As the sesquicentennial of the Morrill Act approaches, I take this opportunity to reflect on the lasting impact that Oregon State University has made in Oregon and throughout the world, as well as the crucial and evolving role of land-grant universities in creating a prosperous future.

Oregon State’s long-standing commitment to provide the citizens of Oregon with a world-class education and to deliver innovative research throughout the state continues to this day. Our impact is specific and measurable. It is wide-ranging as well as personal. And it is deeply ingrained into our culture. For more than 140 years, we have made a positive and significant difference across the state on what’s most important for Oregonians.

At Oregon State, we have an unwavering commitment to excellence: in our classrooms and laboratories where faculty inspire students to expand their minds and develop the knowledge to achieve their goals; in cutting-edge research; and through Extension Service outreach and engagement in communities throughout Oregon.

And while we are proud and deeply committed to serving as the state’s land-grant university, our reach extends well beyond Oregon. Our contribution and impact extend across the U.S. and throughout the world and range from the microscopic innovation of nanoscience to the vast universe within our oceans. Oregon State’s global impact has been estimated at $2.06 billion.

I value Oregon State’s partnership with the federal government particularly in the areas of student access, community outreach and scientific research. As OSU works to meet emerging community and national needs, we commit to the following:

» Provide a high quality education for a fair price — offering unparalleled opportunities for students and contributing to a strong economy.

» Broaden the contributions of the OSU Extension Service throughout the state by increasingly serving the specific needs of Oregon’s urban and rural communities.

» Build upon our strong scientific research portfolio by conducting vibrant, innovative and impactful government and industry-sponsored research and expanding partnerships to propel the economy, retain employment and create new businesses and jobs.

As the President of Oregon State University, I personally thank you for your service and leadership and I look forward to working with you to secure a bright future for both our state and our nation.

Sincerely,

Edward J. Ray
President
Oregon State University
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</tr>
</tbody>
</table>
Oregon State University’s nearly 25,000 students come from every county in Oregon, all 50 states and nearly 100 countries. This includes more than 20,600 undergraduates and more than 4,300 graduate and professional students. Oregon State consistently enrolls more high achievers — including 133 Oregon valedictorians in 2010 — than any other Oregon public university. Oregon State also leads in the number of full-time resident students. In Fall 2011, Oregon State enrolled 14,324 of these students, as compared to 13,474 at Portland State University and 12,083 at the University of Oregon.

Oregon State Student Enrollment by Oregon County* – Fall 2011
Total students from Oregon*:
17,104

Oregon State Fall Term 2011 Enrollment by Academic College** and Student Level

<table>
<thead>
<tr>
<th>Academic Unit</th>
<th>College of Agricultural Sciences</th>
<th>College of Business</th>
<th>College of Earth, Ocean, and Atmospheric Sciences</th>
<th>College of Education</th>
<th>College of Engineering</th>
<th>College of Liberal Arts</th>
<th>College of Pharmacy</th>
<th>College of Public Health and Human Sciences</th>
<th>College of Science</th>
<th>College of Veterinary Medicine</th>
<th>Graduate School</th>
<th>University Exploratory Studies Program</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Undergraduate</td>
<td>1,742</td>
<td>2,340</td>
<td>***</td>
<td>20</td>
<td>4,343</td>
<td>803</td>
<td>3,604</td>
<td>3,359</td>
<td>3,411</td>
<td>999</td>
<td>20,621</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Graduate</td>
<td>321</td>
<td>181</td>
<td>99</td>
<td>281</td>
<td>870</td>
<td>164</td>
<td>184</td>
<td>28</td>
<td>528</td>
<td>12</td>
<td>831</td>
<td>580</td>
<td></td>
</tr>
<tr>
<td>First Professional</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>****</td>
<td></td>
<td>**</td>
<td></td>
<td>**</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>2,063</td>
<td>2,521</td>
<td>99</td>
<td>301</td>
<td>5,213</td>
<td>967</td>
<td>3,788</td>
<td>3,363</td>
<td>3,939</td>
<td>234</td>
<td>831</td>
<td>999</td>
<td>24,977</td>
</tr>
</tbody>
</table>

*Best estimation of assignment by county; does not reflect all Oregon resident students.
**Unduplicated headcount based upon student’s primary college.
*** The College of Earth, Ocean and Atmospheric Sciences was reorganized after the Fall 2011 enrollment report and now includes undergraduate students majoring in Geography, Geology and Geographic Information Systems.

Source: Enrollment Summary Fall Term 2011, Office of Academic Planning and Assessment, Oregon State University, November 2011.
Top 10 States — Fall 2011
Total out-of-state enrollment: 5,856*

Top 10 Foreign Countries — Fall 2011**
Total international student enrollment: 1,852*

Oregon State is making significant efforts to increase its international enrollment. Currently, there are 1,852 international students from nearly 100 countries, comprising 7.4 percent of the student body. By 2015, Oregon State hopes to increase its international enrollment to 10 percent.

*Residency based on student fee status.
**Foreign countries are based upon countries of citizenship.
Source: Fall Term 2011 4th Week Enrollment Data, Office of Academic Planning and Assessment, Oregon State University.
Ravi Patel typically spends 10 hours a day on the Oregon State University campus. And he’s happy to do it. A junior majoring in public health with concentrations in health management and policy and health promotion and health behavior, Patel tackles more than 17 credits of coursework each term. When he’s not in class or studying or at his work-study job, he’s giving back to the student community. Patel serves on the executive cabinet of the Associated Students of Oregon State University (ASOSU), volunteers at the campus cultural centers and is active in Greek life.

Patel says the federal Pell Grant program made college possible. A first-generation college student, he sees the Pell Grant as more than just providing access to a four-year university. It also allows him to make the most of his time at Oregon State. “The Pell Grant allowed me to take the classes I really want to take and helped me in my major, so I can take a full course load,” he says. “Without the Pell Grant, I’d be working three jobs just to stay in school.”

Instead, Patel has the flexibility to balance his academic and volunteer commitments with work. In addition to a part-time job on campus through support from the Federal Work-Study Program, Patel often spends the weekends at home in Woodburn, Ore., where he works nights at the family motel business.

Patel’s parents are first-generation immigrants from India who stressed the importance of postsecondary education as the path to a better life. However, it was up to Patel to figure out how to make college possible. With support from a dedicated faculty at the Academy of International Studies High School in Woodburn, Patel applied for scholarships, grants and other funding sources. “Kids from small, rural towns like me really depend on grants, scholarships and loans to give them access to a four-year university,” he says.

Pell Grants also allowed Patel to choose the university that fit his goals. Patel turned down a four-year, full-tuition scholarship at the another Oregon university to attend Oregon State. He says he chose Oregon State because of the people and the emphasis on quality education. “Everyone was talking about degrees and science,” he explains. “It was the community I wanted to be in.”

After he graduates from Oregon State, Patel plans to pursue graduate degrees in health policy management and law at Stanford University to prepare him for a career in hospital policy and management. He would like to then return to Oregon to work at an institution like Oregon Health and Science University.

But in the here and now, Patel is committed to giving back to other students, whether that means volunteering on campus or working with legislators to sustain Pell Grant funding in his role as ASOSU’s executive director of government relations. “I know the Pell Grant program has helped me a lot, and I want it to stay around so that it helps other students in the same way,” he explains.

Ravi Patel is just one of millions of students nationwide for whom a college education is possible thanks to Pell Grants. From 2006 to 2011, Congress made historic investments in college financial aid, passing the College Cost Reduction and Access Act (PL 110-84), the Higher Education and Opportunity Act (PL 110-315) and the Student Aid and Fiscal Responsibility Act (PL 111-152). Pell Grants and other federal student aid programs make a significant, positive difference, not only in the lives of these students, but in the future of our nation.
Financial Aid by the Numbers

of Oregon State undergraduate and graduate students received need-based federal financial aid in the 2010–11 school year.

2010–11 Federal Financial Aid at Oregon State

<table>
<thead>
<tr>
<th>Type of Financial Aid</th>
<th>Number of students</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pell Grants</td>
<td>7,224</td>
<td>$29,397,456</td>
</tr>
<tr>
<td>Federal Work-Study Program</td>
<td>795</td>
<td>$1,047,289</td>
</tr>
<tr>
<td>Federal Supplemental Education Opportunity Grants</td>
<td>887</td>
<td>$914,853</td>
</tr>
<tr>
<td>Perkins Loans</td>
<td>1,570</td>
<td>$3,196,417</td>
</tr>
<tr>
<td>Federal Ford Direct Loans</td>
<td>12,774</td>
<td>$133,853,656</td>
</tr>
</tbody>
</table>

Pell Grants

<table>
<thead>
<tr>
<th></th>
<th>Pell Grant Recipients</th>
<th>Total Pell Grant Payments</th>
<th>% of Tuition Fees* (Undergraduate Residents) Covered by Maximum Pell Grant</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005–06</td>
<td>4,449</td>
<td>$11,487,130</td>
<td>75%</td>
</tr>
<tr>
<td>2010–11</td>
<td>7,224</td>
<td>$29,397,456</td>
<td>77%</td>
</tr>
</tbody>
</table>

Tuition and Fees Per Student

<table>
<thead>
<tr>
<th></th>
<th>Undergraduate*</th>
<th>Graduate**</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Resident</td>
<td>Non-Resident</td>
</tr>
<tr>
<td>FY 2007</td>
<td>$5,642</td>
<td>$17,559</td>
</tr>
<tr>
<td>FY 2012</td>
<td>$7,600</td>
<td>$21,316</td>
</tr>
</tbody>
</table>

Financial Aid dollars – 2010–11

Total: $202,655,039

- Grants $35,257,356
- Loans $137,044,818
- Work Study $1,047,289
- Scholarships $29,305,576

* Oregon University System Academic Year Fee Book 2011–12. Assume 15 credit hours. All majors except business, engineering and some forestry and public health and human sciences majors, which have higher differential tuition.
** Oregon University System Academic Year Fee Book 2011–12. Assume 12 credit hours. All majors except business, engineering, Master of Public Health and Professional Science Masters, which have higher differential tuition.

Source: Oregon State University Office of Financial Aid and Scholarships, January 2012.
Workforce and Alumni Footprint

Oregon State Payroll by County 2011
Total payroll from Oregon: $325,877,439

Source: OSU Office of Human Resources
Includes all paid Oregon State University faculty and staff, student employees and graduate assistants. Does not include OSU Foundation or OSU Alumni Association employees.

Oregon State Alumni Count by County 2011
Total Alumni from Oregon: 89,982

Source: Active Alumni Demographic Data report, OSU Foundation, December 2011.
Financial Profile

Source of Funds – FY 2011
Total: $785,284,000

- Other Revenue: $58,763,000 (7%)
- Auxiliary Enterprises: $102,755,000 (13%)
- Sales and Services: $28,659,000 (4%)
- Gifts, Grants and Contracts: $225,838,000 (29%)
- Capital Grants and Gifts: $9,769,000 (1%)
- Student Tuition and Fees: $180,759,000 (23%)
- State Appropriations: $150,280,000 (19%)
- Federal Appropriations: $10,235,000 (1%)
- County Appropriations: $6,762,000 (1%)
- Capital and Debt Service Appropriations: $11,437,000 (1%)

Source of Funds – FY 2006
Total: $609,619,000

- Other Revenue: $54,371,000 (9%)
- Auxiliary Enterprises: $67,040,000 (11%)
- Sales and Services: $30,116,000 (5%)
- Gifts, Grants and Contracts: $168,877,000 (28%)
- Capital Grants and Gifts: $14,493,000 (2%)
- Student Tuition and Fees: $112,281,000 (18%)
- State Appropriations: $140,491,000 (23%)
- Federal Appropriations: $7,157,000 (1%)
- County Appropriations: $5,410,000 (1%)
- Capital and Debt Service Appropriations: $9,383,000 (2%)

Source: Oregon University System Audited Financial Statements.
Using FY06 numbers restated for comparison to FY11 presentation.
Oregon State’s Research Enterprise

Oregon State University is ranked in the Carnegie Foundation’s top tier for “very high research activity” and is one of only two research universities in America to hold the federal land, sea, space and sun grant designations simultaneously. Oregon State is Oregon’s largest public research university, receiving approximately half of the total federal research funding in the Oregon University System (see graph on page 9).

In 2010–11, Oregon State scientists earned more than $261 million in research contracts and grants.

In addition:

**DEVELOPMENT**

Two new start-up companies were created — Home Dialysis Plus and AGAE

47 new patent applications were submitted

77 new invention disclosures were submitted

**REVENUE**

$4,011,475 in licensing income was received from commercialization activities

**AGREEMENTS**

88 material transfer agreements

105 confidentiality agreements

Three option agreements

Seven exclusive and 29 nonexclusive license agreements

Source: Proposal and Award Statistics, OSU Research Office; OSU Office for Commercialization and Corporate Development.

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**Oregon State Externally Funded Awards – FY 2010-2011**

Total: $261,700,333

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Total Federal Agency Awards: $183,689,996

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*Other includes DHS, NRC, DPM and State.*
Competitively Awarded Oregon State Grants and Contracts by Federal Agency FY 2006-07 to FY 2010-11

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>NSF</td>
<td>$35,572,725</td>
<td>$38,635,862</td>
<td>$38,744,085</td>
<td>$44,465,174</td>
<td>$49,432,893</td>
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<tr>
<td>USDA</td>
<td>$21,351,711</td>
<td>$22,342,884</td>
<td>$27,835,986</td>
<td>$38,502,349</td>
<td>$36,141,321</td>
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<tr>
<td>HHS</td>
<td>$17,783,815</td>
<td>$15,758,469</td>
<td>$25,348,979</td>
<td>$27,654,068</td>
<td>$28,762,560</td>
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<tr>
<td>DOD</td>
<td>$11,999,217</td>
<td>$12,085,895</td>
<td>$19,664,894</td>
<td>$15,566,549</td>
<td>$17,190,159</td>
</tr>
<tr>
<td>DOE</td>
<td>$9,223,561</td>
<td>$9,874,648</td>
<td>$10,459,874</td>
<td>$19,063,674</td>
<td>$12,326,743</td>
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</table>

Oregon University System Federal Research Dollars Awarded 5-year trends by institution*

<table>
<thead>
<tr>
<th>Institution</th>
<th>FY 2006-07</th>
<th>FY 2007-08</th>
<th>FY 2008-09</th>
<th>FY 2009-10</th>
<th>FY 2010-11</th>
</tr>
</thead>
<tbody>
<tr>
<td>OSU**</td>
<td>$157,866,064</td>
<td>$160,964,551</td>
<td>$166,335,024</td>
<td>$183,264,445</td>
<td>$193,039,148</td>
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<tr>
<td>UO</td>
<td>$100,962,182</td>
<td>$105,018,505</td>
<td>$107,004,949</td>
<td>$113,186,015</td>
<td>$122,930,154</td>
</tr>
<tr>
<td>PSU</td>
<td>$34,372,631</td>
<td>$36,368,262</td>
<td>$53,892,832</td>
<td>$59,248,590</td>
<td>$66,180,722</td>
</tr>
<tr>
<td>Regional Campuses***</td>
<td>$21,950,635</td>
<td>$22,865,397</td>
<td>$21,924,232</td>
<td>$20,919,654</td>
<td>$21,284,325</td>
</tr>
<tr>
<td>Total</td>
<td>$315,151,512</td>
<td>$325,216,712</td>
<td>$349,147,037</td>
<td>$376,615,704</td>
<td>$404,434,349</td>
</tr>
</tbody>
</table>

Oregon State’s contribution in federal research dollars awarded is consistently around 50% of the OUS total.

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*Based on OUS count.
**Does not include statewide Public Service Programs.
***Includes EOU, SOU, WOU and OIT.
Source: Oregon State University Research Office; Oregon University System 2011 Fact Book.
Statewide Public Services
100+ years of service to Oregonians and the Oregon economy

Oregon State University’s three Statewide Public Service Programs — the OSU Extension Service, Agricultural Experiment Station and Forest Research Laboratory — have been improving quality of life and bolstering the state’s economy for more than a century.

Serving Oregon’s 36 counties
Since 1911, the OSU Extension Service has been providing research-based educational programs across the state. A total of 219 Extension faculty are located on the Corvallis campus and in each of Oregon’s 36 counties. Programs focused on agriculture, family and community health, forestry, 4-H youth development and marine resources help Oregonians of all ages and in both rural and urban settings solve problems, develop skills and manage resources wisely. A statewide network of 18,900 volunteers works with OSU Extension Service faculty to lead programs such as 4-H, Master Gardeners, nutrition and health assistance and others. OSU Extension Service programs reach an estimated 2.3 million Oregonians every year — nearly two-thirds of the state’s population.

Impacts in Agriculture
As Oregon’s land grant university, Oregon State has always played a vital role in the state’s $43 billion agriculture industry, which includes nearly 39,000 farms and tens of thousands of jobs.

Research and outreach from the College of Agricultural Sciences and OSU Extension Service faculty, Experiment Station scientists and students help Oregon farmers and ranchers solve problems, improve operations, increase yields and gain market share. Examples include helping coastal cranberry growers protect against frost damage, working with ranchers to successfully market value-added beef and breeding herbicide-resistant, high-yield wheat varieties.

Oregon State earned nearly $60 million in agricultural research funding in 2011, and these grants are often leveraged with industry partners and other external sources, sometimes by as much as two dollars for every dollar in research funding.
Oregon is our Campus

This year marks the sesquicentennial anniversary of the Morrill Act of 1862. The Morrill Act established the land-grant system of colleges and laid the foundation for the nation’s vibrant public colleges and universities and the democratization of public higher education.

Hatch Act: The Hatch Act of 1887 established a sustainable federal funding stream for state agricultural experiment stations. The Hatch Act authorized direct payment of federal grant funds to each state to establish agricultural experiment stations under the direction of each state’s land grant college. These funds provide each state with basic infrastructure, scientific expertise and facilities for conducting research. Hatch Act FY11 funding was $3,707,778 for Oregon State and $236,334,384 nationwide.

Smith–Lever Act: The Smith–Lever Act of 1914 established a stable federal funding stream for cooperative extension programs. Current extension education programs are creating social, economic and environmental benefits. Extension programs contribute to economic growth; sustainable agricultural, forestry and marine production methods; improved health and wellness of limited-income populations; positive rural development; and disaster management, responding to the diverse needs of Oregonians. Smith–Lever Act FY11 funding was $4,531,713 for Oregon State and $294,000,000 nationwide.

McIntire–Stennis Act: The McIntire–Stennis Act of 1962 provides ongoing federal funds in a federal-state partnership to support university-level forestry research. Research efforts of faculty and graduate students have focused on sustainable, healthy forests that provide economic, social and ecosystem benefits to the state, region and nation. The scientific results and management technologies developed from a variety of research activities are delivered to policy makers, forest managers, forest land owners and other scientists. McIntire–Stennis Act FY11 funding was $1,078,523 for Oregon State and $32,934,000 nationwide.

OREGON STATE UNIVERSITY is the only college or university in Oregon that can claim a presence in each of Oregon’s 36 counties. The 64 physical locations are supplemented by the virtual presence of OSU Extended Campus and Oregon Open Campus programs, making the university a vital partner in workforce and economic development, locally focused research, public health assistance and other issues.

Hatch, Smith–Lever and McIntire–Stennis Act funds are all distributed according to a statutory formula to each of the 50 states. A dollar-for-dollar match is required from the states, but many jurisdictions provide a greater amount.
OSU–Cascades: Oregon State in Central Oregon

By the Numbers

Based on fall 2011 enrollment, unless otherwise noted.

935 enrolled students, including 764 upper division and graduate students and 171 attending classes at COCC.

50% of graduates are first in their family to attend college (2010).

81% of students are from Central Oregon. 14% are from other Oregon communities. 5% are from out of state.

45% of students transfer from COCC.

50% of students plan to live and work in Central Oregon after graduating (2010).

16 academic majors offered.

1,700 degrees awarded since founding in 2001.

$1.7 million in scholarships awarded since 2001 through the OSU Foundation.

15 students on average in upper-division courses.

274 students engaged in internships, practicums and study abroad programs with businesses, organizations and agencies in Central Oregon and around the world in 2011.

1,200 community members attended lectures in Central Oregon presented by OSU faculty researchers from Bend and Corvallis.

A small university, powered by the resources of Oregon State University

OSU–Cascades is the only baccalaureate and graduate degree granting institution based in Central Oregon. Here, students find the excellence, resources and lifelong advantages of a premier research university, and a personalized, small-campus learning experience. Led by Oregon State University, OSU-Cascades awards bachelor’s and master’s degrees.

Central Oregon’s university

OSU–Cascades was established more than a decade ago by a grassroots effort put forth by Central Oregonians to bring a university to the region. In 2000, the Oregon University System selected Oregon State, the state’s land-grant university, to administer a campus that would serve as a capstone to Central Oregon Community College, offering upper-division and graduate coursework toward bachelor’s and master’s degrees. The university opened its doors in September 2001.

Today, the dynamic campus offers degree programs in disciplines essential to the world’s growing demand for sustainable enterprises in energy, natural resources, health and recreation and tourism. The spectacular living-learning laboratory of Central Oregon, combined with the world-class excellence of Oregon State’s faculty, provides an incubator for student opportunities and experiences shaped by Oregon State’s strengths in engineering, science, business and the humanities. The vibrant campus continues to develop, bringing a Central Oregon orientation to Oregon State’s strategic emphases on healthy people, a healthy planet and a healthy economy.

Faculty excellence

Thirty-two full-time faculty include a Distinguished Professor of Art History, a Fulbright Fellow and Max Planck Institute for Economics research fellow, a finalist for the Oregon Non-Fiction Book of the Year award, a Fellow of the International Canadian Studies Institute and published authors. The faculty include tenured and tenure-track professors and instructors with real-world experience. Professorial faculty report to the Dean of Academic Programs and to their home department at Oregon State in Corvallis. In addition to teaching, many faculty assume research and/or community outreach responsibilities. Academic programs are also supported by 30 part-time associate faculty.

A partnership with COCC

A shared campus for undergraduate programs allow students to begin studies at Central Oregon Community College and continue upper-division coursework and degree completion at OSU–Cascades. The partnership saves students more than 25 percent in tuition as compared to a traditional four-year university. Students also transfer to OSU–Cascades from community colleges throughout Oregon.
Major Areas of Study (Fall 2011)


Student Profile
- Most students are from Central Oregon.
- 32 percent attended local high schools.
- Students are slightly older than traditional university students.
- More than 75 percent are enrolled full-time.
- Women comprise 56 percent of undergraduate students.
- About 9 percent of students self-identify as representing a minority.

Community Service and Outreach
As Oregon’s land-grant university, Oregon State requires a service component from its faculty. OSU–Cascades faculty provide research and expertise to businesses and organizations throughout Central Oregon.

Since 2001, OSU–Cascades has partnered with 150 businesses, government and nonprofit agencies and public schools to provide student internships and practicums.

## Federal Scientific Research Priorities

<table>
<thead>
<tr>
<th>Agriculture Bill</th>
<th>FINAL FY2010</th>
<th>FINAL FY2011</th>
<th>FINAL FY2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agriculture and Food Research Initiative (AFRI)</td>
<td>262.4</td>
<td>264.5</td>
<td>264.5</td>
</tr>
<tr>
<td>Hatch Act Funds</td>
<td>215.0</td>
<td>236.3</td>
<td>236.3</td>
</tr>
<tr>
<td>Smith Lever Funds 3(b) and 3 (c)</td>
<td>297.5</td>
<td>293.9</td>
<td>294.0</td>
</tr>
<tr>
<td>McIntire-Stennis Cooperative Forestry</td>
<td>29.0</td>
<td>32.9</td>
<td>32.9</td>
</tr>
</tbody>
</table>

| Commerce, Justice, Science Bill | |
|----------------------------------|------------------|------------------|------------------|
| National Science Foundation (NSF) | 6,926.0 | 6,860.0 | 7,033.0 |
| NSF, Major Research Equipment and Facilities (MREFC) | 117.3 | 117.0 | 167.1 |
| National Aeronautics and Space Administration (NASA), Science Mission Directorate | 4,469.0 | 4,945.0 | 5,090.0 |
| NASA, Space Grant | 46.0 | 46.0 | 39.0 |
| National Oceanographic and Atmospheric Administration (NOAA) | 4,853.0 | 4,600.0 | 4,894.0 |
| NOAA, Sea Grant | 63.0 | 61.3 | 62.2 |
| NOAA, Oceanic and Atmospheric Research (OAR) | 439.0 | 427.0 | 384.7 |

| Defense Bill | |
|--------------|------------------|------------------|------------------|
| Department of Defense Basic Research (6.1) | 1,947.0 | 2,002.0 | 2,117.0 |

| Energy and Water Development Bill | |
|-----------------------------------|------------------|------------------|------------------|
| Department of Energy (DOE), Office of Science | 4,904.0 | 4,897.0 | 4,874.0 |
| DOE, Advanced Research Projects Agency for Energy (ARPA-E) | - | 180.0 | 275.0 |
| DOE, Office of Science, Energy Frontier Research Centers (EFRC) | - | 100.0 | 100.0 |
| DOE, Energy Efficiency and Renewable Energy (EERE), Water Power R&D Account | 48.0 | 30.0 | 59.0 |

| Interior, Environment Bill | |
|---------------------------|------------------|------------------|------------------|
| United States Geological Survey (USGS), Water Resources Research Institute (WRRI) | 6.5 | 6.5 | 6.5 |
| USGS, Climate Science Centers | - | 20.9 | 25.6 |
| USGS, Cooperative Fish and Wildlife Research Units | 19.3 | 19.1 | 18.8 |
| Environmental Protection Agency (EPA), Office of Science and Technology | 848.0 | 813.0 | 795.0 |

| Labor, Health and Human Services, Education Bill | |
|-------------------------------------------------|------------------|------------------|------------------|
| National Institutes of Health (NIH) | 31,168.0 | 30,688.0 | 30,640.0 |
Oregon State University’s research portfolio is rich and diverse and has a significant impact on Oregon and the world. Oregon State researchers partner with the federal government to answer questions about basic and applied science. Looking forward, Oregon State research will continue to improve fundamental understanding, create solutions to global challenges and address emerging opportunities in three thrust areas:

» Advancing the Science of Sustainable Earth Ecosystems  
» Improving Human Health and Wellness  
» Promoting Economic Growth and Social Progress

These three research thrusts build upon the university’s core teaching and research strengths, the skill and capacity of its faculty and Oregon State’s many established national and international partnerships and collaborations. Collectively, these areas represent Oregon State’s greatest opportunity to lead in solving complex societal problems and to creating superior learning opportunities for students. Oregon State research funded by the following agencies consistently reflects the strengths identified in the research agenda.

### National Science Foundation (NSF)

Oregon State University researchers are successfully leveraging NSF support to develop new energy technologies, increase knowledge of the environment, improve health and more. NSF support for Oregon State research during the past five years has totaled almost $207 million, with nearly $49.5 million in FY11 alone.

#### Earth and Ocean Science

**Tsunami Wave Basin**

Groundbreaking studies of off-shore earthquake risks in the Pacific Northwest have led to tsunami tests at Oregon State’s O.H. Hinsdale Wave Research Laboratory. Researchers are helping to design affordable, damage-resistant buildings that can aid communities and save lives. Harry Yeh, a College of Engineering professor in the Coastal and Ocean Engineering program, has received support from NSF’s Directorate for Social, Behavioral and Economic Sciences. Chris Goldfinger, a professor of marine geology and geophysics in the College of Earth, Ocean, and Atmospheric Sciences, has received support from NSF’s Directorate for Geosciences and Division of Ocean Sciences.

**Abrupt Climate Change**

Based on studies of ancient climate and ice cores, Oregon State researchers Peter Clark and Edward Brook have outlined mechanisms by which Earth’s climate has changed abruptly in the distant past. With funding from NSF’s Directorate for Geosciences, their studies will help explain the potential risks of current climate changes.

**Ocean Observing**

With sponsorship by NSF’s Directorate for Geosciences, autonomous underwater gliders and moored sensor arrays are revealing new details about our coastal oceans, such as wind-driven currents that bring acidified, low-oxygen waters to the rich ecosystems of the Pacific Northwest. Results by Oregon State’s Tim Cowles, biological oceanographer and program director of NSF’s National Ocean Observatories Initiative, and Jack Barth, physical oceanographer, will guide ocean management plans.

#### Materials Science and Chemistry

**Transparent Electronics**

NSF’s Directorate for Mathematical and Physical Sciences has provided key support for Oregon State investigators John Wager and Doug Keszler, who have led engineers and chemists in creating the world’s first transparent transistors and integrated circuits. The technology is already finding applications in solar energy and may be used in flat-panel TVs, automobile windshields, cell phones and toys.

**High-Speed Electronics**

With support from NSF’s Directorate for Mathematical and Physical Sciences, a team of Oregon State chemists, electrical engineers and materials scientists has devised a way to influence and control the nearly instantaneous movement of electrons between two closely spaced metals. This advance provides a new platform for substantially increasing the speed of circuits in personal computers and cell phones.
United States Department of Agriculture (USDA)

Oregon State University researchers are successfully using support from the U.S. Department of Agriculture. USDA support for Oregon State research during the past five years has totaled more than $146 million, with almost $36 million in FY11 alone.

Health

Obesity Prevention
With funding from USDA’s National Institute of Food and Agriculture (NIFA), Oregon State researchers are developing an obesity prevention program for children in rural Oregon. Childhood obesity is a problem faced by many families across the nation. In addition, many children in rural areas face obstacles, such as access to fresh, healthy foods and physical activity and recreational programs that help to fight obesity.

Sustainable Agriculture

Improved Crop Yields
Steve Petrie and colleagues at Oregon State’s Columbia Basin Agricultural Research Center, in collaboration with the USDA Agricultural Research Service (ARS), have developed practices that minimize soil erosion while improving crop yields and quality. Improving soil and nutrient management and tillage is enhancing water infiltration, carbon sequestration, resistance to pests and fertilizer efficiency, helping U.S. growers of wheat and other crops prosper in the global marketplace.

Specialty Crops
Oregon State helps provide specialty crop producers with information and tools to successfully grow, process and market safe, high-quality products. In FY10, NIFA’s Specialty Crop Research Initiative grants were awarded to Oregon State for more than $5 million. In addition, with funding from the NIFA Integrated Food Safety Initiative, Yanyun Zhao is helping ensure the safety of specialty foods production by developing and implementing food safety training.

Natural Resources

Green Building Materials
Kaichang Li has developed a formaldehyde-free adhesive made with renewable natural resources. The high-performance, soy-based adhesive is strong and cost-competitive. Application of this adhesive in U.S. wood products may improve the global competitiveness of U.S soybean growers and the wood composite industry. NIFA funded Li’s research through the National Research Initiative Biobased Products and Bioenergy Production Research program.

Biotechnology

Tree Genetics
With funding by ARS and NIFA, an international team led by Distinguished Professor Steven Strauss has made key discoveries about the genetic mechanisms of tree growth and adaptation and their application to breeding. The findings have promise for forestry, bioenergy, horticulture, ecology and conservation. Applications include accelerated breeding, better understanding of risks to forests from climate change, improvements to health and fruit yield and safe uses of transgenic biotechnologies. Strauss emphasizes outreach and basic science in applying biotechnology to biological and social problems.

Human Health

Linus Pauling Institute
The National Center for Complementary and Alternative Medicine has funded research for this signature multidisciplinary institute, including projects led by Balz Frei, Tory Hagen and Joseph Beckman. The support is advancing the understanding of risk factors for atherosclerosis, vulnerability to toxins in aging and the role of antioxidants in ALS, plus training of graduate students and post-docs related to complementary medicine, neurology and stress.

Environmental Health Sciences

Response to Stresses
Established in 1967 with funding from National Institute of Environmental Health Sciences (NIEHS), the Oregon State Environmental Health Sciences Center advances understanding of how to improve our ability to respond to environmental stresses, with the goal of preventing diseases such as cancer, heart disease and neurodegeneration. The collaborative center, headed by Beckman, supports the application of sophisticated technologies involving mass spectrometry, cell imaging and genetic analyses, providing an integrated view of the complex impact of the environment on human health.

National Institutes of Health (NIH)

Oregon State University researchers are successfully using support from the U.S. Department of Agriculture. USDA support for Oregon State research during the past five years has totaled more than $146 million, with almost $36 million in FY11 alone.
Protection from Toxins
David Williams, directing Oregon State’s Superfund Research Program, is helping further understanding of polycyclic aromatic hydrocarbons and their effect on human health, with NIEHS-funded studies on toxicity risks from oil contamination, inhalation and food preparation practices. Supported by the National Cancer Institute, he has demonstrated that supplementing maternal diet during pregnancy with vegetable components protects the fetus from developing cancer from a pollutant in tobacco smoke and automobile exhaust. Efforts are underway to translate the findings to humans.

Healthspan Research
Healthy Aging
Karen Hooker, a preeminent scholar in the aging sciences who has published extensively on personality, health behaviors and mental and physical health related to aging, is founding director of the Center for Healthy Aging Research. Her work has been supported by the National Institute on Aging (NIA). The NIA has also supported work on dietary prevention of cardiac mitochondrial aging by Tony Hagen, director of Oregon State’s Healthy Aging Program.

Renewable Sources
Solar
Oregon State chemist Doug Keszler and electrical engineer John Wager created the Center for Inverse Design, a DOE Office of Science – Energy Frontier Research Center devoted to discovering new solar-energy-relevant materials. Collaborations in theoretical modeling can guide chemical design and synthesis as well as deposition and characterization of thin film technologies on the basis of physical and chemical properties.

Wave
With support from the Wind and Water Power Program, Belinda Batten, director of the Northwest National Marine Renewable Energy Center (NNMREC), is helping to answer important technology, environmental and social questions about the nascent marine hydrokinetics industry. NNMREC works closely with the National Renewable Energy Laboratory and also conducts high-resolution wave-tank testing for subscale wave energy devices at Oregon State’s O.H. Hinsdale Wave Research Laboratory.

The DOE was a primary sponsor for establishing the Wallace Energy Systems and Renewables Facility, which includes a state-of-the-art wave energy Linear Test Bed for optimizing power take-off systems. Annette von Jouanne and Ted Brekken are co-directors.

Biofuels
Research by Todd Mockler contributes to a global initiative funded by the Joint Genome Institute that has successfully sequenced the genome of Brachypodium distachyon. This will speed research on improved varieties of wheat, oats and barley, as well as switchgrass, a crop of major interest for biofuel production.

Environment
Methane Hydrates
Oregon State’s large-scale collaboration with the DOE National Energy Technology Laboratory (NETL) National Methane Hydrate R&D Program is advancing understanding of methane hydrates, their potential as a future energy resource and their role in slope stability and climate change. The work has already resulted in improved prospecting methods. Oregon State’s Maria Torres, Rick Colwell and Anne Trehu have led international collaborations. NETL has also funded work to define scientific strategies at a planned cabled observatory facility off the Oregon coast. Oregon State and NETL are in the planning stages for a combined coring facility.

Technology Innovation
Nuclear Safety and Modularity
Technologies developed by Oregon State researcher Jose Reyes include modular reactors with passive safety features and spent fuel recycling. They will make nuclear power safer, more efficient, portable and scalable.

Department of Energy (DOE)

Oregon State University researchers are successfully using DOE support to advance the science behind innovative energy technologies. Forty-nine faculty members have been principal investigators for DOE-funded projects over the past six years. DOE support for Oregon State research during the past five years has totaled almost $61 million, with more than $12 million in FY11 alone.
Department of Defense (DOD)

Oregon State University researchers are successfully using DOD support to help enhance national security through scientific and engineering contributions to critical systems, platforms and programs. DOD support for Oregon State research during the past five years has totaled nearly $77 million, with more than $17 million in FY11 alone.

Environmental Characterization

Space-Borne Coastal Imaging
Over 2,500 images of Earth have been produced by the Hyperspectral Imager for the Coastal Ocean (HICO), developed by the Naval Research Laboratory and installed aboard the international space station. HICO allows better analysis of human impacts and climate change effects, with applications for oil spills, plankton growth, harmful algal blooms and sediment plumes. Oregon State manages the data archive and its distribution, with Curtiss Davis as project scientist.

Marine Mammal Acoustics
Kelly Benoit-Bird received the Young Investigator Award from the Office of Naval Research (ONR), which encouraged her studies of the interrelationships of animals in marine environments, using acoustics and other sophisticated technologies. Her innovative uses of sonar in tracking marine creatures from Humboldt squid to spinner dolphins have led to new discoveries about their feeding behavior, movements and even communication. One project funded by ONR is on factors influencing the acoustic behavior and nearshore residence of the gray whale. Benoit-Bird was also selected for a MacArthur Fellowship in 2010.

Systems

Miniature and Microscale
Richard B. Peterson, co-director of the Microproducts Breakthrough Institute, has made significant contributions to the design and development of heat-activated cooling systems and other small-scale power cycles for improving fuel efficiency and fuel utilization in forward deployed areas. Research on integrating systems has been funded by the U.S. Army Communications-Electronics Research, Development and Engineering Center and Research, Development and Engineering Command. Applications include power and cooling in operational command centers and squad-level power for the dismounted warfighter.

Hydrogen Generation
Air Force Office of Scientific Research funding has enabled Roger Ely and Oregon State colleagues to succeed in getting one type of cyanobacteria to grow and produce hydrogen while encapsulated in a solid-state system. This important step demonstrates the feasibility of using biological processes to produce hydrogen that can be used directly as fuel, or in fuel cells to power electric vehicles.
Oregon State University researchers are successfully using DOI support to protect America’s great outdoors and power our future. DOI support for Oregon State research during the past five years has totaled nearly $26 million, with more than $6 million in FY11 alone.

Remote Sensing
Satellite Sensing, Youth Impact
The College of Earth, Ocean and Atmospheric Sciences Cooperative Institute for Oceanographic Satellite Studies (CIOSS), an academic-federal center of excellence, develops, improves and uses satellite remote sensing methods. Through the NOAA/CIOSS partnership with the Science and Math Investigative Learning Experiences Program, underserved youth in after-school clubs participate in scenario-based problem solving, helping prepare them for higher education and careers.

Resource Management
Research, Education, Cooperation
The OSU/NOAA Cooperative Institute for Marine Resources Studies (CIMRS) represents a strong, long-term partnership dedicated to research, education and cooperation with regional industries and communities. An integral part of Oregon State’s Hatfield Marine Science Center, with co-location with three regional NOAA laboratories representing two Line Offices, CIMRS addresses complex issues concerning living and non-living components of the marine environment.

Environmental Stewardship
Climate Science
In 2010, the DOI U.S. Geological Survey (USGS) established the Northwest Climate Science Center, a consortium hosted by Oregon State, to help inform policy decisions and planning by federal and state agencies, non-governmental organizations and others. Oregon State’s resources include the nation’s top-ranked conservation biology program, nationally ranked programs in fish and wildlife research, rapidly growing applied climate research and extensive connections to natural resources management agencies.

Oceans and Coastlines
USGS has partnered with Oregon State to understand the response of fragile U.S. coasts to storm and hurricane hazards – including the feedbacks by which an eroding nearshore alters storm waves. The Coastal Imaging Laboratory at Oregon State, led by Rob Holman of the College of Earth, Ocean and Atmospheric Sciences, has pioneered the development of quantitative nearshore monitoring using the optical processing methods of the Argus Program, invented at Oregon State with funding from USGS and now used worldwide.

Data Infrastructure
Oregon’s Territorial Sea Plan guides efforts to protect both natural and economic resources. Essential to this are spatially specific data products to inform mapping of the marine environment. The Bureau of Ocean Energy Management, Regulation and Enforcement partnered with Oregon State’s Institute for Natural Resources on the recent Coastal and Marine Data Network Workshop, which helped establish a network of content providers, tool developers and users to better assist state and federal agencies, local governments and non-governmental organizations with a reliable distributed infrastructure for data.

Research, Outreach and Education
Water Resources
The Institute for Water and Watersheds (IWW) is over 50 years old, even predating its sponsorship by USGS under the Water Resources Research Act. With more than 125 Oregon State faculty members, it is the interdisciplinary hub of research, outreach and education for the wider community. Innovative ways to engage stakeholders include conferences on aquifer storage and recovery, impacts of domestic wells and development of a statewide water plan. IWW offers a graduate program on water resources science, engineering, policy and management, plus “K-gray” teacher training.
Smooth Sailing: Ocean Research at Oregon State

For the past decade, Oregon State University has boasted an oceanography program ranked among the top five in the nation, and its broad spectrum of marine and coastal research has an international reputation that few institutions can match.

Federal agencies are funding Oregon State research on tsunamis, marine ecosystems, wave energy, ocean observing, invasive species and acidification, among other things. In September 2008, the U.S. Department of Energy created a Northwest National Marine Renewable Energy Center, further cementing the university’s leadership in wave energy and bringing the total amount of funding for the initiative to $13 million. Researchers are looking at environmental (How will marine organisms respond to subsurface electrical fields?) and technical (What engineered systems will be most effective?) questions and collaborating with state agencies, communities and the private sector.

National Leadership

In 2009, Oregon State zoology professor Jane Lubchenco became administrator of the National Oceanic and Atmospheric Administration (NOAA) — the second Oregon State faculty member to hold that position after John Byrne in the 1980s, who later became president of Oregon State. In addition, Kelly Falkner, former professor in the College of Earth, Ocean, and Atmospheric Sciences (CEOAS), now leads the National Science Foundation’s polar research programs. Her CEOAS colleagues have made similar contributions: Professor Mike Freilich heads NASA’s Earth Science Division; Mark Abbott, dean of the college, is a member of the National Science Board, which oversees the NSF and advises Congress and the president; and Emeritus Professor Tim Cowles directs the national Ocean Observatories Initiative.

In August 2009, NOAA announced that it would move its Pacific Fleet operations from Seattle to Newport to be adjacent to the Hatfield Marine Science Center, a stunning economic boon for the mid-Oregon coast that will bring as many as 175 NOAA employees, a half-dozen ships and an annual economic impact in the tens of millions.

Ocean Observing

Shortly after that, NSF announced that Oregon State would be one of the lead institutions on a $386.4 million Ocean Observatories Initiative that, among other things, will establish a system of surface moorings, seafloor platforms and undersea gliders to monitor the ocean — with a major presence off Newport.

“Oregon State University has perhaps more breadth and depth in marine and coastal science than anyone, and that opens up a lot of doors,” Abbott says. “In addition to expertise in many different disciplines, we provide fundamental science, research with direct application, and now we’re providing new access to the ocean through ships, satellites, the Ocean Observatories Initiative, gliders, the Marine Mammal Institute and other programs — and we do it on a global scale.”

Emerging Force

Oregon State University’s emergence as a force in marine and ocean sciences has been in the works for decades. The university came of age as an agricultural institution, developed the top-ranked forestry program in the country, and toward the end of the last century, became an emerging force in engineering. Marine sciences got some recognition, such as when Oregon State University’s oceanographers discovered the first documented undersea hydrothermal vents and when John Byrne was named NOAA administrator.

“We’ve always been the light under the bushel basket,” Abbott says. “Face it, fundamental science isn’t necessarily sexy. But more and more people are beginning to notice Oregon State because of the volume of high-quality research, our federal leadership, the emergence of programs with applications to real-world problems and that confluence of recent major events.”

Oceanography began at Oregon State in the late 1950s under the leadership of Wayne Burt, but its reach was limited by poor facilities and little access to the ocean. The 16-foot fiberglass boat Burt used in those early days was restricted to Yaquina Bay, and it wasn’t until the Office of Naval Research provided a sea-going 80-foot research vessel called the Acona in 1961 that the university was able to attract new ocean scientists, Byrne says.
The R/V *Yoquina* followed in 1964, and a year later, Oregon State opened the Hatfield Marine Science Center as a research, education and outreach facility. As both HMSC and CEOAS grew, the university developed marine science strengths in other areas — marine ecology, fisheries and wildlife, the nationally recognized Oregon Sea Grant program, wave energy, tsunamis and others.

The growth has been nothing short of phenomenal. In 2008-09, Oregon State University spent nearly $100 million on ocean and coastal research — 37 percent of all Oregon State research expenditures. And a funny thing happened along the way. Fundamental science has become — if not sexy — at least necessary in the eyes of the public.

When the oil tanker *New Carissa* sank near Coos Bay in 1999, Oregon State physical oceanographers explained where the currents would carry the spilled oil. When the Pacific Ocean off Oregon was first plagued by low-oxygen areas that led to periodic marine “dead zones” in 2001-02, an interdisciplinary team of Oregon State researchers described the phenomenon and explained its origins.

The 2004 Indian Ocean earthquake and tsunami that killed more than 200,000 people drew comparisons with Oregon’s own Cascadia Subduction Zone and brought the university’s researchers into the spotlight. Oregon State’s O.H. Hinsdale Wave Research Laboratory includes one of the world’s foremost tsunami wave basins.

In 2010, as British Petroleum’s Deepwater Horizon well continued to spew oil into the Gulf of Mexico, Oregon State researchers were documenting the effects. Kim Anderson of the university’s Superfund Research Program established a sensor network to monitor PAHs (petroleum-based compounds) in the air and water. Bruce Mate, director of the Marine Mammal Institute, led efforts to monitor sperm whale movements. Stephen Brandt, director of Oregon Sea Grant, conducted his sixth assessment of fish habitat in the northern Gulf “dead zone.”

The strength of Oregon State’s expertise gained additional recognition in 2010 when CEOAS scientist Kelly Benoit-Bird received a prestigious MacArthur Fellowship, which carried a $500,000 grant for her research. She specializes in the use of acoustics to study marine ecology.

Today, Oregon Sea Grant Director Stephen Brandt leads Oregon State’s Marine Council, which aims to enhance and to coordinate a global research enterprise. With scientists conducting studies from the Arctic to the Antarctic, from the North Atlantic to the South Pacific, Oregon State’s leadership in international ocean science is literal.
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