

**THE UNIVERSITY OF NORTH CAROLINA  
*CAPITAL EQUITY/ADEQUACY STUDY***

**PHASE II WORK PAPER II-B-9  
*ENROLLMENT DRIVEN CAPITAL NEEDS***

MARCH 5, 1999

Important Note: This document is an *Interim Work Paper*, not a *Report*. It was prepared pursuant to Phase II of this *Study*, to present analyses of space capacity of UNC institutions related to current and future enrollment levels. These analyses will be used to develop capital needs related to capacity, for each UNC institution.

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## ***INTRODUCTION***

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### **LEGISLATIVE MANDATE FOR 10-YEAR CAPITAL PLAN**

For the *Capital Equity/Adequacy Study*, the General Assembly's revised *Special Provision* mandates creation of a *10-Year Capital Needs Plan* and a related "capital spending plan" for The University of North Carolina (UNC). Work is underway to formulate that *Plan*, which will describe capital needs for each UNC institution in four categories:

Part 1: Condition and Quality	Renovations required to upgrade and modernize existing facilities or infrastructure
Part 2: Current Capacity	Space needs required to bring space capacity up to current enrollment levels (at some institutions)
Part 3: Future Capacity	Space expansion needs required to meet planned enrollment growth
Part 4: Special/Programmatic	Other needs that are program-specific or otherwise not included logically in Parts 1, 2, or 3.

Other parts of the work plan for this *Study* address *Part 1—Condition and Quality*, needed renovations to existing facilities and *Part 4—Special/Programmatic Needs*. This *Work Paper* provides the analysis for *Part 2—Current Capacity* and for *Part 3—Future Capacity*.

### **A GROWING UNIVERSITY SYSTEM**

UNC expects to experience enrollment growth of approximately 48,000 students between this year and 2008. As headcount (HC) enrollment in Fall 1998 was 154,989 students, expected growth represents about 31 percent, or nearly one-third, of current enrollment. This forecast is based on the enrollment projection model of UNC General Administration (GA), which uses US Census, Western Interstate Commission on Higher Education (WICHE), and NC school system demographic data, together with assumptions about UNC's continued market share of enrolling students, for various age cohorts. This significant enrollment increase will strain campus facilities capacity for those UNC institutions that already have shortages in certain space categories. In other cases, the growth should serve to make use of existing capacity that has been underutilized.

### **OBJECTIVES**

The purpose of this *Work Paper* is to project capital needs of the UNC institutions, based on quantitative increases in the students to be served. Specific objectives were to:

- Analyze *Current and Future Capacity* based on a quick ratio of *limiting factors*
- Use the *Space Planning Standards and Guidelines* and *variance analysis* to project facilities expansion needs for various space categories.

In addition, another purpose of early iterations of this analysis was to support GA's enrollment planning. As the *Study* nears completion, this *Work Paper* will be used, along with *Work Paper II-B-6—Baseline Space Quality Criteria* and *Work Paper II-B-7—Facilities Maintenance and Repair Issues*, as three main inputs to the *Phase II-C Facilities Evaluation and 10-Year Capital Plan Development*.

## ***METHODS***

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### **COORDINATION WITH UNC ENROLLMENT PLANNING**

All of these analyses relating to *Current Capacity* and *Future Capacity* have been developed in close coordination with UNC GA staff responsible for enrollment projections and planning studies. (See Exhibit 1 for participants in this *Work Paper*.) The work has been iterative—as *Current Capacity* was an input to enrollment projections and the enrollment projections were input to *Future Capacity* needs.

Enrollment estimates or targets for each UNC institution used in this *Work Paper* are those that the UNC chancellors reviewed in late February 1999 and that were submitted to the Planning Committee of the Board of Governors (BOG) for discussion in March 1999. These estimates/targets remain tentative, and may be changed by the BOG Planning Committee or the full Board. If/as any of the targets for specific institutions are changed, the capacity needs related to enrollment also would need to be revised accordingly.

Overall, two methods were developed for assessing *Current Capacity* and *Future Capacity*. Each of these is described following. Findings of both analyses are described in subsequent sections of this *Work Paper*.

### **METHOD 1—QUICK RATIO OF CAPACITY BY LIMITING FACTORS**

As a part of an iterative process to both establish target enrollment growth for each of the constituent institutions and to estimate their capacity-related space needs, GA needed EKA to produce an analysis to estimate *Current Capacity* for each of the constituent institutions. Each of the campuses had submitted capacity estimates to GA in the enrollment planning exercise, but the means of arriving at these estimates differed. The *Space Planning Standards and Guidelines*, which allow *variance* analysis, were the original intended focus of this *Work Paper*. There was no quick way to use these variances to provide estimates of capacity expressed in HC enrollments. The possibility of using an existing ratio of *Academic Space per FTE* that is reported annually in the *Facilities Inventory and Utilization Study* (Table 2) was considered. However, it was determined that the numerator of that ratio is a very broad definition of the term *academic space* that does not serve the specific purpose of this analysis. Therefore, to support UNC GA's analyses of planned enrollment growth, at the request of Dr. Judith Pulley, EKA produced a quick measure of existing capacity.

#### **Limiting Factor Analysis**

An analysis was developed, to create a new ratio that would answer the following question:

Of the various types of campus space, which ones truly are the **LIMITING FACTORS** that really might preclude an institution from being able to enroll more students?

Academic facilities, parking, and student housing were considered at length. It was decided that parking is a limiting factor for some campuses, but a means to assess its limiting impact eluded the team. It was concluded that limits on capacity should be calculated essentially by two parameters:

- Core Academic Facilities
- Residential Beds.

### Core Academic Facilities

Next, it was necessary to determine which categories of space should be included as critical *Core Academic Facilities*. Three categories for which there are space guidelines—Athletic and Physical Education Facilities, Student Services Support Facilities, and Support Facilities—were eliminated early in the considerations. While these facilities certainly play a role in providing services to students, they do not rise to the level of being *limiting factors* in enrollment.

#### *Four Scenarios Tested*

To define *Core Academic Facilities*, as a *limiting factor*, four scenarios were tested.

- Scenario 1: Classrooms + Class Labs + Open Labs
- Scenario 2: Classrooms + Class Labs + Open Labs + Offices
- Scenario 3: Classrooms + Class Labs + Open Labs + Offices + Study
- Scenario 4: Classrooms + Class Labs + Open Labs + Study Space.

The actual ASF (based on *Fall 1997 Facilities Inventory*) of *Core Academic Facilities*, as defined in each of the four scenarios, was summed and then divided by the Fall 1997 FTEs of the institution, to provide a ratio of ASF of *Core Academic Space* per FTE (ASF/FTE) for each campus.

#### *Different Treatment of Study Space*

The calculation for Study (Library) Space in this analysis differs in two ways from that in the space *variances*. Study/Library space includes not only study space (410 and 430), but also stack space (420 and 430) and support space (440 and 450). For this analysis, only the 410-Reading Room space plus 50 percent of the 430-Open Stack space was counted. On the other hand, it was determined that study space as part of *Core Academic Facilities* is not only in the libraries, but also throughout the campus. Therefore, unlike Study Space variance calculations associated with the planning standard, which includes central libraries only, it was decided to count all campus space coded as HEGIS 410.

#### *Conclusion: Core Academic Facilities*

Scenarios 2 and 3, which included office space, drove the ASF/FTE to a very high level and reduced the estimated *Current Capacity* levels to an unacceptable number. Based on review of the results of the four scenarios, it was determined to define *Core Academic Facilities* for this exercise as follows:

Core Academic Facilities = Classrooms (HEGIS 110) + Class/Teaching  
Laboratories (HEGIS 210) + Open Laboratories  
(HEGIS 220) + Study Space (HEGIS 410/430)

#### *Creating a Benchmark*

Then, using actual ASF/FTE of space at UNC campuses, with actual ratios at NC State, UNC-Charlotte, and UNC-Wilmington as the point of departure, a benchmark of 26 ASF of *Core Academic Facilities* per FTE student was established. With the benchmark of 26 ASF, calculations were made of

*Current Capacity* expressed in *Student FTEs*. These then were converted to *Student HCs*. This *HC Current Capacity* was compared with those submitted by the institutions. There were some variations, as the campus methods varied.

### Residential Beds

The next part of the analysis undertook to determine the number of housing beds that would be needed to make full use of the existing *Current Capacity* derived from *Core Academic Facilities*. This analysis was based on the percent of *HC students* that the institution currently houses, given mission, programs, and demographics of the populations it serves. A comparison of the number of beds needed vs. the number of beds available led to a variance—positive or negative—expressed in numbers of beds, not in square footage.

## METHOD 2—UNC SPACE PLANNING STANDARDS AND GUIDELINES

The second means for quantitative assessment of facilities needs in this *Work Paper* are based on *Space Planning Standards* the BOG adopted in November 1998 and on the *Space Planning Guidelines* developed in *Work Paper II-B-8—Additional Space Planning Guidelines*, distributed recently to *Study* constituents. By this method, a more detailed analysis leads to indications of surpluses or excess by *HEGIS room use codes*. This level of detail is important for development of the *10-Year Capital Plan* needs estimates and this analysis was the original purpose of *Work Paper II-B-4*.

The November 1998 *Space Planning Standards* covered only four *HEGIS Room Use Codes* that, at the time of that *Study*, were deemed most critical to the primary missions of instruction. They were:

- Classrooms (HEGIS 110)
- Class/Teaching Laboratories (HEGIS 210)
- Offices/Conference Space (HEGIS 310/315/320/325)
- Study (Library) Facilities (HEGIS 410/420/430/440/450)—in “central libraries” only

In order to prepare this analysis and project needs based on current and future *HC enrollment*, it became necessary to establish *standards* or *guidelines* for additional categories of campus space. Therefore, *Work Paper II-B-8—Additional Space Planning Guidelines* was developed to provide these additional guidelines. The guidelines developed in *Work Paper II-B-8* have not been adopted formally. They are being used, however, in this analysis. The space categories covered in *Work Paper II-B-8* include:

- Open Laboratories (220)
- Athletic and Physical Education Facilities (520/525)—only for *Program Code 11—Instruction*
- Student Service Support Facilities (520/525/610/615/620/625/650/655/670/675/680/685)—only for *Program Code 52—Social and Cultural Development* and *Program Code 55—Student Auxiliary Services*)

- Support Facilities (700 series)
- Residential Facilities (900 series)—only for *Program Code 55—Student Auxiliary Services*.

## APPLICATION OF PLANNING STANDARDS AND GUIDELINES

### Current Capacity

The function of all the standards and guidelines is to calculate a *standard* or *predicted* amount of space in a given category that a campus should have, given various measures. Then, with data from the *Facilities Inventory*, one compares the amount of *actual space* with the *predicted* or *standard* space and calculates a variance—which may be positive or negative.

**Figure 1**  
**Sample Calculation of *Standard***  
**Study/Reading Space and *Variance***

**Planning Standard for Reading Space:**  
Reading Station Size = 25 ASF  
Reading Users = 20% Student FTEs  
                                  + 8% Faculty FTEs

**Calculation of *Standard* Space Needed:**  
(.25X10,000 + .08X1000) x 25 ASF = 52,000 ASF

**Variance Calculation:**

Actual ASF	=	50,000
Standard ASF	=	52,000
Variance	=	(2,000)

In this hypothetical example, the institution would have a calculated *negative variance* or *deficit* or *shortage* of about 2,000 ASF of Study/Reading Space.

For example, one can calculate the amount of HEGIS 410 Study/Reading Space in libraries needed, based on a *planning standard* that assumes 20 percent of student FTEs, plus 8 percent of faculty FTEs, need to use reader stations in the library at any given time, and that one reader station is 25 ASF in size. Thus, the standards and guidelines permit at least a gross view of whether an institution has more capacity than it needs, less capacity than it needs, or has about the right amount of reading space in its libraries. The same exercise is repeated for other space types, with different standard metrics. This, essentially, is the analysis that was done for the four HEGIS categories of space in the *Space Planning Standards Study*. This variance analysis was performed initially for all the above space types based on Fall 1997 *Facilities Inventory* data.

## ADJUSTMENTS TO FALL 1997 CURRENT CAPACITY FOR “PIPELINE” CAPITAL PROJECTS

For both of the methods described above, initial calculations used Fall 1997 data. However, the UNC GA enrollment projections model is expressed in three timeframes: 1998, 2003, and 2008. There never can be a perfect correlation of timing between annual enrollment growth and the step-function additions of space that come when capital projects in the *pipeline* are completed and placed in service. For this reason, an additional methodology was needed, to adjust the Fall 1997-based calculations to reflect an *Adjusted Current Capacity* that would be matched more closely with the Fall 1998 enrollment periods, and with the enrollment levels for the next approximately two to three years—all considered *Current*, and distinguished from the next two timeframes, 2003 and 2008.

### Definition of *Pipeline* Capital Projects

The definition of *pipeline* capital projects that was used to create *Adjusted ASF* for 1998 and used as the measure of *Adjusted Current Capacity* includes the following UNC capital facilities projects:

- Projects that already are in service but that were not available to be counted in the *Fall 1997 Facilities Inventory*

- Projects that are under construction, as of this date and, therefore, assumed to go into service within the next 12 to 18 months
- Projects that are not yet under construction but that have been fully funded by the General Assembly and, therefore, are likely to be in service within the next 24 months or so.

Excluded from the definition of *pipeline* capital projects are those additional projects that are:

- Partially funded for construction
- Funded for planning only
- Listed in the Capital Request but not funded even for planning.

These projects will be associated with *Future Capacity* for 2003, if/as they materialize. In a few cases, the analyses for the *10-Year Capital Plan* may lead to changes in those not-yet-funded projects. There was one exception made. The Humanities Building for UNC-Charlotte, for which the majority of the funding has been committed, was counted as a *pipeline* project under *Current Capacity*, as if fully funded.

Estimated ASF data for pipeline projects was obtained from UNC institutions as this *Work Paper* was in preparation. The consultants have not had time to review these thoroughly with the institutions. There is the possibility of errors. We intend to continue with this review after publication of the *Work Paper* and we will adjust any errors in the course of development of the *10-Year Capital Plan*.

Then, the analysis was updated with data provided by the UNC institutions about the estimated ASF being added to *Inventory* by *pipeline* projects, as defined above. The estimated ASF of space that has been (or will be) added to campuses with completion of these *pipeline* projects was added to space already recorded in the *Fall 1997 Facilities Inventory*, to express *Adjusted Current Capacity*—based on Fall 1998 HC student enrollment. The projects and the ASF for each HEGIS *Room Use Code* or series submitted by each Institution as a *pipeline* project can be found in Exhibit 2.

## ESTIMATES OF FUTURE CAPACITY FOR 2003 AND 2008

The final element of analysis was to turn both methods—the quick ratio of capacity and the more detailed *variance* calculations—into projections, by applying UNC GA's enrollment estimates or targets for 2003 and 2008. Again, we note that these targets are working figures currently under review by the Board of Governors Planning Committee and, thus, subject to change.

In the *variance* calculations, since the UNC enrollment targets are expressed in *Student HCs*, they were converted into *Student FTEs* and *Student Clock Hours of Instruction*, for use in the various formulae associated with the planning guidelines. The following notes are explanatory. Findings are provided in a separate chapter below.



## General

The Standard ASF for 2003 reflects the need for increase in space from 1998. The Standard ASF for 2008 reflects the need for increase in space from 1998.

The conversion of HC to FTEs and Student Clock Hours of Instruction (SCH) was done by determining the ratio of HC to FTE and HC to SCH over an 11-year period of time, from 1987 to 1997. This conversion factor then was used to predict FTEs for the year 2003 and 2008. The FTEs are used to determine Standard ASF for Study (Library), Athletic and Physical Education, and Student Services.

The conversion to SCH was used to calculate the SCH for 2003 and 2008. SCH are used to determine Standard ASF for Classrooms. A percentage of increase was then calculated to show the percentage increase of SCH from 1997 to 2003 and from 1997 to 2008. This percentage increase was used to calculate SCH for the 22 disciplines in the Class Labs for 2003 and 2008. The percentage increase also was used to calculate Student Credit Hours for the 19 disciplines in the Open Labs for 2003 and 2008.

## Classrooms

Standard ASF for classrooms is calculated by multiplying the *Space Factor* of 0.79 times the SCH.

## Class Labs and Open Labs

The Standard ASF for Class Labs is calculated by multiplying the *Space Factor* for each of the four discipline groupings times the SCH. The Standard ASF for Open Labs is calculated by multiplying the Student Station size for each of the four discipline groupings times the Number of Converted Students, as described in *Work Paper II-B-8 Additional Space Planning Guidelines*.

## Office

The Standard ASF for Office space is calculated by multiplying the FTEs in each personnel category times the space allowance for each of the personnel categories. Ratios of Student HC to each of the personnel categories were made based upon 1997 data, the last year for which data was available. These ratios then were used to predict the number of staff for each category of personnel for the years 2003 and 2008. The space allowance for each category of personnel then was used to calculate Standard ASF for 2003 and 2008.

## Study (Library)

The Standard ASF for Study (Library) space is a total of Study Space (20 percent of student FTEs and eight percent of faculty FTEs times 25 ASF per station), Stack Space (0.08 times the number of volumes), and Service/Processing Space (15 percent of Study and Stack Space). The percentage of increase for faculty FTEs was calculated at eight percent for the period 1997 to 2003 and 24 percent for the period 1997 to 2008. These percentages were used to calculate the increase in faculty FTEs. A comparison of library volumes from 1987 to 1997 was done. This provided the percentage increase in library volumes necessary for the calculation of stack space. The predicted increase in volumes was distributed equally between the two time periods.

### Athletic and Physical Education

The Standard ASF for Athletic and Physical Education is calculated by multiplying 7.5 ASF time the number of student FTEs above the core of 1,000 student FTEs and adding in the core of 20,000 ASF.

### Student Services

The Standard ASF is calculated by multiplying 12 ASF times student FTEs.

### Residence Halls

Given the wide variety of housing stock among the 16 constituent institutions and the need for different types of new housing, no Standard ASF for Residence Halls was calculated. The total number of beds needed for 2003 and 2008 is calculated using the percentage of students that each institution indicated that it wished to house. For this reason, the percent of *Students Housed* used in the tables and graphs for 2003 and 2009 are not the same as the actual percentages housed that appear in the 1997 and 1998 analysis. In some cases, institutions provided us targets for percentages of students they would like to house that differ from their current actual percentages.

## ***FINDINGS—BASED ON QUICK RATIO OF CAPACITY***

### **FALL 1997 BASELINE CURRENT CAPACITY**

The entire analysis for Fall 1997 data is shown as Exhibit 3 and summarized below in Figure 2. *Baseline Current Capacity*, as defined by the two limiting factors of *Core Academic Facilities* and *Residential Beds*, based on Fall 1997 statistics for enrollments and actual ASF yields the following findings:

- **Theoretical Student Capacity in 1997.** If student market preferences and housing beds were not a constraint, the Fall 1997 analysis indicates theoretical capacity of 175,000, or approximately 20,00 students above Fall enrollment levels.
- **Usability of Current Capacity.** Much of the existing potential capacity is at institutions with historically lower enrollments. The fast-growth, high-demand institutions do not have current available capacity. Therefore, UNC's ability to make use of existing capacity requires measures to enhance facilities, programs, and enrollment at underutilized institutions.
- **Shortage of Residential Beds.** If institutions maintain their current ratio of residential to total students, most institutions that have existing academic capacity would need to add beds to use that academic capacity. Six institutions—NC A&T State, NC Central, Western Carolina, UNC-Asheville, Elizabeth City State, and Winston-Salem State—would require either additions of large numbers of residential beds, with the same ratio of residential students, or a considerably reduced ratio of students housed.

Figure 2  
Summary of Actual HC, Estimated HC Academic Capacity, and # Beds Needed: Fall 1997

Carnegie Classification	Institution	Actual HC	Est. HC Capacity (Core Academic)	# Beds Needed to Use Capacity
Research I	NC State	27,529	27,440	(21)
	UNC-Chapel Hill	23,668	23,006	(184)
Doctoral I	UNC-Greensboro	12,308	12,539	66
Doctoral II	East Carolina	17,846	18,821	274
Master's I	Appalachian State	12,108	12,626	209
	Fayetteville State	3,916	5,654	511
	NC A&T State	7,468	12,177	1,868
	NC Central	5,664	9,296	1,272
	UNC-Charlotte	16,370	14,558	(406)
	UNC-Pembroke	3,034	4,231	333
	UNC-Wilmington	9,176	8,841	(70)
	Western Carolina	6,531	10,400	1,706
Liberal Arts	UNC-Asheville	3,179	5,889	785
Baccalaureate II	Elizabeth City State	1,920	4,514	1,377
	Winston-Salem State	2,865	4,927	829
Specialized	NC School of the Arts	1,032	N/A	N/A
	UNC Totals	154,614	174,919	8,550

Note: The NCSA HC number includes the high school cohort. Capacity estimate is not applicable to NCSA.  
Source: Eva Klein & Associates

## ADJUSTED CURRENT CAPACITY WITH PIPELINE FACILITIES INCLUDED AND FALL 1998 ENROLLMENTS

The analysis of *Adjusted Current Capacity* is provided as Exhibit 4 and summarized below in Figure 3. After data were organized to include in the current ASF of campus space those facilities that are in the pipeline, the following findings emerge:

- Theoretical Student Capacity in 1998. If student market preferences and housing beds were not a constraint, UNC has an *Adjusted Current Capacity* for 191,000 HC students, an more than 36,000 above Fall 1998 HC.
- Institutions Near Capacity in 1998. When pipeline projects are considered, six institutions that are growing rapidly are just catching up in space with previous enrollment levels, and while Figure 3 shows some excess capacity, these institutions, are likely to absorb their Estimated HC Capacity very rapidly. These are UNC-Chapel Hill, NC State, UNC-Greensboro, East Carolina University, UNC-Charlotte, and UNC-Wilmington.
- Institutions with Additional Capacity in 1998. Of the remaining 9 institutions (excluding NCSA), seven have more substantial amounts of capacity than they can absorb rapidly. These include Fayetteville State, NC A&T, NC Central, UNC-Pembroke, Western Carolina, Elizabeth City State, and Winston-Salem State. Two more, Appalachian State and UNC-Asheville have substantial capacity that they might be able to absorb; however UNC-Asheville is not targeted for growth beyond 3,500.

Figure 3  
Summary of Current HC, HC Adjusted Academic Capacity, and # Beds Needed: Fall 1998  
(and including Pipeline Facilities Not in Fall 1997 Inventory)

Carnegie Classification	Institution	Actual HC	Est. HC Capacity (Core Academic)	# Beds Needed to Use Capacity
Research I	NC State	27,175	28,065	1,251
	UNC-Chapel Hill	23,827	24,313	720
Doctoral I	UNC-Greensboro	12,700	13,964	447
Doctoral II	East Carolina	17,799	19,612	1,082
Master's I	Appalachian State	12,386	15,013	801
	Fayetteville State	3,943	5,747	629
	NC A&T State	7,354	13,097	2,145
	NC Central	5,580	10,345	2,165
	UNC-Charlotte	16,670	18,232	871
	UNC-Pembroke	2,998	4,302	620
	UNC-Wilmington	9,643	10,553	428
	Western Carolina	6,287	10,605	2,105
Liberal Arts	UNC-Asheville	3,175	6,054	989
Baccalaureate II	Elizabeth City State	1,903	5,889	1,926
	Winston-Salem State	2,778	5,914	1,214
Specialized	NC School of the Arts	1,043	N/A	N/A
	UNC Totals	155,261	191,714	17,392

Note: 1. # of beds needed reflects the percentage of total HC enrollments that institutions stated they would like to house.  
2. The NCSA HC includes the high school cohort. Capacity estimate is not applicable to NCSA.  
Source: Eva Klein & Associates

## PROJECTIONS FOR 2003

The analysis of *Adjusted Future Capacity* for the Year 2003 is provided in Exhibits 5 and summarized below in Figure 4. The calculations do not add any additional ASF beyond 1998 pipeline projects. After the data were organized to reflect 2003 HC, and with Fall 1998 ASF including pipeline projects held constant, the following findings emerge:

- **Future Capacity in 2003.** As this analysis does not change the ASF of space from the 1998 figures, this projection shows that UNC institutions are absorbing some of the *Estimated HC Capacity* (Fall 1998). Again, the capacity would not necessarily be distributed where the growth is occurring. In this scenario, if student preferences and housing beds were not a constraint, the *Core Academic Facilities* HC capacity of more than 191,000 would permit another 23,000 students above the 2003 targets. Excess capacity is reduced by 13,000 as targeted enrollments begin to catch up.
- **Institutions At or Over Capacity in 2003.** Based on enrollment growth, and with no facilities added, there would be three institutions for which the targeted HC enrollment will exceed their capacity. These institutions are UNC-Chapel Hill, East Carolina University, and UNC-Wilmington. Three more, NC State, UNC-Greensboro, UNC-Charlotte, would be close to capacity. Two more, Fayetteville State and UNC-Pembroke, would be within 1,000 students of their HC capacity.
- **Institutions Below Capacity in 2003.** Again, with no new facilities, there still would be six institutions with material excess capacity based on targeted HC enrollments and HC capacity for *Core Academic Facilities*. These institutions are Appalachian State, NC A&T State, NC Central, Western Carolina, Elizabeth City State, and Winston-Salem State. UNC-Asheville and NC School of the Arts are not targeted to meet capacity.

Figure 4  
Summary of Target HC, Estimated HC, Adjusted Academic Capacity, and # Beds Needed: Fall 2003  
(and including Pipeline Facilities Not in Fall 1997 Inventory)

Carnegie Classification	Institution	Target HC	Est. HC Capacity (Core Academic)	# Beds Needed to Use Capacity
Research I	NC State	27,180	28,065	1,251
	UNC-Chapel Hill	24,970	24,313	720
Doctoral I	UNC-Greensboro	13,730	13,964	447
Doctoral II	East Carolina	20,000	19,612	1,082
Master's I	Appalachian State	12,500	15,013	1,102
	Fayetteville State	4,730	5,747	285
	NC A&T State	8,840	13,097	2,276
	NC Central	6,700	10,345	1,234
	UNC-Charlotte	17,960	18,232	871
	UNC-Pembroke	3,600	4,302	620
	UNC-Wilmington	10,700	10,553	322
	Western Carolina	7,550	10,605	2,105
Liberal Arts	UNC-Asheville	3,500	6,054	1,353
Baccalaureate II	Elizabeth City State	2,280	5,889	1,926
	Winston-Salem State	3,320	5,914	1,214
Specialized	NC School of the Arts	1,160	N/A	
	UNC Totals	168,720	191,714	16,805

Note: 1. # of beds needed reflects the percentage of total HC enrollments that institutions stated they would like to house.  
2. The NCSA HC includes the high school cohort. Capacity estimate is not applicable to NCSA.  
Source: Eva Klein & Associates

## PROJECTIONS FOR 2008

The analysis of *Adjusted Future Capacity* for the Year 2008 is provided in Exhibits 6 and summarized below in Figure 5. Again, no changes were made in ASF of facilities from 1998. After the data were organized to reflect the 2008 HC with the Fall 1998 ASF including pipeline projects held constant, the following findings emerge:

- **Future Capacity in 2008.** By 2008, with ASF of *Core Academic Facilities* held constant, UNC would have enrollment that exceeds HC capacity, by about 5,000 students. As many as 20,000 residential beds might be needed.
- **Institutions At or Over Capacity in 2008.** There will be seven institutions where the targeted HC enrollment would exceed their HC capacity, even before residential constraints are considered. These institutions are NC State, UNC-Chapel Hill, UNC-Greensboro, East Carolina University, Fayetteville State, UNC-Charlotte, and UNC-Wilmington. In addition, UNC-Pembroke would be about at capacity.
- **Institutions below Capacity in 2008.** There will be six institutions with material excess capacity based upon their targeted HC enrollments and HC capacity. These institutions are Appalachian State, NC A&T State, NC Central, Western Carolina, Elizabeth City State, and Winston-Salem State. Again, UNC-Asheville is not projected or expected to grow to its theoretical capacity, and NC School of the Arts is treated differently. Appalachian State will be within about 1,000 of its HC capacity.

**Figure 5**  
**Summary of Target HC, Estimated HC, Adjusted Academic Capacity, and # Beds Needed: Fall 2008**  
**(and including Pipeline Facilities Not in Fall 1997 Inventory)**

Carnegie Classification	Institution	Target HC	Est. HC Capacity (Core Academic)	# Beds Needed to Use Capacity
Research I	NC State	30,100	28,065	1,251
	UNC-Chapel Hill	27,500	24,313	720
Doctoral I	UNC-Greensboro	14,800	13,964	447
Doctoral II	East Carolina	24,000	19,612	2,847
Master's I	Appalachian State	14,000	15,013	2,303
	Fayetteville State	6,000	5,747	285
	NC A&T State	10,600	13,097	2,276
	NC Central	8,300	10,345	1,234
	UNC-Charlotte	23,500	18,232	871
	UNC-Pembroke	4,200	4,302	620
	UNC-Wilmington	12,500	10,553	322
	Western Carolina	9,400	10,605	2,105
Liberal Arts	UNC-Asheville	3,500	6,054	1,958
Baccalaureate II	Elizabeth City State	3,000	5,889	1,926
	Winston-Salem State	4,200	5,914	1,214
Specialized	NC School of the Arts	1,200	N/A	
	UNC Totals	196,800	191,714	20,377

Note: 1. # of beds needed reflects the percentage of total HC enrollments that institutions stated they would like to house.  
2. The NCSA HC includes the high school cohort. Capacity estimate is not applicable to NCSA.  
Source: Eva Klein & Associates

Figure 6 summarizes the increases and decreases in the ASF/FTE ratio for each institution as the HC enrollment and/or the ASF increases. In the ratio calculation, the only ASF changes are from 1997 to 1998. ASF is constant for 2003 and 2008. Therefore, institutions fall below the 26 ASF benchmark, indicating the need for expansion space. As ASF capacity is added, there may be a lag time before the HC enrollment catches up with the capacity.

Figure 6 Summary of ASF/FTE: All Four Periods				
	1997	1998	2003	2008
NC State	25	26	27	24
UNC-Chapel Hill	30	31	25	23
UNC-Greensboro	27	29	26	25
East Carolina	30	31	25	21
Appalachian State	27	31	31	28
Fayetteville State	37	37	32	25
NC A&T State	42	46	38	32
NC Central	42	48	40	32
UNC-Charlotte	24	29	26	20
UNC-Pembroke	36	37	31	27
UNC-Wilmington	25	28	26	22
Western Carolina	41	43	37	29
UNC-Asheville	46	47	45	45
Elizabeth City State	59	77	66	50
Winston Salem State	44	54	46	37
NC School of Arts*	142	151	134	130

This summary clearly shows that some of the UNC institutions would be well below the benchmark of 26 ASF/FTE by 2008, if no new facilities are added. Others will remain above the benchmark through 2008.



## ***FINDINGS—BASED ON SPACE VARIANCE ANALYSES***

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The analyses in this *Work Paper*, following the work done in 1998 on *Space Planning Standards*, represent the first comprehensive methodology by which UNC institutions and the BOG can assess overall capacity and capacity by categories of space. It is interesting to note that "Method 1—Quick Ratio of Capacity" leads to the general conclusion that UNC institutions, for the most part, have available *Core Academic Facilities* capacity. In contrast, the more detailed *variance* analyses, by *HEGIS Room Use Codes*, reveal various deficits or negative variances of some kinds of space.

This contrast occurs because many campuses may have "enough" total space, but they may not have the right kinds of space or optimal mixes of space types. This may be the logical result of decades of capital projects, under successive chancellors, being planned and implemented without the benefit of baseline or benchmark analytical tools. As the results of these new analyses are reviewed, it may become apparent that much can be accomplished by creative retrofitting of some existing space to new uses—all in connection with renovations that also would be required for obsolescence or qualitative reasons. Thus, a great part of facilities needs may be possible to accomplish within existing square footage and not necessarily only from new facilities.

### **ESTIMATES OF CAPACITY-RELATED FACILITIES NEEDS**

In this context, the following are brief summaries of space needs based upon calculations of Standard ASF for 1998, 2003, and 2008 using the *Space Planning Standards* and *Additional Space Planning Guidelines* for each institution. The comments pertain to the 16 bar graphs, Figures 7 through 22, on pages 19 through 34, for each UNC institution, that show:

- Adjusted Actual ASF (including pipeline projects)
- Standard ASF for 1998
- Standard ASF for 2003
- Standard ASF for 2008

The 16 bar graphs are not depicted with identical scales. They use three different scales for groups of institutions, by size, as follows:

- Up to 2 million ASF for UNC-CH, NC State, and East Carolina
- Up to 450,00 ASF for UNC-Greensboro, Appalachian State, Fayetteville State, NC A&T, NC Central, UNC-Charlotte, UNC-Wilmington, and Western Carolina
- Up to 150,000 ASF for UNC-Pembroke, UNC-Asheville, Elizabeth City State, and Winston-Salem State.

On each page, the graph in the lower right corner shows the total number of residential beds, not ASF, for 1998, 2003, and 2008. On the bottom left, the current working estimates for 2003 and 2008, current Fall 1998 enrollments and the targets for percent of total HC students housed are

summarized. The percent of total HC students housed is calculated for 1998 and the percent is supplied by the institution for 2003 and 2008.

The detailed statistics that generate the bar graphs are provided as Exhibit 7.

NC State University will need increases in space for Study and Student Services.. Space for Classrooms, Class and Open Labs (Figure 7) will need to be increased by 2008. There is a need for a small increase in space for Athletics and Physical Education space. There appears to be sufficient Office space, but it will be necessary to review the ASF more closely for Office space that is included in Agricultural programs that are not located on the campus. NC State also will need additional housing. Also, although it is not covered in this analysis, NC State has parking constraints that must be addressed.

UNC-Chapel Hill (Figure 8) appears to have sufficient Classroom space but may need increases in space for Class Labs and maybe in Athletics and Physical Education. More significant space increases will be needed for Open Labs, Study (Library) and Student Services. The chart shows the need for a large increase in office space; however, in calculating the Standard ASF for 1997, it was noted the personnel numbers includes staff in the Health Affairs division that work in the hospital and who do not require office space. Therefore, the increase in office space that is shown may not be a realistic one. There may be a need to increase the number of beds by approximately 1,000 by 2008, depending on the mix of undergraduate and graduate students in UNC-Chapel Hill's growth. Also, we believe the target residential ratio will be revised.

East Carolina University (Figure 9) will need increases in space for Classrooms, Class and Open Labs, Office, Study (Library), and Athletics and Physical Education. As with UNC-Chapel Hill, ECU Health Affairs personnel are counted in the space calculations for offices, and as a result, the need shown may be higher than actual. There appears to be sufficient space in Student Services through 2003 and then a need for additional space by 2008. There is a potential need for as many as 4,000 beds by 2008. It should be noted that ECU projects an increase in percent of students housed from 31 to 40 percent, and also expects private housing to meet some of the need.

UNC-Greensboro (Figure 10) appears to have sufficient Classroom space. There is a need for a small increase in Class Labs and more significant increases in Open Labs, Study (Library), Athletics and Physical Education, and Student Services. There appears to be sufficient Office space through 2003 and then a need for some additional office space for 2008. There may be a need to increase the number of beds.

Appalachian State University (Figure 11) has more than sufficient space in Classrooms, Class Labs, Office, and Student Services. There will be a need for a slight increase in the space for Open Labs (perhaps as a trade-off or netted against Class Labs) and Athletics and Physical Education. There is a need for a larger increase for Study (Library) space. There is a need for approximately 2,000 beds by 2008. Appalachian also wishes to increase its residential population, from about 40 to 50 percent.

Fayetteville State University (Figure 12) appears to have sufficient space for Classrooms and Athletics and Physical Education. There is a need for additional space in Class and Open Labs, Office

(by 2008), Study (Library), and Student Services. There appears to be a need for a small increase in the number of beds by 2008.

NC A&T State (Figure 13) has enough space for Classrooms. It has enough space for Office, Study (Library), and Athletics and Physical Education through 2003 and then will need additional space in each of these areas by 2008. Increases in space are needed in Class and Open Labs, and Student Services. There may be a need for approximately 1,500 beds by 2008.

NC Central (Figure 14) has sufficient space for Classrooms. It has a need for additional space for Class and Open Labs, Study (Library), and Student Services. There is sufficient space for Office and Athletics and Physical Education through 2003 and then potential need for additional space by 2008. There appears to be a need for an increase in the number of beds by 2008. NC Central suggested a potential decrease in the percentage of students housed, from 45 to 36 percent.

UNC-Charlotte (Figure 15) has a need for immediate increases in space for Classrooms, Class and Open Labs, and Athletics and Physical Education. There is sufficient space for Study (Library) and Student Services through 2003 and then UNC-Charlotte will need additional space in these categories by 2008. Needs for Office space will emerge for 2003 and 2008. There may be a need for approximately 1,500 beds by 2008.

UNC-Wilmington (Figure 16) needs immediate increases in space for Class and Open Labs, Study (Library), Athletics and Physical Education, and Student Services. It appears to have sufficient space for Office through 2003 and then will need an increase in this category. There is a need to increase the number of beds during each of the time periods. UNC-Wilmington projects a slight decrease in the percent of students housed, from 26 to 25 percent.

Western Carolina University (Figure 17) has sufficient space for Classrooms, Study (Library), Athletics and Physical Education, and Student Services. It appears to have sufficient space for Class Labs through 2003 and then will need an increase in space for this category. It will need increases in space for Open Labs and Office. There is a need to increase the number of beds during each of the time periods.

UNC-Pembroke (Figure 18) has sufficient space for Classrooms, Class Labs, Offices, Athletics and Physical Education, and Student Services. It has sufficient space for Office through 2003 and then will need an increase in space. It will need later increases in space for Open Labs and Study (Library). There is a need to increase the number of beds during each of the time periods.

UNC-Asheville (Figure 19) has sufficient space for Classrooms, Class Labs, and Athletics and Physical Education. It may need increases in space for Open Labs (or netting against Class Labs), Office, and Student Services by 2003 but no increases after this. It will need an increase in space for Study (Library) by 2008. There is a need to increase the number of beds during each of the time periods. UNC-Asheville proposes increases in the students housed (34 percent), to 40 percent in 2003 and 50 percent in 2008..

Elizabeth City State (Figure 20) has sufficient space for Classrooms, Class and Open Labs, Athletics and Physical Education, and Student Services. It may need an increase in space for Study

(Library) by 2008. It has sufficient space for Office through 2003 and will need more space by 2008. There is a need to increase the number of beds by 2008, including a minor increase of one percent in the students housed, from 49 to 50 percent.

Winston-Salem State (Figure 21) has sufficient space for Classrooms, Office, and Student Services. It has sufficient space for Class Labs and Study (Library) through 2003 and may then need an increase in this space by 2008. It may need an increase in space for Open Labs and Athletics and Physical Education. There may be a need for a small increase in the number of beds.

NC School of the Arts (Figure 22) has sufficient space for Classrooms, Open Labs, Office, and Student Services. There may be a need for space for Class Labs, Study (Library) and Athletic and Physical Education. Class Labs and Open Labs may offset each other to some extent. The excess in Student Services space is very high, suggesting further review would be useful. NCSA currently is constructing a new student recreation center that may eliminate the need for additional Athletic and Physical Education space. There may be a need to increase the number of beds during each of the time periods. NC School of the Arts plans a small increase, from 69 to 70 percent, in residential students.

## **SUMMARY**

The UNC System Summary (Figure 23) shows sufficient space for Classrooms overall, through 2008. Altogether, systemwide, there is sufficient space for Office through 2003, although there are many positive and negative variances by institution. There is a need for more space for Class and Open Labs, Study (Library), Athletics and Physical Education, and Student Services. Systemwide there may be a need for approximately 18,000 beds, although much of this could be reduced by reductions in residential student ratios or by private/in-community housing.

Overall, the excess space may not be at the institutions that are experiencing rapid growth in student enrollment. The campuses with excess space and room to grow may not be the institutions agreeable to or targeted for increased enrollment to match the capacity of the campus.

## **OVERALL DISTRIBUTION OF UNC SYSTEMWIDE SPACE: 1998, 2003, AND 2008**

Exhibits 8 through 10 summarize the distribution of campus space systemwide for the three enrollment periods. The projections would show overall decrease in HEGIS 300 office and overall increase in HEGIS 210 and 220 laboratory spaces. (HEGIS 250/255 Research Space is not included in these pie charts.)

Figure 7  
NC State University

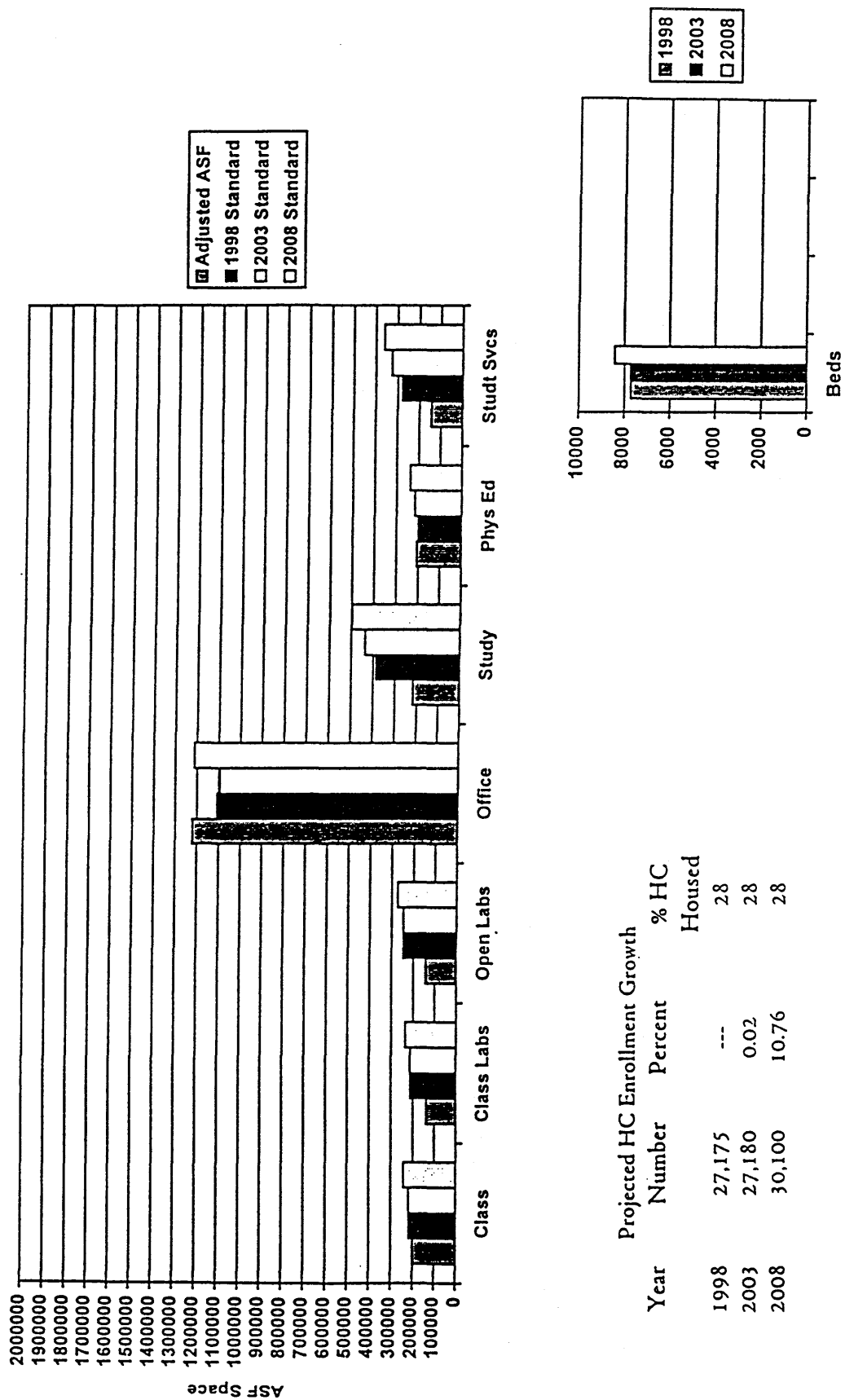


Figure 8  
UNC Chapel Hill

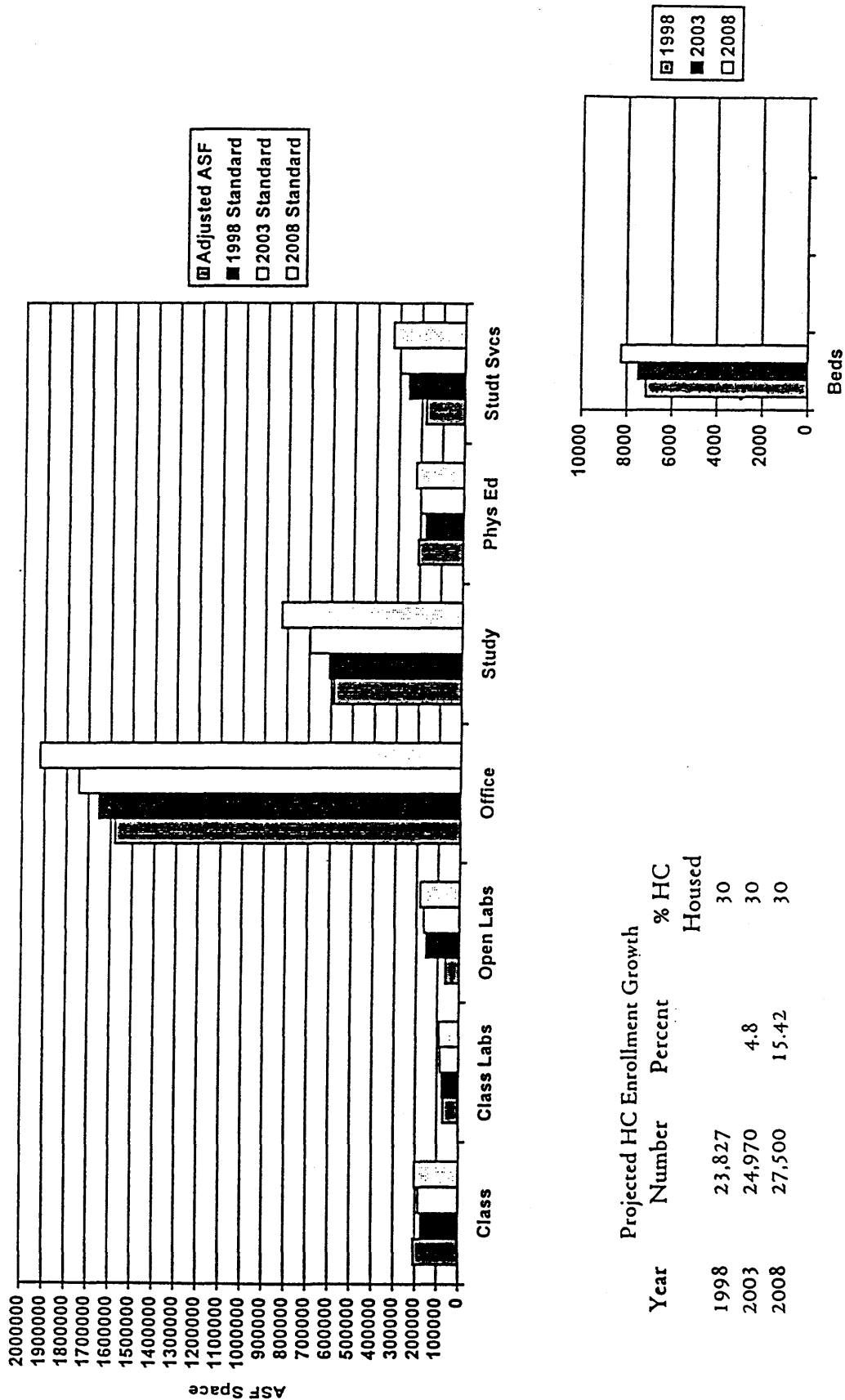


Figure 9  
East Carolina University

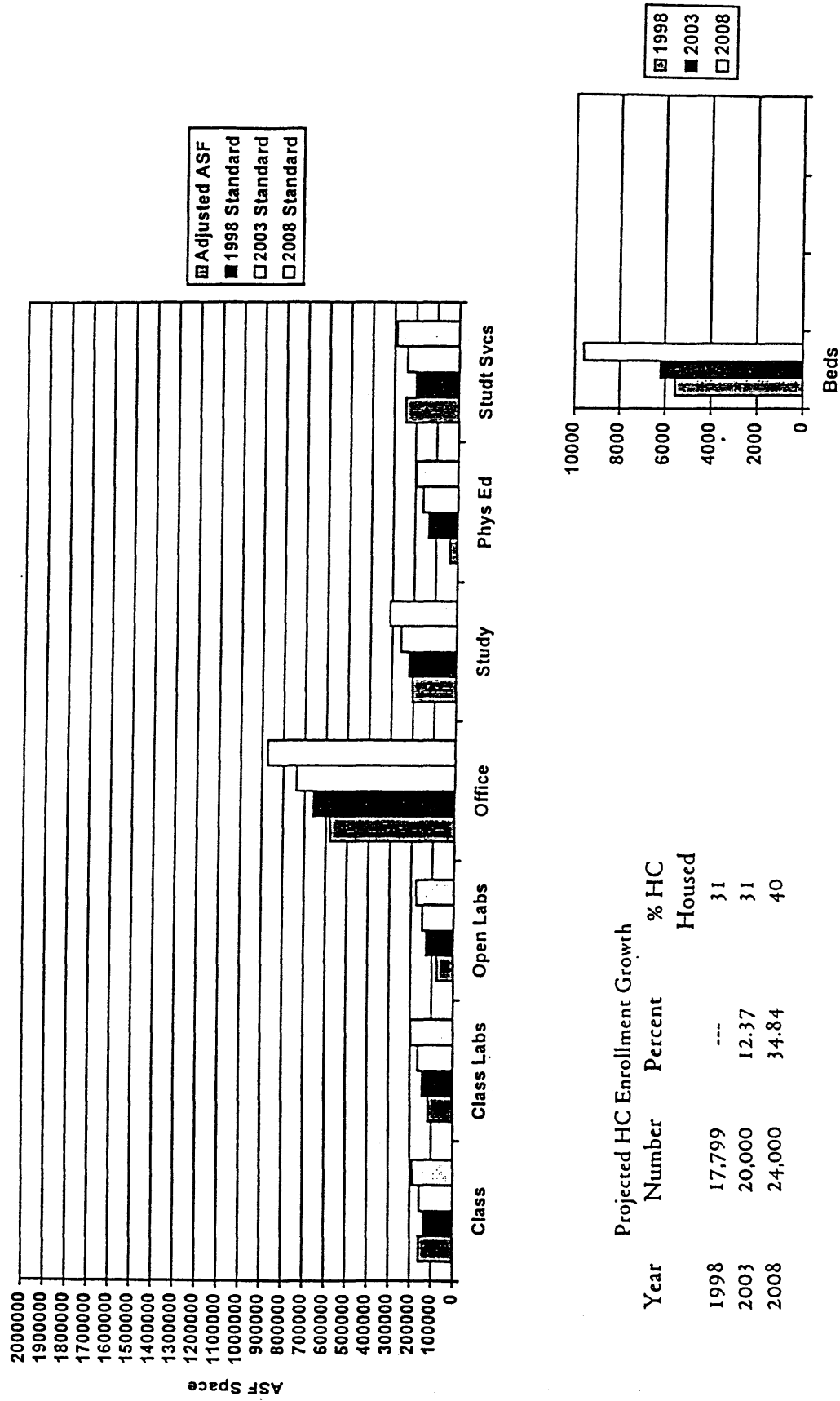
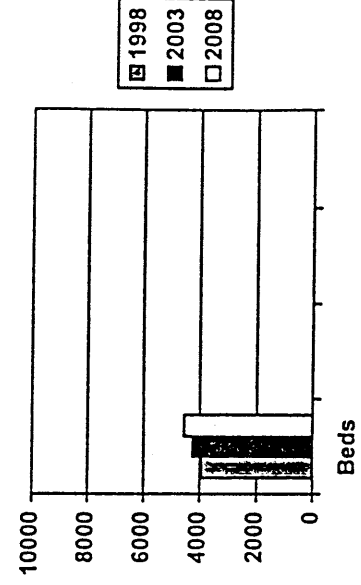
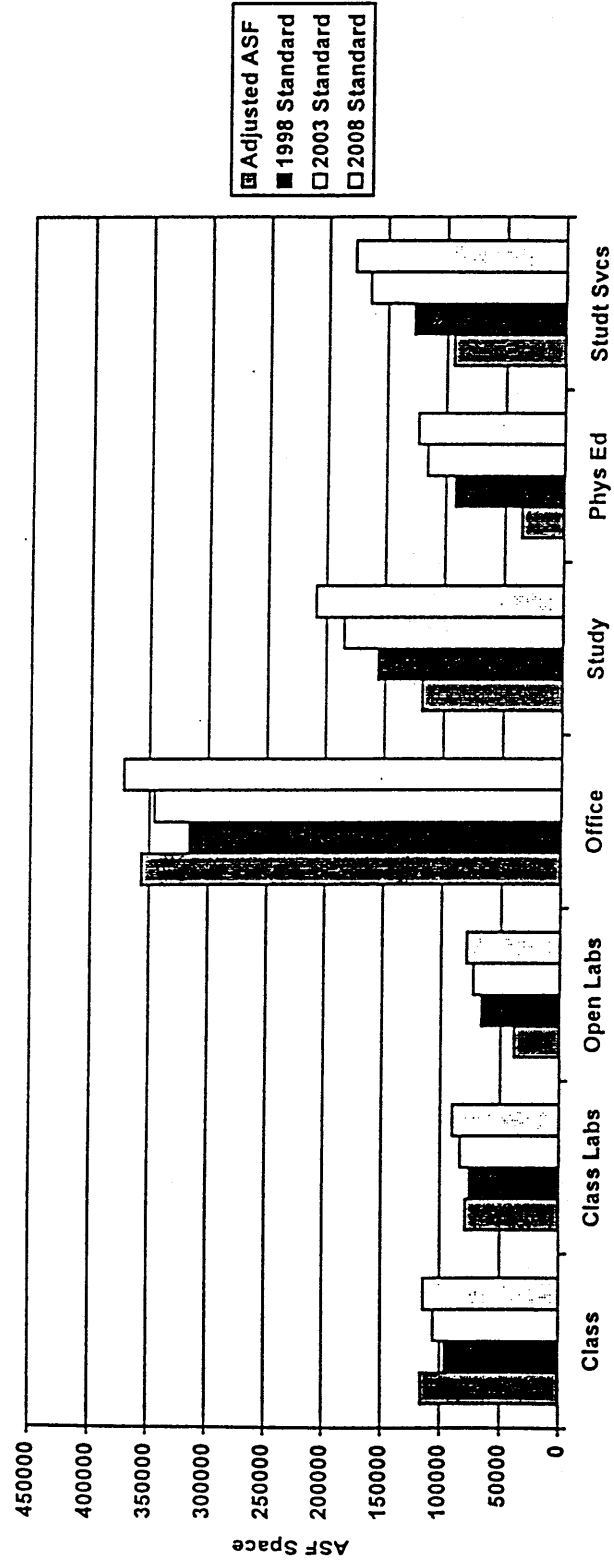


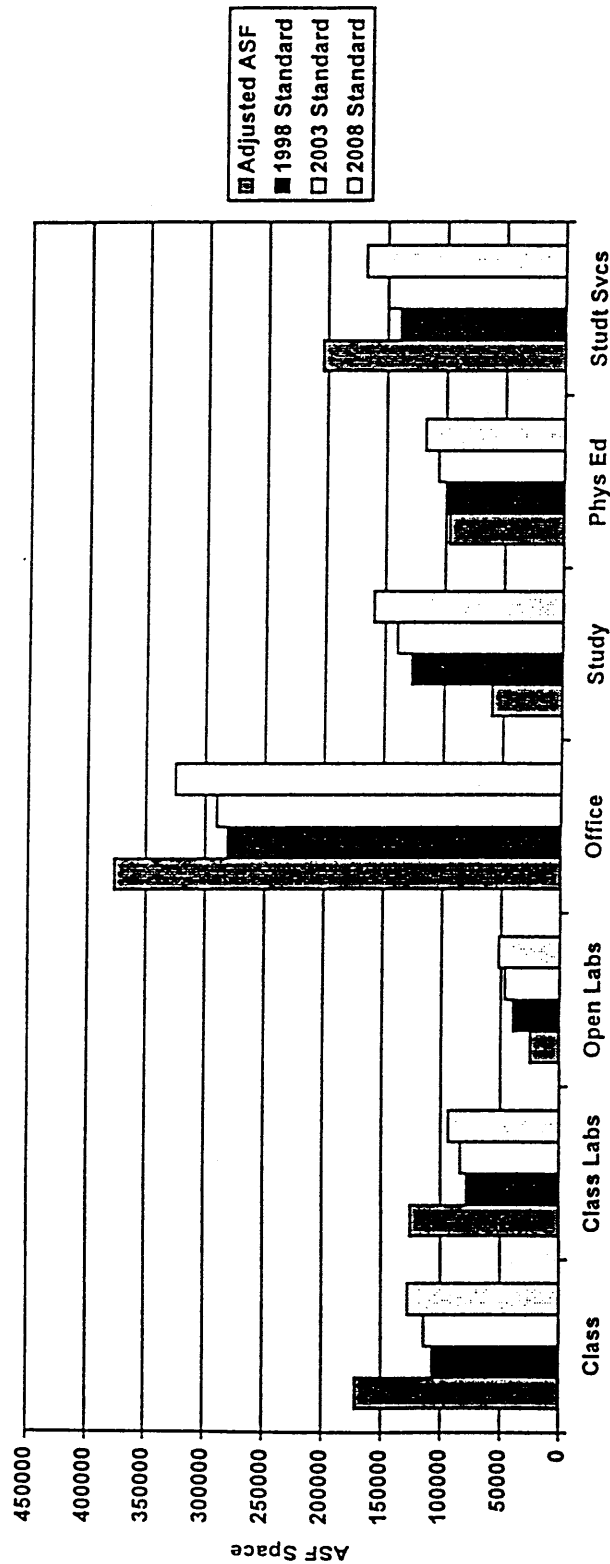
Figure 10  
UNC Greensboro



Projected HC Enrollment Growth			
Year	Number	Percent	% HC Housed
1998	12,700	---	31
2003	13,730	8.11	31
2008	14,800	16.54	31



Figure 11  
Appalachian State University



Projected HC Enrollment Growth			
Year	Number	Percent	% HC Housed
1998	12,386	---	40
2003	12,500	0.92	42
2008	14,000	13.03	50

Figure 12  
Fayetteville State University

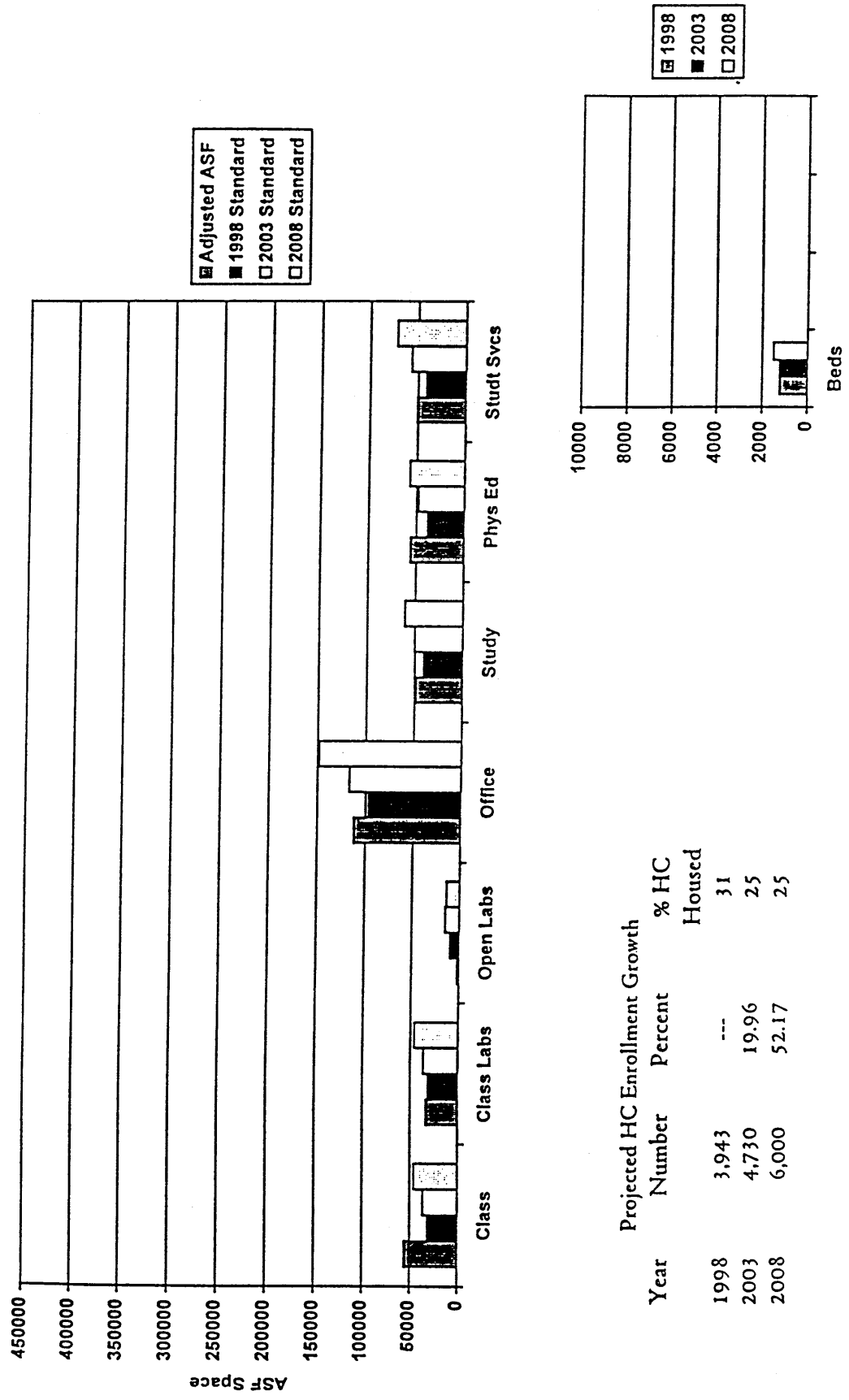


Figure 13  
NC A&T State University

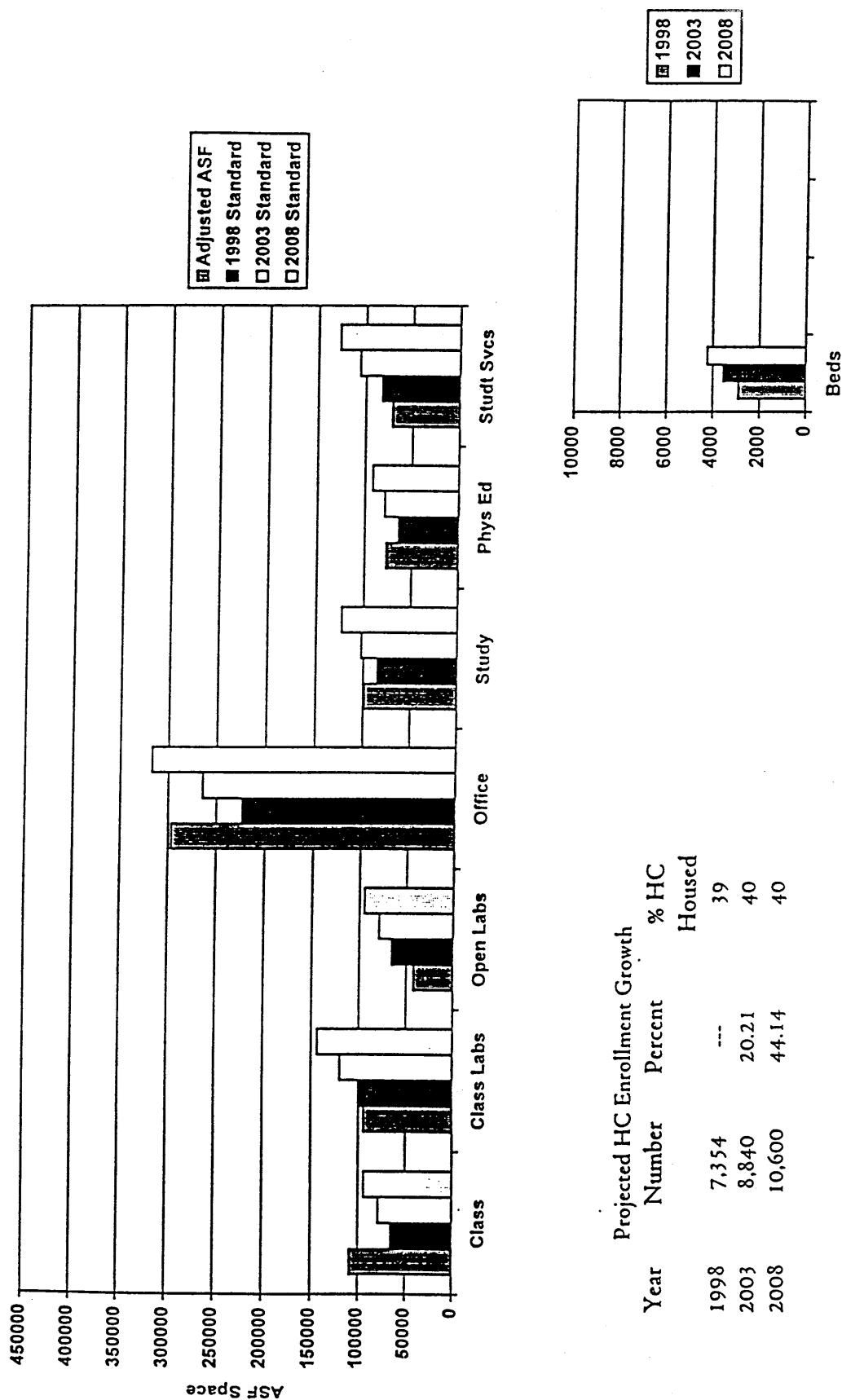
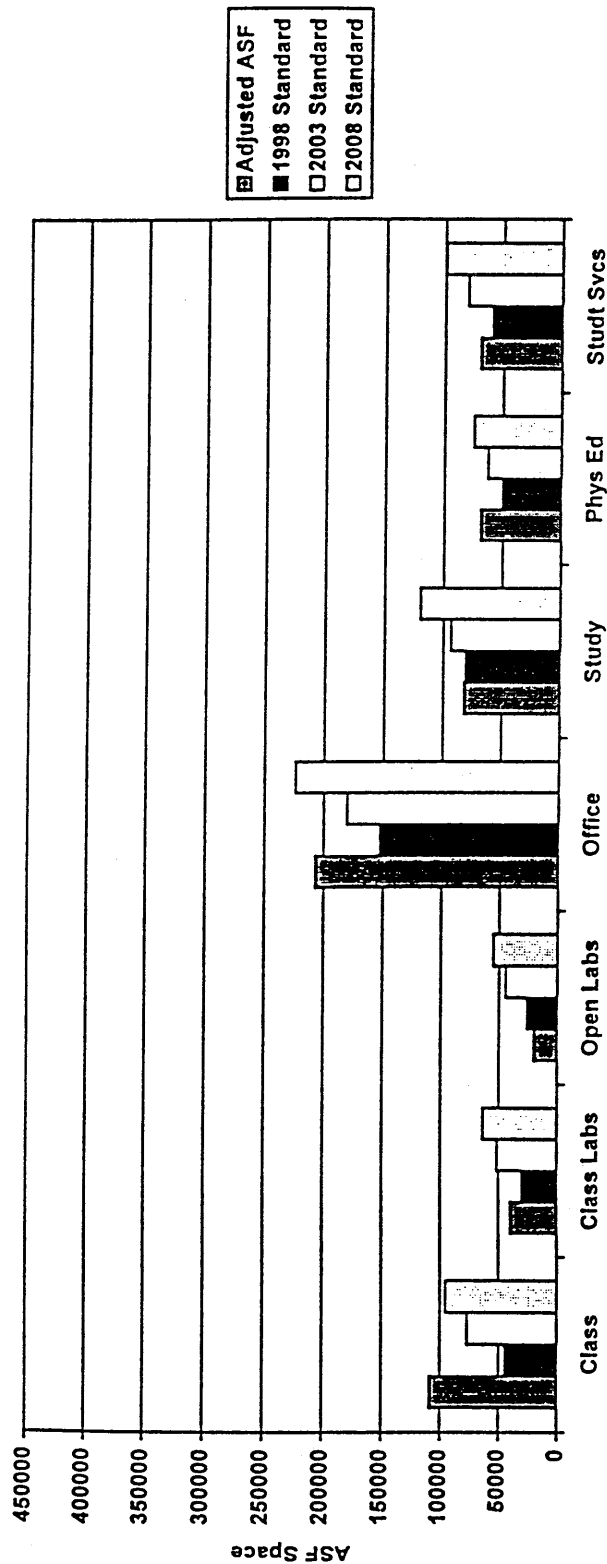


Figure 14  
NC Central University



Projected HC Enrollment Growth			
Year	Number	Percent	% HC Housed
1998	5,580	---	45
2003	6,700	20.07	36
2008	8,300	48.75	36

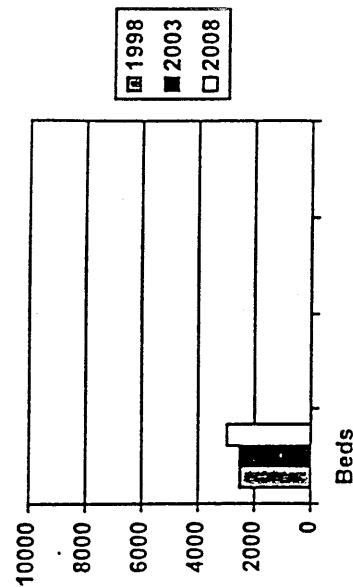
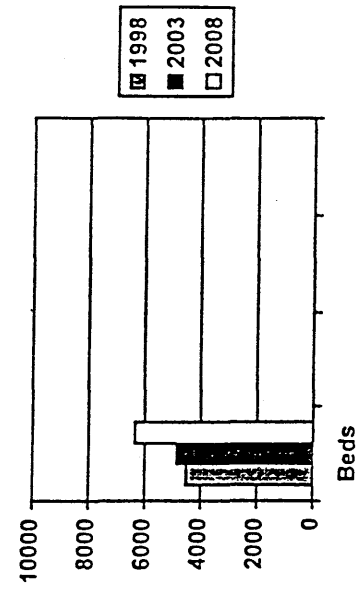
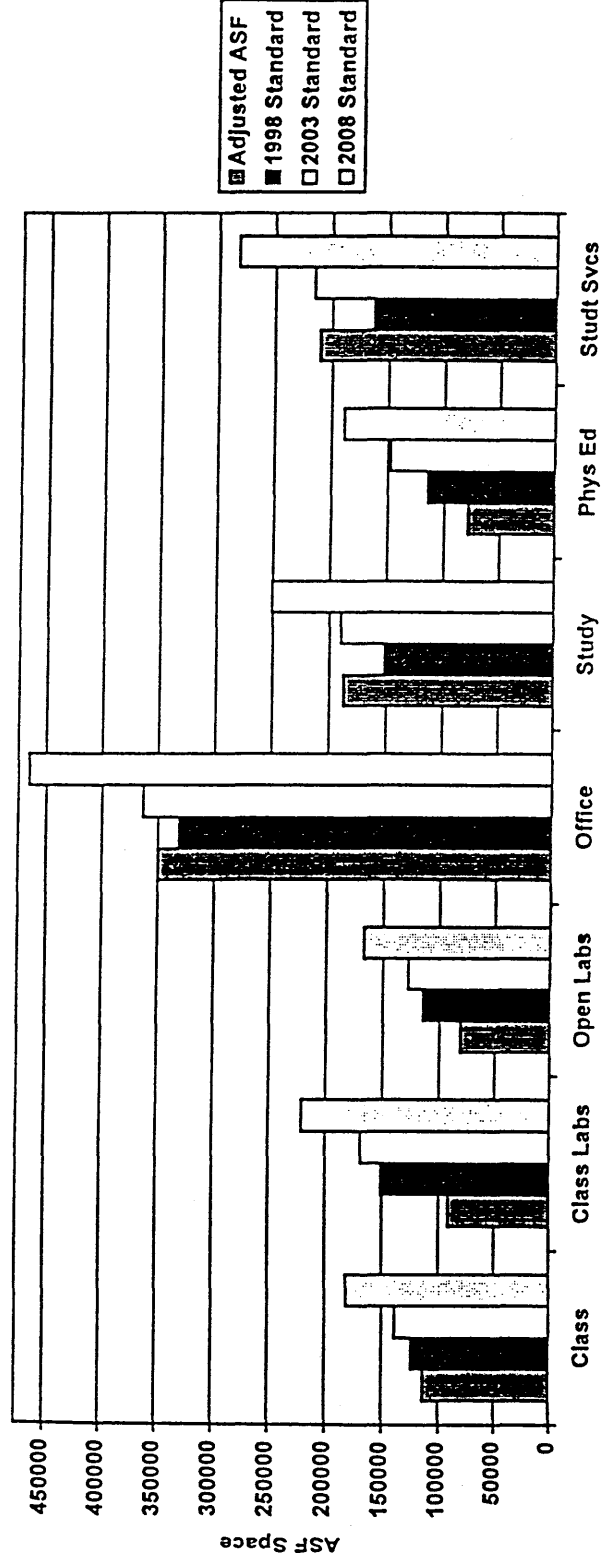
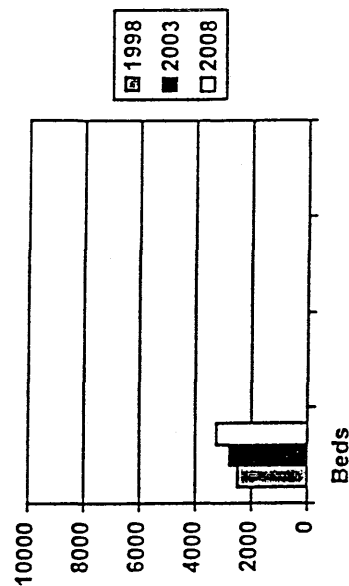
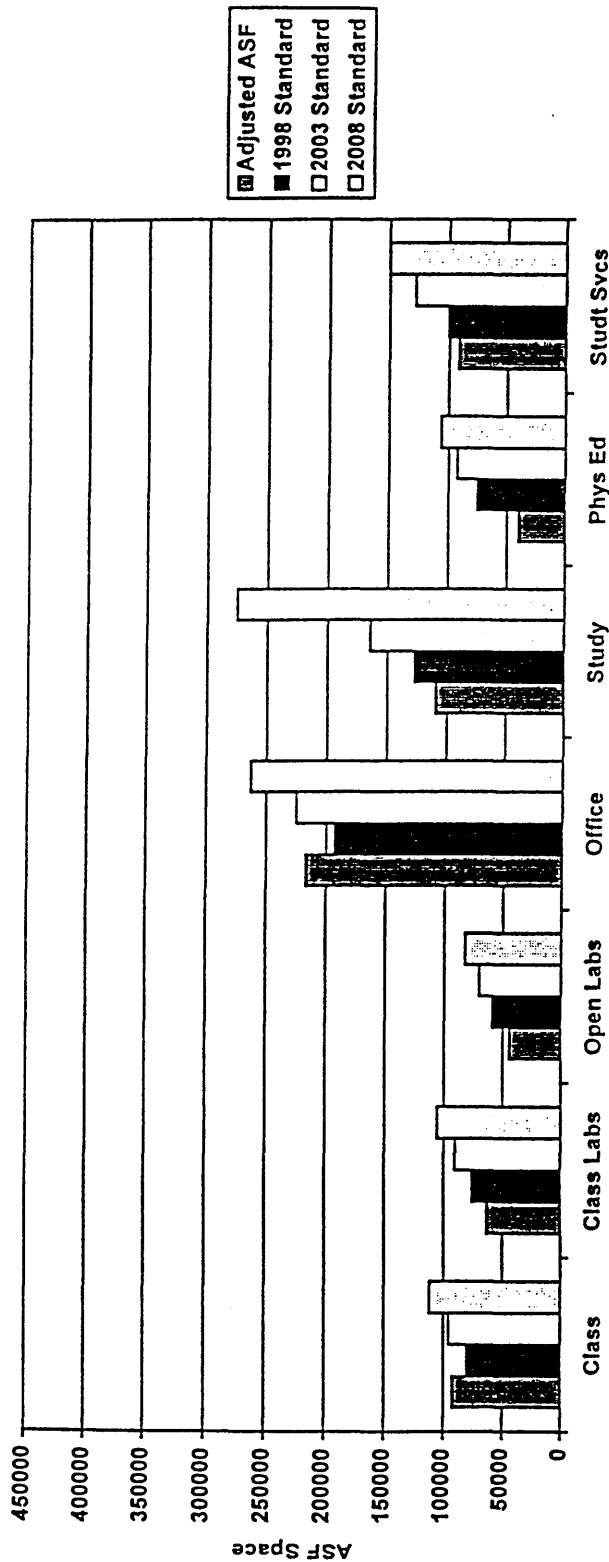


Figure 15  
UNC Charlotte



Projected HC Enrollment Growth			
Year	Number	Percent	% HC Housed
1998	16,670	---	27
2003	17,960	7.74	27
2008	23,500	40.97	27

Figure 16  
UNC Wilmington



Targeted HC Enrollment Growth			
Year	Number	Percent	% HC Housed
1998	9,643	---	26
2003	10,700	10.96	25
2008	12,500	29.63	25

Figure 17  
Western Carolina University

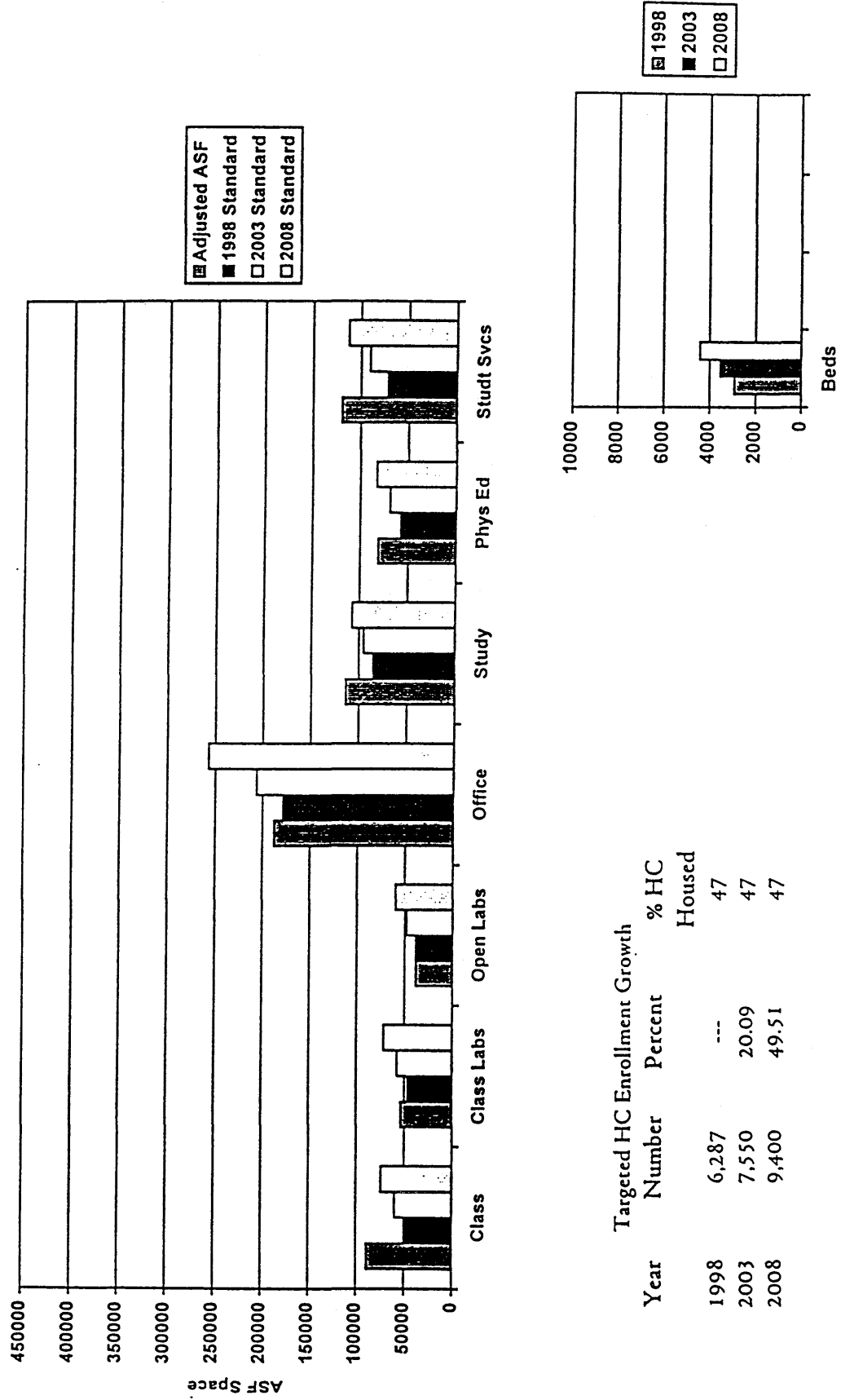
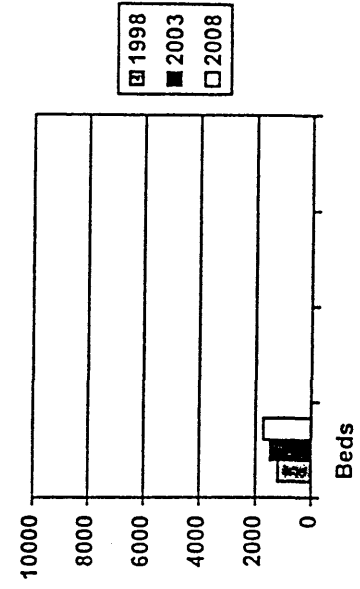
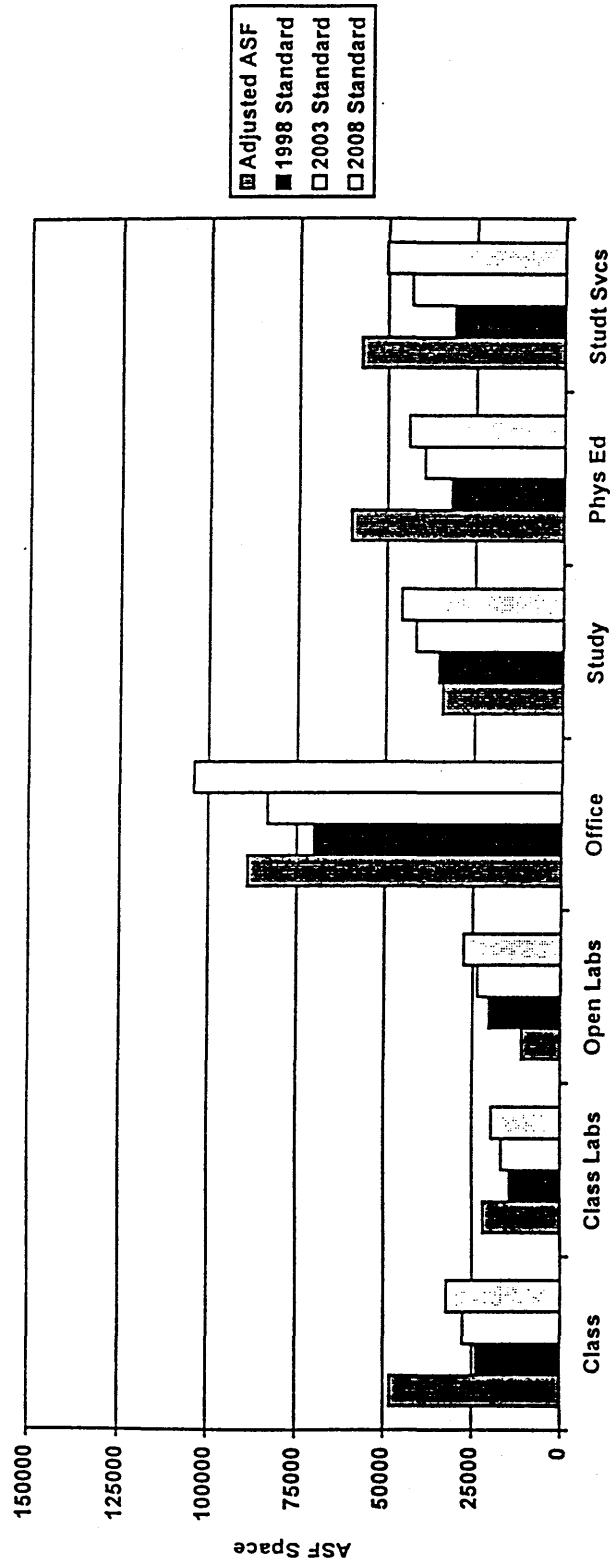


Figure 18  
UNC Pembroke



Year	Targeted HC Enrollment Growth		% HC Housed
	Number	Percent	
1998	2,998	---	41
2003	3,600	20.08	41
2008	4,200	40.09	41



Figure 19  
UNC Asheville

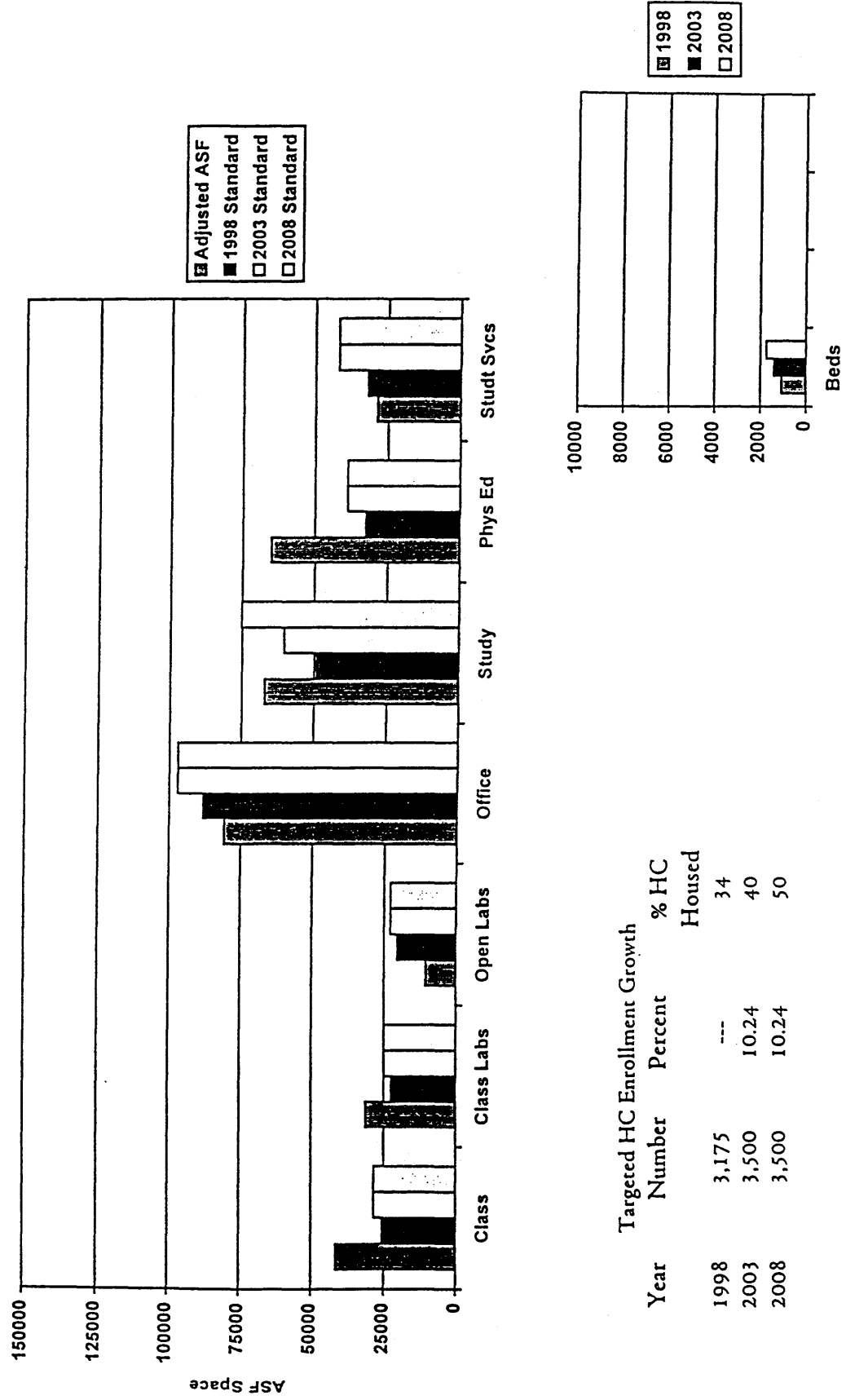
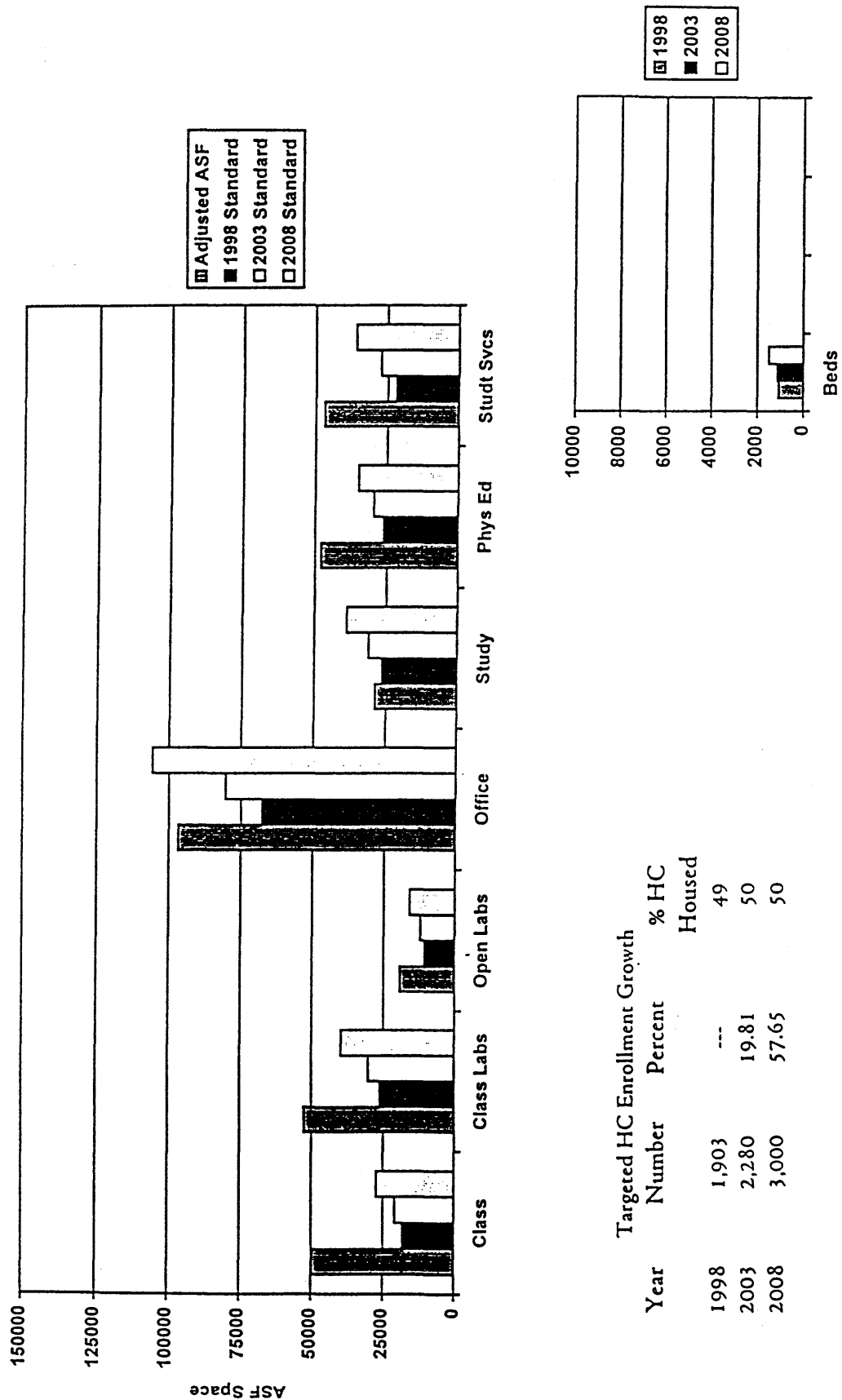
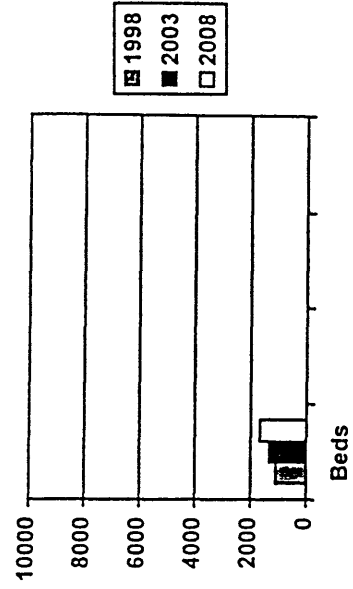


Figure 20  
Elizabeth City State University



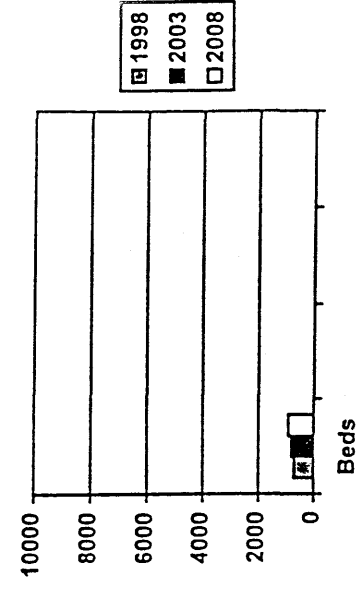
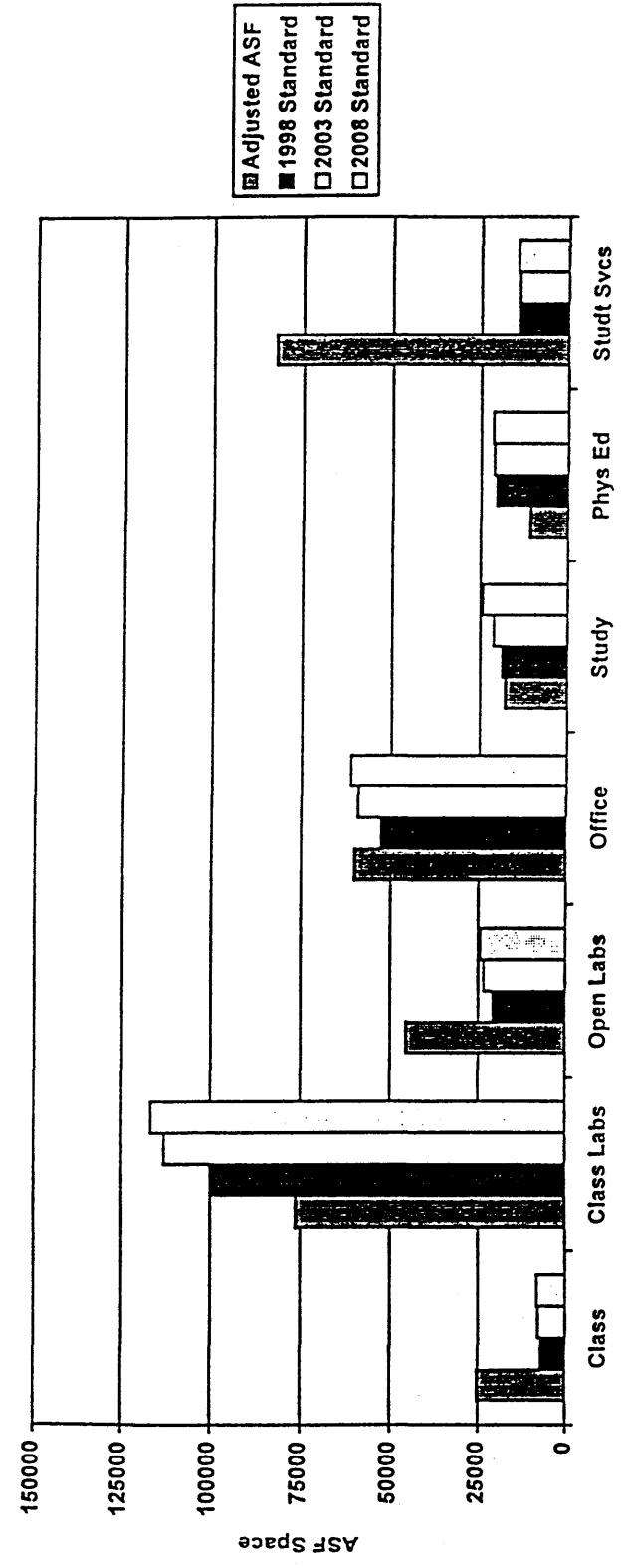
Targeted HC Enrollment Growth			
Year	Number	Percent	% HC Housed
1998	1,903	---	49
2003	2,280	19.81	50
2008	3,000	57.65	50

Figure 21  
Winston-Salem State University



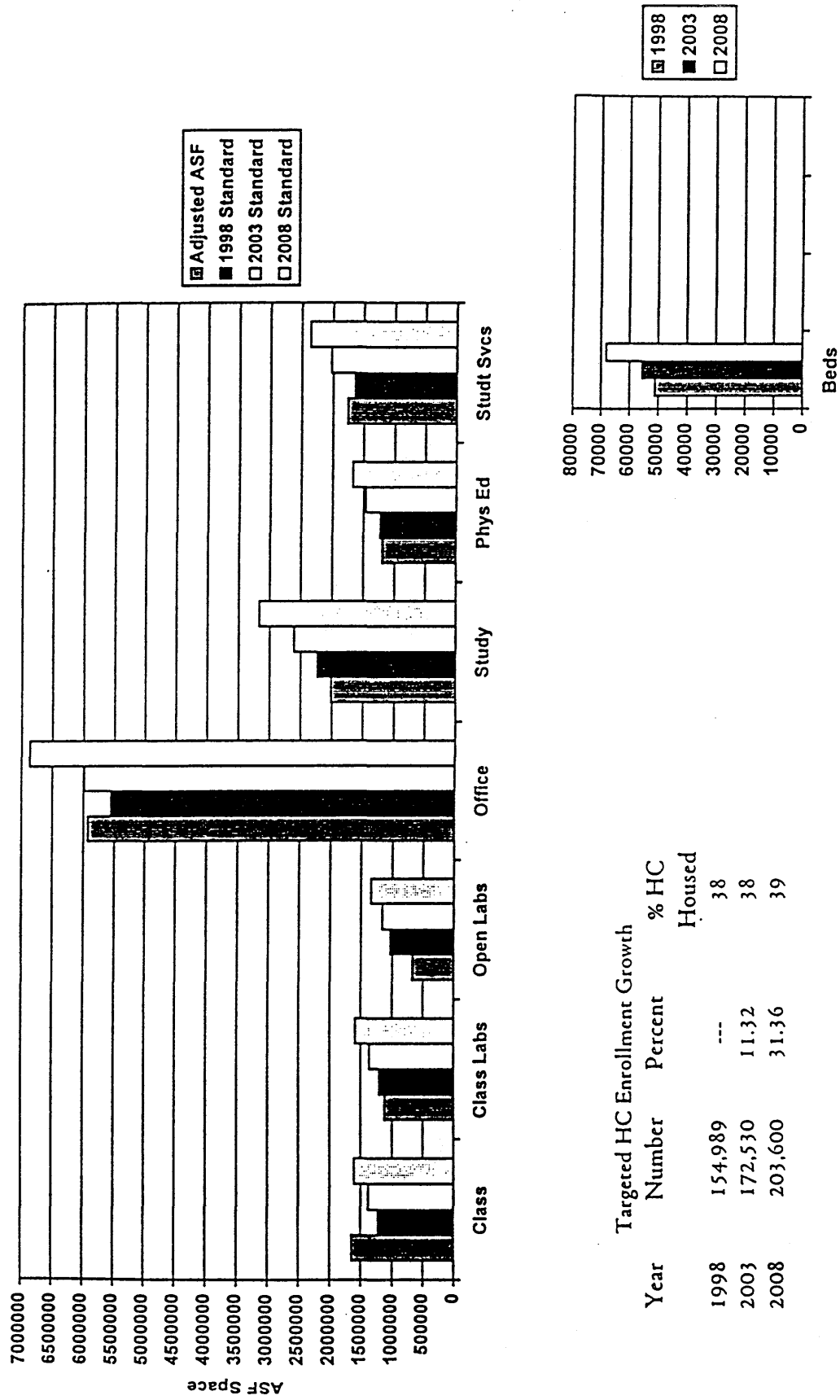
Targeted HC Enrollment Growth			
Year	Number	Percent	% HC Housed
1998	2,778	---	40
2003	3,320	19.51	40
2008	4,200	51.19	40

Figure 22  
NC School of the Arts



Targeted HC Enrollment Growth			
Year	Number	Percent	% HC Housed
1998	1,021	---	69
2003	1,160	11.54	70
2008	1,200	16.73	70

Figure 23  
University of North Carolina - Summary



## ***RECOMMENDATIONS***

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In one sense, the results of this analysis already have been used, in that UNC GA has used the early *Current Capacity* estimates, based on Fall 1997 and *Adjusted Current Capacity* in development of working assumptions for the *UNC Enrollment Plan*. In a second sense, the detailed variances analyses will be used, in the course of work for *Phase II-C—Facilities Evaluation and 10-Year Capital Plan*, to develop expressions of capital needs relating to *Current Capacity* and *Future Capacity*. For these reasons, recommendations for this *Work Paper* are limited to some general points.

Recommendation 1: The Board of Governors' *UNC Enrollment Plan* should aim at all reasonable means to make use of existing system capacity, as indicated by capital facilities.

The UNC GA enrollment planning process already has incorporated this key principle. Of eight UNC Masters (Comprehensive) institutions, six are underutilized. Of these six, four are HBU/minority institutions and the other two are Western Carolina and Appalachian State. One of the major implications is that capital development emphasis needs to shift to renovations and modernization—to make it feasible for UNC campuses to make fuller use of existing (but obsolete or inadequate) building assets. Another major implication is that there may be additional measures or investments required—beyond facilities—to make use of unused capacity.

Recommendation 2: The Board of Governors' *UNC Enrollment Plan* should seek to promote economies of scale and stronger institutional financial capacity for currently very small institutions, by setting very aggressive growth targets for the smallest and most underutilized among them—with exceptions for UNC-Asheville and NC School of the Arts—due to special mission purposes of those two institutions.

The UNC GA enrollment planning process already has incorporated this key principle. The discussion has suggested that a target of 5,000 to 6,000 HC enrollments might represent a minimum size at which institutions achieve an efficient economy of scale. The literal number for the target is, however, much less important than the general principle. Enrollments of 4,000 or more at Elizabeth City State, for example, would represent a major improvement in that institution's financial strength. At present, the opportunity of significant systemwide growth makes significant growth for the small institutions a feasible goal.

If 5,000 to 6,000 is a hypothetical benchmark for size, the small institutions include some (but not all) of the HBUs and UNC-Pembroke. They are:

- Fayetteville State University (3,943)
- Winston-Salem State University (2,778)
- Elizabeth City State University (1,903)
- UNC-Pembroke (2,998)

In addition, while their enrollments are at somewhat higher levels, NC A&T (7,354), Western Carolina University (6,287) and NC Central (5,580) have available capacity for growth and would be strengthened by meaningful growth.

In discussions of aggressive growth targets, the BOG has expressed doubts about whether the small institutions can grow by relatively large percentages. History indicates that this is, indeed, possible, as shown in the table below.

<p style="text-align: center;">Figure 24 The University of North Carolina Summary of Historical Growth Rates Small Institutions: Various 10-Year Periods</p>								
Institution	Past 5-Yr Growth (See Periods Below)		Proposed 5-Yr Growth 1998-2003		Past 10-Yr Growth (See Periods Below)		Proposed 10-Yr Growth 1998-2008	
	#	%	#	%	#	%	#	%
Elizabeth City State	489	29.8	377	19.8	644	43.3	1,097	57.7
Fayetteville State	1,075	35.4	787	24.7	1,430	53.4	2,057	52.2
NC A&T State	1,812	29.4	1,486	20.2	2,351	41.8	3,246	44.1
NC Central	526	12.0	1,120	20.1	1,627	49.5	2,720	48.8
UNC-Pembroke	794	34.0	602	20.1	832	36.2	1,202	40.1
Western Carolina	1,294	25.3	1,263	20.1	3,418	114	3,113	49.5
Winston-Salem State	551	33.3	542	19.5	903	69.4	1,422	51.2
<i>Averages-7 Institutions</i>	934	28.5	882	20.6	1,601	58.23	2,122	49.1
Historical Periods:								
Elizabeth City State	1983-93							
Fayetteville State	1984-94							
NC A&T State	1983-93							
NC Central	1969-79							
UNC-Pembroke	1980-90							
Western Carolina	1965-75							
Winston-Salem State	1968-78							
Source: UNC General Administration, Office of the Vice President for Planning								

With respect to facilities, this recommendation will mean a major emphasis on renovations, upgrades, and overall campus appearance that will assist the small institutions to be more competitive in the market for students.

**Recommendation 3:** Consider the HBUs and small or underutilized institutions as valuable assets that position the State to accommodate growth in higher education services without the need to create new campuses today. The HBUs must be seen as “universities” that happen to be historically and culturally significant as HBUs, but not just as “HBUs.” These institutions are a vital part of the State’s plans to be competitive in the Global Knowledge Economy.

We acknowledge that facilities quality is not the only driver of student demand. Location, programs, and quality of faculty also play significant parts in student choice. It is well beyond the scope of this *Study* to prescribe solutions in the realms of program, faculty, financial aid, and marketing. To achieve growth and better utilization of the small campuses in the next decade and

Our recommendation is aimed at suggesting that the BOG has before it a unique opportunity to couple the capital facility recommendations of this *Study* with other initiatives to help chancellors create holistic “strategic business plans” for needed investments. Also important will be further explorations of the issue of diversity for the HBUs. In the course of work for this *Study*, we have concluded that, for the most part, the HBUs are willing to diversify.

**Recommendation 4:** Ensure that those institutions that are at/near capacity are funded for appropriate expansion facilities, to grow beyond capacity, and consistent with adopted growth targets.

Several UNC institutions—especially NC State, UNC-Chapel Hill, Eastern Carolina, UNC-Greensboro, UNC-Charlotte, and UNC-Wilmington—are poised for another period of growth. These institutions have varying degrees of need for renovation and modernization, and all will have major expansion needs as well, in certain types of space.

**Recommendation 5:** Adopt measures that will facilitate the creation of significant numbers of new residential beds, as residential capacity is a limiting factor, in several cases, in utilization of academic capacity.

Analyses for this *Work Paper* indicate an existing shortage of residential beds and a computed shortage of as many as 18,000 residential beds systemwide by 2008. This suggests that either institutions will reduce the mix of residential students in their total HC populations or they will need to add residential capacity in significant numbers. Parking also will be a problem for many institutions.

**Recommendation 6:** Continue the use of these newly developed capacity ratios, space planning standards and guidelines as indicators and benchmarks for first assessments of capital needs.

One beneficial outcome of this complex *Study* is new methods and tools for UNC GA and the Board of Governors to support the *UNC Capital Plan* with quantitative and qualitative analyses. There now exists a more comprehensive set of quantitative guidelines for projecting capacity and needs. There now also exists a set of qualitative space criteria that augment FCAP studies, to evaluate condition and renovation-related needs. Also, recent work to join capital and enrollment planning has established a new model for interaction of these important analyses.

Over time, it undoubtedly will be possible to refine these tools further. And, it is important to recognize that none of these tools represents absolute measures. They always must be tempered with subjective judgments of mission, program, and special circumstances.

**Recommendation 7:** Develop and apply facility design, policy, and utilization concepts that are capable of both responding to future instructional methods and improving productivity of facilities.

*Work Paper II-B-10—New Concepts for Higher Education Facilities* is intended to explore innovative ideas for improving facilities productivity—as well as their functionality. When that analysis is completed, UNC institutions may have opportunities for adopting some of the concepts that will be



developed. Among concepts to be explored may be different space configurations for office areas, re-evaluation of library space needs based upon increased usage of information technology, and the possibility of converting some excess academic space to Living-Learning Centers. As an example of the latter, Western Carolina is an institution with computed excess of academic space and a shortage of residential housing. WCU has suggested that there are two campus buildings with potential for such use conversion, provided that renovations and related moves can be funded.

## ***EXHIBITS***

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### **EXHIBIT I—PARTICIPANTS IN THE ANALYSIS**

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## EXHIBIT 2—ASF IN PIPELINE—INSTITUTIONAL RESPONSES

ASF in the Pipeline—Institutional Response																	
		Date		Fully Funded (Y/N)	Under Constr	Total ASF	Class 110	Class Labs 210	Open Labs 220	Office 300	Study 410	Stack 420	Study/Stack 430	Srvc Process 440/450	Athl & PE 520/525	Total 600	Residential # of Beds
	Project	Fall (Y/N)	Now Occp'd (Y/N)														
ASU																	
	Living/Learning Center	N		Y	N	43,636										0	320
	Police Building	N		Y	N	6,000				4,000						0	
	University Bookstore	N		Y	N	7,000										0	
	Welborn Hall Renovation	N		Y	N	no change										0	
	Appalachian Convocation Center	N		Y	Y	42,000	5,000	16,000	1,000	6,000						0	
	Science Building	Y		Y			12,469	15,232	1,687		1,432					0	
ECU	Rankin Science Addition	N		Y	N	18,000	2,000	4,000		1,000						0	
	Totals					116,636	19,469	35,232	2,687	11,000	1,432	0	0	0	0	0	320
	Student Health Center			x						774						0	
	Jarvis Residence Hall			x	x					60						1,451	(16)
	Fletcher Music Building	x														0	
	Incinerator-SOM	x														0	
	Life Sciences Building	x			x					5,366						0	
	Joyner Library Phase 2 & 3 renovations		x							553	2,956	282	31,706	(3,897)		0	
	Blount Building	x			x											0	
	Blount Recreational Sports Complex		x													956	
	Harris Building			x						3,819						0	
	Remco East Property-1807 Charles Blvd		x													0	
	JES Corp Capital LLC Property (Quixote)-319 S Cotanche St		x													0	
	Charles Gardner Property-918 E 14th St		x													0	
	14th Street Med Center-507 E 14th St		x													0	

Exhibit 9 (Continued)																	
ASF in the Pipeline—Institutional Response																	
		Date															
	Project	Fall Ocnpd (Y/N)	Now Ocnpd (Y/N)	Fully Funded (Y/N)	Under Constr	Total ASF	Class 110	Class Labs 210	Open Labs 220	Office 300	Study 410	Stack 420	Study/ Stack 430	Srvc Process 440/450	Athl & PE 520/525	Total 600	Residential # of Beds
	Spright Residence-508 E 9th St		x													0	
	Ficklen Stadium Expan.		x													0	
	Lee Property-111 E 3rd		x							2,043						0	
	Tedi Bear Project-755		x							838						0	
	John Hopkins Dr																
	Totals					0	0	0	0	13,453	2,956	282	31,706	(3,897)	0	2,407	(16)
	Science & Technology Building			P			11,965	43,062	5,351	Library 19,046	31,047	18,809	Study				
ECSU	Fine Arts and General Classroom	Y		Y	Y	38,527	4,970	12,080	1,472	1,330	300					0	
	Academic Computer Center	N		Y		10,072	2,849	2,109	765	2,882						0	
	Vaughn Center Addition	N		Y	Y	13,330	1,485	715	6,110	1,255						0	
	Totals				-	61,929	9,304	14,904	8,347	5,467	300	0	0	0	0	0	0
FSU	Fine Arts and General Classroom			N	N												
	Rudolph Jones Student Center			Y	Y	22,286										0	
	Rosenthal Addition			Y	Y	4,115	2,073			320				20,336		636	
	Totals					26,401	2,073	0	0	320	0	0	0	20,336	0	636	0
NCA&T	Memorial Student Union	2000				10,839										4,968	
	Engineering Laboratory Building	N/A														0	
	Coltrane Hall	1999				18,000				12,000						0	
	New School of Technology	1999	Y	Y	N	26,113	1,978	16,999		5,189						0	
	Williams Cafeteria									1,000						0	
	Dudly Hall	2000	N	Y	Y	14,000		2,200	126	700						0	
	Totals					68,952	1,978	19,199	126	18,889	0	0	0	0	0	4,968	0
	GenClass/Lab New/Renov		N	N	N	85,909	34,870	2,658	2,776	29,743	422						

Exhibit 9 (Continued)																	
ASF in the Pipeline—Institutional Response																	
		Date															
	Project	Fall Occpd (Y/N)	Now Occpd (Y/N)	Fully Funded (Y/N)	Under Constr	Total ASF	Class 110	Class Labs 210	Open Labs 220	Office 300	Study 410	Stack 420	Study/ Stack 430	Srvc Process 440/450	Athl & PE 520/525	Total 600	Residential # of Beds
NCCU																	
	Bio Med. And Tech. Center		Y							4,566						0	
	New Education Building			Y	Y		21,815	1,825		21,769						0	
	New Student Dormitory		Y							4,079						0	506
	Totals					0	21,815	1,825	0	30,414	0	0	0	0	0	0	506
NCSA																	
	School of Filmmaking	ON THE BOOKS															
	Classroom/Offices School of Film	99		Y	Y	10,000	7,500			2,500						0	
	Student Activity Center	99		Y	Y	19,000											
	Student Commons renovation			Y	n	39,000				9,000						19,000	
	Totals					68,000	7,500	0	0	11,500	0	0	0	0	19,000	49,000	0
	Basic Education Complex			n	n	46460	4650		15500	1610							
NCSU																	
	Language & Computer Labs - Lndry Bldg. Conversion	Yes	Yes	Y	N	12,075			2,958	2,391	2,137					0	
	1911 Building - First Floor Modifications	Yes	Yes	Y	N											0	
	Student Health Services *	No	Yes	Y	N	47,673				7,151						0	
	Turlington Res. Hall - Renovate Bsmt	Yes	Yes	Y	N	31,094				498	342					964	
	Communication Services Center *	No	Yes	Y	N	29,415				5,275						0	
	Meat Processing Laboratory	No	No	Y	N	27,246	1,395	5,449		2,725						0	
	EGRC - 3rd Floor Upfit	Yes	Yes	Y	N	99,506		1,194		8,300						0	
	Totals					247,009	1,395	6,643	2,958	26,340	2,479	0	0	0	0	964	0
	J.C Raulston Arboretum Edu.Ctr.	No	No	P	N	11,440	4,576			4,576							

Exhibit 9 (Continued)																
ASF in the Pipeline—Institutional Response																
Project	Date		Fully Funded (Y/N)	Under Constr	Total ASF	Class 110	Class Labs 210	Open Labs 220	Office 300	Study 410	Stack 420	Study/ Stack 430	Svcs Process 440/450	Athl & PE 520/525	Total 600	Residential # of Beds
	Fall Occpd (Y/N)	Now Occpd (Y/N)														
UNC-A																
New Residence Hall	N	N	Y	Y	28,019					1,800					640	148
Asheville Graduate Center	N	Y	Y	N	3,010	905	749		1,356						0	
Conference Center	N	N	N	N											0	
Totals					31,029	905	749	0	1,356	1,800	0	0	0	0	640	148
Highsmith Center	N	N	P	N	51,004				11,090	892						
UNC-CH																
Beard Hall Addition	-	-	Y	N	25,000				5,000						0	
Institute for Arts & Humanities	-	-	Y	N	7,000	5,000*			2,000						0	
Soccer Center	-	-	Y	Y	3,300				2,000						0	
Carroll Hall Renovation	NO CHANGE IN USAGE		Y												0	
Tarrson Hall	-	Y	Y	-	153,143				1,587		-				0	
WUNC-FM Building	NON ACADEMIC SPACE		Y												0	
Institute of Marine Sciences Addition	-	Y	Y	-											0	
Sonja Haynes Stone Center	TOO EARLY IN PROJECT DESIGN TO OBTAIN DATA		N												0	

Exhibit 9 (Continued)																	
ASF in the Pipeline—Institutional Response																	
Project	Date		Fully Funded (Y/N)	Under Constr	Total ASF	Class 110	Class Labs 210	Open Labs 220	Office 300	Study 410	Stack 420	Study/Stack 430	Srvc Process 440/450	Athl & PE 520/525	Total 600	Residential # of Beds	
	Fall Occpd (Y/N)	Now Occpd (Y/N)															
FPG Student Union Addition	NON	ACADEMIC SPACE	Y		20,000				10,000						10,000		
Neurosciences Research Building	-	-	Y	Y	54,000				10,800						0		
Van Hecke-Wettach Hall Addition	Y	-	Y	Y	26,500	5,300			5,300	2,975					0		
Security Svcs Addition & Renovation	NON	ACADEMIC SPACE	Y												0		
Center for Dramatic Art	-	Y	Y	-	31,815	823	8,204		12,875						0		
UNC Press Warehouse	NON	ACADEMIC SPACE	Y												0		
Aycock & Graham Residence Halls	-	Y	Y	-	ADDED THE FOLLOWING:										1,409		
School of Leadership Training Acad	GA OWNED BLDG. NOT UNC-CH		Y												0		
Health Affairs Bookstore	NON	ACADEMIC SPACE	Y												0		
Executive Education Center	N/A SPECIAL PROGRAM		Y												0		
Knapp Building Additions/Renovations	-	-	Y	Y	19,500	9,750			5,850	1,950					0		
Chapel Hill North	-	Y	Y	-	31,324				30,956						0		
R.B. House Library	NO CHANGE IN USAGE		Y												0		
Memorial Hall Addition & Renovations	TOO EARLY IN PROJECT DESIGN TO OBTAIN DATA																0
Totals					371,582	15,873	8,204	0	86,713	6,631	0	0	0	0	11,409	0	

Exhibit 9 (Continued)																	
ASF in the Pipeline—Institutional Response																	
		Date															
	Project	Fail (Y/N)	Now Occpd (Y/N)	Fully Funded (Y/N)	Under Constr	Total ASF	Class 110	Class Labs 210	Open Labs 220	Office 300	Study 410	Stack 420	Study/ Stack 430	Srvc Process 440/450	Athl & PE 520/525	Total 600	Residential # of Beds
UNC-C	Biomolecular Research Building	.	.	P	N	112,500				22,500							
	Polymers Ext. Program																
	Humanities Building	N	N	Y	N											0	
		N	N	P	N	70,000	1,690	8,050	4,640	9,090	420					0	
	Cameron Applied Research Center	N	N	Y	Y	20,735			6,714	14,021						0	
	Student Housing Phase VII	N	N	Y	Y	112,000				320	1,355					3,394	388
	Library Addition	Y	N	Y	Y	209,37	6896		1650	33536	4389		154312	9154		0	
	Totals					416,547	8,586	8,050	15,530	58,316	6,164	0	154,312	9,154	0	3,394	388
UNC-G										Library	106,058	52,829	Study				
	New Music Building	1999	N	Y	Y	60,618	1,260	12,703	8,299	17,007	8,307		3,042			0	
	Phillips/Hawkins Residence Hall	1998	Y	Y	N	51,651				145						10,394	348
	Totals					112,269	1,260	12,703	8,299	17,152	8,307	0	3,042	0	0	10,394	348
	New Science Building	2002	N	P	N	84,483	15,550	33,545	4,308	5,995	1,760	1,440					
	Brown Music Building Renovation	exit F99	Y	N	N	17,891			(4,928)	4,928							
UNC-P												9,828	Study				
	New Residence Hall	N	N	Y	Y	*55824	Y		647	120	939					1,318	300
	Totals															1,318	
UNC-W																0	
	General Classroom Building	Aug-00	No	Yes	No	34,775	13,600		2,200	7,700							
	Marine Science Building	Jul-99	No	Yes	Yes	52,845	2,294	11,400	9,400	6,020						0	
	200 Bed Student Housing	Oct-98	Yes	Yes	Completed	33,150	410			205						1,100	200
	200 Bed Student Housing		No	No	No	39,000	500			300						1,240	200
	Campus Recreation Facility	Dec-99	No	Yes	Yes	34,005	925			960						26,700	
	Totals					203,775	17,729	11,400	11,600	15,185	0	0	0	0	0	29,040	400
	School of Education Building		No	P	No	80000	19500			4200							



Exhibit 9 (Continued)																			
ASF in the Pipeline—Institutional Response																			
		Date		Fully Funded (Y/N)	Under Constr	Total ASF	Class 110	Class Labs 210	Open Labs 220	Office 300	Study 410	Stack 420	Study/Stack 430	Srvc Process 440/450	Athl & PE 520/525	Total 600	Residential # of Beds		
		Fall Occpd (Y/N)	Now Occpd (Y/N)																
WCU	Project																		
	Renovation of Camp Labs (II)***	Yes	Yes	Y	Y	37,442			4,823	3,850						0			
	**Fine Arts Center is Gross Square Feet																		
	***Camp Lab Building is Still Under Renovation (Areas Entered are ASF for Completed Rooms In Use)																		
	Totals					37,442	0	0	4,823	3,850	0	0	0	0	0	0	0		
	Fine Arts Center**	No	No	P	N	123,400	2,660	20,095	4,175	4,255			565						
WSSU	F.L. Atkins Building Renovation	No	n/a	Yes	No	27,776	6,956	9,300	2,700	7,020						0			
	Anderson Center	No	n/a	Yes	No	6,404	2,425	1,100		2,320						0			
	Computer Science Facility	No	n/a	No	No	(TBD - To Be Determined, this building has not yet begun official programming.)												0	
	Totals					34,180	9,381	10,400	2,700	9,340	0	0	0	0	0	0	0		

# EXHIBIT 3—BASELINE CURRENT CAPACITY—FALL 1997 FACILITIES AND ENROLLMENT

Column #	Analysis of Current HC Capacity by Core Academic Facilities										HC Capacity by Residential Beds						
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Student HC 1997	Student FTEs 1997	ASF 110 1997	ASF 210 1997	ASF 220 1997	ASF 410/430 1997	ASF Core Academic Facilities (Sum 3 to 6)	ASF/ FTE (7/2)	ASF/ FTE (7/2)	FTE Capacity (7/26 ASF) 26	Conv. Factor	HC Capacity (9*10)	HC Capacity form Inst't 1998	Diff.-HC Capacity Minus Inst't HC	Current Bed Capacity	% HC Currently Housed (14/1)	# Beds Needed for HC Capacity (15*11)	# New Beds Needed (16 - 14)
Calc by Column #																	
Proposed Benchmark																	
NC State	27,529	22,928	200,295	130,862	157,912	93,816	582,885	25	22,419	122.4%	27,440	25,250	2,190	6,610	24.0%	6,589	(21)
UNC-Chapel Hill	23,668	18,078	191,396	66,278	82,248	200,407	540,329	30	20,782	110.7%	23,006	23,827	(821)	6,574	27.8%	6,390	(184)
UNC-Greensboro	12,308	10,631	115,075	66,628	42,273	58,281	282,257	27	10,856	115.5%	12,539	14,657	(2,118)	3,534	28.7%	3,600	66
East Carolina	17,846	15,116	160,736	117,757	83,399	85,399	447,291	30	17,204	109.4%	18,821	17,800	1,021	5,288	28.1%	5,288	274
Appalachian State	12,108	11,610	152,577	92,146	33,068	33,381	311,172	27	11,968	105.5%	12,626	12,366	260	4,884	40.3%	5,093	209
Fayetteville State	3,916	3,414	53,582	35,124	3,724	34,298	126,728	37	4,874	116.0%	5,654	5,175	479	1,152	29.4%	1,663	511
NC A&T State	7,468	6,870	106,993	75,791	46,144	58,623	287,551	42	11,060	110.1%	12,177	8,200	3,977	2,963	39.7%	4,831	1,868
NC Central	5,664	4,932	87,159	39,476	33,079	49,719	209,433	42	8,055	115.4%	9,296	6,374	2,922	1,984	35.0%	3,256	1,272
UNC-Charlotte	16,370	13,585	105,774	83,464	74,578	55,871	319,687	24	12,296	118.4%	14,558	16,670	(2,112)	3,664	22.4%	3,258	(406)
UNC-Pembroke	3,034	2,592	48,276	23,008	10,957	12,189	94,430	36	3,632	116.5%	4,231	5,000	(769)	844	27.8%	1,177	333
UNC-Wilmington	9,178	8,382	75,033	52,527	37,769	44,969	210,298	25	8,088	109.3%	8,841	9,800	(959)	1,916	20.9%	1,846	(70)
Western Carolina	6,531	6,007	89,100	53,829	49,333	52,891	245,153	41	9,429	110.3%	10,400	7,000	3,400	2,879	44.1%	4,585	1,706
UNC-Asheville	3,179	2,668	40,500	30,575	17,752	34,554	123,381	46	4,745	124.1%	5,889	3,400	2,489	921	29.0%	1,708	785
Elizabeth City State	1,920	1,829	40,507	41,199	15,339	10,834	107,879	59	4,149	108.8%	4,514	3,000	1,514	1,019	53.1%	2,396	1,377
Winston Salem State	2,865	2,556	47,777	22,995	16,515	24,996	112,283	44	4,319	114.1%	4,927	2,778	2,149	1,152	40.2%	1,981	829
NC School of Arts*	1,032	1,016	17,896	59,541	58,412	8,227	144,076	142	153,875	102.8%	174,919	162,047	13,622	45,110		53,660	8,550
UNC-System Totals	154,614	132,214	1,532,676	991,200	762,502	858,455	4,144,833		153,875								

## Notes:

1. Column 1 = Student HC Fall 1997
2. Column 2 = Student FTEs Fall 1997
3. Column 3 = ASF 110 Classroom Space in Fall 1997 Facilities Inventory.
4. Column 4 = ASF 210 Teaching Laboratory Space in Fall 1997 Facilities Inventory.
5. Column 5 = ASF 220 Open Laboratory Space in Fall 1997 Facilities Inventory.
6. Column 6 = ASF of all campus 410 Study Room Space + 50% of all campus 430 Open Stack Space.
7. Column 7 = The sum of Columns 3, 4, 5, and 6 and represents this definition of "Core Academic Facilities." This includes Classrooms, Teaching Labs, Open Labs, and Study Space.
8. Column 8 = ASF Core Academic Facilities (Column 7) divided by Student FTEs (Column 2).
9. Column 9 = ASF Core Academic Facilities (Column 7) divided by the Benchmark of ASF per FTE of 26 ASF.
10. Column 10 = Conversion Factor to convert FTEs to HC, based on an average of the last 11 years of HC and FTE enrollments, from 1987 through 1997.
11. Column 11 = Our estimate of Current HC Capacity, which is calculated as FTE Capacity (Column 9) multiplied by the Conversion Factor (Column 10).
12. Column 12 = Estimates of Current HC Capacity (for 1998) submitted by the UNC institutions to UNC-General Administration in current Enrollment Planning work.
13. Column 13 = Difference in the EKA and campus estimates of Current Capacity (Column 11 minus Column 12). For example, for ASU, EKA estimates 12,626 or 260 more.
14. Column 14 = Current number of beds available on the campus, from Statistical Abstract.
15. Column 15 = Calculated % of HC students currently housed (Column 14 divided by Column 11).
16. Column 16 = Number of beds that are needed to house students, based on HC Capacity determined in Column 11.
17. Column 17 = The number of additional beds that would be needed to accommodate the calculated HC Capacity (Column 16 minus Column 14).
18. Column 18 = "Net HC Capacity, using the limitation of beds available (Column 11 minus Column 17).

\* Enrollment statistics for NC School of the Arts include High School Students. No calculations of Capacity are shown for NCSA.

## EXHIBIT 4—ADJUSTED CURRENT CAPACITY—PIPELINE FACILITIES AND FALL 1998 ENROLLMENT

Column #	Analysis of Current HC Capacity by Core Academic Facilities										HC Capacity by Residential Beds						
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Student HC	Student HC	Student FTEs	ASF 110	ASF 210	ASF 220	ASF 410/430	ASF Academic Facilities	ASF FTE	FTE Capacity	Conv. Factor	HC Capacity	HC Capacity from Inst't	Diff. HC Capacity Minus Inst't HC	Current Bed Capacity	% HC Currentl Y Housed	# Beds Needed for HC Capacity	# New Beds Needed
1998	1998	1998	1998	1998	1998	1998	(Sum 3 to 6)	(7/2)	(7/26 ASF)		(9*10)	1998	(11-12)		(14/1)	(15*11)	(16 - 14)
									26								
27,175	23,311	201,690	137,505	160,870	96,295	596,360	26	22,937	122.4%	28,075	25,250	2,825	6,610	28.0%	7,861	1,251	
23,827	18,290	207,269	74,482	82,248	207,038	571,037	31	21,963	110.7%	24,313	23,827	486	6,574	30.0%	7,294	720	
12,700	11,028	116,335	79,331	50,572	68,109	314,347	29	12,090	115.5%	13,964	14,657	(693)	3,882	31.0%	4,329	447	
17,799	15,170	160,736	117,757	83,399	104,208	466,100	31	17,927	109.4%	19,612	17,800	1,812	4,998	31.0%	6,080	1,082	
12,386	11,865	172,046	127,378	35,755	34,813	369,992	31	14,230	105.5%	15,013	12,366	2,647	5,204	40.0%	6,005	801	
3,943	3,455	55,655	35,124	3,724	34,298	128,801	37	4,954	116.0%	5,747	5,175	572	1,152	31.0%	1,781	629	
7,354	6,777	108,971	94,990	46,270	59,045	309,276	46	11,895	110.1%	13,097	8,200	4,897	2,963	39.0%	5,108	2,145	
5,580	4,882	108,974	41,301	33,079	49,719	233,073	48	8,964	115.4%	10,345	6,374	3,971	2,490	45.0%	4,655	2,165	
16,670	14,018	113,590	91,514	86,555	109,700	400,359	29	15,398	118.4%	18,232	16,670	1,562	4,052	27.0%	4,923	871	
2,998	2,574	48,276	23,008	11,604	13,128	96,016	37	3,693	116.5%	4,302	5,000	(698)	1,144	41.0%	1,764	620	
9,643	8,859	92,762	63,927	49,369	44,969	251,027	28	9,655	109.3%	10,553	9,800	753	2,316	26.0%	2,744	428	
6,287	5,758	89,100	53,829	54,156	52,891	249,976	43	9,614	110.3%	10,605	7,000	3,605	2,879	47.0%	4,984	2,105	
3,175	2,720	41,405	31,324	17,752	36,354	126,835	47	4,878	124.1%	6,054	3,400	2,654	1,069	34.0%	2,058	989	
1,903	1,820	49,811	56,103	23,686	11,134	140,734	77	5,413	108.8%	5,889	3,000	2,889	1,019	50.0%	2,945	1,926	
2,778	2,469	57,158	33,395	19,215	24,996	134,764	54	5,183	114.1%	5,914	2,778	3,136	1,152	40.0%	2,366	1,214	
1,043	1,007	25,396	59,541	58,412	8,227	151,576	151		102.8%		750						
155,261	134,023	1,649,174	1,120,509	816,666	953,924	4,540,273		168,796		191,714	162,047	30,417	47,504		64,896	17,392	

### Notes:

NCSA HC and FTE include the high school but there is no calculation of HC capacity and the HC is not included in the totals for columns 11 and 15.

ASF includes buildings from the Fall 1997 Inventory, additional buildings in service since then, and buildings under construction or fully-funded, plus the Humanities Building at UNC-Charlotte (partially funded). No other partially-funded buildings are included.

1. Column 1 = Student HC Fall 1997
2. Column 2 = Student FTEs Fall 1997
3. Column 3 = ASF 110 Classroom Space in Fall 1997 Facilities Inventory.
4. Column 4 = ASF 210 Teaching Laboratory Space in Fall 1997 Facilities Inventory.
5. Column 5 = ASF 220 Open Laboratory Space in Fall 1997 Facilities Inventory.
6. Column 6 = ASF of all campus 410 Study Room Space + 50% of all campus 430 Open Stack Space.
7. Column 7 = The sum of Columns 3, 4, 5, and 6 and represents this definition of "Core Academic Facilities." This includes Classrooms, Teaching Labs, Open Labs, and Study Space.
8. Column 8 = ASF Core Academic Facilities (Column 7) divided by Student FTEs (Column 2).
9. Column 9 = ASF Core Academic Facilities (Column 7) divided by the Benchmark of ASF per FTE of 26 ASF.
10. Column 10 = Conversion Factor to convert FTEs to HC, based on an average of the last 11 years of HC and FTE enrollments, from 1987 through 1997.
11. Column 11 = Our estimate of Current HC Capacity, which is calculated as FTE Capacity (Column 9) multiplied by the Conversion Factor (Column 10).
12. Column 12 = Estimates of Current HC Capacity (for 1998) submitted by the UNC institutions to UNC-General Administration in current Enrollment Planning work.
13. Column 13 = Differences in the EKA and campus estimates of Current Capacity (Column 11 minus Column 12). For example, for ASU, EKA estimates 12,626 or 260 more.
14. Column 14 = Current number of beds available on the campus, from Statistical Abstract.
15. Column 15 = Calculated % of HC students currently housed (Column 14 divided by Column 1).
16. Column 16 = Number of beds that are needed to house students, based on HC Capacity determined in Column 11.
17. Column 17 = The number of additional beds that would be needed to accommodate the calculated HC Capacity (Column 16 minus Column 14).
18. Column 18 = "Net HC Capacity, using the limitation of beds available (Column 11 minus Column 17).

\* Enrollment statistics for NC School of the Arts include High School Students. No calculations of Capacity are shown for NCSA.

# EXHIBIT 5—FUTURE CAPACITY—FALL 2003 ENROLLMENT

Column #	Analysis of Current HC Capacity by Core Academic Facilities										HC Capacity by Residential Beds						
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Student HC	1998	Student FTEs	ASF 110	ASF 210	ASF 220	ASF 410/430	ASF Core Facilities	ASF FTE	FTE Capacity	Conv. Factor	HC Capacity	HC Capacity from Inst't 1998	Diff. HC Capacity Minus Inst't HC	Current Bed Capacity	% HC to be Housed	# Beds Needed for HC Capacity	# New Beds Needed
Calc by Column #									(7/26 ASF)		(9*10)		(11-12)			(15*11)	(16 - 14)
Proposed Benchmark									26								
NC State	27,180	22,206	201,690	137,505	160,870	96,295	596,360	27	22,937	122.4%	28,075	25,250	2,825	6,610	28.0%	7,861	1,251
UNC-Chapel Hill	24,970	22,548	207,269	74,482	82,248	207,038	571,037	25	21,963	110.7%	24,313	23,827	486	6,574	30.0%	7,294	720
UNC-Greensboro	13,730	11,890	116,335	79,331	50,572	68,109	314,347	26	12,090	115.5%	13,964	14,657	(693)	3,882	31.0%	4,329	447
East Carolina	20,000	18,280	160,736	117,757	83,399	104,208	466,100	25	17,927	109.4%	19,612	17,800	1,812	4,998	31.0%	6,080	1,082
Appalachian State	12,500	11,850	172,046	127,378	35,755	34,813	369,992	31	14,230	105.5%	15,013	12,366	2,647	5,204	42.0%	6,306	1,102
Fayetteville State	4,730	4,077	55,655	35,124	3,724	34,298	128,801	32	4,954	116.0%	5,747	5,175	572	1,152	25.0%	1,437	285
NC A&T State	8,840	8,036	108,971	94,990	46,270	59,045	309,276	38	11,895	110.1%	13,097	8,200	4,897	2,963	40.0%	5,239	2,276
NC Central	6,700	5,809	108,974	41,301	33,079	49,719	233,073	40	8,964	115.4%	10,345	6,374	3,971	2,490	36.0%	3,724	1,234
UNC-Charlotte	17,960	15,176	113,590	91,514	86,555	108,700	400,359	26	15,398	118.4%	18,232	16,670	1,562	4,052	27.0%	4,923	871
UNC-Pembroke	3,600	3,089	48,276	23,008	11,604	13,128	96,016	31	3,693	116.5%	4,302	5,000	(698)	1,144	41.0%	1,764	620
UNC-Wilmington	10,700	9,781	92,762	63,927	49,369	44,969	251,027	26	9,655	109.3%	10,553	9,800	753	2,316	25.0%	2,638	322
Western Carolina	7,550	6,848	89,100	53,829	54,156	52,891	249,976	37	9,614	110.3%	10,605	7,000	3,605	2,879	47.0%	4,984	2,105
UNC-Asheville	3,500	2,825	41,405	31,324	17,752	36,354	126,835	45	4,878	124.1%	6,054	3,400	2,654	1,069	40.0%	2,422	1,353
Elizabeth City State	2,280	2,125	49,811	56,103	23,686	11,134	140,734	66	5,413	108.8%	5,889	3,000	2,889	1,019	50.0%	2,945	1,926
Winston Salem State	3,320	2,908	57,158	33,395	19,215	24,996	134,764	46	5,183	114.1%	5,914	2,778	3,136	1,152	40.0%	2,366	1,214
NC School of Arts*	1,160	1,129	25,398	59,541	58,412	8,227	151,576	134		102.8%		750		47,504		64,309	16,805
NC-System Totals	168,720	148,586	1,649,174	1,120,509	816,666	953,924	4,540,273		168,796		191,714	162,047	30,417				

## Notes:

NCSEA HC and FTE include the high school but there is no calculation of HC capacity and the HC is not included in the totals for columns 11 and 15.  
ASF includes buildings from the Fall 1997 inventory, additional buildings in service since then, and buildings under construction or fully-funded, plus the Humanities Building at UNC-Charlotte (partially funded). No other partially-funded buildings are included.

- Column 1 = Student HC Fall 1997
- Column 2 = Student FTEs Fall 1997
- Column 3 = ASF 110 Classroom Space in Fall 1997 Facilities Inventory.
- Column 4 = ASF 210 Teaching Laboratory Space in Fall 1997 Facilities Inventory.
- Column 5 = ASF 220 Open Laboratory Space in Fall 1997 Facilities Inventory.
- Column 6 = ASF of all campus 410 Study Room Space + 50% of all campus 430 Open Stack Space.
- Column 7 = The sum of Columns 3, 4, 5, and 6 and represents this definition of "Core Academic Facilities." This includes Classrooms, Teaching Labs, Open Labs, and Study Space.
- Column 8 = ASF Core Academic Facilities (Column 7) divided by Student FTEs (Column 2).
- Column 9 = ASF Core Academic Facilities (Column 7) divided by the Benchmark of ASF per FTE of 26 ASF.
- Column 10 = Conversion Factor to convert FTEs to HC, based on an average of the last 11 years of HC and FTE enrollments, from 1987 through 1997.
- Column 11 = Our estimate of Current HC Capacity, which is calculated as FTE Capacity (Column 9) multiplied by the Conversion Factor (Column 10).
- Column 12 = Estimates of Current HC Capacity (for 1998) submitted by the UNC institutions to UNC-General Administration in current Enrollment Planning work.
- Column 13 = Difference in the EKA and campus estimates of Current Capacity (Column 11 minus Column 12). For example, for ASU, EKA estimates 12,626 or 260 more.
- Column 14 = Current number of beds available on the campus, from Statistical Abstract.
- Column 15 = % of HC students the institution indicates it wishes to house by 2003.
- Column 16 = Number of beds that are needed to house students, based on HC Capacity determined in Column 11.
- Column 17 = The number of additional beds that would be needed to accommodate the calculated HC Capacity (Column 16 minus Column 14).
- Column 18 = "Net HC Capacity, using the limitation of beds available (Column 11 minus Column 17).

\* Enrollment statistics for NC School of the Arts include High School Students. No calculations of Capacity are shown for NCSEA.

## EXHIBIT 6—FUTURE CAPACITY—FALL 2008 ENROLLMENT

Column #	Analysis of Current HC Capacity by Core Academic Facilities										HC Capacity by Residential Beds						
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	
Student HC	Student FTEs	ASF 110	ASF 210	ASF 220	ASF 410/430	ASF Academic Facilities	ASF FTE	FTE Capacity	Conv. Factor	HC Capacity	HC Capacity from Inst't 1998	Diff. HC Capacity Minus Inst't HC	Current Bed Capacity	% HC To be Housed	# Beds Needed for HC Capacity	# New Beds Needed	
1998	1998	1998	1998	1998	1998	1998	(Sum 3 to 6)	(7/2)	(7/26 ASF)	(9*10)	(11-12)	(11-12)			(15*11)	(16 - 14)	
Calc by Column #																	
Proposed Benchmark																	
NC State	30,100	24,592	201,690	137,505	160,870	96,295	596,360	24	22,937	122.4%	28,075	25,250	2,825	6,610	28.0%	7,861	1,251
UNC-Chapel Hill	27,500	24,833	207,269	74,482	82,248	207,038	571,037	23	21,963	110.7%	24,313	23,827	486	6,574	30.0%	7,294	720
UNC-Greensboro	14,800	12,817	116,335	79,331	50,572	68,109	314,347	25	12,090	115.5%	13,964	14,657	(693)	3,882	31.0%	4,329	447
East Carolina	24,000	21,936	160,736	117,757	83,399	104,208	466,100	21	17,927	109.4%	19,612	17,800	1,812	4,998	40.0%	7,845	2,847
Appalachian State	14,000	13,272	172,046	127,378	35,755	34,813	369,992	28	14,230	105.5%	15,013	12,366	2,647	5,204	50.0%	7,507	2,303
Fayetteville State	6,000	5,172	55,655	35,124	3,724	34,298	128,801	25	4,954	116.0%	5,747	5,175	572	1,152	25.0%	1,437	285
NC A&T State	10,600	9,635	108,971	94,990	46,270	59,045	309,276	32	11,895	110.1%	13,097	8,200	4,897	2,963	40.0%	5,239	2,276
NC Central	8,300	7,196	108,974	41,301	33,079	49,719	233,073	32	8,964	115.4%	10,345	6,374	3,971	2,490	36.0%	3,724	1,234
UNC-Charlotte	23,500	19,858	113,590	91,514	86,555	108,700	400,359	20	15,398	118.4%	18,232	16,670	1,562	4,052	27.0%	4,923	871
UNC-Pembroke	4,200	3,604	48,276	23,008	11,604	13,128	96,016	27	3,693	116.5%	4,302	5,000	(698)	1,144	41.0%	1,764	620
UNC-Wilmington	12,500	11,438	92,762	63,927	49,369	44,969	251,027	22	9,655	109.3%	10,553	9,800	753	2,316	25.0%	2,638	322
Western Carolina	9,400	8,526	89,100	53,829	54,156	52,891	249,976	29	9,614	110.3%	10,605	7,000	3,605	2,879	47.0%	4,984	2,105
UNC-Asheville	3,500	2,825	41,405	31,324	17,752	36,354	126,835	45	4,878	124.1%	6,054	3,400	2,654	1,069	50.0%	3,027	1,958
Elizabeth City State	3,000	2,796	49,811	56,103	23,686	11,134	140,734	50	5,413	108.8%	5,889	3,000	2,889	1,019	50.0%	2,945	1,926
Winston Salem State	4,200	3,679	57,158	33,395	19,215	24,996	134,764	37	5,183	114.1%	5,914	2,778	3,136	1,152	40.0%	2,366	1,214
NC School of Arts*	1,200	1,168	25,396	59,541	58,412	8,227	151,576	130	102.8%		750						
NC-System Totals	196,800	173,344	1,649,174	1,120,509	816,666	953,924	4,540,273		168,796	191,714	162,047	30,417	47,504		67,881	20,377	

### Notes:

NCSA HC and FTE include the high school but there is no calculation of HC capacity and the HC is not included in the totals for columns 11 and 15.

ASF includes buildings from the Fall 1997 inventory, additional buildings in service since then, and buildings under construction or fully-funded, plus the Humanities Building at UNC-Charlotte (partially funded). No other partially-funded buildings are included.

1. Column 1 = Student HC Fall 1997
2. Column 2 = Student FTEs Fall 1997
3. Column 3 = ASF 110 Classroom Space in Fall 1997 Facilities Inventory.
4. Column 4 = ASF 210 Teaching Laboratory Space in Fall 1997 Facilities Inventory.
5. Column 5 = ASF 220 Open Laboratory Space in Fall 1997 Facilities Inventory.
6. Column 6 = ASF of all campus 410 Study Room Space + 50% of all campus 430 Open Stack Space.
7. Column 7 = The sum of Columns 3, 4, 5, and 6 and represents this definition of "Core Academic Facilities." This includes Classrooms, Teaching Labs, Open Labs, and Study Space.
8. Column 8 = ASF Core Academic Facilities (Column 7) divided by Student FTEs (Column 2).
9. Column 9 = ASF Core Academic Facilities (Column 7) divided by the Benchmark of ASF per FTE of 26 ASF.
10. Column 10 = Conversion Factor to convert FTEs to HC, based on an average of the last 11 years of HC and FTE enrollments, from 1987 through 1997.
11. Column 11 = Our estimate of Current HC Capacity, which is calculated as FTE Capacity (Column 9) multiplied by the Conversion Factor (Column 10).
12. Column 12 = Estimates of Current HC Capacity (for 1998) submitted by the UNC institutions to UNC-General Administration in current Enrollment Planning work.
13. Column 13 = Difference in the EKA and campus estimates of Current Capacity (Column 11 minus Column 12). For example, for ASU, EKA estimates 12,626 or 260 more.
14. Column 14 = Current number of beds available on the campus, from Statistical Abstract.
15. Column 15 = % of HC students that the institution indicates it wishes to house by 2008.
16. Column 16 = Number of beds that are needed to house students, based on HC Capacity determined in Column 11.
17. Column 17 = The number of additional beds that would be needed to accommodate the calculated HC Capacity (Column 16 minus Column 14).
18. Column 18 = "Net HC Capacity, using the limitation of beds available (Column 11 minus Column 17).

\* Enrollment statistics for NC School of the Arts include High School Students. No calculations of Capacity are shown for NCSA.

# EXHIBIT 7—ACTUAL ADJUSTED ASF, STANDARD ASF, AND VARIANCES FOR 1998, 2003, 2003, AND 2008

	110-Classroom						
	Actual Adjusted 1998	Standard 1998	Variance form Standard	Standard 2003	Variance form Standard	Standard 2008	Variance form Standard
Research Universities I:							
NC State	201,690	217,483	(15,793)	218,437	(16,747)	241,904	(40,214)
UNC-Chapel Hill	207,269	172,703	34,566	184,658	22,611	203,368	3,901
Doctoral Universities I:							
UNC-Greensboro	116,335	95,945	20,390	105,625	10,710	113,857	2,478
Doctoral Universities II:							
East Carolina	160,736	136,902	23,834	155,993	4,743	187,192	(26,456)
Masters/Comprehensive Colleges/Universities I:							
Appalachian State	172,046	107,037	65,009	114,264	57,782	127,975	44,071
Fayetteville State	55,655	30,983	24,672	36,134	19,521	45,836	9,819
NC A&T State	108,971	65,245	43,726	78,761	30,210	94,442	14,529
NC Central	108,974	44,329	64,645	77,045	31,929	95,444	13,530
UNC-Charlotte	113,590	124,107	(10,517)	138,621	(25,031)	181,380	(67,790)
UNC-Pembroke	48,276	23,853	24,423	27,621	20,655	32,224	16,052
UNC-Wilmington	92,762	80,157	(5,124)	95,739	(20,706)	111,844	(36,811)
Western Carolina	89,100	48,286	40,814	59,729	29,371	74,364	14,736
Baccalaureate Colleges I:							
UNC-Asheville	41,405	25,610	15,795	28,480	12,926	28,480	12,926
Baccalaureate Colleges II:							
Elizabeth City State	49,811	18,096	31,715	20,820	38,991	27,395	32,416
Winston Salem State	57,158	22,856	34,302	27,985	29,173	35,403	21,755
Specialized Institutions:							
NC School of Arts	25,396	6,917	18,479	7,839	17,557	8,109	17,287
UNC Systems Subtotals	1,649,174	1,220,509	421,117	1,377,749	263,877	1,609,216	32,410
Sources: Adjusted ASF is from the Space Planning Standards and information supplied by the constituent institutions.							

Sources: Adjusted ASF is from the Space Planning Standards and information supplied by the constituent institutions.

Exhibit 7 (con't) 210-Class Labs									
	Actual 1998	ASF In Pipeline	Actual Adjusted 1998	Standard 1998	Variance form Standard	Standard 2003	Variance form Standard	Standard 2008	Variance form Standard
<b>Research Universities I:</b>									
NC State	130,862	6,643	137,505	211,633	(74,128)	212,561	(75,056)	235,396	(97,891)
UNC-Chapel Hill	64,962	8,204	73,166	77,183	(4,017)	82,525	(9,359)	90,887	(17,721)
<b>Doctoral Universities I:</b>									
UNC-Greensboro	66,628	12,703	79,331	75,892	3,439	83,549	(4,218)	90,060	(10,729)
<b>Doctoral Universities II:</b>									
East Carolina	116,944		116,944	142,750	(25,806)	162,657	(45,713)	195,188	(78,244)
<b>Masters/Comprehensive Colleges/Universities I:</b>									
Appalachian State	90,916	35,232	126,148	78,505	47,643	83,805	42,343	93,862	32,286
Fayetteville State	33,136		33,136	31,046	2,090	36,208	(3,072)	45,929	(12,793)
NC A&T State	75,791	19,199	94,990	99,357	(4,367)	119,940	(24,950)	143,820	(48,830)
NC Central	37,811	1,825	39,636	29,508	10,128	51,286	(11,650)	63,533	(23,897)
UNC-Charlotte	83,464	8,050	91,514	151,297	(59,783)	168,991	(77,477)	221,119	(129,605)
UNC-Pembroke	22,037		22,037	14,471	7,566	16,756	5,281	19,549	2,488
UNC-Wilmington	51,855	11,400	63,255	75,781	(12,526)	90,512	(27,257)	105,738	(42,483)
Western Carolina	53,829		53,829	46,567	7,262	57,602	(3,773)	71,717	(17,886)
<b>Baccalaureate Colleges I:</b>									
UNC-Asheville	30,575	749	31,324	22,434	8,890	24,947	6,377	24,947	6,377
<b>Baccalaureate Colleges II:</b>									
Elizabeth City State	37,866	14,904	52,770	26,290	26,480	30,247	22,523	39,799	12,971
Winston Salem State	19,551	10,400	29,951	22,035	7,916	26,980	2,971	34,131	(4,180)
<b>Specialized Institutions:</b>									
NC School of Arts	76,283		76,283	99,539	(23,256)	112,801	(36,518)	116,691	(40,408)
<b>UNC Systems Subtotals</b>	<b>992,510</b>	<b>129,309</b>	<b>1,121,819</b>	<b>1,204,288</b>	<b>(82,469)</b>	<b>1,361,367</b>	<b>(239,548)</b>	<b>1,592,366</b>	<b>(470,547)</b>
Sources: Adjusted ASF is from the Space Planning Standards and information supplied by the constituent institutions.									

Exhibit 7 (con't) 220-Open Labs										
	Actual 1998	ASF In Pipeline	Actual Adjusted 1998	Standard 1998	Variance form Standard	Standard 2003	Variance form Standard	Standard 2008	Variance form Standard	
Research Universities I:										
NC State	140,044	2,958	143,002	245,935	(102,933)	247,013	(104,011)	273,550	(130,548)	
UNC-Chapel Hill	65,045		65,045	154,633	(89,588)	165,336	(100,291)	182,088	(117,043)	
Doctoral Universities I:										
UNC-Greensboro	30,474	8,299	38,773	66,388	(27,615)	73,086	(34,313)	78,782	(40,009)	
Doctoral Universities II:										
East Carolina	78,577		78,577	128,243	(49,666)	146,126	(67,549)	175,351	(96,774)	
Masters/Comprehensive Colleges/Universities I:										
Appalachian State	22,453	2,687	25,140	39,744	(14,604)	46,372	(21,232)	51,936	(26,796)	
Fayetteville State	1,845		1,845	9,138	(7,293)	14,602	(12,757)	13,519	(11,674)	
NC A&T State	42,053	126	42,179	65,545	(23,366)	79,123	(36,944)	94,876	(52,697)	
NC Central	19,950		19,950	25,485	(5,535)	44,294	(24,344)	54,872	(34,922)	
UNC-Charlotte	69,149	11,977	81,126	114,258	(33,132)	127,620	(46,494)	166,986	(85,860)	
UNC-Pembroke	10,507	647	11,154	20,412	(9,258)	23,636	(12,482)	27,576	(16,422)	
UNC-Wilmington	32,696	11,600	44,296	59,048	(14,752)	70,526	(26,230)	82,391	(38,095)	
Western Carolina	33,854	4,823	38,677	38,654	23	47,814	(9,137)	59,530	(20,853)	
Baccalaureate Colleges I:										
UNC-Asheville	10,573		10,573	20,520	(9,947)	22,819	(12,246)	22,819	(12,246)	
Baccalaureate Colleges II:										
Elizabeth City State	10,965	8,347	19,312	10,505	8,807	12,086	7,226	15,902	3,410	
Winston Salem State	8,471	2,700	11,171	11,781	(610)	14,425	(3,254)	18,248	(7,077)	
Specialized Institutions:										
NC School of Arts	45,550		45,550	20,714	24,837	23,473	22,077	24,283	21,267	
UNC Systems Subtotals	622,206	54,164	676,370	1,031,002	(354,632)	1,158,351	(481,981)	1,342,709	(666,339)	
Sources: Adjusted ASF is from Work Paper II-B-2 Additional Space Planning Guidelines and information supplied by the constituent institutions.										



Exhibit 7 (con't)

	300-Office						400-Study (Library)						
	Actual Adjusted 1998	Standard 1998	Variance form Standard	Standard 2003	Variance form Standard	Standard 2008	Variance form Standard	Standard 1998	Variance form Standard	Standard 2003	Variance form Standard	Standard 2008	Variance form Standard
Research Universities I:													
NC State	1,221,701	1,108,398	113,303	1,094,347	127,354	1,211,914	9,787	385,532	217,734	436,556	(218,822)	498,081	(280,347)
UNC-Chapel Hill	1,580,224	1,652,961	(72,737)	1,743,892	(163,668)	1,920,566	(340,362)	609,282	586,343	695,723	(109,380)	826,475	(240,132)
Doctoral Universities I:													
UNC-Greensboro	356,964	315,782	41,182	345,595	11,369	372,021	(15,057)	155,963	118,503	184,935	(66,432)	209,189	(90,666)
Doctoral Universities II:													
East Carolina	581,630	658,354	(76,724)	737,817	(156,187)	874,313	(292,683)	221,407	204,928	258,678	(53,750)	310,517	(105,589)
Masters/Comprehensive Colleges/Universities I:													
Appalachian State	377,457	280,934	96,524	290,029	87,428	324,832	52,625	127,816	60,217	139,886	(79,669)	159,661	(99,444)
Fayetteville State	112,093	96,813	15,280	116,937	(4,844)	148,335	(36,242)	40,556	48,821	50,313	(1,492)	61,003	(12,182)
NC A&T State	296,632	223,314	73,318	264,041	32,591	316,969	(20,337)	84,719	99,122	102,174	(3,052)	123,069	(23,947)
NC Central	207,021	152,643	54,378	180,563	26,458	223,682	(16,661)	80,662	82,081	93,609	(11,528)	119,752	(37,671)
UNC-Charlotte	349,738	331,133	18,605	363,295	(13,557)	465,245	(115,507)	151,408	187,837	189,903	(2,066)	250,668	(62,831)
UNC-Pembroke	88,826	70,156	18,670	83,243	5,583	104,054	(15,228)	35,275	34,174	41,663	(7,489)	45,803	(11,629)
UNC-Wilmington	216,863	192,811	24,052	224,834	(7,971)	262,656	(45,793)	127,126	109,650	164,469	(54,819)	275,068	(165,418)
Western Carolina	187,780	178,551	9,229	206,409	(18,629)	256,987	(69,207)	84,984	113,816	95,172	18,644	107,323	6,493
Baccalaureate Colleges I:													
UNC-Asheville	80,780	88,118	(7,338)	97,016	(16,236)	97,016	(16,236)	49,010	67,158	60,331	6,827	75,268	(8,110)
Baccalaureate Colleges II:													
Elizabeth City State	81,396	67,626	13,770	80,306	1,090	105,666	(24,270)	26,436	28,934	31,114	(2,180)	38,836	(9,902)
Winston Salem State	134,662	84,176	50,487	97,544	37,118	123,399	11,263	32,371	39,384	37,845	1,539	44,308	(4,924)
Specialized Institutions:													
NC School of Arts	60,239	52,749	7,490	59,292	947	61,336	(1,097)	18,653	17,852	21,128	(3,276)	24,165	(6,313)
UNC Systems Subtotals	5,934,006	5,554,517	379,489	5,985,159	(51,153)	6,869,011	(935,005)	2,231,200	2,016,554	2,603,499	(586,945)	3,169,186	(1,152,632)

Sources: Adjusted ASF is from the Space Planning Standards and information supplied by the constituent institutions.

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Exhibit 7 (con't)

	520/525-Athletic and Physical Education					600-Student Services								
	Actual Adjusted 1998	Standard 1998	Variance form Standard	Standard 2003	Variance form Standard	Standard 2008	Variance form Standard	Actual Adjusted 1998	Standard 1998	Variance form Standard	Standard 2003	Variance form Standard	Standard 2008	Variance form Standard
Research Universities I:														
NC State	206,122	186,770	19,352	216,350	(10,228)	238,250	(32,128)	145,548	278,832	(133,284)	326,160	(180,612)	361,200	(215,652)
UNC-Chapel Hill	207,499	173,383	34,117	199,775	7,724	218,750	(11,251)	180,126	257,412	(77,286)	299,640	(119,514)	330,000	(149,874)
Doctoral Universities I:														
UNC-Greensboro	36,262	92,233	(55,971)	115,475	(79,213)	123,500	(87,238)	94,478	127,572	(33,094)	164,760	(70,282)	177,600	(83,122)
Doctoral Universities II:														
East Carolina	35,878	135,673	(99,795)	162,500	(126,622)	192,500	(156,622)	246,685	197,076	49,609	240,000	6,685	288,000	(41,315)
Masters/Comprehensive Colleges/Universities I:														
Appalachian State	96,838	99,575	(2,737)	106,250	(9,412)	117,500	(20,662)	204,566	139,320	65,246	150,000	54,566	168,000	36,566
Fayetteville State	56,056	38,105	17,951	47,975	8,081	57,500	(1,444)	50,522	40,968	9,554	56,760	(6,238)	72,000	(21,478)
NC A&T State	77,000	64,025	12,975	78,800	(1,800)	92,000	(15,000)	71,732	82,440	(10,708)	106,080	(34,348)	127,200	(55,468)
NC Central	68,903	49,490	19,413	62,750	6,153	74,750	(5,847)	69,628	59,184	10,444	80,400	(10,772)	99,600	(29,972)
UNC-Charlotte	78,685	114,388	(35,703)	147,200	(68,515)	188,750	(110,065)	210,673	163,020	47,653	215,520	(4,847)	282,000	(71,327)
UNC-Pembroke	60,148	31,940	28,208	39,500	20,648	44,000	16,148	57,442	31,104	26,338	43,200	14,242	50,400	7,042
UNC-Wilmington	39,598	75,365	(35,767)	92,750	(53,152)	106,250	(66,652)	91,911	100,584	(8,673)	128,400	(36,489)	150,000	(58,089)
Western Carolina	81,333	57,553	23,781	69,125	12,208	83,000	(1,667)	120,029	72,084	47,945	90,600	29,429	112,800	7,229
Baccalaureate Colleges I:														
UNC-Asheville	65,139	32,510	32,629	38,750	26,389	38,750	26,389	28,854	32,016	(3,162)	42,000	(13,146)	42,000	(13,146)
Baccalaureate Colleges II:														
Elizabeth City State	47,992	26,218	21,775	29,600	18,392	35,000	12,992	46,970	21,948	25,022	27,360	19,610	36,000	10,970
Winston Salem State	29,812	31,678	(1,866)	37,400	(7,588)	44,000	(14,186)	62,756	30,684	32,072	39,840	22,916	50,400	12,356
Specialized Institutions:														
NC School of Arts	10,768	20,458	(9,690)	21,200	(10,432)	21,500	(10,732)	82,497	12,732	69,765	13,920	68,577	14,400	68,097
UNC Systems Subtotals	1,198,033	1,229,360	(31,327)	1,465,400	(267,367)	1,676,000	(477,967)	1,764,417	1,646,976	117,441	2,024,640	(260,223)	2,361,600	(597,183)

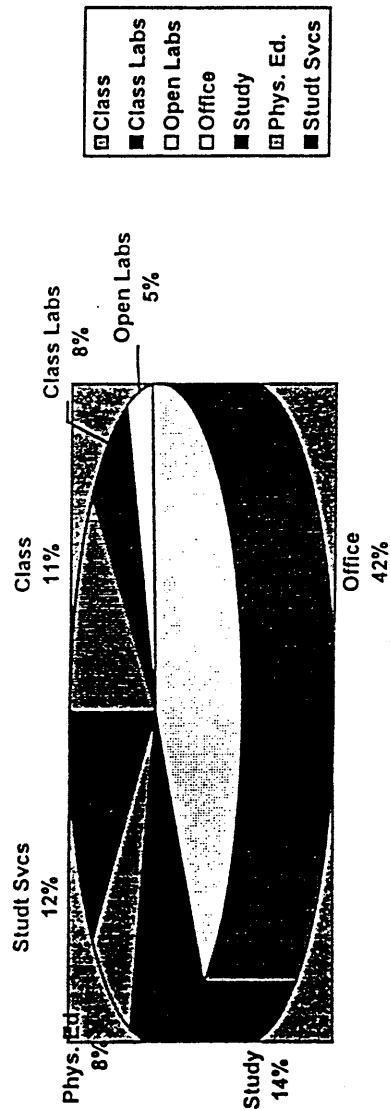
Sources: Adjusted ASF is from Work Paper II-B-2 Additional Space Planning Guidelines and information supplied by the constituent institutions.

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	Exhibit 7 (con't)				
	900-Residence Hall Beds				
	Beds 1998	(Needed) 2003	Beds 2003	(Needed) 2008	Beds 2008
<b>Research Universities I:</b>					
NC State	7,732		7,732	(696)	8,428
UNC-Chapel Hill	7,152	(339)	7,491	(1,098)	8,250
<b>Doctoral Universities I:</b>					
UNC-Greensboro	3,944	(312)	4,256	(644)	4,558
<b>Doctoral Universities II:</b>					
East Carolina	5,566	(634)	6,200	(4,034)	9,600
<b>Masters/Comprehensive Colleges/Universities I:</b>					
Appalachian State	5,001	(249)	5,250	(1,999)	7,000
Fayetteville State	1,225		1,225	(275)	1,500
NC A&T State	2,901	(635)	3,536	(1,339)	4,240
NC Central	2,520		2,520	(468)	2,988
UNC-Charlotte	4,525	(324)	4,849	(1,820)	6,345
UNC-Pembroke	1,218	(258)	1,476	(504)	1,722
UNC-Wilmington	2,504	(171)	2,782	(621)	3,250
Western Carolina	2,944	(605)	3,549	(1,474)	4,418
<b>Baccalaureate Colleges I:</b>					
UNC-Asheville	1,081	(319)	1,400	(669)	1,750
<b>Baccalaureate Colleges II:</b>					
Elizabeth City State	1,091	(49)	1,140	(409)	1,500
Winston Salem State	1,109	(219)	1,328	(571)	1,680
<b>Specialized Institutions:</b>					
NC School of Arts	714	(98)	812	(126)	930
<b>UNC Systems Subtotals</b>	51,227	(4,212)	55,546	(16,747)	68,159
Sources: Bed counts are from the North Carolina Commission on Higher Education Facilities and percent of students housed for 2003 and 2008 are supplied by the constituent institutions.					

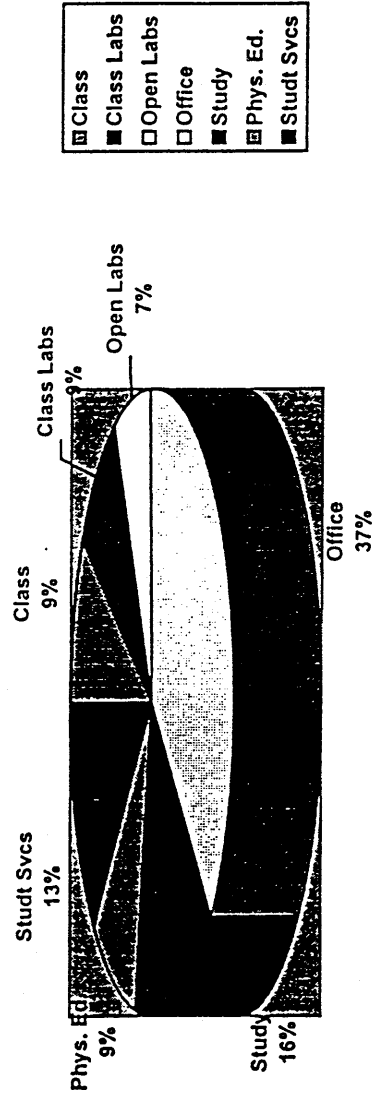
## EXHIBIT 8—DISTRIBUTION OF HEGIS ROOM USE CODES - 1998

Distribution of UNC Adjusted Actual ASF by HEGIS Room Use Codes - 1998



## EXHIBIT 9—DISTRIBUTION OF HEGIS ROOM USE CODES - 2003

Distribution of UNC Standard ASF by HEGIS Room Use Codes - 2003



## EXHIBIT 10—DISTRIBUTION OF HEGIS ROOM USE CODES - 2008

Distribution of UNC Standard ASF by HEGIS Room Use Codes - 2008

