

Relief of Impaction of Academic Units Near-Term Planning Committee

January 8, 2002

Charge

The Near-Term Planning Committee (NTPC) has been charged with identifying impacted academic programs, developing a plan for relief of this impaction, and recommending an allocation of resources to accomplish this relief. The NTPC's recommendations apply to the period from academic year 2002-03 through the academic year 2004-2005, and address near-term strategies for accommodating enrollment growth, including allocation of faculty FTE, staff and support budgets. This report is prepared for the Executive Vice Chancellor and Provost and for the Academic Senate's Budget Committee.

Committee Membership

William Webster, Vice Provost-Academic Planning & Facilities, Chair
Richard Black, Director-Financial Aid
David Dowall, Chair-Academic Senate
Tony Falcone, Representative Undergraduate ASUC
James Hyatt, Vice Chancellor-Budget & Finance
Cathy Koshland, Vice Chair-Academic Senate
Christina Maslach, Vice Provost-Undergraduate Affairs & Instructional Technology
Horace Mitchell, Vice Chancellor – Business and Administrative Services
Genaro Padilla, Vice Chancellor-Undergraduate Affairs
Gary Penders, Director-Summer Session

The NTPC was appointed in June, 2001 and has been meeting regularly throughout the Summer and into the Fall of 2001. This report represents the consideration of the relief of impaction on academic units. The NTPC is currently considering the concomitant issue--the effect relief of impaction will have on the budgets of the various student services units. This report is anticipated to be completed during January 2002.

Report Organization

This report has five sections: 1) the definition of impaction; 2) the process employed by the Committee in gathering data; 3) issues addressed and assumptions upon which the Committee based decisions; 4) findings and recommendations for resource allocation to relieve impaction; and 5) implementation. An appendix summarizes the impaction data.

I. Definition of Impaction

After considering the complex problem of impaction from many perspectives, the NTPC decided to define impaction from the point of view of the student, and adopted the following operating definition:

Impaction is an insufficient capacity in a program compared with both the student demand for the program and the quality standards in competing programs across campus. Both undergraduate and graduate programs are included.

Using this definition, the NTPC identified several typical examples of impaction:

Highly qualified students applying for entrance into Berkeley are being turned away from impacted programs, whereas the same students would be easily admitted into another program on campus.

Highly qualified Berkeley students are unable, as a result of impacted program space limitations, to declare their desired major even though they could be easily admitted into other majors.

Berkeley students cannot enroll in gateway courses, required breadth courses, or courses that are a pre-requisite to the major because the impacted program classes are full or there are not enough sections to accommodate the demand.

II. Process

In order to address its charge, the NTPC followed a process involving many steps:

A. Data were collected concerning each of the academic units on campus. These data were for the years from 1994-95 through 1999-2000 and included:

- Enrollment of students in the program and the student credit hours (SCH) generated by the unit.
- FTE permanent faculty, lecturers, temporary faculty and GSIs in the unit.
- FTE staff in the unit.
- Space assigned to the unit.
- S&E and other components of the permanent budget.
- Existence of caps on entrance into the unit, statistics concerning admission and yield rates for freshman, community college transfers and graduates.
- A list of courses that are traditionally over-subscribed and have long waiting lists.

These data were collected using Cal Profiles, SIS and other sources. Copies of the data were supplied to the members of the NTPC and to all of the deans.

In order to display the data in a compact form, the committee agreed to average the multiyear data using a “sum of the digits” weighting¹. A summary of these averaged data is included as the Appendix of this report.

- B. Because the NTPC was convinced that the substantial data collected in Step A above could reveal only part of the impaction, the committee decided to conduct interviews with each of the deans. Two members of the NTPC conducted each interview using a common interview instrument. These interviews were summarized and used as one foundation for the committee’s deliberations.
- C. Each unit was asked to do a self-evaluation of impaction. Those units who believed that they were impacted were invited to submit proposals for relief of the impaction. The units were directed to focus on the use of Summer Sessions for this relief. These proposals were submitted to their dean. The deans then submitted all of the proposals from their school or college to the NTPC together with their own comments.

The NTPC received 45 proposals for relief of impaction from 13 schools / colleges. In total these proposals requested:

- 2340 undergraduate FTE students including
 - 1416 in Fall / Spring
 - 924 in Summer Sessions
- 197 graduate FTE students
- 60 staff
- \$4.7M in TAS and GSI support
- \$1.2M in S&E expenses.
- 80,000 asf for offices for faculty and staff and for faculty laboratories.
- \$200K for startup and other funds.

These proposals reflect a consensus that most of the current impaction lies in the undergraduate area. Most of the proposals for graduate enrollment were based not on impaction at the graduate level, but rather on the need for graduate students as GSIs to help in the increased teaching at the undergraduate level necessary to relieve impaction.

- D. The proposals from each school / college were reviewed by the NTPC using the following five criteria:
1. Responsiveness
 - How well does the proposal respond to the call?
 2. Merits of the Impaction Case
 - Does the diagnosis of impaction presented in the proposal make sense and is this diagnosis consistent with campus data on impaction?

¹ In this scheme, the 1999-2000 year’s data is multiplied by a weight of 6, the 1998-99 year’s data is multiplied by a weighting of 5, etc. These weighted data are summed and divided by 21 (the sum of 6+5+4+3+2+1) to yield an average that, though biased towards the most recent data, still reflects an influence of the earlier data.

Is the estimate of the number of students to be increased in the courses identified for relief realistic?

3. Feasibility

Does the proposed relief predominantly use Summer Sessions?

Does the proposed relief require at most a very modest amount of new space?

4. Efficiency

How does the proposed relief of impaction compare with current measures of teaching load, staffing and S&E expenses?

5. Connectivity

Do the identified courses affect students only in the major of the proposer or will relief of impaction affect students in many different majors?

How far down will the relief flow?

- E. The NTPC considered the reviews of each proposal and the parameters of the implementation. From this detailed analysis, it developed a plan for relief of impaction that is outlined below.

III. Issues and Assumptions

A. Workload

At the time the Near-Term Planning Committee was established, there were approximately 3000 more students that needed to be accommodated in order to reach the enrollment growth targeted increase of 4000 students above the 1998-99 academic year levels. The Strategic Planning Committee (SPC) has determined that the allocation of these students and the resources associated with them should be used in three ways: relief of impaction, new strategic thrusts, and “elastic” growth of existing majors. The NTPC is focusing only on the first of these growth components. The SPC will be recommending allocation of the 3000 students amongst the three growth components in its final plan in Spring 2002.

Since the SPC deliberations are not yet complete, the NTPC has adopted the notional view that approximately 1000 students (1/3 of the remaining 3000 student growth) will be allocated for the purpose of impaction relief. The time horizon for the NTPC is three years and the resources corresponding to the 1000 students are to be spread more or less uniformly over this time. That is, resources for about 330 students will be allocated for each of these next three years, beginning with the budget cycle for 2002-03. After the completion of the strategic planning exercise, the proposed number of students allocated for relief of impaction will be re-examined and refined in consideration of the other growth components identified by the SPC. These considerations may modify somewhat the allocations in the out years. The discussion below is based on the first year’s allocations. If subsequent year’s allocations are modified, it is assumed that the modifications will affect the numbers accordingly.

B. “Coin of the Realm”

The NTPC has assumed that the “coin of the realm” is the increase in workload as measured by Student Credit Hours (SCH). In other words, the proposed increase in SCH will implicitly carry with it the resources normally associated with workload increases for the particular unit in question. SCH are used rather than FTE to unambiguously differentiate workload (measured by SCH) from headcount, the number of students enrolled in a major. Further, the campus receives funding for enrollment increases based on the workload as measured by the student FTE² derived from the SCH³.

The resources corresponding to the allocated SCH can be utilized to fund a number of different elements: faculty, staff, TAS budget, GSIs, S&E expenses, space, etc. The balance and type of resources will vary from program to program depending on current practice and specific needs to accommodate increased enrollment. The translation of SCH into specific resources is to be accomplished using the existing budget process: the recommended increase in SCH for any unit will form the basis for proposals from the units for increased faculty and staff FTE and other resources as part of the unit’s budget submission. The Academic Senate’s Budget Committee and the Executive Vice Chancellor and Provost will review these proposals and the actual resources corresponding to the SCH will be allocated as a result of these deliberations.

C. The Number and Distribution of FTE Students

As mentioned above, the proposals indicate that most of the impaction resides at the undergraduate level, but relief of some of this impaction will require additional graduate students for use as GSIs. Thus, the NTPC proposes that the annual allocation of 330 student FTE be divided in the following way:

- 20 graduate student FTE
- 200 upper division student FTE
- 110 lower division student FTE

² At the current time, the campus receives \$9,158 per budgeted student FTE. In addition, the campus receives 2/3 of the education fees of \$2,716, or \$1,812 (the remaining 1/3 of these is reserved for financial aid). The total is \$10,970 per additional student FTE and these monies are the resources that the campus has available for funding the various costs associated with the increase in enrollment. These monies are allocated in the following way:

General Support:	
Campus services (libraries, health services, police, recreation, etc.)	\$2,984
Academic support (campus average, actual amounts vary by department):	
Departmental support (staff, S&E, etc.)	1,811
GSI support	749
Faculty salaries	3,064
Benefits, appointment upgrades, etc.	<u>2,362</u>
	<u>\$10,970</u>

³ One FTE corresponds to 30 student credit hours (SCH) for undergraduate courses and to 24 SCH for graduate courses.

The current undergraduate workload consists of 64% upper-division student FTE and 36% lower-division student FTE. The NTPC assumed that the increased population of undergraduate students resulting from relief of impactation will also reflect these percentages in arriving at the distribution of the upper and lower-division students above.

The NTPC also assumed that, in concert with typical enrollment patterns, 75% of the lower-division FTE will involve service and general education courses (typically humanities, physical sciences, mathematics, etc.) and the remaining 25% will involve gateway courses in preparation for declaring a major. It was also assumed that 10% of the upper division FTE will involve service and general education courses and the remaining 90% will involve coursework in particular majors. Thus, the number of undergraduate student FTE resulting from courses in the impacted majors will be approximately 208 (25% of 110 lower-division student FTE plus 90% of the 200 upper-division student FTE). The number of undergraduate student FTE resulting from courses in service and general education courses will be approximately 102 (75% of 110 lower-division student FTE plus 10% of 200 upper-division FTE).

Finally, the NTPC assumed that the graduate student FTE will be in majors that need additional GSIs to mount the increased course workload, and will therefore be distributed between the service and general education courses on one hand and the gateway courses in the impacted majors on the other. The NTPC assumed that 100% of the service and general education courses will require GSIs, and that 25% of the non-service and general educational offerings in the targeted impacted departments are gateway courses and will require GSIs.

With these assumptions, the proposed annual allocation of FTE students is approximately as follows:

- 8 graduate student FTE in impacted majors
- 208 undergraduate FTE in impacted majors
- 12 graduate student FTE in majors providing service & general ed. coursework
- 102 undergraduate FTE in service & general ed. coursework

In terms of SCH, these translate to:

- 192 graduate SCH in impacted majors
- 6240 undergraduate SCH in impacted majors
- 288 graduate SCH in majors providing service & general ed. coursework
- 3060 undergraduate SCH in service & general ed. coursework

An allocation of these SCH to individual units will be proposed in the subsequent sections. The selected units should include a request in their budget process submission for the resources that are associated with these SCH. Units will agree to increase their workload in the corresponding sessions in accordance with the general strategies presented in their proposals to the NTPC.

D. Fall/Spring and Summer Sessions

Because of the limitations set forth in the current Long-Range Development Plan (LRDP), the Berkeley Campus is constrained to focus much of its near-term enrollment growth in Summer

Sessions. The graduate student SCH part of the Near-Term Plan will necessarily be mostly in the Fall/Spring since almost all graduate coursework is offered during these semesters. There is no plan to expand significantly the summer offerings of graduate courses. It is also anticipated that not all of the enrollment growth of the undergraduates can be accomplished in the Fall/Spring semesters. As a result, the following annual target distribution of Fall/Spring and Summer SCH seems appropriate:

	Fall/Spring	Summer Sessions
graduate students	480	0
undergraduate students	3300	6000

E. Impaction and “Cascade” of Majors

With regard to impaction of majors, there is a difference between L&S and other colleges such as Engineering, CED, etc., where students enter a specific major on admission. In L&S all students are admitted as undeclared and generally are admitted into a major of their choice by the time they become juniors. Some of the “capped” majors (Business, Psychology, Economics, etc.) since they cannot accommodate all of the students that wish to declare them. These capped majors usually regulate acceptance through a requirement for a minimum GPA. Many students who are not admitted to their first choice of major are forced to select an alternate major. Some students go through several rounds of applications to majors before they are finally enrolled in a major. The following table is derived from data obtained from L&S and lists the typical majors students apply for (lower part of the table) when they are refused entrance into certain capped majors in L&S (the headings).

Business	Economics	PEIS	Mass Comm.	Computer Sci.	Psych.	Social Welfare
Econ	ISF Legal Studies American Studies Political Science PEIS	Developmental St. ISF	American Studies Political Science	Cognitive Sci. Math Economics Statistics ISF	Sociology ISF Social Welfare Anthropology	Sociology Anthropology American St ISF

The data from which this table was derived are anecdotal since the units do not now collect them systematically, but an examination of the table reveals a “cascade” of impacted majors. Students will continue the application process until they find a major in which they are accepted. Relief of impaction in one of the most impacted majors may also relieve somewhat the impaction in other majors since the “spill-over” will be eliminated.

At this time there is no way to quantify the spill-over or to predict the effect elimination of impaction of the most impacted majors will eventually have on others. Therefore, it seems prudent to concentrate on the most impacted majors first and to re-evaluate the impaction of the current moderately impacted majors after the consequences of relieving the most critically impacted ones are known.

F. *Space*

Because of the ongoing seismic renovations of many campus buildings and the growth that we have already sustained, there is almost no space available on campus for new growth. Space resources that can be applied to the relief of impaction are exceedingly limited. Proposals for relief of impaction that fundamentally rely on large space allocations in addition to other resources cannot be accommodated at this time, independent of the level of impaction.

G. *Mix of Ladder-Rank Faculty, Lecturers and GSIs*

The responsibility for course teaching on the Berkeley campus varies from department to department and depends upon several factors: the course type, course level and content. For instance, a predominance of the general education classes (composition and writing, foreign languages, etc.) has been traditionally taught by lecturers and GSIs. Ladder-rank faculty typically teach gateway courses and courses specific to a major's curriculum. The allocation of resources to relieve impaction is not intended to change this pattern, but rather to replicate the pattern in a general way.

IV. Findings and Recommendations for Resources to Relieve Impaction

The NTPC has found that all of the programs for which there is indisputable evidence of impaction are programs that already have capped their enrollment or are growing so fast that there is considerable pressure to cap their enrollment. Although there are many other programs that exhibit evidence of an existing high workload, the impaction is less clear in these cases. Further, the NTPC feels that the mechanisms currently in place through the budget process should be adequate to resolve workload issues. Some proposals appear to be based on the belief that the program would have increased demand if the program were allowed to grow. Although the charge to the NTPC places these proposals outside its scope, the NTPC recommends that these proposals be resubmitted next year. At that time there will be two additional committees: one considering "elastic" growth of existing departments (under which the proposals in question might comfortably fit), and one considering programs in response to the new thrusts developed by the strategic plan.

All of the proposals were read in detail by the NTPC and evaluated as described in Section II above. After considerable deliberation, the NTPC developed a set of recommendations for the allocation of resources to relieve impaction and these recommendations are described in detail below.

The recommendations are divided into three parts. The first part (A) consists of the workload (SCH) increase that is aimed at increasing the number of students that can be accommodated by severely impacted programs. The second part (B) is the workload (SCH) increase to accommodate the indirect affects of impacted program relief: the increase in service and general education courses due to enrollment growth, wherever the enrollment growth occurs. The final part (C) consists of the graduate student workload associated with providing GSI support. Implementation of each of these parts will be dealt with separately.

It was possible to accommodate only about 40% of the requests and thus the proposed allocations for most programs are generally less than were requested for even the targeted programs. Typically, allocations for Summer Session were given precedence over those for Fall / Spring because of the constraints in the Long Range Development Plan (LRDP).

A. Severely Impacted Programs

The NTPC proposes relief for impacted undergraduate programs whose enrollment is capped or reaching a point where the program's ability to accommodate more students is in question. The resources proposed for the relief of targeted programs are to be *in exchange for* a defined minimum increase in enrollment (i.e., headcount in the major). In the case of capped programs, this is to be achieved through an easing of the caps in accordance with the proposals submitted by the programs, or preferably through elimination of caps. In all cases, the caps or the enrollments in place during academic year 2000-01 will be used as the reference in gauging the enrollment increase in a targeted program. Since the resources will be spread out over three years, it is anticipated that the enrollment will also increase concurrently with resource allocation and reach full augmentation at the end of the third year.

Because programs change over time, the NTPC does not wish to specify the exact course offerings or other remedies that any program will adopt in order to accommodate an increase in the enrollment. However, it is anticipated that the assigned increase in workload will follow the plan presented in the individual proposals. The NTPC suggests that, during the annual budget process throughout the three-year ramp-up period, the targeted programs should provide the Executive Vice Chancellor and Provost and Budget Committee with data to facilitate evaluation of the unit's progress in following its relief strategy. These should include data on enrollment, any enrollment cap, and the workload increases both for the Fall/Spring and the Summer Sessions. The targeted programs and the recommendation for allocation of resources are given in the following table:

	Minimum per year Increase in Enrollment	Recommended Distribution of Impaction Resources for Each of Three Years	
		Fall / Spring	Summer
Business	50	600	600
Engineering	25	300	300
L&S - Social Sciences	140	1650 ⁴	1650 ⁴
L&S - UGIS	25	300	300
International & Area Studies (PEIS)	15	150	150
Social Welfare ⁵	15	150	150

⁴ Social Sciences allocation for both Fall /Spring and Summer 2002-03 is 1800 SCH in order to "jump start" their relief of impaction.

⁵ Social Welfare's proposed allocation is for years 2003-04 and 2004-05 only.

B. General Education Courses

A general increase in the population of undergraduates on campus will lead to an increase in lower division general education course workload across almost all schools and colleges on the campus. The committee assumes that this workload increase will be distributed proportional to current workload distribution.

The weighted-average lower division workload by school/college derived from the data collected by the NTPC is shown in column two below. Column three shows the distribution of the 3060 SCH per annum earmarked for general education courses, based proportionally on the historical workload data of column two. Increases of less than 70 SCH per annum over the three-year ramp-up period would result in resources significantly less than those required to justify one new faculty FTE in this period and, thus, would be indistinguishable from the normal variations in year-to-year workload. Column three therefore shows the 3060 SCH distributed proportionally over the five schools/colleges with proportional values greater than 70 SCH.

	Average LD Historical SCH Workload ¹	Proportional Distribution of 3060 SCH ⁶
Chemistry	17190	225
College of Engineering	14280	187
College of Environmental Design	3030	
Arts & Humanities ⁷	55470	855
Biological Sciences	8970	117
Physical Sciences	47790	624
Social Sciences	60060	784
UGIS	8400	110
CNR	8160	107
Business	2550	
Education	3930	
SIMS	30	
Journalism	780	
Law	780	
Optometry	210	
Public Policy	510	
Public Health	1830	
Social Welfare	210	
Energy	90	

⁶ Proportional values less than 70 SCH are set to zero.

⁷ After applying the 70 SCH minimum (see note 7 above), the sum of the proportional allocations was 2879. The NTPC decided to assign 130 SCH of these unassigned per-year resources to L&S – Arts & Humanities in recognition of the fact that these resources will have to be distributed over a large number of individual departments.

The NTPC recommends that the per annum workload increases shown in column two be assigned to the eight schools/colleges shown. The implicit assumption is that these workload increases be derived from offerings mostly in the Summer Sessions. The NTPC does not wish to specifically recommend how the resources associated with these workloads should be distributed within the corresponding schools/colleges, since the deans are more likely to be informed about the needs within their unit.

C. Graduate Students

There is a need for GSIs to mount the coursework to relieve the impacted programs and to mount the general education courses discussed above. As a result, these workload increases are of a different character from the others: it is the workload created by these graduate students taking coursework in their majors *separate* from their duties as GSIs. It is anticipated that the distribution of these workload increases over the affected units would not be sufficient to justify a single faculty FTE in any of the corresponding departments. However, the resources associated with the workload increases in combination with the specific resource recommendations for impacted programs or general education course allocations may be used to justify faculty FTE. The NTPC notes that the financial support for the actual teaching by the GSIs is already comprehended in the allocation of workload to relieve the impacted programs and to mount the general education courses.

The following table shows the proposed yearly distribution of graduate SCH increase corresponding to the GSI need in the targeted programs above. Note that the SCH here are graduate SCH and therefore are “worth” 20% more than the undergraduate SCH used for the other two parts of the recommended allocation.

	GSI Workload for Relief of Impaction	GSI Workload for Teaching General Ed.	Total GSI Workload Increase
Business	43		43
Chemistry		23	23
College of Engineering	21	19	40
L&S - Arts & Humanities		73	73
L&S - Biological Sciences		12	12
L&S - Physical Sciences		62	62
L&S - Social Sciences	117	78	195
L&S - UGIS		11	11
Social Welfare ⁸	9		9
CNR	11	11	22

Because providing this information was time-critical, the NTPC developed summaries of its evaluations and proposed allocations listed above for each of the 13 schools and colleges that

⁸ For years 2003-04 and 2004-05 only.

submitted proposals before this report was completed. These summaries were distributed on December 13 to EVC&P Gray, the Budget Committee and relevant deans. Each summary was tailored for the individual school or college and, as a result, these are not appropriate for general distribution and are not be attached to this report. For completeness, however, we will describe the contents of these summaries here.

Each summary consisted of three components. The first component is a qualitative evaluation of the proposal. This qualitative evaluation addresses each of the five criteria mentioned in Item D of the Process section above and each is a compilation of the evaluations from at least two members of the NTPC. The second component is a quantitative evaluation with one sheet for each proposed program. The top section of each quantitative evaluation sheet includes a summary of the specific requests of each program. The requests are compared with the current school or college average and with the campus average. Using standard cost data, the requests are “monetized”⁹. That is, the permanent annual cost of each component is estimated. The total permanent cost of each request is then divided by the student FTE and SCH so that these costs can be easily compared to the income from these students. The lower section of each quantitative evaluation sheets is a summary of the impact measures derived from the data collected and an interpretation of these measures. The third component is a summary of the committee findings, a proposed allocation of SCH for the three years, and the NTPC’s expectations of the results from these allocations.

Since these summaries were transmitted in full to the Executive Vice Chancellor and Provost and the Budget Committee, with the portion that applies to a particular school / college transmitted to the corresponding deans, these will not be duplicated here, but they will be considered as an integral part of this report.

V. Implementation

The allocations recommended in this report were transmitted individually to the deans on December 13, 2001 and were intended to inform the submission to the budget process from these Schools and Colleges. It is expected that the submissions from the units that the NTPC identified as impacted will contain a detailed plan similar to that submitted to the NTPC, but adjusted to reflect the recommended allocation. In particular, this plan should acknowledge the targeted growth recommended in the evaluation summaries and should be integrated with the department’s own self-evaluation and other requests. Units that have recommended allocations for service and general education (lower division) coursework should also comprehend these allocations in their budget submission. The corresponding plan should address how the school / college will accommodate the general growth needed in their lower division course offerings.

The allocations proposed by the NTPC are only advisory and are input to the comprehensive budget process. Actual allocations of resources will result from negotiations between the individual schools and colleges and the Executive Vice Chancellor and Provost as part of the normal budget process.

⁹ The average annual cost of space was not included in the totals nor were the estimates of the startup costs. These are shown for information only.

Appendix
Summary of the Impaction Data