



ENSURING PUBLIC RESEARCH UNIVERSITIES REMAIN VITAL

*A Report to the Membership on the
Research University Regional Deliberations*

*Revised based on discussion by the A·P·L·U Presidents on
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INTRODUCTION

United States public research universities face greater challenges today than in past decades to meet the growing national needs for highly educated graduates, new knowledge and community engagement. While greatly exacerbated by current economic conditions, these challenges are the accumulation of at least two decades of declining public investment in higher education as discussed in the A·P·L·U background paper, *Forging a Foundation for the Future: Keeping Public Research Universities Strong*.

Perhaps the most familiar analysis of the challenges facing research universities is contained in The National Academies' 2005 report, *Rising Above the Gathering Storm*. Requested by Congress, the report was authored by a distinguished panel of educators, innovators and scientists.

In June 2009, Senators Barbara Mikulski (D-MD) and Lamar Alexander (R-TN) and Representatives Bart Gordon (D-TN) and Ralph Hall (R-TX) again turned to The National Academies to review the ability of research universities to meet the nation's human resources, research and innovation needs. The National Research Counsel has convened the 22-member Committee on Research Universities to develop a consensus report with findings and recommendations that answers the question: "What are the top ten actions that Congress, the federal government, state governments, research universities, and others could take to assure the ability of the American research university to maintain the excellence in research and doctoral education needed to help the United States compete, prosper, and achieve national goals for health, energy, the environment, and security in the global community of the 21st century?"

During April 2010, the Association of Public and Land-grant Universities conducted a series of five regional meetings, hosted by member institutions, to consider questions related to the future viability of public research universities. The meetings were hosted by:

- University of Texas System, Austin, TX
- University of Georgia, Athens, GA
- University of Washington, Seattle, WA
- University of Wisconsin, Madison, WI
- Rutgers, The State University of New Jersey, New Brunswick, NJ

Each host president/chancellor invited distinguished individuals from industry, government and the academic community to provide general remarks. Member presidents, chancellors, provosts and chief research officers and other senior executives attending each meeting deliberated over the issues during a series of small group discussions.

This paper highlights the central threads of those rich and varied deliberations and reflects the comments, concerns and suggestions from the A·P·L·U regional meeting hosts. Additional input was sought during the June 2010 Council of Presidents meeting and the paper was revised again. . The paper also will be a topic for discussion during the Council on Academic Affairs meeting in July and the Council on Research Policy &

Graduate Education and Council on Governmental Affairs meetings in August. After these discussions and input, the paper will be finalized by late summer or early fall.

A·P·L·U will distribute the paper and use its conclusions to add to our ongoing advocacy work in collaboration with Association of American Universities (AAU) and Council on Governmental Relations (COGR). It also will inform A·P·L·U's formal submission to the National Research Counsel's Committee on Research Universities.

Sustained growth in federal research funding and revising U.S. immigration policy to facilitate enrollment of highly talented students, including non-U.S. students and post doctoral fellows, are required to ensure the future prosperity of this country. These twin core components of the academic enterprise, already part of our policy agenda, are not dealt with significantly in this paper.

The first section of this paper, *The Role of Public Research Universities*, reviews the core contributions made by public research universities to their states and the nation. The second, *Reaffirmation of Our Public Purpose: Commitments for the Future*, reviews and reaffirms the public purpose mission of public research universities by emphasizing the commitments made collectively to pursue objectives vital to this nation's future. The third section, *Supplemental Funding*, proposes three models to provide funds to strengthen the educational and research programs at research universities. The final section, *Reforms to the Facilities and Administrative Cost Practices of the Federal Government*, advances the proposition that the federal government must pay its appropriate share of the costs of federally sponsored research conducted by public research universities to ensure these universities remain vibrant.

THE ROLE OF PUBLIC RESEARCH UNIVERSITIES

Innovation and research are critical elements for national success in the highly competitive global marketplace. Many of the most competitive innovations arise from the basic and applied research activities conducted at research universities. Without these contributions, life today would be far less productive, far less rewarding, far more mysterious, and dramatically shorter.

In the United States, our modern public and private research universities thrive on the synergy flowing from the mix of research, graduate study and undergraduate instruction. They are critical to sustaining a competitive growing economy which provides adequate and well-paid jobs. Those countries providing the greatest economic challenges to the U.S. today in food, energy, health, manufacturing, electronics, and environmental progress primarily launch those challenges from sophisticated technological developments that arise from research. The appropriate response to their challenge is to rapidly and steadily add to our knowledge base; we do that best through university-based education and research.

Indeed, the prosperity of individual citizens largely and increasingly depends on the acquisition of higher education. Earnings of college graduates are approximately twice the amount of high school graduates, and that multiple has increased steadily since 1980. High school graduates have an unemployment rate that is more than double that of college graduates while community college graduates are about 1.7 times as likely to be unemployed as college graduates.

Through the years, few sectors of American society have been as important to the strength of our nation as public higher education. As the country's needs have changed universities have rapidly adapted, preparing generations of students and researchers as well as making discoveries that enabled agricultural modernization, assembly line manufacturing, war mobilization, lifesaving healthcare and pharmaceutical advances, development of the transistor and microchip, space exploration, discovery of advanced materials, new methods of energy exploration and production, biofuels, solar energy, genetics, genomics, and countless other timely, cutting-edge developments.

Founded with a public purpose that has been the touchstone guiding their activities for more than 150 years, public research universities have evolved to meet each generation's needs. In the period after World War II and the launch of Sputnik in 1957, public higher education faced dramatic increases in student enrollment and the assumption of a new role as a major producer of federally funded research. Public higher education rose to the challenge. This period largely shaped the current model of the modern public university and this spirit of responsiveness continues today.

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Each year, the United States depends on public research universities to:

- Educate 85 percent of undergraduate students and 70 percent of graduate students enrolled in *all* research universities.
- Produce more than 50 percent of the doctorates granted in the United States in 11 of the 13 national needs categories—including:
 - 92 percent of doctoral degrees in agriculture,
 - nearly 90 percent of doctoral degrees in natural resources and conservation, and
 - 60 to 80 percent of doctoral degrees in computer and information sciences, engineering, foreign languages and linguistics, mathematics and statistics, physical sciences and security.
- Serve as the primary route to a research university degree for minority students—more than 800,000 of the almost one million minority students enrolled in a research university are at public research universities—including Hispanic Serving Institutions, Tribal Colleges and Historically Black Land Grant Universities (1890 institutions).
- Offer distinct opportunities for minority Americans through the 17 Historically Black Land Grant Universities (1890 institutions) and Tuskegee University. While their enrollment is open to all students, 81.5 percent of their enrollment (85,000 students) is African-American.
- Perform about 60 percent of the nation’s federally funded academic research—some \$19.3 billion in 2008. The Historically Black Land Grant Universities (1890 institutions) are all classified as research universities and, while small in enrollment and faculty, produce about \$185 million of research annually.
- Serve as an engine for the economy—according to the Association of University Technology Managers—research at public universities in fiscal year 2008 led to:
 - 358 start-up companies,
 - 2,891 new technology licenses (16,555 are actively in force),
 - 6,460 applications for new patents, and
 - 1,791 patents.

Sustaining a competitive growing economy, providing adequate and well-paid jobs without developing new technologies and products and further enhancing productivity is nearly impossible. Other nations have cheaper labor forces and are increasingly becoming as skilled as those in the U.S. This nation needs further assistance from its public research universities, assistance which they are prepared to give. Through the years, robust state support for these efforts has been critical. Unfortunately, state support has been eroding for several decades, and the current recession has exacerbated the problem.

REAFFIRMATION OF OUR PUBLIC PURPOSE: COMMITMENTS FOR THE FUTURE

The time has come for a new partnership between public research universities and society. Our nation relies on a higher education system operating in the land-grant tradition of integrating learning, discovery and engagement. It also counts on public research universities to provide students the sort of education which supports democracy and permits living fuller and richer lives. With this in mind, below are some examples of additional commitments public research universities make at this time to help ensure our country's future is even brighter than it's past. The commitments below are carefully articulated to align public research universities with the needs of the states that provide important parts of their funding. The commitments also address key national and world responsibilities integral to the universities' missions.

More and better educated college graduates

- **Increase the number of U.S. college degree holders.** For generations, the United States has led the world in higher education. But today the nation has fallen to ninth in the proportion of young adults (age 25-34) who attain college degrees among the countries belonging to the Organization for Economic Co-operation and Development (OECD). In Japan, Korea and Canada, more than 50 percent of young adults hold college degrees. Only 41 percent do in the United States. This country's international competitiveness depends on increasing the proportion of our citizens holding tertiary degrees. Indeed, President Obama has established the goal of restoring United States leadership in tertiary degree attainment by 2020. Public research universities are broadly supportive of this goal.

Public research universities are committed to making an important contribution to solving this problem while also ensuring that the student population becomes ever more reflective of the broader population. This is particularly important given the nation's rapid demographic changes. Many public research universities have the capacity to expand undergraduate enrollment and will do so. While graduation rates for public research universities are relatively high, there is clearly room for improvement and many universities have such efforts under way. Some institutions are expanding enrollment and striving to improve graduation rates. Other public universities are actively searching for students who left their studies just short of earning a degree and advising them on feasible ways to complete their remaining degree requirements.

Graduate education must be a core activity of research universities. There rightly has been much concern about the proportion of entering graduate students who ultimately earn a degree and the length of time that it takes to do so. Public research universities commit to strengthening efforts to shorten the time to degree and increase degree completion rates.

- **Provide improved non-traditional routes for earning degrees.** Much of the cost of attending a public research university is incurred in commuting, foregone earnings and living costs. These costs can be mitigated if students attend community colleges near their homes and seamlessly transfer to public research universities. Much has already been done to improve articulation and transfer from community colleges to public research universities and expanded efforts are underway. More can and will be done.

Similarly, students can avoid some commuting and living costs through distance education. Distance education programs at public research universities are growing in enrollment at greater than 15 percent annual rates and efforts to understand barriers to offering distance education^[2] will enable universities to continue this growth trend.

- **Ensure appropriate learning outcomes and be publicly accountable for doing so.** Of course, what one expects from higher education is learning and the development of skills and abilities. Achieving the goals of reducing the time required to earn a degree, reducing the cost of earning the degree, or increasing the numbers of students earning degrees are for naught if substantial learning does not occur. In 2007, A·P·L·U member universities joined with the public colleges and universities in the American Association of State Colleges and Universities (AASCU) in an initiative to measure value added during the educational process and to report publicly to students and parents and other stakeholders. Nearly 330 public colleges and universities, including roughly 70 percent of A·P·L·U's members, are participants in this effort that is called the Voluntary System of Accountability (VSA). In addition, different methods of measuring learning outcomes are underway at other public research universities that do not participate in VSA.
- **Control Educational Costs Per Degree.** Universities are being pressed to increase significantly the number of degrees granted even as they face (at best) flat state appropriations due to increased competition for public funds. These twin pressures create the need to control, and if possible, to reduce, educational costs while at a minimum maintaining quality. Public research universities have a proud record of maintaining the real, per student cost of education at nearly the same level as 20 years ago. They will continue the diligent management that produced this result. Nonetheless, the need to reduce cost per degree granted whenever possible remains. This can be achieved if graduation rates are increased and time to degree is shortened. Public research university efforts to achieve both are broadly underway and will be intensified.

The real net tuition and fees at four-year public universities are less than they were 15 years ago according to the College Board, having fallen from \$2,030 in 1994-95 to \$1,620 in 2009-10.

^[2] *Online Learning As a Strategic Asset: Volumes I & II*, Association of Public and Land-grant Universities, 2009.

The real *net* tuition and fees at four-year public universities are less than they were 15 years ago according to the College Board, having fallen from \$2,030 in 1994-95 to \$1,620 in 2009-10. [The College Board calculates these “net tuition and fees” by excluding room and board, reducing tuition by grant aid from all sources, and including federal tax benefits. These figures are inflation adjusted.] ^[1]

More and more public universities are putting in place programs to ensure students from low-income families can earn a degree without incurring debt. Increasing the probability of earning a degree and shortening the time to degree reduces the cost to the average student. Modest cost to the student in public research universities can be projected into the future provided states cease their 20-year trend of reducing state appropriations per student.

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Some existing public research university courses have been reengineered such that a higher portion of students complete the course work with improved learning outcomes relative to students in traditional sections of the courses. In these flexibly redesigned courses, students generally complete the coursework in a shorter time period than a traditional semester long course and better retain the knowledge gained. These efforts generally produce increased student learning at less cost per student and contribute both to increasing graduation rates and keeping instructional costs down.

The cost of attending college is sometimes not clearly presented to potential students. On the one hand, this is understandable as discounting is frequent and tailored to the individual. Students also can elect programs of radically different expense within the same institution. On the other, failure to clearly articulate cost has negative consequences. Among those negative consequences is that the general public tends to think that public research universities are far more expensive to attend than they actually are and many students from low income backgrounds assume they cannot afford to attend and do not bother even to apply. Public research universities commit to simplifying and demystifying information provided to students on the cost of attendance to the extent possible. This will require that costs net of projected financial aid be provided to students and their families. Working together through the VSA project, public research universities (along with their colleagues represented by AASCU) developed the sophisticated but easy to use VSA College Cost Calculator before the reauthorized Higher Education Act required such a device and it is now being deployed on the CollegePortrait[®] websites of 131 public research universities. Public research universities not participating in VSA commit to using other effective devices to portray net cost.

^[1] *Trends in College Pricing*, College Board, 2009, p. 11. “Net Tuition and Fees” as calculated by the College Board excludes room and board and reduces tuition by grant aid from all sources and federal tax benefits. These figures are inflation adjusted.

Preparing high school students to be ready for college

- **Work to improve public education.** Public universities will continue to work closely with the public schools in their states to strengthen public education. A major impact universities have on public education is through the preparation and graduation of well prepared teachers. In 2008, A·P·L·U formed the Science and Mathematics Teacher Imperative (SMTI) with the goal of increasing the number and diversity of well-trained science and mathematics teachers produced by member schools. The initiative focuses on science and mathematics because our member universities have large and productive departments in those areas and recruit strong students as majors. With initial funding from the Carnegie Corporation and several grants from the National Science Foundation to enable core A·P·L·U activities, about 125 universities have committed to this effort.
- **Support the Common Core Standards Initiative.** In early June, the National Governors Association, Council of Chief State School Officers and ACHIEVE announced a set of state-led education standards that define the knowledge and skills students should have within their K-12 education careers to facilitate graduating high school fully prepared for college and careers. Public research universities believe properly designed and widely adopted high school core standards will reduce the need for remedial work in college and improve student retention and graduation rates. Public research universities are broadly supportive of this effort and are working with the governors and chief school officers state-by-state to ensure that strong national high school mathematics and English common core standards are put into place.

Continued discovery/new knowledge/more solutions/more jobs

- **Support state economic development goals while ensuring that discoveries flow readily from the lab to the consumer.** Each public research university plays a key role in the economic development of their state. The core economic development function is the very high level workforce development that occurs in the classroom. Knowledgeable and well-rounded university graduates become a principal magnet for attracting and retaining firms, and creating new firms within each state.

Directly from the federal- and industry-funded research at public universities, flow many dollars into each state's economy, creating a significant number of jobs. Indeed, in many states the research university is ranked among the largest employers because of the size of its research enterprise.

But a critically important core element of the public university economic development agenda is the commercialization of research performed at each institution. As the statistics above show, public research universities take technology transfer seriously. While graduation will always be the most meaningful flow of new knowledge from universities into the private sector, the flow of patents, licenses and

start-up companies will continue and grow at least as rapidly as university research funding grows. Research universities will seek ways to make commercial access friendlier and easier, consistent with the legitimate constraints imposed by conflict-of-interest and fair dealing rules and federal and state regulations.

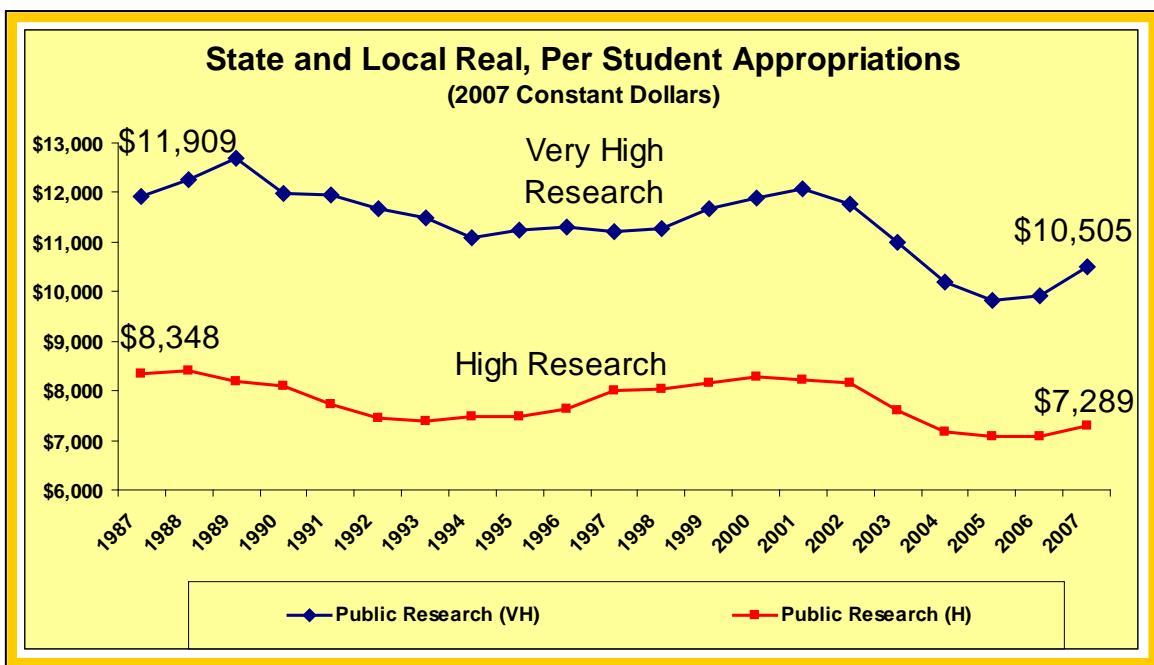
International engagement

- **Internationalization.** Perhaps the strongest force for internationalization in most states is the public research university. In this “flat” world, bringing international students and faculty to public research university campuses in significant numbers leavens the educational process and provides a window on the world for domestic students who have not been abroad. International faculty often are among the most productive researchers whose contributions enhance their university’s research reputation and lead to the formation of start-up firms which sometimes serve to attract investment capital into the state. Furthermore, public research universities have relatively large study abroad programs that provide a substantial portion of the roughly 200,000 American students who study overseas each year. Public research universities will continue to expand study abroad opportunities as they work to recruit the strongest faculty and students from throughout the world. Public research universities are extraordinary collections of diversity; for those students for whom international study or research opportunities cannot be arranged, opportunities for exposure to diverse cultures are easily made available on campus or elsewhere within the U.S.

FEDERAL SUPPLEMENTAL FUNDING

The long-term decline in real state funding per student at high and very high public research universities has made it increasingly difficult for universities to appropriately fund an array of teaching and research programs. While damage to these core research university functions may not yet be visible to some observers, it is clear to public research university leaders that the ability to carry out their research university missions has been undermined with increasing severity.

The 20 year (1987-2007) decline in real per student appropriations from the states for public research institutions has been severe; 11.8 percent for public research universities classified as “very high” and 12.7 percent for institutions listed as “high.” in the Carnegie Classification of Institutions of Higher Education™. To this decline, unfortunately, has been added the financial reversals occasioned by the current recession, perhaps on average, 10 percent, but ranging upwards beyond 25 percent in some states.

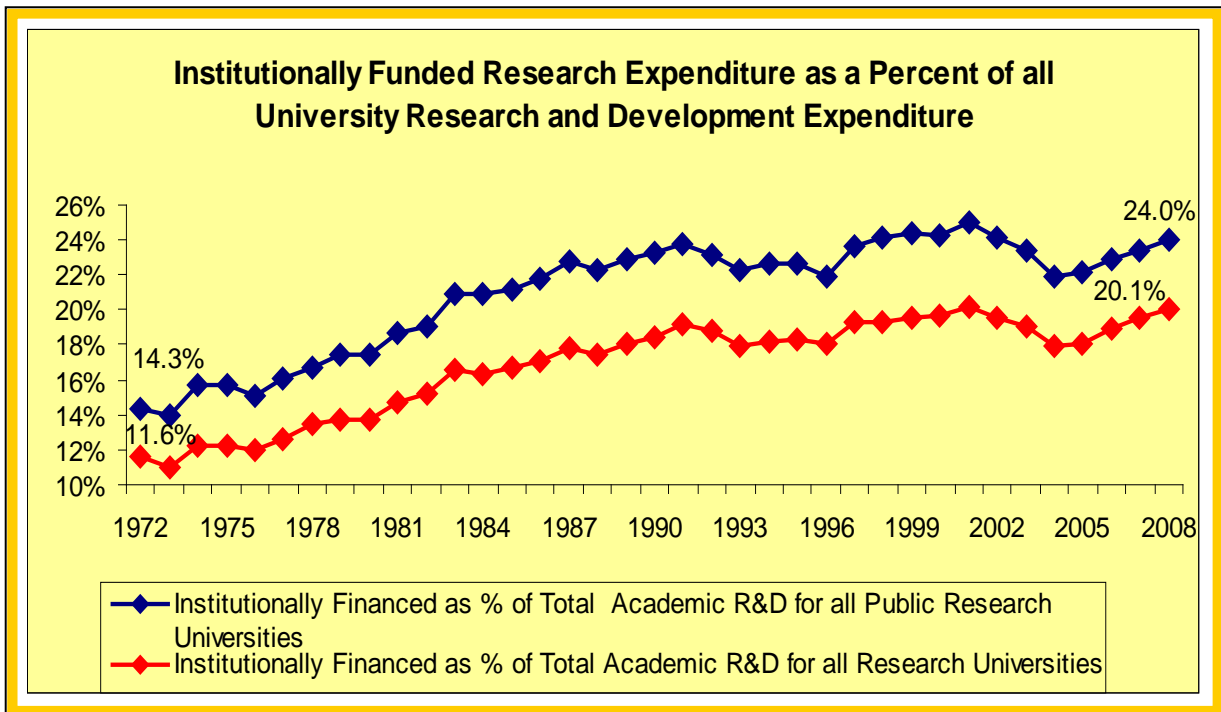


These declines have forced public research universities to focus their remaining state resources on a steadily reducing number of programs. Basic support for instructional programs, teaching and research infrastructure, and faculty, graduate and research assistants and staff has suffered.

The remaining state appropriated funding is increasingly focused on large enrollment undergraduate programs and applied research programs that connect directly to state economic development agendas. Unfortunately, many of the expenditure items that universities have had to cut were essential elements that contributed to the richer experiences of the undergraduate curricula of the research university. Furthermore, graduate education is poorer for these losses and the capability of research universities to

carry out the complex research required by our national competitiveness agenda is undermined.

As state appropriations per student fell, changes in federal policy regarding reimbursement for research grant facilities and administration costs compelled universities to spend more of their institutional funds on research. In March 2008, the Council on Governmental Relations (COGR) released the study: *Finances of Research Universities*. Their detailed analysis estimated that the university subsidy to all research, both federal and non-federal, exceeded \$2.3 billion per year, and that “a majority of that subsidy can be attributed to federal programs.”^[3] COGR's analysis used data in the chart below from the National Science Foundation's annual survey on Research and Development (R&D) Expenditures at Universities and Colleges.



The COGR report relies on the *increasing* proportion of total R&D that is funded by institutional funds to argue that the underfunding of universities to perform federal R&D is a growing problem. They conclude: “. . . the risk is that additional financial burdens will move universities closer to a ‘tipping point’. The result could be decline in the quality of research infrastructure and compliance initiatives, as well as a gradual degradation of research laboratories and facilities.”^[4]

The background paper A·P·L·U staff prepared for the regional conferences: *Forging a Foundation for the Future: Keeping Public Research Universities Strong*, concluded the decline in state support and increased burden of supporting research with internal funds

^[3] *Finances of Research Universities*, Council on Governmental Relations, Washington, D.C., March 2008 p. 13

^[4] *Ibid.* p. 15

made public research universities particularly vulnerable. And should the capacity of public research universities to continue their strong contribution to the nation's research product be diminished, the consequences to the nation are potentially great.

Any decline in the quality or output of research from U.S. public universities, could impact U.S. global standing. Confirmation of the overall relative decline in U.S. scholarly publications comes from a recent study reported by the *Financial Times*.^[5] The study found China, Brazil and India led the United States in the rate of growth in scholarly publications from 1990 to 2008. While the U.S. remains the largest producer of scholarly journal articles, China is now second and, "if it continues on its trajectory it will be the largest producer of scientific knowledge by 2020." Much evidence can be found in the rapidly multiplying international rankings of universities regarding the declining dominance of U.S.

institutions. While there is some disagreement about the importance that should be given to these rankings,^[6] there is much evidence emerging that the energy and resources being invested in universities worldwide will challenge U.S. dominance in higher education in the future. Further funding losses in the large public sector American research universities can only hasten the U.S. decline.

Mark Emmert, president of the University of Washington, observed: "We could see 50 different independent decisions made in 50 different states and the result would be a national tragedy!"

To some degree the decline in state appropriations is a result of each state setting priorities independently of other states but with the implicit assumption that other states will continue to fund basic infrastructure. Of this phenomenon, Mark Emmert, president of the University of Washington, observed at the A·P·L·U Western Regional Meeting: "We could see 50 different independent decisions made in 50 different states and the result would be a national tragedy!"

Unless this disinvestment is halted and reversed, the resulting decline in public research universities and the contributions they make to the nation's competitiveness is inevitable. Daniel Fogel, president of the University of Vermont, spoke for his colleagues during the A·P·L·U Northeastern Regional Meeting: "We are haunted by the specter that our enterprise [the American Public Research University] has seen its best days..."

At each regional meeting, a consensus developed that every effort must be made to redouble efforts to align research universities with critical state needs in order to make clear to states that further state appropriation cuts in operating as well as capital expenditures will cause severe damage. Furthermore, the general consensus was that

^[5] Clive Cookson, "China Scientists Lead World in Research Growth," *Financial Times*, January 25, 2010 <http://www.ft.com/cms/s/0/7ef3097e-09da-11df-8b23-00144feabdc0.html>

^[6] For a recent discussion of the changing face of international rankings see Aisha Labi, "Rankled by Rankings", *The Chronicle of Higher Education*, February 2, 2010 http://chronicle.com/article/Criticism-of-Global-Rankings/63786/?sid=at&utm_source=at&utm_medium=en

additional federal support is critically needed as state support is unlikely to return soon enough, or in sufficient quantity, to forestall permanent damage.

During the A·P·L·U regional meetings, senior university leaders concluded there was a justification for additional federal support for a portion of the needs created by state underfunding and failure of the federal government to pay their share of grant related university research costs. While additional federal funding of facilities and administrative costs is clearly needed, that alone will not be sufficient to cover the budget gap that exists. It also is unlikely that the 10 percent decline in real state appropriations per student over the 1988-2008 period plus the additional roughly 10 percent average decline during the 2008-10 recession years will be made up by the states. Thus there is clear need for additional federal support. Of course, while states continue to provide much support for public research universities, the situation would not be improved if additional federal support prompts a further reduction in state appropriations..

While different priorities emerged from region-to-region and university-to-university, there was general agreement that federal funding was needed to help maintain critical research university capacity and we should request that funding. While priorities varied for what form(s) additional federal funding should take, there was common agreement that funding targeted to high need areas would benefit research universities because it would permit reallocation of institutional funds to other areas of need.

The following three pages contain three models of federal supplemental funding that were proposed and discussed at one or more of the meetings. The three models are targeted to different areas of need, but because funding is fungible, establishing any one of the programs will likely free institutional funds to use for others. This paper presents the three options, but does not develop a full case for each of them. Those arguments are to be developed only after the three options have been vetted by the research officers and provosts from A·P·L·U member universities at their summer meetings. At that point, A·P·L·U will assess the feasibility of proposing to the Administration and Congress programs which have a significant fiscal note and make a decision about when it is best to initiate such proposals.

The level of funding required for each model is justified, but each of the programs could be scaled up or down in size as is required. Similarly, each program could be modified to include state, foundation or donor matching if a realistic prospect of leveraging federal funding existed. There was little support for matching federal funding with university funds because such requirements result in shifting funds from one area of need to another area, but not in a growth of funding or of overall capacity for teaching or research. It is growth in total capacity that is needed and needed now.

SUPPLEMENTAL MODEL I: THE U.S. CHAIRS PROGRAM

The hiring and/or retention of distinguished faculty members in areas of national need is the first approach. The program described is modeled after the Canada Research Chairs program started in 2000. Please note that this program borrowed from our neighbor, Canada, is described to illustrate the use of a Chair program to strengthen research universities. The growth in competition to U.S. research universities comes largely from China and the European Union, not from Canada. Implementations of a program such as this one would help U.S. universities better compete.

Program Description

To help attract and retain distinguished faculty to research universities and to enable them to achieve research excellence in engineering, the natural and physical sciences, health sciences, humanities, and social sciences. Their presence improves depth of knowledge and quality of life, strengthens international competitiveness and helps train the next generation of highly skilled people.

Program Scale

Support up to 18,000 U.S. Chairs. The Canada Chairs program presently includes 2,000 chairs. Increasing the number of chairs by the ratio of U.S. population (309 million) to Canadian population (34 million) produces the target number of 18,000 chairs.

Costs

The Canada Chairs program supports Type I and Type II chairs, with the former reserved for “outstanding researchers acknowledged by their peers as world leaders in their fields” and the latter for “exceptional emerging researchers, acknowledged by their peers as having the potential to lead in their field.” Type I chairs are funded for seven years at \$200,000 per year and are renewable, while Type II are funded for a single five year term at \$100,000 annually. Universities are alternately awarded Type I and Type II chairs so equal numbers of each type would be awarded initially. Cost: \$2.7 billion annually.

Distribution

If the Canadian method is followed, 94 percent of the chairs would be awarded to universities in proportion to the dollar amount of research awards received during a three-year base period from federal research agencies. The remaining 6 percent of the chairs would be awarded to universities that received some, but no more than 1 percent, of funding from federal research agencies over the three-year base period.

SUPPLEMENTAL FUNDING MODEL II: COMPETES DOCTORAL TRAINEE PROGRAM

This model expands support for doctoral students in key areas of national need. The program described generally follows the structure of the doctoral program of the same name proposed by the Council of Graduate Schools in the 2010 monograph: *The Path Forward: Improving Graduate Education in the United States*.

Program Description

The program supports training of doctoral students in key areas associated with national need identified by the “Administration.” The major investment needed “to maintain U.S. leadership in the 21st century global economy . . . to develop the U.S. domestic talent pool by increasing investments in . . . graduate education.” Eighty percent of the traineeships would go to U.S. citizens while 20 percent would go to international students to ensure that “U.S. graduate schools continue to attract the best and brightest students from around the world.”

Program Scale

The program would begin with 25,000 fellowships in FY2011 and ramp up to 125,000 students in FY2016 with each Fellow eligible for five years of support.

Cost

Each doctoral trainee would receive a stipend, tuition and fees, other costs of education, and ancillary fringe costs, for a total program cost of \$80,000 per student per year. Costs: \$2 billion in FY2011 ramping up to \$10 billion in FY2016.

Distribution

Graduate programs would apply for funding to support doctoral students in key areas. Those submitting proposals would be required to provide data, including enrollments, completion rates, and job placement information.

SUPPLEMENTAL FUNDING MODEL III: RESEARCH CAPACITY OF NATIONAL SIGNIFICANCE (RCNS)

Universities need additional flexible funding to maintain their research capacity in areas of national importance. The funding program described here could support graduate students, research equipment acquisition, research facility maintenance, library materials acquisition, key research faculty retention, new faculty start-up costs, payment of construction bonds for new or renovated facilities, seed funding for new research endeavors, etc. While targeted programs for research facilities have been funded from time to time, this proposal is for flexible funding as some universities have great need for facilities while other have greater needs in other areas enumerated here.

Program Description

RCNS funding would be provided directly to universities with senior administrators determining where to spend the funds in order to best maintain the programs/facilities that contribute to research capacity of national significance.

Program Scale

There is no accepted estimate of the deficit in this area. The National Science Board estimated that the proportion of NSF spending devoted to infrastructure needed to be increased 6 percentage points to make up the deficit for university facilities and equipment. Somewhat arbitrarily, using this figure, one would estimate the cost of this program at \$1.8 billion per year ($.06 \times \30 billion in total federal academic science research funding). At 10 percent, the cost would be \$3 billion per year.

Distribution

The funds would be distributed proportionally as research awards are made by the federal research agencies. Congress would be asked to increase each research agency's university research budget by 6 or 10 percent (or the agreed-upon proportion) over the prior year. Each research award would then carry with it a sum designated for RCNS that is calculated by multiplying the total award budget by the agreed-upon percentage.

RE-BALANCING THE FEDERAL-UNIVERSITY PARTNERSHIP: F&A REFORM TO RECOVER A GREATER PORTION OF THE COST OF DOING RESEARCH

In the modern era, over some 60 years, the federal government and research universities have shared an overarching objective to build and sustain the international leadership of the nation's research universities. One of the hallmarks of this partnership is that each partner would shoulder an appropriate share of the costs common to research grants—the facilities and administrative (F&A) components. To make this collaborative relationship work well, the federal government developed common rules (Circular A-21) to avoid arbitrary practices; intending to promote efficiency and uniformity across federal funding agencies and universities, and consistency over time.

Today, as university based research and graduate education are of increasing importance to U.S. economic and social welfare, universities face financial challenges that threaten their capacity to continue their significant contributions to society. These financial challenges are exacerbated by the significant increase in the share of research costs that universities now incur for federally funded grants. In the past 19 years, the allocation of these costs have become seriously imbalanced as reimbursement rates have stayed roughly the same while new federal regulatory requirements have been put in place, and personnel, energy and facility costs have increased.

During the discussions of F&A reimbursement rates at the A·P·L·U Regional Meetings, aspects of these costs most in need of examination to re-balance the federal-university sharing of research costs were identified and categorized in the following three elements:

- 1. Defining Components of the F&A Rate**
- 2. Setting the F&A Rate**
- 3. Using the F&A Rate**

The following potential actions from the discussions at the regional meetings have been distilled and divided into rough timeframes for action:

- immediate (discussions already underway, or ought to be in the next several months);
- mid-term (over the course of perhaps the next 6+ months and in the case of administrative costs charged to faculty, a demonstration project already underway);
and
- longer term (for exploration and action probably not ready for at least a year).

A fourth related element that was discussed and should be acted upon is:

- 4. Applying These Principles to Foundation, State and Industry Research Funding Practices**

While there was robust conversation and general consensus during these meetings except where noted, A·P·L·U presently regards these options as preliminary, as they have not

yet been vetted fully with Association members. The options are complementary to the proposals under development by AAU and COGR, but include several items that are not as yet priority matters on the joint agenda. Following feedback from A·P·L·U members, we will determine, along with colleagues at AAU and COGR, which of these issues are most conducive to action by the White House Office of Science and Technology Policy (OSTP) and Office of Management and Budget (OMB).

We also add a fifth element—a question—for consideration by universities:

5. Are There Ways to Disconnect the Presentation of Federal F&A Reimbursement From University Investment in Research?

Although this aspect was not discussed explicitly at the regional meetings *per se*, the concerns about how F&A reimbursement is ‘spent’ are tacitly in every consideration of the matter. Usually expressed as how difficult it is to explain to faculty and policymakers, we strongly believe that the matter becomes much more difficult to understand by confusing how F&A cost rates are derived with how the returns are allocated on campus in subsequent university investments.

OPTIONS FOR REFORM

1. Defining Components of the rate

Problem: In 1991, the federal government imposed a cap of 26 percent on administrative rates, which reflected about the average rate at the time. Today, COGR calculates that the average administrative cost rates would be about 30 percent, driven in large part by increased regulatory compliance. According to a COGR survey and analysis. Thus the university subsidy of federally sponsored research has grown significantly despite repeated and effective efforts by universities to streamline their operations and cut their costs for overall administration. Also in 1991, the direct charging of clerical and administrative expenses by Principal Investigators on grants was disallowed. Thus, either faculty have had to rely more on a central administrative support (which had fallen under the 26% cap) and/or taken care of their own administrative tasks. Indeed, a recent survey by the Federal Demonstration Project (FDP) noted that faculty administrative activities have increased dramatically.

Options:

Immediate action

- Eliminate the 26 percent cap on administrative costs, setting the rate for each university based on actually audited costs;

OR

- Raise the administrative cap to some higher rate, perhaps the present average of about 30 percent

OR

- Retain or adjust the existing 26 percent administrative cap AND define a NEW regulatory compliance add-on rate component of up to 5 percent, if justified by university expenses

Mid-term (probably requiring some analysis/demonstration projects)

- Allow direct charging by PIs of certain specific administrative costs to grants, relieve burden to PIs of larger awards/research teams (Note that this option might result in reduction of the administrative cost rate justified by a university, a matter of little concern if the cap remains at 26% but material if the cap is raised.)

Longer term (requiring further conceptual development, analysis and testing/demonstration)

- Explore the development of separate rate ‘modules’ for the more regulatory intensive areas of research—e.g., biomedical research incurs more regulatory requirements due to human subjects, review of animal care and use, etc. Would it be a more targeted and efficient way to allocate costs to determine an administrative rate add-on tagged to the intensity of specific types of research in which a university engages—perhaps an added point or two? There would be many issues to explore, but it is an intriguing idea brought up by several university research vice presidents. (Note that this option also might result in reduction of the administrative cost rate justified by a university under some circumstances.)

2. Setting the Rate

Problem: F&A rates for individual institutions vary considerably based on their past rates and historic precision in claiming costs, region of the country, and cognizant audit agency. The present process is rife with inconsistency over time and lack of uniformity across agencies and institutions; to many, F&A rate setting appears to be arbitrary.

Options:

Immediate action, to be phased in according to the rate-setting cycle for each institution

- Set university F&A rates based on auditable costs at each institution, not on arbitrary judgments based on legacy rates
- Ensure consistency across universities in allowing components of rates, such as utility studies and patenting/licensing costs; if some institutions are/have been allowed to claim such costs, the same opportunities ought to be afforded to all institutions
- Ensure consistency in practice across agencies and across regions of the country, in how rates are set for universities—those institutions blessed in history with a straightforward cognizant agency or regional office ought not to have a cost advantage over other institutions that have a cognizant agency with a different orientation to rate-setting

3. Using the Rate

Problem: Various federal agencies have imposed an array of limitations or caps on F&A rates which challenge the supposed uniformity and consistency of practice and cost averaging

Options:

Immediate action

- Eliminate lack of uniformity in agency rate implementation, particularly by eliminating congressionally imposed caps for U.S. Department of Agriculture (USDA) and Department of Defense (DOD) programs (targeted conversations underway)

Mid-term

- Revisit the justification for separate and lower rates for federal training and other education programs; recognize that there may be factual justification for rates for a federal non-research oriented training program to be lower than for research intensive programs, but strive for consistent practice in charging F&A rates across federal agencies for similar activities and programs

4. Extending These Principles and Practices to Foundation, Industry and State Funders of Research

Problem: Foundations, companies and states often specify that they will not pay research overhead or establish some arbitrary research overhead rate. Given the seemingly arbitrary and inconsistent practices of the federal government in establishing F&A rates, this foundation/industry/state practice is perhaps understandable. As an ameliorating practice states, companies and foundation funders sometimes permit inclusion in direct cost some items that are not allowed to be directly charged in federal grants. This practice may result in compensating funding in some cases but it creates confusion and complication for researchers whose funding sources include federal, state, industry and foundation sources and it creates expensive accounting practices to track these exceptions.

All research funders should pay a more appropriate share of the cost of research.

Option: Mid-term action

Endorse the position that all research funders should pay a more appropriate share of the cost of research. Communicate as a national association this position to foundations, industry, and states and ask them to change their practices to conform. To the extent that the federal government changes its F&A practices to recognize this principle, foundations, industry and states would be asked to add university F&A rates to the direct charges in their grants.

5. Are There Ways to Disconnect the Presentation of Federal F&A Reimbursement from University Investment in Research?

Problem: Policymakers and others often equate how universities spend indirect cost returns with federal policies for deriving F&A rates. The university community causes this confusion by explicitly linking these federal reimbursements with university formulas for investment or “payback.” The intense and growing damage of this connection is twofold:

- it suggests to faculty and policymakers that federal reimbursed funds are free money, or some form of ‘slush fund’ inviting regulation over its use, and
- it diverts attention from how universities lose money on research when federal reimbursements do not fully cover research costs already incurred.

While this confusing link has always lurked in the background and was not explicitly discussed at the regional meetings, there is growing urgency to change this difficult to explain and dangerous practice. The potential for significant harm grows as demonstrated in two recent examples:

- In partial justification of a floor amendment threatening to withhold F&A reimbursement from universities that do not abide by certain provisions in a major research authorization bill before the U.S. Congress, the Committee Chair suggested that a particular segment of the university community does not receive its share of university F&A reimbursement.
- During a recent talk, a senior official responsible for university rate-setting with the Office of Naval Research noted that universities are not transparent in how they spend their indirect cost returns, based on the variance in university allocation formulas from campus to campus. Several university officers in attendance immediately challenged that it is immaterial how universities expended these funds, as they are **reimbursements** for research costs already incurred. Although the ONR official recanted and agreed that how the universities spend these funds is not germane to the determination of cost rates or return, the suggestion remained that at least some at ONR questioned subsequent university expenditures of F&A reimbursements.

One university president likened the present circumstances to a university judging the legitimacy of a travel reimbursement to a faculty member based not on expenses already incurred for the trip, but instead on how the reimbursed funds might be spent.

By presenting two formulas—one to establish the F&A rates and another on how to distribute the ‘returns’, does the university community contribute to this confusion? Do our various constituents believe that the latter formula—on distributing the funds after they are reimbursed—really drives the process? In allowing the focus to be on the payout rather than the reimbursement, we undercut how much universities increasingly subsidize research. In agreeing with the need to address this confusion, one university president

likened the present circumstances to a university judging the legitimacy of a travel reimbursement to a faculty member based not on expenses already incurred for the trip, but instead on how the reimbursed funds might be spent.

Option, for potential conceptual development and demonstration:

Immediate initiation of discussions; Mid-term implementation

Is it possible for universities to present these two funding flows as two entirely separate activities? This is not to suggest universities change their accounting practices, but instead change their presentation to show **F&A** costs by source. This would require presenting how much is allocated to federally funded research, how much the university would have received if full rates were allowed, and how much the university actually received from federal reimbursements—thus indicating the increased university subsidy of federally funded research. The reimbursements would be presented as going back into the university general funds, and/or back to the activities for which they were incurred. Consistency would require each university to report in the National Science Foundation Expenditures Survey the amount of its own funds spent to support research; this is now an optional reporting item.

Decoupled and apart from F&A reimbursement, current university research-related expenditures/investments for the types of activities presently attributed to indirect cost reimbursements—research start-ups, new laboratories, departmental/college funding, etc.—indicate these funds as coming from a specifically named category of university funds, perhaps keyed to a university’s overall research expenditures in a prior year, *but not explicitly keyed or sourced* to F&A cost return.

CONCLUSIONS & NEXT STEPS

Twenty years of reduced real funding per student and shifting by funders of facilities and administrative costs onto public research universities have taken a significant toll. While the research enterprise remains robust, some deterioration is evident and more is in the offing unless these practices are reversed. During five regional conferences across the nation in April 2010, public research university presidents, provosts and research officers gathered and considered the actions required to ensure that public research universities remain vital and competitive in the future.

Clearly, the long-term decline in state funding must be arrested and funding restored. In this document, public universities affirm their commitment to continue their strong service to the states and nation. In addition, public research universities commit to future action in eight specific priority areas in order to improve their alignment with state needs.

To renew the historic federal-university partnership, critical to future U.S. economic and technological competitiveness, public research universities seek a reaffirmation of the principle of shared costs—that the federal government should reimburse an appropriate portion of facilities and administrative costs that arise from research done on behalf of federal agencies. Policies and practices of federal research agencies would have to be changed to implement this principle. States, foundations and companies should endorse the principle of appropriate reimbursement and change their practices as well.

Because the funding decline has been prolonged and sharply worsened by the recent recession, federal government supplemental funding of research universities is needed. Three possible programs of supplemental funding are detailed above.

This paper will be widely distributed to APLU members and their comments and recommendations will be gathered. The paper has been revised on the basis of comments from the June 22 meeting of the A·P·L·U Council of Presidents in Washington, D.C. and it will be revised following the summer 2010 meetings of the A·P·L·U research officers and provosts. While A·P·L·U consults with its members, the Association also will work with colleagues at AAU, as the overlapping university memberships have concerns that generally complement one another. COGR has been the research academies' principal agent for considering matters related to research reimbursement practices, so A·P·L·U will work closely with them. Dialogue with the administration and individual agencies will continue since they understand the contribution made by research universities and are often willing to make adjustments that serve to strengthen the institutions. The National Academies' Committee on Research Universities is about to begin a study of the international competitiveness of research universities. A·P·L·U will work with the study panel as they undertake their important work.

Thus over the coming months, A·P·L·U will work towards a set of outcomes that improve the health of the nation's research universities. A·P·L·U thanks our colleagues

at AAU and COGR for their input to this process and the many university officials that participated. A·P·L·U is especially grateful to the leaders of the five host institutions and their dedicated staffs for convening these meetings and their special contributions to this dialogue.