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California Postsecondary Education Commission

Appendix to Update on Space and Utilization Policies in Higher Education

Purpose

This appendix is provided as background and technical information for the Commission report *Update on Space and Utilization Policies in Higher Education* (04-13). It describes the background and history of space planning policies in California and presents contemporary information on this subject. It provides information from other states and from national consultants on facilities planning and analyzes these data to draw conclusions about emerging trends in higher education space usage policies and practices.

Survey

In March of 2002, the Commission began a survey of space and utilization practices in other states. Of the 49 states surveyed, the Commission received responses from 34, with some states providing more extensive information than others. With follow-up queries and interviews, Commission staff was able to obtain in-depth responses directly from the 34 respondents, and indirectly from two other states, to most of the questions that were posed. Additionally, two national consulting firms working in this area – MGT of America, Inc., based in the State of Washington and Paulien and Associates, based in Colorado – provided information on space and utilization policies and practices.

The Commission's latest research in the area of space and utilization policies nationwide provides validation for both the specifics and the general approach taken in its 1990 work, *A Capacity for Learning* (CPEC Report 90-3). Information provided by 36 states – and from national consultants in nearly every state – conclude that the overwhelming majority of states has moved away from the prescriptive planning mandates of standards developed during the 1950s. These states either do not adhere to the space standards on their books in favor of campus-level decision making on capital projects or they have completely re-written their space and utilization planning policies to accommodate the realities of higher education's varying programmatic needs.

The Commission survey posed five questions designed to encompass some of the main areas of contention in California higher education space and usage policies: (a) the currency of the policies, (b) the provisions of space for postdoctoral fellows and part-time faculty, and (c) the impact of year-round operations on assumptions used in space planning.

Detailed survey responses are presented below.

QUESTION ONE: *In what year were your most current space and utilization standards/guidelines for use in public higher education institutions adopted?* Sixteen of the 34 states responding indicated that they do not have space standards or guidelines for higher education. The other 18 states provided the year of their most recent adoption of higher education space policies and information was available for two other states; this information was available separately for two other states. No state reported a date any earlier than California's 1971 – 1973 as the last legislatively-adopted revision to space standard.

The average date of most current space policies for the 20 states is the year 1994, and 15 of these 20 states have adopted or revised space guidelines since the completion of the Commission study in early 1990. Other states, such as Arizona, have no current higher education space guidelines but noted that they expected to have a space utilization reporting system in place sometime during 2002. Information available from MGT for some states that did not respond to the Commission survey shows that the states of New York, North Carolina, Louisiana, South Dakota, and Pennsylvania have also adopted revised space guidelines since 1992.

Most states tended to respond to this question in terms of space and utilization standards and/or guidelines and this paper categorizes their responses as such. Of the 25 states that provided a breakdown of “standards” vs. “guidelines,” 14 utilize guidelines for institutions to follow in this space planning, while nine initially reported the use space standards. However, several of the “standards” states later amended their responses to note that while they maintain space standards on the books, their institutions have flexibility to plan for the use of space in manners they deem appropriate for their programs and campuses.

QUESTION TWO: *Do any of these standards/guidelines provide for space for postdoctoral fellows involved in research at your flagship research institutions or other public colleges and universities?* Twenty-one of the 34 states specifically addressed this question, while the other 13 reported that they have “permissive” policies that allow for this use of space. Fifteen of the 21 states responding directly to this question specifically affirmed the inclusion of research space for postdoctoral fellows at their institutions, while six initially responded that their space standards or guidelines did not explicitly provide for such space. During follow-up interviews conducted with representatives from the 34 states, representatives from each of the six “no” states reported that their state or systems’ space usage guidelines are silent on this specific component but that it is permitted, as are other practices not expressly spelled out in those guidelines. They stated that institutions requesting research space for postdoctoral fellows must defend their decisions on a project-by-project basis. With these follow-ups, none of the 34 states responding to the survey have standards that prohibit the provision of research space for postdoctoral fellows at their institutions.

QUESTION THREE: *Do these standards/guidelines allocate space for use by part-time faculty in any of your public institutions?* Nineteen states responded directly to this question; again the other 15 reported that they have “permissive” policies that allow for this use of space. Fifteen of the 19 respondents reported allowing this usage of space, while four states initially reported that they do not. Supplemental information on Florida (one of the “no” states) from MGT classifies its guidelines as providing academic office space for “all FTE positions requiring office space,” which includes part-time faculty. Information from reports done by MGT denotes that states with large numbers of community and junior colleges, including New York, North Carolina and Georgia, either explicitly allow for – or, at a minimum do not prohibit – the provision of space for part time faculty in their institutions. Follow-up interviews with representatives from Kentucky, Wyoming and Ohio (the other three “no” states) determined, again, that their respective space usage guidelines did not specifically address this provision of space and that it was permitted on a project-by-project basis. With these follow-ups, none of the 34 states responding to the survey have standards that prohibit the provision of office space for part time faculty in their institutions.

QUESTIONS FOUR and FIVE *Do your higher education space and utilization standards/guidelines presume “full utilization” year-round? (Full utilization is defined here as assuming for planning purposes that campuses will be as fully enrolled in the summer months as at any other time in the year) What is the highest “percentage of highest term enrollment” you have measured for summer term enrollment at your public campuses, if such a statistic is available? For example, is the busiest summer you’ve had equal to: 30% of fall term, 50% of winter term, 20% of spring term, etc.* Twenty-three states responded directly to question four, while 21 responded to question five, which both dealt with assump-

tions of year-round operations in space planning. Only three of the 20 states initially responded that they included assumptions of “full utilization” (as defined) in their facilities planning. However in follow-ups with the 23 states, representatives from universities in two states (University of Florida and University of Alaska) indicated that their institutions are not required to assume full summer utilization in their facilities planning, irrespective of how that term is defined. Further follow-up to the 11 survey respondents who did not respond directly to this question revealed that all 11 have no State or institutional policies in this area and that their higher education institutions are not required to assume full summer utilization in their space planning. Information on higher education space policies provided by MGT on two other states (New York and Washington) also put them in the “no” column on this question.

Of the 36 states surveyed on this question only one (Minnesota) assumes full summer utilization in its space planning. Minnesota officials stated that this “assumption” carries with it no planning mandate or budgetary consequences for non-achievement. Minnesota also report that its busiest summer FTE enrollment ever measured was at approximately 18% of fall term FTE, and that this was at its most non-traditional institution that has a high percentage of adult students. On question five, only two of the 36 states reporting (Florida, Minnesota) regularly collect the information needed to compute this statistic, while another (Ohio) was able to compute an estimate of this statistic solely for this study.

A spreadsheet detailing individual state responses is presented in Table 1.

Table 1

Higher Education Space and Utilization Polices Survey

<u>State</u>	YEAR	<u>Question 1</u>				<u>Question 2</u>		<u>Question 3</u>		<u>Question 4</u>		<u>Question 5</u>	
		Guidlines	Standards	ALL Instit.	Univ.s Only	YES	NO	YES	NO	YES	NO	Collects Info.	High %'ge
California (excluded)	1972	0	1	1	0	0	1	0	1	0	1	0	40.0%
Alabama ²	--	--	--	--	--	--	--	--	--	0	1	0	--
Alaska ^{1,2}	1990	0	1	1	0	1	0	1	0	1	0	--	--
Arizona ²	2002	--	--	--	--	1	0	--	--	0	1	0	--
Arkansas ¹	--	--	--	--	--	1	0	--	--	0	1	0	--
Colorado	1999	1	0	1	0	1	0	1	0	0	1	0	--
Connecticut ¹	--	1	0	1	0	1	0	1	0	0	1	0	--
Delaware	--	--	--	--	--	--	--	--	--	--	--	--	--
Florida ^{1,2,6}	1999	1	1	1	0	1	0	1	0	1	0	1	36.9%
Georgia ^{1,2}	--	--	--	--	--	--	--	1	0	--	--	--	--
Hawaii	--	--	--	--	--	--	--	--	--	--	--	--	--
Idaho ^{1,6}	1988	1	0	1	0	1	0	1	0	0	1	0	--
Illinois ¹	--	--	--	--	--	--	--	--	--	0	1	0	--
Indiana ^{1,6}	--	--	--	--	--	--	--	--	--	--	--	--	--
Iowa ^{1,6}	--	0	0	0	0	1	0	1	0	0	1	0	--
Kansas	1973	0	0	0	0	1	0	1	0	0	1	0	--
Kentucky ⁶	2001	1	0	1	0	1	0	1	0	0	1	0	--
Louisiana	--	--	--	--	--	--	--	--	--	--	--	--	--
Maine	--	--	--	--	--	--	--	--	--	--	--	--	--
Maryland ³	2000	1	0	1	0	1	0	1	0	0	1	0	--
Massachusetts ^{1,6}	--	--	--	--	--	--	--	--	--	--	--	--	--
Michigan	--	--	--	--	--	--	--	--	--	--	--	--	--
Minnesota ^{3,6}	2002	1	0	1	0	1	0	1	0	1	0	1	18.0%
Mississippi	--	--	--	--	--	--	--	--	--	--	--	--	--
Missouri	--	--	--	--	--	--	--	--	--	--	--	--	--
Montana ¹	--	--	--	--	--	--	--	--	--	--	--	--	--
Nebraska ¹	1987	1	0	0	1	1	0	1	0	0	1	0	--
Nevada	2000	0	1	0	1	1	0	1	0	0	1	0	--
New Hampshire ²	--	0	1	0	1	--	--	--	--	--	--	--	--
New Jersey ^{1,2}	--	--	--	--	--	1	0	--	--	--	--	--	--
New Mexico	--	--	--	--	--	--	--	--	--	--	--	--	--
New York ²	--	0	1	1	0	--	--	--	--	--	--	--	--
North Carolina ²	--	0	1	0	1	--	--	--	--	--	--	--	--

Higher Education Space and Utilization Policies Survey (cont.)

State	Question 1					Question 2		Question 3		Question 4		Question 5	
	YEAR	Guidelines	Standards	ALL Instit.	Univ.s Only	YES	NO	YES	NO	YES	NO	Don't Collect	High %'ge
<i>North Dakota</i> ²	--	--	--	--	--	--	--	--	--	--	--	--	--
<i>Ohio</i> ^{5,6}	1975	1	0	1	0	1	0	1	0	0	1	0	15.4%
<i>Oklahoma</i> ²		0	1	1	0								
<i>Oregon</i> ²	1998	1	1	0	1	1	0	1	0	0	1	0	--
<i>Pennsylvania</i> ^{2,4}	--	0	1	0	0								
Rhode Island													
<i>South Carolina</i> ¹	2002	1	0	1	0	1	0	1	0	0	1	0	--
South Dakota ²													
Tennessee													
<i>Texas</i> ²	1992	1	1	1	0	1	0	1	0	0	1	0	--
Utah													
Vermont													
<i>Virginia</i> ⁶	2001	1	0	1	0	1	0	1	0	0	1	0	--
<i>Washington</i> ²	2002												
<i>West Virginia</i>	1982	--	--	--	--	--	--	--	--	--	--	--	--
<i>Wisconsin</i> ^{1,2,4}	1990	1	0	1	0	1	0	1	0	0	1	0	--
<i>Wyoming</i> ^{2,6}	1993	1	0	1	0	1	0	1	0	0	1	0	--
States Responding: 34	1994	15	10	16	5	22	0	20	0	3	20	2	23.4%
Responses, per quest'n:	(20)	(24)			(22)		(20)		(23)		(22)		(3)

1. Has NO statewide standards, guidelines; policies set at the system / institutional level. **OR** space allocation decisions are made on project-by-project basis.
2. Information from MGT of America, Inc. [only] report *Space Standards for Selected States' Higher Education Systems*, (September 1999) and follow-up.
3. Provides research space allowance for students who are members of an academic department with an approved doctoral or master's program.
4. Pennsylvania only has space guideline for its community colleges. Information on Wisconsin is reported for the University of Wisconsin at Madison only.
5. Highest summer enrollment for any campus is reported here; highest summer for the system = Minn.: **8%**; Ohio: **9.5%**.
6. **YES** responses for questions 2 and 3 are *implicit*; that is, these States' report their space guidelines as: "permissive of these space allocations."

Source: California Postsecondary Education Commission Survey of States SHEEO Offices, 2002 - 2003.

Conclusions from the Survey

This Commission survey provides a snapshot of the practices and policies governing the provision of space for higher education institutions in California and nationally. The results of the Commission's survey on these policies show that most states have moved beyond prescriptive space allocation formulas and into a more efficient and responsive process for judging their public campuses' space needs. The overwhelming majority of states providing information on their practices report that they either use permissive guidelines -- general operating parameters devoid of specific mandates -- or that they leave these planning decisions to the higher education institutions. They also responded that their state policymakers judge these decisions within the context of facilities proposals that are examined and decided upon in their respective budget processes. In states with coordinating or governing boards, these boards have responsibility for approving campus facilities proposals prior to their introduction into the state budget process.

Based on its work in this area, the Commission's position is that flexible guidelines in the area of space and utilization in California's public postsecondary institutions provides the most efficient and effective approach for meeting the evolving needs of academic programs and best facilitating the progress of students through our institutions. Since student and program space needs are quite different now than they were forty years ago, California's higher education institutions should not be locked into rigid and impractical space and utilization standards developed from 1955 – 1966.

A vast amount of research on higher education space and utilization has occurred nationally since the Commission adopted its space guidelines report in 1990. As stated earlier, at least 15 states have revised, or are revising, their policies in this area. Commission staff readily acknowledges that much of the research on the design and usage of space on campuses is moving beyond the Commission's 1985 – 1990 work. Of greater concern is that the last legislatively-adopted higher education space and use policies were developed between 1955 and 1966 (last adopted in 1971 and 1973). As all of the research shows, these older California standards are considered obsolete and are no longer relevant to the actual space needs of its public higher education institutions.

The History of California's Space Standards

In response to Legislative directives in 1985 and 1987, the California Postsecondary Education Commission worked with a national consultant (MGT) and an advisory committee to evaluate California's higher education planning standards and guidelines. The advisory committee for this project included representatives from the California Department of Finance, the Legislative Analyst's Office, legislative staff, and the three public higher education systems. It met 22 times between 1985 and 1990 and its work led to the 1990 Commission report *A Capacity for Learning* (CPEC, 1990).

Space and utilization ("space/use") guidelines and standards are budgetary planning tools that can measure the need for academic spaces such as classrooms, laboratories, research space, and faculty offices. These measurements help determine the amount of physical space to be allocated on a per-student (full-time equivalent, or FTE student) or per faculty member (full-time equivalent faculty, or FTF) basis in buildings, specific to program need. Under this construct, most allocations of space for workstations are done on an "assignable square footage," or "asf" basis. Thus, many space measurements used here are expressed in terms of "asf per FTE" or "asf per FTF."

The report, *A Capacity for Learning*, proposed revisions of the old standards by simplifying, conforming and modernizing higher education space usage guidelines to nationally accepted norms, while maintaining the most stringent classroom utilization standards in the nation at that time. The Commission's 1990 guidelines recognized changes in space usage since the State's original space standards were adopted

between 1955 and 1966. As recently confirmed by MGT of America, virtually all the work done on the issue of higher education space usage across the nation since 1990 has built upon the Commission-approved space and utilization guidelines.

California’s old space standards for higher education were researched and developed between 1948 and 1966, from work done by the consultants and researchers dealing with the post World War II enrollment surge, to planners working towards the state’s eventual adoption of a higher education masterplan, to research done by the Commission’s predecessor, the Coordinating Council for Higher Education (CCHE). While this earlier work had currency during the 1950s through the early 1970s, over time the standards developed in that era became not only empirically out of date but also a hindrance to college and university planning. These standards did not take into consideration new advances in construction methods and materials or institutional practices. This deficiency had a negative effect on the systems’ ability to design buildings that would increase the flexibility of space for varying uses. The 1955 – 1970 standards provided no recognition of advances made not only in technology but also in “smart building” construction concepts and applications. They do not account for the evolved needs of new programs and disciplines or for instruction and research methodologies, some of which did not even exist when the state’s space and usage standards were developed and revised.

The state’s 1955 – 1966 developed space standards for the University of California system were revisited in 1970 by the CCHE and the U. S. Department of Education, but were not changed. In both 1971 and 1973, the California Legislature increased utilization standards, first for classrooms and then for class laboratories, although the approaches taken in 1971 for classrooms and 1973 for class laboratories were fundamentally different. For classrooms, the Legislature applied the daytime utilization rate to the evening hours between 5:00 p.m. and 10:00 p.m. At the time of this decision, there was no research done on its potential impact and there was little understanding of the complexities involved in this adjustment. The California State University and the University of California strongly objected to this change, but their concerns were ignored. For class laboratories, the Legislature simply increased the weekly room hours by 10% – a completely arbitrary percentage. These two adjustments were done to artificially constrict the “need” for new space due to the fiscal constraints facing the State during the early 1970s.

The California Legislature did not formally adopt the Commission guidelines in 1990, again due to State budget pressures from the severe economic recession in the early 1990s. Thus, the California Community Colleges and the California State University have been required to continue using the old 1955 – 1970 space and usage standards in developing their building proposals since that time. The University of California adopted the 1990 Commission standards and has used them in the development of its facilities proposals since the early 1990s and the Legislature and Governor have annually approved UC’s building programs.

Table 2 below shows the history of Higher Education Space and Use Standards in California.

TABLE 2 Higher Education Space and Use Standards in California
1948 – <i>A Report on a Survey of the Needs of California Higher Education</i> (George Strayer and Associates).
1955 – <i>A Restudy of the Needs of California Higher Education</i> (T. R. McConnell). First California higher education space/use standards; developed in anticipation of the building program envisioned in the “Masterplan for Higher Education.”
1965 – Senate Bill 318 of 1965. Required development of elements of space/use standards for instructional space in junior colleges; developed in response to Master Plan recommendations for State construction of a public junior college system.

1966 – *Space and Utilization Standards, California Public Higher Education* (CCHE, CPEC's predecessor). The first review of space/use standards since the 1955 *Restudy*; it was focused primarily on classrooms and class labs.

1970 – *The California Higher Education Facilities Planning Guide of 1970* (CCHE and U.S. Dept of Ed.). Attempted to explain major elements of space/use standards in general planning; was primarily oriented towards the UC system.

1971 – ACR 151 (1970). Increased classroom utilization standards, directed CCHE to study space use in CSU; was done in response to defeat of \$200 million bond issue, "Proposition 3 of 1968," which had led to concerns of insufficient resources.

1973 – Supplemental Report Language to the 1973-74 Budget Act. Increased utilization standards for class laboratories to same high levels required in ACR 151 for classrooms; was adopted to deal with State fiscal pressures during the recession.

1985 – Supplemental Report Language to the 1985-86 Budget Act. Directed CPEC to study space/use standards for classrooms, laboratories, and faculty offices – *Time and Territory* (CPEC, February 1986). This led to 1987 appropriation of \$300,000 to CPEC to perform a more comprehensive analysis – *A Capacity for Learning* (CPEC, January 1990).

1990 – *A Capacity for Learning*, (CPEC). The most recent analytical report, which reviews existing standards and presents recommendations for revisions.

Source: CPEC reports and staff analysis.

Summary of 1990 Commission Report

A Capacity for Learning (CPEC, 90-3) was the first comprehensive study of California space/use standards since 1966 and the first study of research space since 1955. It deals with four space types used in higher education: classrooms, class laboratories, research space, and faculty offices. The Commission and its independent contractors (MGT Consultants, Inc.) examined how changes in teaching and research practices over time had affected space requirements. The report sought to modernize space/use standards and to establish a permanent review process to maintain relevance in the guidelines.

The report had five major recommendations:

- (a) Develop a set of general recommendations designed to simplify the standards wherever possible and apply them campus-wide rather than to individual projects. The report sought biennial segmental reports on space use and establishment of a permanent space/use standards advisory committee to the Commission.
- (b) Regarding classrooms, the report sought to relax classroom utilization standards somewhat, although they would continue to be among the most stringent in the nation; to maintain an ASF-per-station standard; and to provide for storage space in community colleges.
- (c) Regarding teaching laboratories, the report recommended a minor increase in storage space (2-4%) in all three public higher education systems and instituted a single use standard for lower- and upper-division laboratories. It also set standards for five laboratory types, a dramatic reduction from the old practice of having individual standards for the several dozen discipline types.
- (d) Regarding research space, the report established guidelines for six laboratory types and allocated space for "primary" researchers only – State-funded faculty, graduate students and post-doctoral fellows. It set space/use guidelines that were near national norms and in conformity with recent practice, which includes graduate students' office space.
- (e) Regarding faculty offices, the report recommended increasing office space for community college faculty by 58%, for State University faculty by 14.3%, and for University of California faculty by 9.4%.

Specific space and utilization standards and explanations as set forth in the report are as follows:

I. Classrooms – Classroom space for the CCCs, the CSU and UC should be .55 assignable square feet per weekly student contact hour. The utilization standard should be adjusted to a weekly station-hour level of 30. The service and storage area element of the standards should be set at 10% of the total assignable square feet produced by related calculations (these are described on page 10 of the report). With these changes, California would still have the strictest standards in the nation for baccalaureate degree-granting institutions and among the strictest for community and junior colleges nationally.

II. Teaching Laboratories – teaching laboratory space standards are set at assignable square feet (ASF) per weekly student contact hour (WSCH) levels. They differ by postsecondary system. There are five categories of teaching labs; shown below are detailed but illustrative situations which are described in the full context of the report.

California Community Colleges (all support and service areas):

Category I	1.528 ASF per WSCH	33 ASF per station
Category II	2.083 ASF per WSCH	45 ASF per station
Category III	3.009 ASF per WSCH	65 ASF per station
Category IV	5.556 ASF per WSCH	120 ASF per station
Category V	8.565 ASF per WSCH	185 ASF per station

A utilization rate of 27 weekly room hours at 80 percent station occupancy (21.6 weekly station hours) is applied to each category.

California State University (for all levels of instruction):

Category I	1.750 ASF per WSCH	35 ASF per station
Category II	2.500 ASF per WSCH	50 ASF per station
Category III	3.250 ASF per WSCH	65 ASF per station
Category IV	4.250 ASF per WSCH	85 ASF per station
Category V	5.500 ASF per WSCH	110 ASF per station

A utilization rate of 25 weekly room hours at 80 percent station occupancy (20 weekly station hours) is applied to each category at all levels of instruction.

University of California (for all levels of instruction):

Category I	2.000 ASF per WSCH	40 ASF per station
Category II	2.500 ASF per WSCH	50 ASF per station
Category III	3.000 ASF per WSCH	60 ASF per station
Category IV	3.750 ASF per WSCH	75 ASF per station
Category V	4.500 ASF per WSCH	90 ASF per station

A utilization rate of 25 weekly room hours at 80 percent station occupancy (20 weekly station hours) is applied to each category at all levels of instruction.

The report notes that each system maintains some highly specialized and limited-use facilities (performing arts facilities, wind tunnels, wave flumes, etc.) to which broad standards would be very difficult to apply. In such cases, exclusions from standards – “non-standard” space – should be permitted following submission of specific justifications.

III. Research Space – Research space at UC should be determined by the size and type of facility in use and not necessarily by the type of discipline. There are six categories of research space for which standards are presented, with three basic types of research personnel, and with space provided for all service and support areas. The space classifications and standards are summarized below, but are documented more specifically in the report.

Assignable square feet, per each category of user:

<u>Category</u>	<u>Space Classification</u>	<u>Faculty</u>	<u>Graduate Student</u>	<u>Postdoctoral Fellow</u>
I	Wet & Dry Labs	500	250	250
II	Laboratories	350	175	175
III	Large Studios	500	250	250
IV	Small Studios	150	150	150
V	Office/Labs	100	150	150
VI	Office/Computer Labs	50	50	50

Research space for the CSU should be allowed at 75 percent of the UC’s research space allowance for graduate students, provided each project providing research space is individually justified on a programmatic basis. The space generated by these standards should range between 37.5 and 187.5 assignable square feet per full-time-equivalent graduate student, depending upon the type of laboratory or office space being constructed.

IV. Faculty Offices – Faculty office space standards are different for each of the postsecondary systems; the guidelines are summarized below.

California Community Colleges (CCC)

Office standards should be separated into categories for “academic” administration and all other, “non-academic” administrative purposes, including campus and district administrative facilities. The CCC Chancellor’s Office should develop precise definitions for each of these terms. Space allowances for “academic administration” should be based on a space standard of 150 assignable square feet per full-time-equivalent faculty member. Space allowances for “non-academic administration” should be reviewed following additional research on the needs of these functions by the Chancellor’s Office. The current standard of 160 assignable square feet per faculty member for small colleges (California Administrative Code, Title 5, Section 57029) should be abolished and exceptions for small colleges should be negotiated per provisions of Title 5, Section 57020. The California Community College Board of Governors should plan for (in its capital building program) single-occupancy offices for full-time faculty and establish internal guidelines for multiple occupancy offices for part-time faculty.

California State University (CSU)

The existing, multiple office space standards for the CSU should be changed to a single allowance of 175 assignable square feet per faculty member for all academic administrative purposes. This standard should apply to all academic personnel. The CSU Trustee’s policy for providing single office space for

full-time faculty (State University Administrative Manual, Section 9611.01) should be continued. The CSU should endeavor to convert multiple occupancy offices currently used by full-time faculty to single offices.

University of California (UC)

The existing multiple office space standards for the UC should be changed to a single allowance of 195 assignable square feet per faculty member. The existing teaching assistant office space standards for the UC should be changed to a single allowance of 195 assignable square feet per full-time equivalent teaching assistant. A new standard should be created for postdoctoral research fellows at 195 assignable square feet per post-doctoral researcher. The 195 assignable square foot standard should apply for all academic personnel and for all service, storage, and support needs included within the existing standards for faculty and teaching assistant offices. The existing graduate student office standards of between five and thirty assignable square feet per headcount graduate student should be eliminated, with needed office areas for graduate students to be provided by the research space standards.

Significantly, the 1990 Commission report established space guidelines for research labs that for the first time acknowledged all university personnel involved in research. The Commission's teaching lab standards eliminated incentives for the systems to request higher-cost "upper division-specific" laboratory space by eliminating the different classifications of upper and lower division laboratories. The Commission office space standards provided improvement for the community colleges over the decades-old space standards and, for the first time, included space for part-time community college faculty. Faculty members have taken on an increasing role with regard to instruction, providing students with academic and career counseling, and faculty governance responsibilities, yet the legislative standards do not recognize their space needs.

Review and Discussion of LAO Report, CPEC Guidelines, and 1955 Standards

In January 2002, California's Legislative Analyst's Office released a report entitled "Building Standards in Higher Education" (http://www.lao.ca.gov/2002/bldng_standards/building_standards.html). In it, the Analyst discussed construction cost guidelines, space standards, and utilization standards for the California Community Colleges, the California State University, and the University of California. The report included the following findings:

Our review of the instructional space standards currently used by the segments indicates that they are still appropriate for the Legislature to use in determining facilities needs. The standards provide adequate space for the segments needs and are consistent with guidelines used in other states.

Thus, at this time we would not suggest any changes to the existing space standards for classrooms and teaching laboratories at the three segments. We do, however, take issue with UC's space standards for research laboratories, as discussed below. (LAO 2002, page 9)

With regard to the Commission's research space guidelines, the Analyst's report continues:

We are concerned about UC's use of the Commission-proposed standards for research space for two reasons. First, the Commission has indicated the space standards it has proposed are essentially the same as space standards UC proposed, without substantive independent validation. Second, the Commission-proposed standards provide additional space for post-doctoral fellows, which in our view has not been justified. Post-doctoral fellows assist with

research activities in research laboratories and it is not clear why they need additional space. We estimate that new construction to accommodate this additional space would cost over \$280 million. (LAO 2002, page 10)

Later in this report, Commission staff provides an update on higher education space standards nationally, which presents a different picture than that in the Legislative Analyst's report. The Analyst's contention regarding Commission reliance on UC data is significant and warrants a detailed response, since it misrepresents the processes used by the Commission in completing this project. LAO's second point, on post-doctoral research space, will be covered later in this section.

The Analyst's report contains the following statement: "Commission has informed us that it established these standards by asking UC what standards it recommended" (LAO, page 9). This contention is incorrect. The Commission had included the Analyst's Office in the advisory committee to the five-year project leading up to the Commission's 1990 report. That advisory committee helped develop and oversee the data collection process for the report. The Commission relied on the UC Office of the President to provide space and utilization information for its campuses just as it relied on the University of Maryland, for example, to provide data on institutional space and utilization practices at that institution. The information provided by the higher education systems was data on their respective practices, not their recommendations. The study consultants used this information to create a model for use in the research. This methodology was fully discussed and agreed to by the project's advisory committee and carried out by the study consultants. Neither the consultants, nor the Commission staff, nor any members of the advisory committee (including the Analyst) reported any irregularities in the data collection.

To develop a more accurate picture of space standards and guidelines, the Commission's project consultants – MGT and Associates – met with the advisory committee and agreed on an approach. MGT was directed to construct a "model" in which it created a hypothetical research university based on the research laboratory formulas it had obtained from 11 other states and from the Canadian province of Ontario (see Table 3).

The process of data gathering for construction of this model included solicitations of information from the University of California and universities in other states and Canada. The process was overseen by the project's consultants and regularly reviewed by Commission staff and the project's advisory committee. The Legislative Analyst's Office chose not to be a part of most of the advisory committee work, attending only three of the committee's 22 meetings between 1985 and 1990. While the Analyst's Office was continually invited to participate, it chose to have minimal involvement in the process. Nonetheless, Commission staff continued to send Analyst's Office staff updates and draft materials produced throughout the process. The findings of the project consultant's research indicated standards that were comparable to the University of California's research laboratory standards except for the inclusion of postdoctoral fellows so as to produce a valid comparison (all of the national comparators included post-doctoral students in their space allocations).

Tables 3 – reproduced from *A Capacity for Learning* (1990) – presents a summary of the laboratory "asf" space information from the surveyed states that was used to develop a prototype research university. Please note that these data were collected between 1988 and 1990. The information showed that the national standards were actually more generous in the allocation of space than those used by the University of California by a factor of 25.1%: 3,875,363 asf for the national standard in the composite model vs. 3,098,246 asf for the University of California standards. Once post-doctoral students – for which there was no UC standard at that time – are added in at a level comparable to that found in other states, UC's space generated by the standard climbs to 4,022,085 ASF. This was a 30% increase from what the 1955 space standards generate, however it was only 3.8% higher than the national norm determined by the consultants.

TABLE 3 Assignable Square Fee of Research Laboratory Space Generated by the Surveyed State Formulas for the Prototype Research University

State	ASF for State Funded Programs ¹	ASF for Contract and Grant Programs ²	Total ASF for all Programs	
Colorado	2,266,668	32,375	2,299,043	
Florida	3,296,294	285,798	3,582,092	
Kansas	3,595,047	790,020	4,385,067	
Maryland	4,457,319	66,395	4,523,714	
Nebraska	5,149,512	55,300	5,204,812	
New Hampshire	3,644,585	324,444	3,969,029	
Ohio	N/A ³	N/A ³	N/A ³	
Ontario	3,574,988	293,156	3,868,144	
Oregon	1,944,835	78,520	2,023,355	
Utah	5,134,560	236,460	5,371,020	
Virginia	3,288,273	239,085	3,527,358	
Wisconsin	N/A ³	N/A ³	N/A ³	
Mean, excluding CA	3,635,208	240,155	3,875,363	
Median, excluding CA	3,585,018	237,773	3,918,587	
California	3,098,246	N/A	3,098,246	Rank 9th of 11

1. Calculated by applying weighted average space factor values (Exhibits 6.14 to 6.24 of *A Capacity for Learning*) to prototype characteristics in accordance with each state's formula outlined in Section 6.1.

2. California's total ASF for research lab space, 3,472,859 has been reduced by 374,613, which is the average graduate teaching lab space generated by other state's standard. California must use research lab space for scheduled graduate teaching labs. The full range of space factors for other states are presented in Exhibit 5.4.3 of *A Capacity for Learning* and are discussed in Section 5.5 of that report.

3. Cannot be computed.

Source: CPEC report "A Capacity for Learning," MGT Consultants

Turning to the Analyst's request for "substantive independent validation" of the Commission's research on space standards, the Commission maintains that the independent consultants for this project, MGT, and the project's advisory committee – of which the Analyst was a member – provided the objectivity, professional review, and "third party" perspective on the collection of data and the development of the research on other states' space and utilization standards. The data collection from UC was handled in the same manner as was data collection from the other states, with collection from each institution (or system) conducted by the consultant and reviewed by Commission staff and the advisory committee. Commission staff and the consultants conducted site visits at selected campuses both in California and nationally as a part of this research project as well.

At no time during this 1990 research did any party to the Commission's space standards project raise complaints about the professionalism, independence or accuracy of the data collection process. Simi-

larly, neither the Analyst nor any other group objected to the participation of the consultants, Department of Finance, Legislative staff, or segmental staff in this data collection and review process.

The project's findings and recommendations on this subject area have been validated nationally in subsequent years as evidenced by the use of the Commission space guidelines in other states, as is presented later in this report. The data collection process and the model developed for this effort were considered as cutting edge and exemplary at the time and are still cited in national literature.

In summary on this point, the Commission, working with MGT, looked extensively at the national space standards and practices for its 1990 report. This process was both empirically valid and unbiased. Working with the consultant and the advisory committee, Commission staff developed the six categories of space guidelines described above in the 1990 Commission report. The Commission subsequently approved this proposal and adopted the space and utilization guidelines report on January 22, 1990.

The Legislatively-adopted Research Space Standards

The Analyst, in its January 2002 report on space standards, recommends that the Legislature continue to evaluate the need for research space at UC using 1955 Restudy space standards. Based on both prior and current research on this topic, Commission staff note that this recommendation would have a negative impact on the University's research mission for many reasons. Primary among them is the fact that the nature of university research has changed immensely since these standards were developed.

Changes in practices and protocols are not recognized in the old research space standards and the old standards cannot be reconciled to meet the changing needs of the university. In addition, state and federal policies, requirements and regulations affecting institutional research are far different now than they were in 1955. Continued use of the 1955 space standards would be inconsistent and contrary to legislative actions towards the University of California and its research mission over the last dozen years. This is of particular concern in the future, as such a change in state policy could negatively impact the University's research in areas important to the state's economic vitality.

The state's legislatively-adopted standards on research space predate the California Masterplan for Higher Education. As to the utility of these standards, the following passage is excerpted from the Commission's report *A Capacity for Learning*:

In developing new standards for the University of California, it was necessary to take into account the fact that the existing standards have not been used for many years. So much has changed since the 1950s in the ways that universities conduct research and in their space requirements for equipment and health and safety that when funding for new construction became available in the early-to-mid-1980s, it became apparent that the 1955 *Restudy* standards would be entirely inadequate as a basis for determining current needs. Because of that, the University of California based its capital requests not on the existing standards, but on assessments of program need, with each project individually justified and approved by the Governor and Legislature (CPEC, 1990).

As this passage notes, the research space standards currently on the books in California were developed in the 1950s, more than half a century ago. Neither the consultant's work on the 1990 Commission report nor Commission's 2002 – 2003 research on this subject uncovered any higher education research space standards nationally that were this out-of-date. The Legislative Analyst's January 2002 report presents no information or research to substantiate the adequacy of this 1950s-era research to present-day university space needs and its recommendation that UC use the 1955 research space standards. Thus, Commission staff do not agree with this Legislative Analyst's recommendation.

The Analyst also maintains that the Commission's Research Space Guidelines would engender additional costs.

The Analyst purports that the University of California currently has 6.1 million "asf" of research laboratory space, that this is 18% more than the Commission standards call for, and that large additional costs are involved in the use of the Commission standards. We do not have the data to review the Analyst's contention of UC's actual research space allocation, however, based on the Analyst's own contentions, if the Legislature held UC strictly to the Commission space standards, UC would have to cut back on its research construction projects – thus generating no additional costs. Secondly, each capital project proposed by the University of California undergoes a review by the Department of Finance in order to be included in the proposed budget. The Legislative Analyst also reviews these projects and comments on them during the budget cycle and they must be approved by the Legislature.

Most importantly, however, the Analyst's rigid approach to space standards misses an important point about the Commission's 1990 study, one that has been proven in subsequent research in this area: the design and usage of higher education facilities is best governed by guidelines, not standards, that allow for flexibility in meeting the needs of different programs and different campuses.

Post-doctoral Students and Research Space

In its January 2002 report, the Legislative Analyst's Office stated its view that providing research space for post-doctoral fellows has not been justified. There are few issues in the area of higher education space standards that have been so thoroughly validated and adopted by policymakers nationwide as has been the space needs for post-doctoral students involved in research. Post-doctoral students are fellows at the universities who assist and often lead research projects. The Commission's 1990 space guidelines included research space for these researchers at the same "asf per FTE" rate as is provided for graduate students.

As early as 1963, former University of California President Clark Kerr referred to post-doctoral fellows as "the unfaculty," who are unrecognized despite their integral role in university research. The National Academy of Sciences only began to chronicle the use of post-doctoral fellows in 1969 in its report, *The Invisible University: Post-doctoral Education in the United States*.

The evolution of the role of post-doctoral research fellows in university research since the 1950s has been well documented. In *Time and Territory* (CPEC, 86-2), the Commission noted the importance of post-doctoral fellows in research:

Of particular importance in the development of research teams are post-doctoral fellows whose existence is not recognized in any California space standard but who nevertheless occupy scientific laboratory space and perform a large amount of work. (1986a, pp. 53, 55)

The report cited a 1983 survey in which more than 600 American doctoral degree-granting institutions reported employing nearly 21,000 post-doctoral fellows. The report also noted a National Science Foundation (NSF) estimate that institutions employ 23,000 post-doctoral fellows. The NSF in 1983 ranked universities according to their use of post-doctoral fellows and reported that the University of California employed nearly 13 percent of all post-doctoral fellows included in its survey.

Through its work with the Commission on its 1990 report, MGT's survey work also determined that post-doctoral fellows were an integral part of the work in university scientific research, and that they needed to be accounted for in space allocations. Every state surveyed by MGT at that time not only had post-doctoral fellows, but also provided research space for them. Further, through dozens of specific building appropriations over the decades, the California State Legislature itself has confirmed this point

of view, since the projects it has approved for the University of California have provided research space for post-doctoral fellows for at least this length of time.

Beginning in March 2002, the Commission undertook a survey of space and utilization guidelines and practices in other states. Of the 49 states surveyed, the Commission received responses from 34, some more extensive than others. Additionally, two national consulting firms working with states on this issue – MGT of America, Inc. and Paulien and Associates – provided information on space and utilization policies and practices. One of the questions asked: “Do any of these standards/guidelines provide for space for post-doctoral fellows involved in research at your flagship research institutions or other public colleges and universities?”

Of the 34 states responding to the survey, 21 specifically addressed this question. Fifteen of the 21 states specifically affirmed the inclusion of research space for post-doctoral fellows at their institutions and six responded that their space standards or guidelines did not explicitly provide for such space. Follow-up phone and e-mail interviews were conducted with each of the 34 states responding to this survey. During this process, representatives from all six of the states that had initially responded “no” to this question (Colorado, Kentucky, Wyoming, Florida, Ohio, and Maryland) confirmed that there are no prohibitions on institutions requesting research space for post-doctoral fellows in their statewide or systemwide policies. They all reported that while their space usage guidelines are silent on this specific component, it is permitted – and does occur – as are other practices not expressly spelled out in those guidelines. These representatives added that policymakers and state officials must approve campus requests for space in their facilities on a project-by-project basis.

An example of this practice is evident in information from the State of Colorado, which initially reported that it did not allocate research space for postdoctoral fellows:

No. We have been relying on our program plan submittals to have the most current data and then we evaluate the request based upon that information. Most of our post-doctoral programs have highly specialized space, and it is so ever-changing much like technology, so we find it best not to try and document standards for use from our policy. (Colorado Commission on Higher Education, March 2002)

In its follow-up, based upon its above response, Colorado officials clarified their initial response to the question as follows:

... it is important that you know that our process begins with each institution writing what we call a program plan. It includes among a number of items, a detailed breakdown of square footage planned for, its planned uses, and the cost to build the total square footage. Based upon that, we also analyze enrollment, enrollment trends, and past enrollment growth or stability. With that, we throw in a few more elements for review, and that is the basis for our overall review and recommendation process ...we do not preclude them [the institutions] from including them [postdoctoral fellows], but the ratio of education space to support space in the overall building equation is an important evaluation criteria. So, it is up to them to decide that, and to defend it in their program plan. (Colorado Commission on Higher Education, March 2002)

More directly, Colorado continued that its institutions are allowed to request research space for postdoctoral fellows, as long as they can justify it as is spelled out above. This sort of response was by far the most common for the States that had initially responded “no” to this question.

The other 13 states of the 34 reported having no statewide space/use standards for higher education in response to the survey’s questions. Most of these states – including Illinois and Connecticut – reported that space allocation policies are set at the system/institutional level or that space allocation decisions

are made on a project-by-project basis. In follow-up interviews, representatives from all 13 of these states also confirmed that there is no prohibition on institutions requesting research space for post-doctoral fellows. They reported that requests for this type of space may be -- and regularly are -- allowed, as the project goes through the budget processes of the respective states. Thus, based upon our written survey and follow-up questions, not one of the 34 states responding to the Commission's survey appears to prohibit the provision of research space for post-doctoral fellows.

Information from reports by national consultants on this question was unclear on this particular point for most of the states that did not respond to the Commission's survey. However, information available for New York, North Carolina, Virginia and New Jersey indicated that each of these states appears to allow for research space for post-doctoral fellows. This conclusion is based on the fact that these states' and systems' facilities guidelines do not expressly prohibit this practice and their respective facilities guidelines are self-described as being "flexible" and "responsive to institutional program needs." As stated earlier, "program need" for research universities has for decades nearly always included some role for post-doctoral fellows.

On a larger point, follow-up contacts were made with all of the 34 respondents to the Commission's space policies survey. These follow-up efforts determined that there were far fewer clearly "yes/no" responses to the survey questions than were initially offered by many states. In these follow-up conversations, nearly every state noted that institutional practices regarding the requesting of space allocations are allowed to vary, so long as their requests are justified in the budget approval process in each of the states. Thus, the final authority for making these space determinations rests with the Legislature and Governor, and not with state or system regulations.

In summary, the Commission's space guidelines allowing for research space for post-doctoral fellows are in line with the policies and practices of at least 36 of the 38 of the states responding to our survey or for whom national literature was available; responses were not available for the other two. This finding is not surprising given the long accepted role that post-doctoral fellows play in institutional research.

Commission's National Survey of Space Planning

The Commission's Space Guidelines in a National Perspective

More than a decade has passed since the Commission's *A Capacity for Learning* report on space and usage standards in higher education. From March 2002 through April 2003, the Commission solicited information on this topic from around the country. In addition to receiving e-mail responses from 34 states to five questions on higher education space and use policies, the Commission received several reports on facilities space planning, including national research done by such consultants as MGT of America and Paulien & Associates.

The Commission's survey of other states was designed to solicit information on space and utilization standards and guidelines in the planning of campus building programs. The survey focused on four areas: the currency of State's policies, the inclusion or exclusion of part-time faculty for office space, the inclusion or exclusion of postdoctoral fellows for research space, and the role of year-round operations in facilities planning assumptions. This report has already addressed the issue of research space allowances for postdoctoral fellows, so this section will only detail our findings in the other three areas.

I. How Current are State Guidelines?

The first question posed in the Commission's survey read: "In what year were your most current space and utilization standards/guidelines for use in public higher education institutions adopted?" Eighteen states responded to this question with a specific year in which their most recent space standards or

guidelines – as was appropriate for each state – were adopted by the State or higher education system. This information was available for two other states through MGT. Several states responded that they did not have such space standards or guidelines, as was noted earlier. Table 4 presents the states providing information in response to this question.

Of the 20 states for which this information is available, the most recent year of adoption was Minnesota’s adoption in 2002, followed by Virginia in 2001. No state reported a date any earlier than California’s 1973 adoption as the last officially adopted revisions to space standards. And it is important to note that California’s space and utilization standards were actually “adopted” in 1966 and were only “tightened” to artificially reduce the need for space in 1971 and 1973. Kansas also last revised its space standards in 1973 and Ohio last revisited its standards in 1975. Based upon survey responses, 14 of the 20 respondents have adopted, or are adopting, revised higher education space guidelines since the completion of the Commission study in early 1990.

<u>State</u>	<u>YEAR</u>
California (excluded)	1971 - 1973
Alaska	1990
Arizona ¹	2002
Colorado	1999
Florida	1999
Idaho	1988
Kansas	1973
Kentucky	1999
Maryland	2000
Minnesota	2002
Nebraska	1987
Nevada	2000
Ohio	1975
Oregon	1998
South Carolina ¹	2002
Texas	1992
Virginia	2001
West Virginia	1982
Washington ¹	2002
Wisconsin	1990
<u>Wyoming</u>	<u>1993</u>
Average (excl. CA)	1994

¹ These states reported being in the process of adopting new guidelines that took effect during 2002.

Source: Commission Staff space policies survey, 2002 – 2003.

As Table 4 shows, the average date of space policies for the 20 states is 1994 – three years after the Commission study and more than two decades after the California legislature’s last adopted revisions to State space policies. Even states that have adopted space guidelines in recent years, such as South Carolina and Washington, reported the need to update these policies and adopted new ones in 2002. Other states, such as Arizona, reported no current higher education space guidelines but expected to have a space utilization reporting system in place by late 2003.

In its report, *Space Standards for Selected States’ Higher Education Systems* (MGT, 1999), consultants MGT of America, Inc. provide information for several states that did not respond to the Commission survey, noting that several had adopted revised space guidelines within the past decade. These states include: New York, North Carolina, Louisiana, South Dakota, and Pennsylvania. If these states are factored into the above calculations, California’s 1971 – 1973 legislatively-revised space standards fall even further out of date, relative to the national average date of states’ adoption of policies in this area.

Most states tended to respond to the Commission question in terms of “standards” or “guidelines,” and so the report categorizes their responses as such. Of the 25 states that provided this breakdown, 14 (58%) utilize *guidelines* for institutions to follow in this space planning, while nine (38%) initially use space *standards*. Two states (Oregon and Florida) reported using both standards and guidelines in their higher education space planning. At least two of the states reporting the use of space standards (Florida and Alaska) also reported that they have no statewide standards and that these policies were set at the system or institutional level, or that space allocation decisions were made on a project-by-project basis. In some states, such as Colorado, higher education space planning guidelines are not adopted by the State Legislature but rather by the higher education coordinating authority for the State and are revised periodically by that agency.

Other state responses to survey questions and follow-up conversations indicated a national trend toward more “permissive” statewide guidelines – if any – on space usage by the State’s higher education policy or coordinating board, followed by determinations of merit during the regular budget review and approval process.

In summary, most States responding to the Commission survey report having adapted or completely rewritten their state and system policies on higher education space in the last few years. Additional states report to MGT that they have updated their space policies some time since 1992. California’s last legislatively-adopted higher education space standards of 1971 – 1973 are the oldest such standards nationally that were reported in this research.

2. Part Time Faculty and Office Space

California’s 1971 – 1973 space standards exclude the provision of space for part-time faculty in the California Community Colleges. The 1990 Commission standards included this space allocation, as justified based upon the evolution in the role these faculty play in the institution. The second question posed in the Commission’s recent survey read: “Do these standards/guidelines allocate space for use by part-time faculty in any of your public institutions?” Of the 19 states responding to this question, 17 (90%) report allowing this usage of space, while two states (10%) initially reported that they do not. Supplemental information from MGT for the University of Florida classifies its guidelines as providing academic office space for “all FTE positions requiring office space,” which they note includes part-time faculty. Information from independent studies conducted for other states denotes that several states with large numbers of community and junior colleges, including New York, North Carolina and Georgia, either formally allow for – or do not prohibit the provision of – office space for part time faculty in their institutions.

Follow-up communication with representatives from Ohio and Kentucky (the two “no” states on this question) determined that their respective policies on this use were also “permissive” and that the provision of space for part-time faculty was allowed, on a case-by-case basis. As a result of our survey and follow-up conversations, no state appears to prohibit the inclusion of office space for part-time faculty in either its written policies or actual practices.

3. Findings On Year-Round Instruction

Though not a specific component in higher education space standards, the effect of year-round operations is an important and timely issue in facilities planning. Since the mid 1960s, the Commission and its predecessor, the CCHE, has formally advocated for year-round operation in California’s public postsecondary education systems. In 1968, the CCHE commissioned a study, conducted by the management firm Touche, Ross, Bailey, and Smart, of year-round operations at four CSU and two UC campuses that had implemented year-round operations. This report concluded that year-round operations could eventually save the state millions of dollars in enrollment and capital costs. However, the report cautioned that these estimates were highly subjective and based on underlying educational policy, breadth of operations, and capital cost assumptions that all heavily impact any such estimates.

There has been a great deal of speculation about the potential of year-round operations since that time. In recent years, the State of California has encouraged its public institutions to become fully operational for the entire calendar year. Year-round operation was not envisioned in the state’s 1970s space standards and has led to changes in facilities planning and assumptions. Even after nearly 40 years, the actual implementation of year-round scheduling is a work-in-progress, and, as such, benefits greatly from the perspectives of other higher education institutions around the nation that are facing the same challenges and directives from policymakers. In its 2002 – 2003 survey, the Commission sought to quantify the assumptions of year-round operations that are reflected in space planning and practices.

In its *Analysis of the 2002-03 Budget*, the Legislative Analyst stated that the assumption of full utilization of facilities should be built into campus facilities planning. The Analyst’s Office testified in legislative budget subcommittee hearings that its office defines full utilization as that wherein a campus will be as fully enrolled in the summer months as it will during any other term in the academic year. Given the timeliness and contentiousness of this issue, the Commission’s 2002 – 2003 space survey sought responses on this issue from the 49 states outside of California and was able to compile information from 36 of them.

One of the questions posed by the Commission in its space policies survey read: “Do your higher education space and utilization guidelines presume “full utilization” year-round? (Full utilization is defined here as assuming for planning purposes that campuses will be as fully enrolled in the summer months as at any other time in the year.)” Of the 23 states that responded directly to this question, three states initially responded “yes” and 20 states responded “no.” In follow-ups with these 23 states, two states (Florida and Alaska) that had initially responded “yes” to this question noted the permissiveness of their space guidelines. These representatives stated that their institutions are not required to assume full summer utilization in their facilities planning, irrespective of the definition of that phrase.

In follow-ups to the 11 survey respondents who did not respond directly to this question, each of their representatives stated that there are no State or institutional policies in this area and that their higher education institutions are not required to assume full summer utilization in their space planning. In reviewing information on states’ space guidelines from MGT, and from the states themselves, New York and Washington also do not appear to assume full summer utilization in their respective higher education space planning. This finding is implied based upon the methodologies the two states employ to generate space in their institutions. New York’s State University of New York (SUNY) system uses a

dynamic space evaluation model that considers many factors and variables in the allocation of space and summer utilization is not one of the factors evident in its model. A similar situation exists for the State of Washington, which MGT reports is presently in the process of modifying its space standards for its “Community and Technical” colleges.

With these clarifications and supplemental information, the results are that of the 34 states responding to the Commission survey – and including New York and Washington – only one of the 36 states surveyed (Minnesota) assumes full summer utilization in its space planning and defines “full utilization” as meaning summer term utilization equal to that in the fall or spring terms.

Minnesota reports that it uses what it calls “full-year enrollment,” or FYE. State officials define this term as meaning full-time utilization averaging in its space planning. However state officials report that this “assumption” carries with it neither a planning mandate nor any penalty for non-achievement. With regard to this planning assumption and its higher education space guidelines overall, Minnesota’s officials said:

Space and Utilization guidelines have not been formally adopted - they are merely guidelines that the campuses can use to differentiate and evaluate overall use. (AIA System Director for Facilities Planning and Programming, Minnesota State Colleges and Universities, March 2002).

With regard to Minnesota’s actual achievement of summer term enrollment, the state reports:

Our biggest enrollment is likely to be at Metro State University - which is a non-traditional four year campus and has about 18% summer enrollment. For the whole system, in FY 2001, we had 7.9% or 9,345 of our 118,795 total in summer classes. In FY 2002 we were up to FYE of 125,078 with 8% or 10,064 in summer classes. (Minnesota, March 2002)

As a final question in this area, Commission staff asked each state to provide its highest summer term FTE enrollment recorded at any of its institutions, as a percentage of its highest regular term enrollment, if this statistic was available. Only Florida, Minnesota, and Ohio were able to provide this information and only Florida and Minnesota appear to collect this type of information on a regular basis. As is cited above, Minnesota’s highest summer FTE enrollment was 18%, while Florida’s was 37% and Ohio’s was 18%, for a three-state average of 23.4%. Given these findings, it is apparent that no institution in the country even comes close to enrolling 100% of its highest term enrollment during the summer.

In its January 2002 report, the Legislative Analysts recommends that the Legislature “continue to emphasize to the segments that it is the intent of the Legislature that the segments operate their facilities year around with nearly equal enrollments in all terms.” The Commission supports this State policy goal as an important aspect of providing access to a quality higher education to all Californians who can so benefit. However, Commission staff believes that such a goal should be informed by factual information and based on sound research. As a goal or intent, such full utilization is admirable, even desirable, however seeking to hold university-building programs to this level as a “standard” is not well-informed policy. Despite many different approaches taken by states and institutions across the country to encourage greater summer attendance by students, no “full summer utilization” enrollment levels have materialized over the past 40 years and none are likely for the next decade. As such, the Commission recommends that no facilities planning funding be based on the unattainable assumptions of “full summer utilization.”

Update on Facilities Utilization Practices

Space Utilization Policies and Practices

Separate from allotments of space in higher education facilities planning are estimates of the use of space. Simply put, utilization standards are planning assumptions detailing how many hours a given classroom, class lab, etc. will actually be used. As noted earlier, the last full review of space and utilization standards in California was conducted by the CCHE in 1966. This was the first review of space and usage standards since 1955 and it focused primarily on classrooms and class labs; the last review of usage standards for research space was the State's 1955 *Restudy* report.

In 1971, the California Legislature approved Assembly Concurrent Resolution 151, which tightened classroom utilization standards, and in 1973, the Legislature approved Supplemental Report Language (SRL) to the 1973-74 Budget Act that tightened utilization standards for class laboratories by ten percent. These two actions were taken to deal with budget shortfalls at those times – ACR 151 because the defeat of an earlier General Obligation bond issue created a deficiency of capital outlay resources, and the SRL to lessen fiscal pressures during the state's 1973 – 1975 economic recession. Neither of these actions involved research or empirical validation prior to their adoption. Put simply, these policy changes were intended to squeeze more use out of each allotment of new and existing space with the goal of reducing the “theoretical” need for new space. As noted below, however, these changes may have had the unintended effect of actually increasing facilities costs. Table 5 displays the current legislatively-revised utilization standards for California higher education in 1971 and 1973, from the Analyst's January, 2002 report.

TABLE 5 Legislative Utilization Standards — CCC, CSU, and UC

Category	Weekly Room	Station Occupancy	Weekly Hours
	Hours	Percentage	Station Use
CCCs Classrooms	53.0	66.0%	35.0
Teaching laboratories	27.5	85.0	23.4
CSU Classrooms	53.0	66.0	35.0
Teaching laboratories			
• Lower division	27.5	85.0	23.4
• Upper division and graduate	22.0	80.0	17.6
UC Classrooms	52.5	66.7	35.0
Teaching laboratories			
• Lower division	27.5	85.0	23.4
• Upper division	22.0	80.0	17.6

Reprinted from the LAO report “Building Standards in Higher Education,” January, 2002.

The California higher education utilization standards shown above have proven to be unrealistic and have long since been discarded nationally.

Table 6 shows utilization rates for classrooms and teaching labs in 26 states for which this information was available. It is excerpted from a display in the 1999 MGT of America report, *Space Standards for Selected States' Higher Education Systems*, and from the Commission. For the California information included in its study, it is important to note that MGT used the 1990 Commission's 1990 space utilization guidelines (not the 1971 – 1973 legislatively-revised standards shown in Table 5). Highlighted in

bold in the display are the Commission space usage guidelines for California and those of other states, institutions, or classifications whose utilization guidelines or standards exceed those in the Commission guidelines.

TABLE 6 Utilization Rates for Classrooms and Teaching Labs Nationally				
STATE (Type of Inst.)	<u>Classrooms</u>		<u>Teaching Laboratories</u>	
	Weekly Room Hours	Station Occupancy Rate (%)	Weekly Room Hours	Station Occupancy Rate (%)
Alaska: CCs and University	30	60	20	80
Arizona: University	35	65	25	85
California: Community Colleges	42	71.4	27	80.0
California State University	42	71.4	25	80.0
University of California	42	71.4	25	80.0
Colorado (Academic labs)	30	67	20	80
Florida: Univ. (Upper & Grad)	40	60	20	80
CC < 2,500 enrollment	58.5	55	21.0	80
CC > = 2,500 enrollment	58.5	60	24.0	80
Kansas	30	60	20	80
Kentucky	38	67	23	80
Louisiana	30	60	20	80
Maryland: CC < 1,000 FTE enrollment	30	60	20	75
CC 1,000-2,499 FTE enrollment	31	62.5	21	80.0
CC 2,500 - 4,999 FTE enrollment	32	62.5	22	80.0
CC >= 5,000 FTE enrollment	33	65	23	80
Univ <= 3,000 FTE enrollment	30	60	21	79
Univ 3,000-6,000 FTE enrollment	30	65	21	79
Univ > 6,000 enrollment	30	70	21	79
Nebraska	30	65	20	65
New Hampshire (Upper & Grad.)	30	60	18	70
New York CUNY (classroom)	30	80	22	75
CUNY (small room)	30	80	22	75
CUNY (lecture hall)	30	80	22	75
New York Univ. (classroom)	30	60	22	75
University (small room)	30	60	22	75
University (lecture hall)	30	60	22	75
North Carolina	35	65	20	75
Ohio: (2-year Colleges): Technical	31.5	67	N/A	N/A
Comm Colleges	31.5	67	N/A	N/A
University	31.5	67	22.5	80
Oklahoma: < 1,000 enrollment	27	40	24	*80
1,000 - 2,999 enrollment	28.5	40	24	*80
> = 3,000 enrollment	30	40	24	*80
Oregon: (Upper & Grad.)	33	60	16	75
Penn.: (CCs) # of classrooms:				
10-25	32	75	26.0/24.0	80

	26-45	36	67	26.0/24.0	80
	46-70	36	67	26.0/24.0	80
	71-125	30	75	26.0/24.0	80
	126 & Over	23	80	26.0/24.0	80
South Carolina (University)		35	60	16-18	75
South Dakota: Univ. Assoc. Arts		32	65	18	80
University BA & Masters		30	60	20	85
Doctoral		28	55	16	75
Tennessee		30	67	18	80
Texas		38	67	25	80
Utah		34	67	22.5	80
Virginia		N/A	N/A	N/A	N/A
Washington: University	Net seat hrs. =	20	60	20	80
Wisconsin		30	67	24	80
Wyoming		33	60	20	75

* Oklahoma's space standards are presented as **additive** for two academic terms and, thus, appear to be twice as high as they are in practice.

Sources: MGT of America report *Space Standards for Selected States' Higher Education Systems*; CPEC Report 90-3, *A Capacity for Learning*.

With regard to utilization rates for classrooms, as Table 6 shows, for weekly room hours only community colleges in Florida have higher utilization rates than those in the Commission's utilization guidelines for California. We note that the information collected in 1988 on Oklahoma's space standards indicates that they are presented as additive for two academic terms; thus, they appear to be twice as stringent as they actually are in practice. For station occupancy rates in classrooms, only selected institutions in two states (New York and Pennsylvania) have higher station occupancy rates for classrooms than the Commission guidelines set for California institutions. For weekly room hours anticipated for teaching labs, no state has higher rates than California and only one state (Arizona) has any higher station occupancy rates for teaching labs than the Commission standards for California.

The information in Table 6 shows that the 1990 Commission space usage guidelines are still among the most stringent in the nation, more than a decade after their adoption. The information in this table is best viewed in the context of the information provided by other states on the level of flexibility from space standards that are allowed in higher education institutions in their states. Given this, the picture that emerges nationally is one of lower anticipated levels of space usage in nearly every other state, higher education system, and level of instruction than is written into California's legislatively-adopted standards. As this and other research shows, California's 1971 – 1973 facilities utilization standards are not representative of the findings and policy determinations around the nation in this area, while the 1990 Commission guidelines are still current in the national literature on this subject.

In its January, 2002 report the Legislative Analyst offers the following comment:

If UC utilized its facilities at 100 percent of the utilization standards (each station used 35 hours per week and each teaching laboratory station used 20 hours per week), it could serve over 40,000 additional FTE students with its current facilities. (LAO 2002, page 12).

It would be virtually impossible for the University of California to achieve and maintain a level of 100 percent of the 1971 – 1973 utilization standards. The Commission is unable to find any evidence nation-

ally that such a rate of utilization has ever been achieved. The Analyst goes on to recommend that "... the Legislature direct the segments to operate their instructional facilities at least as intensively as called for by the existing utilization standards." (LAO, 2002)

Further, this Legislative Analyst Office' recommendation fails to recognize the human element in space usage, the downtime necessary for repair and maintenance of the facilities, and other uses of the facilities that fulfill the State's goals for the systems such as pre-collegiate outreach and public service. In addition, the state's public higher education facilities face a mounting problem of maintenance deferral due to funding shortages and the challenges of attaining modern functionality in increasingly aging infrastructure and grounds with only limited repair and replacement funding. The national research fully validates the Commission's position on facilities utilization.

Turning to the Commission's 1990 research on utilization rates in California's public postsecondary systems, classroom utilization in the systems varies somewhat by student attendance patterns. The University of California is almost entirely a full-time student institution (except for its Extension program), whereas evening coursework is almost exclusively a part-time student phenomenon. As such, UC has generally experienced high utilization during the daytime, but much less in the evening. Ironically, all nine UC campuses use vast amounts of space for UC Extension activities in the evening; however, none of this utilization counts towards satisfaction of the classroom utilization standard, since UC Extension is a self-supporting operation.

The part-time nature of evening student enrollments makes it easier for the community colleges and the State University to come close to the 1971 – 1973 classroom utilization standards, since their evening usage counts toward satisfaction of the space standard. Neither system does well with laboratories (in terms of the old use standards), however, since relatively fewer labs are given in the evenings. Yet even with large evening programs, CSU and CCC campuses still have difficulty meeting the legislative classroom utilization standard except under conditions of overcrowding. In its work leading up to the 1990 Commission space guidelines report, Commission staff found that the State's high classroom utilization standards have not had the intended effect of increasing utilization, but only of slowing down the construction of classrooms, which are the cheapest kind of instructional space to build. As a result, it is quite possible that the community colleges and the State University have of necessity built more of the more costly teaching laboratories than they may have actually needed in order to help meet their classroom space demands. The legislatively-adopted teaching lab standards are more generous than are classroom standards but this space is more expensive to construct than classroom space.

A final point here is the distinction between classrooms and teaching laboratories. From an operational if not a cost perspective, this distinction has become blurred in recent years. It is now almost impossible to say that a computer lab is not really a classroom, any more than it is possible to build a new classroom without terminals for computers. As such, rigid space allocation and utilization standards for these two types of space as *separate* functions may no longer be relevant.

Reporting on Utilization

In its January, 2002 report, the Legislative Analyst notes that the community colleges and State University do not report the actual utilization of their classrooms and teaching laboratories. The Analyst recommends that the Legislature direct the community colleges and State University to report their space utilization biennially and by actual hours per week of room use, as is done by the University of California.

In *A Capacity for Learning* (CPEC, 1990), the Commission recommended that all three segments conduct utilization studies every other year, a recommendation implemented only by the University of California. UC accepted and implemented virtually all of the rest of the 1990 Commission study's recom-

mendations as well. The State University did not complete what had been a very comprehensive effort in this area, because, as they pointed out, actual classroom and teaching laboratory utilization in the CSU had changed very little for at least two decades. CSU officials said they failed to see the point of spending resources on a largely unimportant effort, since only the Commission ever used the data, and then only while conducting its space utilization study. CSU officials note that a major factor in their decision to end their detailed utilization studies was, and continues to be, the system's move away from traditional lecture and laboratory space to carry out instruction. CSU estimates that presently 28 percent of the instruction on its main campuses is carried out in facilities other than strict lecture classrooms and teaching laboratories.

With regard to the community colleges, the Commission's 1990 report recommended that utilization reports be completed as well, but only if the California Community Colleges Chancellor's Office was granted the personnel needed to do so. All of the parties to the Commission's 1990 study realized that the time-intensive nature of such reporting, with more than 100 colleges involved, would create an unacceptably heavy workload for the Chancellor's Office staff. When subsequently presented with this budget request, the legislature did not approve these staffing positions and the Chancellors' Office did not get the personnel needed to do the systemwide survey. As a result, no community colleges utilization studies were completed.

Given the potential utility to the state of such reporting by the systems, this 1990 Commission recommendation still has merit and Commission staff continues to recommend that the state's public higher education systems provide these reports to the Commission annually, for transmittal to the Legislature and Governor. (One version of such language was agreed to as part of the final 2002-03 Budget for the State of California.)

Summary of Commission's Findings

This Commission research concludes that the Commission's 1990 space and utilization policies are a great improvement over the 1955 – 1966 standards currently in place for the state. The 1990 space guidelines report's recommendations have even had some influence abroad, as the Commission received requests for it and supporting documentation from Australia, New Zealand, the United Kingdom, Israel, Turkey, and a Chinese delegation when they visited California. Commission staff recognizes that even these revised 1990 space policies are now more than a dozen years old and not up to current practices. Real-time space utilization now assumes year-round usage, intersegmental (joint) planning and usage of buildings, program flexibility and other concepts not even dreamed of when the 1960s Coordinating Council space policies were adopted. As such, the Commission suggests that when resources are available, it revise its 1990 facilities space and use policies. Until that time, Commission staff encourages the Legislature to provide the California Community Colleges, the California State University, and the University of California with the flexibility needed to develop facilities that meet the academic, programmatic, and research needs of institutions of higher learning in the twenty-first century.

The response to a follow-up question provided by the University of Wisconsin at Madison perhaps best summarizes the evolving national consensus on the use of space and utilization policies in higher education:

These space guidelines serve more as a "starting point" for planning new space than as hard-and-fast standards. The University of Wisconsin, Madison has flexibility to seek comparisons to programs or projects at peer institutions. Ultimately, each project is evaluated on the merits of the program and these peer comparisons, rather than on the comparison to the space standards. (UW-Madison, Space Management Office, April 2002).

California's public postsecondary education infrastructure is worth tens of billions of dollars and the maintenance of the physical plant is costly. Updated space allocation and utilization policies will better facilitate contemporary construction and building renovation techniques. Advances in these areas have lengthened building life and utility far beyond that envisioned in traditional space and utilization standards. The combination of modern space planning policies and modern building design will increase the efficiency and sustainability of California's institutions, thus lessening capital outlay costs over time.

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California Postsecondary Education Commission. *A Capacity for Learning*. Commission Report 90-3. Sacramento: The Commission, January 1990.

--. *Time and Territory: A preliminary Exploration of Space and Utilization Guidelines in Engineering and the Natural Sciences*. Commission Report 86-2. Sacramento: The Commission, February 1986.

--. Commission staff survey "Higher Education Space and Utilization Polices Survey". Sacramento: The Commission, May, 2002.

Coordinating Council for Higher Education. *Evaluation of Year-Round Operations at the University of California and the California State Colleges: A Report Prepared for the Coordinating Council for Higher Education By Touche, Ross, Bailey and Smart*. Council and consultant's report. Sacramento and San Francisco, California: The Council, September 23, 1968.

--. *Space and Utilization Standards in California Public Higher Education*. Council Report 66-11 (Revised). Sacramento and San Francisco, California: Sacramento: The Council, September 23, 1968.

Florida Postsecondary Education Planning Commission and MGT of America, Inc. *A Review of Community College and State University Facilities Space Planning Models: Final Report and Recommendations by the Florida Postsecondary Education Planning Commission*. Tallahassee, Florida. January 2000.

Legislative Analyst's Office. *Building Standards in Higher Education*. Sacramento. January 2002.

Oregon University System, *Facilities Standards and Guidelines: Chapter VIII – Facilities standards and Guidelines*. Eugene, Oregon. August 1998.

Paulien & Associates, Inc. *Space Utilization Standards & Space Needs Model*. Denver, Colorado. June 1999.

--. *Systemwide Utilization & Space Needs Modeling Study*. Denver, Colorado. Minnesota State Colleges and Universities. December 2001.

Storey Consulting Educational Planning & Analysis. Memorandum "The Legislative Analyst's Office's Most Recent Space Standards Analysis." Sacramento. March 5, 2002.

Space Standards for Selected States' Higher Education Systems. MGT of America, Inc. Seattle, Washington. September 1999.