

A Report to the New Jersey
Commission on Higher Education

February 1999

New Jersey's Capital Investment in Higher Education

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New Jersey's Capital Investment in Higher Education

Introduction

During the past eighteen months, the Commission on Higher Education has been gathering data regarding facilities at the public and private colleges and universities in the state. A significant portion of the data was generated by a two-phase institutional survey.¹ This facilities survey was the first since the early 1990s and the first to result in a formal report since the late 1980s; it was intended to accomplish the following five goals:

- Determine the current utilization of facilities as part of the capacity study;
- Provide a comprehensive description and analysis of recent capital funding;
- Provide information for long-range planning;
- Support proposals for additional capital funding; and
- Stimulate discussions regarding capital needs.

New Jersey has a significant investment in facilities for higher education. The replacement value of academic buildings at the institutions that responded to the survey is more than \$5 billion; it is more than \$2 billion for auxiliary buildings such as dormitories and student centers. The 1,955 buildings contain more than 51 million gross square feet,² the majority of which was constructed in the 1960s and 1970s (see Figure 1). The colleges and universities estimate that an additional \$3.2 billion is needed for capital construction over the next seven years, two-thirds of which is for new construction, with an additional \$547 million needed to preserve existing buildings.³

This report begins by describing the current facilities in each sector, including the age of the facilities and their use, and drawing national comparisons where possible. It then summarizes the public funds and debt issued by institutions for facilities since 1980. The third section of the report details the capital requirements as estimated by the institutions.

Before beginning the discussion, however, there are three caveats. First, although attempts were made to ensure that the data are correct and comparable, different institutions have different capabilities in their capital information systems. As a result, the values included may be more reflective of orders of magnitude than precise figures. Second, two institutions provided no information, and others were unable to complete some portions of the survey. Third, the description of public or other funding most likely understates the total amounts available or spent because institutions may obtain funds from sources not included in the survey or analysis, such as foundations or general purpose funds. For example, public four-year institutions received funds from energy conservation bond issues, and several public and private institutions constructed athletic facilities using financing secured through the New Jersey Sports and Exposition Authority, but these are not included in the totals.

Existing Facilities: Profiles of the Sectors

Community Colleges

The 19 community colleges operate 26 campuses (five colleges have at least two campuses). The average college maintains 185 acres, of which 79 are improved. The smallest campus is just under two acres; the largest exceeds 553 acres. As of August 1997, the smallest campus had 49,500 square feet, the largest, 806,319. Of the total 7.8 million square feet of buildings, 45 percent was constructed during the 1970s, 17 percent during the 1960s, and 19 percent in the 1990s (see Figure 1). The replacement value of the buildings is \$970 million, or approximately \$126 per square foot. Most of the space is academic; auxiliary facilities comprise only 11 percent of the total. The replacement value of auxiliary space is \$88 per square foot; that for academic space is \$130. The age of the facilities reflects the creation of the colleges in the late 1960s and their expansion through the bond acts of the 1980s. Nevertheless, more than half of the space is at least 20 years old.

The majority of space in community colleges is used for classrooms (18%), laboratories (18%), and offices (17%) (see Figure 2). The average college has a total of 63 classrooms, of which three-quarters hold fewer than thirty students. Classrooms are scheduled approximately 56 percent of the time during weekdays and almost 65 percent of the time on weekday evenings, making community colleges the only sector in which evening utilization is higher than daytime utilization. The average college also has 38 laboratories, with those for computers (16) and science (12) constituting the vast majority. These are scheduled 51 percent of the available time on weekdays and 55 percent of weekday evenings, paralleling the utilization patterns seen for classrooms. Community colleges also make greater use of their classrooms and laboratories on weekends than do the other sectors.

One method for comparing institutions is to compute the square footage, either gross or net assignable, for each full-time equivalent (FTE) student. For New Jersey's community colleges, the average gross square feet per FTE student is 85.9; net square footage averages about 60 percent of gross in the sector. A survey by the Association of Higher Education Facilities Officers (APP) permits comparison with a sample of county colleges throughout the nation (see Table 1). In 1995-96, they report an average of 76.9 total square feet per FTE student, which is somewhat less than the average for New Jersey's community colleges.⁴ The range in New Jersey is between 51.1 and 175.3 total square feet per student, compared to a range of 34.6 to 421.6 for the national sample.

Figure 1
Gross Square Feet by Age of Facilities

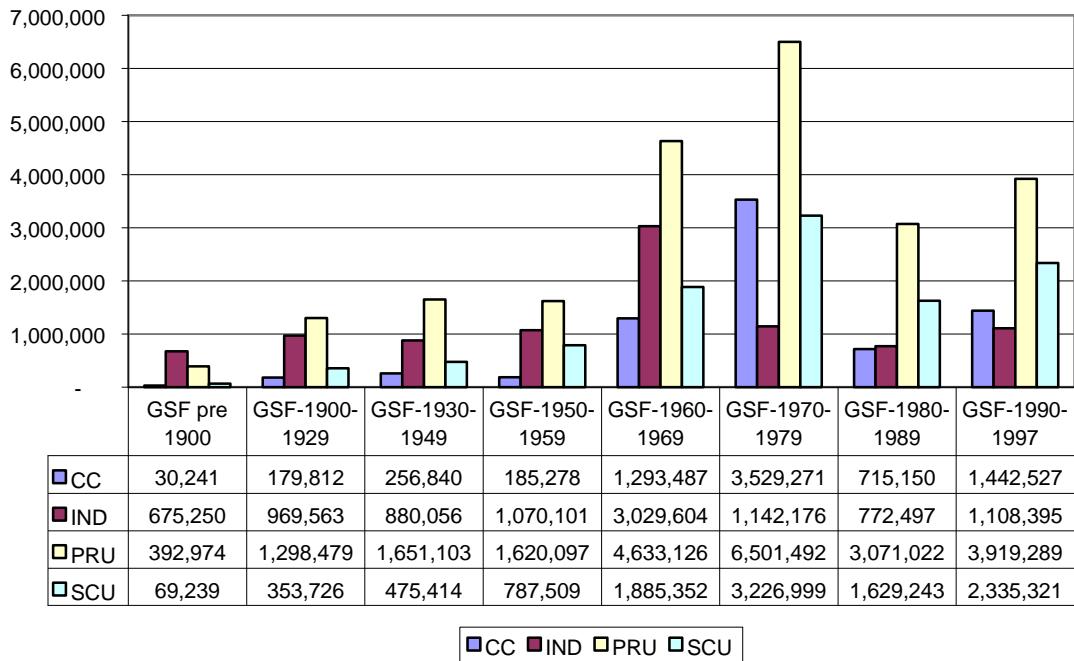


Figure 2
County Colleges Facilities Use Breakdown

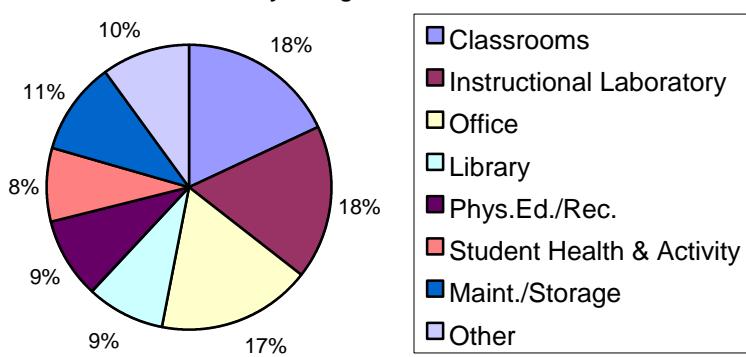


Table 1
Gross Square Footage per FTE Student

NJ				APPA			
	Overall	Low	High		Overall	Low	High
19 Community Colleges	85.9	51.1	175.3	25 2-year Public Colleges	76.9	34.6	421.6
8 State Colleges/Universities [Thomas Edison excluded]	227.0	169.6	416.3	45 Public Comprehensive or Liberal Arts Colleges/Universities	289.7	116.9	720.3
Rutgers University	415.2	-	-	17 AAU Institutions	424.0	205.3	620.5
NJIT	361.0	-	-	3 Peers [Note 1]	439.0	432.4	474.8
UMDNJ	1320.9	-	-	6 Public Medical Schools [Note 2]	1084.0	493.8	2490.4
12 Independent Institutions	309.8	106.6	618.1	50 Private Institutions [Note 3]	472.2	119.4	1130.4

NOTES:

Note 1 NJIT Peers in APPA data are North Carolina State University, Purdue University, and Carnegie-Mellon University.

Note 2 Public Medical Schools in APPA data are Medical College of Ohio, University of Colorado Health Science, College of Medicine at University of Illinois, University of Oklahoma Health Sciences, University of Texas-Houston Health Science, and University of Texas Medical Branch. University of Arizona Health Sciences was not included due to lack of accurate FTE information.

Note 3 The Independent Peers in APPA data consist of 50 private colleges and universities with Carnegie classifications of Comprehensive, Doctorate Granting, or Liberal Arts.

State Colleges and Universities

The eight state colleges and universities* constitute the only sector in which each institution offers degrees on only one campus. As a whole, the colleges have 10.8 million square feet of buildings on 3,140 acres. The replacement value of the buildings is \$1.24 billion, of which three-fifths is for academic buildings. The replacement value for academic buildings averages \$129 per square foot; that for auxiliary buildings averages just \$78 per square foot.

During the 1960s, the state colleges doubled the size of their facilities as their mission expanded from teacher training to general liberal arts colleges. The largest single decade for construction was the 1970s, when 30 percent of present facilities were constructed, including two new colleges. Although construction declined during the 1980s, the state colleges still managed to construct 15 percent of their campuses during the decade. With institutional and state-backed funding, an additional 2.4 million square feet (22 percent of the total) have been constructed thus far in the 1990s. The building surge in the 1970s and the decline of the 1980s were less pronounced than for the county colleges.

The typical state college campus consists of 221 acres of which 144.9 are improved.⁵ It has 39 buildings containing 1.3 total million square feet, although the range is from 19 to 51 buildings and from 726,665 to 2,330,106 square feet. Student housing accounts for 29 percent of the net square footage, and student activity and health facilities combined add another 11 percent. Student centers and housing are generally built and maintained without using public funds, with maintenance funded primarily through student charges.

Classrooms and laboratories together make up 17 percent of the total; offices constitute the same amount (see Figure 3). As will be seen later from data for the independent and public research institutions, this allocation of space appears to be typical for institutions with large residential populations. Excluding student health and housing facilities makes the more residential state and independent colleges generally comparable with the county colleges. With these exclusions, classrooms constitute 11 percent of the total, laboratories 15 percent, and offices 25 percent.⁶

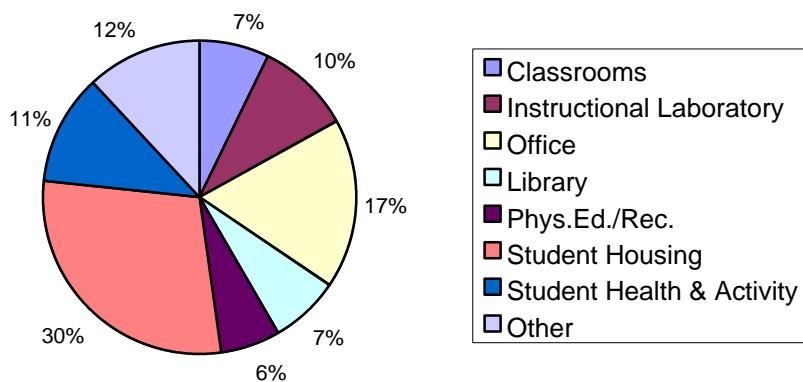
Campuses contain an average of 81 classrooms, the vast majority (75) of which are small or medium (fewer than 50 students). The 65 laboratories and studios are more evenly divided between those dedicated for science (22), computers (17), and art or music (23). Classrooms are scheduled an average 70 percent of the time on weekdays, 56 percent of the weekday evenings, and 13 percent on weekends. Laboratories are scheduled 42 percent of the time on weekdays, 25 percent during the evening, and only 2 percent on weekends.

Compared with the public comprehensive and liberal arts colleges in the APPA survey, New Jersey's state colleges and universities have fewer square feet per student (227.0) than the average (289.7) for their counterparts in the survey (see Table 1). The range among the eight colleges is between 169.6 and 416.3 square feet per student; the range of

* Thomas Edison State College is excluded from this portion of the analysis.

the national sample is between 116.9 and 720.3 square feet per student. Other things being equal, campuses with more residential facilities will have higher ratios. Although the national data do not permit comparisons of academic facilities, the New Jersey data do permit such comparisons. For the eight institutions, the median for total academic space per student is 118.6 square feet; the range is between 109.4 and 184.6 square feet per student.⁷

Figure 3
State Colleges Facilities Use Breakdown



Public Research Universities

The three public research universities also reflect the growth in higher education during the 1960s and 1970s. Although approximately 22 percent of the facilities were built before the building boom of the 1960s and 1970s, construction during the latter period tripled the capacity from just under 5 million square feet to 16.1 million square feet (see Figure 1). An additional 33 percent of the current 23.1 million square feet was constructed during the 1980s and 1990s.

Rutgers, The State University. Rutgers occupies 6,326 acres, of which 5,102 acres are owned, with the remainder leased. Of the total, 4,137 are associated with Agricultural Experiment Stations and similar operations. The New Brunswick campus of Rutgers contains 2,130 acres, the Newark campus, 34 acres, and the Camden campus, 25.

Excluding the Agricultural Experiment Stations, Rutgers' facilities comprise 15.6 million square feet, primarily on the New Brunswick campus. Residential and similar facilities occupy 6.7 million square feet; academic facilities occupy almost nine million square feet. Small classrooms constitute more than half the total. Overall, classrooms are scheduled approximately half the available hours on weekdays and weekday evenings. Use of the 359 instructional laboratories averages slightly more than 50 percent during the day and 44 percent during the evening.

The total replacement value of academic buildings at Rutgers is \$1.592 billion. This figure includes \$27 million for the outlying campuses and extension centers. The replacement value for academic buildings on the three main campuses is \$174 per square foot. The value of auxiliary facilities such as dormitories is \$792 million (\$118 per square foot). Although both the Camden and New Brunswick campuses contain buildings constructed throughout the century (and before), the Newark campus dates to the 1960s. All campuses expanded significantly during the 1970s, with construction and reconstruction continuing at reduced levels during the 1980s and 1990s.

Overall, 36 percent of buildings on Rutgers' campuses are used for housing, although most of this is in New Brunswick. Classrooms and instructional laboratories constitute 12 percent; offices, 18 percent; and facilities devoted primarily to research, including 1,420 laboratories, 9 percent. Rutgers' three campuses make it unique among comparable public research universities, and it is larger than most, even if the Camden and Newark campuses are excluded. Nevertheless, the total building space for each student is slightly less than the average for the 17 peer institutions in the APPA survey, with 414.8 total square feet at Rutgers compared to 424.0 at its peers. (The range for the peers is from 205.3 to 620.5 square feet per FTE. See Table 1.) When residential and other auxiliary facilities are excluded, Rutgers provides 238 academic square feet per FTE student.

New Jersey Institute of Technology. NJIT's 26 buildings sit on 45 acres and contain 2 million square feet, more than half of which was constructed or reconstructed since 1990.⁸ Two-thirds of the facilities are academic; their replacement value is \$315.5 million, or \$233 per square foot. This value is significantly higher than that for other sectors, which may reflect the more specialized function of NJIT. The value of the auxiliary facilities is \$82.4 million (\$123 per square foot). The 98 classrooms are primarily small and medium-sized. Forty percent of the 110 instructional laboratories are for engineering; an additional 38 studios are for departments such as architecture. The classrooms and laboratories represent 23 percent of the usable space on campus. Research facilities, including 94 laboratories, make up an additional 11 percent. Only 17 percent of the campus is devoted to housing.

NJIT's facilities provide significantly less space per student than the three peers in the APPA survey: 361 square feet per FTE compared to an average of 439 square feet per FTE (see Table 1). Academic space is almost the same as that for Rutgers: 241.5 square feet per FTE. Surprisingly, classrooms are scheduled more heavily during evenings (77 percent of the time) than during the day (42 percent). Laboratories are used 42 percent of the time during the day and 18 percent during evenings.

University of Medicine and Dentistry of New Jersey. UMDNJ operates five campuses, not including affiliated hospitals in which students receive training. All of the campuses comprise 175 acres. The Newark and Piscataway campuses each exceed 60 acres; the Stratford campus is 37 acres; the campuses in Camden and New Brunswick are each less than 5 acres. The Newark campus includes University Hospital, which is operated by the University.

All buildings combined contain slightly more than 5 million square feet, of which 4.1 million square feet are used for academic purposes. The 37 buildings contain 181 classrooms (4 percent of usable space), 92 instructional laboratories (8 percent of usable space), and 731 research laboratories (27 percent of usable space). Office space makes up 37 percent of the total. The University does not offer housing to students. The replacement value for the academic buildings totals \$735 million or \$178 per square foot; replacement value for auxiliary facilities, primarily University Hospital in Newark, is almost \$186 million (\$199 per square foot). All of the buildings were constructed or reconstructed after 1950. The single most significant period of construction was the 1970s, when just under 2 million square feet were built. Since 1980, an additional 1.86 million square feet were built or reconstructed.

The APPA survey includes six public medical schools, which report an average of 1,084 total square feet per FTE student (see Table 1). This figure is less than UMD's five-campus average of 1,320.9 total square feet per FTE student. The reported range is quite wide, from a low of 493.8 to a high of 2,490.4.

Independent Colleges and Universities

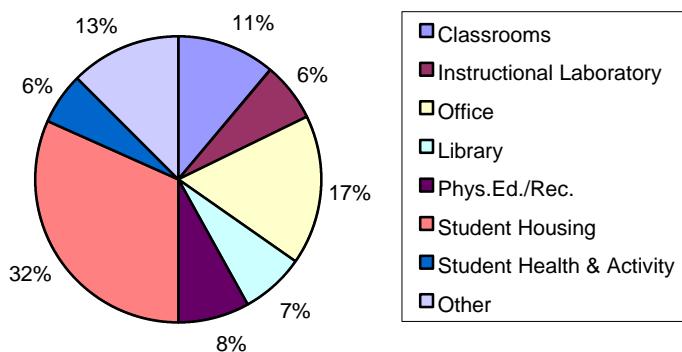
The 12 (of 14) institutions that responded to the survey together occupy more than 1,300 acres and 9.6 million square feet. The smallest is 12.4 acres and 176,000 square feet. The most land occupied is 375 acres. The total replacement value is \$1.1 billion, of which 63 percent is for academic buildings.⁹ Replacement value for academic buildings averages \$123 per square foot; that for auxiliary buildings is \$96 per square foot. Although almost one-third of the buildings was constructed during the 1960s, no one period of time dominates the remaining construction, as is evident from Figure 1.

Each of the institutions offers housing to students, which constitutes one-third of total usable space. Classrooms occupy 11 percent; they are primarily small- and medium-sized, as in other sectors (see Figure 4). Classrooms are used an average of approximately 60 percent of both weekdays and evenings. Instructional laboratories, half of which are for science, represent 6 percent of the average college's facilities. Laboratories are scheduled 46 percent of weekday hours and 27 percent of evenings. Office space equals the total of classrooms and laboratories combined. The institutions that responded are less devoted to research, as evident from the fact that research laboratories constitute only 2 percent of usable space. As in the state colleges and universities, if student health and housing facilities are excluded, classrooms constitute a greater proportion of the total, 17 percent; laboratories, 9 percent; and offices, 25 percent.

As can be seen from Table 1, the average space per student at the independent participants in the APPA survey is more than 50 percent greater than that at New Jersey's independent institutions, with 472 square feet per FTE compared to 310 in New Jersey. Moreover, the range reported in the sample is considerably larger than the range reported for New Jersey's institutions. Many of the institutions in the APPA survey are small residential colleges, however, and their auxiliary facilities increase their total space.

Thus, the differences appear to result from differences in patterns of student living rather than from academic space available.¹⁰

Figure 4
Independent Institutions Facilities Use Breakdown



Funding Since 1980

As is evident from the preceding descriptions and Figure 1, the majority of current facilities were in place by 1980, making 1980 an appropriate starting point for reviewing relatively recent capital funding for higher education. This section looks first at public funding and concludes with an overview of institutional debt for academic buildings.

Public funding takes three forms. First are annual appropriations to address maintenance, renewal, and upgrades, but rarely new construction. Both the state and the counties make such appropriations for their colleges, but the independent institutions do not generally receive funding through annual appropriations. Second, voters may authorize general obligation bond issues, which they did in 1984 and 1988. These two issues benefited all sectors of higher education. The third form consists of state-backed debt that is issued by third parties. The oldest form of this assistance is the Chapter 12 program for county colleges, which was enacted in 1971.¹¹ More recently, the Legislature created the Higher Education Facilities Trust Fund, a \$220 million program in which all sectors participated.¹²

Table 2 provides a summary of the appropriations or allocations made from the different funding sources to each sector since 1980. Because capital projects frequently take many years to complete, the amount actually spent in a year may be more or less than the appropriation or allocation shown in the table.

Annual Appropriations for Capital

Since 1980, state appropriations from the General Fund for capital projects at the public senior colleges and universities totaled \$147 million. More than two-thirds of the support came in the 1980s, particularly in the latter years of the decade when the state's economy

Table 2
Capital Funding for Higher Education
Fiscal Year 1980 to the Present
(thousands of dollars)

Fiscal Year	State Colleges and Universities					County Colleges					Independent Colleges and Universities			
	General Fund Capital	Jobs, Science, & Technology Bond ¹	Jobs, Education & Competitive-ness Bond ¹	Higher Education Facilities Trust Fund	Self-Financed Debt ²	Chapter 12 Debt (total allocations)	Jobs, Science, & Technology Bond ¹	Jobs, Education & Competitive-ness Bond ¹	Higher Education Facilities Trust Fund	County Appropriations for Capital	Jobs, Science, & Technology Bond ¹	Jobs, Education & Competitive-ness Bond ¹	Higher Education Facilities Trust Fund	Self-Financed Debt ²
1980	2,000					-				n/a				
1981	-					-				n/a				
1982	2,000					4,020	-			n/a				
1983	-						-			n/a				
1984	6,000						-			n/a				11,690
1985	25,750	7,600					7,565			n/a				
1986	18,850	-				22,435	85,800	4,100		n/a		7,600		
1987	12,650	-				170,032				n/a				19,356
1988	19,100	3,000					12,861			n/a				233
1989	16,000						611			n/a				10,500
1990	-					130,690	27,700			n/a				54,854
1991	-		158,454				10,000	8,320		n/a		6,250		3,000
1992	-		79,948			78,066	-	14,934		6,538		5,950		42,422
1993	-		-			56,952	37,000	-		11,009		-		28,360
1994	7,745		200			4,628	-	2,900	8,534	992		500		26,777
1995	16,729		-	57,390	2,140	26,463		-	10,686	10,104		3,700	4,739	68
1996	-		6,000	73,800	143,085		-	-	19,112	10,995		-	11,516	2,897
1997	2,650		500	9,750	31,982	31,701		-	23,717	12,255		1,600	5,231	
1998	5,850		-	4,060	38,200	9,329		-	-	n/a		340	-	
1999	11,750		-		50,000	53,793		-				-	-	9,025
Total	\$147,074	\$10,600	\$245,102	\$145,000	\$732,230	\$295,258	\$14,565	\$31,788	\$53,515	\$51,893	\$7,600	\$18,340	\$21,485	\$209,181

Notes: ¹ Higher education portion of these bonds only. Appropriations are shown at campus where constructed, regardless of designation.

² Depending upon the institution, debt may be issued directly or through the Educational Facilities Authority. Figures for the Independent Colleges and Universities exclude Princeton University and theological institutions.

"n/a" means the data are not available for the year.

"-" indicates that there was no appropriation or allocation during the year even though the program was in effect.

Sources: General fund capital appropriations from the State of New Jersey, New Jersey Budget. Trenton, NJ: Office of Management and Budget, various years.

Acts appropriating money from the Jobs, Science and Technology and Jobs, Education and Competitiveness Bond Funds.

Chapter 12 allocations from Board of Higher Education memoranda, various dates, and NJ Council of County Colleges.

County capital appropriations from NJ Council of County Colleges, County College Fact Book, 1998.

Higher Education Facilities Trust Fund approvals from NJ Commission on Higher Education memoranda, various dates.

Self-financed debt provided by institutions and NJ Educational Facilities Authority.

and revenues expanded rapidly. There were no appropriations during the first years of the 1990s, which correspond to a sustained recession. Similarly, there were no appropriations in either 1981 or 1983, which were also difficult years for the state's budget. In sum, as Table 2 indicates, current funding by the state can best be described as episodic, depending in large measure upon the general state of the economy and overall state revenues.

During the same period, the state also made grants to county colleges and, to an extremely limited extent, independent institutions to assist them with capital projects. In the early 1980s, approximately \$2 million in general capital appropriations for county colleges was allocated by the Department of Higher Education, but there were no such appropriations after FY 1982. Since then, a total of \$6.5 million has been appropriated to five different colleges for specific capital projects. Only in the last two fiscal years have direct capital appropriations been made for independent colleges, and these totaled only \$150,000.

By far the largest direct support for county colleges comes from county governments. As can be determined from Table 2, between FY 1992 and FY 1997, counties provided an average of just over \$10 million each year. What is not evident, however, is that not all colleges receive such support. On average, ten of the colleges received an appropriation in a given year; the range was between eight and thirteen. Indeed, during the six years, five colleges received no county capital appropriations at all, and one received an appropriation only once. Only four colleges received appropriations in each of the six years, and these varied significantly. Whether the variations stem from differing needs, the ability or willingness of a county to support capital as well as operations, or a combination cannot be readily answered, but it is clear that there is wide variation among the counties.

1984 and 1988 Bond Programs

During the 1980s, the state's voters authorized two capital programs funded with general obligation bonds. The first of these was the Jobs, Science and Technology program, approved in 1984. Although most of the \$90 million went to construct technological research facilities on university campuses, educational facilities did receive \$33 million. Of this amount, \$23 million was divided equally among the county college, independent, and public four-year sectors. The appropriations were selective, however, going to four public senior institutions, six county colleges, and four independents. The other \$10 million was used for two computer-integrated manufacturing centers, one at Camden County College and one at NJIT, and the joint Burlington County College/NJIT technology center in Mount Laurel. With the exception of a molecular biology facility at Princeton University, all of the technological research facilities were constructed at the public research universities. All projects funded through this program are complete.

The second bond authorization was the Jobs, Education and Competitiveness program, approved in 1988. The program reversed the emphasis of the earlier one: \$308 million of the \$350 million went for educational facilities, including \$45 million for capital

rehabilitation and renovation at the public four-year institutions. The remaining \$42 million was for technological research facilities. With the exception of the \$45 million, funding was targeted for new construction, the results of which are evident in the sector profiles. Most of the new construction money required matching funds from the institutions. Funds from this program are not yet completely utilized.

State-Backed Debt Programs

Chapter 12 Debt Service. In 1971, the state enacted this renewable (or debt capacity) program in which the state pays for one-half the debt service on bonds issued by county governments on behalf of county colleges. The total value of bonds outstanding at any one time is limited, but as debt is retired the new capacity can be recycled. When enacted, the total state and county debt capacity was limited to \$80 million; in 1985 the limit was doubled; and in 1998 the debt capacity was increased again, to a total of \$280 million. Funds may be used for new construction or for capital maintenance, and there is no limitation on the kind of facility that can be built.

By 1982 the Board of Higher Education approved projects encumbering the initial \$80 million allocation. In 1985 the Board began the process of periodically allocating the available capacity. That year the Board also began targeting funds for capital renewal and replacement, using \$16.6 million of the \$80.8 million then available. The allocations for fiscal years 1988, 1989, and 1991 were exclusively for renovations, whereas that for 1990 was for new construction projects in conjunction with funding from the Jobs, Education and Competitiveness Bond Fund (see Table 2). The allocations made by the New Jersey Council of County Colleges since 1995 have been split almost evenly between new construction and renovation, with \$64.2 million for the former and \$57.1 million for the latter. In sum, 43 percent of the \$295 million allocated since 1985 has been for capital renewal and replacement. Since its inception, a total of more than \$375 million has been allocated through the Chapter 12 program.

Higher Education Facilities Trust Fund. The Higher Education Facilities Trust Fund is also structured as a debt capacity program, in which the maximum debt outstanding can be \$220 million. The Educational Facilities Authority issues revenue bonds backed by an annual state appropriation. The statute also created a Higher Education Facilities Trust Fund Board to review the physical plant needs of the institutions and recommend a plan for the use of additional grants from the fund.¹³

In addition to being financed through a third party, the trust fund differs from the 1984 and 1988 bond funds in three crucial respects. First, the only limitation on the use of the funds is that they be used for “the cost, or a portion of the cost, of the construction, reconstruction, development, extension, and improvement of instructional, laboratory, communication, and research facilities.”¹⁴ Second, no match is required, enabling institutions to structure projects to meet their priorities. Finally, it can be renewed with approval by the Treasurer,¹⁵ whereas the bond fund programs were limited to their initial authorizations.

Of the initial \$220 million, almost half of the funds, \$107.5 million, went for new construction.¹⁶ An additional 43 percent (\$94.7 million) was used for capital renewal and replacement or for more extensive renovation of existing facilities. One objective of many of these projects, but not necessarily the primary one, was to bring the facilities into compliance with new codes and regulations, such as those imposed by various environmental agencies or the Americans with Disabilities Act. An additional \$5.6 million was used strictly to comply with codes and regulations. A portion of the grants, \$6.5 million or just over 3 percent of the total, was used to acquire and renovate existing facilities. Finally, infrastructure problems were addressed using the smallest portion of the funds, \$4.1 million (2 percent). Table 3 summarizes the use of the funds by type of project and sector. The use of the trust funds is broadly consistent with the capital needs identified by the institutions and discussed in the final section of the report.

Table 3
Higher Education Facilities Trust Fund Summary

Type of Project/Sector	Amount	Percent of Total
New Construction	\$107,570,517	49%
Public Four-Year	58,830,000	27%
County College	25,370,000	12%
Independent College	8,370,517	4%
Combined	15,000,000	7%
Renewal, Renovation, Reconstruction	\$94,740,630	43%
Public Four-Year	75,690,250	34%
County College	9,888,000	4%
Independent College	9,162,380	4%
Acquisition and Renovation		
County College	\$6,519,000	3%
Compliance	\$5,562,501	3%
Public Four-Year	5,000,000	2%
County College	23,750	0%
Independent College	538,751	0%
Infrastructure	\$4,128,352	2%
Public Four-Year	1,450,000	1%
County College	-	0%
Independent College	2,678,352	1%
Total	\$220,000,000	

Note: Percentages do not add to 100 due to rounding.

Institutional Debt

Institutions finance capital spending through their operating and capital budgets, including the direct issuance of debt. Unfortunately, the common data collection efforts such as *Grapevine*, *State Profiles*, and Integrated Postsecondary Education Data System (IPEDS) do not obtain information on capital appropriations or spending.¹⁷ Moreover, current accounting practices make it extremely difficult to sort out facilities spending.

Therefore, this section looks strictly at institutionally issued (or “own-source”) debt as an additional source of capital funds.

Institutions issue debt for both academic and auxiliary facilities. Repayment of the debt comes from institutional revenues, including dedicated fees and general sources. Debt for auxiliary facilities, including dormitories, student centers, parking lots or garages, and athletic facilities, is typically repaid through fees charged to users. Debt for academic facilities may be repaid through earmarked fees or tuition, or the institution may pledge general revenues.

Mechanisms for issuing institutional debt vary. All institutions can issue debt through the New Jersey Educational Facilities Authority (EFA). Rutgers, NJIT, UMNDJ, and the private institutions can issue debt on their own but may choose to use the EFA instead. (Rutgers has never used the EFA, and UMDNJ’s use of the Authority has been minimal.) The state colleges issue all of their own-source debt through the EFA. Until 1988, they could issue only “revenue debt” to build auxiliary facilities, but that year a statutory change permitted them to issue “nonrevenue debt” for academic facilities as well. Two county colleges also issued debt through the EFA, but the amounts were minimal.

Institutions issue debt to meet matching requirements or to address institutional priorities not met from other sources. Table 2 summarizes the institutional debt issued for academic facilities at the senior public and independent institutions. Of the \$732.2 million issued by the public colleges and universities, Rutgers’ debt accounts for \$277.3 million, or approximately 38 percent of the total. UMDNJ issued \$190.7 million, or slightly more than 25 percent of the total. Only one of the public senior institutions has not issued debt for academic buildings. The volume of institutional debt is significantly higher than the public-backed long-term financing for the public sector. The independent institutions included on Table 2 have issued relatively less debt, both directly and through the EFA, and much of that shown is accounted for by only three institutions.

Capital Requirements

The preceding discussion provides essential background for the estimates of future needs. As indicated in the introduction, the institutions reporting indicate that they require almost \$3.2 billion over the next seven years (see Table 4). Of this amount, new construction totals more than \$2.0 billion and represents at least 60 percent of the total in each sector. The next most significant category is preservation projects, defined as those that address the repair, replacement, rehabilitation and upgrade of electrical systems, heating, ventilation and air conditioning (HVAC) systems, roofs, security systems, as well as critical repairs to structures themselves. With a total of \$547 million, these projects constitute at least 15 percent of the seven-year needs for each sector. At the public research universities, infrastructure needs (water supply, roads, and energy conservation) are almost as significant, reaching 12 percent of the total, but infrastructure is a lesser problem in the other sectors. Projects needed to comply with the Americans

with Disabilities Act, life-safety requirements, or environmental codes are proportionately less significant, rarely reaching three percent of a sector's total needs.

Table 4
Seven-Year Capital Needs Estimates
(millions of dollars)

Type of Project	Community Colleges	Independent Colleges & Universities	Public Research Universities	State Colleges & Universities	State All Institutions
Preservation	111.12	41.09	188.62	206.01	546.84
Compliance (ADA)	7.49	4.08	16.35	18.72	46.63
Compliance(life safety)	9.22	6.41	25.26	31.60	72.49
Environmental	6.84	6.24	21.43	32.11	66.63
Acquisition	22.15	5.25	79.67	12.57	119.64
Construction	443.67	180.83	746.06	658.79	2,029.35
Infrastructure	42.75	20.61	146.27	58.43	268.06
Total Capital Needs	643.24	264.52	1,223.65	1,018.23	3,149.64
<i>Total Deferred Maintenance</i>	53.25	136.03	208.06	184.11	581.45

The capital needs are not proportional to the size of the different sectors, as measured by the total academic space in the sector. On one hand, the state colleges and universities reported more than 30 percent of the total capital needs but contain less than 20 percent of the total academic space. Conversely, the public research universities and independent institutions present fewer capital needs than their overall space might suggest. The needs and space for the county colleges are both 20 percent of their respective totals.

Deferred Maintenance

In recent years and as higher education's physical plant ages, increasing attention has been paid to the problem of deferred maintenance, both nationally and in New Jersey. A 1996 study conducted by the Association of Higher Education Facilities Officers estimated that the nationwide cost to eliminate deferred maintenance is \$26 billion, of which \$5.7 billion is urgently required, with public colleges typically having greater needs than their private counterparts.¹⁸

As used in the national study as well as the Commission's survey, "deferred maintenance" refers to maintenance projects from prior years or the current year that were not performed because of insufficient funds or a lower priority. Deferred maintenance includes postponed renewal and replacement activities as well as unscheduled major maintenance.¹⁹ It is not a subset of any one of the categories shown in Table 4, although it is subsumed within the total. In other words, deferred maintenance represents the sum of past problems, whereas the capital needs estimates include the cost of remedying past problems as well as future requirements. To emphasize the distinction, the deferred maintenance estimates appear in italics below the capital needs estimates.

New Jersey's institutions reported a total of \$581 million in accumulated deferred maintenance, or 18.5 percent of total capital needs (see Table 4). The problem appears to

be proportionately greater at the independent institutions than at the public ones. Almost 25 percent of the total accumulation is at the independent institutions, and deferred maintenance represents more than half of their total capital needs. By contrast, deferred maintenance at the county colleges is less than 10 percent of their total capital needs as well as less than 10 percent of the statewide total.

Moreover, there is significant variation among individual colleges. Some colleges report no deferred maintenance. Others indicate that the problem is significant, as measured against the replacement value of their facilities, their current operating budgets, or the hypothetical length of time it would take them to eliminate the problem at their current rate of spending.

Other Capital Needs Projections

Capital needs have been reported in other contexts. In June 1997, the county colleges reported a five-year need of \$592 million, of which \$397 million was for new construction and the remainder was for a category called “Renovation/Repair.”²⁰ The overall five-year projection is consistent with the seven-year projection in the Commission’s survey, but projections by individual institutions differ between the two surveys.

As part of the state budget process, the public four-year institutions annually provide a seven-year capital improvement plan and budget request to the state’s Capital Budgeting and Planning Commission. In the plan submitted for fiscal years 1999 through 2005,²¹ the total indicated by the 11 institutions was \$2.34 billion, as compared to the \$2.25 billion indicated in the Commission on Higher Education’s survey. As reported to the Commission on Higher Education, needs for new construction and environmental remediation were higher than those reported to the Capital Commission; needs for preservation, compliance, acquisition, and infrastructure were lower. Given the difficulty of estimating capital needs over long periods, the general congruence of the totals increases confidence in the overall magnitude in spite of the differences in specific amounts.

Summary and Conclusions

The higher education community, along with state and county governments and the higher education trust fund board, should bear several things in mind as they plan for the future. First, there is a significant investment in facilities at the state’s institutions of higher education, but the physical plant is aging. Many of the buildings are at least 20 years old and may well need renovation even if they have been consistently maintained.

Second, in spite of large infusions of public funds during the past two decades, most of the colleges and universities have found these funds insufficient to maintain the physical plant, as evidenced by the amount of accumulated deferred maintenance. This condition may be in part the result of the 1984 and 1988 bond programs’ emphasis on new

construction rather than on preservation and maintenance. Regardless of the source of the problem, it is imperative that deferred maintenance be brought under control and that ongoing maintenance be made a management priority. The Commission has emphasized these priorities every year since its creation.

Third, there are wide variations in the level of capital needs and deferred maintenance, indicating that some colleges have been more successful in constructing and maintaining their physical plants. One can speculate about the reasons for the differences. For example, some institutions may have sufficient tuition revenues to maintain their facilities in the absence of public funds.

Future capital programs should recognize that there are significant differences among institutions in their facility needs. For example, a program that provides funds for deferred maintenance works to the detriment of those institutions that have maintained their plants; conversely, targeting new construction has the reverse impact.

Recent actions recognize the overall need as well as the differences among institutions. In 1998 the Chapter 12 program for community colleges was expanded by \$120 million, and the Governor proposed a \$550 million Higher Education Preservation and Enhancement Fund for four-year institutions. Allocations from both of these programs emphasize deferred maintenance, but colleges and universities that have addressed these needs may turn to new construction.

The commitment of this additional \$670 million is a significant step toward addressing the \$3.2 billion need. Future programs should seek to provide a healthy balance between the ongoing maintenance of institutions' existing physical plants and their need for new construction.

NEW JERSEY COMMISSION ON HIGHER EDUCATION 1997 FACILITIES SURVEY

INSTRUCTIONS December 1, 1997 (revised, February 4, 1998)

INTRODUCTION

This survey was developed in conjunction with the Presidents' Council to collect certain information regarding facilities in those institutions of higher education that are eligible for State capital or bond fund appropriations. The Commission and Council anticipate that the survey will be conducted approximately every three years. This year's survey provides information for the Commission's capacity study and for the Higher Education Trust Fund Board, which is required to review the need for further funding through the Trust Fund. Your cooperation in completing the survey is appreciated.

It is intended that the information requested in this survey build upon and be consistent with other information developed by the institution, such as facilities plans previously provided to the former Board of Higher Education, facilities studies performed in conjunction with Middle States reviews and updates, and enrollment plans and projections made for the Middle States review and self study processes. Every attempt has been made to use existing definitions whenever possible.

The survey applies to buildings only. "Building" is defined as a roofed structure, attached to a foundation, serviced by a utility in addition to lighting, and a source of maintenance and repair activities. (This and other definitions can be found in the *Postsecondary Education Facilities Inventory and Classification Manual* published in November 1992 by the National Center for Education Statistics [NCES 92-165]. Reference is also made to the "Facilities Planning Guidelines and Approval Procedures for New Jersey Colleges and Universities" issued by the New Jersey Department of Higher Education on January 10, 1990.)

Please return this survey no later than Friday, June 5, 1998, to the following address:

New Jersey Commission on Higher Education
P.O. Box 542*
Trenton, NJ 08625-0542

e-mail

nj_che@njche.che.state.nj.us

GENERAL

* If using a delivery service, the street address is 20 West State Street, 7th Floor, Trenton, NJ 08608.

Unless stated otherwise, all information provided should be for the 1997-98 academic year.

The survey is provided in hard copy. A Microsoft Excel spreadsheet can be requested by contacting Robert Goertz, Director, Fiscal Policy, at 609-292-4310 or by e-mail at <bgoertz@njche.che.state.nj.us>.

The survey may be returned either on the form provided or electronically using disk or e-mail. If you provide the information using the spreadsheet, please enter information only in the cells that are outlined and not shaded. The shaded cells contain formulas or references that will be automatically updated when the information is entered in the appropriate cell(s). If you are providing information for more than one campus, please make copies of the spreadsheet so that there is one form for each campus. If you are using hard copy, photocopy as many sheets as you need.

HEADING

Provide the information requested separately for each campus operated by the institution. *Campus* includes branch campuses and main campuses of multi-campus institutions where the campus is used for regular undergraduate or graduate education. Camps or laboratory schools for training teachers should not be included. The date completed should be entered in *MM/DD/YY* format (for example, 06/23/97).

For the question regarding a facilities master plan, please answer “yes” or “no” on the form for each campus even though the question refers to an institution-wide facilities master plan. The date the plan was last updated should be entered in *MM/YY* format (for example, 06/97).

Although we expect that multiple individuals will be involved in completing the form, the name of the person responsible for completing it should be the contact person if additional information or clarification is required. Please provide the telephone and fax numbers for the contact person as well as an e-mail address if the person regularly uses e-mail.

I. GENERAL CAMPUS INFORMATION

A. Acreage Inventory

Report the acreage for each category listed. Definitions are provided below. All entries should be in acres or parts of an acre, expressed in decimals. The sum of improved, unimproved-buildable, and unimproved-not buildable acreage should equal the total acreage reported. Likewise, the sum of owned and leased acreage should equal the total.

Improved acreage is that regularly maintained, including land occupied by structures, parking lots, open athletic facilities, and roads as well as regularly maintained open space.

Unimproved-buildable acreage means vacant land (not regularly maintained) upon which facilities could be constructed.

Unimproved-not buildable acreage is vacant land (not regularly maintained) upon which facilities cannot be constructed. The limitation may be because of terrain or legal restrictions.

Owned land includes land being acquired under a lease-purchase agreement, land for which title is held by the Educational Facilities Authority, and land owned by a related entity, such as a religious order.

Leased land is generally defined as land occupied as the result of a term lease.

B. Buildings Inventory

Report the amounts for each category. For the definition of *building* see the Introduction to these instructions or the NCES Manual. The sum of the reported amounts for gross square footage:academic and gross square footage:auxiliary should equal the total reported.

The *Gross square footage* is the floor area of a structure within the outside faces of the exterior walls. The value is either physically measured or scaled from as-built drawings. (NCES, p. 9)

Gross square footage: academic is the total floor area of structures used for academic and academic support functions, including classrooms, laboratories, faculty offices, libraries, studios, and offices for student services and institutional administration. Operation and maintenance of the buildings is primarily supported by tuition, general fees, and (for public institutions), government appropriations.

Gross square footage: auxiliary is the total floor area of structures whose operation is supported by funds accounted for as auxiliary enterprises (student unions, bookstores, dormitories, etc.).

Note: Certain facilities (e.g., recreational facilities) may be either academic or auxiliary depending upon their financing. For mixed use buildings (e.g., dormitories with classrooms in them), institutions should separate the uses.

C. Replacement Value

Insurance valuation may be used to provide this information even though the valuation may cover only the building shell and not the capital contents of the building. For the definitions of *academic* and *auxiliary* see the definitions under “Buildings Inventory.”

D. Age of Facilities

Provide the total square footage constructed or reconstructed during the periods indicated.

The purpose of requesting this information is to provide an overview of the age of the campus and the possible need for maintenance, replacement, or code compliance. This may mean that the original construction date of a building is less important than the date when a major reconstruction occurred. The construction date provided should be the year constructed or in which a major reconstruction of a building occurred. If there is a question whether rehabilitation of a building constitutes a major reconstruction, the answer should be determined by asking whether the building as redone meets current building, access, and other codes and is considered sufficient to meet current program needs. If the building meets current codes and program needs, it should be considered to have been reconstructed.

All facilities should be included, i.e., both academic and auxiliary. The total square footage should equal the total reported in I. B.

II. CLASSROOM/LABORATORY INVENTORY

A. Number of Classrooms

Provide the number of classrooms for each size category. Although sizes are provided, these are intended to be guides based upon general practices. Individual campuses may differ; for example, small classrooms may have 20 student stations and large ones 40. Use categories appropriate to the campus, but if deviating from the general sizes indicated, provide the actual sizes used in your response. The guide for a large classroom/lecture hall is 100 or more stations.

B. Number of Instructional Laboratories

Provide the number of laboratories for each category. Laboratories devoted solely to research should be excluded; laboratories devoted to both instruction and research should be included. The categories are general because of the large number of specialties that may occur in each category.

Science laboratories may be general or devoted to specific disciplines, such as physics, chemistry, biochemistry, or biology.

Engineering laboratories are those used for engineering instruction.

Computer laboratories include both those used strictly for computer science instruction and those available to students for general computer use.

Studio laboratories are those used for art or architecture instruction. Culinary arts teaching facilities should also be reported as studio laboratories.

C. Number of Research Laboratories

Provide the number of laboratories devoted solely to research.

III. CLASSROOM/ LABORATORY SCHEDULING

A. Classroom Scheduling

For the time periods indicated, calculate the percentage of time that classrooms are scheduled, regardless of whether the schedule calls for the classroom to be fully occupied. For example, a class of 12 that meets in a classroom that holds 50 constitutes a scheduled class even though the classroom itself may be underutilized. The calculated percentage of time that classrooms are scheduled must be based upon the time periods provided even though the institution's schedule may comprise a shorter time period. Thus, if the institution's schedule calls for classes no earlier than 9:00 a.m. and/or no later than 4:00 p.m., the percentage of time scheduled is nevertheless based upon the 8:00 a.m. to 6:00 p.m. period. Percentages should similarly be calculated for evenings and weekends.

B. Instructional Laboratory Scheduling

For the time periods indicated, calculate the percentage of time that instructional laboratories are scheduled, regardless of whether the schedule calls for the laboratory to be fully occupied. For example, a lab of 12 that meets in a instructional laboratory that holds 24 constitutes a scheduled class even though the laboratory itself may be underutilized. The calculated percentage of time that laboratories are scheduled must be based upon the time periods provided even though the institution's schedule may comprise a shorter time period. Thus, if the institution's schedule calls for classes no earlier than 9:00 a.m. and/or no later than 4:00 p.m., the percentage of time scheduled is nevertheless based upon the 8:00 a.m. to 6:00 p.m. period. Percentages should similarly be calculated for evenings and weekends.

Instructional laboratories may occasionally be used as classrooms. All calculations should be based on the primary or intended purpose of the room, not on the particular use at a given time. Thus, calculations for a room equipped as a computer laboratory would always assume that the room is a laboratory even though a particular class meeting in the room might not require the use of computers.

Special notes: Institutions may schedule classrooms or laboratories for activities other than credit-bearing instruction. Examples include noncredit instruction and use by student associations. For this survey, regularly using a classroom for such purposes constitutes a scheduled use and the percentage of use should be calculated accordingly.

The emphasis is on the regular schedule of the classroom or laboratory; occasional uses would not be considered when calculating the percentage of use.

In addition, if an institution's facilities are used by another institution (e.g., through a joint program), the institution owning the facilities should report the classroom or laboratory as scheduled even though it is not offering the course.

IV. FUNCTIONAL SPACE AVAILABLE

Provide the Net Assignable Square Footage (NASF) for each use category. NASF refers to areas on all floors of a building that are assigned to, or are available for assignment to an occupant or to one of the specific use categories listed in the Appendix to these instructions. NASF *excludes* areas used for building service (e.g., janitorial closets and public rest rooms), circulation, mechanical equipment, utility services, shafts, and structural building features. NASF is computed using the inside dimensions of rooms, etc.

See the Appendix to these instructions for the listing of each use category. The use categories are generally those in the DHE 1990 facility guidelines, updated to use the 1992 definitions. Housing has been added as a category. The *use categories* listed may not account for all assignable square footage on a campus.

V. CAPITAL PLAN REQUIREMENTS

For each category, estimate the dollar amount needed for the next seven years (FY 1999 through FY 2005) for *academic buildings only*. This time period and the definitions of the categories correspond to the FY 1999 capital plan requests prepared by the state colleges and universities for the Office of Management and Budget.

Preservation projects are intended to preserve and maintain facilities, buildings and equipment for their intended use. Preservation projects address the repair, replacement, rehabilitation and upgrade of electrical systems, heating, ventilation & air conditioning (HVAC) systems, roofs, security systems, as well as critical repairs to the structure itself. The seven-year plan for preservation projects is not the same as the outstanding deferred maintenance requirements reported in section VI.

Compliance projects are those whose purpose is to comply with Federal or State laws and regulations. Such projects usually have specific compliance standards and penalties for non-compliance. Note that separate estimates are requested for compliance with the Americans with Disabilities Act and with life/safety (primarily fire) standards.

Environmental projects provide for the abatement of hazardous materials, remediation of contaminated sites, and mitigation of such conditions. The category includes projects necessary to comply with permits and environmental regulations.

Acquisition projects should be limited to the purchase, either outright or through lease/purchase, of facilities and land. Do not include the purchase of capital equipment or computer equipment.

Construction projects include new construction and major renovations or alteration of existing buildings to provide additional space to expand programs or to replace existing program space.

Infrastructure improvement projects include the delivery of water supplies, energy efficiency improvements, and construction of roads, parking lots, and sidewalks.

VI. DEFERRED MAINTENANCE

A. Deferred Maintenance Budget

Provide the total dollar amount budgeted for FY 1998 for capital renewal and deferred maintenance activities. "Deferred maintenance" is defined by the APPA and NACUBO as maintenance projects from prior years and the current year that were not included in the maintenance process because of perceived lower priority status. Deferred maintenance includes postponed renewal and replacement maintenance and unperformed unscheduled major maintenance.

B. Total Deferred Maintenance

Provide the total outstanding amount of capital renewal and deferred maintenance as of the end of FY 1998, as derived from institutional formula, facilities self-audit, or other means.

Thank you for completing the survey. If you have any questions, please contact Dr. Robert Goertz, Director, Fiscal Policy, New Jersey Commission on Higher Education, telephone 609-292-4310 or e-mail <bgoertz@njche.che.state.nj.us>.

**NEW JERSEY COMMISSION ON HIGHER EDUCATION
1997 Facilities Survey**
APPENDIX: FUNCTIONAL SPACE CATEGORIES

FUNCTIONAL SPACE CATEGORY¹	ROOM USE CODE²
a. Classroom	110, 115
b. Instructional Laboratory	210, 215, 220, 225
c. Office	310, 315, 350, 355, except for library, student activities, student health, and physical plant maintenance staffs
d. Library	410, 420, 430, 440, 455; 310, 315, 350, 355 serving library staff
e. Physical Education and Recreation	520, 525
f. Assembly and Exhibition	610, 615, 620, 625
g. Central Computing	710, 715
h. Student Activity	630, 635, 650, 655, 660, 665, 670, 675, 680, 685 (all non-residential); 310, 315, 350, 355 for student activities staff
i. Student Health	Series 800 used for student health services only; 310, 315, 350, 355 for student health services staff
j. Housing	Series 900; 630, 635, 650, 655, 660, 665, 670, 675, 680, 685 (all residential); 310, 315, 350, 355 for housing staff
k. Maintenance and Storage	720, 725, 730, 735, 740, 745, 750, 755, 760 (new), 765; 310, 315, 350, 355 for physical plant maintenance staff
l. Audio-visual, Radio, Television	530, 535
m. Research	250, 255 (may be combined with office space for some faculty)
n. Other	640, 645, 590

¹ The following functional space categories are not reported for this survey: armories (510, 515); permanent athletic facilities, spectator seating (523); non-health professions clinics (540, 545); demonstration facilities (550, 555); field buildings (560); animal quarters (570, 575); greenhouses (580, 585); and all health care facilities (800 series) associated with medical schools.

² For further definition and discussion of the space codes, see National Center for Education Statistics, *Postsecondary Education Facilities Inventory and Classification Manual (1992 edition)* [NCES 92-165] (Washington, D.C.: U.S. Government Printing Office, November 1992), Chapter 5, or contact the Commission on Higher Education. The room use codes differ from those in the earlier 1973 edition.

**New Jersey Commission on Higher Education
1997 Facilities Survey
OVERALL SUMMARY**

OVERALL SUMMARY - ALL CAMPUSES of ALL INSTITUTIONS

I. GENERAL CAMPUS INFORMATION			II. CLASSROOM/LAB INVENTORY		
A. Acreage Inventory			D. Age of Facilities		
Total:	14,755.19		GSF constructed or reconstructed:		
Improved:	4,532.77		pre 1900:	1,167,704	
Unimproved-buildable:	3,344.73		1900-1929:	2,840,793	
Unimproved - unbuildable:	6,877.59		1930-1949:	3,294,642	
Owned Acreage:	13,402.70		1950-1959:	3,671,543	
Leased Acreage:	1,352.49		1960-1969:	10,843,954	
			1970-1979:	14,404,405	
			1980-1989:	6,264,833	
B. Buildings Inventory			1990 to present:	8,828,256	C. Number of Research Labs:
Number of Buildings:	1,955				2398
Gross Square Footage:	51,438,259				
Academic GSF:	33,387,901				
Auxiliary GSF:	18,063,969				
C. Replacement Value					
Academic:	\$5,002,747,702				
Auxiliary:	\$2,001,012,517				
IV. FUNCTIONAL SPACE AVAILABLE (NSF)			V. CAPITAL PLAN REQUIREMENTS (current value - capital construction needed next seven years.)		
USE CATEGORY	OWNED	LEASED	TOTAL		
A. Classroom	2,507,367	79,860	2,587,227	A. Preservation	\$547,689,847
B. Instructional Lab	2,469,361	42,578	2,511,939	B. Compliance	
C. Office	5,175,589	125,942	5,301,531	ADA	\$46,632,330
D. Library	2,220,528	794	2,221,322	Life Safety	\$72,490,444
E. Phys Ed/Rec	1,844,793	26,359	1,871,152	C. Environmental	\$66,627,502
F. Assmby/Exhibit	959,265	7,725	966,990	D. Acquisition	\$119,750,000
G. Cntrl Computing	282,617	6,149	288,766	E. Construction	\$2,050,549,089
H. Student Activity	1,271,008	115,840	1,386,848	F. Infrastructure	\$268,330,920
I. Student Health	418,189	0	418,189	TOTAL:	\$3,172,070,132
J. Housing	6,564,316	349,913	6,914,229		
K. Maint/storage	1,530,966	28,201	1,559,167	VI. DEFERRED MAINTENANCE	
L. AV/Radio/TV	146,835	1,155	147,990	A. Deferred (FY97)	\$52,430,750
M. Research	1,342,664	22,850	1,365,514	B. Total Deferred	\$581,375,199
N. Other space	243,929	18,372	262,301		
TOTAL:	26,977,42	825,738	27,803,165		
		NSF as % of GSF:	54.1%		

Thursday, September 09, 1999
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OVERALL SUMMARY

I. GENERAL CAMPUS INFORMATION

A. Acreage Inventory

Total:	14,755.19
Improved:	4,532.77
Unimproved-buildable:	3,344.73
Unimproved - unbuildable:	6,877.59
Owned Acreage:	13,402.70
Leased Acreage:	1,352.49

B. Buildings Inventory

Number of Buildings:	1,955
Gross Square Footage:	51,438,259
Academic GSF:	33,387,901
Auxiliary GSF:	18,063,969

C. Replacement Value

Academic:	\$5,002,747,702
Auxiliary:	\$2,001,012,517

IV. FUNCTIONAL SPACE AVAILABLE (NSF)

USE CATEGORY	OWNED	LEASED	TOTAL
A. Classroom	2,507,367	79,860	2,587,227
B. Instructional Lab	2,469,361	42,578	2,511,939
C. Office	5,175,589	125,942	5,301,531
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H. Student Activity	1,271,008	115,840	1,386,848
I. Student Health	418,189	0	418,189
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K. Maint/storage	1,530,966	28,201	1,559,167
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N. Other space	243,929	18,372	262,301
TOTAL:	26,977,42	825,738	27,803,165
NSF as % of GSF:			54.1%

II. CLASSROOM/LAB INVENTORY

D. Age of Facilities:	
GSF constructed or reconstructed:	
pre 1900:	1,167,704
1900-1929:	2,840,793
1930-1949:	3,294,642
1950-1959:	3,671,543
1960-1969:	10,843,954
1970-1979:	14,404,405
1980-1989:	6,264,833
1990 to present:	8,828,256

A. Number of Classrooms:	
Seminar (<12):	316
Small (30):	1877
Medium (50):	780
Large/Lecture Halls:	290

B. Number of Instructional Labs:	
Science:	776
Engineering:	157
Computer:	744
Studios:	493

C. Number of Research Labs:	2398
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III. CLASSROOM/LAB SCHEDULING (average):

A. Classroom Scheduling	
weekday:	59.7 %
evening:	55.0 %
weekends:	18.2 %

B. Instructional Lab Scheduling

weekday:	49.9 %
evening:	37.5 %
weekend:	15.6 %

V. CAPITAL PLAN REQUIREMENTS

(current value - capital construction needed
next seven years.)

A. Preservation	\$547,689,847
B. Compliance	
ADA	\$46,632,330
Life Safety	\$72,490,444
C. Environmental	\$66,627,502
D. Acquisition	\$119,750,000
E. Construction	\$2,050,549,089
F. Infrastructure	\$268,330,920
TOTAL:	\$3,172,070,132

VI. DEFERRED MAINTENANCE

A. Deferred (Budgeted FY97)	\$52,430,750
B. Total Deferred	\$581,375,199

Community Colleges

Enrollment (FTE): 87,442

I. GENERAL CAMPUS INFORMATION

A. Acreage Inventory		D. Age of Facilities		II. CLASSROOM/LAB INVENTORY	
	Total:	GSF constructed or reconstructed:		A. Number of Classrooms:	
Improved:	1,560.11	pre 1900:	30,241	Seminar (<12):	67
Unimproved-buildable:	1,327.66	1900-1929:	179,812	Small (30):	911
Unimproved - unbuildable:	635.86	1930-1949:	256,840	Medium (50):	184
Owned Acreage:	3,507.13	1950-1959:	185,278	Large/Lecture Halls:	55
Leased Acreage:	16.50	1960-1969:	1,293,487	B. Number of Instructional Labs:	
		1970-1979:	3,529,271	Science:	229
		1980-1989:	792,071	Engineering:	57
		1990 to present:	1,443,527	Computer:	321
				Studios:	136
B. Buildings Inventory		C. Number of Research Labs:		0	
Number of Buildings:	245				
Gross Square Footage:	7,770,299				
Academic GSF:	6,924,832				
Auxiliary GSF:	859,078				
C. Replacement Value		III. CLASSROOM/LAB SCHEDULING (average):			
Academic:	\$900,831,21				
Auxiliary:	\$75,689,717				
				A. Classroom Scheduling	
				weekday:	56.6 %
				evening:	64.9 %
				weekends:	22.3 %

IV. FUNCTIONAL SPACE AVAILABLE (NSF)

USE CATEGORY	OWNED	LEASED	TOTAL
A. Classroom	776,236	55,046	831,282
B. Instructional Lab	795,719	19,774	815,493
C. Office	796,071	14,802	810,873
D. Library	412,627	0	412,627
E. Phys Ed/Rec	425,388	704	426,092
F. Assmby/Exhibit	255,727	100	255,827
G. Cntrl Computing	33,035	1,404	34,439
H. Student Activity	372,231	4,760	376,991
I. Student Health	7,963	0	7,963
J. Housing	0	0	0
K. Maint/storage	482,588	9,225	491,813
L. AV/Radio/TV	61,636	755	62,391
M. Research	24,813	0	24,813
N. Other space	82,317	1,970	84,287
TOTAL:	4,526,351	108,540	4,634,891
	NSF as % of GSF:		59.6%

V. CAPITAL PLAN REQUIREMENTS (current value - capital construction needed next seven years.)

A. Preservation	\$111,969,727
B. Compliance	
ADA	\$7,487,950
Life Safety	\$9,215,440
C. Environmental	\$6,840,000
D. Acquisition	\$22,260,000
E. Construction	\$452,175,989
F. Infrastructure	\$43,019,320
TOTAL:	\$652,968,426
VI. DEFERRED MAINTENANCE	
A. Deferred (Budgeted FY97)	\$12,284,200
B. Total Deferred	\$53,174,543

Independent Colleges & Universities *

Enrollment (FTE): 41,610

I. GENERAL CAMPUS INFORMATION

A. Acreage Inventory		D. Age of Facilities		II. CLASSROOM/LAB INVENTORY	
Total:	1,305.78	GSF constructed or reconstructed:		A. Number of Classrooms:	
Improved:	690.00	pre 1900:	675,250	Seminar (<12):	96
Unimproved-buildable:	255.55	1900-1929:	969,563	Small (30):	267
Unimproved - unbuildable:	360.23	1930-1949:	880,056	Medium (50):	231
Owned Acreage:	1,271.78	1950-1959:	1,070,101	Large/Lecture Halls:	79
Leased Acreage:	34.00	1960-1969:	3,029,604		
		1970-1979:	1,142,176		
		1980-1989:	772,497		
		1990 to present:	1,108,395		
		:			
B. Buildings Inventory		C. Number of Research Labs:			32
Number of Buildings:	445				
Gross Square Footage:	9,647,792				
Academic GSF:	5,533,906				
Auxiliary GSF:	4,113,886				
C. Replacement Value		III. CLASSROOM/LAB SCHEDULING [average]:			
Academic:	\$678,890,625	weekday:	56.7 %		
Auxiliary:	\$394,986,766	evening:	55.3 %		
		weekends:	22.2 %		

IV. FUNCTIONAL SPACE AVAILABLE (NSF)

USE CATEGORY	OWNED	LEASED	TOTAL
A. Classroom	561,922	24,618	586,540
B. Instructional Lab	313,621	22,560	336,181
C. Office	848,556	45,636	894,192
D. Library	382,139	0	382,139
E. Phys Ed/Rec	383,444	25,565	409,009
F. Assmby/Exhibit	178,086	2,625	180,711
G. Cntrl Computing	33,489	245	33,734
H. Student Activity	257,720	21,070	278,790
I. Student Health	23,232	0	23,232
J. Housing	1,602,623	60,753	1,663,376
K. Maint/storage	232,730	18,667	251,397
L. AV/Radio/TV	27,485	0	27,485
M. Research	112,672	817	113,489
N. Other space	30,961	16,395	47,356
TOTAL:	4,988,680	238,951	5,227,631
		NSF as % of GSF:	54.2%

V. CAPITAL PLAN REQUIREMENTS (current value - capital construction needed next seven years.)

A. Preservation	\$41,093,120
B. Compliance	
ADA	\$4,080,380
Life Safety	\$6,413,504
C. Environmental	\$6,244,502
D. Acquisition	\$5,250,000
E. Construction	\$180,828,600
F. Infrastructure	\$20,614,600
TOTAL:	\$264,524,706
VI. DEFERRED MAINTENANCE	
A. Deferred (Budgeted FY97)	\$4,045,000
B. Total Deferred	\$136,034,400

* Does not include Princeton or Monmouth Universities.

Public Research Universities

Enrollment (FTE): 47,158

I. GENERAL CAMPUS INFORMATION

A. Acreage Inventory		D. Age of Facilities		II. CLASSROOM/LAB INVENTORY	
Total:	6,546.17	GSF constructed or reconstructed:		A. Number of Classrooms:	
Improved:	1,108.17	pre 1900:	392,974	Seminar (<12):	121
Unimproved-buildable:	1,208.00	1900-1929:	1,298,479	Small (30):	322
Unimproved - unbuildable:	4,230.00	1930-1949:	1,651,103	Medium (50):	167
Owned Acreage:	5,249.68	1950-1959:	1,620,097	Large/Lecture Halls:	111
Leased Acreage:	1,296.49	1960-1969:	4,633,126	B. Number of Instructional Labs:	
		1970-1979:	6,501,492	Science:	199
		1980-1989:	3,071,022	Engineering:	62
		1990 to present:	3,919,289	Computer:	192
				Studios:	108

B. Buildings Inventory

2290

Number of Buildings:	897
Gross Square Footage:	23,147,582
Academic GSF:	14,865,480
Auxiliary GSF:	8,282,102

C. Replacement Value

Academic:	\$2,642,180,196
Auxiliary:	\$1,060,574,051

IV. FUNCTIONAL SPACE AVAILABLE (NSF)

USE CATEGORY	OWNED	LEASED	TOTAL
A. Classroom	626,618	196	626,814
B. Instructional Lab	646,065	244	646,309
C. Office	2,292,212	14,704	2,306,916
D. Library	883,728	794	884,522
E. Phys Ed/Rec	586,685	90	586,775
F. Assmby/Exhibit	235,479	0	235,479
G. Cntrl Computing	73,100	0	73,100
H. Student Activity	263,787	0	263,787
I. Student Health	7,391	0	7,391
J. Housing	3,107,352	0	3,107,352
K. Maint/storage	541,683	309	541,992
L. AV/Radio/TV	20,092	0	20,092
M. Research	1,161,343	22,033	1,183,376
N. Other space	37,650	7	37,657
TOTAL:	10,483,18	38,377	10,521,562
NSF as % of GSF:			45.5%

V. CAPITAL PLAN REQUIREMENTS [current value - capital construction needed next seven years.]

A. Preservation	\$188,616,000
B. Compliance	
ADA	\$16,349,000
Life Safety	\$25,258,000
C. Environmental	\$21,433,000
D. Acquisition	\$79,668,000
E. Construction	\$746,059,000
F. Infrastructure	\$146,265,000
TOTAL:	\$1,223,648,000

VI. DEFERRED MAINTENANCE

A. Deferred (Budgeted FY97)	\$6,051,243
B. Total Deferred	\$208,058,756

State Colleges & Universities

Enrollment (FTE): 47,410

I. GENERAL CAMPUS INFORMATION

A. Acreage Inventory

Total:	3,379.61
Improved:	1,174.49
Unimproved-buildable:	553.52
Unimproved - unbuildable:	1,651.50
Owned Acreage:	3,374.11
Leased Acreage:	5.50

D. Age of Facilities GSF constructed or reconstructed:

pre 1900:	69,239
1900-1929:	392,939
1930-1949:	506,643
1950-1959:	796,067
1960-1969:	1,887,737
1970-1979:	3,231,466
1980-1989:	1,629,243
1990 to present:	2,357,045

II. CLASSROOM/LAB INVENTORY

A. Number of Classrooms:

Seminar (<12):	32
Small (30):	377
Medium (50):	198
Large/Lecture Halls:	45

B. Number of Instructional Labs:

Science:	177
Engineering:	29
Computer:	132
Studios:	182

C. Number of Research Labs: 76

III. CLASSROOM/LAB SCHEDULING (average):

A. Classroom Scheduling

weekday:	70.1 %
evening:	56.3 %
weekends:	12.9 %

B. Buildings Inventory

Number of Buildings:	368
Gross Square Footage:	10,872,586
Academic GSF:	6,063,683
Auxiliary GSF:	4,808,903

C. Replacement Value

Academic:	\$780,845,670
Auxiliary:	\$469,761,983

IV. FUNCTIONAL SPACE AVAILABLE (NSF)

USE CATEGORY	OWNED	LEASED	TOTAL
A. Classroom	542,591	0	542,591
B. Instructional Lab	713,956	0	713,956
C. Office	1,238,750	50,800	1,289,550
D. Library	542,034	0	542,034
E. Phys Ed/Rec	449,276	0	449,276
F. Assmby/Exhibit	289,973	5,000	294,973
G. Cntrl Computing	142,993	4,500	147,493
H. Student Activity	377,270	90,010	467,280
I. Student Health	379,603	0	379,603
J. Housing	1,854,341	289,160	2,143,501
K. Maint/storage	273,965	0	273,965
L. AV/Radio/TV	37,622	400	38,022
M. Research	43,836	0	43,836
N. Other space	93,001	0	93,001
TOTAL:	6,979,211	439,870	7,419,081
		NSF as % of GSF:	68.2%

V. CAPITAL PLAN REQUIREMENTS

(current value - capital construction needed next seven years.)

A. Preservation	\$206,011,000
B. Compliance	
ADA	\$18,715,000
Life Safety	\$31,603,500
C. Environmental	\$32,110,000
D. Acquisition	\$12,572,000
E. Construction	\$671,485,500
F. Infrastructure	\$58,432,000
TOTAL:	\$1,030,929,000

VI. DEFERRED MAINTENANCE

A. Deferred (Budgeted FY97)	\$30,050,307
B. Total Deferred	\$184,107,500

Endnotes

¹ The survey was conducted in two phases. Phase I was conducted during the fall of 1997; Phase II during the spring of 1998. Two independent institutions, Princeton and Monmouth Universities, did not respond to either part of the survey. For the survey, institutions were requested to report information for the campuses that they maintain.

² The term “gross square feet” (GSF) refers to the total floor area available within a building. “Net assignable” square footage (NASF) excludes the area devoted to stairwells, halls, restrooms, and similar uses.

³ The colleges and universities also provided a separate estimate of their deferred maintenance backlog and spending. The backlog totals \$581 million, with \$52 million budgeted during FY 1997. The capital plan and deferred maintenance requirements are based upon reports from 39 of the 45 institutions. In addition to Princeton and Monmouth, Bloomfield College, Seton Hall University, Mercer County Community College, and Salem Community College were unable to provide these data.

⁴ Data from APPA: The Association of Higher Education Facilities Officers, 1995-96 Comparative Costs and Staffing Report for College and University Facilities (Alexandria, VA, 1997) analyzed by Commission staff. The report is available on diskette from the association.

⁵ The figure for acreage is the median, which is used because the average (mean) is skewed by the extremely large size of Richard Stockton (1,717 acres). However, much of Stockton’s campus lies in the Pinelands Preservation area and cannot be improved. With the exception of AcademicGSF per FTE noted below, other descriptions of the typical campus use the mean.

⁶ The county colleges devote relatively more space to classrooms and laboratories and relatively less to offices. The differences in office space may reflect different faculty configurations, among other factors.

⁷ As with the acreage, one institution is significantly larger than the other seven, making the median a more descriptive figure for the typical campus. The mean is 126.9 AcademicGSF per FTE, but only two institutions exceed this amount.

⁸ NJIT also offers degrees on the campus of Drew University and in Mount Laurel, on a campus jointly operated with Burlington County College. Campus information for these campuses is reported by the “host” institution, not by NJIT.

⁹ According to the most recent report of the Association of Independent Colleges and Universities in New Jersey (AICUNJ), the total replacement value of facilities at all 14 institutions is \$1.5 billion. See AICUNJ, The Report of the Independent Colleges and Universities in New Jersey to the Governor and State Legislature, September 1998 (Summit, NJ, 1998), p. 15.

¹⁰ For example, the GSF/FTE at Fairleigh Dickinson University is 272.75, which is consistent with the 280.84 GSF/FTE at Villanova University.

¹¹ The name of the program stems from its pamphlet law number, i.e., P.L. 1971, c. 12.

¹² Two other recently enacted programs provide public funds for specialized equipment and infrastructure. The Equipment Leasing Fund, enacted in 1993 (P.L. 1993, c. 136), made \$100 million available for scientific, engineering, technical, computer, communications, or instructional equipment. In 1997, the Higher Education Technology Infrastructure Fund (P.L. 1997, c. 238) made \$50 million available on a 1:1 matching basis for technology infrastructure and related equipment.

¹³ The board consists of the Chair and Vice Chair of the Commission on Higher Education, and the State Treasurer, President of the Senate, and Speaker of the General Assembly or their designees,

¹⁴ The Higher Education Facilities Trust Fund Act, P.L. 1993, c. 375, section 4.

¹⁵ The Treasurer must approve the issuance of debt by the Educational Facilities Authority. See section 9.a of P.L. 1993, c. 375.

¹⁶ The legislation specified one new construction project, a new building for the law school at Rutgers-Newark (\$20 million), and set aside \$15 million for South Jersey Economic Development projects. Thus approximately one-third of the amount ultimately spent on new construction was legislatively determined.

¹⁷ *Grapevine* (Illinois State University [Normal, IL]) collects data on state appropriations of tax funds for operating expenses. *State Profiles* (Research Associates of Washington [Arlington, VA]) collects data on public support for public institutions. IPEDS (National Center for Education Statistics) collects information on finance, staff, enrollment, and other institutional characteristics for all institutions, and capital outlay for some. The Association of Higher Education Facilities Officers collects information on staffing but not overall finance.

¹⁸ Harvey H. Kaiser and Jerry S. Davis, A Foundation to Uphold: A Study of Facilities Conditions at U.S. Colleges and Universities (Alexandria, VA: APPA: The Association of Higher Education Facilities Officers, 1996). The authors note that two factors contribute to an accumulation of deferred maintenance. The first is underfunding of *routine maintenance*, allowing minor problems to become major considerations. The second is “*the failure to take care of major projects to repair and/or restore facilities that have reached the end of their life cycle* [emphasis in the original].” (pp. 15-16)

¹⁹ “Renewal” is defined as repairing or replacing components or parts of a system; “replacement” is defined as substituting new systems or components for major portions of facilities. See A Foundation to Uphold, p. 16.

²⁰ NJ County College Fact Book and Directory, 6th ed. (Trenton, NJ: New Jersey Council of County Colleges, 1997), Table B-3, N.J. Community College Projected Capital Needs for FY 1998 to FY 2002.

²¹ State of New Jersey, 1999 Annual Capital Improvement Plan (Trenton, NJ: New Jersey Commission on Capital Budgeting and Planning, April 1998), Section III, pp. 277 to 316.