

# College of Forestry MegaTrends Advisory Team Report

April 9, 2007

The MegaTrends Advisory Team was charged with identifying trends that would have an impact on the operations and programs of the College of Forestry. We considered trends that would have statewide, national, and global scope. As a prelude to our discussions, the Team reviewed the College of Forestry Strategic Plan, which states:

*The mission of the College of Forestry, as part of Oregon's Land, Sea, and Space Grant University, is to educate and engage the next generation of scholars, practitioners, and users of the world's forest resources, to conduct distinctive problem-solving and fundamental research on the nature and use of forests and related resources, and to share our discoveries and knowledge with others.*

The current budgetary situation often provided a pretext to our discussions, but did not limit them. We carefully considered the evidence of a significant trend in an attempt to minimize value judgments and strictly anecdotal statements. During our discussions it became evident that the trends could be categorized thematically as *education*, *funding*, and *natural resource* issues. Many of the trends are multi-faceted, interdependent, and certainly transcend the categories listed. This report lists each trend and includes a brief discussion of the perceived impact on the College, as well as an opinion on whether the College is currently positioned to address the trend.

The Team made no attempt to rank the trends, since we felt consensus could never be achieved. Instead, we selected a subset that we believe has the greatest impact on the College within the context of the current budget situation. This strategy inevitably placed a greater emphasis on the near term.

## Highly Significant Trends

### Education

***There is an increasing demand for Web-based education.*** This is a global trend. Escalating tuition costs may make tertiary education unaffordable to many individuals in the future, with implications to the general society. Alternate forms of education (web-based, long-distance) are likely to gain popularity. Since Web-based instruction can be delivered from anywhere in the World, educational institutions outside of Oregon could provide programming in the Oregon market as well as to potential clients elsewhere in the U.S. and overseas. The impact to the College is the loss of opportunity. In the short-run, we have the ability to take advantage of this trend, which may help to partly mitigate rising instructional costs per student and increase revenue. The Extended Campus Program at OSU is currently quite generous with the tuition

distribution from online courses, but that could change in the future. Another benefit would be an enhanced ability to deliver our programs outside of Corvallis and reach urban as well as rural populations. Web-based instruction may be an effective method of delivery for some course materials. However, COF has many courses with laboratory and field sessions. Although some innovative multi-media tools are available, Web-based instruction is not the answer for all of our instructional programs.

### **Funding**

***Funding agencies will place more emphasis on interdisciplinary and multi-institutional large-scale research.*** This is a national trend that impacts extramural funding. Federal agencies have been, and will continue to emphasize multidisciplinary and multi-institutional projects in requests for proposals. The College must seek and nurture new partnerships on and off campus or we will miss opportunities as other research institutions form partnerships without us. Isolationism will not lead to success. The College has good collaboration on campus and several successful multi-institutional projects. However, there is potential for more collaboration. There is a sense among faculty that incentives are lacking for multi-institutional projects. Success with these types of projects will require leaders to emerge among the faculty ranks.

***Costs of operating a university are increasing.*** This is a trend in Oregon and nationally. The financial situation at universities is characteristic of Baumol's cost disease. Baumol's cost disease occurs when the method of manufacturing a product or delivering a service can not be significantly changed. This is a common problem with some labor-intensive sectors that rely heavily on human interaction or activities, such as nursing, education, or the performing arts. Consequently, there is little potential to improve efficiency. The cost per unit (per graduate or research product) inevitably increases. At OSU the cost of salaries and benefits increase, while tuition and E&G funds remain stagnant. Cutting positions, without shifting the paradigm, only delays the terminal effect of Baumol's cost disease. In regard to research grants, indirect costs are increasing, resulting in less money for graduate students, equipment, materials, and all of the other costs of research.

Colleges at OSU have lost ground in regard to indirect cost recovery. Some agencies prohibit indirect costs or limit the amount. In addition, the amount of indirect cost return from the University to the colleges needs to be reevaluated. Some of the services provided internally by COF, and not provided by other colleges, should be part of the indirect cost equation and certainly taken into consideration in discussions regarding COF reorganization. The College should investigate other strategies regarding direct costs charged to grants, such as faculty salary support and cost for computing services. Most faculty members are probably unaware of indirect financial implications of grant budgets on the operations of the College. There are likely some strategies that could bring more grant funds to COF and its departmental units by carefully crafting the budget requests with consideration to what the funding agency will allow and how the funds are distributed at the university level.

COF is not well positioned to capture more indirect costs from the university. Perhaps the College could argue that we provide many “indirect” services internally that other colleges must draw from University resources.

***State funding for higher education on a per capita basis is declining.*** This is a well documented, nationwide trend. There is no indication that this situation will change in Oregon. The obvious impact to COF is E&G funding will not keep pace with rising costs of instruction. The College is poorly positioned to address this trend (otherwise we wouldn’t be doing this exercise). In the future, longer range financial planning at the College level is needed. The financial plan must be consistent with the strategic programmatic planning of the College.

***Harvest tax payers in Oregon want to be sure the funds are spent on topics relevant to them.*** This is an Oregon trend that is based on anecdotal evidence. We can’t be sure if this situation has changed significantly from the past. If the College loses its relevancy in the eyes of the people making decisions about the Harvest Tax, we risk losing this revenue stream. The College is apparently well positioned to address this trend. However, some College faculty members are largely unaware of the connection between harvest tax payers and funds they actually consume. This is not a statement about the importance of individual research programs, but rather an observation of a general lack of accountability. Do we know what these tax payers want? Are we delivering what they need?

***The reduction (adjusted for inflation) of federally funded research, that has occurred for the last decade, will continue.*** This is a national trend. Federal support for research in nearly all disciplines is now in decline, a decline that would accelerate in the proposed 2008 budget. This reduction would occur even in the physical sciences, where gains would be more than offset by NASA and DOD cuts. The 2008 budget would leave the federal research portfolio 7.4% below the 2004 level in inflation-adjusted dollars.

The impact on the College is a lower success rate for research proposals due to greater competition chasing fewer federal dollars. This means more time writing proposals or performing less federally-funded research.

The College’s position is unclear. The largest federal funding agency is NIH, where the College is practically a non-player. The College must identify and play to its strengths. One strategy is to focus on forest-related research, where the pool of available funds is small, but OSU is a major player. Another strategy is to cast a wider net where our reputation is far less significant, but the pool of potential funding is much greater. The College, and more importantly OSU, needs a presence in Washington to provide current information on funding and to influence the direction of future funding opportunities.

### **Natural Resource Issues**

***Global climate change issue will transition from a basic to an applied research endeavor.***

There is a growing concern about the potential for rapid changes in the climate. The evidence is clear that the climate is warming. Trends in precipitation and extreme weather are less clear, but

change is likely here as well. Regardless of the cause of climate change, the impetus to do something about the changes in the form of mitigation and adaptation will only become stronger. There is an increasing number of granting agencies focusing on this topic.

This trend will impact educational programs in the College. We will need to train a workforce that can implement the various adaptation strategies as well to perform assessment and carbon accounting tasks. We will need to train students about systems that include more than trees and mills. They will need to understand how to use modeling effectively. Research will continue to have strengths in the basic sciences, but there will be an increasing need to develop rigorous monitoring systems, quantification of uncertainty, and assessing the effectiveness of alternative adaptation strategies. The latter tasks are all of an applied nature.

Outreach will have to be more effective in informing policy makers and the general public about the role of forests in the global climate. This will include everything from explaining ongoing trends (e.g., possible increases in insect outbreaks, fire) to how mitigation or adaptation strategies work in the context of forests.

There are many aspects of research and education in this arena that the College could accommodate without major changes, but we are already behind on this front. The Governor has developed a climate plan that excludes forests. This is an untapped area for research funds and has already been identified as a priority for the College. This is an area where a multi-institutional project makes sense.

***There will be a growing emphasis for alternates to fossil fuels.*** This is a national trend. Federal and state governments are investing in biomass energy, including Oregon. There is a huge incentive for R & D efforts to combine energy production with forest management. The College has already lost the lead on biomass energy to the College of Agriculture. We have been largely a non-player in biomass energy, but we have expertise to assess the resource potential and development of allied products to make forest biomass a viable energy resource. We are uniquely situated to develop technology and silvicultural systems capable of resulting in cost-effective fuels while solving wildfire/oil-dependent problems. The College needs to move quickly, or miss the opportunity. Some COF efforts are already underway.

## **Other Important Trends**

### **Education**

***There is shrinking scientific expertise in production forestry (including plantation forestry) in the College and the Pacific Northwest.*** Plantation forest practices continue to expand in such places as Southeastern U.S., China and other parts of Asia, South America, and New Zealand. This trend is linked to a maturing workforce, in which many recognized experts are nearing retirement age. The market for production forestry expertise in PNW is not as large as it once was, but will exist for the foreseeable future. The expectation of payers of the harvest tax is that this remains an emphasis. Many current College faculty members, and others in PNW universities, are uninterested or uninvolved in this area. This is an education trend in the sense

that there are not enough people in the pipeline to fill future needs. It is also a trend that impacts future research opportunities because plantation forestry operations, with new challenges, will continue to proliferate around the World.

The College must balance the interests of various stakeholders as to the emphasis given to production forestry. The recent initiative for the Center for Planted Forests could help. Unfortunately, the current budget situation leaves the College in a poor position to replace faculty in this area.

***The forestry workforce in the region is maturing, with implications of an inadequate supply of replacement hires.*** There continues to be a high demand for forestry graduates and a high demand for continuing education programs to assist young managers in obtaining the necessary skill sets. Of particular interest are graduates to fill positions in wood processing operations, environmental sciences faculty, surveyors, forest engineers, operational foresters, and recreational resource managers. The College is perceived to be weakly positioned to address this trend, since there are insufficient numbers of students in the pipeline.

***Internationalization of teaching and research.*** This is a global trend. The global economy for goods and services applies equally well to teaching and research. The 2002 COF Strategic Plan recognized that “global markets, technologies, environmental issues, information, and transportation - are increasingly important forces affecting the sustainability of forest resources and the work of the College of Forestry”. China and other developing economies are investing heavily in higher education and research. The European Union provides a high level of support to students and current efforts are toward integration across countries and providing universal English language coursework.

The College will likely need to implement changes to further embrace collaboration with institutions beyond our borders. Competition for the best foreign graduate students will become more intense and perhaps the number of American graduate students pursuing degrees overseas will increase.

Given the change of leadership organization for international programs, the College’s position in this regard is unclear. There seems to be a lack of incentives for internationally oriented programs. One of the goals of the Strategic Plan is to strengthen leadership in education and research on global forest issues. However, beyond this we must realize there is growing international competition for educational programs and research funding. Opportunities exist for international funding for educational programs. Perhaps we need to partner with other institutions that already have active programs.

***More effective methods of teaching, along with outcomes based assessment, will be required.*** This is a national trend. More accountability of student success will be required by stakeholders, particularly as tuition costs increase and public scrutiny on expenditures of tax dollars increases. The College appears to be well positioned for outcomes based assessment. However, more administrative duties will be required. Maintaining effective methods of teaching may present a challenge if College resources are diverted away from the teaching mission.

***College tuition is increasing faster than inflation.*** This is a national trend, and one that applies to Oregon when considered over the longer term of the past decade. The impact to the College is student recruitment and retention. The College is well positioned due its aggressive scholarship program. The College also has a strong record of job placement in many of its disciplines, which should remain attractive to students looking to obtain value out of their tuition payments.

***There are a decreasing number of forestry programs nationwide.*** In some cases this trend has been more about name changes than elimination of programs. Some academic departments and colleges have been combined with other disciplines. Currently there are 50 SAF and 9 SWST accredited programs in the U.S. The Team was unable to locate historical data on accredited programs.

The impact to the College is unclear. Perhaps this implies less competition from other forestry programs and greater recognition for OSU as a lead program. On the other hand, the trend could be perceived as an overall decline in the relevance and need for forestry programs.

The College is very well-positioned as a forestry program. However, we can't afford to be complacent. Any potential name change, or change of program focus, must be strategic and not budget driven. Brand name is important.

***Forestry graduates are obtaining less specialized set of skills and knowledge.*** This is a national trend. Workplace demands, academic requirements, and pressure to reduce total credits for graduation are factors contributing to this trend. Credit reductions have occurred, while other evidence is anecdotal. The impact to the College is that graduates will not be as well trained as in the past for certain career paths. The College is poorly positioned and has been reactionary to this trend. Faculty expertise in certain areas may not be on staff (or unavailable for teaching) to address this issue.

***Basic skills of student applicants, both undergraduate and graduate, are declining.*** This is a national trend and may be more acute for certain disciplines. A general decline in college readiness is documented in a 2005 report by the National Center for Public Policy and Higher Education. The impact on the College could be lower enrollment standards and the need to teach remedial subjects. Student success is correlated to student preparedness. The College is well positioned. We have a dedicated recruiting effort, which has been effective for certain undergraduate programs. However, graduate recruiting is not coordinated at the college level. In general, the College has small class sizes, which permits more individual attention to students requiring additional help.

### **Funding**

***Increased competition from other institutions nationally.*** The number of research scientists at public and private institutions, across all disciplines, is growing and competing for a stagnant supply of research funds. Success rate for proposals submitted to NSF and USDA is between 5 and 10%. Competition for funding is primarily national, but competition for graduate students is

global. The impact of this trend on the College will be reduced funding success rate for proposals and fewer graduate students.

The College has broad expertise to be a player in many fields and our teaching load is collectively small to permit more time for grantsmanship. We have a good reputation and may be better positioned than other forestry programs in an increasingly competitive arena.

***Growing requirement for an outreach and teaching component in federal grants.*** Federal agencies now frequently emphasize inclusion of outreach and teaching components in grant proposals. For example, USDA National Research Initiative Competitive Grants Program, USDA CSREES Hatch Funds, and National Council for Science and the Environment's Wildlife Habitat Policy Research Program all emphasize outreach and teaching components to be included in their grant programs. If this is a significant criterion in proposal review, it will test the College's ability to cooperate internally and to be creative with project proposals.

The College is well positioned given our strengths in research, teaching, and outreach. However, communication and collaboration between these areas could be improved in such areas as integrating research into the classroom and providing incentives to collaborate with outreach efforts.

***Research sponsors are increasing focused on practical deliverables.*** This national trend is the opinion from leaders of industry-supported co-ops and centers. The industry is interested in solutions to problems, often in the short-term. Research to develop useful decision support tools is in demand. The impact of this trend to the College is the potential loss of research contracts that pay full overhead and loss of credibility in the applied sciences. In some disciplines the College has lost capacity in applied research. One contributing factor is the emphasis on peer-reviewed publications for career advancement. These publications are typically in the area of basic science and usually not directly applicable to today's industry problems. This may be a deterrent to pursuing applied research opportunities, particularly for junior faculty members.

***There will be a reduction, or more scrutiny, of earmarked federal funding.*** USDA special grants were dropped this year and the future of like programs is uncertain. This is a national trend. The immediate impact on the College is a loss of nearly \$1 million per year starting in the next fiscal year. Since part of this funding was used to support tenured/tenure-track faculty salaries, this loss was particularly severe. It is fairly certain that earmark funding will be part of the federal budget picture in the future. Forestry programs at universities in other states will most certainly pursue federal earmarked funds. The College must reestablish political support and likely create partnerships with institutions in other states. The College is well positioned and already working effectively in this area. The reputation of the College is good and political connections are good, although not strong. Industry support for earmark funding at the federal level is questionable.

***Some funding organizations are moving away from site-specific to regional-focus.*** This is a national trend that implicates funding because it necessitates more than a single funding agency. Cost sharing reduces the financial burden on a single agency, while researchers often get better data (larger sample size, several regions / areas) and more agency involvement. Large regional

studies improve visibility of our research and forges partnerships and relationships with many agencies. This could make a significant positive impact on the College.

The College is poorly positioned, as we typically depend on single-agency sponsored research programs that are site-specific, narrow in focus, and non-theoretical in nature. We need to nurture and pursue opportunities to get more funding agencies together at the same table to talk with each other and with OSU faculty. Incentives and logistical and financial support needs to be provided to encourage these efforts.

***Funding agencies are becoming more specific in regard to project topics in requests for proposals.*** This is a national trend. The College may miss some funding opportunities if we lack expertise in those specific areas. College expertise is fairly broad, although rather thin in some areas. Niche research areas are not cultivated and the College lacks the flexibility, or the will, to be opportunistic. College leadership needs to make strategic moves to encourage faculty to pursue emerging research areas. For example, the topic of biomass energy developed as a national priority with little participation by the College.

***NSF is moving to larger scale research projects.*** The National Science Foundation has been funding more projects like ORION, NEON and Critical Zone Observatories, which are multi-million dollar, multi-institutional projects. The impact to the College is a focus on larger projects with multi-institutional collaboration. The College has moderate experience with large research projects. One concern is that NSF funding is often a political process rather than based on scientific merit.

***There is decreasing cooperation between federal agencies and research providers.*** In some federal agencies a shrinking percentage of their budget is used for cooperative research. This is a result of financial constraints within the agency. Agencies undergoing a stagnant budget outlook will spend a smaller fraction of their budget on cooperative research, and thus, there will be fewer funding opportunities for the College. This trend is seemingly out of our control. However, a high profile program like OSU, with good political and industry connections, could help promote increased funding for key federal programs, and perhaps create cooperative research opportunities. The College needs to maintain a line of communication with these agencies.

***Industry technology development funding in the U.S. is growing. However, overall industry R&D funding over all sectors will remain flat.*** This is a national trend. The implication is that there will be more funding opportunities for applied research. The WSE Department is well positioned, but the position of the other departments is unclear. Restrictions on publishing research results and intellectual property rights may be a deterrent.

***Technology will rapidly change the way people perceive and interact with forests.*** This is a global trend. More things are being measured and managed in forests by fewer and fewer people. For example, three years ago Scandinavian forest engineers set a goal of "no [work] man in the forest" and are already running trials on remotely controlled harvesting vehicles. Other sensor technologies, such as LIDAR, NIR, and acoustics, are changing what and how we measure things in the forest. Research funding opportunities related to sensor technology exist for forest applications. The College is moderately positioned in this regard. We don't have access

to funding like the University of Washington has with their state-funded Advanced Technologies Initiative. We do have some faculty in the College interested in sensor technology and we have some links to the College of Engineering.

### **Natural Resource Issues**

***The urban population is growing and therefore an increasing sector of the population is becoming more disconnected with forest management issues.*** This is a national and global trend based on anecdotal evidence. As a result of the Oregon Forest Research Institute, Oregon may be an exception to this trend. Since 1991, OFRI's mission has been to educate the public regarding forest related issues. A 2004 OFRI report on the Oregon forest sector stated "Oregonians increasingly do not see environmental and economic forest benefits as trade-offs. There is a new working strategy for reserve, multi-resource and wood production forests. There is emerging consensus that active forest management is essential to achieving a full mix of environmental, economic and social benefits." Nevertheless, the 2002 COF Strategic Plan recognized that "urbanization and changing demographics and social values of society worldwide, including in Oregon, create opportunities to broaden the constituency of the College". Furthermore "public perceptions of forestry are mixed and will continue to change. The College must effectively communicate that forestry and wood products enterprises in Oregon are strong, and that our programs go beyond these traditional enterprises to include areas of growing concern in Oregon, such as watersheds, recreation and tourism, and fish and wildlife". Since COF programs extend well beyond the borders of Oregon, and nationwide public opinion impacts federal programs and policy, an inability to effectively communicate with the U.S. urban population will result in a loss of public support for COF programs. The College is well positioned to address this trend within Oregon. However, our regional and national influence on the urban population is low.

***Wildfire potential in the West is becoming more of a problem.*** This is a national trend, but perhaps more acute in Oregon. Technology and silviculture in overstocked forests may help with the fire problem and is linked to forest biomass energy. This trend will have a major impact on College programs in teaching, research, and especially outreach. There are opportunities to find solutions to fire potential on public lands. Efforts are underway in all four departments, so we are well-positioned to continue to grow in this area. There are economic, material resource, and social issues to overcome. One challenge is that most of the places where fire and energy management schemes are present are a great distance from our base, or from any other institution for that matter. Serious work in this area might require an outpost station, at which such institutions as University of Idaho, Utah State University, University of Wyoming, Colorado State University, and U.S. Bureau of Mines could cooperate, all with the National Forest Service as a major sponsor.

***Forest industry will continue to consolidate.*** There has been a wave of consolidation in the forestry sector as companies try to get bigger to deal with increased competition and to cut an increase in operating costs due to higher fuel, transportation and raw material costs. For example, Abitibi-Consolidated and Bowater merged in January 2007 to become the North American forest industry's third largest publicly held company; and previously Weyerhaeuser had acquired the assets of MacMillan Bloedel and Willamette Industries. This is a global trend that impacts the

industry in the U.S. and Oregon. Consolidation will impact membership in COF cooperative research centers and reduce potential research contract opportunities. Research objectives may have a shorter time-frame. The College needs to continuously reacquaint itself with the changing face of industry at the highest level. In many cases our potential contacts with industry no longer have a forestry background.

***There is a greater emphasis on growing small diameter logs for all species, including Douglas-fir.*** This is a global trend, but has been particularly significant in Oregon in regard to Douglas-fir. Global demand for Douglas-fir will continue to increase. The trend is toward small diameter logs becoming the commodity of commerce. Oregon industry has retooled to preferably handle small logs. Consequently large-log value is not as great as it could be. Oregon's potential competitive strength is its ability to grow large, high quality raw material. Oregon is well positioned from a resource standpoint, but the industry infrastructure is designed for smaller logs. The College has great experience in Douglas-fir management. We need to help industry realize the benefits of managing Douglas-fir for longer rotations and larger tree size, while at the same time remaining competitive in a small-log market.

***U.S. universities are moving toward a broader concept of "human dimensions" instead of "recreation".*** This is a national trend. For example, Colorado State University, University of Idaho, Utah State University, and others have all moved to broader, more encompassing department and program names such as "Human Dimensions of Natural Resources" and "Conservation Social Sciences", and have removed the word "recreation" in program and department names. This is also a trend that impacts potential funding from federal and state agencies. Many federal agencies still want research and people trained in natural resource recreation and tourism, but often they are looking for broader social science expertise. Job announcements are using the phrase "human dimensions" instead of recreation and / or tourism. Implementing this change in COF should be relatively straightforward and could allow us to be more visible and competitive in an increasingly competitive marketplace, because "recreation" is often confused with "ball bouncing" programs, therapeutic recreation programs, and leisure programs, which we are not. Human dimensions captures better the essence of what we are all about here.

***There is increasing emphasis on traditional (including native) views of forests and other cultural views.*** This is a national and global trend. Given contentious land use planning issues, some grant programs require or emphasize a native / First Nations component in proposal submissions. This trend could impact the College in a number of areas. Pursuing an active path in this area could improve ethnic and cultural diversity in the College and broaden our students' social perspectives. We may be missing some funding opportunities, including scholarships and fellowships for students. COF could improve relationships with the Ethnic Studies faculty and possibly develop joint or adjunct appointments. The College is poorly positioned in this area.

***Ownership of forests will continue to become disconnected from manufacturing.*** This is a global trend that is clearly evident throughout the U.S., including Oregon. The recent trend in the creation of TIMOs and REITs is well known and is leading to movement away from long-term forest management goals. Whoever owns commercial forest lands will still be connected with manufacturing simply by market linkages for their products. However, investors will want short-

term financial returns. Non-forester-led investors will likely be slow, or fail entirely, to implement special economic models that evaluate the importance of long-term investment. Such failures will have a negative impact on manufacturing, which will ultimately affect the entire forest industry, particularly in regard to high-value forest products. This kind of short-term economic outlook could undermine the primary economic advantage that Pacific Northwest forests have over foreign competitors. Since the model for forest ownership is changing, there will be a need for different information that addresses this new model. There is a growing market for very financial savvy students. The College is well positioned to address this trend.

***Water resources will become a growing concern as the population increases and improvement in quality of life is demanded in developing countries.*** This global trend is well documented. Water resources are a key element of the OSU strategic plan. The College could be a large player in this area on campus and particularly with the newly-created Water Resources Institute. Water resources will be a growth area for funding and students. The College is losing its position because vacancies of key water-related faculty positions are not being refilled. The FE Department, home of the Forest Hydrology graduate program, has dwindling number of graduate students. Potential students are interested in more interdisciplinary projects that cut across forestry and agriculture disciplines. The College is not well positioned to capitalize on this trend.

***There is a growing awareness of relationships between human diseases and the natural environment.*** This is a global trend. With recent outbreaks of West Nile Virus, Bovine Spongiform Encephalopathy, and Chronic Wasting Disease, several large federal-level grant programs have focused on human diseases and the natural environment (e.g., forests, water). These programs require large interdisciplinary and multi-institutional proposals. While there is potential for some research initiatives by the College, we are not well positioned. The College has some faculty members with experience in human-dimensions of disease and natural resources. However, any significant effort in this area would require hiring new faculty or partnering with other institutions.

***Conversion of forest land to other uses will continue in Oregon, nationally, and globally.*** Increasing housing demand, tourism and recreation in forest lands, public values shifting to more biocentric and preservationist orientations, and recognition of non-market value of forests is causing a reduction in land available for timber production. This impacts forest management decisions. However, more human – forest boundary issues will arise. This trend is consistent with increasing number of students enrolling in natural resources, recreation resource management, and outdoor leadership and tourism (3 of top 4 undergraduate enrollments in COF). The impact on the College will continue and demand for courses and programs in these areas will continue. The College is well positioned, but could improve recruitment and publicity efforts. Students will require some instruction on these changing priorities in forest management, including real estate valuation.

***There will be a growing national concern between homeland security and natural resources.*** This is a national trend. Several federal initiatives are currently active that address potential impacts of war and terrorism on the nation's supply of food and natural resources (especially water security). The impact on the College is the potential lost opportunities for research. We are not well positioned in this area.

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