Title: Recruiting and Retaining Faculty in a Competitive Market

Policy Initiative: This initiative directly supports all of the Board’s primary four goals, especially: (1) ensuring high quality student learning and (2) creating new knowledge through scholarship and research.

Description:
Constituting the largest expenditure category in the Oregon University System’s budget and the primary resource for accomplishing OUS’ mission, a strong labor force of high quality faculty is essential if initiatives related to student success, program development, research advancement, and economic contributions are to be successful. Competitiveness in the national market in which OUS institutions recruit faculty determines the degree to which OUS can acquire and maintain needed faculty, particularly in the face of growing enrollment demand. The level of success in sustaining a robust and high quality faculty workforce will, in turn, determine whether Oregon will be able to compete successfully in the global context. This proposal aims to ensure Oregon’s competitiveness in that important faculty market.

Current Market Position. OUS universities rank at or near the bottom of their respective established peer institutions in both salary and total compensation (salary plus benefits). Although this is not a recent phenomenon—OUS faculty salaries have been comparatively low for many years—the current position is exacerbated by the even more urgent need to compete successfully in the face of increased retirements of baby boom faculty and growing numbers of students requiring more faculty to meet the demand. The latest data (2004-05) show OUS' low position relative to peers:

<table>
<thead>
<tr>
<th>Institution</th>
<th>Salary Rank</th>
<th>Percent of Peer Average</th>
<th>Total Compensation Rank</th>
<th>Percent of Peer Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eastern Oregon University*</td>
<td>13th of 13</td>
<td>78.0</td>
<td>13th of 13</td>
<td>86.0</td>
</tr>
<tr>
<td>Oregon Institute of Technology</td>
<td>11th of 12</td>
<td>85.4</td>
<td>9th of 12</td>
<td>93.8</td>
</tr>
<tr>
<td>Oregon State University</td>
<td>8th of 8</td>
<td>85.8</td>
<td>7th of 8</td>
<td>91.2</td>
</tr>
<tr>
<td>Portland State University</td>
<td>10th of 10</td>
<td>86.6</td>
<td>10th of 10</td>
<td>90.4</td>
</tr>
<tr>
<td>Southern Oregon University*</td>
<td>12th of 13</td>
<td>84.3</td>
<td>11th of 13</td>
<td>92.0</td>
</tr>
<tr>
<td>University of Oregon</td>
<td>9th of 9</td>
<td>79.7</td>
<td>9th of 9</td>
<td>86.1</td>
</tr>
<tr>
<td>Western Oregon University*</td>
<td>11th of 13</td>
<td>84.9</td>
<td>10th of 13</td>
<td>93.3</td>
</tr>
</tbody>
</table>

* On a list of peers shared by all three regional universities.

Given the low rankings noted above, it is not surprising that OUS universities are challenged in attracting and retaining faculty. These challenges are evidenced most clearly in the percentage of failed or diminished searches and in distressing changes in the normal turnover patterns.

Failed or Diminished Searches. Nearly 30 percent of all faculty searches undertaken in recent years in OUS universities have ended in failure (position not filled) or with a
diminished result (not filled with the first-choice candidate). At some campuses, the proportion is approaching half of all searches. The available data on failed and diminished searches actually understate the problem, especially since potential finalists for faculty positions frequently self-select out of the pool once they learn about the salary level or never enter the pool after making inquiries about the salary level, historical salaries paid, and trends for the campus.

In the vast majority of these cases, salary is the major issue. The related issues of overall resource capacity, Oregon’s commitment to support of public universities, and prospects for the future are also a significant concern for candidates. At OSU, for example, packages offered to faculty in engineering, forestry, and the sciences must include support for equipment, set-up, graduate assistants, and sometimes renovation expenses, with costs over and above salary ranging from $45,000 to more than $500,000 per faculty member. Nationally ranked programs—such as the UO’s College of Education—face the prospect not only of losing faculty who are lured away by attractive offers from top universities, but also of being unable to replace them with faculty of equal caliber because of the inability to compete on salary and other support. At PSU, it is frustrating enough to lose promising applicants to financially better offers from the International Monetary Fund (Economics) and the University of California-Irvine (English), but losing the competition for a young “star” in Biology to Mississippi State indicates the depth of the problem faced by universities in Oregon.

In many professional disciplines—for example, engineering, technology fields, architecture, and journalism—departments encounter stiff competition from private industry in their recruitment of faculty. For some campuses, the heavier instruction load is an issue. All campuses must deal with trailing spouse issues in their searches, particularly as the number of academic couples increases. While many other universities have the resources and flexibility to accommodate this changing academic personnel landscape, OUS institutions do not.

**Faculty Turnover and Retention.** A study of faculty turnover data for the Oregon University System, from 1994-95 through 2004-05, shows that, on average, 5 percent of regular rank faculty leave the University System each year—about 100 faculty annually—through resignation, termination, or retirement. There has been some variation over the years, especially in 2002-03 when changes in PERS precipitated an unusually large number of retirements, but for most years during that period, turnover rates ranged from 3 to 6 percent.

In recent years, a greater proportion of senior faculty members (professors or associate professors) who leave OUS are doing so relatively early in their career. In the seven years prior to and shortly after the adoption of Measure 5 in November 1990 – that is, from 1986-87 through 1992-93 – only 13 percent of professors or associate professors who left OUS did so during their first nine years within the System. Between 1993-94 and 2001-02, that proportion had grown to 20 percent. Moreover, recently there has been an increase in the proportion of departing senior faculty who leave before attaining 20 years of service. In the eight years from 1991-92 through 1998-99, 35 percent of
senior faculty who left OUS did so before attaining 20 years of service; in the three following years (i.e., 1999-00 through 2001-02), that proportion had increased to 47 percent – nearly half of the leavers.

This development has significantly reduced the percentage of full professors among OUS faculty. Between 1994-95 and 2004-05, the number of full professors declined by 26 percent and the number of associate professors dropped by nearly 4 percent, while the number of tenure-track assistant professors increased by almost 30 percent. In effect, the University System has exchanged tenured full and associate professors for tenure-track assistant professors, an exchange that has taken place almost entirely in the last six years. The extraordinarily large number of faculty retirements in 2002-03 has placed a huge burden on the University System in replacing them in a competitive faculty market.

OUS universities are finding that too many of the associate professors who might have been expected to be promoted and take their place among the senior ranks are instead leaving OUS. In many cases, these are faculty who are approaching the peak of their career, young enough not to be too vested in the retirement system but distinguished enough in their professional accomplishments to be highly attractive to other universities or, in some cases, to industry.

In many cases, the reasons that create challenges in recruiting new faculty are the same reasons current faculty leave: salary, the prospects for future resources, and spousal issues. Excluding retirements, OUS campuses report that 80 percent of the faculty who leave do so for salary related reasons.

All universities report that current faculty, like prospective faculty, have serious concerns about the larger issue of disinvestment and prospects for future support of their academic work. The UO notes that it takes four to six years to replace a lost national figure and the loss of such visible faculty causes others to be cautious about coming to Oregon.

**Convergence of Other Trends Affecting Faculty Recruitment and Retention.** The result of budget cuts and the inability to offer competitive salary packages is that the number of regular rank faculty has decreased by over 7 percent between 1994-95 and 2004-05. Meanwhile, enrollment has increased by more than 30 percent or nearly 19,000 students.

As enrollment growth has outpaced instructional capacity, particularly after the large number of faculty retirements in 2002-03, OUS universities have turned to part-time and adjunct faculty to meet teaching needs. Although these faculty provide excellent instruction and are an important resource in meeting instructional demands, their

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1 This trend was interrupted in 2002-03 and 2003-04 with the unusual PERS retirement phenomenon, which resulted in dramatically higher numbers of faculty retiring in 2002-03 and much lower numbers in 2003-04 and 2004-05, as the normal retirement pool had been depleted in 2002-03. Staff estimate that it will take approximately five years to restore this category of faculty to pre-2002-03 levels.
growing proportion is worrisome. Part-time and adjunct faculty do not provide many of
the important instructional services provided by regular rank faculty, such as student
advising and mentoring, thesis guidance, work on extracurricular student projects, or
curriculum and course development. As enrollment has increased over the past 10 years,
the burden of providing this kind of non-classroom instruction has been placed
on a shrinking pool of regular rank faculty. Under these circumstances, students
inevitably receive less attention than they should and faculty feel frustrated at their
inability to provide the level of service they would like. The growing student-faculty ratios
are evidence of the overall resource concerns that underlie faculty departures and
difficulties in successful faculty recruitment.

OUS universities are facing a set of interconnected issues involving increasing losses of
senior and mid-career faculty, the inability to replace them because of diminished
resources now and dim prospects for the future, growing student demand, and
increasing frustration on the part of both students and faculty. The ability to address the
single greatest factor underlying these conditions—competitive salaries to attract and
retain faculty—is the goal of this policy package.

**Expected Outcomes:**
The implementation of this proposal should result in a higher proportion of successful
faculty searches; better retention of outstanding faculty, especially at the associate
professor level; and average faculty salaries that are competitive with those of
comparable universities. These results will significantly contribute to the success of
other key OUS initiatives:

- Better student outcomes addressed through the work of the Excellence in
  Delivery and Productivity (EDP) Working Group and the Provosts’ Council,
  through improved retention and advising initiatives that depend on an adequate
  labor force of high quality faculty;
- Capacity to carry out high priority research and economic development initiatives
  being advanced through the work of the Academic Excellence and Economic
  Development (AEED) Working Group, such as Sustainability and Natural
  Resources, Neuroscience and Biomedical Research, and Nanoscience and
  Microtechnologies; and
- Successful implementation of the ETIC, Healthcare Workforce, and General
  Education Outcomes proposals.

**Performance Indicators:**
- Average faculty salaries at the mean of peer group average salary
- Reduced percentage of failed or diminished faculty search results
- Improved retention of faculty at the associate professor rank
**Budget Request:**
Staff estimates the cost of increasing faculty compensation from 2005-06 levels to the average of the peer institutions to be approximately $50,000,000 for the biennium. The calculation is based on a model that incorporates data from the AAUP Faculty Compensation Survey as published in the March-April issue of Academe. The model projects the faculty compensation cost for each institution, by faculty rank, relative to each institution’s established peer group. Totals are aggregated to identify the OUS requirement.

**FA Policy Package #26**

**Title: Enrollment Growth**

This policy package calculates the increased costs associated with projected increases in enrollment. Institutional Research has provided preliminary enrollment figures and will provide final estimates in mid-June. The preliminary estimates assume an increase in students of approximately 1.5 percent per year.

Using the NACUBO (National Association of College and University Business Officers) Cost of College Model, staff calculated the cost of providing education in 2003-04 at $9,926. This analysis was presented to the Board on February 4, 2005.

Using actual expenditures for 2004-06 and assuming a 5 percent increase in 2006-07 and 2007-08, the cost of service will increase from $9,926 to $11,685 per student. Assuming an annual average tuition and fee revenue for graduate and resident undergraduate students to be approximately $4,650 and will grow by 3 percent in 2007-08, staff calculated the need for additional appropriation of $20,289,600.

### Impact of Enrollment Growth

<table>
<thead>
<tr>
<th>Assumptions</th>
<th>2007-08</th>
<th>2008-09</th>
<th>Biennium Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increase in Student FTE over 2005-06</td>
<td>900</td>
<td>900</td>
<td>1,800</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1,200</td>
<td>1,200</td>
</tr>
<tr>
<td>Total Student FTE Increase</td>
<td>900</td>
<td>2,100</td>
<td>3,000</td>
</tr>
<tr>
<td>Cost per Student FTE</td>
<td>$11,129</td>
<td>$11,685</td>
<td></td>
</tr>
<tr>
<td>Average Tuition per Student FTE</td>
<td>$4,650</td>
<td>$4,800</td>
<td></td>
</tr>
<tr>
<td>Cost</td>
<td>$10,016,100</td>
<td>$24,538,500</td>
<td>$34,554,600</td>
</tr>
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</table>

Impact of Enrollment Growth

<table>
<thead>
<tr>
<th></th>
<th>2007-08</th>
<th>2008-09</th>
<th>Biennium Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Tuition and Fee Revenue</td>
<td>4,185,000</td>
<td>10,080,000</td>
<td>14,265,000</td>
</tr>
<tr>
<td>Net Cost</td>
<td>$5,831,100</td>
<td>$14,458,500</td>
<td>$20,289,600</td>
</tr>
</tbody>
</table>

FA Policy Package #27

**Title:** Tuition Buy-down to Median Family Income

This policy package assumes that it will require a 7 percent tuition increase to fund the Essential Budget Level (EBL) of the Oregon University System in 2007-2009 (EBL calculations are pending at this time). Given the Board’s desire to maintain access and affordability, the purpose of this legislative policy package is to seek state appropriation funding to lower the rate of tuition increase for resident undergraduate students to the change in median family income (MFI) rates, or 3.3 percent per year in 2007-09.

Based on a projected base resident undergraduate tuition in 2006-07 of $194 million, this would require supplemental state appropriation funding of $22.3 million. This amount is calculated as follows:

**Calculation of Resident Undergraduate Tuition Increases and Buy-down Amounts for 2007-2009**

<table>
<thead>
<tr>
<th></th>
<th>2007-08</th>
<th>2008-09</th>
<th>Biennium Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2006-07 Projected Resident UG Tuition Revenues</td>
<td>$194,000,000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Projected Revenues based on 7% increase</td>
<td>$13,580,000</td>
<td>$13,580,000</td>
<td>$14,530,600</td>
</tr>
<tr>
<td>Total</td>
<td>$13,580,000</td>
<td>$28,110,600</td>
<td>$41,690,600</td>
</tr>
<tr>
<td>Projected Revenues based on 3.3% increase</td>
<td>$6,402,000</td>
<td>$6,402,000</td>
<td>$6,613,266</td>
</tr>
<tr>
<td>Difference Needed to Buy-down Increase to MFI</td>
<td>$6,402,000</td>
<td>$13,015,266</td>
<td>$19,417,266</td>
</tr>
</tbody>
</table>

Difference Needed to Buy-down Increase to MFI | $22,273,334 |
FA Policy Package #29

Title: Funding for Regional Universities

The regional campuses within the Oregon University System provide very important functions and services to the state and to the geographic regions in which they are located. In addition to the traditional functions of instruction, research, and service, these campuses represent significant employers and economic development engines for their respective service areas. However, these organizations are not currently funded at a sustainable level and this has created great distress for these institutions. These campuses lack the economies of scale in operations and do not have the depth and diversity in funding streams that are common at some of the larger institutions within the Oregon University System.

This policy package requests $12 million in biennial state appropriation funding to underpin and support these important institutions. This supplemental funding would be allocated in equal increments to Eastern Oregon University, Oregon Institute of Technology, Southern Oregon University, and Western Oregon University.

FA Policy Package #30

Title: Restoration of Funding for the Chancellor’s Office

During the reorganization of the Chancellor’s Office in 2004-05, staffing and the budget were reduced by approximately 40 percent, resulting in ongoing administrative reductions in excess of $6 million per year. However, this reduction has impacted the Chancellor’s Office’s ability to perform its assigned functions. Additional staff and other resources are needed to assist the Board in discharging its fiduciary responsibilities and supporting the work of the Joint Boards of Education. Functions to be strengthened include:

- Internal audit
- Budget and Management
- Controller’s Office and Financial Planning and Analysis
- Performance Measurement and Outcomes
- Institutional Research and Planning
- Legal Affairs
- Facilities Maintenance and Capital Planning

An investment of $3 million per biennium is needed to strengthen these functions and provide the OUS Board with the resources needed to discharge its statutory obligations. This investment will result in better management and coordination of current initiatives, including pre-K-20, IDTS, ATLAS, and other Joint Boards initiatives. In addition, accountability will be strengthened through greater audit coverage; enhanced financial analysis and monitoring; and better institutional research information and planning efforts.
Title: Aquatic Bioinvasion Research and Policy Institute

Policy Initiative:
This proposal will support the state’s overall economic, agriculture, and environmental initiatives. It addresses an issue of key concern to many areas of Oregon’s economic vitality, including the shipping industry, recreational industry, and fishing industry.

Project Description:
PSU and the Smithsonian Environmental Research Center (SERC) have recently joined forces to establish the Aquatic Bioinvasion Research and Policy Institute. Based at PSU, the Institute combines the expertise of two complementary, world-class research programs on marine invasions (SERC) and freshwater invasions (PSU). The Institute’s mission is to advance multi-disciplinary understanding and real-world solutions for aquatic bioinvasions and is a focal point for interdisciplinary approaches, engaging researchers, industry, and resource managers from an association of participating institutions. This initiative implements a series of activities at the Institute and expands the consortium to include collaborative and coordinated efforts with the University of Washington, San Francisco State University, Oregon State University, and other universities in the region. Institute activities will include: 1) research on biological invasions, including the biology, ecology, and management of invasive species; 2) focal workshops, seminars, and symposia on aquatic bioinvasion policy, prevention, and research issues; 3) public outreach and education on impacts and management that are coordinated with ongoing efforts in the state and region; 4) technology development to prevent species introductions via ballast water, hull fouling, and other pathways, including research, development, and testing of treatment systems; and 5) development of early detection and rapid response programs including development of a web-based toolkit of information on criteria and options for rapid response and implementation of demonstration projects. The funding will also provide support for student and professional development.

The Situation:
Trade is crucial to commerce, cultural development, and the economic vitality of Oregon. Developing ways to conduct such human enterprise in a manner that is ecologically as well as economically sustainable is a priority for Oregon and the nation. One unintended consequence of trade is the movement of organisms that cause enormous economic and ecological damage. Such human-aided transfers breach historical barriers to dispersal (e.g., ocean basins or mountains) and allow organisms to establish self-sustaining populations and spread beyond their historical geographic ranges, resulting in biological invasions. Biological invasions are fundamentally changing the structure and function of life on Earth. Invasions have wide-ranging and potent effects on species diversity, ecosystem services, food resources, water supplies, and human health. In the U.S. alone, annual economic losses due to invasions are estimated to exceed $137 billion, adversely impacting many dimensions of society.
The rate of new invasions has increased tremendously (often exponentially) throughout the world, a predictable but underappreciated outcome of globalization of trade, whereby more commodities are transferred among more global regions at ever faster rates. The observed impacts of invasions, combined with the rapid increase in the number of introductions, is driving strong public and scientific concerns and urgent calls for actions to stem the flow of new invasions and minimize severe effects. The importance of the issue to Oregonians was most recently demonstrated in the concern expressed by the people of Newport following a proposal to move derelict ships from the Suisan Bay near the San Francisco Bay to Newport for dismantling. The threat of invasive species on the ship hulls was cited as a major problem with the project.

The development of coherent and effective policy depends upon a strong scientific understanding about mechanisms of transfer, factors that influence establishment, and effects (risks) of particular organisms. Many conspicuous gaps exist in our knowledge base, hindering management and policy decisions. Moreover, bioinvasions are inherently complex and multidisciplinary in nature, involving the interaction of economics (trade), engineering (shipping and other transport mechanisms), ecology, biogeography, law, and environmental science. Advancing science-based policy to prevent new invasions of coastal ecosystems is a national priority. On a continental scale, the observed rates of marine and freshwater invasions have increased exponentially, impacting powerplants, commercial fisheries, and critical habitats. Similar trends are evident on state and regional scales. For example, a recently completed survey of the lower Columbia River by PSU found 81 nonnative species. During the last decade, a new species was found in the river about every five months; during the previous century the rate of new species entry was estimated at one every five years.

Ballast water discharge from ships is one of the most important pathways of aquatic invasive species introduction. Development of technologies to treat ballast water to remove organisms prior to discharge is a major focus of state, federal, and international regulatory organizations. Meeting this objective requires not only a strong scientific understanding of biology and ecology but also an interdisciplinary approach.

Developing technological solutions and management strategies for biological invasions creates significant economic opportunity for Oregon and southwest Washington. The global market for ballast water treatment technology has been estimated to be $20 billion. Our region is poised to become a leader in competition for this emerging market and the jobs it will create. To fully realize this potential, we propose an initiative that develops the local expertise and capacity to address biological invasions, building upon our existing strengths in this area.

**Project Outcomes:**

1. An informed citizenry: The Institute will collaborate with and enhance the Oregon Invasive Species Council’s outreach and education strategy.
2. Rapid response plans: The Institute will work with management agencies to develop emergency response plans for new aquatic invaders such as the zebra mussel.
3. A training program for managers: The Institute will train new undergraduate and graduate students in the science and management of aquatic invasive species and provide professional education to current managers.

4. Data warehousing: The Institute will collaborate with the USGS and SERC on a database on aquatic invasive species.

5. Surveys: Regular survey of Oregon’s water resources are necessary for early detection and effective management of invasive aquatic species.

6. Coordination: The Institute will coordinate all activities with local, state, regional, and national and international agencies involved in aquatic invasive management.

7. Technical assistance: The Institute will provide taxonomic and management planning assistance on aquatic invasive species to agencies that lack those capacities.

Performance Indicators:

1. Oregonians will be surveyed before and after implementation of the outreach and education strategy. The goal of the strategy is to increase the breadth and depth of understanding of aquatic invasive species among Oregonians.

2. At least one rapid response plan for species or habitat type will be developed or reevaluated each year.

3. At least one professional education seminar and one course will be offered on aquatic bioinvasions each year to undergraduate and graduate students.

4. Any new reported species and all data from surveys will be entered into a database. The database will be accessible on the web.

5. At least one comprehensive statewide survey will be conducted each year. Surveys will be based upon habitat type; e.g., wetlands, lakes, estuaries, rivers, streams, etc.

6. The Institute will organize semiannual symposia on aquatic invasive species in Oregon and will attend coordinating meetings held regionally, nationally, and internationally.

7. The Institute will respond to requests for technical assistance as required.

General Budget Request: $1,000,000 (biennial support)

 Staff (including institute director)  
$500,000

Outreach, Education, and Research  
$400,000

Supplies, Services, and Travel  
$100,000
Title: National University Transportation Center: Portland State University in partnership with the University of Oregon, Oregon State University, and the Oregon Institute of Technology

Policy Initiatives:
This proposal supports the Board’s policy initiatives in Access and Affordability, Excellence in Education Delivery and Productivity, and Academic Excellence/Economic Development, and Sustainability

Description:
A four-university consortium (Portland State University in partnership with the University of Oregon, Oregon State University, and the Oregon Institute of Technology) has been designated by the U.S. Congress as a National University Transportation Center (UTC), as part of the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU). SAFETEA-LU authorizes the federal surface transportation programs for highways, highway safety, and transit for the 5-year period 2005-2009. Within the overall UTC program, only ten (including Oregon) are designated as national centers. The UTC program is administered by the Research and Innovative Technology Administration (RITA) within the U.S. Department of Transportation, designed to be “half Silicon Valley entrepreneurial company and half university research lab.” The UTC program supports internationally recognized centers of excellence, fully integrated within institutions of higher learning, that serve as a vital source of leaders who are prepared to meet the nation’s need for safe, efficient, and environmentally sound movement of people and goods. The UTC mission is to advance U.S. technology and expertise in the many disciplines comprising transportation through the mechanisms of education, research, and technology transfer at university-based centers.

The Situation:
There is a need to use advanced and applied research to improve our transportation systems to make them more sustainable. There is also a workforce crisis in the transportation sector in that half of our nation’s transportation system employees will be eligible for retirement in the next ten years. In order to address these issues, the UTC program supports six goals in the areas of education (undergraduate, graduate, and lifelong learning); human resources (increasing numbers of faculty, students, and staff involved in transportation); diversity (increasing diversity of faculty, students, and staff in transportation programs); research selection (an objective, rigorous, and peer-reviewed process for selecting and reviewing research); research performance (producing quality research products that can be applied toward solving problems); and technology transfer (connecting research results with potential users).

The Oregon Center is funded at $16 million in federal funds over five years, but each federal dollar must be matched by a local, non-federal dollar. The purpose of this request is to build a stable source of local match on behalf of all participating OUS institutions, which will support an ongoing local effort to improve and sustain improved transportation research, education, and outreach. It is recognized that there is value in
the need to ferret out local match in that external partners (e.g., transportation agencies and industry) will be stakeholders in research results and will push researchers to make their products relevant. However, the requested funding will lower the burden for faculty at the four campuses to pursue research and education initiatives that are perhaps too advanced to fit with local priorities or that are difficult to match. The requested funding will allow the Oregon Center, with faculty and students on all four campuses, to develop sustained, improved expanded transportation research and education initiatives that are cross-disciplinary, cross-campus, cross-institution, and address the important passenger and freight movement issues that affect our state and beyond. Also, RITA required the center to support research needs of federal transportation agencies who cannot provide matching funds.

The Oregon Center is collaborative, statewide, multimodal, and inclusive. Our themes are: advanced technology, integration of land use, and transportation and healthy communities. We have already identified 100 faculty on the four campuses in 27 different disciplines who are interested in transportation—in order to ensure that the best ideas are developed, we expect substantive collaborations across campuses and across disciplines.

The Oregon UTC is also intended to be student-centered: we must attract, retain, and train top students in our graduate programs. To accomplish these objectives, the UTC is also faculty driven—as educators and principal investigators, the faculty will be empowered to develop their ideas and pursue their passions toward improving our transportation system—making it more efficient, effective, equitable, and sustainable. We expect to make a positive impact on the transportation profession and on our state’s economy.

The Oregon UTC at Portland State University, in partnership with the University of Oregon, Oregon State University, and Oregon Institute of Technology, is committed to providing relevant research to assist local, state, and regional agencies in their work and to expanding the pool of highly talented students who choose to work in the area of transportation planning and engineering. Building upon our collective efforts to make Oregon a place where innovation, creativity, and collaboration lead to sustainable communities, we look forward to working together to create a vibrant, multimodal, multidisciplinary university transportation center that is an exciting place for students to learn and be enriched by an active faculty and compelling research program.

*Expected Outcomes:*
Outcomes include more students supported (tuition support, stipends, fellowships) with research assistantships that will make our campuses more competitive, more and better graduates (master’s and Ph.D.), increased graduation rates for transportation students, placement rates with transportation agencies, more graduates working in Oregon, more peer-reviewed faculty and student publications, more diverse student pool, more faculty, more staff supporting research efforts, more sponsored research dollars, improved quality of transportation programs at the four campuses, potential for intellectual
property development, greater national and international reputation, and greater opportunities for students to collaborate across campuses.

Performance Indicators:
As part of the Oregon UTC’s strategic plan, the following performance indicators will be tracked:

Research Selection
1) Number of transportation research projects selected for funding.
   a) Number of projects considered to be: basic research, advanced research, and applied research.
2) Total budgeted costs for the projects reported above.

Research Performance
3) Number of transportation research reports published.
4) Transportation research papers presented at academic/professional meetings.

Education
5) Number of courses offered as part of a transportation curriculum.
6) Number of students participating in transportation research projects.

Human Resources
7) Number of transportation-related advanced degree programs, students enrolled and graduates produced.

Technology Transfer
8) Number of transportation seminars, symposia, distance learning classes, etc. conducted for transportation professionals.
9) Number of transportation professionals participating in those events.

Budget Outline:
Total recurring request: $1 million per year as part of the 2007-2009 budget ($2 million for the biennium). This will leverage at least $2 million in federal funds during the biennium (budget breakdown, including FTE, available upon request). Funding will support faculty, students, and programs at PSU, UO, OSU, and OIT.
Title: Leading Innovation: Strengthening Oregon’s Manufacturing Enterprise

Manufacturing has been an important part of Oregon’s landscape since the mid-19th century. Isolated from the rest of the nation, pioneer craftsmen and entrepreneurs married the region’s abundant natural resources and energy with their own innovation to create a diverse and self-reliant manufacturing economy. Manufacturing became the bedrock of Oregon’s economy and its hidden economic giant, producing high-wage jobs, wealth, and civic commitment to urban and rural communities alike. The state’s manufacturing sector is still shaped by this pioneer spirit and commitment to place. But today our companies are no longer isolated—they compete in a global economy.

Manufacturing is the business of making things. Manufacturing companies combine raw materials, the skills of craftsmen, and the innovation of business professionals, as well as engineering and applied technology, to produce goods and services. Our region’s manufacturers have made huge strides in productivity – adding value to products in ways that allow them to compete with companies in foreign, low-wage economies.

Oregon companies are challenged by an aging workforce and declining numbers of young workers with the necessary skills to replace retirees. In the Portland area, in the metals and fabrication industry alone, it is estimated that 16,000 replacement craftspeople and professionals will be needed within the next six to ten years. Expected employment growth will drive the need for even more skilled craftspeople across the manufacturing cluster. Yet there are not enough young people entering the training pipeline and receiving the right mix of skills to meet this impending need.

Manufacturing companies are technology and innovation companies. Whatever the product, the companies all share a set of core technology needs. These include large scale dynamic testing, thermal and joining processing, systems health, surface engineering, component performance, and production prototyping. These industries’ needs do not fall comfortably into established technical or engineering disciplines but are interdisciplinary. Like manufacturing itself, they must be organized and delivered by people and organizations that understand how to draw upon and integrate knowledge into useful innovations for companies focused on delivering high value products to customers every day. This is the unique role for accomplished faculty and university research programs and the objective of this initiative.

Policy Initiative(s):
This package is a central component of the Governor’s strategy to increase the level of investment in support for Oregon’s manufacturing cluster and his statewide workforce strategy. The initiative is part of the Oregon Business Plan and the Portland Metro Area Business Plan and has been advocated for by Oregon’s manufacturing industry. The package is broadly supported by industry, which has played a leading role in its development.
Description:
This proposal targets the innovation needs of Oregon’s manufacturing cluster, which is composed of 2,200 companies and 200,000 employees. The program has three elements. The effort focuses on expanding the Oregon University System’s capacity to deliver applied technology research and providing new education and training opportunities to the state’s manufacturing cluster. The request will have statewide impact and is fully consistent with plans to establish a Center for Manufacturing and Infrastructure Engineering in the Portland metropolitan area. The investment is linked to collaborative activities with the Pacific Northwest National Laboratory, located in Richland, Washington and Oregon’s nano-technology agenda. Collaboration with PNNL is a central feature of the Governor’s Innovation Agenda.

The initiative has three components that build on existing capabilities that have been repeatedly identified by Oregon companies as highly responsive to their needs. One of the new faculty positions will provide a solid bridge between Oregon’s nano-technology initiative and its metals and materials fabrication clusters. This will create a significant new pathway for the transfer of OUS-created technology to Oregon companies capable of producing products and creating jobs around nano applications.

- Create three new senior faculty positions at Portland State University in the following areas: environmentally benign nano-structured surface engineering; materials joining; and non-destructive analysis of engineered materials.
- Acquire three new critical pieces of equipment for use in existing laboratories. These include: a dynamic physical thermal mechanical simulation test system; a controlled-atmosphere, high-temperature programmable furnace; and an automated micro-hardness test system.
- Expanded matching applied research grant program, Oregon Metals Initiative, to create stronger collaboration with Oregon University System research faculty and the manufacturing cluster. This policy package includes funds for a small business set-aside to allow smaller manufacturing companies to participate in the applied matching grant program.

These investments are tied to investments in the manufacturing cluster made by Oregon’s Economic and Community Development Department and the Governor’s Office of Workforce Development. The investments are supported and complemented by investments and participation by industry groups. These include the Manufacturing 21 Coalition, Pacific Northwest Defense Coalition, and the Oregon Recreational Vehicle Consortium.

The total investment sought for the biennium is $3,222,000.

Expected Outcomes:
Expected outcomes include: increased graduation of technicians and engineers for the manufacturing sector; increased research productivity due to new collaborations between industry, national laboratories and faculty; increased monetary contributions by
industry to university research; and improved connectivity with community college engineering and applied technology programs.

Performance Indicators:

| Increased graduation of technicians and engineers available to manufacturing companies | 10% increase over current PSU mechanical engineering/materials science enrollment levels. Steady state goal of 35 additional engineering graduates. |
| Increased research volume | 50% increase over current levels after four years. |
| Increased industry monetary contribution to university research programs | $750,000 increase in contributions from industry and expanded participation from small businesses over a two-year period. This will produce a total applied research fund value of $3,750,000 for the 2007-2009 biennium. |
| Improved connectivity with community college engineering and applied technology programs | Ten community college students involved in upper division engineering research projects prior to transfer into OUS engineering programs. |

Budget Outline:

Number of FTE's and position titles

<table>
<thead>
<tr>
<th>Recurring Costs</th>
<th>Year One</th>
<th>Year Two</th>
</tr>
</thead>
<tbody>
<tr>
<td>Salary 3 FTE</td>
<td>$340,000</td>
<td>$340,000</td>
</tr>
<tr>
<td>OPE 40%</td>
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<tr>
<td>S&amp;S</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Capital Outlay</td>
<td></td>
<td></td>
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<tr>
<td>Technology Expenses</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Cost</td>
<td>$476,000</td>
<td>$476,000</td>
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</table>

<table>
<thead>
<tr>
<th>One-Time Costs</th>
<th>Year One</th>
<th>Year Two</th>
</tr>
</thead>
<tbody>
<tr>
<td>Salary</td>
<td></td>
<td></td>
</tr>
<tr>
<td>OPE</td>
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<td></td>
</tr>
<tr>
<td>S&amp;S</td>
<td></td>
<td></td>
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<tr>
<td>Capital Outlay related to new faculty start up funding packages. (Laboratory renovation, equipment, related start-up costs.)</td>
<td>$750,000</td>
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</table>
### One-Time Costs

<table>
<thead>
<tr>
<th></th>
<th>Year One</th>
<th>Year Two</th>
</tr>
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<tbody>
<tr>
<td>Equipment purchase to upgrade existing laboratories to support manufacturing research. (See below)</td>
<td>$500,000</td>
<td>N/A</td>
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<tr>
<td>Technology Expenses</td>
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<tr>
<td>Phase In</td>
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<tr>
<td>Phase Out Search/Moving, relocation costs</td>
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<tr>
<td>Total Cost</td>
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### Additional equipment purchase and upgrades to support manufacturing research

<table>
<thead>
<tr>
<th>Equipment</th>
<th>Cost</th>
</tr>
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<tbody>
<tr>
<td>Dynamic physical thermal mechanical simulation test system</td>
<td>$400,000</td>
</tr>
<tr>
<td>Controlled atmosphere high temperature programmable furnace</td>
<td>$50,000</td>
</tr>
<tr>
<td>Automated micro-hardness test system</td>
<td>$50,000</td>
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<tr>
<td>Total one-time cost</td>
<td>$500,000</td>
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</table>

### Matching applied industry grant program (OMI)

<table>
<thead>
<tr>
<th>Matching applied industry grant program (OMI)</th>
<th>Two-year cost</th>
<th>Industry match</th>
<th>Total research volume with increase and assuming small business lower match requirement</th>
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</thead>
<tbody>
<tr>
<td>Represents a doubling of the state 2005-2007 commitment to the longstanding program. Current level of biennial funding is $1 million.</td>
<td>$1 million (includes small business set aside, with 50% lower match requirement).</td>
<td>$1,750,000</td>
<td>$3,750,000</td>
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</table>