

**Department of Wood Science & Engineering**  
**College of Forestry**  
**Oregon State University**

## **STRATEGIC PLAN**

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### **BACKGROUND**

For over 70 years OSU has been a leading center in the western US for education, research and outreach in forest products technology and wood science. This has been a direct result of the dominant importance of the timber industry in the region. Oregon and the Pacific Northwest is one of the major wood producing regions of the world and has a well established industrial forest sector. The state and the industry have invested in a wood science and technology program at Oregon State primarily to solve problems, improve productivity and to a lesser degree, produce well-educated future employees. As a result of those investments the forest products program in the College of Forestry has remained relatively strong compared to most sister American programs and has emerged as one of the top 3-4 comprehensive WS&T programs in North America.

However, the past 20 years have been tumultuous for Oregon's forest sector and forestry overall. The industry has undergone wrenching changes due to a reduction in available timber supply from public lands and a myriad of social, environmental and economic challenges. The industrial forest sector in the region is experiencing intense global competition, the effects of many land and company ownership changes and a growing competitive disadvantage because of high raw material costs compared to other regions. This has been partially offset by investments in processing technology, the proximity of a strong California market and a well-established historical infrastructure. Production of commodity primary products such as lumber and plywood is especially stressed, but all wood manufacturing sectors are challenged. The number of employees in the secondary manufacturing sector now exceeds that of the primary lumber and veneer segment. A potentially very serious challenge for Oregon is that a strong, viable manufacturing sector and accompanying log markets are essential for maintaining an economic incentive for private forest land owners to grow timber. Without such an incentive the private forest land base in the state may decline and lead to greater pressure to change land-use planning laws.

Demand for wood products continues to increase globally and nationally. That trend is expected to continue for some time, especially if world population and living standards increase, energy supplies are constrained, and serious efforts at mitigating the effects of climate change are attempted. However, the productive forest land base in the world is declining. In Oregon, restricted access to public timber has reduced the number of primary mills and limited growth in

other subsectors of the forest industry. Recent analyses of the future of Oregon's forest sector<sup>1 2</sup> suggests that the industry must embrace innovation in products, processes and business practices to remain robust, and perhaps even viable. As a result, there is considerable interest within state government and the university for innovation-driven economic development action. This has led to interest and support for establishing a university center for wood innovation.

Within higher education, however, a myriad of forces are changing and shaping programs nationally and within the state. Some of those mega changes are specifically outlined in the University and College Strategic Plans. A few key factors that directly affect WS&E planning include:

- declining state support for higher education that is creating an environment of higher student costs, increasing dependence on gifts, grants, contracts and other external funds for program teaching support, and reduced capacity for key university partners in business, science and engineering to collaborate with us. Within the next biennium, the current University deficit will exacerbate these problems.
- the lack of growth in harvest tax, general fund, and FRL appropriations revenues for research, coupled with increased costs, can no longer be mitigated by College Forest revenues. This will likely result in significant changes within CoF.
- increasing demand for BS and higher graduates with a WS&T foundation due to a changing industrial business environment and projected retirements in industry over the next 5-10 years,
- nationally, a declining student interest (at graduate and undergraduate levels) in science and technology and in traditional natural resource careers in an environment of an increasing potential student population.

## **DEPARTMENTAL PLANNING CONTEXT**

In 2002, the Department of Forest Products changed its name to Wood Science & Engineering and retitled all of its degree programs. This was done to better reflect the contemporary nature of our programs to a new generation of students and to better describe the evolving nature of our programs. In 1999 the department occupied state-of-art facilities in Richardson Hall that are among the best in the western hemisphere.

For most of the past 15 years the number and composition of the WS&E professorial faculty has been quite stable. Over the past several years, however, retirements and departures of senior faculty have ushered in a period of transition and change that will likely continue. We currently

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<sup>1</sup> Hovee, et al. 2004 "Oregon Forest Sector Contributions and Potential" OFRI

<sup>2</sup> Hovee, et al. 2005. "Oregon Forest Cluster Analysis", OFRI

have about 15 T/TT professorial faculty that are state-supported and two that are gift-funded. This group continues to lack sufficient gender diversity despite our best efforts. The outreach program has seen the most significant change with a loss of half of our campus-based Extension FTE and 85% of our field-based FTE. This loss is partially offset with the establishment of the Oregon Wood Innovation Center in late 2005. Recent additions of two gift supported senior faculty positions offer exciting new opportunities, especially in the area of composite materials science. WS&E enjoys the services of a core group of dedicated and competent clerical and technical support staff, most of whom are long-term employees.

The department's mission includes resident instruction (BS, MS and PhD programs), research and outreach (Extension and continuing education programs). While our research budget is the largest component of our annual expenditures, the resident instruction and outreach missions are each exceptionally important. Extra mural funding is increasing in importance for supporting the graduate program and research infrastructure. The Department receives funding from a USDA Special Grant for Wood Utilization Research (WUR) that allows for some flexibility in research direction, especially for high priority needs for which extramural funding may be difficult to obtain. Most WUR funds are used directly or indirectly to support the graduate program, but the College is now mandating that the WUR grant support some base faculty salaries. The future of the WUR funding is unknown, but considered tenuous.

The undergraduate population in WS&T was at a low of 15 in the Fall of 2001 when the department, with college assistance, began a focused effort at recruitment. The Fall 05 census was 46 with projections of over 50 for Fall 06. Further increases may be likely, especially if our scholarship program can be expanded. Over that same period graduate enrollment has increased from 22 to 30-35, largely because of faculty effort and the availability of WUR funding. These enrollment gains have helped to quell university proposals for a WS&E program reduction and merger.

The Department research and graduate education programs were reviewed by USDA CSREES and the OSU Graduate Council in 2004 with highly complimentary results. The department and the BS degree program was reviewed and accredited by the Society of Wood Science and Technology in 2001.

Other factors important to planning include:

- With the potential for a greater disconnect between land managers and product markets it is likely that WSE will need to improve communications about the nature and value of our work.
- Economic development will likely be a state priority for some time. WSE can tangibly contribute to the role that the College and FRL can play with addressing that priority
- There has been a significant decline in the potential for collaboration with faculty CCEE, ChemE, ME and Business as they lose faculty and fail to replace them.
- Federal grant opportunities from NRI and other traditional sources have been significantly reduced in recent years.

## **Summary:**

Oregon's forest resources will continue to be a major component of the state's economy and may be seen by the state as a competitive advantage. The forest sector, including both the land management and manufacturing components, could play a bigger role in future economic development. Demand for wood products will continue to increase, global competition will intensify; Oregon will remain a high cost fiber producer, and its current competitiveness due to species, technology implementation, infrastructure, and access to markets may be difficult to maintain. Commodity production will be especially challenged and value-added product manufacturing could increase in importance to the state and bring new opportunities and challenges. The price of energy will likely stay high or increase. If interest in reducing dependence on fossil fuels and addressing CO2 emissions becomes serious, the demand for wood for energy could rise very significantly.

WS&E is a mission-directed department; our future (and that of the college in its current form) will be connected with the success of the manufacturing component of forest sector. The department has the potential to contribute very significantly to that success within the context of the Land-Grant mission of OSU.

## **MISSION AND VISION**

**Our vision is to be widely recognized as a leading center in the world for innovative wood science and technology education, research and outreach.**

**Our mission is to advance science, engineering and business to help society use renewable wood-based materials and products in an environmentally sound and sustainable manner. We will enable Oregonians and the wood industry to be successful in a globally competitive environment through our teaching, research and outreach programs.**

The WS&E mission is directly aligned with the missions of the College and University. WS&E supports the College mission through educational, research and outreach programs that help society wisely use the wood fiber extracted from forests, and that assist the domestic manufacturing industry to be globally competitive. Both of these goals are essential to the health of society and the long-term management of our forests-- key elements of the College mission. A strong WS&E program is one of the key elements of the College of Forestry that makes it unique in North America and gives it a competitive edge in the 21<sup>st</sup> Century.

The WS&E mission supports all the University goals as expressed in the 2004 *OSU Strategic Plan for the 21<sup>st</sup> Century*, but is especially directed toward two themes:

- optimizing enterprise, innovation and economic development; and
- managing natural resources that contributes to Oregon's quality of life, and growing and sustaining natural resource-based industries.

## **STRATEGIC ACTIONS:**

1. **Strengthen our undergraduate and graduate programs to better meet the needs of students and future employers.**
  - a. Increase the number and diversity of undergraduate majors through active recruiting, retention and an increased number of scholarships to qualified students. Achieve a goal of annually producing 10 graduates.
  - b. Review and strengthen the curriculum and delivery of WSE courses in our degree program to maximize student learning and skills, reduce our degree requirements to 180 credits, and comply with SWST accreditation standards and OSU assessment expectations.
  - c. Ensure that OSU WS&T graduates have practical work experience prior to graduation.
  - d. Actively recruit the highest quality national and international students from diverse backgrounds and perspectives into our MS and PhD programs. We will achieve and maintain a graduate student body of 30-40.
  - e. Develop and deliver a core graduate curriculum in the diverse aspects of wood science that is supplemented by 5xx and 6xx courses in select areas of science and engineering, and by 4xx/5xx courses in wood technology subjects. Emphasize training in oral presentation skills, ethics, and research methods.
  
2. **Expand and strengthen faculty research programs to address important problems and opportunities for industry and society.**
  - a. Recruit and retain the highest quality faculty from diverse backgrounds and perspectives to maintain a critical mass of faculty in key areas for teaching viability and research momentum.
  - b. Develop and maintain a research portfolio that is balanced between applied problem solving work and more fundamental explorations in these broad areas:
    - i. The chemical, physical, mechanical and biological aspects of wood science and technology,
    - ii. Composite materials science and applications,
    - iii. Manufacture and use of wood-based products,
    - iv. Wood products business strategies and management practices.
  - c. Aggressively seek extramural funding from diverse sources to support the research enterprise, and especially, graduate student involvement.
  - d. Invest in improving equipment and infrastructure to enable world-class research.
  - e. Strongly encourage and reward collaboration between WSE faculty and with other units on campus, or elsewhere. Maximize use of the OSU dual-major program to attract students with diverse skills and backgrounds.

3. **Strengthen the reputation of the department through a sustained high level of faculty productivity, student satisfaction and improved communications.**
  - a. Faculty and students will regularly publish their scholarship in high quality, appropriate regional, national and international outlets, including refereed journals and peer-reviewed publications. Faculty will present their work to professional peers at meetings and conferences. As a goal, each professorial faculty member will publish a minimum of two scholarly works per year averaged over a five-year period and will present their scholarship at one or more meetings per year.
  - b. Faculty will be expected to take on highly visible national and regional professional leadership roles. Those interested in international activities are encouraged to actively travel and develop foreign connections.
  - c. We will encourage and support visiting scientists and international trainees to come to OSU to learn about our programs and to share ideas.
  - d. We will gain feedback about student satisfaction through course evaluations, formal and informal surveys, confidential exit interviews and other means. Students will be expected to provide input into faculty promotion and tenure decisions.
  - e. Actively communicate and promote the accomplishments of faculty and students so that others learn of the value of our programs and to maintain a strong national and international reputation. Target audiences include University and College administrators, alumni, donors, industry stakeholders, potential students and the broader public.
  - f. Sponsor and organize conferences, workshops and other events to enhance disciplinary and programmatic leadership.
  
4. **Actively identify and promote innovation that will enhance the competitiveness of Oregon's wood industry.**
  - a. Establish and grow the Oregon Wood Innovation Center as the hub of OSU outreach and continuing education efforts to the wood products industry.
  - b. Develop a portfolio of targeted outreach activities to industry, including continuing education events, technical assistance, testing and consultation among others. Seek client feedback to improve and refine services and delivered value.
  - c. Conduct applied research and testing that addresses industry needs, or offers new opportunities. Be available for informal and formal consultations and requests for help or information.
  - d. Develop, seek funding for and deliver conferences, workshops and other venues to effectively transfer research and other knowledge.
  - e. Proactively consider potential for faculty research to have commercial applications and explore intellectual property protection.

5. **Be proactive in helping the technical and general publics understand the essential role that wood plays in 21<sup>st</sup> Century society, and the appropriate use of wood-based products.**
  - a. Develop and offer Wood Magic and other outreach programs to youth.
  - b. Be open to speaking, giving tours, media interviews and other opportunities that will enhance public or stakeholder understanding.
  - c. Offer at least one baccalaureate core course to educate resident students, especially non-majors about the role of wood in society. Actively participate as guest lecturers or speakers in classes, seminars or educational programs.