



March 2011

DRAFT: Master of Sustainable Transportation University of Washington Seattle

Introduction

Beginning fall 2011, the University of Washington (UW) proposes to offer a Master of Sustainable Transportation degree designed to serve professionals working in transportation-related fields. This self-supporting, practice-oriented program would be delivered online except for a five-day, face-to-face summer residency component on campus. UW projects initial enrollment of 5 FTE students, increasing to 26 FTE students during the fifth year. By then, 18 students per year would graduate, prepared to apply sustainable strategies in practice. The Department of Civil and Environmental Engineering would house the proposed program, which would complement transportation specializations within existing Master of Science in Civil Engineering; Master of Science in Engineering, Civil; and Master of Science degrees.

Relationship to Institutional Role and Mission and the Strategic Master Plan for Higher Education in Washington

The proposed program would support UW's knowledge dissemination mission by teaching sustainable transportation more comprehensively than traditional engineering, planning, or other programs. In addition, online delivery and part-time scheduling would support the *Strategic Master Plan for Higher Education* strategy of creating a system of support for lifelong learning. Since transportation is critical to many economic activities, the proposed program would also support the Master Plan's economic prosperity goal.

Program Need

The department anticipates maximizing student demand by offering certificate programs in conjunction with the proposed degree. During 2009-10, the department collaborated with UW Professional and Continuing Education to offer a year-long Sustainable Transportation certificate program. Strong enrollment that year (23 students including 19 completers) indicates student interest in sustainable transportation and is consistent with student demand for the proposed program. However, enrollment was not as strong this year, and the certificate program was cancelled until the degree is approved and a more substantial marketing effort can be undertaken.

During May 2010, UW Professional and Continuing Education emailed 862 UW alumni a survey and published links to it in three professional organizations' online newsletters. Out of 244 respondents (including 123 UW alumni), 100 indicated they were very or somewhat interested in the proposed program. Most respondents reported working in transportation planning, commuter service, civil or environmental engineering, and urban or regional planning.

The Bureau of Labor Statistics forecasts above average 2008-18 national employment growth for civil and environmental engineers and urban and regional planners. Although the Employment Security Department (ESD) forecasts above average statewide 2013-18 employment growth for civil engineers, it forecasts below average growth for environmental engineers and urban and regional planners. Nonetheless, ESD places urban and regional planners and civil engineers among the top 10 occupations for public-sector green jobs.¹ In addition, the employer needs assessment joint report indicates current degree production is less than half of forecast demand for civil and environmental engineers.² Furthermore, the willingness of over a dozen professionals to serve on an advisory committee suggests that employers value the education the proposed program would provide.

Strong community demand for sustainable transportation is indicated by many public initiatives, such as light rail, the Washington State Department of Transportation's sustainable transportation program, and 2009 commute trip reduction and electric vehicle infrastructure planning legislation. The proposed program would align with these public initiatives by comprehensively focusing on topics transportation professionals' previous education did not cover well, such as demand management, transportation alternatives, and new modes and methods. This curricular focus would differentiate the proposed program from civil engineering, urban or regional planning, and other existing programs, which offer only piecemeal transportation sustainability coverage.

Diversity

To enhance diversity, the department intends to recruit students from organizations such as the Association of Black Engineers and Association of Hispanic Engineers. It would also advertise to minority and women's professional societies. Furthermore, it would seek to hire underrepresented faculty.

Program Description

The proposed 42-quarter-credit multidisciplinary program would consist of nine online courses plus a capstone project with accompanying directed study. It would serve transportation planners, engineers, and other working professionals, who would be admitted on a competitive basis through the department's normal application process.

¹ Employment Security Department, *2009 Washington State Green Economy Jobs*. Page 22.

² Higher Education Coordinating Board, State Board for Community and Technical Colleges, and Workforce Training and Education Coordinating Board. *A Skilled and Educated Workforce: An assessment of the number and type of higher education and training credentials required to meet employer demand* (2009). Page 20.

After admission, students would typically complete the program part-time in three years. The curriculum would focus on planning and livable communities during the first year; followed by environmental issues and impacts during the second; and policy development, health, and economics during the third. Between the second and third years, students would spend five days on campus working on a capstone project to be completed off-campus during the third year.

Courses would be taught by full-time faculty, part-time affiliate professors, and outside professionals (with a minimum of a master's degree and relevant experience). The department would ensure a stable faculty pool by requiring a three-year commitment for any faculty member developing a course and by identifying faculty members able to teach more than one course. About 80 percent of instructional effort would be provided by six part-time affiliate faculty (including two to be hired), and 20 percent by two full-time assistant research professors. Most proposed faculty have conducted research for Transportation Northwest or the Washington State Transportation Center at UW.

Student learning would be assessed through papers, exams, class participation, presentations, and a capstone project. Similarly, the program would be assessed through course evaluations, focus groups, entry and exit surveys, alumni surveys, and external advisory committee assessments. During the first few years, program assessment would also include faculty and program director peer review, student placement and advancement measures, employer surveys, and interviews with students who stop out.

Program Costs

The proposed program would enroll 5 FTE students in the first cohort, increasing to 26 FTE in all cohorts the fifth year. It would require 1.0 FTE instructional faculty and 0.75 FTE administrative staff (including 0.4 FTE provided by UW Educational Outreach). By the fifth year, the total cost of instruction, including indirect cost, would be \$406,977 (\$15,653 per average annual FTE student). This lies within the graduate engineering cost range reported in the HECB's *2005-06 Education Cost Study* (July 2007). A student enrolling in 2011 would initially pay \$650/credit hour, for a total of \$28,000-\$29,000 to complete the program. According to program planners, this cost per credit hour is the same as that of a program of similar type now offered at the University of Washington and is considerably less than what other universities charge for graduate level technical education.

External Review

Two reviewers evaluated the proposal: Dr. Martin Wachs, Director of Transportation, Space, and Technology, RAND Corporation and Professor Emeritus of Civil and Environmental Engineering, University of California Berkeley; and Dr. Susan Handy, Professor, Department of Environmental Science and Policy and Director, Sustainable Transportation Center, University of California Davis. Both reviewers supported the proposal but offered specific suggestions for improvement. Dr. Wachs called the proposal "sound and innovative," and Dr. Handy called it ". . . an exciting proposal with much potential to make a difference in the transportation profession and to serve as a model for new programs in transportation and in other fields."

Both reviewers favored broadening the advisory committee to make it national in scope, and program planners responded by outlining plans to do so. Although Dr. Handy called the program's combination of curriculum and delivery "innovative," she recommended emphasizing transportation system users more, and program planners responded with planned curricular adjustments. Although she called the faculty "distinguished," she noted they primarily have civil engineering appointments or backgrounds and recommended diversifying academic perspectives. Program planners responded that although all instructors would have civil engineering appointments, the department would be careful to maintain an appropriate balance of engineers, planners, and public policy experts.

Staff Analysis

The proposed program would support the *Strategic Master Plan for Higher Education* and UW's mission. It would complement existing UW transportation-related programs by offering a more comprehensive and intensive focus on sustainable transportation issues and would leverage expertise available through the Transportation Northwest and Washington State Transportation Center offices at UW.

The proposed program would respond to employer, student, and community demand at a reasonable cost without duplicating other programs. Community demand for the program is particularly strong, and, despite somewhat mixed evidence, student and employer demand seem adequate. Online delivery should appeal to out-of-state as well as in-state students, and plans to offer certificates for portions of the proposed program should lead to enhanced student demand.

Both reviewers supported approval of the program, which one called ". . . an exciting proposal with much potential to make a difference in the transportation profession and to serve as a model for new programs in transportation and in other fields." Students would study a curriculum with more comprehensive sustainability content than other transportation-related programs. The curriculum would be taught by faculty one reviewer called "distinguished." Student and program assessment would both employ multiple measures.

Staff Recommendation

After careful review of the proposal and supporting materials, staff recommends approval of the Master of Sustainable Transportation at the University of Washington. The HECB's Education Committee discussed the proposal during its March 8, 2011 meeting and recommended approval by the full Board.

RESOLUTION NO. 11-05

WHEREAS, University of Washington proposes to offer a Master of Sustainable Transportation; and

WHEREAS, The program would support the Strategic Master Plan for Higher Education, as well as the university's mission; and

WHEREAS, The program would respond to student, employer, and community demand without duplicating existing programs; and

WHEREAS, The program has support from external reviewers; and

WHEREAS, The program would be offered at a reasonable cost; and

WHEREAS, The program would be offered primarily online except for an on-site component at the University of Washington's Seattle campus;

THEREFORE, BE IT RESOLVED, That the Higher Education Coordinating Board approves the Master of Sustainable Transportation at the University of Washington effective March 31, 2011.

Adopted:

March 31, 2011

Attest:

Ethelda Burke, Chair

Earl Hale, Vice Chair