# STATE UNIVERSITY SYSTEM OF FLORIDA
# STRATEGIC PLAN METHODOLOGY

## *Y-AXIS GOALS AND INDICATORS*

Board of Governors Strategic Planning Committee

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*DRAFT FOR CIRCULATION*

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# I. State University System Goals

## *I.A. Access to and Production of Degrees*

### I.A.1. Bachelor Degrees

In December 2002, the Commissioner's Higher Education Funding Advisory Council recommended that Florida seek to reach the national average in number of bachelor degree graduates per capita. The recommendation reflected concern that Florida's low ranking (45th among the states) in per-capita bachelor graduates reflected inadequate access to four-year education. While not everyone should be expected to complete a bachelor degree, the Council believed the national average would be a reasonable, though challenging target to set for long-term planning. For further background on the Council's recommendations, see http://www.fldoe.org/HigherEdFundAdvCounc/default.asp/.

### I.A.1-4. Bachelor, Master's, Doctoral, and Professional Degrees

The targets in I.A.1-4 extend this reasoning to graduate degrees as well. The 2012-13 goals are all based on projections of the national average degrees per capita. Key data, assumptions and calculations used to arrive at the targets include:

- Projected U.S. Population age 18-44 in 2013: 109,708,000. U.S. Census Middle Series Projections. See http://www.census.gov/population/www/projections/natproj.html/

- Projected U.S. Degrees Awarded in 2012-2013:

| | |
|---|---|
| Bachelor: | 1,509,000 |
| Master's: | 556,000 |
| First Professional: | 95,900 |
| Doctoral: | 47,300 |

National Center for Education Statistics, *Projections of Education Statistics to 2013*, Middle Series Projection. See: http://nces.ed.gov/programs/projections/

- Given these projections, degrees per 100,000 population nationally in 2012-13 would be:

| | |
|---|---|
| Bachelor: | 1,375 |
| Master's: | 507 |
| First Professional: | 87 |
| Doctoral: | 43 |

- Projected Florida population age 18-44 in 2013: 6,307,817. Office of Economic and Demographic Research, *Florida Total Population by Age, Race, and Gender: April 1 1970-2025.* See http://www.state.fl.us/edr/population.htm/

- At the national average rate per capita, Florida's share in 2012-13 would therefore be:

| | |
|---|---|
| Bachelor: | 86,732 |
| Master's: | 31,981 |
| First Professional: | 5,488 |
| Doctoral: | 2,712 |

- This analysis assumes that the State University System's share of degrees awarded would remain constant.

**State University System degrees granted:**

| | 97-98 | 98-99 | 99-00 | 00-01 | 01-02 | 02-03 |
|---|---|---|---|---|---|---|
| Bachelor | 34,075 | 34,529 | 35,437 | 35,724 | 38,078 | 39,989 |
| Master's | 9,830 | 10,008 | 10,036 | 10,766 | 11,623 | 12,179 |
| First Professional | 1,128 | 1,141 | 1,237 | 1,245 | 1,335 | 1,380 |
| Doctorate | 1,121 | 1,064 | 1,115 | 1,221 | 1,270 | 1,315 |
| Grand Total | 46,154 | 46,742 | 47,825 | 48,956 | 52,306 | 54,863 |

- Although the baseline for planning is 2002-2003, the most recent year for which data are available on degrees awarded by private institutions is 2001-2002:

**Private Institution Degrees Granted in Florida, 2001-2002**

| | Bachelor | Master's | First Professional | Doctoral |
|---|---|---|---|---|
| Private Non-Profit | 16,403 | 8,003 | 1,747 | 839 |
| Private For Profit | 1,937 | 1,212 | 135 | 176 |
| Total | 18,340 | 9,215 | 1,882 | 1,015 |

Source: IPEDS (Integrated Postsecondary Education Data Set) Peer Analysis System. See http://nces.ed.gov/ipeds/

- Applying the system's share of all degrees granted (public + private) in 2001-02 to the 2012-2013 combined target yields:

| | | | |
|---|---|---|---|
| Bachelor: | 67.6% x 86,732 | = | 58,622 |
| Master's: | 55.8% x 31,981 | = | 17,845 |
| First Professional: | 41.5% x 5,488 | = | 2,278 |
| Doctoral: | 55.6% x 2,712 | = | 1,508 |

Reaching these targets would require the following annual growth rates in degrees granted from 2002-2003:

| | |
|---|---|
| Bachelor | 4.34% |
| Master's | 4.34% |
| Doctoral | 1.53% |
| Professional | 5.73% |
| All Degrees | 4.32% |

**Cost Estimates**

More detailed estimates of costs will be needed in the final strategic plan but cannot be made until universities have submitted their own projections. The numbers and methodologies for the current system-level estimates are for discussion purposes only.

**Estimated Instructional Costs**

The total full instructional costs from the 2002-2003 SUS Expenditure Analysis was divided by the total number of degrees produced in 2002-2003 to generate an estimated cost per degree. This cost per degree can be used as a benchmark of total full instructional costs that may be incurred to achieve the targeted degree production in the out years. It is not adjusted for inflation, so as expenses rise, cost-per-degree will also rise.

Costs may also change as a result of quality improvement initiatives, changing emphasis in degree programs or changing ratios of upper-division, lower-division, and graduate instruction.

**Estimated Capital Outlay Costs**

Preliminary projections of enrollment assume that enrollment will grow in proportion to bachelor degrees at the undergraduate level, and to doctoral, professional, and master's degrees at the graduate level. This would yield 241,948 FTE students by 2012-13 with Net Assignable Space Needs, using the current formulas, of 31,420,335 square feet. This is 12,528,235 more square feet than currently available. Total project costs to complete the additional square feet needed are estimated at $2,823,878,903 using December 2002 construction costs.

This amount has been distributed in proportion to the annual FTE increases projected from 2004-05 to 2012-13.

These figures represent the estimated expenditures needed. Because of the long-term nature of capital projects, however, appropriations for these expenditures might need to occur several years in advance.

In addition to the need for additional assignable square feet, there would also be additional infrastructure, renovation and maintenance needs to accommodate the growth.

## I.A.5. Access/Diversity

There are many forms of diversity to which individual institutions and the system need to be attentive. The broad measure on the Y-axis is the ratio of the representation of historically under-represented minorities (Black, Hispanic, and Native American) among SUS graduates (27.3% of graduates, excluding non-resident aliens and ethnicity unknown graduates, in 2002-2003) to their representation in the total18-44 year-old population (36.8% in 2003). In 2002-2003, this ratio was: 27.3 divided by 36.8 = 74.3%. If minority graduates were as well represented as they are in the total population, this figure would be 100%, which is the target for 2012-13.

This broad analysis needs to be broken down at various points in the degree pipeline. The following tables illustrate admissions, enrollment and completion gaps throughout the SUS pipeline. There are differences in how race and ethnicity are categorized in different data sources, but the overall patterns and discrepancies are still evident.

**2003 Florida Population Age 18-44 (Census Middle Series)**

| Asian Non-Hispanic | Black Non-Hispanic | Hispanic (Any Race) | American Indian Non-Hispanic | White Non-Hispanic |
|---|---|---|---|---|
| 2.0% | 16.8% | 19.7% | 0.3% | 63.3% |

*U.S. Census Population Projections. See* *http://www.census.gov/population/www/projections/natdet-D1A.html/*

**Florida Public High School Graduates (Standard Diploma), 2002-2003**

| Asian/Pacific Islander | Black Non-Hispanic | Hispanic | American Indian/Alaska Native | White Non-Hispanic | Multiracial |
|---|---|---|---|---|---|
| 2.7% | 19.2% | 17.3% | 0.3% | 59.7% | 0.8% |

*Florida Department of Education Statistical Brief, High School Graduates 2002-2003. See* *http://www.firn.edu/doe/eias/eiaspubs/pdf/graduates.pdf/*

**Summer/Fall 2003 SUS Admitted Students by Race/Ethnicity**

| | Asian-Pacific Islander | Black | Hispanic | Indian-Alaskan Native | Non-Resident Alien | White | Unknown Race |
|---|---|---|---|---|---|---|---|
| First-Time-In-College | 4.6% | 16.7% | 13.2% | 0.3% | 1.6% | 62.7% | 0.8% |
| Community College Transfer | 3.4% | 9.9% | 14.3% | 0.5% | 2.2% | 68.8% | 1.0% |
| Other Transfer | 3.4% | 10.6% | 11.3% | 0.4% | 7.6% | 65.8% | 0.8% |
| First Professional | 6.7% | 8.9% | 9.9% | 0.6% | 0.9% | 71.7% | 1.2% |
| Graduate (Incl. Post-Baccalaureate) | 2.8% | 7.6% | 7.2% | 0.2% | 22.5% | 59.0% | 0.6% |
| All Admitted | 3.9% | 12.7% | 12.0% | 0.4% | 6.4% | 63.7% | 0.8% |

**Summer/Fall 2003 SUS Applicants by Race/Ethnicity**

| | Asian-Pacific Islander | Black | Hispanic | Indian-Alaskan Native | Non-Resident Alien | White | Unknown Race |
|---|---|---|---|---|---|---|---|
| First-Time-In-College | 4.1% | 18.9% | 12.9% | 0.3% | 3.1% | 59.6% | 0.9% |
| Community College Transfer | 3.4% | 11.1% | 14.3% | 0.5% | 2.4% | 67.3% | 1.0% |
| Other Transfer | 3.5% | 12.8% | 11.0% | 0.4% | 9.7% | 61.5% | 1.1% |
| First Professional | 7.8% | 9.3% | 11.4% | 0.6% | 1.2% | 67.8% | 2.0% |
| Graduate (Incl. Post-Baccalaureate) | 2.6% | 7.8% | 6.9% | 0.2% | 32.2% | 49.6% | 0.6% |
| All Applicants | 3.7% | 13.9% | 11.5% | 0.3% | 10.5% | 59.1% | 1.0% |

**Fall 2003 SUS Enrollment by Race/Ethnicity**

| | Asian-Pacific Islander | Black | Hispanic | Indian-Alaskan Native | Non-Resident Alien | White | Unknown Race |
|---|---|---|---|---|---|---|---|
| Total | 4.5% | 14.6% | 14.9% | 0.4% | 4.0% | 59.9% | 1.7% |
| Total Undergraduate | 4.6% | 15.7% | 15.9% | 0.4% | 1.9% | 59.7% | 1.6% |
| Total Graduate | 4.3% | 10.4% | 9.9% | 0.4% | 12.8% | 60.3% | 1.9% |
| Freshman | 4.4% | 19.2% | 15.5% | 0.4% | 0.9% | 58.1% | 1.5% |
| Sophomore | 4.9% | 15.8% | 18.6% | 0.4% | 2.1% | 56.8% | 1.5% |
| Junior | 4.3% | 14.5% | 15.2% | 0.5% | 2.1% | 61.7% | 1.7% |
| Senior | 4.8% | 14.1% | 14.8% | 0.5% | 2.5% | 61.6% | 1.7% |
| Beginning Graduate | 4.7% | 11.0% | 11.0% | 0.4% | 8.5% | 62.5% | 2.0% |
| Advanced Graduate | 2.8% | 8.4% | 6.3% | 0.3% | 27.7% | 52.8% | 1.6% |
| Unclassified | 4.2% | 12.2% | 16.1% | 0.4% | 4.3% | 60.5% | 2.4% |

**2002-2003 SUS Degrees Granted by Race/Ethnicity**

| | Asian-Pacific Islander | Black | Hispanic | Indian-Alaskan Native | Non-Resident Alien | White | Unknown Race |
|---|---|---|---|---|---|---|---|
| Bachelor | 4.5% | 12.8% | 14.1% | 0.4% | 3.1% | 63.9% | 1.3% |
| Master's and Equivalent | 3.7% | 9.4% | 11.9% | 0.3% | 12.8% | 60.0% | 1.9% |
| First Professional | 7.5% | 11.6% | 8.7% | 0.5% | 0.7% | 70.4% | 0.7% |
| Doctorate | 2.8% | 5.9% | 5.4% | 0.4% | 20.7% | 63.4% | 1.4% |
| Grand Total | 4.3% | 11.8% | 13.2% | 0.4% | 5.6% | 63.2% | 1.4% |

**Other Access/Diversity Issues**

In addition to the broad issues of race and ethnic representation, there may be diversity issues at the program or institution level that differ from the larger patterns statewide. There will also be other diversity problems—in terms of geography, gender, age, disability status, family background, etc.—that institutions should identify and plan to address. Each institution's plan should enumerate its unique diversity goals and issues as well as its contribution to the objective of reducing the statewide minority educational attainment gap.

## *I.B. Meeting statewide professional and workforce needs*

In addition to serving students, universities also serve the state's employers by providing an educated workforce. The State University System and individual universities need to plan both for the predictable needs of the state today and for the harder-to-anticipate needs of the future. We know, for example, that we need more teachers and nurses, and we can quantify those demands fairly well. We also know, although it is harder to quantify, that the kinds of businesses we want to bring to or start in Florida will need a range of creative, educated workers who, in addition to the specific training they may have, can also think critically, communicate well, work collaboratively, compute accurately, and solve problems in creative ways. Florida can learn from areas where new industries have thrived, places where education tends to run broad and deep: Boston, Austin, Chicago, Atlanta, North Carolina's Research Triangle, and California's Bay Area.

The specific technologies students will work with ten years from now have probably not yet been invented, which is why the targeting process has to be flexible. Some degree programs will be closely linked to occupations: nursing, law, surveying, etc. Others are difficult to tie to particular jobs but rather have a broad range of possibilities, either directly or by way of feeding into graduate programs: mathematics, business, industrial engineering, psychology, etc.

The methodology below is a first attempt to group programs for whose graduates specific employers and the broader business and education communities believe demand will be highest in coming years. It will need to be revisited regularly, as economic conditions change and new technologies develop. It is based on data used for *Targeting Baccalaureate Degree Programs for Florida Workforce Enhancements*, a report submitted to, and adopted by, the Workforce

Estimating Conference in 2001, which was updated and expanded to include graduate and professional programs.

The 2001 report identified baccalaureate degree programs that could be expected to have high demand for at least one of three reasons. Programs either:

- met critical state needs
- were identified by the Advisory Group on Emerging Technologies as being important to continued high-tech industry development in the state; and/or
- had a record of placing graduates in high-wage positions.

The strategic plan's goal is that half of all degrees be in targeted programs (up from 41% in 2002-2003), which will require that those programs grow at a rate 40% faster than the average annual growth rate for all programs. This rate of growth for targeted programs also allows for growth, although at a slower rate, in other degree programs.

| | Overall Growth | Targeted Programs Growth | Non-Targeted Programs Growth |
|---|---|---|---|
| Bachelor | 4.3% | 6.1% | 2.4% |
| Master's | 4.3% | 6.1% | 1.5% |
| Doctoral | 1.5% | 2.1% | 0.8% |
| Professional | 5.7% | 8.0% | 0.0% |
| All Degrees | 4.3% | 6.0% | 2.1% |

## I.B.1-2 Critical Needs in Education and Health Care

As in the 2001 report, the two areas identified as **critical state needs** are health care and education.

## I.B.1. Critical Needs: Education

Each year, the State Board of Education is statutorily required to identify teacher shortage areas. For the 2004-05 school year, the SBE identified the following subject fields as critical shortage areas:

- Middle and high school level mathematics;
- Middle and high school level science;
- Reading;
- Exceptional student education programs;
- English for speakers of other languages (ESOL);
- Foreign languages;
- School psychologists; and
- Technology education/industrial arts.

The number of education graduates does not reflect the system's only contribution in these areas. Some of these fields (such as exceptional education) do generally require specific education degrees. Others, such as foreign language or mathematics instruction, draw both from education programs and from subject-area majors.

## I.B.2. Critical Needs: Health Care

The Florida Hospital Association released a report in December 2003 that indicates that Florida will need 61,000 more nurses in 2020 than are currently being produced, as determined by the National Center for Health Workforce Analysis. In addition to a shortage of nurses, faculty shortages in nursing programs were documented in a report released in May 2003 by the American Association of Colleges of Nursing.

In its July 2000 report, *Shortages of Allied Health Professionals*, the Florida Hospital Association documents that hospitals are experiencing shortages in other key patient care positions, such as in Pharmacy and Medical technology.

## I.B.3. Economic Development: Emerging Technologies

The Advisory Group on Emerging Technologies consisted of individuals from Florida industry and universities who were selected based on their broad knowledge of cutting edge scientific research and technological developments. The Group's basic methodology in 2001 is used with updated data to identify degree programs that support **emerging technologies**.

The Advisory Group had merged targeted industry sectors identified in the Workforce Florida, Inc. 2000-2001 Strategic Plan with areas of research identified by the State University System 1998-2003 Strategic Plan as being important to economic development in Florida.

The Workforce Florida/SUS targeted areas were analyzed by the Advisory Group to determine those areas in which Florida had an advantage or critical mass. From this analysis, Areas for Strategic Emphasis were developed.

The Advisory Group then created a list of degree programs that prepared graduates for employment in each area.

Because of the great overlap of degree programs associated with each area, the Advisory Group grouped the programs under broad descriptive headings as follows:

**I.B.3.a. Mechanical Science and Technology Programs**

**I.B.3.b. Natural Science and Technology Programs**

**I.B.3.c. Medical Science and Technology Programs**

**I.B.3.d. Computer Science and Information Technology Programs**

**(n/a) Analytical and Conceptual Programs**

This list has been modified slightly to replace Analytical and Conceptual Programs with two related categories:

**I.B.3.e. Design and Construction and**

**I.B.3.f. Electronic Media and Simulation,**

The 2001 report included, within existing programs, tracks that could prepare graduates for employment in high-tech fields. For example, the Cognitive and Psycholinguistics track within Psychology could prepare students to work in the strategic area of Simulation Training and Modeling. Other programs, such as Landscape Architecture, do not have specific tracks, but a certain percentage of program graduates could be expected to work in a high-tech area. Since the present Classification of Instructional Programs Code system and the university databases are not configured to track students at either of these levels, the Board of Governors Strategic Plan does not include the tracks and programs identified by either of these approaches.

## I.B.4. Economic Development: High-wage/high-demand jobs

In economic terms, employer demand is most directly measured by how many people are hired and how much employers are willing to pay. When the demand for workers exceeds the supply, employers may have to raise wages to attract the workers they want (or reduce their expectations…). Many of the critical need and emerging technology fields also have relatively high wages, but this group also captures some fields not included in those two categories.

The criteria used to determine **high-wage** programs were similar to those used in the 2001 *Targeting Baccalaureate Degree Programs for Florida Workforce Enhancements* report: (1) the program had to have at least 25 graduates and 15 in-state job placements and (2) the median salary of bachelor degree graduates had to be at least $32,000. This approach was expanded for graduate and professional degree programs – graduates had to earn an average of $50,000. If a program is listed under either of these categories (critical needs or emerging technologies), it is not listed again under high-wage.

If a program is not listed as high-wage, it may just mean that it was too small to be included even though wages are actually very high. In the future, the Board of Governors or individual

universities may wish to propose groups of related programs that would collectively have enough graduates and placements to be included.

## *I.C. Building world-class academic research capacity*

In addition to producing new graduates, universities also produce new ideas.

Part of what students learn in college comes from becoming familiar with a range of specialized skills, knowledge, and ideas already familiar to those in the field. Some of what they learn, however, is how to expand that body of knowledge, as faculty share their own discoveries or collaborate with students on groundbreaking work. In the research programs of universities, the distinction between teacher and student fades as everyone involved grapples with innovative theories or new information. The ability to produce and test new ideas is also one of the most valuable skills a student can bring to the workplace.

The high-level measures of research activity in universities are very blunt instruments to simplify an enormous range of activity. At any given moment, research in progress on our campuses might include:

- Testing potential new treatments for breast cancer
- Mapping the flow of water (or pollution) in the Floridian aquifer
- Documenting the history of slavery locally, regionally, and internationally
- Developing more effective strategies to teach learning-disabled children to read
- Interviewing recent immigrants to compare their experience with previous generations
- Identifying characteristics of successful democracies in different cultures
- Investigating ways to reduce pesticide use in citrus production

### I.C.1. Association of American Universities (AAU) Membership

The AAU is an association of 63 institutions in the U.S. and Canada that includes most of the major research universities in the two countries. Florida is the only large state with fewer than three member universities (UF is the only member).

For high-level strategic planning, membership in the AAU is really a proxy for the measures of research quantity and quality that the association uses to evaluate potential members. These include National Research Council rankings, faculty awards, publications, and research expenditures, among others. (See http://www.aau.edu/aau/Policy.pdf for details on AAU membership policy.)

The two most recent institutions to join, SUNY Stony Brook and Texas A&M, are good examples of public institutions with growing research agendas. Significant resources and focus would be required for any one of our institutions to aspire to a similar level of research activity, but that level is not out of reach in a long-term plan. Progress may be made on the AAU membership criteria measures by a number of institutions even if no additional Florida institutions become members.

The strategic plan sets the goal of having one additional public AAU member institution by 2012-13, with significant progress toward that goal, as measured by related indicators, by 2008-09.

## I.C.2. Research Expenditures – Contracts and Grants

Externally-funded contracts and grants are an important source of income for university research programs and, indirectly, for economic development. They are also an indirect measure of the quality of a university's research program. New contracts and grants are more likely to be awarded to universities who have done excellent research in the past. Governmental and private funding entities will not provide funding if they have been unsatisfied in the past with the research work provided by a university or if the university's research faculty does not have a good reputation.

In the most recent national data available, Florida ranked 45th in total academic R&D expenditures per capita and 44th in federal academic R&D per capita. (See the National Science Foundation data compiled at www.higheredinfo.org.)

Projections of future federal R&D expenditures are not available, so the strategic plan sets the objective of growing externally-funded contract and grant research expenditures at a rate that would bring Florida to the 2001 national average.

The goal was derived using the ratio of the 2001 national average per capita Federal R&D ($66.40) to the 2001 Florida per capita Federal R&D ($28) and multiplying it by the contract and grant expenditures in the 2001 operating budget (less funds for the developmental research schools).

That figure was then increased by 19% to adjust for projected population growth (2013 population: 19,845,212) and by an additional 3.6% to adjust for inflation (CPI-U) from 2001 to 2003, so that the goal could be expressed in 2003 dollars. The result is an estimate of what the SUS would need to achieve to make a proportionate contribution to increasing the state's federal academic R&D spending to the national average.

In constant dollars, external contracts and grants would need to grow by 5.9% annually to reach the target. If national R&D expenditures per capita increase as well, however, growth will have to be at a faster rate than projected.

## I.C.3. National Research Council Rankings

The National Research Council conducts a survey every ten years of doctoral/research programs around the country, asking programs to evaluate the faculty and educational quality of their peers. To be considered for ranking, programs must have a minimum number of doctoral graduates. In the most recent survey, 62 SUS programs were ranked, and six out of those were ranked in the top 25% nationally for faculty quality (All six were at the University of Florida: Anthropology, Chemistry, Electrical Engineering, Material Science, Physics and Psychology. See Appendix P of the report *Research-Doctorate Programs in the United States: Continuity and*

*Change* at http://books.nap.edu/html/researchdoc/). The survey for 2002-2003 has been delayed and results will not be available for at least two years. The strategic plan sets the goal of having 25% of SUS programs ranked in the top 25% nationally and assumes that the number of research programs (regardless of rank) will grow in proportion to the increase in doctoral degrees granted.

This survey is the most direct indicator of a program's reputation within a discipline. However, because it is only revised once each decade, intermediate related measures, such as faculty publications and awards, should be used to gauge progress.

## I.C.4. Centers of Excellence

Universities with existing centers of excellence should specify their quantifiable goals for those centers over the next ten years. Existing centers include:

**I.C.4.a. Biomedical and Marine Technology (FAU)**

**I.C.4.b. Photonics (UCF)**

**I.C.4.c. Regenerative and Health Technology (UF)**

**I.C.4.d. Other Centers**

Institutions that plan to apply for establish new centers should indicate that as part of their strategic plan.

## I.C.5. Other Forms of National Recognition

In addition to research expenditures, certain types of national recognition would be good indicators that a program, institution, or the system as a whole, is on track to world-class status. These are also some of the indicators that the AAU uses to evaluate potential members. Targets on the Y-Axis assume that these forms of recognition will increase at a rate proportional to increasing research expenditures.

***Examples of significant forms of national recognition:***

National Academy membership and awards at the level of the Nobel Prize are unusual enough that any "targets" are purely speculative. As SUS institutions and programs raise their levels of research activity and national prominence, however, it would be expected that there would be additional national and international recognition.

Since these awards and National Academy memberships are, by design, exceptional and not to be expected every year, the number awarded in the previous five years is given. To create a better link with recent levels of SUS research and creative activity, only those given to faculty who had been in the SUS for three or more years were included.

**I.C.5.a. National Academy Membership**

Membership in the national academies (Institute of Medicine, National Academy of Science, and National Academy of Engineering) is granted to only a small percentage of prominent researchers. For membership lists, see http://www.nationalacademies.org/

**I.C.5.b. Major Awards**

Of all the national and international awards, the Nobel Prize (http://www.nobel.se/), the Pulitzer Prize (http://www.pulitzer.org/), and the MacArthur Fellowships (http://www.macfdn.org/) signal a unique national achievement. They are often, although not always, awarded to university faculty and cover a range of fields of achievement in science, humanities, and social science.

**I.C.5.c. Highly Cited Scholars**

The Web of Science citation service compiles lists of the most frequently cited scholars in each of 21 fields. Other measures of faculty productivity could be used, but this is a good high-level indicator of the number of influential researchers in the system. See: http://hcr3.isiknowledge.com/home.cgi/

**I.C.5.d.- Other Measures**

Individual institutions may wish to suggest other types of significant recognition in their plans. In general, specific numerical "targets" would not be expected.