

## PROFESSIONAL-TECHNICAL PROGRAM APPROVAL REQUEST

<b>College:</b> Bellingham Technical College		
<b>Program Title:</b> Engineering Technology: Clean Energy	<b>CIP:</b>	<b>EPC:</b> 603T
<b>Total Credits:</b> 105	<b>Anticipated maximum enrollment:</b> 24	<b>Anticipated yearly completions:</b> 24

x

Primary  (if so, initial  or final  documentation) Option  Contract

If **option**, to which primary program Engineering Technology

If **option**, include curriculum guide for primary program.

Award at completion (type of degree or certificate) Associate of Applied Science - Transfer

Brief program description:

Bellingham Technical College (BTC) received a grant from the National Science Foundation with the goal of advancing training pathways for the renewable energy workforce. Bellingham Technical College, Western Washington University (WWU), and the Pacific Northwest Center of Excellence for Clean Energy have worked with industry to develop career training pathways in renewable energy that advance the capabilities of students, increase employability of graduates, and provide industry with a highly skilled workforce. This focus of this work is on creating degree pathways in clean energy including certificate options, an associate of applied science degree, and transfer options. After discussion with industry partners and analyzing career profiles put together by the Center of Excellence for Clean Energy, BTC chose power electronics as the focus for the core technical knowledge base of the AAS-T degree in Engineering Technology: Clean Energy. These technical courses provide students with foundational technical training skills that enhance job placement after graduation.

Through this PAR, BTC is requesting approval of an Associate of Applied Science – Transfer (AAS-T) degree in Engineering Technology: Clean Energy. In addition to the AAS-T degree, BTC is seeking approval for a 15 credit Clean Energy Certificate. The AAS-T degree consists academic, technology, and industry training coursework detailed on the program requirement sheet (attached). Upon completion of both academic core and specialized electronic technology training coursework at BTC, students are prepared to enter the workforce as a technician **or** can choose to directly articulate to the Institute of Energy Studies at Western Washington University. The academic coursework focuses on contextualized math, science, and technology coursework that transfers into WWU Institute for Energy Studies while providing a solid foundation for students planning to enter the workforce directly after graduation. The electronics technology coursework prepares the student for jobs related to clean energy, specifically in the area of electronics. Knowledge of this technology is useful a wide variety of clean energy sectors including wind, solar, hydropower, and utilities.

Having options to enter into the renewable energy industry at a variety of technical levels is powerful for students and is important to industry. Furthermore, since the AAS-T degree consists of a strong foundation of transferable academic coursework, students have the option to return to school after working in the field to earn a Bachelor's degree in Energy Studies at WWU.

Criteria	Plan Description
PROGRAM NEED	
<p>1. Potential <b>career progression</b>, including job titles and <b>employment opportunities including wage data</b>. Need studies or indication of need from employers should support new and emerging occupations not covered by standard forecasts or data.</p>	<p>According to the US Energy Information Administration, global energy consumption has significantly increased and is expected to continue rising through 2035 (Energy Outlook, 2012). The energy industry is working to increase energy efficiency and looking toward innovative technologies to meet the growing demand. Prominent energy companies like BP and Phillips 66 are starting new departments focused on alternative energy and investing in technology development and production.</p> <p>New energy technology career categories are emerging at an unprecedented pace, and skill sets associated with energy technology cut across both traditional and emerging industries. The number of green jobs in Washington rose 32% in the last few years, and these trends are expected to continue as the demand for energy increases and resources decrease. In Whatcom County alone, there are over 3,600 green jobs (Source: WA Employment Security Department, 2010). Many emerging green energy jobs will be technical jobs that require more than a high school diploma but less than a bachelor's degree.</p> <p>This two-year degree prepares graduates to enter into the industry for wide variety of job titles including, but not limited to, the following:</p> <ul style="list-style-type: none"> <li>• Engineering Technician*</li> <li>• Electronics Technician</li> <li>• Electronics Engineering Technician*</li> <li>• Solar Installer</li> <li>• Wind Energy Technician</li> <li>• Wind Turbine Service Technician</li> </ul> <p>Entry level wages range from \$19 to \$36 per hour with annual median wages averaging between \$39,431 and \$58,486 per year (Source: WA Employment Security Department, 2016).</p> <p><i>*Indicates careers that are currently considered "in demand" by the Washington State Employment Security Department.</i></p> <p>Graduates of this program can also choose to transfer into the Western Washington University Institute for Energy Studies program.</p> <p>In addition to the AAS-T degree, BTC is seeking approval for a Clean Energy Certificate.</p>

Criteria	Plan Description
2. Initial assessment of opportunities for <b>work-based learning/clinical sites</b> (must be answered if applicable to program)	<p>Bellingham Technical College has strong partnerships with local and regional companies, many participating in advisory committees, hiring graduates as well as offering internships. Below are local companies identified in the area of clean energy/engineering:</p> <ol style="list-style-type: none"> <li>1. Eco Tech Solar – Bellingham, WA</li> <li>2. Chinook Wind – Bellingham, WA</li> <li>3. Itek Solar – Bellingham, WA</li> <li>4. Puget Sound Energy – Greater Puget Sound Region</li> <li>5. Convivium Renewable Energy – Bellingham, WA</li> <li>6. Western Solar – Bellingham, WA</li> <li>7. Jackie Rae, Snohomish PUD – Snohomish County</li> <li>8. McKinstry – Seattle, WA</li> </ol>
<p><b>3. Collaboration with other colleges –</b> Indicate which other colleges have similar programs and what potential conflicts may exist. <b>Provide evidence of attempts to collaborate with other colleges.</b></p>	<p><u>Transfer:</u> BTC has worked closely with WWU to ensure the program will articulate into WWU's Institute for Energy Studies program. Classes were chosen to meet program prerequisites and to satisfy degree requirements. Two of the three new Clean Energy content courses will be identical (and transferable) to courses taught at WWU.</p> <p><u>Collaboration:</u> BTC has been in collaboration with faculty at South Seattle College (Alison Pugh), Shoreline Community College (Louise Petruzzella), and Cascadia College (Gail Alexander). In October, 2015, BTC faculty met with the directors of energy programs from South Seattle (Alison Pugh) and Shoreline College (Louise Petruzzella). At this meeting we discussed the similarities and differences between our renewable energy programs. Alison and Louise shared their successes and failures as well as provided input regarding the proposed focus for the degree. At the time of this meeting, we were considering three focus areas (biofuels, power electronics, and anaerobic digestion), all of which were considered compliments to the programs at South and Shoreline.</p> <p>On January 21<sup>st</sup> 2016, faculty from BTC attended the Clean Energy Directors meeting. At this meeting BTC presented the proposed clean energy degree and all participants were invited to provide feedback. BTC received positive feedback from all three colleges present (Cascadia, Shoreline, and South Seattle).</p>

Criteria	Plan Description
<p>4. <b>Planning/advisory committee</b> – Provide ADV form located at <a href="http://www.sbcc.ctc.edu/college/_e-wkforceproftechprograms.aspx">http://www.sbcc.ctc.edu/college/_e-wkforceproftechprograms.aspx</a> and minutes of the related meeting(s) showing evidence that the committee has determined there is a commitment in the geographic area to employ individuals who have been served by the program.*</p>	Refer to Attachment 1
5. Other supporting documentation	N/A
<b>PROGRAM DESCRIPTION</b>	
<p>1. <b>Attach</b> program description, goals, and learning objectives.</p>	Refer to Attachment 2
<p>2. <b>Attach</b> program/curriculum guide (list by course number, course title, credit and/or clock hours per course, and total credits).  <i>NOTE: May not be available for a new primary program at initial submission. Is required for final approval.</i></p>	Refer to Attachment 3

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\* If an active Joint Apprenticeship and Training Committee for the occupation exists in the region, at least one labor and one management member from that committee should be invited to serve on the advisory committee. The college shall contact the chairperson or secretary of the JATC and request representation for the specific occupation. In cases where representation is not provided by the JATC, a letter must be on file from the college to the JATC requesting representation for that occupation. JATCs may act as the advisory committee where it has been determined that both the college and the occupation could best be served. "Organized labor" representatives should be used whenever possible to ensure a balance of all points of view, and currency with issues relevant to the development of courses.

Criteria	Plan Description
<p>3. <b>Attach</b> course descriptions, goals, and learning outcomes as they will appear in the catalog (do not include course syllabi).</p> <p><i>NOTE: May not be available for a new primary program at initial submission. Is required for final approval.</i></p>	Refer to Attachment 4
<p>4. Program goals are developed in conjunction with the planning/advisory committee. This joint development is reflected in the minutes of the committee.</p>	Refer to Attachment 5

#### ***Assurances***

By the signatures below, we attest to the fact that the following actions have occurred:

1. The program has been integrated with the strategic planning and budgeting plan of the college.
2. The curriculum of this program has gone through the institution's established approval process.
3. The college will maintain an advisory committee of industry representatives to help the institution keep the program current with employer needs.
4. A continuous improvement plan is in place for this program.

#### Approvals:

Chief Instructional Officer \_\_\_\_\_ Date \_\_\_\_\_

Workforce Education Director \_\_\_\_\_ Date \_\_\_\_\_

#### Endorsements:

Advisory Committee Representative\* \_\_\_\_\_ Date \_\_\_\_\_

*\*Must be a voting member.*