Incentive-Based Budget Model
Undergraduate Tuition Allocation

*New or revised material is indicated by an asterisk.

The following information is intended to provide context for a discussion on allocating undergraduate tuition revenue within an incentive-based budget. This paper includes a general overview of tuition allocation, examples from other universities, data specific to UC Davis, and a proposed methodology to serve as a starting place for deciding the specific aspects of undergraduate tuition allocation.

PRINCIPLES

Before delving into the specifics of undergraduate tuition allocation, it is important to reiterate the over-arching principles of the UC Davis budget process. These principles should help inform the decisions to be made on specific aspects of the budget model.

1. Establish a sustainable funding model with incentives that advance the Vision of Excellence and the 2020 Initiative.
2. Advance and encourage campus strengths and priorities such as interdisciplinary scholarship and internationalization, as well as boost economic development.
3. Be transparent, linking authority with accountability.
4. Be as simple as possible to understand, administer and implement; rely on common and easily available data sources.
5. Encourage creativity and responsible risk-taking while providing for reasonable reserves and oversight.
6. Balance local autonomy with a strong sense of unity in vision and values.
7. Provide mechanisms for investments in fresh ideas at all levels.
8. Provide for reasonable transitions and bridging strategies.

TERMINOLOGY

For purposes of this paper, the term tuition includes tuition (formerly the educational fee) and nonresident supplemental tuition. For 2011-12, tuition is $11,220 per year. With the addition of the undergraduate nonresident supplemental tuition ($22,878), the total is $34,098 per year (see Appendix I for a summary of student fees). The Student Services Fee ($972 for 2011-12) is
excluded, because its uses are restricted to student services and cannot be used to directly support instruction. Campus-based fees ($1,668 - without health insurance - for 2011-12) are also excluded, because they are, in general, dedicated to specific purposes and are not available for the allocation process described in this document. And graduate academic tuition, tuition for professional degree programs and fees paid by students in self-supporting degree programs are excluded. As explained later, the topic of graduate tuition will be discussed in more detail in a separate paper.

Unless otherwise stated, the term unit is intended to refer to the primary campus organizational units that are led by a dean, vice provost or vice chancellor. Universities that have implemented incentive-based budgets tend to allocate funds at the highest level. There is no expectation that funds be distributed to departments using the same methodology that drive allocations to the schools, colleges and divisions.

The term financial aid encompasses a variety of mechanisms to help students pay education expenses. It includes federal, state and private sector support in the form of grants, loans and work-study programs. The term return-to-aid is the portion of tuition revenue that, per Regental policy, is dedicated to university-sponsored financial aid programs. Of the tuition paid by undergraduates roughly 30% is currently reserved for return-to-aid.

The term blended tuition refers to a pool of revenue that is the combination of resident and nonresident tuition. The amount of undergraduate tuition revenue per student that a unit receives will be based on the overall campuswide mix of resident and nonresident populations and not on a unit’s specific enrollment.

TUITION ALLOCATION WITHIN INCENTIVE-BASED BUDGETS

Incentive-based budgets are designed to allocate revenue directly to the units or activities responsible for generating the revenue. In general, universities with incentive-based budgets allocate tuition between the unit of instruction and the degree major (also known as the unit of enrollment). As we will see, the exact breakdown between instruction and degree major varies from campus to campus and may also evolve over time. In a recent report by the Education Advisory Board, all ten universities surveyed reported allocating at least 50% of undergraduate tuition to the unit of instruction.

The allocation between instruction and major for undergraduate tuition is usually different than that of graduate and professional tuition. This is due to the fact that graduate and professional students generally take courses in the same unit that offers the major. However, to incentivize interdisciplinary coursework, it is important to allocate some graduate tuition to the unit of instruction. Further, at UC Davis, a significant percentage of graduate academic students (approximately 45%) are enrolled in graduate groups that cross traditional school-college boundaries, so models from other universities may not provide sufficient guidance. Therefore, the details of allocating graduate tuition revenue will be discussed in a separate paper (anticipated to be available in winter quarter 2012).

Budget and Institutional Analysis

*Asterisk indicates new or revised material
TUITION ALLOCATION AT OTHER INSTITUTIONS

For comparison purposes, Table 1 shows the variety of allocation methods that exist at selected public universities with incentive-based budgets. It is also worth reviewing how the allocation at the University of Michigan has changed.

**University of Michigan**

When Michigan first implemented their incentive-based budget model in 1998-99, all undergraduate tuition dollars were allocated to the degree major. In 2002-03, the attribution was modified so that 25% went to the unit of instruction and 75% to the major. In 2008-09, Michigan revised the allocation once more. Now, the revenue is evenly split - 50% to instruction and 50% to major.

The undergraduate revenue allocated to units is a blend of resident and nonresident tuition. That is, the actual distribution of in-state and out-of-state students within a particular unit is irrelevant, since all units get credit for the campuswide mix of resident and nonresident undergraduates. Tuition at Michigan also varies by discipline (e.g., engineering students pay more than music majors) and by lower vs. upper division courses (e.g., lower division tuition for engineering majors is $6,700 and $8,600 for upper division majors). Michigan incorporates the differential tuition rates paid by students into their allocation model.

The original justification for allocating all of the revenue to the unit offering the major was to take away the incentive for units to create duplicate courses. Michigan wanted to avoid a situation where units that had never been responsible for general education courses suddenly began offering them as a means to earn more revenue. To put it another way, engineers should take writing courses in the English department, not in engineering. While Michigan avoided the outcome of duplicate courses, their system based solely on degree majors created an incentive to enroll as many students as possible in a major while ignoring the costs necessary to teach them.

As time went on, Michigan revised the allocations to provide a better link between the revenue and the cost of providing instruction. The change also provides greater incentives to offer courses that will benefit students from other units. As discussed in the section on incentives,
there must be controls in place regardless of the apportionment between major and instruction.

*University of Washington*
Rather than degree major, an alternative for measuring the number of students that a unit serves is to use degree awarded. Degree major considers the entire student body, while degree awarded includes only those students that have graduated. In general, universities that have implemented incentive-based budget models rely on degree major. However, the University of Washington uses degree awarded in its allocation of tuition. One reason is that undergraduates are not admitted to a particular college when they enroll and many do not declare a major for a significant portion of their academic career. Washington also feels that degree awarded emphasizes student retention and degree completion.

**WHAT ARE WE TRYING TO INCENTIVIZE?**
As pointed out in a study of how the Michigan budget model is perceived by campus citizens, it is important to be clear about the intent of the incentives that are created. As stated in the report, “incentives should work only within the units’ strategy; they should neither constrain nor encourage behavior or initiatives that do not fit the units’ strategy and mission.”

*Ideally, the allocation of tuition revenue should*
- Support the overall quality of the institution and the student experience.
- Encourage units to teach non-majors.
- Consider the relative cost of instruction and the cost of the major.

*The allocation of tuition revenue should not*
- Encourage units to create courses solely for the purpose of increasing revenue or to create courses already offered by another unit.
- Encourage behavior that is counter to the overall mission of the unit and the university.
- Create a barrier to cross-college teaching.

**CROSS-COLLEGE INSTRUCTION**

The metric most often used for determining the unit of instruction is student credit hours (SCH). For SCH at UC Davis, data systems distinguish between the course unit and the pay unit. The course unit is based on the academic unit offering the course subject. The pay unit is based on the instruction and research funding associated with the instructor’s academic appointment. Currently, some colleges and divisions have an arrangement whereby a professor from one college teaches courses in another college. The most predominant example of this type of cooperation is between the College of Agricultural and Environmental Sciences (CA&ES) and the College of Biological Sciences (CBS). Tenure-track professors within CA&ES are able to offer their expertise and their department is still responsible for the professor’s salary. Meanwhile, departments within CBS are able to provide courses that lead to a CBS degree without the financial burden of funding an instructor, but CBS does pay for teaching assistants, readers and other course support (e.g., lab preparation).

Budget and Institutional Analysis

*Asterisk indicates new or revised material*
For all campus units, this type of exchange currently accounts for about 4% of total undergraduate SCH, and the pay unit designation has generally been used for resource allocation decisions. However, cross-college instruction does fulfill a need for both parties and is generally reviewed as improving the quality of the student’s experience. Any new methodology for allocating tuition revenue should not discourage such arrangements. Therefore, as a starting assumption, when the pay and course units are different, then the SCH associated with the course will be credited to both units. While this inflates the total number of SCH, cross-college instruction should be encouraged whenever possible.

**DEGREE MAJOR VS. DEGREE AWARDED***

As previously mentioned, it is possible to use degree awarded as a metric for the allocation of tuition revenue, instead of degree major. Unlike the University of Washington, new students at UC Davis are admitted into a college or division. In fact, undeclared students are undeclared within a unit, so data is available for degree major and degree awarded.

One reason for using degree awarded is that it recognizes the transition of students out of one major and into another. In April 2009, BIA published an update on the percentage of undergraduate students who were admitted and graduated in a major in the same unit. See Update: New Undergraduate Students, Movement in and out of divisions/colleges. The report was based on the 2002 cohort of new students (freshmen and transfer) and compared their major in 2002 to their major at graduation as of 2008. As shown in the report, every unit experiences a flow of students in and out of their programs, but the net effect for each unit is not zero. Overall, approximately 11% of the students that started with a major in CA&ES, CBS, COE or MPS graduated with a major in HArCS or DSS. HArCS gained an additional 100 majors and DSS an additional 500 between admission and graduation.

Alternatively, the fact that students do transition to other fields of study can also be seen as a reason not to use degree awarded. Allocating resources based on degree awarded is akin to a winner-take-all system. All of the emphasis is placed on the end result, without regard to the process.

A reason for using degree major has to do with growth. In a growth scenario, if one unit experiences an increase in majors (in comparison to all other units), then the revenue associated with that growth will flow to the unit in the same academic year. But if the allocation is based on degree awarded, then the unit must wait for its new students to graduate before receiving the corresponding revenue. That is, if using degree awarded, the revenue related to the growth in majors is deferred, but the unit will still be burdened with the cost of those new students. And for units without significant general education courses, the lag is even more severe, because such a unit would not receive substantial revenue from SCH until year two or three.
Finally, both metrics - majors and degrees awarded - place an incentive on retaining majors, but degree awarded places an additional incentive on units to have a higher graduation rate. For degree awarded, no consideration is given for students that never complete a degree.

Instead of choosing between the two, the hypothetical allocation on the following page takes degree major and degree awarded into account. While this creates a more intricate formula, it acknowledges that incentivizing higher graduation rates is worth additional complexity. And degree awarded is not weighted so much that it severely impacts units that experience growth.

**COST CONSIDERATIONS***

In its current form, the budget model for UC Davis emphasizes revenue allocation over cost allocation. By distributing tuition revenue based on where it is generated (i.e., where the students are), the result is an allocation that deans will manage as an overall portfolio to maximize the alignment of income with expenses. But such a method does not address how costs differ by discipline, nor does it address how costs differ between upper and lower division courses.

Certain disciplines are more expensive to operate than others. The most direct way to deal with that is to charge differential tuition for the higher cost programs (e.g., University of Michigan). However, at UC Davis, all undergraduates pay the same tuition. In the absence of differential tuition, one option is to weight the SCH differently based on an understanding of how costs vary between programs. For example, the SCH for unit A might be counted at 80% of actual, unit B at 100%, and unit C at 150%, with the idea that unit C is the most expensive to operate, followed by B, then A. Instead of adjusting the weight of the SCH, the model currently assumes that the more expensive units will be supported by the provost supplement. The provost supplement will be a combination of unrestricted state dollars and revenue received from assessing those units that generate tuition (see Appendix II).

Another consideration is whether or not to weight lower division and upper division courses differently. Assigning a different weight is predicated on the assumption that upper division courses are more expensive than lower division courses. For example, the SCH of lower division courses might be counted at 100% of actual and the SCH for upper division courses at 150% of actual. Campuswide, upper division courses may be more expensive than lower division; however, this can vary widely within and between units. Some lower division courses require supplies, equipment and staffing not present in some upper division courses. Allocating resources equally allows each unit to manage its own portfolio of courses according to its own needs.

**HYPOTHETICAL REVENUE ALLOCATION***

Table 2 is a revised hypothetical distribution of undergraduate tuition revenue based on a 65-25-10 split between SCH, degree majors and degrees awarded, respectively (degrees awarded has been added in this version). The distributions shown in this table are based on the activity Budget and Institutional Analysis *Asterisk indicates new or revised material
from the last two years (average of 2009-10 and 2010-11). Degree majors and degrees awarded are based on duplicated counts. This means that if a student has declared a double major, then equal credit is given to both. The same is true for students who graduate with two degrees. When the pay and course departments are different, the SCH are credited to both units.

The initial version of this table was based on two metrics - SCH and degree majors. Units that have a higher distribution of SCH versus majors will receive more tuition revenue if the allocation is weighed more heavily on instruction. A shift from 65-35 to 75-25 would mean more revenue for the Division of Humanities, Arts and Cultural Studies (HArCS) and the Division of Mathematics and Physical Sciences (MPS). Conversely, a shift from 65-35 to an allocation weighed more heavily on majors (e.g., 55-45) would distribute more revenue to the College of Agricultural and Environmental Sciences (CA&ES), the College of Biological Sciences (CBS) and the College of Engineering (ENGR). The allocation split is less significant when the distributions of majors and SCH are equal or close to equal, such as with the Division of Social Sciences (DSS).

As explained earlier, the movement of students from one major to another impacts units differently. The data for degrees awarded when compared to majors shows that HArCS and DSS experience a net growth of students in their programs, and the other units experience a net loss. Therefore, the addition of degrees awarded at 10% of the allocation (absent from the initial hypothetical) means that HArCS and DSS will receive a slightly larger share of the revenue as compared to the others.
PROPOSED DETAILED METHODOLOGY

The following is a proposed methodology for allocating tuition paid by undergraduate students. Any of the points presented are open for debate and clarification. Unless noted otherwise, the specifics are taken from the University of Michigan.

1. All units receive credit for the universitywide blend of resident and nonresident tuition.
2. Revenue is split 65-25-10 between the unit of instruction, degree major and degree awarded, respectively (see hypothetical example).
3. A degree major is determined by the unit in which a student registers in a given term.
   a. Another university uses a three-year average to protect units from sudden shifts. In the example presented earlier, a two-year average was used.
4. For students pursuing a joint degree, each unit is allocated an equal share.
5. Unit of instruction is determined by SCH taught in the previous year (Washington).
   a. Another university uses a three-year average to protect units from sudden changes shifts. In the example presented earlier, a two-year average was used.
6. When the pay and course departments are different, each unit is given credit for the SCH (see hypothetical example).
### APPENDIX I

#### 2011-2012

**UCD STUDENT FEES SUMMARY**

(Annual fees unless otherwise indicated.)

<table>
<thead>
<tr>
<th></th>
<th>Total Fees &amp; Tuition</th>
<th>Fees &amp; Tuition Components</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Resident</td>
<td>Nonresident</td>
</tr>
<tr>
<td><strong>UNDERGRADUATE</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Full Time Undergraduate</td>
<td>$15,123</td>
<td>$38,001</td>
</tr>
</tbody>
</table>
| Family Nurse Practitioner/Physician Assistant<sup>4</sup>  
  - Student Entering 2011-12 | $17,560 | $40,438     | $12,912 | $1,052                    | $3,596             | $22,878                         |
|  - Continuing Student | $17,186 | $40,064     | $12,912 | $1,052                    | $3,222             | $22,878                         |
| UC Center at Sacramento  
  - Full Time UCCS Undergraduate (Quarterly) | $5,208 | $12,834     | $3,740  | $324                      | $1,144             | $7,626                          |
| **GRADUATE ACADEMIC** |          |             |         |                          |                   |                                  |
| Full Time Graduate    | $15,271 | $30,373     | $11,220 | $972                      | $3,079             | $15,102                         |
| In Absentia           | $4,909  | $20,011     | $1,686  | $144                      | $3,079             | $15,102                         |
| UC Center at Sacramento  
  - Full Time UCCS Graduate (Quarterly) | $5,257 | $10,291     | $3,740  | $324                      | $1,193             | $5,034                          |
| **GRADUATE PROFESSIONAL** |          |             |         |                          |                   |                                  |
| Graduate School of Management | $37,447 | $49,692     | $11,220 | $972                      | $22,176            | $3,079                          |
| School of Law  
  - Resident | $46,485 | $54,622     | $11,220 | $972                      | $31,218            | $3,075                          |
|  - Nonresident | $46,485 | $54,622     | $11,220 | $972                      | $27,110            | $3,075                          |
| School of Nursing    | $21,001 | $33,246     | $11,220 | $972                      | $5,730             | $3,079                          |
| School of Veterinary Medicine  
  - 1st thru 3rd Year Students | $32,975 | $45,220     | $11,220 | $972                      | $15,216            | $3,079                          |
|  - 4th Year Students<sup>5</sup> | $36,599 | $48,844     | $14,604 | $1,052                    | $15,216            | $5,727                          |
| Master of Preventive Veterinary Medicine  
  - Resident | $21,013 | $33,714     | $11,220 | $972                      | $5,742             | $3,079                          |
|  - Nonresident | $21,013 | $33,714     | $11,220 | $972                      | $6,198             | $3,079                          |
| School of Medicine<sup>4</sup> | $38,020 | $50,265     | $14,604 | $1,052                    | $18,636            | $3,728                          |
| Master of Public Health  
  - Resident | $23,729 | $36,430     | $11,220 | $972                      | $6,810             | $4,727                          |
|  - Nonresident | $23,729 | $36,430     | $11,220 | $972                      | $7,266             | $4,727                          |
| Health Informatics | $21,271 | $33,516     | $11,220 | $972                      | $6,000             | $3,079                          |
| Educational Leadership | $19,273 | $31,518     | $11,220 | $972                      | $4,002             | $3,079                          |

As a result of gubernatorial, legislative, Regental, and/or campus action, these fees may change without notice

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<sup>2</sup>A one-time fee of $159.00 is charged to entering international students who hold a F-1 or J-1 visa, excluding UC Education Abroad and non-UC Davis sponsored students (i.e. Fulbright or Vietnam Education Fund).

<sup>3</sup>Includes health insurance fees of $1,263 for undergraduates and $2,166 for graduate students (except Medical School students; see below). Undergraduate and Graduate students are automatically in the Student Health Insurance Plan (SHIP) unless they are able to prove comparable coverage under another insurance plan. Approximately 40% of UC Davis undergraduates are enrolled in SHIP, while 80% of UC Davis graduate students are enrolled. More information about the SHIP is available at [http://shcs.ucdavis.edu/insurance/index.html](http://shcs.ucdavis.edu/insurance/index.html). Health insurance fee is $2,130 for Medical School students. More information is available from the Office of Medical Education at [http://www.ucdmc.ucdavis.edu/medschool/financialaid/cost.html](http://www.ucdmc.ucdavis.edu/medschool/financialaid/cost.html).

<sup>4</sup>Undergraduate course materials and services fees (CMSF) are excluded. A course material fee of up to $80 per course may apply to some courses. See [http://budget.ucdavis.edu/studentfees/special-reports](http://budget.ucdavis.edu/studentfees/special-reports).

<sup>5</sup>School of Medicine and Family Nurse Practitioner/Physician Assistant (FNP/PA) students attend summer quarter and pay this fee schedule.

<sup>6</sup>4th year DVM students must attend summer quarter and pay this fee schedule.

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Budget and Institutional Analysis
APPENDIX II – Budget Model Basics

A working paper such as this one deals with a specific component of the budget model. Here are some notes on the larger context.

On Day One, No New Money

Implementing this budget model will not add resources to the system. New revenue is dependent on one or more of the following: additional students, higher tuition, increased research, or increased funding from the state. What the model will do is serve as a mechanism for revenue to flow in a more direct and transparent manner. For FY 2012-13, each campus unit will have a budget roughly equivalent to their budget for FY 2011-12. As always, this assumption is predicated on no further reductions in state support.

The Colors of Money

In the realm of fund accounting, people often talk about having different colors of money. What this budget model allows us to do is “re-color” some of the funds that units have traditionally received - the most prominent example being general funds. Going forward, we will be able to make a clear distinction between the portion of general funds that is tuition revenue and the portion that is unrestricted state support. As a technical matter, we may still refer to the combination of tuition and state dollars as general funds, and it may continue to be one fund number (19900) in the accounting system, but units will be able to forecast tuition revenue and manage the state support (or provost supplement – see below) on an incremental basis. In the aggregate, the campuswide transition of 19900 funds to tuition revenue and unrestricted state funds is displayed by the table on the right.

Provost Supplement

In the new model, state support goes directly to the Provost to become the foundation for the provost supplement. Added to this will be the revenue that comes from an assessment on units that generate tuition revenue and indirect cost recovery. The provost supplement will be used to help support academic and non-academic units.

Budget and Institutional Analysis  
*Asterisk indicates new or revised material
APPENDIX III – Distribution of Undergraduate Tuition Revenue by Mix of Major and SCH

The allocation of tuition revenue to campus units is often based on student hours (SCH) and the number of degree majors. The chart displays how the percentage of tuition revenue each unit would receive changes as the distribution of those two metrics is adjusted. The far left hand side represents an allocation based solely on SCH (100SCH – 0M). The far right is based entirely on degree majors (100M – 0SCH).

Note: Degree majors and SCH are based on a two-year average. Double-majors are counted twice as are SCH when the pay and course departments are different.