

FORM 3

**COVER SHEET
EXTENSION OF AN EXISTING PROGRAM NOTICE OF INTENT
(LOCATION NOI)**

Program Information

Program Name: Bachelor of Science in Electrical Engineering

Institution Name: Washington State University

Degree Granting Unit: College of Engineering and Architecture

Degree: B.S. Electrical Engineering Level: Bachelor Type: Science

Major: Electrical Engineering CIP Code: 14.1001

Proposed Start Date: Fall 2008

Projected Enrollment (FTE) in Year One: 25 At Full Enrollment by Year: six: 80

Proposed New Funding: 2007-09 High demand FTE

Funding Source: State FTE Self Support Other:

Mode of Delivery / Locations

Single Campus Delivery Vancouver

Off Site _____

Distance Learning _____

Other

Scheduling

Day Classes

Evening Classes

Weekend Classes

Other (some evening classes)

Attendance Options

Full-Time

Part-Time

The BS Electrical Engineering degree is already offered at WSU Pullman and WSU Tri-Cities. A proposal to also offer this degree at WSU Vancouver has been approved by the appropriate administrative offices, as well as by the WSU Faculty Senate.

Substantive Statement of Need

National and state trends

The Bureau of Labor Statistics estimates 11.8% growth in demand for electrical engineers by 2014. The growth projection for computer hardware engineers (a subfield in electrical engineering) is expected to be about 10.1% by 2014¹.

Electrical engineering is one of the high-tech fields in demand in Washington². The context of the economic growth expectations at the national level is reflected in the state of Washington. The state data is based on 10 year projections for the period of 2004-2014. In 2004 there were an estimated 3,390 electrical engineers employed in the state. As of April 2007 there were 173 statewide openings. Between 2004 and 2014 an average annual long-term growth rate of 1.4% is estimated. For SW Washington the growth rate is 1.73%. Electrical engineers also work as electronics engineers. In this category, there were 183 statewide openings as of April 2007. The long term growth rate is projected as 1.3%. In both electrical and electronics categories a total of 356 openings were available. In SW Washington the annual average growth rate is projected to be 3.5%.

Southwest Washington is home to Washington's Silicon Forest, a concentration of high technology industries in the Vancouver/ Portland metropolitan area. The Washington semiconductor industry emerged as a significant economic cluster during the 1990s. The region joined San Jose, Austin, and Phoenix as national concentrations of technology based industries. SW Washington's technology cluster is unique in the nation in that it did not evolve in proximity or collaboration with a major research university. Absent a university, regional technology stalwarts such as Tektronix and Intel served as surrogate centers of innovation, workforce training and sources of entrepreneurial start-ups. While this model of growth and economic development has been successful for SW Washington, longer term there are challenges.

A major challenge facing the regional cluster is the lack of local graduates in electrical engineering. The foundation for an innovation economy is human talent. Competition for this scarce resource is fierce. Local technology companies desire the ability to recruit interns and full time employees from the region. They believe enhanced local production of Bachelors and advanced degrees at Washington State University Vancouver will heighten their ability to recruit and retain talent.

To address these challenges, Columbia River Economic Development Council (CREDC), Clark County High Technology Council, SW Washington Workforce Development Council and Washington Technology Center jointly proposed an "Innovation Zone" plan to Governor Gregoire in 2006. The proposed electrical engineering program at WSU Vancouver is closely articulated within this economic development plan. Furthermore, the plan calls for establishing a center for semiconductor research, development and innovation. The center will include the

¹ Bureau of Labor Statistics, <http://www.bls.gov/>, 2007.

² Workforce Explorer, Washington, <http://www.workforceexplorer.com>, 2007.

development of a research park at WSU Vancouver and a satellite of WTC Microfabrication Laboratory at WSU Vancouver³.

Student demand

The electrical engineering (EE) degree is well known and is sought after by many industries in the area but is not available for the place-bound students in SW Washington.

There is demand and a breadth of employment opportunities for graduates. A marketing study conducted by a group of WSU Vancouver MBA students was administered in 2002 to develop a marketing plan for the WSU Vancouver Engineering program⁴. A total of 299 responses, including 223 high school students, 39 Clark College and Lower Columbia College students and 37 industry paraprofessionals from four area businesses, were compiled and analyzed. Survey respondents were asked to indicate the degree they were targeting. On a scale of 1 to 6 mechanical engineering scored highest in all three groups (high school sample: 4.62, community college sample: 5.19, paraprofessional sample: 4.21) followed by electrical engineering as the second choice for degrees (high school sample: 3.82, community college sample: 4.96, paraprofessional sample: 3.86).

The market for WSU Vancouver programs is regional. WSU Vancouver target radius includes Washington counties with an approximate two-hour commute and Oregon counties specifically named in the border bill. These are Lewis, Wahkiakum, Cowlitz, Skamania, Clark, Columbia, Clatsop, Washington, Multnomah and Clackamas counties. Existing programs in the market area of WSU Vancouver are at Portland State University (PSU) and University of Portland (UP) with approximately 175 and 75 students, respectively.

Our target market contains (1) high schools; (2) community colleges; and (3) local paraprofessionals (working adults who want to change careers). The high school market was determined using statistics from the Washington State Office of Superintendent of Public Instruction and the Oregon Department of Education Websites⁵. This market contains an estimated 589 students who would pursue electrical engineering. It is difficult to find any data on the paraprofessional market. This market gets very affected from the economic fluctuations. It is estimated that there are about 20 paraprofessionals each year in the target radius of WSU Vancouver who may consider going back to school for EE. The area community colleges including Clark College, Lower Columbia College (LCC), Mt. Hood Community College and Portland Community College have an estimated 111 students who are targeting electrical engineering. Therefore, the total potential number of EE students in the target market is estimated to be 720 (589 + 20 + 111).

During our frequent recruitment trips for our current programs to area community colleges and industry in the past six years, it has become evident that there is a significant desire for Electrical Engineering. In every classroom where we made presentations, at every company where we talked to the employees, in the open house events we held at WSU Vancouver, prospective students were always asking why WSU Vancouver did not offer an electrical engineering degree

³ Bart Phillips, President, CREDC, "Promoting innovation in the technology cluster of SW Washington", 2006.

⁴ Marketing plan for manufacturing engineering program, WSU Vancouver, April 2002.

⁵ <http://www.k12.wa.us/>, and <http://www.ode.state.or.us/>

program. Over and over we heard them say “I would sign up immediately if you had electrical engineering at WSU Vancouver.” As indicated by the data from the transfer instructors at the area community colleges, about 25% of all engineering transfer students in their programs are targeting electrical engineering. In our recruiting trips we asked these prospective students if they would consider WSU Vancouver as an option if we had electrical engineering. Almost all of these students indicated they would.

The target market of WSU Vancouver contains an estimated 720 students who are interested in electrical engineering. Based on a study conducted by WSU Vancouver, 17% of the surveyed high school students from the target market consider PSU. Therefore, 30 (175 x 17%) of the 175 EE students enrollment at PSU are considered to have come from the WSU Vancouver target area. Data is not available for UP. However, due to the significant tuition difference, the UP draw from the WSU Vancouver target area is considered to be much lower (estimated to be 10). As a result, about 40 students are drawn out of the WSU Vancouver target market by the PSU and UP local programs. The remaining 680 students go to other programs in the state or often out of state. While there are many reasons behind these choices, the unavailability of Electrical Engineering in SW Washington is an obvious reason.

According to an American Society for Engineering Education (ASEE) report⁶, BS in electrical engineering was the second highest number with 11,915 degrees awarded nationwide in 2005-06. Similarly, in 2005-06 there were 75,302 undergraduates enrollment in electrical engineering closely following the highest enrollments in mechanical engineering with 80,288 undergraduates. The mechanical engineering enrollment in Vancouver has been strong with continuing growth. The national statistic imply that the student demand in the proposed electrical engineering program will also be very high.

⁶ Gibbons, M., “Engineering by the numbers”, <http://www.asee.org/prism> , 2006.

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Endorsement by Chief Academic Officer

May 2, 2008

Date