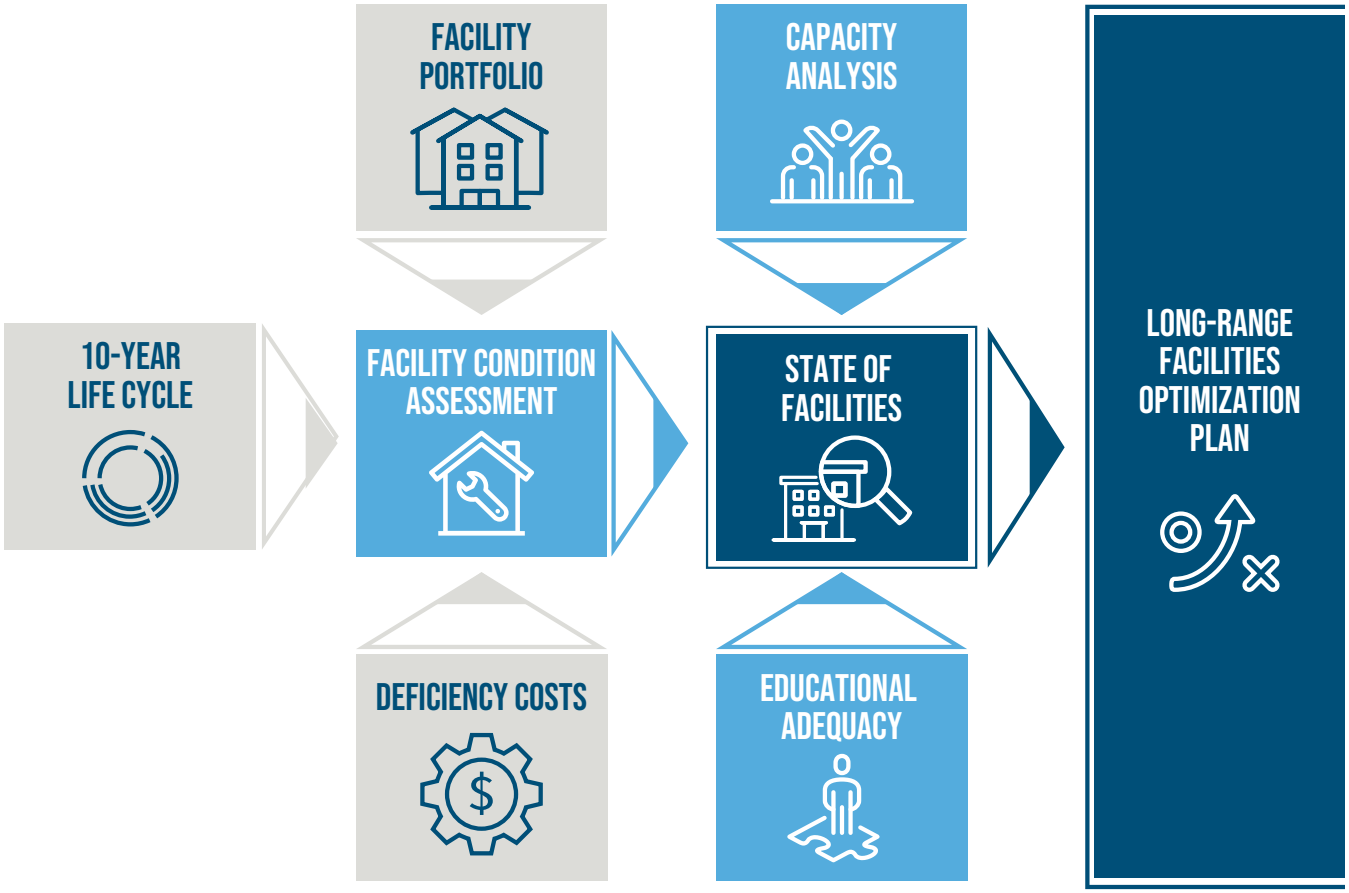
LONG-RANGE FACILITIES OPTIMIZATION PLAN

Based on the analysis of information collected during the assessment, a plan can begin to be developed to address high priority needs and important capital renewal, renovations and school constructions project to support the educational missions of CHCCS and OCS.

The multiple factors involved in planning, designing, and building school facilities necessitate the development an analysis of various scenarios for both CHCCS and OCS. Each option has varying impacts on facility condition, capacity, educational support, and total investment.

Once the options are vetted, recommendations for a Long-Range Facilities Optimization Plan can be compiled. The final optimization plan report will outline recommendations for capital improvements, timelines for execution, and budgetary costs for the County Commissioners and CHCCS and OCS school boards to consider.

Figure 1-1: State of Facilities Process



Orange County is currently responsible for more than 3.8 million square feet of facilities across 39 campuses.

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FACILITY PORTFOLIO

Orange County is currently responsible for more than 3.8 million square feet of facilities across 39 campuses. CHCCS maintains and operates nearly 2.26 million square feet at three high schools, four middle school, eleven elementary, and two alternative school sites.

OCS maintains and operates over 1.54 million square feet at two high schools, three middle school, seven elementary, one alternative school, and six administrative sites, Table 2-1 summarizes the portfolio of school facilities in Orange County.

Table 2-1: Orange County Portfolio of School Facilities

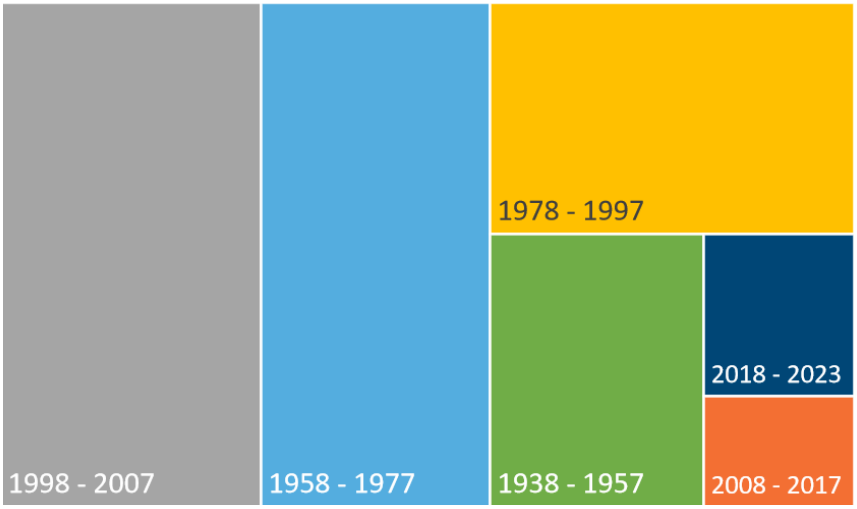
	CHCCS		OCS		Orange County Totals	
Facility Type	**Count**	**Area (SF)**	**Count**	**Area (SF)**	**Count**	**Area (SF)**
Elementary School	11	1,078,318	7	532,514	18	1,610,832
Middle School*	4	359,140	3	389,951	7	749,091
High School	3	753,143	2	506,566	5	1,259,709
Alternative School	2	68,851	1	6,600	3	75,451
Administrative	0	-	6	105,281	6	105,281
Totals	**20**	**2,259,452**	**19**	**1,540,912**	**39**	**3,800,364**

*McDougle Middle School area is included with McDougle Elementary School

CAMPUS AGE

The facilities on average are 46 years of age at both CHCCS and OCS. Almost 60 percent of the facilities were constructed before 1997, and although many have undergone recent renovations, building age is calculated from the original build date. Figure 2-1 illustrates building age breakdown across both school districts. Facility age information was provided by the districts or was approximated in the field where data was not available.

Figure 2-1: Building Age at CHCCS and OCS

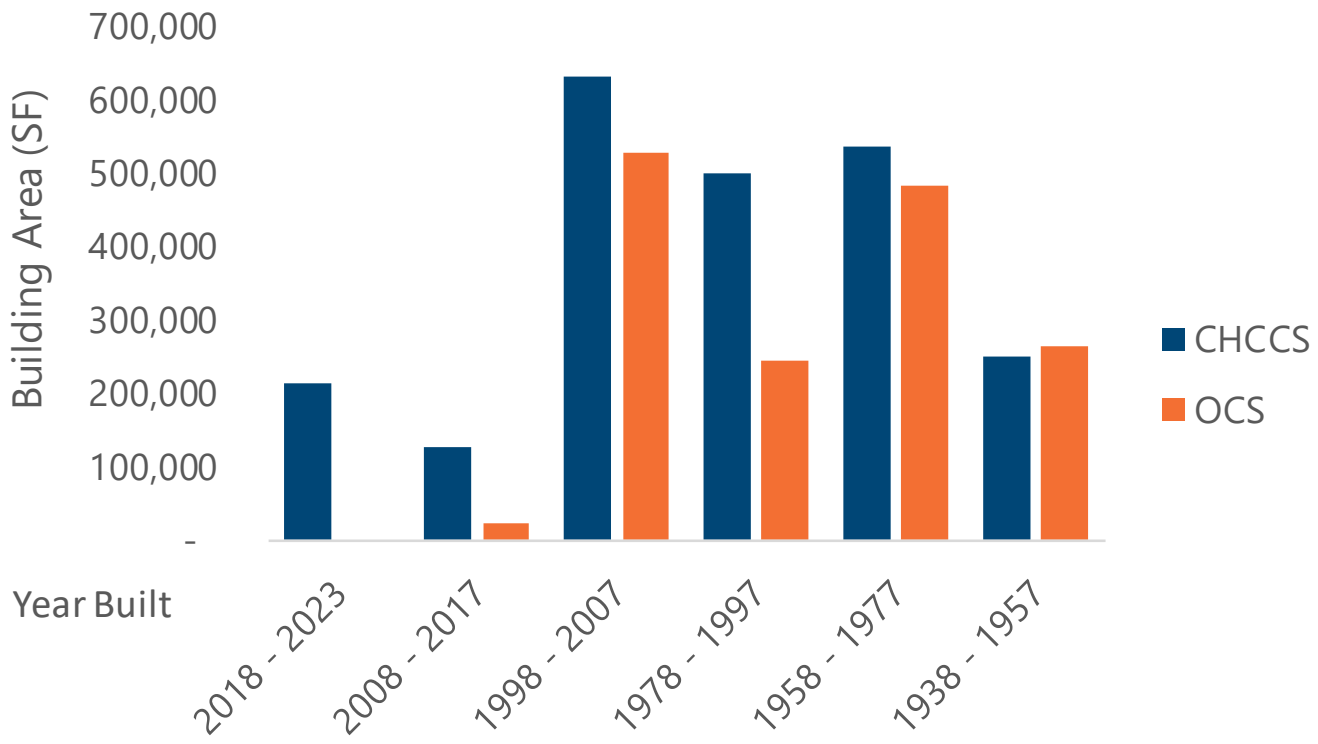


A 2014 report by the National Center for Educational Statistics (NCES) found the average public school facility to be 44 years. Schools average age ranged from 54 years in the northeast to 36 years in the southeast. The study also reported that the average age of major renovations was 12 years. The NCES defines functional age as the age of the school based on the year of the most recent major renovation or the year of construction of the main instructional building if no renovation has occurred. The average functional age of schools in the southeast was on average 17 years. Generally, major building systems require complete replacement around 20 years. Additionally, educational programs and technologies evolve at a rapid pace, quickly making facilities outdated for today's education.

Facilities play a key role in the education of today's student. Research indicates a direct correlation between school condition and student achievement. Schools with better lighting, air quality, and comfort tend to have higher attendance rates and improved student performance.

CHCCS and OCS facility ages align with the average facility age across the country. Nearly two-thirds of both districts' portfolios were constructed prior to 1997 with another third between 1998 and 2007.

Figure 2-2: Building Age by Square Footage (SF) and School District



Applying NCDPI standards for educational spaces identifies the capacity of each school to understand the number of students a facility can support.

03

CAPACITY ANALYSIS

The capacity of a school is a measure of how many students the school's physical facilities can effectively accommodate. Over the past thirty years, there have been significant changes in both the programs offered by public school systems and how they are delivered. These changes have had a direct impact on the way school facilities are utilized. For example, in the past schools did not provide full day kindergarten or computer labs. Certain programs, such as music and art, were often held in multipurpose areas, and art might have been taught by teachers who moved from classroom to classroom. Modern education standards generally require dedicated spaces, such as music rooms and art studios.

Many school districts have historically used a method called "design capacity." This method typically calculates capacity based on the number of general classrooms for elementary schools, the number of core instructional suites for intermediate schools, and the number of classrooms with scheduling factors applied for high schools. However, this approach is often inflexible and may not account for district-sponsored programs or the changing needs of modern education.

To calculate capacity, teams visited each school to measure and categorize each space type. Based on the room use, North Carolina Department of Public Instruction (NCDPI) standards were applied to formulate the capacity for each school. It is important to note that this method measures the number of students a school can hold, not how the facility is currently being used.

Initial findings showed that many of the classrooms across CHCCS and OCS were undersized, as a result rooms identified as core classrooms less than 650 square feet were not allotted capacity.

Utilization is the comparison of the capacity of a school to the 2019-20 school year enrollment. It is a ratio represented as a percentage, which indicates how many students are served in the building compared to its rated capacity.

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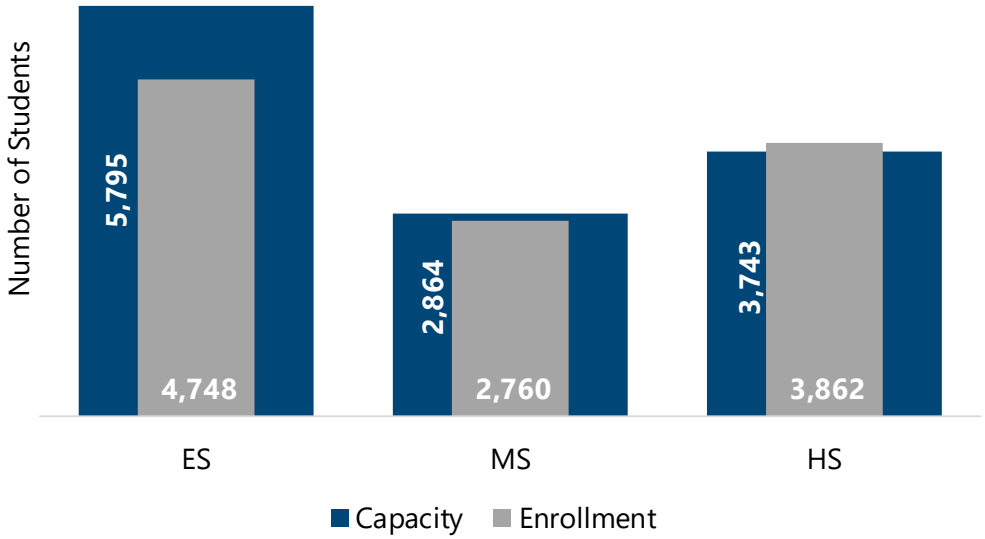
Figure 3-1 shows enrollment and capacity by school type. Overall CHCCS elementary schools have some surplus space, middle schools are at capacity, and high schools are at or above capacity.

Figure 3-1: Capacity vs. Enrollment at CHCCS



UTILIZATION

The utilization of individual schools varies across the district and by school type (Figure 3-2). While the elementary schools across the CHCCS portfolio have some surplus space, Glenwood Elementary and Seawell Elementary are both over utilized. The utilization of the middle schools is greater than 88 percent at each school, indicating the middle schools are at capacity. Similarly, the high schools all have a utilization greater than 100 percent, indicating the schools are operating at or above their capacity.

Figure 3-2: CHCCS School Utilization Rates

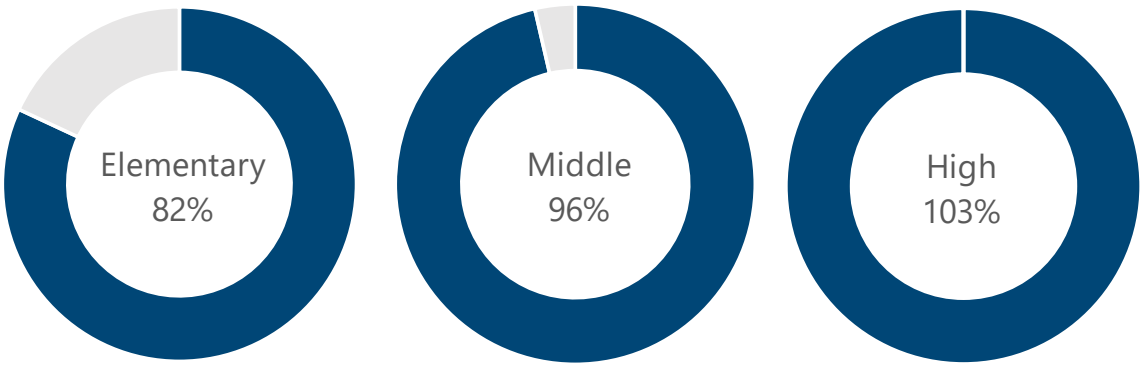


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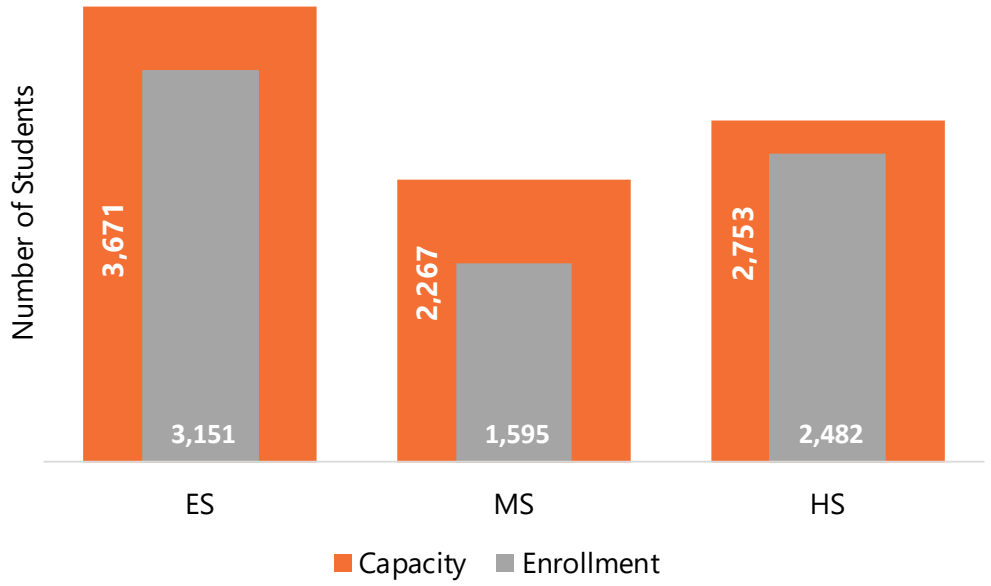
Figure 3-3 shows enrollment and capacity by school type. Overall OCS elementary schools are nearing capacity, middle schools have surplus space, while high schools are reaching maximum capacity.

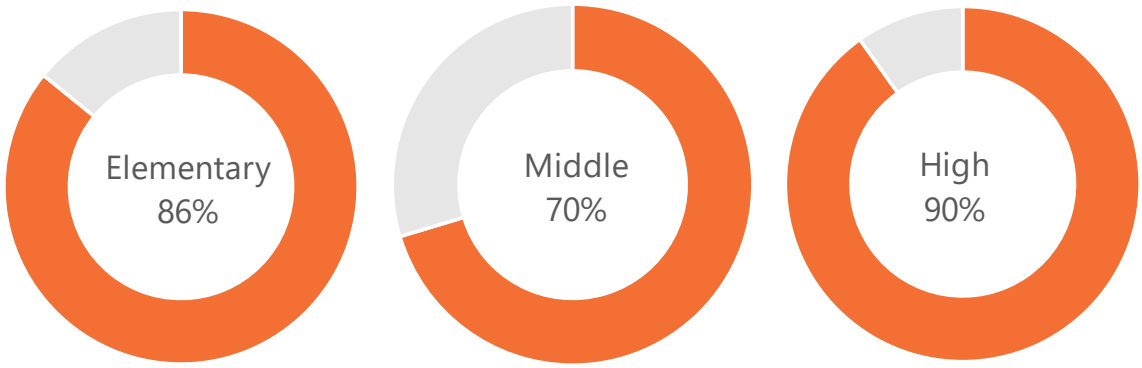
Figure 3-3: Capacity vs. Enrollment at OCS



UTILIZATION

The utilization of individual schools varies across the district and by school type (Figure 3-4). The elementary utilization varies from 66 percent at Central Elementary to 102 percent at Efland-Cheeks Elementary. Central Elementary and Pathways Elementary have surplus space, with the remaining elementary schools are at or near full capacity. All three middle schools have surplus capacity and the high schools are nearing or above their capacity.

Figure 3-4: OCS School Utilization Rates



Educational adequacy measures space types and sizes relative to industry standards to evaluate the ability of spaces to support current educational programs.

04

EDUCATIONAL ADEQUACY

Educational adequacy is a critical component to achieving functional equity across school district facilities. The educational adequacy assessment evaluates the physical capacity of a school building to accommodate the existing programming and educational courses being offered. The assessment measures the ability of a building to facilitate learning by evaluating items such as access to movable furniture, operable windows, adequate ventilation, classroom storage, lighting, and appropriate technologies.

There are several challenges in assessing educational adequacy. First, programmatic needs change far quicker than the facilities themselves do. For example, many facilities built in the 1950s did not have a dedicated music and art rooms. These programs were held in the student's home room as "art on a cart" or on the stage of the multi-purpose room. Second, exceptional children programs were not delivered in the regular public school and spaces have been retro-fitted with the proper restrooms, changing rooms, and specialty spaces required to serve that student population.

An educational adequacy assessment can reveal how well a campus is equipped to deliver the current instructional curriculum. The assessment answers such questions as the following.

- Is the classroom the correct size?
- Are labs appropriately equipped?
- Does technology support the classroom activities?
- Are there adequate provisions for administration, guidance, and tutorial areas?
- Does the building include all of the spaces to deliver the desired educational program?
- Are the core spaces (cafeterias, gyms, library/media centers) present, of sufficient size, and appropriately equipped?
- Are the desired outdoor activities present?
- Is there adequate separation of pedestrian, bus, and parent drop off traffic to ensure student safety?

The educational adequacy assessment focused on the standard space types, learning tools, and environments that teachers and district leadership need to deliver high quality instruction. During the on-site assessment, the teams identified and measured each space and counted specified learning tools. The space sizes and learning tool requirements were compared to current CHCCS and OCS standards to evaluate gaps.

Not only used as a way to compare facilities, an educational adequacy assessment is imperative to determine how well a renovated school will support teaching curriculum. The assessment is valuable when campuses are faced with determining renovation versus replacement. Decision makers must evaluate the cost trade-off of using an educationally inferior facility for long term use.

SPACE ANALYSIS

All spaces were measured and categorized and grouped into the following program areas to facilitate analysis and overall understanding of space usage. These space types were compared to NCDPI standards. Where standards were not available industry best practices and expertise were used.

- Academic Support
- Administrative Space
- Core Academics
- Career Technical Education
- Pre Kindergarten
- Gym/PE/Fitness
- Kitchen/Cafeteria
- Library Media Center
- Exceptional Children
- STEM
- Visual and Performing Arts

LEARNING TOOL REQUIREMENTS

Twenty-three items were identified by CHCCS and OCS as requirements in various spaces to support education. Individual spaces have differing requirements depending on the type of learning environment. The assessment considered adjustable lighting, AV/PA systems, bulletin boards, magnetic white boards, movable furniture, safety features like eye wash stations for science labs, and support features like washers and dryers in self-contained special education classrooms. The most significant requirements gathered include:

- Adjustable lighting
- AV/PA Systems
- Writable surfaces
- Movable furniture
- Teaching walls

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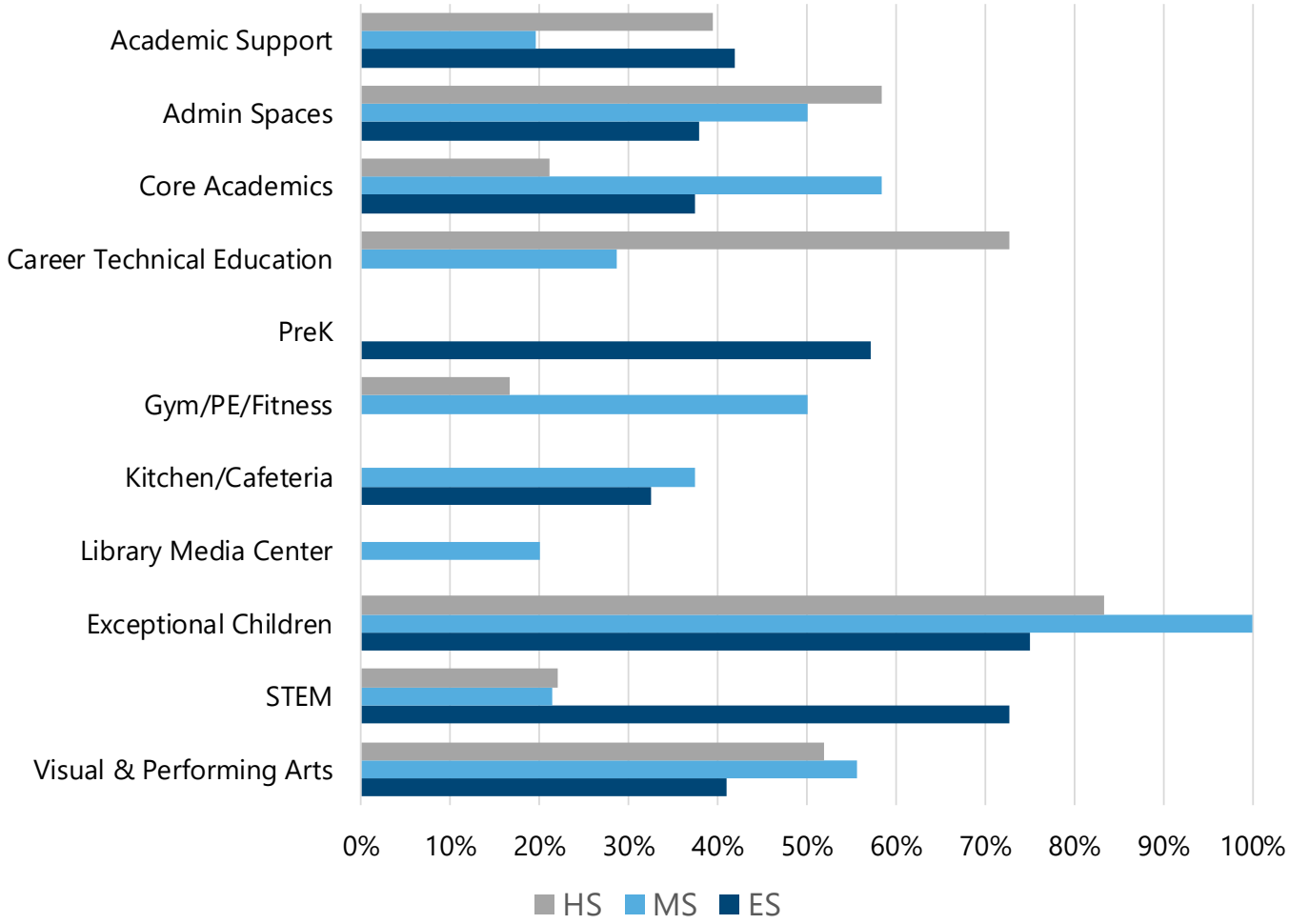
The space analysis at CHCCS indicates most schools have the space types required; however, many of the spaces are undersized (Figure 4-1). On average, 80 percent of the necessary space types were present across all traditional schools in CHCCS. To understand the size of the spaces relative to the standards, we assumed spaces to be adequately sized if they were 90 percent of the required area (spaces less than 90 percent of the standard were considered undersized).

Over 70 percent of the exceptional children's classrooms are undersized across all school types. Over 50 percent of the core classrooms are undersized based on today's standards. These are understandable findings given the average age of the facilities.

Figure 4-1: CHCCS: Present but Undersized Spaces



Note: Spaces below 90% minimum size were set by NCDPI or Woolpert Standards when not applicable

Across the district, CHCCS generally has most of the learning tools necessary to do instruction. Adjustable lighting, AV/PA systems, bulletin boards, magnetic white board, movable furniture and teaching walls were present in the more than 88 percent of the spaces required. In general, the classrooms are supplied with the necessary equipment.

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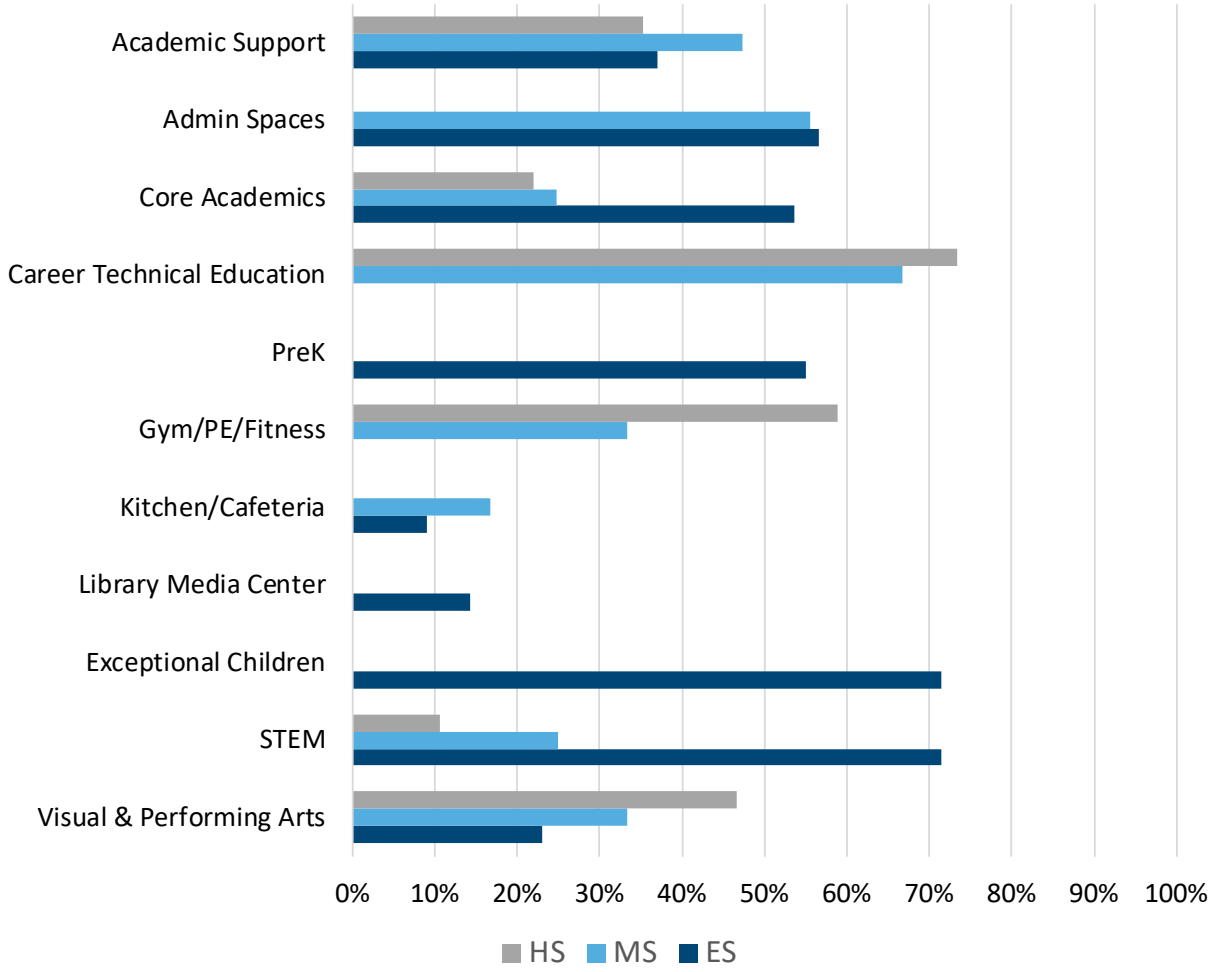
The space analysis at OCS indicates most schools have the space types required; however, many of the spaces are undersized Figure 4-2). On average, 80 percent of the necessary space types were present across all traditional schools in OCS. To understand the size of the spaces relative to the standards, we assumed spaces to be adequately sized if they were 90 percent of the required area (spaces less than 90 percent of the standard were considered undersized).

Approximately 70 percent of the exceptional children's classrooms are undersized at the elementary schools. Over 20 percent of the core classrooms at the elementary and middle schools are undersized and over 50 percent at the high schools. These are understandable findings given the average age of the facilities.

Figure 4-2: OCS: Present but Undersized Spaces



Note: Spaces below 90% minimum size were set by NCDPI or Woolpert Standards when not applicable

Across the district, OCS generally has most of the learning tools necessary to do instruction. Adjustable lighting, AV/PA systems, bulletin boards, magnetic white board, movable furniture and teaching walls were present in the more than 88 percent of the spaces required. In general, the classrooms are supplied with the necessary equipment.

A facility condition assessment identifies and evaluates the condition of building components and systems.

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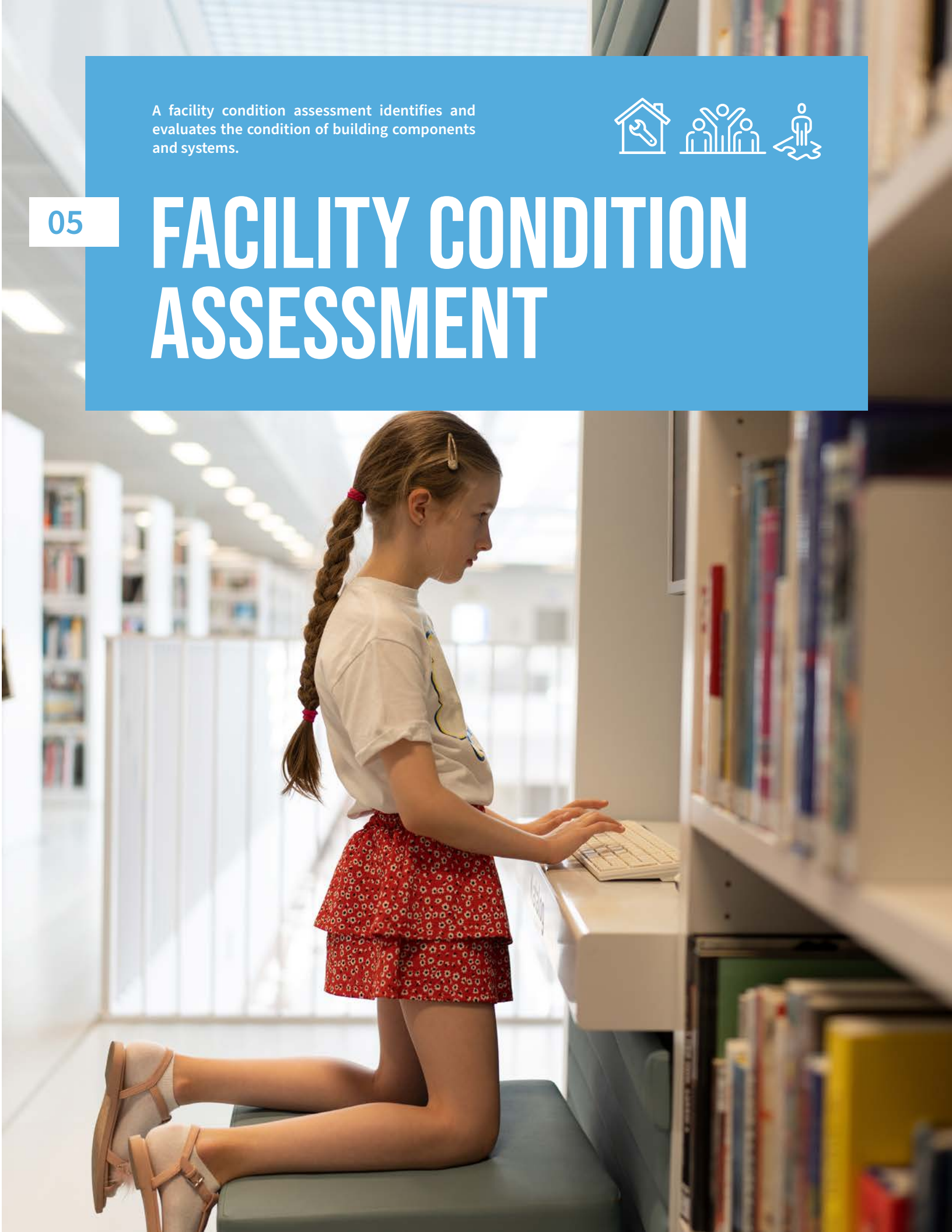
FACILITY CONDITION ASSESSMENT



A facility condition assessment is a comprehensive process aimed at evaluating the general health of the built environment. It identifies and prioritizes current deficiencies, estimates remaining useful life, and develops costs for repair and replacement of building components. The life cycle renewal analysis forecasts building system and component replacement based on observations and information available at the time of the assessment. Facility deficiencies are items currently in need of repair or replacement.

The assessment team employed handheld data collection tools to promote consistency and completeness of data across different teams. Digital photographs were taken to better identify significant deficiencies. Additionally, a separate quality control team reviewed the data collected to promote accuracy of the dataset.

FACILITY DEFICIENCIES

Deficiencies identified by the assessment team refer to building components or systems currently in need of repair or replacement. Addressing all identified deficiencies would bring a facility to like new condition. The current need across the county is approximately $262.9 million (Table 5-1). East Chapel Hill High School in CHCCS and A.L. Stanback Middle in OCS had the largest current deficiencies.

Table 5-1: Orange County Deficiency Costs

District	Current Need
Chapel Hill-Carrboro City Schools	$164,916,937
Orange County Schools	$97,941,196
Total	**$262,858,133**

FACILITY DEFICIENCY PRIORITY LEVELS

Prioritizing current deficiencies is a critical element in the decision-making process, especially when a school district has limited funding available. The primary objective of this prioritization is to help CHCCS and OCS allocate resources effectively, focusing on addressing the most critical issues first. Deficiencies are categorized into different priority levels, ranging from Priority 1 to Priority 5, with Priority 1 being the most urgent and critical to address. Priorities are assigned based on the importance of building components and systems in keeping the facility operational. For example, issues related to safety, security, or critical infrastructure might be designated as Priority 1, as they directly impact the well-being of students and staff and the overall functionality of the facility. This approach allows the districts to focus funding on the most critical facility needs that impact the ability for schools to educate children.

PRIORITY 1 – CRITICAL. If these building systems or components are inoperable or expected to fail in the near term, it may directly affect the facility's ability to remain open or deliver the mission. These deficiencies typically relate to building safety systems such as fire suppression and fire alarm systems.

PRIORITY 2 – ESSENTIAL. Inoperability or failure of these building systems or components will cause damage to other building systems if not addressed in the near future. For example leaking or failing roofs cause damage to interior finishes and mechanical or electrical equipment.

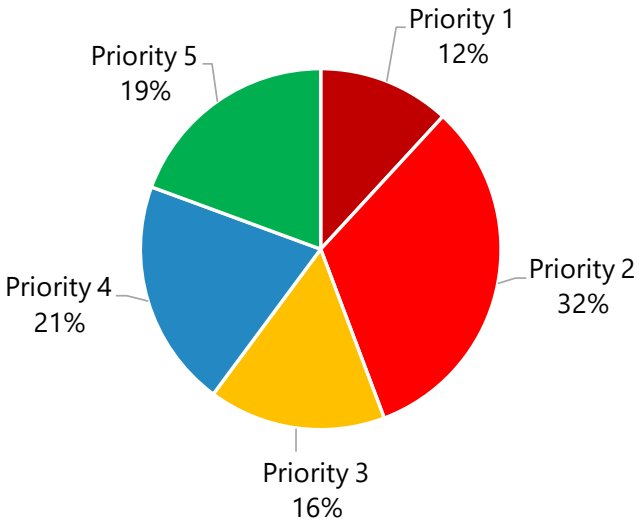
PRIORITY 3 – NECESSARY. These deficiencies are necessary to the facility's mission but may not require immediate attention. These items should be considered improvements required to maximize facility efficiency and usefulness. Examples of Priority 3 items include panel boards and ductwork.

PRIORITY 4 – SUGGESTED. Systems or components that may be considered improvements to the environment. The improvements may be aesthetic or provide improved functionality. Examples include cabinets, interior doors, or paving.

PRIORITY 5 – IMPROVEMENTS. Items are aesthetic in nature and include repainting, re-carpeting, or signage.

Across Orange County, 32 percent of the current needs are categorized as Priority 2, indicating there is a need for component replacements that are essential to the function of the school facilities. The majority of these costs are related to roofing replacements. Only 12 percent of the current deficiencies are Priority 1, and most of these costs are for replacing PA communication and fire alarm systems.

Figure 5-1: Orange County Facility Deficiencies by Priority

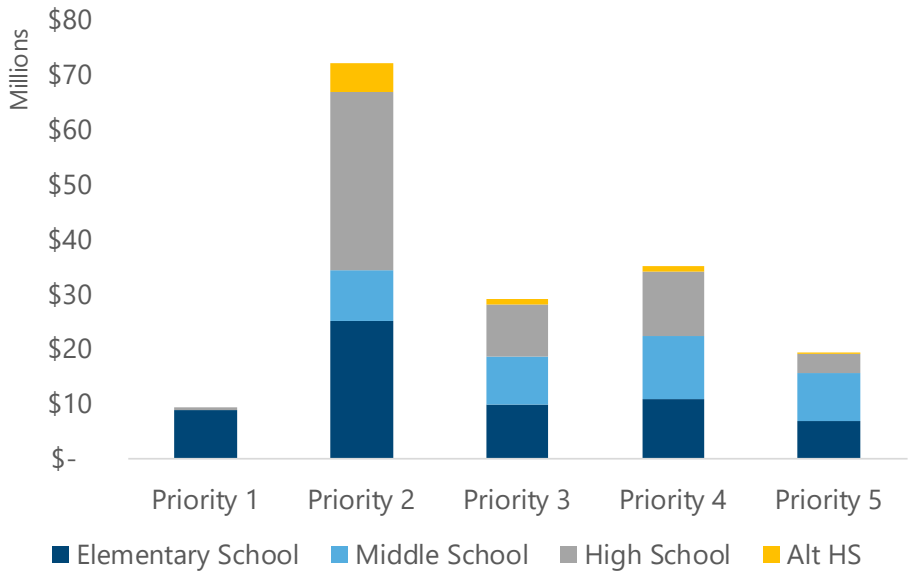


FACILITY DEFICIENCY BY FACILITY TYPE

CHAPEL HILL-CARRBORO CITY SCHOOLS

Most of the deficiencies at CHCCS are Priority 2 at the high schools and elementary schools. A significant portion of the Priority 2 cost at the high schools is associated with the replacement of the roofs at East Chapel Hill High and Carrboro High. Similarly, the Priority 2 cost at the elementary school is associated with primarily roofing replacements at Ephesus Elementary, Scroggs Elementary, Estes Hill Elementary, and Frank Porter Graham Elementary. Figure 5-2 shows the distribution of deficiencies by priority and facility type for CHCCS.

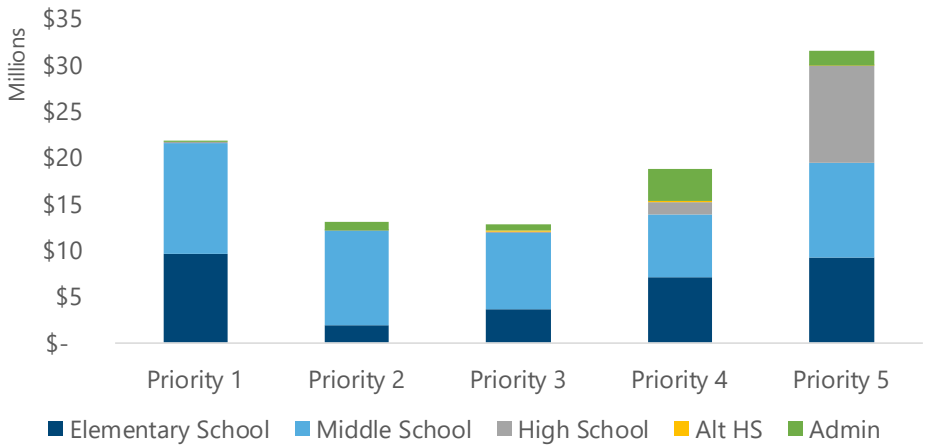
Figure 5-2: CHCCS Deficiencies by Priority and Facility Type



ORANGE COUNTY SCHOOLS

Nearly half of the deficiencies at OCS are at the middle schools. The Priority 1 items at the middle schools consist of fire alarm system replacements at A.L.Stanback Middle and Gravelly Hill Middle. Approximately a third of the deficiencies are Priority 5, over half of these consisting of flooring replacements across OCS. Figure 5-3 shows the distribution of deficiencies by priority and facility type for OCS.

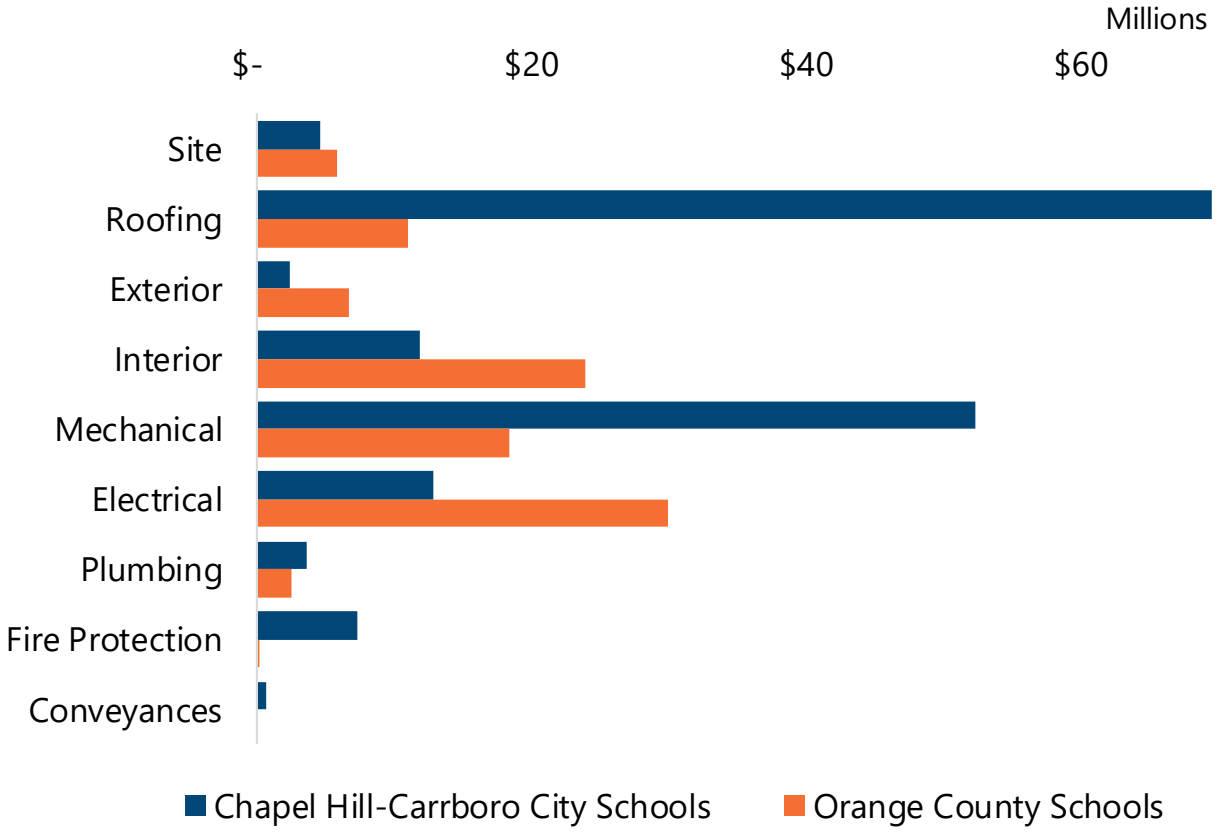
Figure 5-3: OCS Deficiencies by Priority and Facility Type



FACILITY DEFICIENCY BY BUILDING SYSTEM

Figure 5-4 provides the current deficiencies for CHCCS and OCS by building system. The largest need at CHCCS are roofs totaling over $69 million, with a significant portion of that need being at East Chapel Hill High, Carrboro High, McDougle Middle/Elementary and Culbreth Middle. CHCCS mechanical systems are estimated to need over $52 million in current replacements. Examples of these replacements include of ductwork, controls, and air handlers. The largest need at OCS are electrical systems, totaling over $29 million. A significant portion of these replacements are fire alarm systems and/or PA communications systems at A.L. Stanback, Gravelly Hill Middle, Pathways Elementary, Grady A. Brown Elementary, and River Park Elementary. Another $23 million in need was identified at the interior finishes, over half of being floor finishes. A significant portion of the interior finishes identified are at Orange Middle, Orange High, and Cedar Ridge High.

Figure 5-4: CHCCS and OCS by Deficiencies by Building System



LIFE CYCLE RENEWAL FORECAST

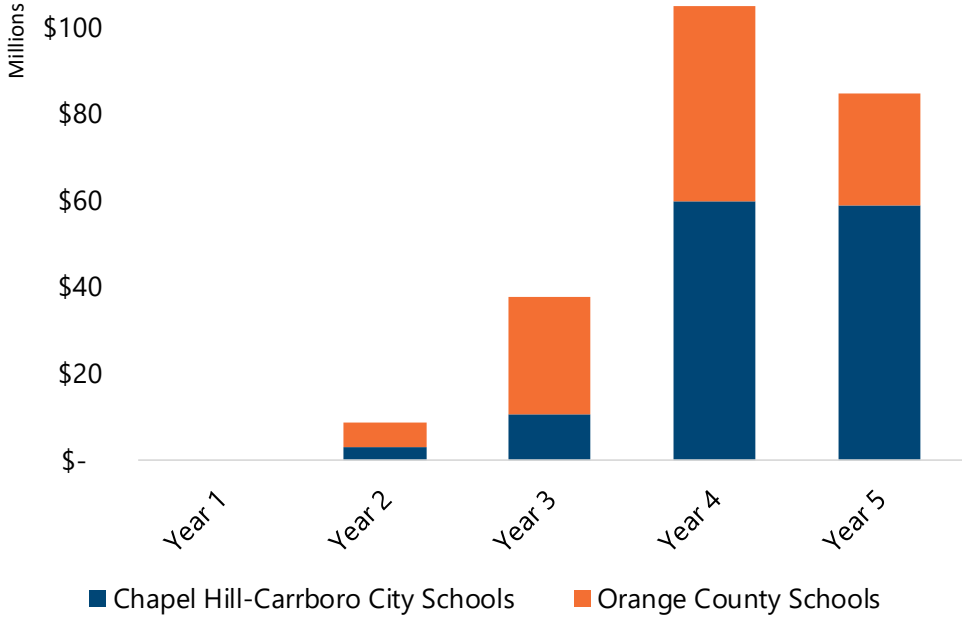
The life cycle renewal forecast is an important consideration in planning future capital needs. It acknowledges that a building component or system may currently be in working condition, but it could reach the end of its useful life in the near future, potentially impacting planning decisions.

Life cycle renewal forecasting assesses each major building system or component individually. This allows for a more precise estimate of when each component will likely need replacement or significant maintenance. The estimated remaining useful life of building system or components is determined during field assessments. This estimation takes into account various factors, including the approximate age of the system, its observed condition during the assessment, and information provided by on-site representatives. The estimated remaining useful life serves as a basis for planning future building system investments. Life cycle renewal forecasting is a forward-looking strategy that promotes a proactive approach to planning and budgeting, which helps avoid sudden large capital expenditures.

Over the next five years Orange County can expect to spend over $235.7 million in capital renewals across both CHCCS and OCS.

Nearly half of the five-year need is expected to occur in Year 4, with approximately a third of the investment being for roof replacements (Figure 5-5). A large portion of the Year 5 capital renewals are anticipated to be wet fire suppression systems, ductwork, and interior finishes.

Figure 5-5: CHCCS and OCS Five-Year Need

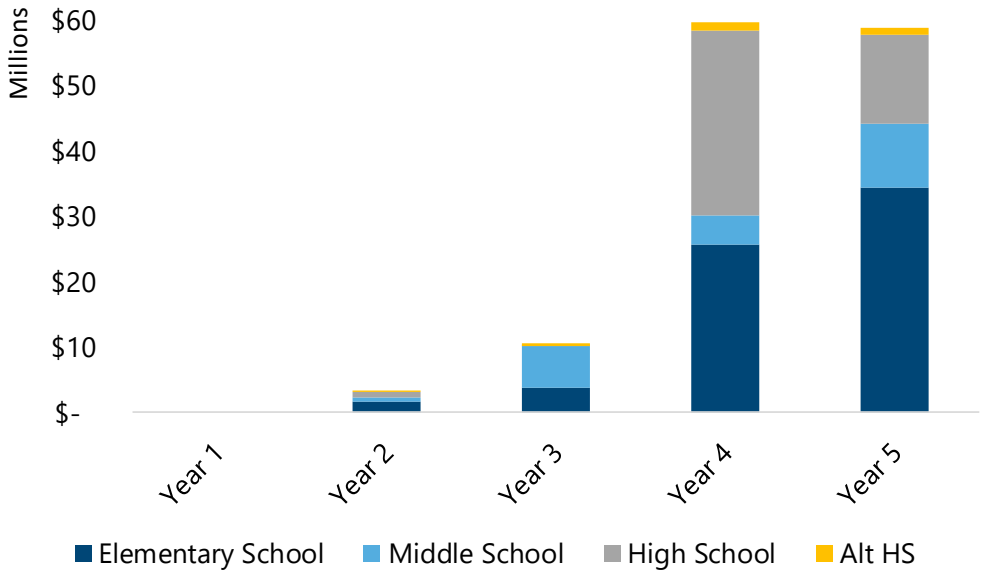


LIFE CYCLE RENEWAL FORECAST BY FACILITY TYPE

CHAPEL HILL-CARRBORO CITY SCHOOLS

The five-year forecast at CHCCS is over $132 million, with over $65 million in capital improvements identified at the elementary schools and another $42 million at the high schools (Figure 5-6). Years 4 and 5 total approximately $100 million; components in need of replacement include: fire suppression systems, ductwork, controls, and light fixtures.

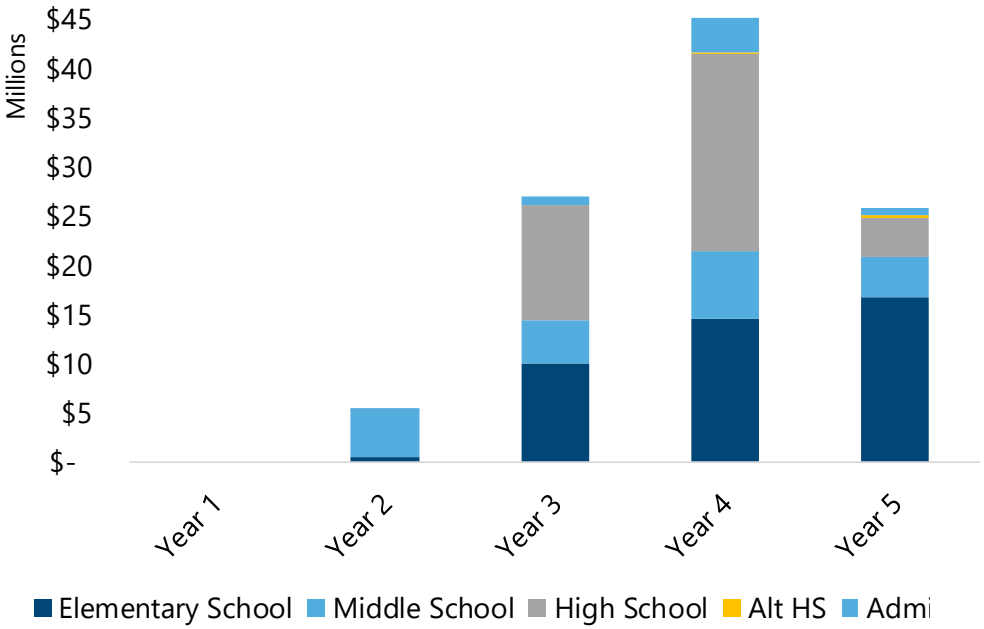
Figure 5-6: CHCCS Five-Year Forecast by Facility Type



ORANGE COUNTY SCHOOLS

The five-year forecast at OCS was identified as $100 million, with over 40 percent of the capital renewals occurring in Year 4 (Figure 5-7). Approximately $20 million of the renewals in Year 4 are associated with replacing roofs at Orange High and River Park Elementary.

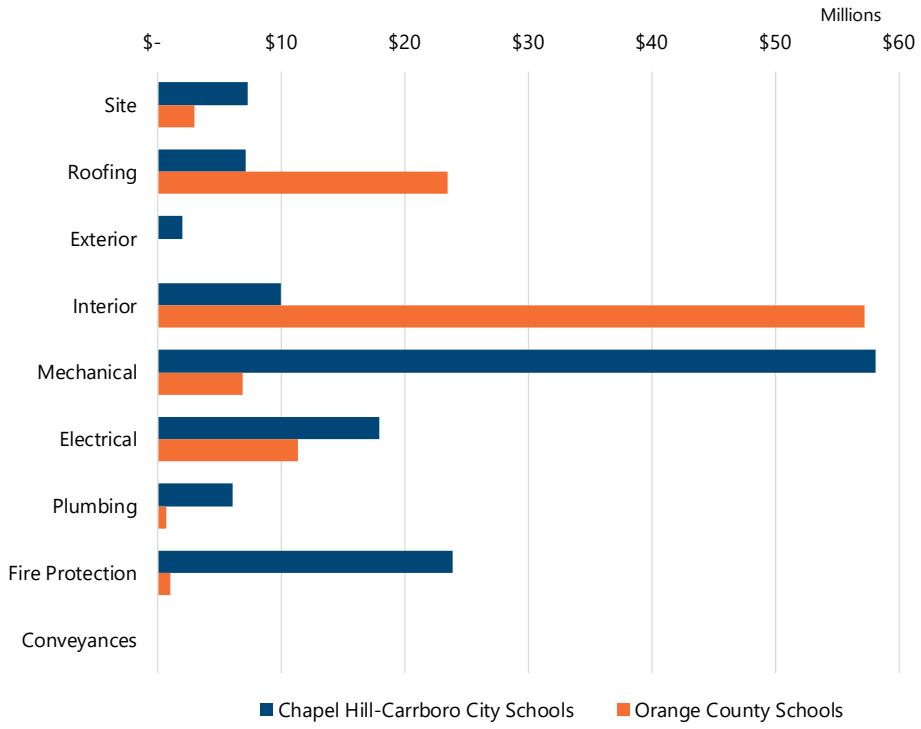
Figure 5-7: OCS Five-Year Forecast by Facility Type



LIFE CYCLE RENEWAL FORECAST BY BUILDING SYSTEM

Figure 5-8 illustrates the 10-year forecast by major building systems. The interior and mechanical systems each make up approximately 28 percent of the future need. Approximately $57 million in future need was identified at the interior finishes of OCS. Some of the larger interior expenditures are interior painting at Cedar Ridge High, Gravelly Middle, and New Hope Elementary. The majority of the mechanical systems, approximate $58 million, was identified at CHCCS. A large portion of these mechanical items are ductwork at East Chapel Hill High, Carrboro High, and Smith Middle.

Figure 5-8: CHCCS and OCS 10-Year Forecast by Major Building Systems



COMBINED FIVE YEAR NEED

For planning purposes, it is beneficial to consider both the current deficiency costs and the five-year life cycle renewal forecast. This provides an understanding of current and near-term facility needs.

The estimated five year need across the Orange County is $498.5 million. CHCCS comprises approximately $297.1 million and OCS $201.4 million. Over 50 percent of the combined five year need is related to mechanical building systems and over 45 percent associated with roofing.

East Chapel Hill High School and Orange High School have the largest need of $45.4 million and $35.7 million, respectively. It is important to note that these are two of the larger schools and it is anticipated that larger schools would have more need.

A cost per square foot analysis allows for a comparison across facilities of varying sizes. It is anticipated that Carrboro High School and Frank Porter Graham Elementary will have the largest cost per square foot at $222 and $213, respectively.

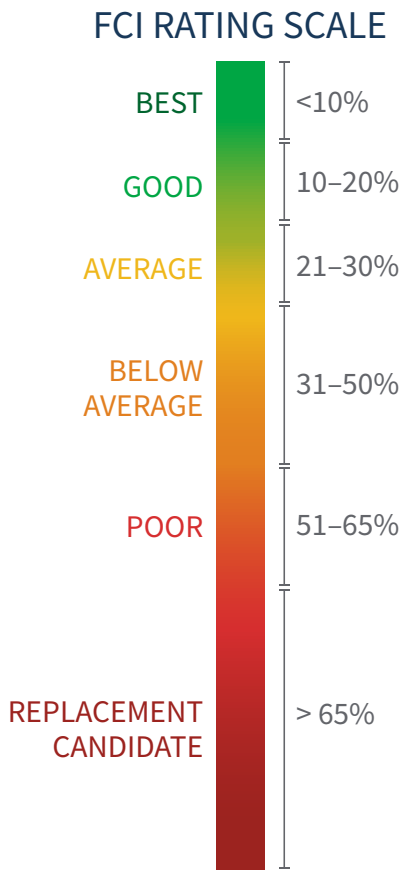
FACILITY CONDITION INDEX

The Facility Condition Index (FCI) is calculated by dividing the costs to repair a facility by the cost to replace it. FCI provides a way to understand the condition of the facility, rather than the total need of that facility, and provides a metric to compare dissimilar facilities across a portfolio. For example, high schools typically have more needs than elementary schools due to their size difference; however, the elementary school may be in worse overall condition.

The replacement value represents the estimated cost of replacing the current building in kind, based on today's estimated cost of construction. The higher the FCI, the worse condition of a facility (Figure 5-9).

Different organizations utilize varying scales to associate FCI to condition. Industry best practices generally suggest that facilities with FCIs greater than 65 percent may be more cost-effective to replace than to repair. By the time a facility reaches an FCI of 65 percent, it tends to be more financially prudent to replace with a new modern facility that is better suited for how education is provided today. It is important to note that the FCI at which a facility should be considered for replacement is often debated and modified based on the approach to facility management. FCI is not the only factor considered when determining the need for a facility's renovation, replacement, or closure. Historical significance, community sentiment, functional adequacy, and the availability of capital funding are also factors that are analyzed when making decisions.

Figure 5-9: FCI Rating Scale



FIVE-YEAR FCI

A five-year FCI was calculated by combining the current deficiencies and five-year needs to anticipate the overall condition of facilities. The five-year FCI provides a metric to better understand the condition of the facilities in the near term and allows the districts to plan not only for the current conditions, but for upcoming capital renewals.

The five-year FCI at both CHCCS and OCS (Figure 5-10 and Figure 5-11) indicates that most of the schools are in good to average condition. The one facility with a five-year FCI greater than 65 percent is the OCS Transportation facility; however, it should be noted that the facility has a large amount of asphalt paving that will require replacement in the next five years. This large expenditure causes the site to be in the replacement category.

Figure 5-11: CHCCS and OCS Five-Year Facility Condition Index

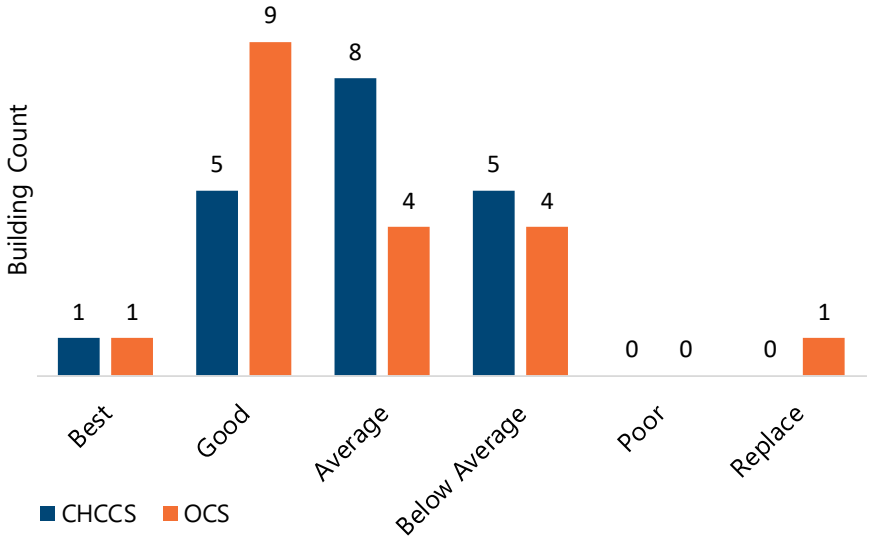


Figure 5-10: CHCCS and OCS Five-Year Facility Condition Index Ranges

5-YEAR FCI		CHCCS		OCS		Orange County	
		Campus	Area (SF)	Campus	Area (SF)	Campus	Area (SF)
Best	<10%	1	78,012	1	270,229	2	348,241
Good	11-20%	5	812,018	9	327,559	14	1,139,577
Average	21-30%	8	831,556	4	554,862	12	1,386,418
Below Average	31-50%	5	537,866	4	375,558	9	913,424
Poor	51-65%	0	-	0	-	0	-
Replace	>65%	0	-	1	12,704	1	12,704
	Total	**19**	**2,259,452**	**19**	**1,540,912**	**38**	**3,800,364**

Note: *McDougle Middle School area is included with McDougle Elementary School

TEN YEAR FCI

A ten-year FCI was calculated by combining the current deficiencies and ten-year needs to anticipate the overall condition of facilities in the long-term. The ten-year FCI shows how the facilities will continue to degrade in the future.

While in the next five years Orange County schools are in generally good to average condition, in ten years facilities are anticipated to be in below average to poor with some replacement candidates (Figures 5-12 and 5-13). This indicates that investment in the next five years is crucial to avoid deteriorating schools.

The following schools reach a ten-year FCI greater than 65 percent making them replacement candidates: at CHCCS, Estes Hills Elementary, Frank Porter Graham Elementary and Carrboro High; at OCS, New Hope Elementary.

Figure 5-13: CHCCS and OCS Ten-Year Facility Condition Index

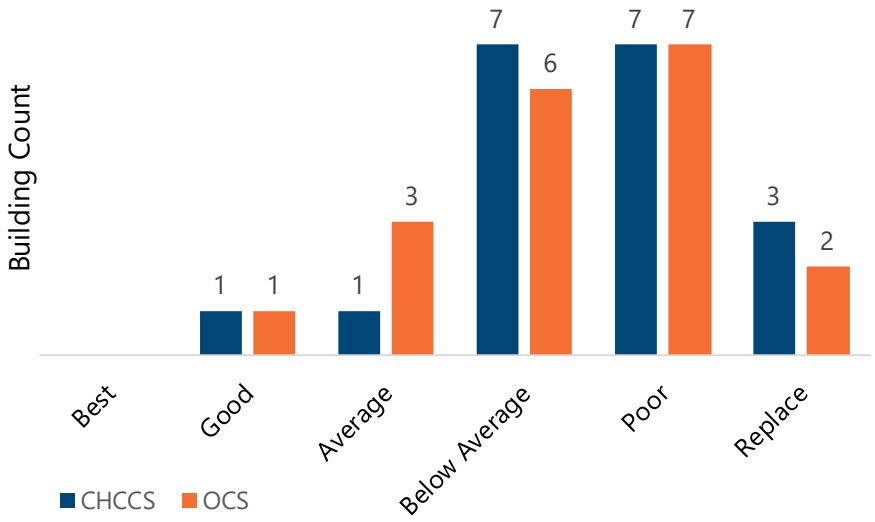


Figure 5-12: OCS and CHCCS Ten-Year Facility Condition Index Ranges

10-YEAR FCI		CHCCS		OCS		Orange County	
		Campus	Area (SF)	Campus	Area (SF)	Campus	Area (SF)
Best	<10%	0	-	0	-	0	-
Good	11-20%	1	320,328	1	270,229	2	590,557
Average	21-30%	1	109,100	3	34,879	4	143,979
Below Average	31-50%	7	914,638	6	413,898	13	1,328,536
Poor	51-65%	7	627,262	7	707,116	14	1,334,378
Replace	>65%	3	288,124	2	114,790	5	402,914
	Total	**19**	**2,259,452**	**19**	**1,540,912**	**38**	**3,800,364**

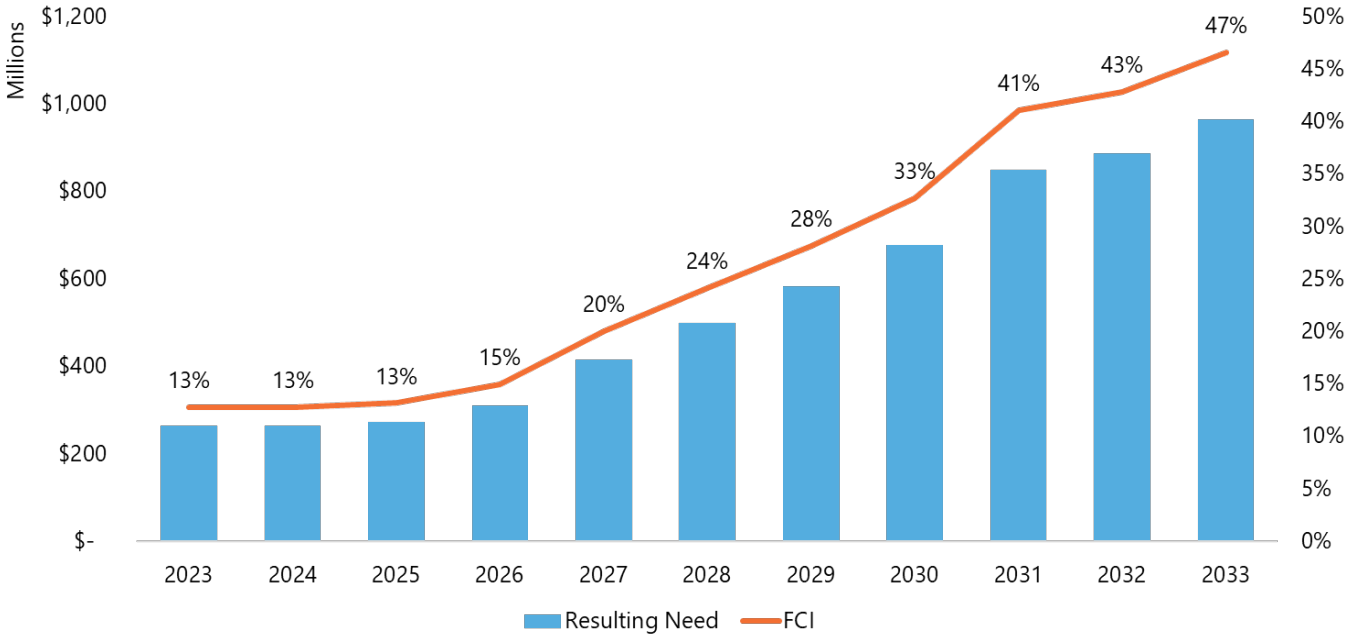
IN 10 YEARS, MOST SCHOOLS WILL MOVE TO BELOW AVERAGE, POOR, AND REPLACE CONDITIONS

Note: *McDougle Middle School area is included with McDougle Elementary School

INCREASE IN FCI OVER THE NEXT TEN YEARS

The average FCI across the Orange County school portfolio is currently 13 percent. Figure 5-14 shows the increase in FCI over the next ten years relative to the anticipated capital renewal costs. This chart assumes no capital investment in the facilities would result in an average FCI of 47 percent, which is below-average condition.

Figure 5-14: Increase In Fci Over the Next Ten Years Relative to the Anticipated Capital Renewal Costs



CURRENT DEFERRED MAINTENANCE PROJECTS

CHCCS and OCS are currently utilizing the FCA information to prioritize and begin work on projects using deferred maintenance funding that has already been allocated. CHCCS has obligated over $33 million of items identified in the FCA (Table 5-2). OCS has obligated $37.9 million in facility improvements (Table 5-3). The projects listed below are for fiscal year (FY) 24 and FY25. Note that the actual cost of construction projects may vary from the assessment cost estimates. Completing these projects in FY24 and FY25 allows the districts to save money by eliminating future escalation costs and utilizing the funds already available.

Table 5-2: CHCCS Deferred Maintenance Projects

Facility	Repair Project	Cost Estimate
Smith Middle	Roof	$8.8M
East Chapel Hill High	Roof	$17.2M
Rashkis Elementary	2 Boilers	$1.0M
Morris Grove Elementary	2 Boilers	$1.0M
Carrboro High	3 Boilers	$1.9M
East Chapel Hill High	1 Chiller	$0.8M
Morris Grove Elementary	1 Chiller	$0.9M
Chapel Hill High Gym	2 Boilers	$1.9M
Chapel Hill High Gym	2 Water Heaters	$0.1M
	Total	**$33.7M**

Table 5-3: OCS Deferred Maintenance Projects

Facility	Repair Project	Cost Estimate
Efland-Cheeks Elementary	HVAC Renovation	$2.8M
Orange High School	Restroom Renovation	$1.1M
Administration	1 Generator	$0.2M
Orange Middle	Lockers	$2.8M
Orange Middle	2 Chillers	$0.9M
Hillsborough Elementary	Gym HVAC	$0.7M
Pathways Elementary	1 Chiller	$0.9M
New Hope Elementary	HVAC Renovation	$0.8M
A.L. Stanback Middle	HVAC Renovation	$9.4M
Gravelly Hill Middle	Roof	$6.5M
New Hope Elementary	Roof	$0.1M
Hillsborough Elementary	Roof	$1.5M
Orange Middle	Paving	$3.4M
Orange High School	Paving	$6.7M
	Total	**$37.9M**

While currently in good to average condition, without significant investments, Orange County's educational facilities will degrade to below-average to poor condition in the next ten years

06

SUMMARY OF FINDINGS

Orange County embarked on assessment and master planning program for CHCCS and OCS. The assessment included the facility condition and educational adequacy of 39 educational and administrative facilities in CHCCS and OCS. The data collected during the assessments informs the final Long-Range Facilities Optimization Plan based on an objective, data-driven process. Combining assessment data with enrollment projections, capacity, school utilization, and district goals facilitates the development of an achievable optimization plan that serves all the students in Orange County.

CAPACITY ANALYSIS

The utilization of a school is determined by dividing the current enrollment by the calculated capacity of a facility. The utilization of individual schools varies across the districts and by school type.

The elementary schools across CHCCS portfolio have some surplus space; however, Glenwood Elementary and Seawell Elementary are both over utilized.

CHCCS middle schools and high schools are operating at or above capacity (Figure 6-1). The OCS elementary school utilization varies from 66 percent to 102 percent. Central Elementary and Pathways Elementary have some surplus space, with the remaining elementary schools at or near full capacity. All three OCS middle schools have surplus space and the high schools are nearing or above their capacity (Figure 6-2).

Figure 6-1: CHCCS Utilization

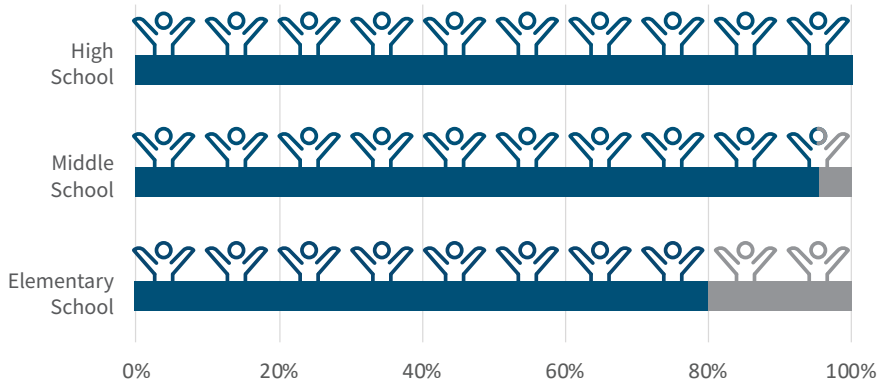
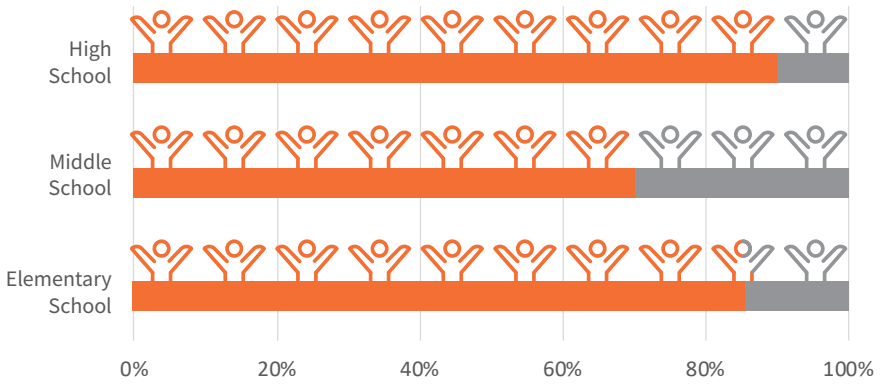


Figure 6-2: OCS Utilization



EDUCATIONAL ADEQUACY

In general, the space analysis indicates most schools have the space types required; however, many of the spaces are undersized. On average, 80 percent of the necessary space types were present across all traditional schools at both CHCCS and OCS. At CHCCS over 70 percent of the exceptional children's classrooms and over 50 percent of core classrooms are undersized based on today's standards. At OCS, approximately 70 percent of the exceptional children's classrooms, over 20 percent of the core classrooms at the elementary and middle schools, and over 50 percent at the high schools are undersized. These are understandable findings given the average age of the facilities.

FIVE-YEAR NEED

Over the next five years, identified deficiencies and life cycle renewal needs are expected to reach more than $498.5 million. Facility condition assessments revealed $262.9 million of facility deficiency costs. East Chapel Hill High School and A.L. Stanback Middle had the largest current deficiency at CHCCS and OCS, respectively. Considering CHCCS and OCS average campus age is 46 years, many of the building systems are nearing or have exceeded the end of their useful lives.

The largest need at CHCCS are roofs, totaling over $69 million, with a significant portion of that need being at East Chapel Hill High, Carrboro High, McDougle Middle/Elementary, and Culbreth Middle. CHCCS mechanical systems are estimated to need over $52 million in current replacements. Examples of these replacements include ductwork, controls, and air handlers.

The largest need at OCS are electrical systems, totaling over $29 million. A significant portion of these replacements are fire alarm systems and/or PA communications systems at A.L. Stanback, Gravelly Hill Middle, Pathways Elementary, Grad A. Brown Elementary, and River Park Elementary. Another $23 million in need comes from interior finishes, over half of being floor finishes. A significant portion of the interior finishes identified are at Orange Middle, Orange High, and Cedar Ridge High.

The projected five-year life cycle renewal needs are estimated to be $235.7 million. Nearly half of the five year need is expected to occur in Year 4, with approximately a third of the investment being for roof replacements. A large portion of the Year 5 capital renewals are anticipated to be wet fire suppression systems, ductwork, and interior finishes. Most of these costs will be incurred four and five years out.

FACILITY CONDITION INDEX

The Facility Condition Index (FCI) is an industry recognized formula that provides a way to understand the condition of the facility rather than the total need of that facility. The FCI provides a metric to compare dissimilar facilities across a portfolio. A five-year FCI was calculated by combining the current deficiencies and five-year needs to anticipate the overall condition of facilities. The five-year FCI at both CHCCS and OCS indicates that most of the schools are in good to average condition.

A ten-year FCI was calculated by combining the current deficiencies and ten-year needs to anticipate the overall condition of facilities in the long-term. The ten-year FCI shows how the facilities will continue to degrade in the future; while in the next five years schools are in generally good to average condition, in ten years facilities are anticipated to be in below-average to poor with some replacement candidates. Estes Hills Elementary, Frank Porter Graham Elementary, and Carrboro High in CHCCS, and New Hope Elementary in OCS reach a ten-year FCI greater than 65 percent, making them replacement candidates. This indicates that investment in the next five years is crucial to avoiding deteriorating schools.

CONCLUSIONS

Facility condition assessments and master planning is important for school districts to effectively prioritize capital improvement projects to maximize the return on investment and the student environment over the long-term. Combining assessment data with enrollment projections, capacity, school utilization, and district goals facilities the development of an achievable optimization plan. The comprehensive assessment identified:

- Surplus space at the CHCCS elementary schools and OCS middle schools
- Maximized capacity at CHCCS and OCS high schools
- Undersized educational spaces at both CHCCS and OCS
- Good/average condition facilities in the next five years; however, in ten years the facilities degrade to below-average to poor condition

The assessment findings reflect the average age of the portfolio and level of past investment in facilities. Increases in facility investment are necessary to avoid failing building systems and components that could impact the ability of schools to remain functional. Additionally, older schools have smaller, less educationally adequate facilities and require strategic and significant renovations to bring these spaces into modern learning environments.

APPENDIX A - CHCCS FACILITIES

Site	Year Open	Building Area	Total Deficiencies	Five-Year Life Cycle	Five-Year FCI	Capacity	Enrollment	Utilization
Carrboro Elementary	1957	78,012	$857,519	$2,793,303	9%	543	494	91%
Carrboro High	2007	152,823	$10,678,235	$23,305,014	39%	851	840	99%
Chapel Hill High	1960	320,328	$17,348,407	$3,324,565	11%	1,535	1,523	99%
Culbreth Middle	1969	115,462	$13,079,717	$5,987,311	30%	775	684	88%
East Chapel Hill High	1996	279,992	$29,581,841	$15,794,846	28%	1,275	1,477	116%
Ephesus Elementary	1972	73,952	$4,808,735	$6,343,476	29%	578	340	59%
Estes Hill Elementary	1940	63,001	$3,599,835	$8,390,687	37%	528	350	66%
Frank Porter Graham Elementary	1960	72,300	$9,325,749	$6,095,207	41%	589	525	89%
Glenwood Elementary	1971	67,300	$1,512,662	$5,095,627	19%	407	421	104%
Lincoln Center	1950	53,669	$5,874,585	$2,072,069	29%	589	460	78%
McDougle Middle/Elementary	1994	249,092	$16,701,721	$6,596,115	17%	707	699	99%
Morris Grove Elementary	2008	90,221	$6,774,515	$5,252,545	26%	547	460	84%
Northside Elementary	2013	109,100	$756,848	$5,323,956	11%	583	389	67%
Phillips Middle	1962	109,498	$12,288,425	$3,104,327	26%	702	668	95%
Phoenix Academy	1950	15,182	$1,583,627	$604,968	25%	83	22	27%
Rashkis Elementary	2003	115,562	$8,085,703	$12,428,978	34%	532	413	78%
Scroggs Elementary	1999	93,580	$7,065,097	$4,366,325	23%	521	390	75%
Seawell Elementary	1940	66,198	$1,853,664	$3,017,175	14%	378	506	134%
Smith Middle	2001	134,180	$13,140,053	$12,317,101	34%	679	709	104%
		2,259,452	**$164,916,937**	**$132,213,594**	**14%**	**12,402**	**11,370**	**92%**

APPENDIX B - OCS FACILITIES

Site	Year Open	Building Area	Total Deficiencies	Five-Year Life Cycle	Five Year FCI	Capacity	Enrollment	Utilization
A.L. Stanback Middle 304	1995	136,758	$24,281,439	$3,577,631	37%	813	642	79%
Administrative Annex	1971	12,000	$339,059	$301,430	10%	-	-	-
Administrative Annex II	1990	1,575	$62,858	$33,016	12%	-	-	-
Cedar Ridge High School 310	2002	270,229	$3,585,557	$8,579,190	8%	1,328	1,108	83%
Central Elementary 312	1952	61,502	$8,567,726	$2,578,745	35%	447	295	66%
Central Office	1971	6,210	$341,660	$237,588	18%			
Efland Cheeks Elementary 324	1952	65,084	$2,508,158	$3,296,445	17%	538	551	102%
Grady A. Brown Elementary 328	1974	78,016	$4,019,807	$2,721,019	17%	486	410	84%
Gravelly Hill Middle 327	2006	122,793	$10,526,084	$7,437,514	27%	663	428	65%
Hillsborough Elementary 329	1952	65,332	$2,244,751	$7,332,507	28%	524	430	82%
Maintenance Department	1940	16,279	$1,218,929	$312,548	18%	-	-	-
New Hope Elementary 330	1991	102,086	$5,214,000	$11,833,159	32%	562	549	98%
Orange High School 332	1962	236,337	$8,471,518	$27,236,110	27%	1,310	1,340	102%
Orange Middle 316	1968	130,400	$12,455,108	$8,979,967	30%	791	525	66%
Partnership Academy Alternative School	2007	6,600	$138,347	$464,441	16%	116	34	29%
Pathways Elementary 336	2000	85,282	$2,894,308	$5,641,297	19%	534	359	67%
River Park Elementary 308	1956	75,212	$6,140,395	$8,566,032	38%	580	557	96%
Transportation Department	1971	12,704	$4,498,115	$764,967	81%	-	-	-
Welcome Center	2006	56,513	$433,377	$3,581,205	14%	-	-	-
		1,540,912	**$97,941,196**	**$103,474,810**	**14%**	**8,691**	**7,228**	**83%**

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