

Wake County Public School System and Wake County Government

Citizens' Facilities Advisory Committee

**Initial Report on Wake County Public Schools Building
Program**

**Presented to the
Wake County
Board of Commissioners and Board of Education**

_____, 2007

Citizens' Facilities Advisory Committee

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Citizens' Facilities Advisory Committee

EXECUTIVE SUMMARY

[SECTION UNDER DEVELOPMENT]

Introduction

KEY RECOMMENDATIONS

NEXT STEPS

CONCLUSION

Citizens' Facilities Advisory Committee

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MONTH 2007

THE CITIZENS FACILITIES ADVISORY COMMITTEE: MISSION AND PROCESS

The Wake County Board of Commissioners and Board of Education established the Citizens' Facilities Advisory Committee (the "CFAC") through Board action on _____, 2006 and _____, 2006, respectively. The Boards stated that _____ Because of the County's economic success, the Board agreed that "continued infrastructure investment will be critical to maintaining a world-class quality of life," and that "failure to invest is not an option, as it will have a depressing effect on our economic competitiveness. The key to future economic success requires a community-wide commitment to making the investments necessary to sustain our position as one of the best markets in the world."

Based on these conditions, the Boards _____.

COMMITTEE CHARGE

The CFAC was established to do the following:

1. Evaluate Wake County Pubic School System (WCPSS) capital improvement program;
2. Evaluate WCPSS school design criteria and construction management and/or delivery methods;
3. Communicate its findings to the boards and the public.
4. Review Wake County projections for enrollment growth and demographic changes impacting WCPSS;
5. Review data on WCPSS school construction costs and life-cycle costs as compared with those of benchmark districts;
6. Evaluate opportunities to reduce cost of new school construction;
7. Evaluate practices and procedures for development of projects at existing school buildings;
8. Compare WCPSS school space planning parameters with those of benchmark districts;
9. Review proposed capital improvement program and the assumptions upon which it is based;
10. Evaluate applicability and feasibility of alternate forms of school building construction and/or project delivery;
11. Provide reports at least quarterly to both boards and the public;
12. Examine or review other issues as requested by the boards and staffs

COMMITTEE MEMBERSHIP AND COMPOSITION

The committee is composed of 13 business and community leaders having knowledge and understanding of school capital with experience in corporate leadership, architecture and engineering, financial management and/or public administration.

Citizens' Facilities Advisory Committee

John Mabe, Co-Chair
Billie Redmond, Co-Chair

Fred Aikens
Sepideh Asefnia
Glenn Blackley
Justus Everette
Roddy Jones
Russell Killen

Jim Smith
Jimmy Smith
Terry Stoops
Eddie Truelove
Rob Weaver

Wake County Board of Education

Rosa Gill, Chair
Beverly Clark, Vice-Chair
Eleanor Goette
Patti Head
Ron Margiotta
Lori Millberg
Carol Parker
Susan Parry
Horace Tart

Wake County Board of Commissioners

Tony Gurley, Chair
Paul Coble, Vice Chair
Joe Bryan
Lindy Brown
Kenn Gardner
Betty Lou Ward
Harold Webb

PROCESS

The committee began its work on July 26, 2006. In order to make informed decisions about funding strategies, the committee needed to understand and assess the planning already underway for major infrastructure needs. To that end, subject matter experts provided comprehensive presentations on the following topics:

- **[Insert listing of major topics covered]**
-

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CITIZENS' FACILITY ADVISORY COMMITTEE – WORK PLAN

Meeting Date	Topic(s)
July 26, 2006	<ul style="list-style-type: none"> ▪ First Meeting ▪ Introductions, Overview of Wake County and Wake County Public Schools Capital Plans
August 23, 2006	<ul style="list-style-type: none"> ▪ Committee Work Plan Development ▪ School District Comparisons: Project Scope and Cost Comparison Template ▪ Overview of WCPSS Building Program ▪ Tour – Barwell Road Elementary
September 24, 2006	<ul style="list-style-type: none"> ▪ WCPSS Capital Program Planning Assumptions ▪ Tour – Panther Creek High School
October 24, 2006	<ul style="list-style-type: none"> ▪ School Design Process ▪ School District Comparisons: Status Report ▪ Tour – Lacy Elementary
November 28, 2006	<ul style="list-style-type: none"> ▪ School Construction Process ▪ Tour – Salem Middle School
December 18, 2006	<ul style="list-style-type: none"> ▪ Public Private Partnerships ▪ Municipal Partnerships
January 31, 2007	<ul style="list-style-type: none"> ▪ School District Comparisons: Report Presentation
	COMMUNITY INPUT SESSION
February 27, 2007	<ul style="list-style-type: none"> ▪ School District Comparisons: Report Discussion
March 27, 2007	<ul style="list-style-type: none"> ▪ School District Comparisons: Report Follow-up ▪ Subcommittee Work
April 23, 2007	Subcommittee Work
May 23, 2007	Subcommittee Work
June 26, 2007	Subcommittees Report Preliminary Recommendations
July 24, 2007	Discussion of Subcommittee Preliminary Recommendations
August 28, 2007	Finalize Recommendations and Report
September __, 2007	Present Findings and Recommendations to Wake County Board of Commissioner and Board of Education

Citizens' Facilities Advisory Committee

To delve more deeply into these areas and begin formulating recommendations, the committee divided into the following three subcommittees:

- Planning and Site Selection
- Program and Design
- Project Delivery: Contracting and Construction Administration

The Subcommittees met with subject matter experts and key staff to develop a base understanding of the WCPSS building program before formulating recommendations and reporting those out to the full committee. Those recommendations are outlined more fully in this report, but central recommendations that can be drawn from the Subcommittee reports are:

[Discuss how subcommittee's work was framed: Subcommittees were asked to either:

- Affirm current school construction processes
- Identify areas of further study
- Identify recommendations]

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WAKE COUNTY OVERVIEW

[Section Under Development]

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**WCPSS BUILDING PLAN OVERVIEW, SUBCOMMITTEE REPORTS
AND RECOMMENDATIONS**

WCPSS BUILDING PLAN OVERVIEW

[Section Under Development]

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PLANNING AND SITE SELECTION

BACKGROUND

[Need general information about areas of study of committee, approach, information used and analyzed, etc. Include relevant data, charts and graphs from presentations provided to the committee]

AREAS OF STUDY

LONG RANGE PLANNING

PLANNING HORIZON

Findings

WCPSS engages in long Range planning with the assistance of:

- In-house expertise in planning
- NCSU expertise in computer-assisted population growth projections,
- Wake County population projections, and
- Periodically contracted services of consultants in population and demographics

One area of inquiry visited by the CFAC is whether the district adequately projects needs. Projections for needs in the current 2007-2009 capital improvements program were first assessed in _____ and projected a student population of _____, and projected a growth rate of _____. These projections have periodically been updated, such that the committee found that the population projections have generally been more accurate than the availability of funds to meet the projected needs. In other words, there is no evidence that the school district has caused the county to incur added expense through inaccurate growth projections.

The District currently projects that the greatest demand for new facilities will arise in a tier running generally north and south along the eastern border of the county, in the region opened by the I-540 corridor, and east to west from Garner to Morrisville. Parcel identification and land acquisition is underway in targeted watershed zones with radii of 2.5 miles, centered on population growth zones identified by the NCSU lab.

Nevertheless, as the pace of growth in the county accelerates, the FAC expects that certain characteristics of the districts' facilities will change.

- The district will become more urban, resulting in the need to plan for potential infill population near the urban centers of the county, especially inside the I-440 beltline;
- Land parcels meeting the current size models will become ever rarer, resulting in escalating land costs.

Recommendation

Increase the time horizon and further consideration of the present planning process to assure that future urbanization of the district is accounted for in planning.

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BUS TRANSIT CENTERS

Findings

Parking buses on school property costs more than central transit centers. Transit centers enable the district to store and service buses more efficiently, in addition to providing less expensive land.

Recommendation

Use bus transit centers to reduce school-site storage costs and to provide more efficient service of buses.

LAND BANKING

Findings

It is apparent from all information available, that land prices in Wake County are escalating faster than construction costs. Not only is land becoming more expensive, but it is becoming ever more difficult to identify and acquire sites that are large enough to accommodate a typical school footprint, including not only athletic fields and parking, but open space, buffers, and other unusable acreage. The district needs funds to "bank" land for future school sites in areas that are projected to grow in years beyond the current building phase.

Recommendation

Bank land for future growth in years beyond the current building phase.

URBANIZATION OF THE COUNTY

Findings

Urban sites will not accommodate the sorts of open spaces that the typical current school design requires. The district will need more urban sites in and near population centers as land use policies favoring denser population growth are devised and take effect. The district should plan for urban schools with compact footprints and seek to preserve suitable locations for such schools in and near population centers.

Recommendation

WCPSS should plan urban school designs and seek to preserve suitable locations for them in and near future high-density population centers.

SITE SELECTION & ACQUISITION

JOINT USE OF SITES

Findings

[To be provided]

Recommendations

In order to achieve the maximum value to the community for the investment in the WCPSS facilities, it is recommended that sites be reviewed for joint use and joint funding during construction. We think that it is imperative to include joint use of facilities with many groups including municipalities, non-profits (YMCA), and other private entities.

- The joint use of new facilities in cooperation with municipalities is limited to specific town budgets and local citizenry needs. The planning of future facility dollars in the municipal budget process must be encouraged throughout all of the municipalities in Wake County. Raleigh and

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Cary provide for this in their budgetary process; however, other smaller communities have more pressing constituent needs and less aggregate budget dollars available for future planned facility funds. Given the anticipated billion-dollar construction budget of the WCPSS, the opportunity now exists for local governments to realize joint use benefits of WCPSS facilities.

- The potential could exist for Wake County to fund portions of the local participation through the use of a revolving credit program with the smaller municipalities. In essence, the county could loan funds at some level to the smaller towns. As the loans are repaid, the amounts would be available for other future joint use facilities. This concept is used to fund local clean water improvements within the state.
- Non-profits should be encouraged to participate in the joint use of WCPSS facilities. Currently the YMCA leases facilities at numerous sites to fulfill programmatic needs. This concept may be broadened in scope in concept to entities having both existing program structure and facility needs.
- The potential may exist in some form or fashion to address the health care needs of the children through joint use efforts with the local hospital communities (Wake Med, Duke and UNC) on student health care issues. Joint use of WCPSS facilities may provide a vehicle to address the issues of childhood and adolescent obesity.

APPRAISALS OF PROPERTY TO BE ACQUIRED

Findings

[To be provided]

Recommendations

As good stewards of the public trust, real estate acquisitions should be appraised for value. Given the scarcity of good large school sites going forward, the potential costs for such sites is certain to escalate with the current land value trends in Wake County. Land banking of future sites is a very real need of the WCPSS to provide for the realized and anticipated growth in the county population. This will give rise to higher cost per acre in site acquisition. This will indeed require larger aggregate dollars to be invested in each future site.

Area for Further Study - Use of RESS Teams

Determine if the existing site selection process, using RESS Teams, is the most effective way to acquire sites. The RESS process is soon to be reviewed internally after the first round. The review process needs to engage the teams and their performance, the values and fees paid, as well as feedback from the sellers on the acquisition process and what can be improved.

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SITE PROGRAMMING

PLAN FOR FUTURE EXPANSIONS

Findings

[To be provided]

Recommendations

If there is “surplus” area at a new site, plan the school building and site for future expansion. Each prototype building design should include the capability to increase capacity.

MAXIMIZE THE USE OF NEW SITES

Findings

[To be provided]

Recommendations

If there is “surplus” area at a new site, plan the school building and site for additional capacity. Each prototype building design should include the capability to increase capacity.

Areas for Further Study - Feasibility of Smaller Schools

Determine if the use of smaller schools (that would permit smaller sites, increasing the number of “available” sites) is feasible. Models for smaller school sites need to be available. As the county becomes more urban in complexion, the need for schools interior to the beltline will evolve. Currently, existing schools located inter city are being rebuilt and refurbished. Future planning for smaller sites may be necessary as student population densities increase beyond renewed school capacities. Land banking opportunities may give the need to consider smaller model schools solely to realize site availability opportunities. This need will be reviewed in the context of students needs, operational cost models for the size of school, and diversity issues. This trend may be beginning given the number of multistory condominium and townhouse buildings planned and under construction in the downtown area.

MAXIMIZE THE USE OF RENOVATION AND RECONSTRUCTION SITES.

Findings

[To be provided]

Recommendations

If there is “surplus” area at an existing site, plan the renovation (or reconstruction) of the existing school for additional capacity.

SITE PLANNING

PEER REVIEW COMMITTEE

Findings

[To be provided]

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Recommendations

Establishing a Peer Review Committee to review all school sites plans. The makeup and tasks of the committee will be as follows:

- a. The committee membership will consist of no less than one (1) Architect and one (1) Civil Engineer whose businesses are located in Wake County.
- b. The WCPSS staff will select members.
- c. Members cannot presently be doing work (or being considered to do work in the immediate future) for the WCPSS.
- d. Members cannot serve more than two (2) consecutive years on the committee.

The committee will review all site plans at the schematic design phase and submit a summary report of their findings to the WCPSS staff.

COMPREHENSIVE SITE COST VALUE ENGINEERING

Findings

Review of the site design process early in the process can lead to large savings in the per school cost. Wake County is a large and diverse county both topographically and geologically. The WCPSS site cost can vary largely based merely on the location of the site within the county, the topography of the site, and the geology of the site. Many times changing plans and designs is not an option late in the process, as schedule issues related to facility delivery becomes the critical driving force. The private contractor market can be of benefit to the WCPSS in reviewing the site plans at an early level.

Recommendations

Establish a comprehensive site cost value engineering process incorporating review by site contractors. The list of site contractors to be retained will be limited to those that have previously been awarded work on WCPSS projects.

- We recommend private contractors familiar with Wake County soils and geology review the early site plans. We recommend the contractors be companies familiar to the WCPSS and have a satisfactory record of performance.
- This review would encompass the site development issues as it relates to onsite balance of cuts and fills and other site-specific concerns. Given the large size of the sites required and the general requirements of areas of uniform elevation for buildings and tiered parking lots, balanced earthwork on sites can be obtained and result in project savings. Computer design makes the once laborious task now very efficient.
- The potential changes for site conditions related to rock excavation and unsuitable soil removal can be best addressed early in the process. Given the broad location of the sites across the county, contractors can reasonably assess these various risks site by site based on familiarity of local site conditions.
- Utility system needs reviews for constructability and local code compliance. While generally the same across Wake County, each municipality has certain system requirements that are specific to each system operator.
- Numerous options now exist to comply with storm water management systems for both detention and nitrogen removal. Consideration should be given to review of proposed system requirements and economic alternatives
- The design of the site should be reviewed for options related to the structural use of pavements and how best to achieve necessary life cycle requirements given site specific issues and remedies.
- The potential for material reuse and reprocessing in the site development process can result in savings to the project. On site rock crushing, soil stabilization, soil bending, asphalt millings, and

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recycled concrete are materials now available as economic options to historic designs. Each may have a use on a site by site basis

- Experienced contractors can help the WCPSS assess site related construction timing risks. Some sites require great expense to work through winter as example.

PARKING

Findings

[To be provided]

How much additional parking is required for football stadiums?

Can the number of required parking spaces be reduced at high schools?

Recommendations

Reduce the number of parking spaces at all school sites. This action should reduce land costs and site construction costs (including but not limited to paving, landscaping, site lighting, storm sewer, and storm retention).

The number of parking spaces should be reduced via a change in policy to the following:

Elementary	80	(115-35)
Middle	120	(162-42)
High	600	(797-197)

The change in policy would be accomplished by the use of incentives that could include but not be limited to the following:

- Staff: Provide bonuses, time off, and/or other benefits for those that car pool.
- Students: Divide the student parking into grade levels with the senior class getting the highest percentage of spaces. The spaces would be reserved for individual students based on one or more of the following criteria:
 - GPA previous semester
 - Lottery
 - Participation in car-pooling
 - Number of students car-pooled

Implement "Planning Principles and Design Guidelines" as noted in the attached "Parking on Joint Use School and Park Sites" Part V.

Implement the use of "Walking Buses" at elementary schools.

SUSTAINABLE DESIGN

Findings

[To be provided]

Recommendations

The recommendation is to establish sustainable site planning standards. As an example noted in the attached article, "Textbook Tech," a water filtration system was used to filter rainwater from roofs and

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paved surfaces. The system, like many of the other sustainable features at the school, has become “part of the curriculum.”

MUNICIPAL COLLABORATION

Findings [Revise to paragraph format]

- Most citizens of Wake County pay both county and municipal property taxes, and we should seek to make the most efficient use of the combined tax resources of the county and the municipalities located within the county to minimize the tax burden on all residents in Wake County.
- The County needs land for schools.
- Municipalities need land for parks, sports fields, community centers and other public recreation uses (“Municipal Projects”).
- There is an ever-increasing shortage of land available for the needs of the County and municipalities within the county.
- Schools and Municipal Projects are public infrastructure items that benefit all of the residents of Wake County.

Benefits of Municipal Collaboration and Joint Use Sites [Revise to paragraph format]

- Reduces amount of land needed to accommodate public infrastructure needs in the County.
- Reduces the overall cost of constructing schools.
- Reduces the overall cost of constructing Municipal Projects.
- Allows for coordinated planning to ensure that there is adequate space and funding for Schools and Municipal Projects.
- Broadens the group of taxpayers that benefits from the project (creation of new parks, recreational facilities and community centers benefits taxpayers who may not have children in WCPSS and thus do not perceive a direct benefit from the construction of new schools).

Reduces the administrative burden and cost to WCPSS in obtaining approval for construction of new schools.

Recommendations

WCPSS and municipalities should work together to develop a methodology for countywide land banking for joint use projects.

Municipalities should include and fund as part of their yearly budgets a capital reserve to provide funds for acquiring land and funding joint use projects when they arise.

WCPSS should provide municipalities with projected locations for schools/joint use projects over the next 10 years. The County, municipalities and WCPSS should then work together to identify areas where future schools are likely to be located. Municipalities and the County could then incorporate the proposed school locations into their comprehensive plans. This would reflect the fact that schools, like roads, water and sewer, are infrastructure that must be accounted for by developers. Developers would then be required to reserve and/or plan for school sites as growth occurs.

All of the municipalities in Wake County should adopt standard development ordinances with respect the construction of new schools and the renovation of old schools. These ordinances should fairly reflect the obligations of the school system to adequately address public safety issues and concerns such as traffic that may be created by the construction or expansion of a school.

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These ordinances should also recognize that schools are an integral part of the infrastructure for our community and thus should not necessarily be held to the same standards as private developments.

Recommendations

STATE COOPERATION ON TRANSPORTATION ISSUES

Findings

North Carolina Department of Transportation (NCDOT) has a Municipal and School Transportation Engineering Unit. This unit offers recommendations for queue length analysis and drive way permits for the State of North Carolina. They have an in-depth knowledge of various methods of pick up and drop off for children and have many case studies that can be very beneficial to the Wake County School System.

- Modify requirements for off site road and traffic signal improvements.
- Reduce or modify requirements for on site queuing.

This unit is open to looking at each school site in an individual case and will be flexible with modifying the site queuing requirements and adding off site road widening when applicable. In many instances the side roads are not State roads and the municipalities have jurisdiction over the side road widening requirements.

Recommendations

Involve the municipality and NCDOT in the process very early in the process. This can help reduce the time for acquiring driveway permits, look at alternative ways to provide safe pick up and drop off for children, and will improve the time in having a traffic impact study reviewed.

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PROGRAM AND DESIGN

BACKGROUND

[Need general information about areas of study of committee, approach, information used and analyzed, etc. Include relevant data, charts and graphs from presentations provided to the committee]

AREAS OF STUDY

ATHLETICS

Findings

The North Carolina state minimum requirements for physical education or healthy living is as follows:

- Elementary: 1 day/week with a certified professional
- Middle: 225 minutes per week
- High: 9th grade required; 10-12th grades PE is an elective

Healthy Living is a state requirement that must be offered from kindergarten to 9th grade.

Facilities impact from the requirement means:

- Need an indoor space and an outdoor space
- Middle schools current capacity includes 2 health classrooms. Currently these teachers may use 'float' space to meet schedule demands. Most middle schools have one playing field and one softball field for outside field use. Inside facilities include a gymnasium at most locations.
- High schools typical capacity calls for 10-12 teacher to meet the demand (classroom allocation?)

Athletics are considered an option; however athletic activities drive facility design and demand. Although considered optional, track and play fields are also used for Healthy Living classes. Currently 800-900 athletes participate in field uses [need to verify this number and determine if the amount if for high schools]

Field use begins as soon as the school year begins with practice on the fields beginning just after the close of the school day and lasting up to two hours. Facilities are typically used Monday through Thursday with Friday as an optional day based on schedule. Postponements and reschedules impact field and gymnasium uses.

Most middle schools do not offer baseball, lacrosse, or tennis but offer softball, wrestling and track. Limited facilities and set up/maintenance time by athletic directors teaching full loads impact the scheduling and use of the existing facilities.

Older high schools may have no practice field or softball field but instead utilize the stadium/track area. A baseball field outfield may be used for football or soccer practice. The new schools have a stadium/track field, baseball field, softball field, two practice fields, one main gymnasium, one auxiliary gym, tennis courts and a weight room. These facilities are typically in use Monday-Friday and are used for other purposes such as cheerleading practice, intramural activities, and physical education or health classes.

There was extensive review and discussion of shared community facilities. The local municipality most often constructs these facilities with WCPSS contributing the capital costs that would have been expended

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for a facility wholly utilized by the school. Most often the community center facility is larger and _____ which allows the school population an expanded opportunity for use [Need to verify information]

The committee visited one [verify number visited] football stadium facility. Currently, capital expenditure would be expected to be over \$4,000,000. Ticket sales and concessions revenues remain with the school and are used as an offset to operating expenses. It is possible to build a stadium to accommodate use by multiple school populations. Other school systems have utilized this approach successfully to reduce land consumption, development/site costs and capital costs. Problems are recognized relating to scheduling, team and game schedules, maintenance, school identification, etc. Each individual school will continue to need a practice field and track facility.

Currently the North Carolina High School Athletic Association set the sports schedules

Recommendations

The provision of expanded Physical Education electives at the high school level requires additional facilities. We recommend that WCPSS review and consider the activities currently offered that exceeds the PE requirement. Although Title 9 must be met, we recommend that the WCPSS reconsider the expanded athletic options offered that require specific additional facilities such as weight lifting, wrestling, tennis, etc. and their resulting costs. We recommend that the WCPSS further consider a 'pay to play' option to increase potential revenue sources to offset costs.

Area for Further Study

Study whether facilities for athletics and performing arts could be provided by shared use facilities with sharing between schools in the case of athletics, and parks and recreation facilities and/or schools in the case of performing arts. The community must decide if it can afford \$3,875,000 dollars at each new high school for a football stadium with track. Review control, access, accountability and costs of joint use facilities. Can larger or more expansive facilities than needed by WCPSS be constructed and operated at a lower cost by joint use with the community? Can the community fully provide these facilities as a contribution and remove any capital contribution by WCPSS?

RENOVATIONS

Findings

According to the DeJong and Associates Report, the renovation cost divided by the replacement cost of a facility is often used as an index to determine whether a building should be replaced with a new facility. The higher the percentage, the closer the cost of renovating the building is to the cost of fully replacing the building. For example, in Wake County, if the cost to renovate is 75% or above the cost to build a new facility, the facility is considered for replacement. In comparison, Fairfax County has identified 65% as their renovation trigger and Forsyth County has identified 60% as their renovation trigger. Clark County indicated that their trigger incorporates both age and condition while the other districts in the study did not denote a specific renovation/replacement trigger.

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Renovation Triggers

Wake	75%
Fairfax	65%
Forsyth	60%
Clark	Age + Condition
Guilford	No Trigger
Gwinnett	No Trigger
Mecklenburg	No Trigger
Orange	No Trigger

In the 2005 Capital Improvement Plan, Wake County’s school building renovation plan will increase square footage by 236,300 square feet and add 2,096 seats, equivalent to the size of one high school. Three schools, Poe Elementary, Martin Middle, and Enloe High School, will gain no seats in the proposed renovation plan. The cost for the thirteen school renovations will be \$106,754 per seat gained and \$1,035 per square foot gained. Cost per seat is around four times the average cost of a new school seat, and the square foot cost is around nine times the cost of a new school.

Overview of Proposed Wake County Renovation Projects

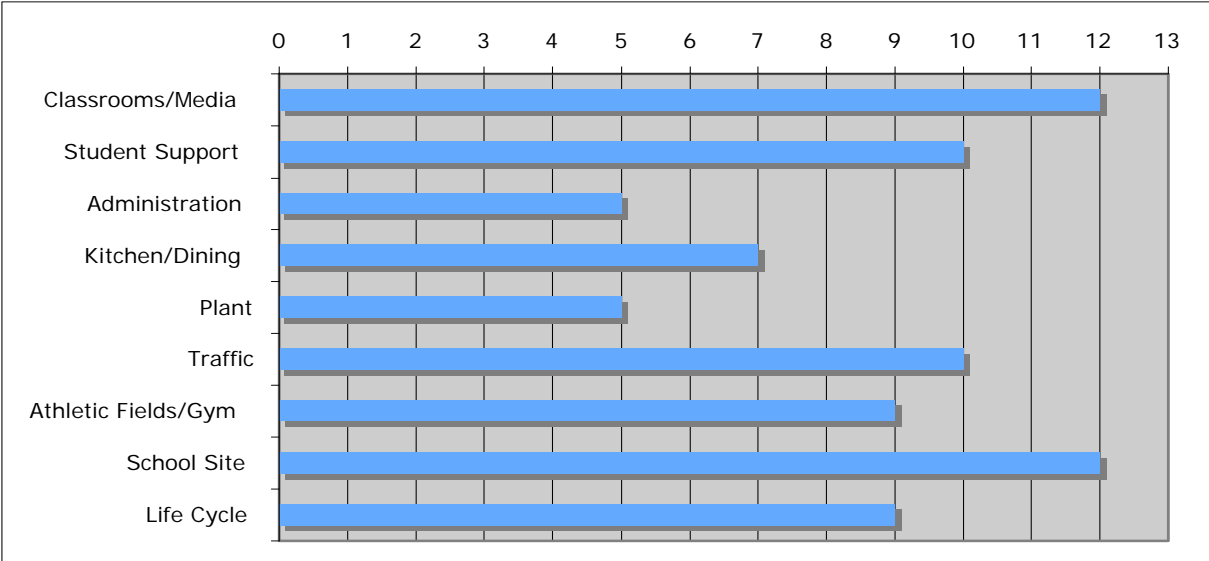
School	Bid Year	Budget	Square Feet Renovated	Square Feet Added	Square Feet Demolished	Net SF Added	Seats Added	Cost per additional seat
E. Millbrook MS	2007	\$29,178,143	58,400	80,600	58,400	22,200	156	\$187,039
Lynn ES	2007	\$22,142,125	84,900	14,500	0	14,500	174	\$127,254
Aversboro ES	2007	\$21,288,392	0	87,300	56,100	31,200	246	\$86,538
Cary HS	2007	\$10,752,136	1,300	51,500	0	51,500	510	\$21,083
Martin MS	2007	\$9,238,983	0	40,500	27,500	13,000	0	\$0
East Wake HS	2007	\$24,107,686	61,400	55,800	15,200	40,600	235	\$102,586
Enloe HS	2007	\$7,335,208	18,800	0	38,300	-38,300	0	\$0
Poe ES	2008	\$14,662,384	50,500	0	0	0	0	\$0
Root ES	2008	\$20,746,609	14,300	66,200	33,300	32,900	170	\$122,039
Smith ES	2008	\$18,658,255	25,300	44,300	30,400	13,900	102	\$182,924
Lacy ES	2008	\$22,868,752	12,200	64,800	56,300	8,500	115	\$198,859
Bugg ES	2009	\$21,565,228	53,800	36,700	0	36,700	312	\$69,119
Wilburn ES	2009	\$22,067,792	24,900	70,100	60,500	9,600	76	\$290,366
TOTAL		\$244,611,693	405,800	612,300	376,000	236,300	2,096	\$106,754 (Avg.)

Although nearly all of the projects will add some classroom space, the majority of the schools in the renovation plan will receive site work, including reworked traffic patterns, landscaping, and athletic upgrades. Enloe High School, for example, will receive a makeover of its athletic facilities, including a new weight room, locker rooms, tennis courts, basketball courts, and a softball field. Over one-third of the schools will receive renovated or new administrative offices and three quarters of the schools will receive renovated support spaces.

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Proposed Renovations for 13 Wake County Schools (By Type)



The \$245 million renovation plan will use around 1/4th of the 2006 bond funds to renovate thirteen schools, but it will only yield enough seats to accommodate 1/15th of the new students projected to be added over the four-year life of the bond.

Recommendations

Develop new methodology and formula to evaluate cost/benefit of life cycle and code-required improvements versus opportunity to increase capacity. We recommend that any other renovations less than a major renovation address life and safety issues and increased capacity as two top priorities. We further recommend that parity of facilities between new school projects and existing/renovation projects be eliminated as a standard (amenities addition in order to keep pace with new school models or prototypes).

DESIGN

DESIGN GUIDELINES FOR MATERIALS USE

Findings

Item 1 of the Planning Assumptions of the WCPSS long-range capital building program states “WCPSS and Wake County support design principles that minimize life-cycle costs and energy costs, and do not have significant adverse effects on the environment. In design and construction, WCPSS will use jointly developed guidelines by Wake County and Wake County Public Schools for basic building materials (developed in January 2003) and energy efficient systems (developed June 2004). A cost benefit analysis of the proposed initiatives will be performed before implementation.”

Area for Further Study

Study CFAC study jointly developed guidelines by Wake County and Wake County Public Schools for basic building materials (developed in January 2003) and energy efficient systems (developed June 2004), and the cost benefit analysis of these initiatives as part of the committee’s review of all Wake County Capital Programs.

Citizens' Facilities Advisory Committee

MEDIA CENTERS

Findings

Small group and multi-tasks are accomplished through the media center. We found that the media center areas are the same or less than the DeJong study averages and are appropriately scheduled and utilized throughout the school day. Per square foot, however, Wake County builds the third largest elementary school media center (552 sf above average) and the largest middle (1,286 so above average) and high (2,980 sf above average) school media centers.

According to the Wake County Schools facilities staff, the three main functions of a media center include computer lab, RLV (Reading, Listening, Visual) study area, and book repository. Media centers are used 100% of the school day and throughout all class periods; in addition media centers are open to students 30-60 minutes before school starts, and many media centers are open beyond the end of the school day. K-12 students are served continuously all day as individuals, in small groups, and as part of whole classes. Media centers may simultaneously provide space used as a classroom, computer lab, reading room, study hall, and places for individual and small group work. Depending upon the school's site-based scheduling, elementary and middle school media centers will average 4-6 classes for whole class instruction daily; high schools will average 6-8 classes in a similar fashion in addition to individual and small groups of students.

In addition, the Wake County Schools facilities staff said that library media centers continue to need space more than ever. With a focus on 21st Century Skills and collaboration, there are more small groups simultaneously doing a variety of tasks. Technology has expanded the role of the media center and actually changed the mission of the school library from a central repository of materials to a rich information system. Students engage in more project-based learning utilizing a variety of print and electronic resources. The media center is a destination place with a variety of materials to ensure that students, teachers, and their electronic tools can connect to each other and the rest of the world. Research from 16 states (including NC) indicates that a well-staffed, high-quality school media program can significantly push student achievement.

According to the DeJong and Associates report, "although Wake County is not building the largest media centers, they do account for a large allocation of square footage. As more information is available electronically, the role of the media center has been changing. Stacks and storage are no longer as necessary as they once were. Rather, the media center has become a place for hands on project-based work. In fact, in Seminole County, FL, the current middle school prototype de-centralizes the library and provides project labs and reference items within the grade level area or pod."

Further study:

Assess the viability of using decentralized media center spaces, as well as wireless technology to allow students to access online research materials from any location within the school. In addition, examine ways to minimize stacks and maximize the use of online databases and resources. Finally, study ways to full integrate media centers with computer labs and technology education spaces in existing schools.

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Overview of Media Center Spaces

	NC DPI	Wake	Guilford	Meck- lenburg	Forsyth	Orange	Clark	Gwinnett	Fairfax	Average w/o Wake
Percentage of Gross Building Area Allocated										
ES Media Center	5.20%	4.90%	5.10%	6.10%	5.00%	5.30%	4.10%	4.70%	4.10%	4.90%
MS Media Center	4.60%	3.50%	4.10%	4.90%	4.10%	6.00%	4.30%	4.90%	4.00%	4.60%
HS Media Center	4.60%	3.70%	3.70%	N/A	4.40%	4.50%	3.30%	2.90%	3.10%	3.70%
Media Center Square Footage										
ES Media Center	N/A	4,140	3,680	4,800	3,200	3,311	2,080	5,000	3,000	3,582
MS Media Center	N/A	5,980	4,480	4,800	3,040	5,887	4,400	5,750	4,500	4,694
HS Media Center	N/A	10,575	7,880	N/A	5,600	8,871	7,895	7,500	7,825	7,595

Processes Affirmed

Small group and multi-tasks are accomplished through the media center. We found that the media center areas are the same or less than the DeJong study averages and are appropriately scheduled and utilized.

AUDITORIUMS IN MIDDLE SCHOOLS

Findings

For elementary schools, the Wake Count Schools facilities staff says that a multi-purpose room cannot be used as an auditorium because the multi-purpose room has to accommodate 51 classes for PE instruction (of which there is only room for 30. The rest use outdoor spaces for instruction). Instead, auditorium is combined with cafeteria space.

For middle schools, the Wake County Schools facilities staff says that middle school auditoriums are sized to accommodate a single grade. Converting a middle school cafeteria into a cafétorium is not desirable because 1) an auditorium gives legitimacy to theatre arts; 2) the Wake County community expects these spaces; and 3) this space teaches technical theatre, which cannot be taught in a cafétorium.

Overall, there is no consistent use of auditoriums among schools that currently have them. Some middle and high schools use the stage and auditorium seating for a majority of periods throughout the day, while other schools use their auditorium for less than half of the periods of the school day. While the stage area of an auditorium appears to be used often, the auditorium seating is not utilized much, except for occasional assemblies and other events. Even when school attempt to use auditorium seating for instruction, it appears that a small percentage of the seating capacity is used. Middle and high school auditoriums have limited seating flexibility, and thus much auditorium space is left vacant throughout the school day.

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Summary of Courses and Programming that Utilizes Auditorium Space

School	Classes taught on Stage	Classes taught in Auditorium Seating Area	Auditorium Use by Non-Arts	Flexible Use of Seating Area
Apex High	Theatre Arts I-IV, Tech Theatre 3 periods/day all week	Seating is used by Theatre & Tech Theatre alternatively	Cultural arts assemblies, talent show, English teachers - approx. 1 period a month	Lecture classes in back but concerned about abuse auditorium will take & acoustic problems
Broughton High	Technical Theater I and II, Drama	ISS in back annex room	Guidance after school or during community class often. IB at night almost every other week. Foreign language meetings/awards. Monthly faculty meeting	Technical Theater is the best one. They could make nice study halls too, but not when a show is in production.
Carroll Middle	Dance classes are taught on stage 4 periods every day	The first two center rows (30) seats are used daily by the dance teacher prior to warm-ups	2-3 times/year for Cultural Arts assemblies, quarterly team meetings with the administrators, cheerleading practice daily during football and basketball seasons, quarterly for the honor roll recipients, team awards assemblies, 5th grade orientation in spring, Club & faculty meetings	In a flexible performing space dance classes and theater classes could be taught, also Band and Choral groups could have monthly rehearsals there to work with the acoustics.
Daniels Middle	Introduction to Theater, Introduction to Dance, Dance I, Dance II, Dramatics, Advanced Dramatics - all day/every day	The stage and auditorium used frequently after school for honors chorus rehearsals, cheerleading practice, and musical rehearsals. Our auditorium is also used for cultural arts assemblies and team activities approximately once every two months.		
Davis Drive Middle	Drama I, Drama II, Advanced Drama, Introduction to Theatre & Dance I, Dance II, and Advanced Dance - 3 to 6 classes per day	Drama & Dance alternate use of stage & seating area	Cultural arts assemblies (4-6/year), higher order thinking all-school events (2-4/year), team activities (1-2/month), guidance counselor grade level meetings (6-9/year), health class assemblies (4-6/year), off-campus speakers (2-4/year), daily for the 7th graders arriving at school from busses, after school sports info. Sessions/play rehearsals, parent mtgs/open houses (frequent)	Seats w/ tablet arms (1st 5 rows) - technology including smart boards, lcd projectors, wireless internet access

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School	Classes taught on Stage	Classes taught in Auditorium Seating Area	Auditorium Use by Non-Arts	Flexible Use of Seating Area
East Garner Middle	Drama - 6 periods/day on 2 days/wk	Dance previously on stage - next year - drama likely full time in auditorium	Cultural performances 2-3 times per year, team activities 1 time/wk for 2-3 periods	Public Speaking, Dance, Drama Critique, Humanities (Social Studies) Electives, Film Critique, Paideia electives, etc.; the desks are a necessity - the projection screen and a projector are a must for that space - Possible swiveling seats so students can turn and hold Paideia discussions.
East Wake Middle	Dance/Drama/Chorus	Alternating Dance/Drama/Chorus for rehearsal	PE 1/month all day; Cultural Arts & Team activities 1-2 periods per day several times/year	
Enloe High	Tech Theatre/Honors Theatre constant - also used for rehearsal by other arts staff	Seating is used by Theatre & Tech Theatre alternatively	At least 2 times/month by non-arts groups	Seating should be permanent theatre style seating on a series of elevations. Tablet arm seats.
Fuquay Middle	Dance 6 classes/day all week	PE/Cultural Arts/Team activities at least 1/month	There is a need for a regular classroom area, quite spacious for the dance teacher. She is relocated every time there is an event in the auditorium. The community also uses this area at various occasions for concerts, musical programs and plays. The dance teacher is pushed to the limits sometimes. All teachers need their own space.	
Green Hope High	Drama I, Drama Mixed, Tech Theatre - 3 periods/day	Drama & Tech Theatre alternate stage & seating area as necessary	Roughly 3-4 times per month. When the auditorium wasn't used as a classroom this was more frequent and regular. With space dominating the issues of importance at this school, the auditorium has to be used as classroom space.	Anything works as long as the original design of a performance space isn't compromised. Flexibility is great - but consider acoustics when trying to divide up spaces
Holly Ridge Middle	Dance 4 periods all week		Frequent use by teams cause Dance teacher to be displaced 3-4 times per month	

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School	Classes taught on Stage	Classes taught in Auditorium Seating Area	Auditorium Use by Non-Arts	Flexible Use of Seating Area
Knightdale High	Theatre I, II, III, IV, Tech Theatre	Seating is used by Theatre & Tech Theatre alternatively	Average 20 days/yr of interruption for assemblies, testing, Freshmen orientation, etc.	Need folding tablet arms & moving walls with good acoustic treatment
Leesville High	Tech Theatre & other performing arts classes periodically		60 times per year	
Martin Middle	Tech Theatre 2 periods/day - dance/drama/music rehearsals frequently		Cultural arts/team activities/countywide events/voting frequent - significant community school use	
Middle Creek High	Theatre - all day every day	Theatre & other performing arts frequently	Frequent use by others - teams/classes/cultural arts/outside speakers	Flexible seating/tablet arms In first 6 rows/technology/substantial walls that can handle the abuse
Wake Forest High	Tech Theatre/Theatre Arts All Day Every Day	Tech Theatre/Theatre Arts alternate stage & seating area	2-3 times/month during school, 1/week before and after school	Flexible seating would be good - save wear/tear on seats, back of auditorium classrooms w/ moveable walls are good
Wake Forest Middle	Dance/Drama classes all day all week	Team activities/cultural arts events frequently		
Wakefield High	# Theatre Arts I, Theatre Arts I Adv, Theatre II, Studio A and Studio B	Tech Theatre Every day of the week, three periods per day. Occasionally four periods per day when band or dance dept uses it.	Frequent use by others	The classroom would have ample rehearsal space, possibly a smaller performance "black box" type of instructional space with storage and the ability for a white erase board or overhead screen. Should be able to seat at least 36.
West Cary Middle	Dance/Show Choir - all day, every day	Not on a regular basis because dance/show choir use stage	Once per month	If the seating has a large area in the center, drama, dance, and music classes could be taught there.

According to the report by DeJong and Associates, “of the three districts that provide a separate auditorium or theater at the middle school level, Wake County constructs the largest. No one can deny that providing this space enhances performance to the student; however, this space is not necessarily integral to the educational experience. Wake County should consider design options that incorporate stages that can accommodate full lighting and sound components within the cafeteria or gymnasium.”

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Overview of Multi-purpose and Auditorium Spaces

	Wake	Guilford	Mecklenburg	Forsyth	Orange	Clark	Gwinnett	Fairfax	Average w/o Wake
Elementary Schools									
Multi- purpose room sf	2,900	4,880	4,000	0	2,925	3,430	7,500	950	3,948
Middle Schools									
Auditorium seats	525	300		0	0	0	0	0	N/A
Stage sf	1,200	2,500		975	988	1,510	450	1,200	1,271
Stage location	Auditorium	Auditorium		N/A	Cafeteria	Theatre	Cafeteria	Cafeteria	N/A
Theater/Aud % gross building area	5.40%	4.50%	7.00%	2.60%	2.40%	2.90%	1.20%	0.00%	2.80%
High Schools									
Auditorium seats	850	800		N/A	904	320	500	650	634.8
Stage sf	2,600	4,000		2,000	3,187	2,000	2,700	1,500	2,565
Theater/Aud % gross building area	4.70%	4.90%	5.60%	n/a	6.40%	4.90%	3.90%	3.60%	3.90%

Area for Further Study

Review and evaluate the use of a cafétorium in middle school models using one larger joint space with appropriate furniture and fixtures, rather than separate food/dining and auditorium spaces. This does not take into consideration any value or opportunity to offer or eliminate a technical theatre elective, but the state does not require that school districts offer this course. Evaluate the use combination of a small theater with theatrical seating, which can be expanded by opening it to the cafeteria, using pull out bleachers for seating.

Use of Multi-story Designs

Processes Affirmed

Multi-story prototypes now under construction will reduce the footprint and potentially land use area.

Use of School Design Prototypes

Processes Affirmed

The re-use of prototype designs is important and was noted: The various prototypes are being reused many times, with two elementary prototypes being used 9 times each (with modification to make them multi-story), and all High Schools and Middle Schools being built from prototypes as well, currently 3 to 4 times each. WCPSS is continuing to improve the cost effectiveness of the prototype designs, by making changes to reduce cost and/or site requirements for the buildings.

It was noted that sharing use of circulation space for multi-purpose space was increasing.

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DESIGN COMPETITIONS

Findings

Schools are complex facilities. There is a question as to the cost-effectiveness of using competitions to select school prototype designs since the competing firms would need to be compensated for their designs through at least the design development phases in order to have meaningful evaluations of cost and function.

Area for Further Study

WCPSS to study the use of design competitions for schools

KITCHENS

Findings

WCPSS Child Nutrition Services operates as a not for profit, requiring no funding for operations. WCPSS does provide the capital cost for kitchen space and equipment at not cost to the food service operation. Currently, kitchens are configured as reheat and serve kitchens, not full kitchens. Currently contracts out the services to obtain pre-cooked, prepared food (quick frozen), providing 5 entrees a day.

Kitchens have been scaled back over time and in new buildings to meet the needs of reheat and serve as opposed to batch cooking. Equipment primarily consists of convection ovens and steamers and refrigeration. Replacement equipment is bought from the cafeteria enterprise fund. Each school maintains a seven-day inventory of food.

Average square feet of kitchens:

	Elem	Middle	High
Kitchen	2190		2790
Serving Area	800		1550
Total	2990		4340

Staffing is provided using six hour employees to provide food prep and cashier services.

Cafeteria Statistics

- 70% of children are eating a plate lunch district-wide (does not include those eating ala carte).
- Federal government requires schools to serve free and reduced lunch students – 25% district-wide
- Average sanitation score district-wide is 99
- Cafeteria operations has a budget of \$40 million

WCPSS has provided capital costs for school kitchens as follows:

	Area	Equipment	Space
Elementary	2990	\$200,000	\$750,000
Middle School	3050	\$250,000	\$770,000
High School	4340	\$300,000	\$1,100,000

The only way that the committee can see to impact cafeteria equipment and space needs would be to change the menu drastically, and serve only pre-packaged, cold food. This could eliminate the hood and

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ovens (\$20,000 to \$50,000 savings per kitchen) but would possibly require additional chillers and dry storage, which would spend some or all of the savings.

Child Nutrition Services believes that this would make it difficult to meet the SMI (nutrient) requirements of USDA, which is a requirement for obtaining federal reimbursement of \$13,500,000 out of a total annual budget of \$36,500,000. In addition, they believe that the limited menu and repetition would reduce student participation, which could increase demand for parking for high school students wanting to go off campus for lunch.

Recommendations

[Pending]

Areas for Further Study

Evaluate the effect of changing the menu on capital costs and operations to determine the potential savings/costs.

Evaluate the effect of requiring Child Nutrition Services to purchase and upfit the kitchens on their operating budget/cost of meals.

JOINT SPACES

Area for Further Study

Review and evaluate the use of a cafétorium in middle school models using 1 larger joint space with appropriate furniture and fixtures, rather than separate food/dining and auditorium spaces. This does not take into consideration any value or opportunity to offer or eliminate a theatre elective. Evaluate the use combination of a small theater with theatrical seating that can be expanded by opening it to the cafeteria, using pull out bleachers for seating.

USE OF MOBILE / MODULAR CLASSROOMS

Findings

[To be provided]

Recommendations

We recommend that WCPSS continue use of modular/mobile units in their primary function of accommodating shifting demographics within the county, and as a secondary function, to meet enrollment capacity requirements. As part of this recommendation, we ask that WCPSS look specifically at increasing core areas such as food service, media center, pull out areas to reduce the over-utilization and time constraints when more than 8% of capacity are provided in modular/mobile classrooms. Currently 19.5% of WCPSS students are in modular/mobile units and reducing that percentage to the goal of 8% would require considerable resources. Expansion of the core areas would reduce some of the stress on the school facilities and schedules (lunch at very early hours in the school day).

TECHNOLOGY

Findings

[To be provided]

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Recommendations

We would encourage WCPSS to enhance access to and use of wireless technology to more effectively utilize classroom and group spaces, and study ways to eliminating movement and re-fixturing by students on a daily basis.

COST PER SQUARE FOOT PER STUDENT

Findings

[To be provided]

Recommendations

We recommend the DeJong data for cost per student and sf per student should not be utilized for comparison purposes. The DeJong study did not ask how the different school systems measure and report capacity. WCPSS research has found that most if not all of the other school districts count every teaching space toward capacity. This exaggerates the reported capacity beyond that which is achievable, at least when using the Wake County models which are designed to provide realistic capacity numbers. WCPSS staff is preparing a comparison of the capacity numbers reported by the various districts with the capacities when calculated based on WCPSS capacity methodology. Based on preliminary results, it appears that the DeJong data for cost per student and sf per student are not valid for comparisons.

SCHOOL CAPACITY

Findings

There are two definitions which are most important in the capacity methodology – School Building Capacity, which is based on the capacity model as applied to a particular school building, and gives a realistic appraisal of how many students can be assigned to the school building itself, without addition of mobile and modular classrooms. The second is Annual School Campus Capacity which adds the number of students that can be accommodated in mobile and modular classrooms and adjusts for actual special needs requirements for the current year.

School Building Capacity is based on a “model” which defines the classrooms that are being included in a new school built today. The “model’s” capacity is based on the total number of teaching spaces times the state mandated class size for the grade level with, deductions for the smaller number of students per classroom in self-contained special needs classrooms and deductions for the capacity of classrooms that are used for pullout or activities such as art, music, resource classrooms, general education support classrooms and computer/resource classrooms which don’t contribute to the total number of students that can be accommodated. The number of special needs classrooms included in the model is based on actual enrollment of students with special needs in ‘Wake County. There are models for standard schools, what the system is building today, as well as models for magnet schools.

School Building Capacity is calculated based on the assigned model, with no adjustments for actual program offerings – “bricks and mortar”. The Annual School Campus Capacity is calculated by adding the School Building Capacity and the capacity of the mobile/modular classrooms on the site, and adjusting for the actual special needs programs assigned to the school in a given year.

School Crowding is calculated by dividing the 20th day actual enrollment at the school by the Annual School Campus Capacity. In many schools, spaces not intended for use as classrooms, such as teachers’ lounges, conference rooms and portions of media center’s are turned into classrooms to accommodate the children assigned to that school.

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Our committee reviewed the application of the model to several schools, showing how different factors affect capacity.

It was noted that new schools and those immediately adjacent to them are under utilized the first year or two after opening. This decision avoids redrawing all the district boundaries every year in an effort to provide consistency in student assignment.

WCPSS presented an analysis of the capacities of schools in the other districts studied in the DeJong study, which did not ask how the different school systems measure and report capacity. WCPSS research has found that most if not all of the other school districts count every teaching space toward capacity. This exaggerates the reported capacity beyond that which is achievable, at least when using the Wake County models which are designed to provide realistic capacity numbers. When these other districts school capacities are calculated using WCPSS methodology, in most cases the capacity decreases significantly.

Areas for Further Study

Provide comparison of 20th day membership vs. membership at other times during the school year to see if the 20th day membership is the peak for the year, above the peak or below the peak.

Study impact of current levels of overcrowding on the current educational program, particularly the impact of re-assigning spaces such as teachers' lounges, conference rooms and media center space to classroom space.

Study alternative educational delivery methods that may impact both space needs and education positively.

Processes Affirmed

The current method of calculating capacity gives a realistic assessment of the number of students that can be accommodated given the current educational program and the requirements for special needs.

We believe that not redrawing all district boundaries every year as new schools open is a reasonable approach in spite of the fact that it causes some of the other schools to be over utilized for a period of time.

The current method of calculating capacity gives a realistic assessment of the number of students that can be accommodated given the current educational program and the requirements for special needs.

New schools and those immediately adjacent are under utilized the first year or two after opening. This decision avoids redrawing all the district boundaries every year in an effort to provide consistency in student assignment. We believe that this is a reasonable approach in spite of the fact that it causes some of the other schools to be over utilized.

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PROJECT DELIVERY: CONTRACTING AND CONSTRUCTION ADMINISTRATION

BACKGROUND

[Need general information about areas of study of committee, approach, information used and analyzed, etc. Include relevant data, charts and graphs from presentations provided to the committee]

Project Delivery is defined as the process by which a construction project is budgeted, managed, built, and transitioned to occupancy. It defines the roles of the Owner, Architect, Contractor and/or Construction Manager and sets specific responsibilities for each party. The Wake County Public School System has multiple school construction project delivery methods available for use based on its needs approved by the North Carolina General Assembly.

Approved methods:

- Design-Bid-Build Using Separate or Multiple Prime Bidding
- Design-Bid-Build Using Single Prime Bidding (approved 2001)
- Construction Manager at Risk (approved 2001)
- Alternative Contracting Techniques-Design-Build (requires approval of the State Building Commission)
- School Capital Lease Authority (public/private partnerships)

There remains a large degree of variance as to how well different construction organizations can prosecute a particular delivery system, thus, this subcommittee has no knowledge or previous experience with a “perfect delivery system.”

As requested, this subcommittee has reviewed the following broad project related topics:

- Budgeting
- Management
- Alternate/Innovative Construction Materials & Methods
- Public/Private Partnerships
- Construction Delivery
- Inspections & Permitting

AREAS OF STUDY

PROJECT BUDGETING

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Findings

Project Budgeting is defined as a system of management and cost controls, whereby school construction, renovation, and expansion projects are individually and collectively monitored to provide accurate cost allocation and timely financial reporting to satisfy business requirements. The complete management and tracking of these projects and project related costs to include whether each project is completed within budget and the time allotted is a measurement that attests to the success of the project budgeting system and the degree to which management maintains the accurate status of each project and follows established cost control policies. All components of the project budgeting system were reviewed as part of the Project Delivery Subcommittee's report to the Citizens' Facilities Advisory Committee. The following key components of the Cost Model budgeting system, are highlighted and defined here:

- **Assumptions and Parameters** - an outline of a list of key issues and principles addressed in the planning assumptions of the Board of Education's CIP 2006 governing the goals and capital building program established jointly by the County Commissioners and School Board (see appendix?). These principles were to be used to identify and quantify the investments anticipated over the next two decades to accommodate school system growth and insure safe, quality places for students to learn;
- **Various documents** - CIP 2006 Estimating Guide -(see appendix?) reflect how this guide was used as a basis for the 2006 program. The cost model construction estimate templates and the construction cost estimates per program area were done separately for elementary, middle, and high schools with suggestions that these estimates be adjusted for renovations and site constraints;
- **Master Schedule** - relates to each project and shows the project manager, facility planner, architect, construction manager, site acquisition status, proposed project budget, start, bid and completion dates as well as bar graphs, describing the various stages and progress of each project. In addition, swing space requirements are identified by school, by year, and by type swing space required, renovation, conversion, or trailer additions;(see appendix ?)
- **Revenue Availability, Funding Detail, Appropriation Schedule, and Cash Flow (Appendix?)** - shows available revenue for the 2006 Capital Program from all sources, detailed funding for each project, the appropriation schedule as adopted by the governing boards, and the cash flow projections for funding projects individually and collectively;
- **Cost Models for Elementary, Middle, and High Schools** -- includes base model assumptions, escalation and contingency factors;
- **Space Standards** - areas programmed for each type of space in each school type.
- **Inflationary Impact of labor, equipment, and materials** document provided by Bovis Lend Lease and Construction Control Corporation; (appendix ?)
- **Land Acquisition Requirements** - identify specific funding requirements and dates necessary for acquisition of property for new schools.

Does the CFAC support the 2006 WCPSS cost model documents that were used to develop new, renovation, and expansion projects?

In general, our review of the WCPSS cost model and supporting documentation suggests that the CFAC should support the model. The WCPSS staff appears to have sufficient and detailed information concerning each project, its estimated costs, funds available and the cash flow requirements for funding the CIP 2006. In addition, the assumptions and parameters governing the CIP 2006 have been revisited, clarified and refined where necessary, and are continually reviewed for compliance with guidance from the County Commissioners and the School Board. The staff also appears to anticipate actions by

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governing bodies at the state or local level that might affect funding for individual projects and are subsequently in a position to request additional funding where projects are more costly.

Conversely, it appears that when projects are completed with less than the funds authorized or budgeted, there is a system in place to reallocate excess funds to a reserve account for use on other projects authorized by the Governing bodies. The cost model anticipates a certain level of inflation and it appears that, overall, the inflation factor experienced at present is in accord with the assumptions underlying the CIP 2006. This inflation factor is, and will continue to be very closely monitored.

Areas for Improvement:

The explosive population and economic growth in Wake County has made the process for land acquisition requirements much more expensive, difficult to acquire, and time consuming than planned. The "Capital Planning Issues" document approved jointly by the Wake County Board of Commissioners and the Wake County School Board on September 21, 2005, item 14 Land Acquisition, indicates that land acquisition for school sites would be sought for land banking five years in advance, but in reality, land banking is not a part of CIP 2006 and land is being bought just in advance of construction start dates. The passage of the 2006 bond issue and the resulting availability of funds for CIP 2006 may not have afforded sufficient time or resources to acquire land well in advance of construction start dates.

Recommendations

Does the CFAC support the 2006 WCPSS cost model documents that were used to develop new, renovation, and expansion projects? Given the diminishing availability of suitable sites for large school complexes, the economic and population growth of Wake County, and the many competing demands for land, it is essential that land banking be initiated and/or suitable sites for future school construction be acquired as far in advance of construction as possible. This will require adequate long range planning and appropriate additional funding.

PROJECT MANAGEMENT

Findings

Project Management is the discipline of organizing resources to ensure a project is completed within a defined scope, quality, time and budget. WCPSS has a large complex organization tasked to accomplish the above mission. WCPSS is in the process of increasing their management staff to deal with the increased size and complexity of the building program, and are continuing to fully staff all positions shown on the organizational chart.

See Appendix ? org chart

Compare and assess cost of providing in-house vs. out-of-house project management services

Fees quoted by several reputable program/project management firms ranged from roughly 2.5% to over 8% of the total program budget. Range variations are dependent upon program size and contract variables. WCPSS provides in-house program/project management services. Due to many variations of duties that might be assumed by an outside (out-of-house) manager, outsourced fees could not be firmly defined.

WCPSS indicated they budgeted 2.3% of the total building program budget for program management which is below the ranges quoted by others, and less than the amounts for comparable school districts quoted by the Construction Cost Analysis Report prepared by DeJong Associates, dated 4/23/07. The 2.3% includes desktop and laptop equipment. Not included in the 2.3% are overhead costs such as, gas

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and vehicle maintenance, utilities, and central office management support (Human Resources, payroll, accounting, corporate management, etc.)

Establish a structured value engineering process.

Value Engineering is a systematic method to improve the value of goods and services by using an examination of function. Value, as defined, is the ratio of function to cost. The intended result of VE is a decrease in cost while improving quality, reliability, durability and effectiveness of facility components and systems. VE solutions must not degrade overall performance, quality, maintainability, reliability and operating cost.

WCPSS currently requires value engineering (including the analysis of alternative materials and systems) in their Construction Manager-at-Risk contracts, although the requirement is less clear in their design consultant contracts. Occasionally, scope or quality reduction to meet budget after bidding has been called value engineering. This is not "true" value engineering.

Alternative/Innovative Construction Materials and Methods

WILL NEED DEFINITION/DESCRIPTION HERE

Are there ways to improve the management process?

Construction projects are not the same as many other contracts and purchases. They typically involve changes due to unforeseen conditions, regulatory issues, and even changes in plans due to the long lead-time for the total project. Changes often need to be acted on quickly to minimize cost by not temporarily halting the progress of work. Halting the work sometimes requires the contractor to remobilize, even though the resources to complete the work are available at the time the need for the change was discovered.

School Board policy 8361 requires that money be encumbered prior to beginning work, including change order work. This policy can lead to extra cost because of the delay to get funds encumbered and the time pressure to have it done quickly. Also, once funds are encumbered, the pressure is off of the contractor to provide the best possible price. The price could often be negotiated to a lower amount if negotiations could continue without the time constraint of needing to begin work in the field. One way to avoid this time constraint has been providing the contractor with an opportunity to do work on a "Time & Materials" basis. However, this eliminates pressure on the contractor to establish an equitable price.

Review program management industry standards to understand whether WCPSS allocates program/project in house management staff to building projects in a similar fashion as existing industry standards.

- WCPSS does assign staff based on what appears to be an industry norm of 1 Planner to 4 Project managers. Staffs are assigned from site selection through warranty. This appears to be in line with larger entities. (Probably need to compare to other large districts)
- WCPSS's stated goal regarding projects per project manager is three (3); with 1 project in each of the following project phases: programming/design, construction, warranty.
- WCPSS currently has 50 major projects in progress with 16 in design, 22 in construction, and 12 in warranty

Tentative Recommendation: Affirmation of current school processes assuming we can quantify ratios above.

Assign the same site planners/engineers/architects on projects with multiple phases

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WCPSS already utilizes the financial and time saving methodology of assigning the same site planners/engineers/architects on projects with multiple phases. The same applies to most renovation projects. The original designer or professionals most familiar with the building being renovated are used when possible.

When selecting consultants, emphasize experience and coordination with local municipalities in regulatory and permitting approval processes

One of the selection criteria in the WCPSS Designer Selection Procedure is "Proximity to and familiarity with the area in which the project is located". This is an item of particular interest when new architects are being considered. WCPSS not only utilizes this practice but also recently has hired an in-house non-project manager dedicated to helping expedite this coordination.

Should WCPSS consider the addition of transportation planner/engineer to staff or design team to ensure appropriate transportation coordination?

Due to the many persons required to perform studies of traffic patterns and transportation routing around school sites, WCPSS has determined that it best benefits the public financially to out-source this work due to the great manpower variations in this work.

The management of the design and construction of a school is not that much different from the development of a retail or mixed-use project. Therefore, examine the methodologies and tools used in private sector.

Most retail or mixed-use projects are built with generic layouts for final up-fit after tenant selection. By contrast schools are built to very exacting requirements for specific use. WCPSS appears to provide much more stringent guidelines than is the norm in retail or mixed-use projects because the requirements for schools must be more exacting.

Recommendations

Compare and assess cost of providing in-house vs. out-of-house project management services The total cost of providing program/project management in house should be determined through a recognized cost allocation model, which accounts for all overhead and related system wide cost.

Establish a structured value engineering process. Provide a documented process to justify the choices made during design to ensure a good value. Make sure that WCPSS Project Management and Operations & Maintenance are centrally involved in the Value Engineering process, along with the design team and Construction Management firm.

Are there ways to improve the management process? Encumbering the Owner's Contingency, and then enabling it to be spent at lower approval levels than are currently in place, has potential to allow projects to progress more efficiently and to minimize the cost due to changes. This would give the Project Manager more authority to effectively manage the project within the normal time constraints of a construction project.

PUBLIC/PRIVATE PARTNERSHIPS

Findings

The term public/private partnership in the context of this report relates to WCPSS's ability to enter into a lease for privately developed public schools. NC Senate Bill 2009 provides school systems in NC this financing opportunity. The question then becomesWhat specific criteria should the WCPSS use when considering whether to enter into a public/private partnership for developing a public school?

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Private Public Partnerships are very complex financial agreements. Typically a capital lease is more expensive than paying debt service, so savings would have to come from the private public partnership, or otherwise the county would have to obligate additional funding for school construction. Thus, the analysis would be “could a product be delivered faster or cheaper or is there a resource not owned by WCPSS or the County that would overcome the County’s favorable cost of capital.”

In addition to costs, the types of construction materials and the life cycle of the materials and building systems must be a part of the analysis to ensure operational cost are sustainable over the life of the partnership. Any project contemplated for this delivery method should follow WCPSS design and construction standards.

WCPSS recently sent out a Request for Qualifications (RFQ) to 12 Owner’s attorney teams on contracts for Public/private partnerships with 3 responses. The BOE will consider selection of representatives at their July meeting. The Project Delivery Subcommittee supports WCPSS’s initial approach in gathering information and developing Public/Private Partnership contractual documents protecting the school system and Wake County Government. With BOE approval of a RFQ planned for July or August, individual development teams will submit their qualifications.

Due to a number of factors, it is believed that there probably will not be any significant savings for completing a project through a public/private partnership; however, a final determination has not yet been made. A determining factor will be whether the schools can be built cheaply enough to overcome the different cost of capital (taxable financing vs. tax free financing). The determining factors may boil down to location of a school site and whether capital or operating dollars are available when needed for development. It is imperative, as stated earlier; any project contemplated for this delivery method should follow WCPSS design, energy and construction standards.

Area for Further Study

The Subcommittee supports WCPSS’s initial approach in gathering information and developing Public/Private Partnership contractual documents. Further study of this delivery method is needed.

CONSTRUCTION DELIVERY

Need brief definition of construction delivery

Study and report on ways to increase competition, especially for unpredictable work phases such as site work and structural materials.

Recommendation: Implement the following:

- Competition can be encouraged by establishing a more fair method of handling Change Orders and timely payments --- especially final payments. Some subcontractors and general contractors no longer want to work for WCPSS because of perceived onerous demands and bureaucracy.
- Staff qualifies construction managers, who in turn qualify subs on larger jobs. Allowing more lead-time for receiving bids can help all levels of bidding. Full coordination with surrounding counties, state government and area colleges to stagger bid days will allow general contractors and subs to bid more projects. Often times there are three or four bids on the same day in the Triangle.
- Site work should have intensive input from architects, engineers, soil specialists, staff and construction managers to review all aspects of a balanced cut-and-fill operation, retaining walls

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and structures to best utilize each site. Invite one of the area site contractors for input prior to releasing a project for bids. (This is already being done on most large projects.)

- Staff and construction managers should always challenge structural elements. Occasionally hire an independent engineer to critique the designs, and various loading factors, including establishing a rule of thumb standard of cost related to pounds per sq. ft of steel structure.
- HVAC loads should be questioned by asking some of the more qualified mechanical contractors to review plans relative to private sector work.
- General materials, and interior finishes including walls, flooring and other surfaces should be limited to “bare bones essentials.” More emphasis should be placed on avoiding fancy or “cutesy” materials. Alternates should be requested for possible changes.

Include and enforce liquidated damages in every Owner/Contractor Agreement

Liquidated damages are currently in every formal WCPSS contract. Liquidated damages are calculated and are often used as bargaining tools with contractors to reach final settlement on a project.

Study process of closing out items on punch lists.

System seems to be in place for general contractors/construction managers to create their own punch list before calling for a final by architect and WCPSS. There are charges enacted for follow up visits. Architects should be thorough and not add items on subsequent inspections.

Consider establishing national contracts for the suppliers of equipment (HVAC, kitchen, lockers, bleachers, etc).

National contracts would be very cumbersome for the staff and purchasing people plus it would possibly deter a contractor from getting better prices for his own bid. This would be unpopular with subcontractors.

Establish the turnover date to be a minimum of 30 days prior to school opening.

Turnover dates are tight as a rule plus time for school systems to mobilize is already built into the process. In most cases more than 30 days are built into current schedules.

Recommendations

Include and enforce liquidated damages in every Owner/Contractor Agreement. In addition to the current liquidated damage policy, bonuses should be offered in same denomination for early completion of a project on hard bid jobs. Construction Managers At-Risk can receive incentive now for on-time delivery.

Study process of closing out items on punch lists. “Retainage of 2.5 times the value of any unfinished item should be held until final work is in place, but should be released as items are completed.

Area for further study:

What are the advantages/disadvantages and net effect of the Construction Management at Risk process on project cost?

Overriding value of Construction Management-At-Risk takes a certain burden off of WCPSS staff in the early stages of working with architects and engineers, and in fact they value engineer projects before bidding the job. The involvement of a Construction Manager in the design phase engages them as part of the design process and enables them to look after the interests of the WCPSS.

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Construction managers tend to staff a project better with their top superintendents, engineers, etc. because more pressure is put on them from the beginning. High quality staffing also protects their "at-risk" responsibility. Projects are getting larger and more complex and subs in many cases are becoming less skilled and less quality conscious, which makes the Construction Manager At-Risk delivery system more important. A successful project by the Construction Manager equates to a good reputation for being considered for prequalification for future work.

The architect and WCPSS Project Manager still perform similar duties as with single prime work, although in many cases the quality of the contractor they are interfacing with is improved.

Staff is accused of sometimes "micro managing" the projects with too much emphasis on general conditions (a small % of job cost), scrutinizing the pay rates for superintendents, engineers and other job personnel. The "motivation" of such scrutiny is questioned, when compared to how state agencies work.

At present, there is no real evidence that Construction Manager-at-Risk is costing WCPSS more than single prime work. See Appendix ???? for a comparison of Construction Manager-at-Risk project attributes to Single Prime construction.

INSPECTIONS AND PERMITTING

Currently there are many inconsistencies between all municipal jurisdictions in the assessment of service fees, building permit reviews, and building inspections. There is a need to develop a common review process with consistent service fees among all municipal jurisdictions in Wake County regarding WCPSS Capital Building Program.

The County and Town Managers established a committee to review possibilities for changing the process by which school construction projects are permitted and inspected. This committee's charge includes review of the following items.

- Site Plan Approvals
- Building Permits
- Building Inspections
- Site Inspections
- Wake County Services
- Municipal Service Costs
- Municipal Service Fees

Recommendations

The Project Delivery Subcommittee supports the Committee's effort and agrees with the development of an efficient streamlined common review process with consistent service fees and single inspection authority among all municipal jurisdictions.

NEXT STEPS

CONCLUSION

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