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The Role of the PSM in STEM Workforce Development: View from the States

As presented by *The Honorable Richard Devlin* (D-Tualatin), Oregon Senate Majority Leader

In beginning my remarks, I wish to recognize one member of the six-person Oregon team that was selected to participate in the National Governors' Association (NGA) Policy Academy in June, 2008, who is in the audience today—Ursula Bechert, Director of Off Campus Programs, College of Science, Oregon State University. The Oregon team was one of six teams representing six states that convened to work on plans for launching statewide Professional Science Master's (PSM) initiatives. I was asked by Jim Sager, then the Governor's advisor on Education, to attend this NGA meeting. I agreed to participate because of my interest in higher education and my interest in expanding and diversifying Oregon's economy.

At the NGA Policy Academy, I learned about the benefits of creating a statewide PSM strategy. We considered the various ways that other states had developed such strategies and the issues they encountered and how they dealt with them. We began to develop a plan for creating an Oregon strategy with the help of PSM experts who attended the kick-off workshop. We committed to continue the planning process after the workshop with the help of national experts.



What was the role of the Oregon NGA team? There were actually two teams. A six-person "core team" attended the kick-off two-day workshop in Sacramento in June, 2008. This team drove the planning process. A larger "home team" met several

times in Oregon providing additional expertise and resources that made the planning process a success.

Early this summer the team received notice from the Alfred P. Sloan Foundation that we had received a grant to support the costs of implementation of a statewide strategy. Milestones in the project were a pair of annual workshops held in September. The first workshop was held in fall, 2008. Representatives from Oregon universities and from industry heard from national and local speakers on the opportunities presented by PSM degree programs and received practical advice on the best way to design and implement a statewide PSM strategy.

The second workshop was held in September, 2009, and was in two parts; the first day and focused on continuing the design work on our new Renewable Energy PSM and included industry representatives— I will talk about this in more detail later, and the second day was more general.

How do I see PSM supporting Oregon's strategies for innovation and economic/workforce development? Many of Oregon's new businesses and those looking at coming to Oregon are high technology firms or are in need of employees with both a strong scientific background as well as business skills. These businesses need highly qualified employees who have skills in both science and business. A PSM degree produces scientists who understand scientific disciplines in depth, understand business principles and practices, and communicate well.

These types of employees are key to Oregon companies being able to create new products and services that are competitive in the world economy.

Two examples of current PSM degrees supporting Oregon's emerging workforce needs are Environmental Science and Applied Biotechnology.

Environmental sciences are central to the economy of the Pacific Northwest. The countries of the Pacific Rim anticipate generating more than \$600 billion in environmental risk assessment, monitoring, and ecotoxicology services over the next decade. Oregon State University (OSU) has recognized the need for high-quality interdisciplinary education that will satisfy the growing demand for trained environmental professionals. The University has created a PSM graduate program in Environmental Science. Also, Associated Oregon Industries' Environmental Industries Section continues to provide significant input to the development of this PSM program.

Biotechnology is a vibrant and growing industry in the Pacific Northwest. However, biotechnology companies now compete to hire from a very limited pool of appropriately trained individuals. Oregon State University has created a PSM in Applied Biotechnology that trains students to be able to function effectively in industrial environments. This PSM also offers students and their corporate sponsors a maximum of flexibility in choosing from OSU's extensive graduate curriculum in the biological sciences.

A major advantage of PSM degrees is the ongoing relationships with employers. PSM degree programs are unusually able to adjust to changing workforce demands and technologies.

Oregon's next PSM program will be in renewable energy. This is a great example of creating a program where there is a workforce demand. This program is currently in the planning stages and will likely include areas of emphasis in solar, fuel cells and hydrogen, wind, biomass, hydro, marine, geothermal, energy policy analysis, and distribution and storage.

How successful are the current PSM programs at OSU? More than 90 percent of the graduates find employment in their field upon graduation. Seventy-seven percent of OSU PSM graduates remain in the Pacific Northwest and 68 percent stay in Oregon compared to 25 percent of PhD degree holders. Thirty-nine percent of internships turn into full-time employment opportunities that students accept. PSM graduates are really contributing to regional workforce and economic development needs.

Now I would like to talk about public-private partnerships in which I participate and their tie to Oregon's proposed new PSM in renewable energy. While Oregon is facing some daunting economic challenges, it also has a robust and growing green economy. I participate on the Oregon BEST (Built Environment & Sustainable Technology) Board. The Board encourages the Oregon University System faculty to engage in research related to green building/infrastructure and renewable energy. The overarching goal of Oregon BEST is to grow Oregon's research and funding capacity and to support economic development through commercialization and other activities that enable industry competitiveness. Oregon BEST is focused on performing research; the renewable energy PSM will be focused on educating future employees for this industry.

There are several direct connections between the programs. The staff of Oregon BEST has helped us recruit faculty and industry representatives to attend PSM planning workshops. David Kenney, BEST Director, has directly assisted in the PSM planning process. Many of the faculty members who will teach in the new renewable energy PSM are affiliated with BEST because of their research programs. Many of the companies that support BEST are helping plan the new renewable energy PSM and will probably provide internships for the PSM students and jobs for the PSM graduates.

What advice might I offer regarding how you might get the interest of state-level policy makers? Most states are facing significant economic challenges. Most states have a mixed history of supporting higher education; Oregon is no exception. What created my interest in the PSM? Current economic challenges, a gap in meeting employers' needs, an opportunity to meet employers' needs with limited new resources, and the benefits for Oregon graduate students were the major factors that led to my interest in support of pursuing a statewide PSM initiative in Oregon.

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