

# **Citizen's Capital Budget Advisory Committee Charlotte Mecklenburg Schools Capital Standards**

## **Approach**

The CCBAC met with Charlotte Mecklenburg Schools ("CMS") management and obtained a summary of its current approach, examined the existing CCBAC standards for CMS and researched best practices. We then developed high level standards that tilt towards cost effective, implementable solutions. Finally, we shared our proposed standards with CMS and confirmed the feasibility of our suggested approach.

## **Constraints**

The CCBAC recognizes that CMS faces significant challenges in applying capital standards uniformly across its numerous facilities, especially with limited dollars available. For example, CMS' grapples with severe space constraints in some areas, and faces daunting renovation needs in others. The County's growth patterns are uneven and land acquisition remains an important, but expensive component of CMS' capital program.

## **Standards**

### Safety

Projects which are required to ensure a safe learning environment, as well as those that alleviate a condition which noticeably diminishes the quality of education should be given funding priority.

### New Construction

*The CCBAC recommends that CMS continue to utilize valuable demographic sources such as the US Census, anticipated Real Estate Development/Housing Starts and Transportation Area Zones to forecast salient demand characteristics for each school zone.*

1. For each proposed new learning environment, an occupancy forecast plan should be created and submitted to the BOCC stating the expected occupancy of the new facility for its first 10 years. This forecast should be evaluated versus actual occupancy on an annual basis if the new learning environment is constructed.
2. The forecasted occupancy of the new facility should have a goal of exceeding 75% occupancy within the first five years. This will provide CMS with the flexibility to phase in new facilities, while ensuring new capacity is targeted towards high growth areas or to relieve appropriately over-crowding situations.
3. CMS shall calculate each proposed learning environment's capacity utilization as directed by the Charlotte-Mecklenburg Board of Education ("CMBE"), as well as

using the Net Area Model, Number of Classrooms Model, and Basic School Utilization Rate, all of which exclude special education spaces.

a. Net Area Model =  $\frac{\text{Net Sq Ft of Instructional Space}}{\text{Pupils Enrolled}}$   
 Net Sq Ft of Instructional Space excludes common areas such as libraries

b. # of Classrooms Model = (Max Pupils Per Classroom) \* (# of Classrooms)  
 CMS should use state or BOCC mandated Max Pupils Per Classroom. If those mandates are absent, the CCBAC recommends a maximum of 30 pupils per classroom, recognizing that it would be optimal to have fewer than 30 students per class for elementary and pre-K – 8 schools. This measure should be utilized in tandem with CMS’ optimal enrollment per facility type, which the CCBAC understands is 800 students for elementary schools, 900-1,000 students for pre-K through 8<sup>th</sup> grade, 1,200 students for middle school and 2,000 for high school.

c. Basic School Utilization Rate =  $\frac{\text{Projected Pupils Enrolled}}{\text{Facility’s Enrollment Capacity}}$

4. CMS should ensure that its new home school learning environments are located within a reasonable distance of its expected attendance population. A map detailing the expected service area of the new facility should be provided with the project package. New learning environments, excluding magnet or special purpose schools, should serve an area no larger than the requirements listed in the table below:

Home School Type	Point to Point Miles
Elementary School	5
Middle School	6
Pre-K-8	6
High School	10

When this requirement will not be met, an explanation should accompany the project package detailing why.

**Portable Classrooms**

*Due to explosive yet uneven growth over the years coupled with funding challenges, CMS continues to experience shortfalls in classroom space for its existing enrollment of students. The school system continues to rely on portable classrooms to address this situation. Multiple parties, including CMS, have agreed that this is a stop-gap solution. Therefore, the CCBAC recommends the following:*

1. CMS should provide the CCBAC with a copy of its annual capacity utilization report which includes its mobile inventory report that it gives to the County when published.

2. CMS should develop and apply system-wide a portable classroom criteria. These criteria should encompass rigorous standards over portable classrooms' air, light and sound qualities to ensure students have a comfortable learning environment that meets all federal, state and local health requirements. Particular attention should be directed to ensure all portable classrooms have adequate outside air ventilation, no formaldehyde, mold, moisture or noise issues, are well-lit, etc. (An example is attached, Table 2-1)

### **Improvements/Renovations**

Improvement capital projects should be considered appropriate when they can satisfy **ONE** of the following requirements:

1. *Lower lifecycle costs*  
These projects should be able to demonstrate a cost savings via reduction in operating budget. Payback periods should be forecast to be less than 10 years.
2. *Increase safety of students and/or educators*  
Students and educators' safety is paramount. A project that can significantly reduce or eliminate a safety risk should be considered appropriate. Please include appropriate metrics and forecast improvement with project submissions.
3. *Comply with legal regulations*  
Legal regulations must be followed. Capital projects to bring CMS facilities into compliance with local, state or federal laws shall be appropriate.
4. Renovate an existing structure in lieu of building a new one  
In this case, a repair vs replace analysis, as detailed below, should be included with the project submission.

Limited capital dollars require repair vs. replace analysis for existing facilities that are nearing the end of their useful life. The CCBAC believes that it and other government entities should have insight into the repair/replace decision and why/how it was made.

To estimate the utility of repairing vs. replacing existing facilities and facilitate the capital allocation decision process, the CCBAC recommends that CMS prepare and present to the County along with its capital allocation request, a high level comparative repair vs. replace cost analysis that takes into considerations not only capital costs, but ongoing operational costs and intrinsic public value. The analysis should be in the relative style of the North Carolina State Construction Office Life Cycle Cost Analysis model, but using Rough Order of Magnitude estimates rather than selecting and designing specific build systems and adding in value for public opinion, historical value, and any other pertinent parameters.

In addition, the CCBAC recommends that CMS calculate and present to the County along with its capital allocation request, the following:

1. Capex Per Pupil = Total Capex Required Per Facility

Anticipated or Actual Pupils Enrolled

2. Capex Per Square Foot =  $\frac{\text{Total Capex Required Per Facility}}{\text{Gross Square Foot of Facility}}$
3. Facility Condition Index =  $\frac{\text{Capex including Deferred Maintenance}}{\text{Facility's Estimated Replacement Cost}}$

## Attachment: Portable Classroom Checklist

Table 2-1- Selected Guidelines and Standards Relevant to School Environments

PARAMETER	STANDARD, CODE or GUIDELINE	SOURCE
<b>Ventilation</b>	<p><b>Mechanical: outside air ventilation rate:</b> 15 cubic feet per minute (CFM) per person or 0.15 CFM per ft<sup>2</sup>, whichever is greater. <b>Natural ventilation:</b> allowed when openable window area is 5% or more of floor area, space is within 20 ft., and airflow is unobstructed.</p> <p><b>Demand control ventilation (optional):</b> CO<sub>2</sub> below 1000 ppm, or CO<sub>2</sub> [outside] + 600 ppm</p> <p><b>Thermal comfort (guideline):</b> Temperature and relative humidity</p> <p><b>Operation &amp; maintenance:</b> continuous operation of ventilation system to provide minimum amount of outdoor air when occupied; annual inspection and written log</p>	<p>CCR Title 24, §121(b)</p> <p>CCR Title 24, §121(c)4</p> <p>ASHRAE 55-1992</p> <p>CCR Title 8, §5142</p>
<b>Noise</b>	<p><b>Classroom standard</b> (unoccupied): 35 dBA (decibels) <b>Classroom guideline:</b> 45 dBA, <b>WHO guidelines:</b> Classroom: 35 dBA Indoor community: 45 dBA Playground guideline: 55 dBA <b>CHPS classroom guideline:</b> 45 dBA and 0.6 s reverberation time (Max) <b>Outdoor community standard:</b> 55 dBA</p>	<p>ANSI (2002) Crandell (1992) WHO (1999) CHPS (2003) City of Los Angeles, others</p>
<b>Lighting</b>	<p><b>Large print/high contrast:</b> 30 foot-candles <b>Small print/high contrast or large/low contrast:</b> 50 foot-candles</p>	<p>IESNA (2000)</p>
<b>Formaldehyde</b>	<p><b>Acute REL:</b> 76 ppb (1-hr average)</p> <p><b>Interim REL:</b> 27 ppb (8-hr average)</p> <p><b>Chronic REL:</b> 2.4 ppb (long-term average) REL= Reference Exposure Limit ppb=part per billion</p>	<p>OEHHA (1992)</p> <p>Broadwin (2000)</p> <p>OEHHA (2001)</p>
<b>Lead dust</b>	<p><b>Federal standards:</b> 40 micrograms of lead per square foot (µg/ft<sup>2</sup>) on bare floor or carpet; 250 µg/ft<sup>2</sup> for interior window sills.</p>	<p>U.S. EPA (2001a)</p>
<b>Asbestos</b>	<p><b>AHERA-Asbestos Hazard Emergency Response Act Cal/OSHA PEL:</b> 0.1 fiber per cc of air</p>	<p>U.S. EPA (1987) CCR Title 8, §5208(c)</p>
<b>Radon</b>	<p><b>Voluntary Action Level:</b> 4 picoCurie (pCi) per liter of air</p>	<p>U.S. EPA (1993)</p>
<b>Mold</b>	<p><b>Workplace</b> prevention and clean-up required in California (includes schools)</p> <p><b>Voluntary guidance</b> for assessment and</p>	<p>CCR Title 8, §3362</p> <p>U.S. EPA (2001b)</p>

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