



Renewable Energy Technology

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Program Review - 2013



Table of Contents

Section One: Mission and Goals	3
A. Describe the mission of the program.	
B. List the goals and objectives for the program.	
Section Two: Action and Previous Review's Recommendations	
A. Please summarize changes that have been made since the last review.....	4
B. Were any of the changes made as a result of the last review? No.	
Section Three: Describe, Assess & Analyze	
Use data to analyze and evaluate the adequacy of the program's key functions and data elements:	5
A. Faculty	
I. Quantity of faculty needed to meet the needs of the program	
II. Extent of the reliance upon part-time faculty	
III. Incorporation of instructional best practices	
IV. Use of professional development opportunities to improve teaching and learning strategies.....	7
V. Faculty involvement in activities that support student success (examples may include the use of instructional technology, service learning, learning communities, and co-curricular activities, etc.)	8
B. Curriculum.....	8
I. Program alignment with professional and national standards	
▪ Course currency and relevancy	
▪ Evaluate the impact of the Advisory Committee on curriculum and instructional content methods, and/or outcomes.	9
▪ Forecast future employment opportunities for students, including national or state forecasts if appropriate	
▪ Degrees and certificates offered	
II. Student Learning Outcomes	9
▪ Course-Level Outcomes:	
○ Identify and give examples of assessment-driven changes made to improve attainment of <u>course</u> -level student learning outcomes.	
▪ Program-Level Outcomes:	
○ Describe the strategies that are used to determine whether students have met the outcomes of their program, degree or certificate.	10

C. Student Learning Outcomes (Cont.)	
o Summarize the results of the assessments of these outcomes.	10
o Identify and give examples of assessment-driven changes that have been made to improve students' attainment of program, degree and certificate outcomes.	
D. Enrollment	
I. Enrollment data since the last review	10
II. Student retention in classes in the program, progression term-to-term and year-to-year, as well as graduation rates for the program	11
III. Describe current and projected demand and enrollment patterns	
E. Budget.....	13
I. Adequate to meet the needs of the program	
Section Four: Recommendations	13
Based on the analysis in Section Three:	
A. Provide recommendations for the next review cycle.	
B. How will the program determine if it has made progress on its recommendations?	
Appendices:	14
A. RET Workforce Statistics Report - Alumni Tracking Initiative, Nov. 9, 2011.....	15
B. Renewable Energy Technology Redesign – Proposed program changes.....	17
C. RET Degree Matrixes – 2007 and 2012 w/approved electives.....	18
D. CTE Outcome Assessment Plan – First year certificate.....	21
E. CTE Outcome Assessment Plan – Second year degree.....	22
F. RET Budget – 2012/13.....	23
G. 27 Best Practices for Student Success - WorkSource Oregon.....	25
H. Jim Pytel Professional Development – Training and Impact.....	26
I. Tom Lieurance Professional Development – Narrative program history w/ Professional Development since RET inception.	27
J. AWEA Skill Set criteria – Outcomes for “Seal of Approval”.....	45
K. Student class progression term-to-term and year-to-year. – 2007 & 2010.....	53
L. Tri-state and National Employment Projections – RE and assoc. technicians...	54

Section One: Mission and Goals

A. Renewable Energy Technology Mission

The following mission statement was developed as part of a mission and planning development process initiated by the RET program. Additional feedback from faculty and staff was received and integrated into the current statement.

The Renewable Energy Technology program at Columbia Gorge Community College provides transformative, relevant, high quality training for community members seeking employment in renewable energy and advanced technology careers.

CGCC offers comprehensive premier workforce training in a broad range of Renewable Energy and Advanced Technology Industries by providing:

- A technical program taught by experienced instructors held to the highest academic standards
- Industry endorsed skills training using standard technology and tools for safety, mechanical, and electronic applications
- Facilitation of employment and career pathway opportunities

B. Renewable Energy Technology Goals

1. Increase and sustain enrollment in the RET program.
2. Establish solid base of qualified full-time instructors that can teach in multiple technical areas.
3. Grow relationships and alignment opportunities with high school programs.

Section Two: Action and Previous Review's Recommendations

A. Summarized changes that have been made since the last review.

This will be the first review of the Renewable Energy Technology (RET) program. However, because the program is only a few years old, it seems appropriate to summarize changes that have occurred as it has grown and developed.

The Renewable Energy Technology (RET) program was instituted fall 2007 to meet the growing demand for wind energy technicians in the region. Curriculum for the program was designed and continues to be vetted by the energy industry via the STEM Advisory Committee. Faculty and students also provide recommendations for updating and improving the quality of the training.

Specifically, the following changes are some that have been implemented in the program since its inception:

- Hybrid format: Many of the second year courses have been converted to hybrid format with lectures online via video and labs face-to-face. In addition, faculty uses this interface to provide online videos, links and other resources in Moodle shells for student access.
- Improved communication: A Moodle shell was implemented for the RET Program as a conduit for communicating with all students in the program. Information regarding industry internships, tours, guest speakers, jobs, etc. is shared through this modality.
- Lab equipment: With the help of various grants, the program has been able to equip all of the learning labs with state-of-the-industry equipment, tools and supplies.

- Tutors: Second year students are hired to provide tutoring to first year students in the program. A graduate of the program has been hired to provide tutoring for second year students.
- Motor Controls: The Motor Controls course was expanded from 3 to 5 credits in fall 2012 to address student requests to broaden training in electric motors. Instructors pursued professional development opportunities with LabVolt and were able to become highly proficient with all new equipment.
- Industrial Safety/OSHA 10: Summer 2012 faculty became a train-the-trainer in OSHA 10 to provide OSHA 10 certification to students in the program. The Industrial Safety course was increased from 1 credit to 2 credits to accommodate the additional training.
- Climb/Rescue: The Introduction to Wind Turbine Operations course was increased from 1 to 2 credits to include climb and rescue training on the newly installed training tower. A faculty member trained extensively to become a certified trainer on the tower. His training also informed decisions on additional equipment purchases necessary to carry out the students training.
- Climb tests: All students are given the opportunity to climb a wind turbine tower before they complete the first year of the program.
- RET staff and administration meet each term with RET students to obtain their feedback on how the program is progressing and what recommendations they have for improvement. It has been the practice of the staff to address recommendations as quickly as possible.

Examples of the original and current course matrixes can be found in Appendix C

Section Three: Describe, Assess & Analyze

A. Faculty

I. Quantity of faculty to meet needs

The most difficult aspect of staffing a program with the level of technical skills that the Renewable Energy program requires is finding qualified individuals with the knowledge base to teach those skills. When the Department of Labor grant ended, the decision was made to reduce the program from 3 to two full-time faculties because the course load each term did not warrant an additional full-time person. However, since that decision was made, it has been difficult finding qualified individuals to teach as adjunct faculty when they can be making much higher wages working in industry. It is the recommendation of the program to hire a third full-time faculty who can teach in multiple technical areas. This would eliminate the need for adjunct faculty in the program and would provide capacity to meet one of the program's goals of growing relationships and curriculum alignment with local high schools.

II. Extent of reliance on part time faculty

Since the sunset of the Department of Labor grant in 2012, one adjunct faculty is needed winter term in the program and two are needed spring term.

III. Incorporation of instructional best practices

For purposes of this review we will be using High-Impact Educational Practices recommended by the American Association of Colleges and Universities and the 27 Best Practices for Student Success available online as part of the Oregon Student Success and Completion Strategy at Workforce Oregon. After a comparison of the two it can be determined that the "Best Practices" can be summarized into Workforces' six categories.

Curricular Initiatives
Institutional Assistance and Academic Interventions
Student Development Initiatives
Campus Climate
Electronic and Online Tools
Institutional Leadership and Assessment

CURRICULAR INITIATIVES:

Learning Communities/Cohort Groups:

The RET Program has used the cohort system since its inception. As a limited entry program it has been necessary to monitor the basic requirements for entering into the program. Cohorts move through the system together, a majority of which continue on through the entire two-year program.

First Term or First Year Experience:

Working with our community partners the RET program arranges for every First Year cohort to climb a full-size commercial wind turbine. This is a very formative experience for any future Wind Turbine Technician and is yet another opportunity to build cohort cohesion.

Curricular Innovations/Faculty Development:

See section IV and V below.

Career Pathways:

EET 254 - Electronic Engineering Technology Seminar is a required class. Its focus is to prepare students for the rigors of finding a new career. This includes participating in guided, practice panel interviews consisting of 3 or 4 interviewers. In addition to maintaining a high standard for graduates, the RET program maintains contact with businesses, nonprofits and private community members. This continued contact with faculty and staff provides a real benefit to the students and the RET program. Each spring an RET Career Fair is held to introduce graduating students to program partners. Most students have

completed EET 254 by this time and are able to bring a complete, professional and up-to-date resume to present to potential employers.

INSTITUTIONAL ASSISTANCE and ACADEMIC INTERVENTIONS:

Learning Centers:

The Dalles campus features a tutoring center for work on specific issues and the RET students use the library meeting rooms and school café to hold study sessions throughout the year.

Mandatory Assessment and Basic Skills Prerequisites:

Entering the RET program requires mandatory assessments of basic skills. Students must meet all program prerequisites (MTH95, WR115, RD115 and CAS133) with a grade of "C" or better. Placement into: WR 121, MTH 111 and college-level reading on a placement test score within one year or successful completion of the prerequisite courses or their immediate prerequisites within one year for math and two years for writing and completion of CAS 133 basic computer skills in MSOffice.

STUDENT DEVELOPMENT INITIATIVES:

Mandatory Orientation/Special Workshops for New Students:

First year students also attend an RET New Student Orientation that is a full day event designed specifically for the RET program. Faculty, advisors and program staff help guide students towards realistic program expectations, best-practices for student success, financial aid information and general college information.

Mandatory Advising/Degree Planning:

RET students are required to meet with an advisor each term. Students are not able to register until they have met with an advisor and received an "ok" to register. Coursework is carefully scrutinized each term in an effort to monitor students' progress through the program.

One – Stop Enrollment Services:

Refer to CGCC catalog

Peer Mentoring/Tutoring/Advising:

Members of the second-year cohort are routinely hired by the program to act as mentors/tutors. These positions are offered to second-year students who are chosen for their competence in the disciplines required in the first year. At least once a term there is a "mid-term check-in". This is an opportunity for students to give feedback to RET staff about their concerns and needs in relation to their scholastic development. A typical result of this kind of feedback would be changing the schedules of tutors to better serve student's requirements.

Career Exploration/Student Employment Services:

Many different avenues are available for career exploration. The RET program maintains a Moodle page. From this gateway both graduates and current students are able to find job postings, internships, and other pertinent information concerning opportunities in the community and around the country. Some of the students are given the opportunity to attend AWEA conferences as volunteers. Typically this means that they are able to attend panel discussions and other presentations as well as face-to-face contact with industry leaders in an informal setting.

CAMPUS CLIMATE:

Relationship Building Activities:

In 2009, the college established a .5 FTE industry liaison position (Suzanne Burd) in the RET program. The intent was to create and sustain industry partnerships and better connect students with industry officials and employment opportunities. Another aspect of the position was to provide for field trips and other industry related activities, providing an opportunity for students to see practical applications of the concepts that they learn in the classroom. This also serves as another team building exercise that leads to cohort cohesion.

As a result, the program has offered an annual career fair; a climb test for every student on an actual wind turbine; opportunities for students to attend national and regional conferences; and field trips to power plants, dams, wind farms, lumber mills and other businesses relative to students' learning objectives.

Co-Curricular Activities/Student Life:

The Delta Energy Club aims to provide learning and growth opportunities in the field of Renewable Energies. They strive to help build their members' dreams and change their lives through encouraging education, industry relations, and community service. Their purpose is to provide a representative forum for students of their RET program at CGCC and to seek and allocate funds to carry out their objectives.

Delta Energy Club objectives;

- Promote an ongoing dialogue between CGCC faculty and students within the RET program.
- Stimulate interest and cooperation among the students and faculty at CGCC and within the RET program.
- Increased public knowledge understanding of the status achievements in goals of the RET program.
- Provide for the interests of all recognized organizations at CGCC.
- Recognize individual achievements of students and faculty within the RET program.
- Provide educational opportunities for students within the RET program.

RET faculty act as advisers for this club. Their latest community partnership is the planning and designing the Discovery Center Community Solar Park.

All RET students are encouraged to participate in Student Life activities including, but not limited to, the weekly doughnut social where RET students have an opportunity to mingle with faculty, staff and students from all departments/disciplines.

Faculty Involvement:

RET faculty participate actively in all aspects of the scholastic life of each cohort. All lab sessions have faculty members in attendance. Instructors are often available for open lab times, advising.

ELECTRONIC and ONLINE TOOLS:

Online Student Services:

Many online resources are routinely used in the RET program. The most directly beneficial resources are those created by RET faculty, posted online and available for review 24 hours a day. Many students have commented on the convenience of this service.

IV. Use of professional development opportunities to improve teaching and learning strategies.

The entire history of the RET program is a story of professional development. The first professional development opportunity undertaken by RET faculty was in 2006. Chief Academic Officer, Dr. Susan Wolff arranged for Tom Lieurance to work for a week along with windfarm technicians to get a flavor for how a wind farm is run, see what the technician's job entailed, talk to the employees and, find out about the training program they had in place. He also talked with Iberdrola, GE, and Vestas who encouraged CGCC to create a program that created a wind farm technician. At the time they were not real concerned about having an EET based program, they just needed bodies.

He took the information, discussed all of it with Dr. Wolff and they decided that the program should contain a great deal of the EET program since the wind turbines contained a lot of electronic equipment for automation. Based on Tom's professional development experience they added new components; Hydraulics, motors, motor control, and mechanical systems and tools, to the EET program. It was relevant to the wind turbine technician and a host of other "high tech" jobs that students could do when they got out of college. Students would have the option of working in electronics, wind energy, or anywhere in the advanced technology fields. It also gave them an avenue for continuing their education at OIT and earning a bachelor's degree.

RET faculty are constantly seeking out opportunities to improve their knowledge base and provide more access to better resources for the students. Most of the professional development undertaken has a direct impact on curriculum and classroom activities. Full-time instructors stay as current as

possible with their skills through software, hardware and safety trainings, tradeshow visits, etc. Adjunct faculty members are typically experienced industry folks with skills and experiences directly applicable to their lessons.

A list of Jim Pytel's professional development activities and their related changes in the classroom can be found in Appendix H.

A narrative history of the RET program including professional development trainings and student involvement for Tom Lieurance in Appendix I. All of Tom's professional development is related to improvements in the program and/or classroom.

V. Faculty involvement in activities that support student success

Faculty is directly responsible for creating/gathering their own materials for use online. This includes producing instructional videos using "online whiteboard" lectures for hydraulics, electronics, and digital classes. Service learning opportunities are supported by faculty and encourage every step of the way. Sometimes this will be supporting students and their efforts to volunteer at AWEA conferences or working together on a project in the community such as the Community Solar Park at the Gorge Discovery Center. Faculty also participates in, and encourages students to participate in, the field trips to many community business and industry partners.

B. Curriculum

I. Program or discipline alignment with professional and national standards

- ***Course currency and relevancy:***

The RET program is constantly striving to stay current with the evolving advanced technologies present in our community and around the world. It is very challenging in a discipline that encompasses so many fields. One of the most important indications of the RET programs relevance and currency is the American Wind Energy Association (AWEA) *Seal of Approval*. CGCC is one of only three institutions to receive this recognition. The RET curriculum map and matrix documenting the alignment with AWEA's skill set and descriptors is being developed. The Science, Technology, Engineering and Mathematics (STEM) Advisory Committee continues to provide critical feedback concerning training needs of the community and business partners. As a result of this feedback the program will be broadening its scope to include a Mechanical Engineering Technology (MET) track. (Appendix B)

New cutting-edge facilities and equipment make it possible to expand the program in many directions while maintaining a clear focus on renewable energy and other advanced technologies. A prime example of this is the new climbing tower available for up-tower rescue, confined space egress and general climbing safety training. We already have a faculty member trained to certify students in rescue techniques and we will begin certifying students in Spring 2013. Governmental, regional business and national safety training organizations have already been consulting with RET faculty and staff regarding their use of the training tower on a rental basis. Outreach to, and feedback from these partners is also vital to our program remaining current and relevant.

The RET program continues to receive commendations from industry partners regarding the quality of the technical skills in the program. The foundational training in electronics, mechanical systems, hydraulics and motor controls provide students a base of knowledge for a variety of career tracks. Faculty, too, feel the College could increase enrollment in the program if it was marketed to broader industry segments. Consideration is being given to creating an MET training track within the existing program.

- **Evaluate the impact of the Advisory Committee on curriculum and instructional content methods and/or outcomes.**

The current STEM Advisory Committee still includes several of the original industry partners that helped design the RET program. Additional partners have been added through the years to incorporate the emerging advanced tech industry in the Gorge. The committee meets twice a year at The Dalles campus. In terms of impact, the committee continues to provide invaluable information regarding the latest technology in the workplace, as well as skills expected to meet current and projected workforce needs. In addition, guidance is provided on curriculum changes and equipment purchases. Faculty is comfortable calling individual members as needed for direction on specific questions or concerns. The value of the committee's input is immeasurable.

- **Forecast future employment opportunities for students**

Annual career fairs indicate which regional industries and employers are growing or seeking a qualified workforce. The RET program does not have a formal placement program. The program has experienced a high level of employment from primarily wind related companies; however, since about 2008-2009, when local unmanned aerial systems (UAS) industries began to prosper, these companies and their offspring have shown much interest in recruiting a qualified workforce from the program. Additionally, RET staff attend national and regional renewable energy conferences and meetings to connect with employers and assess the workforce climate. For 2013 new wind development projects are looking flat; however the UAS sector and solar industries are growing and have a promising employment outlook. Actual graduate survey data and forecast employment opportunities are available in Appendix A and L, respectively.

- **Degrees and certificates offered**

The RET program offers a one-year (9-month) certificate and a two-year Associates of Applied Science degree.

II. Student Learning Outcomes

- **Course-Level Outcomes:**

- **Identify and give examples of assessment-driven changes made to improve attainment of course-level student learning outcomes.**

There is an ongoing process of evaluation for determining if students are meeting course outcomes. Faculty use quizzes, exams and lab scores to monitor the effectiveness of lectures and materials. One specific example of an assessment-driven change is that in most labs now, students are required to demonstrate the practical relevant skills to the instructor. This includes portions of labs that must be signed off to receive credit for the experiment. This shows that they can "demonstrate" required skills listed in the course outcomes.

- **Program-level outcomes**
 - **Describe the strategies that are used to determine whether students have met the outcomes of their program, degree or certificate.**

Year	Enrollment	EET 113	% Success
2009	Total	32	
2009	C or better	30	94%
2009	B or Better	18	60%
2010	Total	32	
2010	C or better	31	97%
2010	B or better	26	84%
2011	Total	32	
2011	C or better	30	94%
2011	B or better	18	60%
2012	Total	35	
2012	C or better	27	77%
2012	B or better	19	70%

The CGCC CTE Assessment Plans recently (10/31/12) submitted by RET are the programs new official benchmark. These assessment plans track specific courses that are designed to meet the stated outcomes for the nine-month certificate and Associates degree. The certificate measurement tool is the final performance assessment for EET113. Our target is 70% of students passing with a C or better and 30% passing with a B or better. For the AAS degree the measurement tool is the final performance assessment for three courses EET273, RET223 and RET122. Our target is 70% of students passing with a C or better and 30% passing with a B or better. The CTE Assessment Plans for RET may be found in Appendix D.

Year	Enrollment	RET 223	% Success	RET 122	% Success2	EET 273	% Success3
2009	Total	14		35			
2009	C or better	13	93%	35	100%		
2009	B or Better	13	93%	35	100%		
2010	Total	17		35			
2010	C or better	17	100%	35	100%		
2010	B or better	17	100%	35	100%		
2011	Total	20		31			
2011	C or better	20	100%	31	100%		
2011	B or better	20	100%	25	81%		
2012	Total	20		36		24	
2012	C or better	20	100%	36	100%	20	83%
2012	B or better	20	100%	35	97%	19	95%

The RET program also has specific outcomes required for AWEA’s “Seal of Approval”. These are integrated into specific classes and are measured using the RET - CTE Assessment Plan classes. Ultimately, this program is about fostering a sense of community where transformative education facilitates students’ dreams. But many students dream of completing school as quickly and inexpensively as possible and moving on to a good entry-level job with an employer who values their skills. We have tracked that type of employment information as well. We have included an Alumni employment survey from 2011 in Appendix A.

- Summarize the results of the assessments of these outcomes

We have outstanding results by most measures. Our data speaks to the focus placed on the outcomes from these classes. Faculty emphasizes the skills demonstrated in these classes because they are critical to the student’s performance in the field, thus their central location in the assessments.

C. Enrollment

I. Enrollment data since the last review

Of the 34 admitted in the Fall 2007 cohort, 10 dropped, 19 graduated within 100 percent of time with a certificate and 13 graduated within 150 percent of time with an Associate’s Degree. Graduation within 150 percent of time is a national standard. For an Associate’s Degree 150 percent of time is three consecutive years.

Term	Headcount	Term	Headcount
Fall 2007	34		
Fall 2008	36	Spring 2009	32
Fall 2009	36	Spring 2010	35
Fall 2010	31	Spring 2011	17
Fall 2011	38		
Fall 2012	21		

Of the 10 that dropped, two changed majors, three left for personal or other academic reasons, and the remaining five found employment in the industry. This data relied on personally tracking the students, which the program doesn’t normally do, but it provides a good snapshot of those who did not persist in the program.

II. Student retention in classes in the program, progression term-to-term and year-to-year, as well as graduation rates for the program

The Institutional Researcher provided the data which follows two cohorts of students all the way through the Electronics series to show their progression. One cohort of students took EET 111 in Fall 2007 and the other cohort we tracked took EET 111 in Fall 2010. We tracked both cohorts from their original fall and followed them through winter term 2012. Some classes may have students who re-took the course. Data and Graphic in Appendix K.

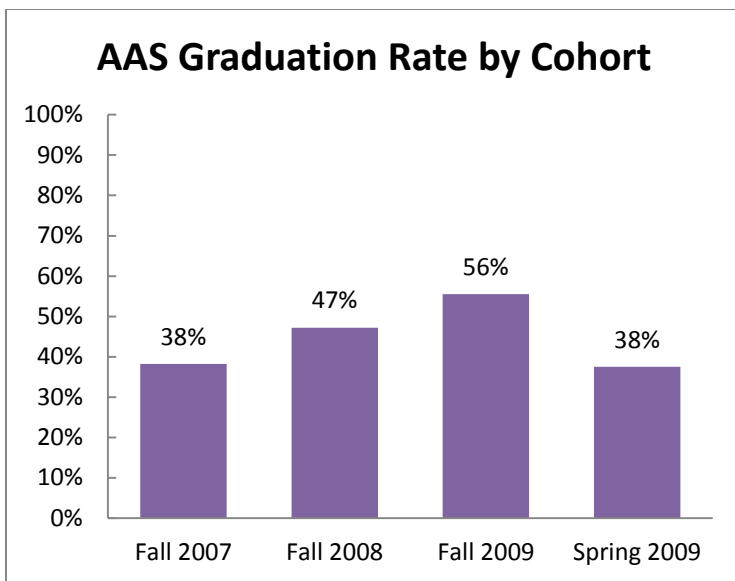
Students have a higher success rate in their second-year courses. This could be in part because students who stay on for the degree are somewhat self-selecting and have developed their study skills, are more accustomed to the rapid (“drinking from a firehose”) pace of instruction and rigors of a highly technical education.

Cohort Graduation Rates: RET Certificate within one year					
Term	Cohort Headcount	Finished Certificate within one year	Term	Cohort Headcount	Finished Certificate within one year
Fall 2007	34	19			
Fall 2008	36	20			
Fall 2009	36	19	Spring 2009	32	14
Fall 2010	31	10	Spring 2010	35	17
Fall 2011	38	15	Spring 2011	17	6
Fall 2012	21	n/a			

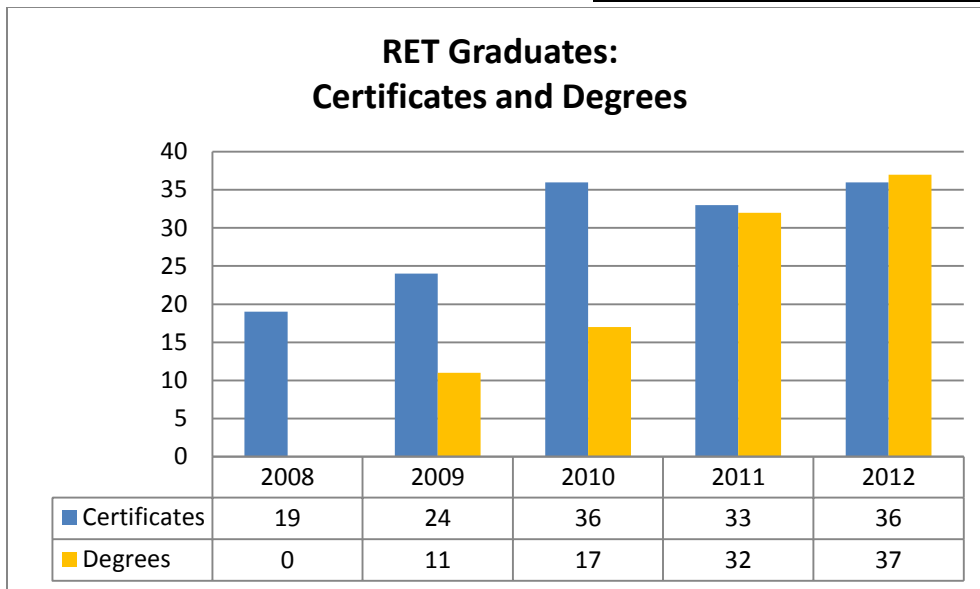
While the percent of those who finish their RET certificate in one year, as intended, seems small, it compares favorably to the college’s overall rate. CGCC has a certificate completion rate of 14 percent within two years. The RET program far exceeds this for each cohort and each year. Moreover, the percentage of students who earn the certificate as a credential may be smaller as some internship opportunities do not allow students to intern if they are credentialed. It is a common practice, that if a student intends to earn a degree the instructors will counsel students to postpone accepting the certificate credential until they graduate with the degree as well.

The graduation rate within 150 percent of time for the RET program compares favorably with the college as a whole and the national average. The graduation rate at CGCC is 15 percent, however it improves somewhat when only considering a defined cohort of first-time full-time students for Integrated Postsecondary Education Data System (IPEDS). Nationally, we can only compare IPEDS data, but the graduation rate still hovers around 20 percent.

It is also worthwhile to point out some of the students in the cohort may have intended to only earn the one-year certificate and not the Associate's Degree.



RET Degrees and Certificates			
Year	Certificates	Degrees	Total
2008	19	0	19
2009	11	24	35
2010	36	17	53
2011	33	32	65
2012	36	37	73
Total	135	110	245



III. Describe current and projected demand and enrollment patterns

Current and projected demand for enrollment is a very tricky thing. From 2009 through 2011 the RET program ran a spring cohort in addition to its regular fall cohort. When these spring cohorts ended many students were forced to wait for courses to be taught on the fall schedule. This skewed the current numbers a little. The period between 2009 and 2011 was also a time of very high unemployment nationally. Many displaced workers sought technical education to aid them in their job search which served to boost enrollment numbers for a few years. The high enrollment numbers were also a reflection of the intense effort and grant funds spent on marketing the program.

As the job market improves the RET program intends to diversify its offerings to offset the enrollment losses due to the improved economic conditions. Feedback from the STEM committee supports adding to the program to create different tracks. This would also include bringing on a third full-time faculty to handle the added responsibilities and free up other faculty to pursue other goals mentioned in our recommendations. Our goal will be to use the well-recognized RET name but give more focus to new and diverse branches of advanced technology. That exact nature of these changes is currently being explored and researched at all levels of the RET program.

D. Budget

I. Adequate to meet the needs of the program

Since the start of the RET program, grants have been secured to develop and equip the program. Industry has been a strong partner in providing equipment donations and funding for student scholarships. There is currently a ten-year commitment from industry to provide \$25,000 per year for program needs. The College's general fund is covering the cost of two full-time faculty, three adjunct faculty, one full-time instructional assistant, a part-time program coordinator, and part-time tutors, in addition to materials and supplies. Beginning in 2013-14, the College's Perkins grant (approximately \$60,000) will be dedicated to the RET program as the only Program of Study at the College and, thus, the only program that qualifies for the funds.

While equipment in the program is reasonably new, a plan for replacement will need to be put in place in the 2013-14 year. The recently installed training tower, purchased with congressionally-directed funds, will be marketed to industry and community partners for contracted training purposes. This could generate an ongoing revenue source for the program.

As the program transitions to the new workforce training center, additional space will allow for the College's own welding lab. While Sherman County has provided \$100,000 for the new lab, the majority of that funding was directed to venting and other infrastructure required for the lab. Funding will be needed to buy welding equipment and necessary supplies. An additional space for a possible machining lab will also require equipment as the purpose for that space is more clearly defined.

2012/13 budget in Appendix F.

Section Four: Recommendations

These recommendations result from feedback and discussions with faculty, STEM committee advisers, RET/CGCC staff and students. They are also related to the new RET building, training tower, equipment and training spaces. A more detailed and relevant plan will be developed as the program transitions into its new facilities. Emerging technologies, industry needs and faculty professional development will continue to heavily influence the exact direction of the program.

1. Design and implement Mechanical Engineering Technology (MET) career track for second year.
2. Faculty mentor/volunteer at related high school programs
3. Consider a third full-time faculty for the program to meet instructional needs
4. Revamp RET 102 and use as a marketing/recruitment tool
5. Develop equipment replacement plan
6. Sell contracted time on training tower
7. Fully integrate review and assessment tools

The first three recommendations are inter-related and depend on one another directly.

A third full-time faculty would:

- Provide needed skills in specific areas where we are expanding the program.
- By broadening our program to include maintenance technologies we should also be able to improve cohort enrollment and retention.
- Open up time for Tom to faculty mentor/volunteer at related high school programs.
- Reduce our need for adjunct faculty.

Appendices:

	14
A. RET Workforce Statistics Report - Alumni Tracking Initiative, Nov. 9, 2011.....	15
B. Renewable Energy Technology Redesign – Proposed program changes.....	17
C. RET Degree Matrixes – 2007 and 2012 w/approved electives.....	18
D. CTE Outcome Assessment Plan – First year certificate.....	21
E. CTE Outcome Assessment Plan – Second year degree.....	22
F. RET Budget – 2012/13.....	23
G. 27 Best Practices for Student Success - WorkSource Oregon.....	25
H. Jim Pytel Professional Development – Training and Impact.....	26
I. Tom Lieurance Professional Development – Narrative program history w/Professional Development since RET inception.	27
J. AWEA Skill Set criteria – Outcomes for “Seal of Approval”.....	45
K. Student class progression term-to-term and year-to-year. – 2007 & 2010....	53
L. Tri-state and National Employment Projections – RE and assoc. technicians	54
M. Feedback from the review committee – Brian Greene, Interim CAO	57
N. Response to the feedback from the review committee	58

Appendix A:

RET Workforce Statistics Report

November 9, 2011

This report is the summary of an Alumni Tracking Initiative held during mid-2011. This report compiles information about RET alumni: employment after graduation, industry of employment, and company of employment. Data from RET alumni in the following cohorts was used for this report: Fall 2007, Fall 2008, Spring 2009, Fall 2009, and Spring 2010. More recent cohorts were omitted due to lack of sufficient program completion time for an AAS degree.

Survey Statistics

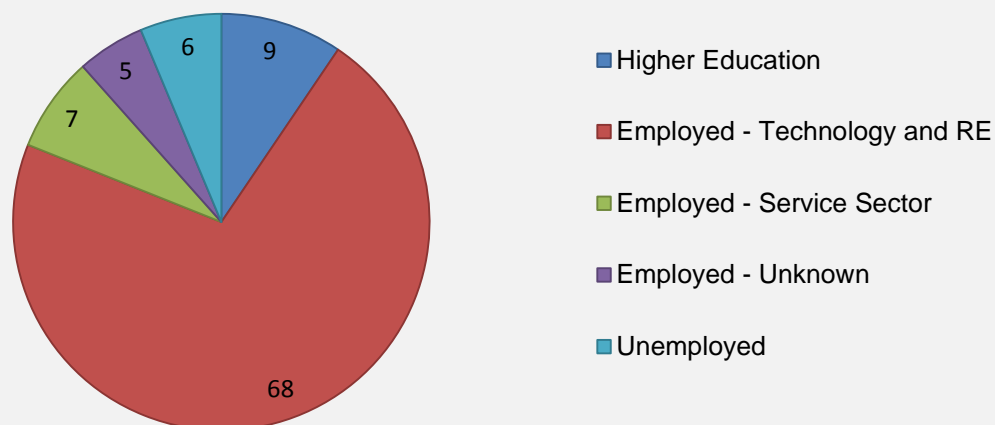
Overview of Statistics (Fall 2007 to Spring 2010)	
Number in Survey	165
Survey Respondents	127
Response Rate	77%

RET Program Completion Rate

Results (Fall 2007 to Spring 2010)	
Total Students in the Program	172
Certificates Awarded	102
Degrees Awarded	57

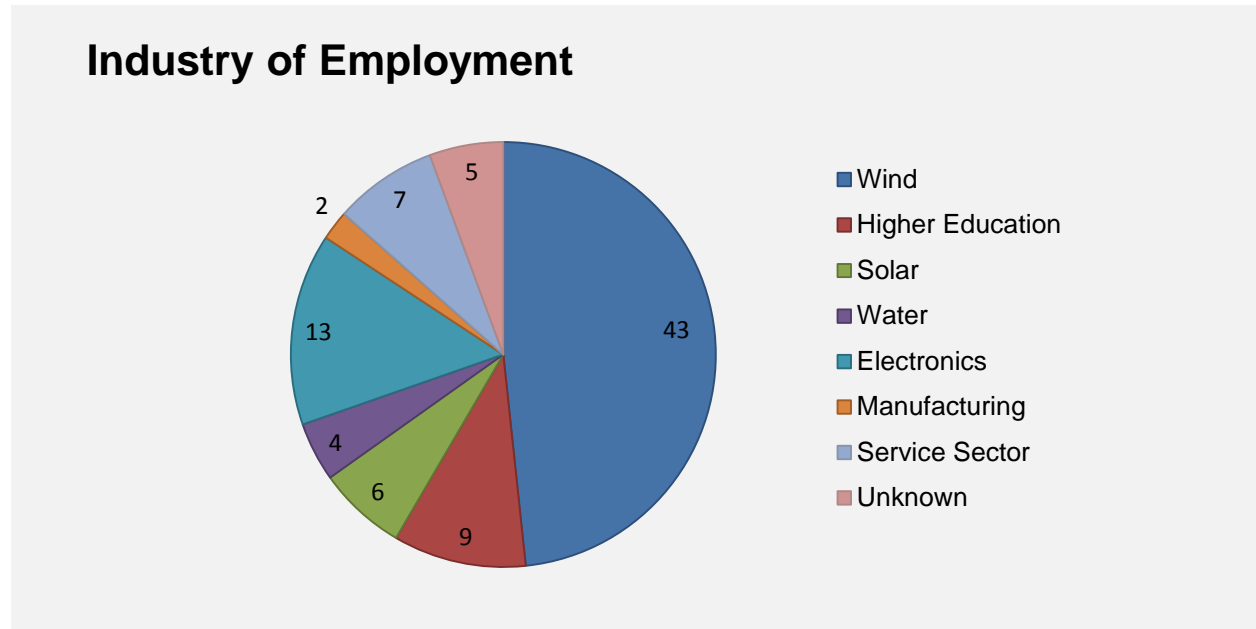
Employment Statistics

- 89 students (70%) found employment or higher education after the RET program.
- 32 students (25%) did not complete the RET program (current student, dropped, or deceased).
- 6 students (5%) remained unemployed after the RET program.
- 68 students (76%) found work in fields of Technology (Wind, Solar, Water, Electronics, and Manufacturing).

Employment vs. Unemployment

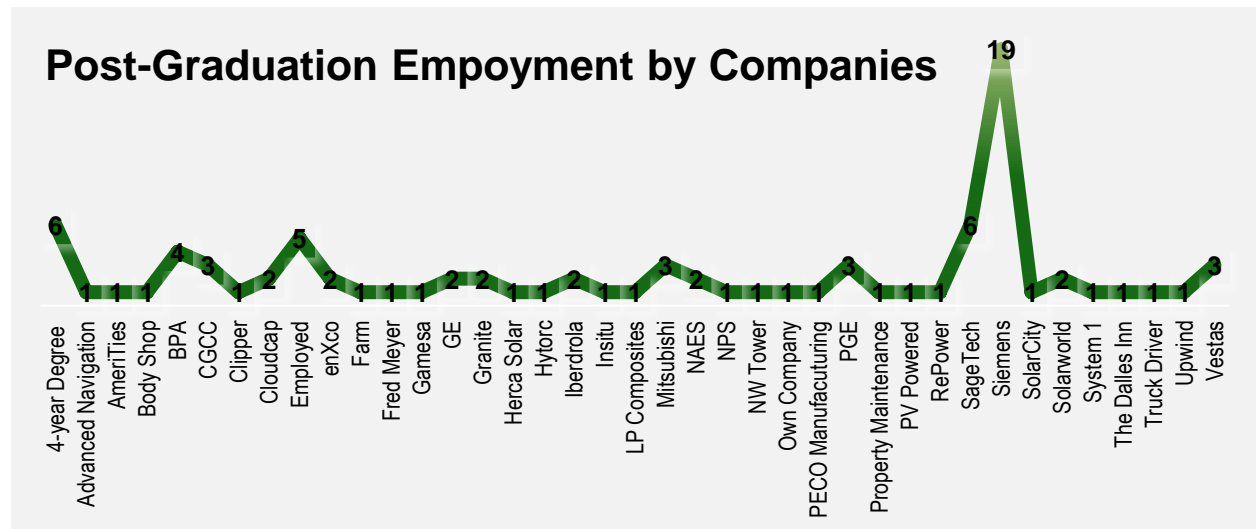
Industry

- The three major industries for the RET program include: Wind (42 students), Electronics/Technology (13 students), and Service Sector (7 students).

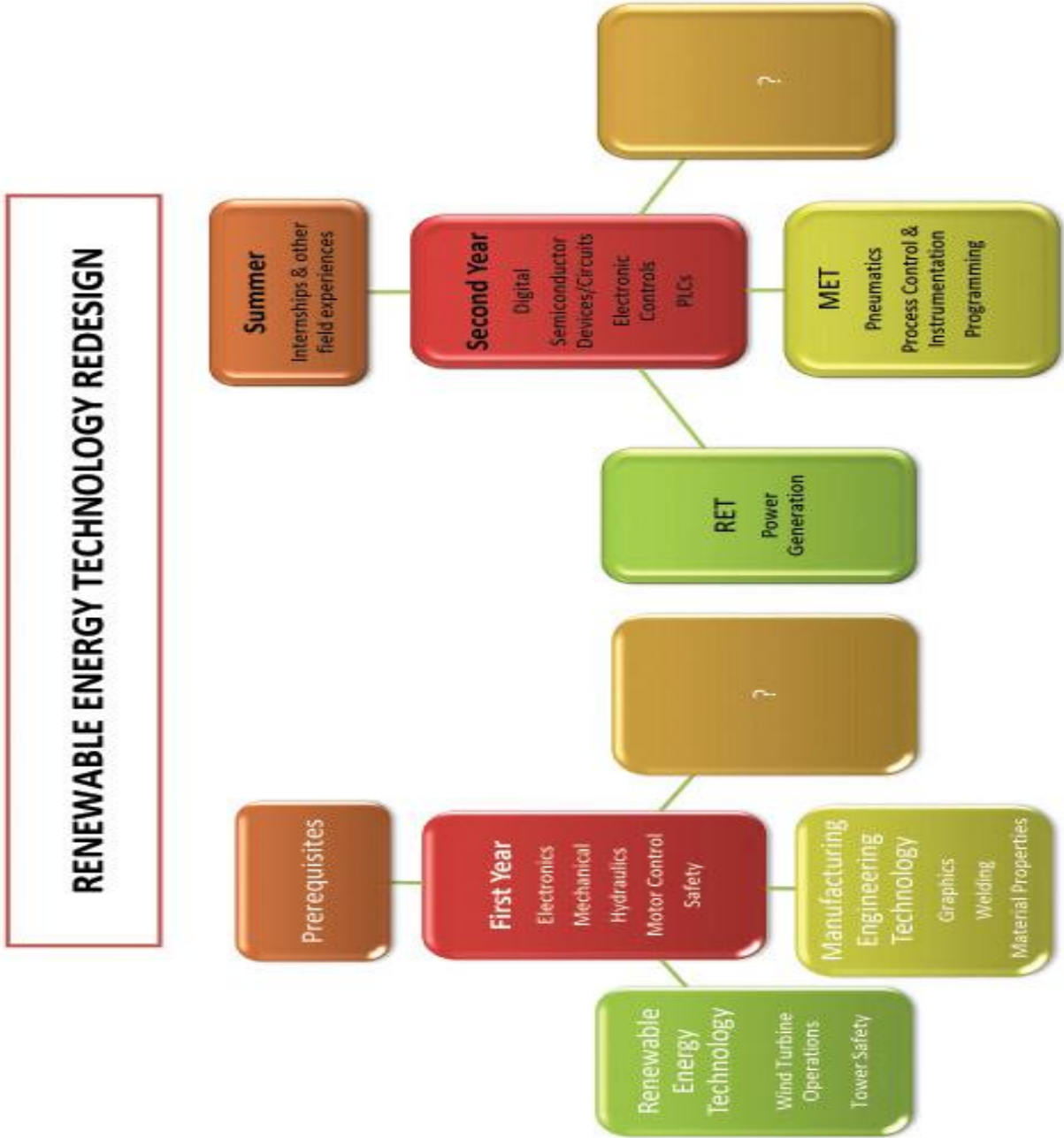


Employers

- The three major employers for the RET program include: Siemens (19 students), SageTech (6 students), and BPA (4 students).



Appendix B:



Appendix C:

Renewable Energy Technology 2007

One-Year Certificate

Two-Year AAS Degree

Year 1 Quarter 1 Fall	Year 1 Quarter 2 Winter	Year 1 Quarter 3 Spring	Year 2 Quarter 1 Fall	Year 2 Quarter 2 Winter	Year 2 Quarter 3 Spring
Electrical Circuit Analysis 1 EET 111 5 credit +Lab	Electrical Circuit Analysis 2 EET 112 5 credit +Lab	Electrical Circuit Analysis 3 EET 113 5 credit +Lab	Semiconductor Devices/Circuits EET 221 5 credit +Lab	Op Amp Circuits EET 222 5 credit	Industrial Control Systems EET 255 4 credit
Basic Hydraulics RET 120 5 credits +Lab (hydraulics for wind)	Wind Mechanical Systems 1 RET 121 5 credit +Lab	Wind Mechanical Systems 2 RET 122 5 credit +Lab	Digital Systems 1 EET 121 3 credit +Lab	Digital Systems 2 EET 122 3 credit +Lab	Digital Systems 3 EET 123 5 credit +Lab
Intro to wind Turbine Operations RET 101 1 credit		Electric Motor Controls RET 141 3 credit +Lab	PhysEd PE 182H 1 credit	Programmable Controllers RET 119 3 credit + lab	Wind Mechanical Systems 3 RET 223 5 credit +Lab
Writing 121 WR 121 4 credit	Social Science/ Gen Ed (no math) Choose approved course in the catalog. 4 credit	Computer Applications CAS 133 4 credits	Physics PHY 201 4 credit	EET seminar EET 254 Job search 1 credit	Alternate Energy Power Generation RET 102 1 credit
	College Algebra for Math, Science, & Engineering MTH 111C 5 credit	Industrial Safety EET 188 1 credit	Trig or Stats MTH 112 5 credits Or MTH 243 4 credits	Arts or Humanities/ General Education 4 credit	
15 Total Credits	19	18	17 or 18 (depending on the MTH)	16	15

Fall 2012 Renewable Energy Technology

One-Year Certificate			Two-Year AAS Degree		
Year 1 Quarter 1 Fall	Year 1 Quarter 2 Winter	Year 1 Quarter 3 Spring	Year 2 Quarter 1 Fall	Year 2 Quarter 2 Winter	Year 2 Quarter 3 Spring
Electrical Circuit Analysis I EET 111 5 credit +Lab	Electrical Circuit Analysis II EET 112 5 credit +Lab	Electrical Circuit Analysis III EET 113 5 credit +Lab	Semiconductor Devices/Circuits EET 221 5 credit +Lab	Op Amp Circuits EET 222 5 credit	Electronic Control Systems EET 273 3 credit
Mechanical Power I RET 121 5 credits +Lab	Basic Hydraulics RET 120 5 credits +Lab (hydraulics for wind)	Mechanical Power II RET 122 5 credits +Lab	Digital Systems I EET121 3 credits +Lab	Digital Systems II EET 122 4 credits +Lab	Digital Systems III EET 123 4 credits +Lab
Writing 121 WR 121 4 credits	Intro to wind Turbine Operations RET 101 2 credits	Electric Motor Controls RET 141 5 credits +Lab	PhysEd PE 182H 1 credit	Programmable Controllers 3 credits RET 119 + lab	Power Generation RET 223 5 credits +Lab
College Algebra for Math, Science, Engineering MTH 111 5 credits	PSY 201A Introduction to Psychology 4 credits	Industrial Safety/ OSHA 10 RET 188 2 credit	RET Elective 4 credits (see attached list)	General Education Arts & Humanities 3 credits	Alternate Energy Power Generation RET 102 1 credit
	EET seminar EET 254 Job search 1 credit (move from 2 nd year)		Beginning Excel CAS 170 3 credits		
19	17	17	16	15	13

Program prerequisites:

- Completion of MTH 95 (Intermediate Algebra) with a "C" or better or scoring into MTH 111 (college-level algebra) on college placement test.
- Completion of WR 115 (Intro to Expository Writing) with a "C" or better or scoring into WR 121 (college-level writing) on college placement test.
- Completion of RD 115 (College Reading) with a "C" or better or scoring out of WR 115 on college placement test
 - Completion of CAS 133 (Basic Computer Skills/MS Office 2007) with a "C" or better or completion of CAS 133 challenge test with a "C" or better

Approved Electives for RET Degree

CH 100	Fundamentals for Chemistry	4 cr
CH 104	General Chemistry	5 cr
CH 105	General Chemistry	5 cr
CH 106	General Chemistry	5 cr
EC 200	Intro to Economics	4 cr
EC 201	Principles of Economics: Microeconomics	4 cr
EC 202	Principles of Economics: Macroeconomics	4 cr
JPN 101	First Year Japanese	5 cr
JPN 102	First Year Japanese	5 cr
JPN 103	First Year Japanese	5 cr
JPN 201	Second Year Japanese	5 cr
JPN 202	Second Year Japanese	5 cr
JPN 203	Second Year Japanese	5 cr
MTH 112	Elementary Functions	5 cr
MTH 243	Statistics I	4 cr
MTH 251	Calculus	4 cr
PHY 201	General Physics	4 cr
SP 215	Small Group Communication	4 cr
SPA 101	First Year Spanish-First Term	4 cr
SPA 102	First Year Spanish-Second Term	4 cr
SPA 103	First Year Spanish-Third Term	4 cr
SPA 201	Second Year Spanish-First Term	4 cr
SPA 202	Second Year Spanish-Second Term	4 cr
SPA 203	Second Year Spanish-Third Term	4 cr
WR 227	Technical Writing	4 cr

Appendix D:

CTE Outcome Assessment Plan for degrees or certificates

AAS or Certificate: **Renewable Energy Technology Certificate**

1. Outcome	2. Criteria or Target	3. Measurement Tool (course and assignment)	4. When/how and by who analysis of assessment will be accomplished
Individuals who receive a certificate of completion should be able to:			
1. Qualify for employment in the renewable energy field as entry level operators	70% of students pass with a C or better 30% pass with a B or better	Spring EET 113 – final performance assessment	Summer or fall Jim Pytel Mary Kramer
2. Assist technicians with repair/servicing/manufacturing of renewable energy systems by applying basic knowledge of electrical, electronics, mechanical, and hydraulics/pneumatics concepts.	70% of students pass with a C or better 30% pass with a B or better	Spring EET 113 – final performance assessment	Summer or fall Jim Pytel Mary Kramer
3. Communicate effectively both at the individual level and within team settings.	70% of students pass with a C or better 30% pass with a B or better	Spring EET 113 – final performance assessment	Summer or fall Jim Pytel Mary Kramer
4. Understand the impact of renewable energy within the context of sustainability and apply sustainability concepts to their practice.	70% of students pass with a C or better 30% pass with a B or better	Spring EET 113 – final performance assessment	Summer or fall Jim Pytel Mary Kramer
5. Apply ethical and professional practice within the field of renewable energy.	70% of students pass with a C or better 30% pass with a B or better	Spring EET 113 – final performance assessment	Summer or fall Jim Pytel Mary Kramer
6. Achieve success in continuing their education towards completion of a two-year AAS degree should that be their goal.	70% of students pass with a C or better 30% pass with a B or better	Spring EET 113 – final performance assessment	Summer or fall Jim Pytel Mary Kramer

Submitted by: Mary Kramer

Date: 10-31-12

Submit to Curriculum Office (slewis@cgcc.cc.or.us) by November 15, 2011

Appendix E:

CTE Outcome Assessment Plan for degrees or certificates

AAS or Certificate: **Renewable Energy Technology Degree**

1. Outcome	2. Criteria or Target	3. Measurement Tool (course and assignment)	4. When/how and by who analysis of assessment will be accomplished
Students who complete the AAS degree should be able to:			
1. Qualify for employment in the renewable energy field as technicians.	70% of students pass with a C or better 30% pass with a B or better	Spring EET 273 – final performance assessment	Summer or fall Tom Lieurance Mary Kramer
2. Service/repair renewable energy systems and assist engineers with the design of renewable systems by applying knowledge of electrical, electronics, mechanical, control systems and hydraulics/pneumatics concepts.	70% of students pass with a C or better 30% pass with a B or better	Spring EET 273 – final performance assessment RET 122 – final performance assessment	Summer or fall Tom Lieurance Mary Kramer
3. Communicate effectively both at the individual level and within team settings.	70% of students pass with a C or better 30% pass with a B or better	Spring RET 223 – final performance assessment	Summer or fall Jim Pytel Mary Kramer
4. Understand the impact of renewable energy within the context of sustainability and apply sustainability concepts to their practice.	70% of students pass with a C or better 30% pass with a B or better	Spring RET 223 – final performance assessment	Summer or fall Jim Pytel Mary Kramer
5. Apply ethical and professional practice within the field of renewable energy.	70% of students pass with a C or better 30% pass with a B or better	Spring RET 223 – final performance assessment	Summer or fall Jim Pytel Mary Kramer
6. Achieve success in continuing their education toward completion of a four-year degree in engineering technology or engineering should that be their goal.	70% of students pass with a C or better 30% pass with a B or better	Spring EET 273 – final performance assessment	Summer or fall Tom Lieurance Mary Kramer

Submitted by: Mary Kramer

Date: 10-31-12

Submit to Curriculum Office (slewis@cgcc.cc.or.us) by November 15, 2011

Appendix F:

03/13/2013 09:55:12 AM

Columbia Gorge Community College
 400 East Scenic Drive
 The Dalles, OR 97058

Report criteria:
 Department: 130

Account Summary
 (2012/13 YTD)

Account	Proj	Description	Original Budget	Current Budget	Encumbered Amount	Expended Amount	Available Balance
100-12-130-11-6107	0000	GF-IN-PT-RENEWABLE ENERGY-TD-FT PROFESSIONAL	\$22,508.00	\$22,508.00	\$0.00	\$7,502.48	\$15,005.52
		SUPPORT SALARIES					
100-12-130-11-6301	0000	GF-IN-PT-RENEWABLE ENERGY-TD-FULL TIME	\$24,211.00	\$24,211.00	\$0.00	\$10,810.31	\$13,400.69
		CLASSIFIED WAGES					
100-12-130-11-6302	0000	GF-IN-PT-RENEWABLE ENERGY-TD-PART TIME	\$0.00	\$0.00	\$0.00	\$681.20	\$-681.20
		CLASSIFIED WAGES					
100-12-130-11-6401	0000	GF-IN-PT-RENEWABLE ENERGY-TD-FULL TIME	\$101,037.00	\$101,037.00	\$0.00	\$37,796.64	\$63,240.36
		INSTRUCTOR SALARIES					
100-12-130-11-6421	0000	GF-IN-PT-RENEWABLE ENERGY-TD-PART TIME	\$17,000.00	\$17,000.00	\$0.00	\$2,625.78	\$14,374.22
		INSTRUCTOR WAGES					
100-12-130-11-6441	0000	GF-IN-PT-RENEWABLE ENERGY-TD-CURRICULUM	\$2,000.00	\$2,000.00	\$0.00	\$0.00	\$2,000.00
		DEVELOPMENT WAGES					
100-12-130-11-6442	0000	GF-IN-PT-RENEWABLE ENERGY-TD-SPECIAL PROJECT	\$500.00	\$500.00	\$0.00	\$62.73	\$437.27
		WAGES					
100-12-130-11-6701	0000	GF-IN-PT-RENEWABLE ENERGY-TD-STUDENT WAGES	\$5,000.00	\$5,000.00	\$0.00	\$1,741.50	\$3,258.50
		GF-IN-PT-RENEWABLE ENERGY-TD-EMPLOYEE TAXABLE	\$0.00	\$0.00	\$0.00	\$90.00	\$-90.00
		ALLOWANCE					
100-12-130-11-6901	0000	GF-IN-PT-RENEWABLE ENERGY-TD-SOCIAL SECURITY	\$13,178.00	\$13,178.00	\$0.00	\$4,407.28	\$8,770.72
		GF-IN-PT-RENEWABLE ENERGY-TD-WORKERS	\$861.00	\$861.00	\$0.00	\$287.51	\$573.49
		COMPENSATION INS					
100-12-130-11-6903	0000	GF-IN-PT-RENEWABLE ENERGY-TD-STATE WORKERS	\$86.00	\$86.00	\$0.00	\$35.66	\$50.34
		BENEFIT FUND					
100-12-130-11-6904	0000	GF-IN-PT-RENEWABLE ENERGY-TD-UNEMPLOYMENT	\$3,962.00	\$3,962.00	\$0.00	\$791.73	\$3,170.27
		INSURANCE					
100-12-130-11-6905	0000	GF-IN-PT-RENEWABLE ENERGY-TD-PERS	\$28,026.00	\$28,026.00	\$0.00	\$7,169.50	\$20,856.50
		GF-IN-PT-RENEWABLE ENERGY-TD-DISABILITY	\$247.00	\$247.00	\$0.00	\$121.07	\$125.93
		INSURANCE					
100-12-130-11-6907	0000	GF-IN-PT-RENEWABLE ENERGY-TD-LIFE INSURANCE	\$48.00	\$48.00	\$0.00	\$20.21	\$27.79
		GF-IN-PT-RENEWABLE ENERGY-TD-HEALTH INSURANCE	\$56,496.00	\$56,496.00	\$0.00	\$19,742.46	\$36,753.54
		GF-IN-PT-RENEWABLE ENERGY-TD-PROGRAM	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
		ADVERTISING & PROMOTIONS					
100-12-130-11-7210	0000	GF-IN-PT-RENEWABLE ENERGY-TD-OTHER CONTRACTED	\$5,000.00	\$199.00	\$0.00	\$199.00	\$0.00
		SERVICES					
100-12-130-11-7211	0000	GF-IN-PT-RENEWABLE ENERGY-TD-PCC CONTRACT	\$8,984.00	\$8,984.00	\$0.00	\$3,076.54	\$5,907.46
		EXPENSE					

Account Summary
(2012/13 YTD)

Account	Proj	Description	Original Budget	Current Budget	Encumbered Amount	Expended Amount	Available Balance
100-12-130-11-7213	0000	GF-IN-PT-RENEWABLE ENERGY-TD-SOFTWARE & LICENSES	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
100-12-130-11-7510	0000	GF-IN-PT-RENEWABLE ENERGY-TD-POSTAGE	\$300.00	\$300.00	\$0.00	\$72.45	\$227.55
100-12-130-11-7521	0000	GF-IN-PT-RENEWABLE ENERGY-TD-SHIPPING & FREIGHT	\$150.00	\$150.00	\$0.00	\$0.00	\$150.00
100-12-130-11-7601	0000	GF-IN-PT-RENEWABLE ENERGY-TD-PRINTING & DUPLICATING	\$1,200.00	\$1,200.00	\$0.00	\$763.40	\$436.60
100-12-130-11-7614	0000	GF-IN-PT-RENEWABLE ENERGY-TD-PROGRAM MARKETING PRINTING	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
100-12-130-11-7901	0000	GF-IN-PT-RENEWABLE ENERGY-TD-SUBSCRIPTIONS	\$100.00	\$100.00	\$0.00	\$0.00	\$100.00
100-12-130-11-8006	0000	GF-IN-PT-RENEWABLE ENERGY-TD-INSTRUCTIONAL SUPPLIES	\$5,000.00	\$5,000.00	\$1,851.88	\$2,600.28	\$547.84
100-12-130-11-8201	0000	GF-IN-PT-RENEWABLE ENERGY-TD-CONFERENCE FEES	\$500.00	\$2,798.00	\$0.00	\$2,797.73	\$0.27
100-12-130-11-8202	0000	GF-IN-PT-RENEWABLE ENERGY-TD-FIELD TRIP EXPENSE	\$3,500.00	\$3,500.00	\$0.00	\$920.00	\$2,580.00
100-12-130-11-8205	0000	GF-IN-PT-RENEWABLE ENERGY-TD-EMPLOYEE TRAVEL	\$500.00	\$2,837.00	\$0.00	\$2,836.34	\$0.66
100-12-130-11-8508	0000	GF-IN-PT-RENEWABLE ENERGY-TD-EQUIPMENT REPAIR	\$1,000.00	\$866.00	\$0.00	\$186.77	\$679.23
100-12-130-11-8509	0000	GF-IN-PT-RENEWABLE ENERGY-TD-FOOD & REFRESHMENTS	\$1,000.00	\$629.00	\$0.00	\$174.35	\$454.65
100-12-130-11-8512	0000	GF-IN-PT-RENEWABLE ENERGY-TD-GIFTS EXPENSE	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
100-12-130-11-8516	0000	GF-IN-PT-RENEWABLE ENERGY-TD-MEMBERSHIP FEES & DUES	\$200.00	\$500.00	\$0.00	\$500.00	\$0.00
100-12-130-11-8803	0000	GF-IN-PT-RENEWABLE ENERGY-TD-INSTRUCTIONAL EQUIPMENT <\$5000	\$2,000.00	\$193.00	\$0.00	\$192.83	\$0.17
			\$304,594.00	\$302,416.00	\$1,851.88	\$108,205.75	\$192,358.37

Appendix G:

27 Best Practices For Student Success

Curricular Initiatives

Learning Communities/Cohort Groups
 First Term or First Year Experience
 Embedding Study Skills in Specific Courses
 Curricular Innovations/Faculty Development
 Career Pathways

Institutional Assistance & Academic Interventions

Learning Centers
 Early Warning Systems
 Mandatory Assessment and Basic Skills Pre-requisites
 Summer Bridge Programs
 Developmental Programs

Student Development Initiatives

Mandatory Orientation/Special Workshops for New Students
 Mandatory Advising/Degree Planning
 One-Stop Enrollment Services
 Peer Mentoring/Tutoring /Advising
 Counseling and Support Groups
 Career Exploration/Student Employment Services
 Calling Campaigns; Person-to-Person Contact
 Financial Aid Outreach

Campus Climate

Relationship-building Activities
 Non-Traditional Student Support
 Co-Curricular Activities/Student Life
 Faculty Involvement
 Ceremonies, Traditions, and Special Events

Electronic and Online Tools

Online Student Services
 Degree Audit

Institutional Leadership and Assessment

College-Wide Retention Initiatives
 Systematic Assessment and Reviews

Appendix H:

Jim Pytel:	
United States Department of Energy Smart Grid training	Used in lectures and in labs to add critical context in discussions and experiments
LabVolt training	The college has invested in LabVolt trainers for electronics and hydraulics
Northwest Solar Expo	Trade show experience which provided exposure to the latest trends in the solar industry. Information used in lectures
AWEA 2011	Networking, outreach and exposure to the latest trends in commercial wind energy
North American Board of <i>Certified</i> Energy Practitioners (NABCEP) Photovoltaic installation training	This is the nationally recognized certification for solar photovoltaic system installation technicians
National Science Foundation – Field Programmable Gate Array (FPGA 1 & 2)	FPGA's are an emerging new tool for use in the classroom. Logic gate experiments can be greatly enhanced using this technology
CGCC in-service – Problems Based Learning	This technique has been integrated into every relevance area of the program
ENSA – Climb Rescue	This training allows the program to certify students using the new training tower.
AWEA Small Wind Conference	Networking, outreach and exposure to the latest trends in small and residential wind energy

Appendix I:

In the beginning there was no program. The EET program had passed away and the RET would be born soon.

April 2006: We were contacted by the wind industry, mostly local folks, Paul Woodin, PPM energy, about creating a training program specifically for the wind industry. After it was made known that we were creating the program, companies like Vestas, Iberdrola, and GE made it known that they were interested also. Dr. Susan Wolff, chief academic officer for the college and dean of the college offered me a contract for the next academic year of school even though the Electronics Engineering Technology (EET) program had closed down. The first step was to create the wind energy program and get a 400 hour 6 month pilot program up and running by the winter quarter. Also I was offered a Project Lead The Way (PLTW) class that was part of a proposed high school class they were bringing on at the start of the 2006-2007 school year at The Dalles-Wahatnoka high school (TDWHS).

July 2006 PLTW: I attended a two week course on engineering basics and the PLTW coursework and how to teach it to high school students at OIT in Klamath Falls.

www.oit.edu/pltw

July 31 to Aug 4 Wind farm training.

Condon wind farm, AES corp.:

I include this because for me it was a professional development for myself and the college.

Dr. Wolff arranged for me to work for a week along with the technicians to get a flavor for how a wind farm is run, see what the technician's job entailed, talk to the employees and, find out about the training program they had in place. I also talked with Iberdrola, GE, and Vestas who encouraged CGCC to develop a program that created a wind farm technician. At the time they were not real concerned about having an EET based program, they just needed bodies.

I took the information, discussed all of it with Dr. Wolff and we decided that the program should contain a great deal of the EET program since the wind turbines contained a lot of electronic equipment for automation. We added New stuff, Hydraulics, and motors, motor control, and mechanical systems and tools to the EET program since it was necessary to the wind turbine technician as well as a host of other "high tech" jobs that students could do when they got out of college. Students would have the option of working in electronics, wind energy, or anywhere in the advanced technology fields. It also gave them an avenue for continuing their education at OIT and getting a bachelor's degree.

Many, many meetings this summer.

Created CCOG's for new classes in the RET program.

We Hired Alan Bailey and Dr. Roy Torley to help with mechanics and hydraulics, and had their help to create the curriculum for the pilot program that we created for winter 2007.

2006-2007 first semester of TDWHS PLTW school year: Taught PLTW with two other high school instructors as well as doing the pilot Wind Technician program.

Presented the RET program along with Dr. Wolff to PCC and the state for accreditation in the spring term this year. Thank you Dr. Wolff, it would not have been done without her arranging this.

Pilot program results: Only 6 of 24 students made it to the end of the school year, the rest were hired by wind farms before "graduation". Comments that came back from employers that wanted to know where they learned what they knew and were amazed at how they were able to use it.. Employers were impressed with the caliber of worker we put out.

Summer 2006: This summer Dr. Torley, Alan Bailey and I visited Iowa Lakes CC to see their wind turbine technician training program. For electronics they used the LV Facet program. They have more equipment at this time than us. They also have a Vestas V89 wind turbine on the college campus. We talked to Al Zietz about the training program they created. This helped us figure out some of the program we have here.

Summer 2007:

Attended AWEA with Dr. Wolff, Alan Bailey and Dr. Torley to see what the industry was made of. There were many vendors that we got ideas from that told us what kind of new equipment that would be in the new turbines. Wind farm companies that we talked to about the RET program that was starting in 2007-2008. Many told us of expectations of workers they hire and that it was very useful to have a program that includes electronics in the curriculum.

Building Partnerships and Pathways Summer Institute

Career Pathways: Please join us for the inaugural Career Pathways: Building Partnerships and Pathways Summer Institute. Participants at this conference will have the opportunity to network and engage in interactive discussions with partners and colleagues on key topics related to Pathways to Advancement in our region.

Date: Monday, August 21 2006

Time: 8:00 am - 3:00 pm

Place: Columbia Gorge Discovery Center

Oct 11, 2006 Subject area committee meeting. Industry advisors attend and give us info on what makes a great technician.

10/20/2006 PCC outcomes

Creating CCOG's and outcomes for creating classes. Understand and writing CCOG's that will aid in the process of getting new classes approved through PCC. Also, rewriting all the existing CCOG's.

PLTW

10/25/06 Science Technology Engineering and Math (STEM) Meeting: Industry advisors. One of many meetings we had.

11/16/06 PROJECT LEAD THE WAY - OREGON

COUNSELOR/ADMINISTRATOR/TEACHER CONFERENCE

on Pre-Engineering and Engineering Technology Education

November 16th, 2006

Gregory Forum 108 C

19600 South Molalla Avenue

Clackamas Community College, Oregon City, Oregon

Oregon's 1st PLTW Summer Training Institute was held in July 2006. Building on the success of this two week professional development opportunity for classroom teachers, we are planning for next summer's STI, tentatively planned for July 8 - 20, 2007.

The PLTW Pre-Engineering Program represents a course sequence that addresses the educational needs of students planning on a post high school educational program in a two or four-year college leading to a career in engineering or engineering technology. The program offers students an

opportunity to explore a potential occupational path, and if appropriate, to prepare for the college experience.

Jenifer and Char,

The article in today's Oregonian has certainly increased awareness and interest in our Renewable Energy Technology program. Marty -- kudos to you and MCCOG for writing and managing the grant from the state to get this started :) Of the phone calls I received today, there are three gentlemen I would like to arrange a time for to visit the campus, meet with us to review the curriculum, and talk about their needs and how they can support the program and college.

Jeremy Norton, Training Manager
PPM (now Iberdrola, Windfarm in Wasco)
503-241-3239

Martin Cavassa
Infracell
503-885-7700
Paul Joiner
Bureau of Labor and Industries, Apprenticeship program
541-686-7654, x 241

I would like to host a two-hour meeting with lunch for the three folks and have Marty Miller, Dr. Toda, Dan Spatz, Tom Lieurance, Dr. Roy Torley, Kristen Kane, Maggie Johnson, and myself at this meeting.

12/06/06 PCC Curriculum committee meeting at PCC.

First meeting to get the CCOG's approved and accepted by PCC for the RET program.

8/06 Not a specific date. OPAS meetings at Portland. NOISE/OPAS/PLTW and its relationship with the state of Oregon's STEM initiative

1/24/07 RET program accepted by PCC at this meeting. Dr. Wolff made this happen very quickly.

EAC meeting for wind industry.

Susan and Tom,

Here are the details for next week's EAC meeting.

Karen wrote:

Agenda is below:

Education Advisory Council

Agenda, January 17, 2007

January 24, 2007, 3-5 pm, Sylvania Conf Rooms A/B

Introductions (5 min)

Action Agenda

1. Approve December 13 minutes and January agenda. (5 min)

Minutes available at

<http://www.pcc.edu/resources/academic/eac/documents/meetings/2006/minutes/Minutes12-13-2006.html>

<<http://www.pcc.edu/resources/academic/eac/documents/meetings/2006/minutes/Minutes12-13-2006.html>>

2. Membership Co. Policy Committee membership - Loretta Goldy (5 min)

3. Degrees & Certificates - Susanne Christopher AAS Degree - Renewable Energy Technology

One-Year Certificate - Wind Energy Technician

EAC Recommendation

1. Curriculum/Pre-Requisite Co. Discussion - Kendra Cawley

Opt Out process

2. Prioritize EAC-recommended budget requests - Karen Jolly

Committee Update

1. Curriculum Committee - Kendra Cawley
2. Degrees & Certificates - Susanne Christopher
3. Policy Committee -- Porter Raper
4. Student Development Committee - Mary Severson
5. Membership Committee - Loretta Goldy
6. Tobacco Use Task Force - Kendi Esary & Brooke Gondara
7. Assessment of Prior Learning Task Force - Terry Foty & Pamela Murray
8. Pre-requisite Committee - Porter Raper
9. On-line Degree Task Force update - Karen Jolly

Other

Adjourn

EAC meetings are open to the entire college community. Your voice is important to us.

Committee chairs:

Karen Jolly - EAC Chair (4079)

Kendra Cawley - Curriculum Committee (7282)

Susanne Christopher - Degrees & Certificates Committee (4251)

Loretta Goldy - Membership Committee (4092)

Porter Raper - Policy Committee (5283)

Mary Severson - Student Development Committee (4692)

Additional information, membership lists, agendas, and meeting minutes of the EAC and its standing committees can be found at

<http://www.pcc.edu/resources/academic/eac/>
<<http://www.pcc.edu/resources/academic/eac/>>

Karen Jolly, Instructor

Computer Applications/Office Systems

Chair, Educational Advisory Council

Portland Community College

503.977.4079

Amy Alday-Murray

Curriculum Manager

Portland Community College

aaldaymu@pcc.edu

Phone: 503-614-7730 Fax: 503-614-7805

2/5/07 OPAS/NOISE

Noise/OPAS

OPAS/NOISE is a state wide initiative that OIT's PLTW is a part of.

Email sent from Stan Felderman of TDWHS. He went along because he is involved in PLTW.

Thank you for your participation in the kickoff NOISE (Network of Informal STEM Educators) conference here at OMSI on Monday, February 5! We look forward to a great day of forging connections among informal and formal STEM educators throughout the state, and finding ways to grow the network to benefit us all.

NOISE Conference Preliminary Agenda

February 5, 2007

8:00-9:00am Registration

Continental Breakfast

9:00-10:30am Welcome, Introduction and Overview - Ron Barnes, OMSI

Keynote Address and Q&A - Charlie Walter, Fort Worth Museum of Science and History Founder of a 10 year old statewide informal educators' network

10:30-10:40am

Break

10:40am-12:00pm Report results from online survey Roundtable discussions to frame topics for afternoon groups

1:00-3:00pm Small group brainstorming sessions to discuss topics raised in morning session. Report back to entire group

Break

3:00-4:30pm Entire group discussion: Where does NOISE go from here? Synthesize key recommendations from small group reports. Establish follow-up items/subcommittees

4:30pm Conference Ends

If you have any questions about the agenda, logistics, travel, or anything else, please feel free to get in touch with me.

Best regards,

Amanda

Amanda Thomas | Coordinator of Adult Learning Programs

Oregon Museum of Science and Industry

1945 SE Water Ave | Portland, Oregon 97214

Tel: 503 797 4517 | Fax: 503 797 4568

athomas@omsi.edu

www.omsi.edu

2/9/2007 Vestas, Jens Midtiby

Their view of a wind energy technician. Prefers the heavy electronics background in our program. Tour of Vestas training site and how their equipment works. Not using standard PLC's but Microprocessor boards made by them.

3/6/07 Celilo converter station, Bonneville power. Bonding and grounding class. Safety. All day

4/24/07 Oregon State Legislature. Meet with local legislators. Present: Paul Woodin, Jeremy Norton, Dr. Wolff, Dr. Toda, and me.

4/26/07 Dufur High School welding competition judge.

5/9/07 PLTW Meeting with Stephen Jupe.

5/10/07 I addressed the Kiwanas at Spookys pizza and presented the new RET program.

5/21/07 RENEWABLE ENERGY TECHNOLOGY PROGRAM SYMPOSIUM AND OPEN HOUSE

Date: Monday, May 21, 2007

Place: CGCC Campus

Prior to Symposium and Open House:

1. Advisors will send graduating Wind Energy (Pilot Program) student resumes to Wind Energy employers to look at prior to symposium
2. Advisors will have Wind Energy employers send company info for students to look at prior to symposium

AGENDA

SYMPOSIUM

(to include Pilot program students, instructors, advisors, Wind Energy employers)

11:00 -12:00 Wind Energy Employers meet for tour and program information update

12:00 - 1:30 Lunch and Open Forum of questions and answers for students and employers (pizza provided)

1:30 - 4:00 Employers and students can have private meetings/interviews in reserved rooms.

4:00 - 5:30 Break for Supper (not provided)

OPEN HOUSE

(to include RET advisors, instructors, STEM members?, Wind Energy employers: to invite - public, RET program list, press, high school counselors, school-to-work, MCCOG, Employment Dept.)

5:30 - 5:40 Introductions (advisor)

5:40 - 6:00 Program information (faculty)

6:00 - 6:20 Admissions process/prerequisites. etc. (advisor)

6:20 - 7:00 Job descriptions/employment outlook (industry)

7:00 - 7:30 Open Forum

9/06/07

Where: Oregon Institute of Technology, Portland Metro Center, RM 139.

Please RSVP to Cylvia Hayes, info@3estrategies.org, 541.617.9013 x1

Background:

The State of Oregon is conducting an assessment of the employee/ workforce status and future needs for sustainable energy companies. One component of the assessment is a series of meetings across the state of key renewable Energy companies and employers, economic development interests and employee training program representatives.

The purpose of these meetings is to ensure that the real life, on the ground workforce needs of clean energy companies are the basis upon which academic institutions and agencies build their clean energy related training programs.

Meetings will be held in Portland, Bend, Klamath Falls, Hood River and Pendleton or LaGrande. Each meeting will address regional concerns and will focus on the industry sectors present in that region.

The September 6th meeting mentioned above is the ONLY meeting that will take place in the Portland Metro region. Please do your best to make it. Your input is extremely important. Please RSVP.

Cylvia Hayes

3EStrategies

16 NW Kansas Bend, OR 97701

(541) 617-9013 phone

(541) 382-2287 fax

info@3estrategies.org

www.3estrategies.org

10/26/07 OIT articulation agreements Travel to Portland to talk with OIT about articulation between RET and a 4 year EET degree.

10/30/07 AWEA conference, Carlsbad, CA. Beginning of AWEA starting the wind energy education training. I presented the Pilot program and the new RET program to several colleges about how we have done so far. Most of them were in the program building process as well.

12/13/07 Meeting, PCC, Sanda Nedelcu (Williams) about RET and how they can put it in their curriculum. Renewable energy systems curriculum. There were several meetings after this. They developed their own more technical engineering classes from this meeting.

1/29/08 Perkins grant stuff: sign off on subject matter Bob Stocking is putting in the PLTW High school classes he is teaching.

3/17/08 Meeting to discuss objectives for new DOL grant for RET program. The DOL grant was for \$1.67M bucks. We would begin evening classes and 4 cohorts of students. Two starting in spring and two starting in the fall quarters. The evening classes were the spring cohorts and the morning classes were students starting in the fall quarter. The spring cohorts would begin the start of summer classes.

4/9/8 PPM energy, bighorn project. Safety seminar, wind farm safety a la PPM energy. Brought many students.

4/23/8 Advanced Navigation internships. Lab tour of CGCC.

5/2/8 Jennifer Mcdougale, Klein Educational systems. Meet to discuss their training systems.

At this point we were going to have money to spend for hydraulics and motor trainers, Lab equipment for the new third floor lab. We purchased from LabVolt instead of buying Amatrol equipment. The difference and concept of the equipment was enough to select the LabVolt.

5/31 to 6/4/8 AWEA, Texas. Talk to prospective employers about students. Find out what the cutting edge technology for wind turbines and measuring equipment is.

6/24 to 6/28/8 Summer wind institute. Gathering of colleges interested in starting a wind program and AWEA gathering data for a wind Technician certificate.

Summer of 08 Teaching assignment Digital 1 and Semiconductor circuits. First time I got to teach over the summer quarter.

Lots of DOL grant stuff and ordering equipment for the new EET lab, PLC lab, hydraulics lab, motor control lab..... Is there enough time in the day?

7/10/08 Education group CCWD

Foundation for a statewide manufacturing/renewable energy certificate.

9/2/08 Paula Ascher

RET Distance Learning Training Day

Tuesday, September 2, 2008

Room 3.102

AGENDA

9:00 am -Introduction to Distance Learning at CGCC

-Moodle Basics and hands-on practice

10:00 am -Quality Matters in distance learning

Noon -Break for lunch

1pm -Using Starboard/Camtasia to produce engineering lectures

-Hands-on practice producing Camtasia videos and loading them in Moodle

-More practice with Moodle

3pm -Adobe Connect - Online tutoring using the starboard

4pm -Discussion about emerging technology in distance learning

-Wrap up

5pm Adjourn

9/2/08 Moodle into class structure.

classes all day with Paula Ascher

Incorporated Moodle into class structure. Made videos for EET222 that went along with the class and gave them more opportunities to visit the lectures.

9:00 am Introduction to Distance Learning at CGCC

Moodle Basics

9:30 am Hands-on practice with Moodle

10:30 am Using Starboard/Camtasia to produce engineering lectures

11:00 am Hands-on practice producing Camtasia videos and loading them in Moodle

Noon Break for lunch

1pm Quality Matters in distance learning

3pm Adobe Connect – Online tutoring using the starboard

4pm Wrap up and discussion about emerging technology in distance learning

5pm Adjourn

9/3/08 Wildhorse wind farm tour Students and I

9/11/08 Bruce McDougall PLC training and ordering PLC's after figuring out (from this conversation) exactly what we have and what I want to order. Outfitted the labs with RSLOGIX5000 and L32 processors with I/O cards. Created plywood stands for desktop use. LV stands were \$900, ours cost \$35.

10/24/08 Delta energy club meetings begin. The big thing this year was the bylaws for the club.

11/12/8 Updated: Training Course Curriculum - Bigelow Wind Farm/Columbia Gorge Community College

12/2/8 RE: LJD renewable energy forum Dec 2. Bobs Texas T-bone with the governor (No governor present). Gave presentation on what a wind farm technician's job is.

Bob's Texas T-bone with the governor Hello all ~ thanks for being patient! We are confirmed for Tuesday,

December 2nd at Bob's Texas T-bone in beautiful downtown Rufus. The agenda remains the same as below, with the exception that we hope to be flexible within 15 minutes each way. That would make the CGCC presentation at 2:15/2:30. Does that work for you?

1/5/9 DOL quarterly report meeting

1/8/9 Meeting Articulation Agreements/Statewide Certificate/OIT

1/12/9 DOL Partners Meeting

2/11/9 RET scholarship meeting, Vestas

Please join us for dinner at The Mint on February 11th at 6:00 pm as Vestas hosts a dinner in honor of their scholarship recipients. This is an opportunity to celebrate the great partnership that has been created with Vestas, as well as a chance to discuss how we can continue working together in the future.

2/20/9 Meeting Work with high school teachers to align RET curriculum w/ high school programs if possible. (Most courses that are taught in high school are not college level courses.)

5/15/09 OSU field trip They have a large wave tank and a tide/wave generator (buoy). Students involved

5/21/09 The Dalles dam field trip. Power generation

5/22/09 AES Advanced Energy Systems (same name but not the AES that I worked for in '06). Training for students in solar energy.

Suzlon meeting about training for current technicians, and what can we do to train them. This has been a problem for them since they have current technicians that know nothing about electricity. Outcome?

6/3/09 PCC curriculum meeting Do I remember what this was about? Perhaps a change or addition of a class.

7/14-16/09 LabVolt conference in Spokane at Gonzaga University. Equipment training.

8/19/09 Competitive Solar. Contemplating a new direction or just adding curriculum. We were looking at setting up an electric vehicle recharging station at the college.

8/20/09 Vestas ribbon cutting for the new hub they donated to the RET program.

9/16/09 Megger came to visit and donated Megger equipment and trained us on it's operation.

10/2/09 Chemeteka CC travel there to create articulation agreement for RET program. Also made articulation agreements with Clackamus CC with the RET program.

10/8/09 Smart grid forum Portland. Learn about PGE's experiments with smart grid for incorporation in the balance of plant class.

2009 Energy Managers Fall Forum

Advancing Smart Grid

Thursday, October 8, 2009

Portland Conference Centers, World Trade Center, Mezzanine 2, 3 & 4

121 SW Salmon Street, Portland, OR

FORUM AGENDA*

7:30-8:00 Registration & continental breakfast

8:00-8:10 Welcome

David Christie, Oregon APEM President

8:10-8:20 Introduction to "Advancing Smart Grid" Jessica Rose, Board Member

8:20-8:50 PGE's Plans for Smart Metering Steve Hawke, Senior Vice President, PGE

8:50-9:20 Networking Dave Cone to lead a networking activity

9:20-10:45 Oregon Public Utility Commission JR Gonzalez, P.E.

10:45-11:00 BREAK

11:00-12:00 Citizens Utility Board Bob Jenks, Executive Director, CUB

12:00-1:00 Lunch & Networking

1:00-2:00 **Tour PGE's System & Generation Control Centers**, two tours will be offered: 1). PGE System Control Center: This is where System Load dispatchers monitor the entire electric grid 24 hours a day balance generation with the fluctuating load in real time. Tour will be given by a PGE expert in control center management.

2). PGE Distributed Generation Control Center: Mark Osborn, Manager of Distributed Generation (DG) will provide a tour of the Control Center for the world's most sophisticated Distributed Generation System that monitors and controls participating customers' back up generation system. These generators are used to supplement PGE's system generation. The system is tested on a monthly basis to ensure DG system reliability.

10/14/09 Paula Ascher class Creating video's for YouTube

10/21/2009 PCC Brainstorm RET, RES program. Sylvania PCC is creating a Renewable Energy Systems addition to the Electronics Engineering Technology program. Asking for my input.

11/5/2009 Northwest Renewable energy forum

11/?/09 From PCC: I attended all the advisory board meetings.

Dear EET Advisory Board Members:

Our EET advisory board meeting is scheduled on Friday, November 13th, from 7:30am-9:30am, in the Oak Room cafeteria area-CC building). Kathleen, our dean's assistant, will email you the parking permits with directions/map.

Yesterday I invited the renewable energy group to attend the Northwest Regional Energy Forum sponsored by the National Science Foundation on November 5th at Rock Creek - we really need your feedback on the NSF program, which is in support of the renewable energy training and partnerships so please attend if you can. It is OK with us if the renewable energy group will skip our general EET advisory meeting on November 13th, however, you are welcome to attend both.

I will email the agenda on a date closer to our meeting.

Looking forward to seeing you again.

Best Regards,

Sanda Williams

Department Chair

Electronic Engineering Technology

PCC-Sylvania Campus

ST 208-O

12000 SW 49th Ave.

Portland, OR. 97219

PH# 503-977-4527

Fax: 503-977-4859

sanda.williams@pcc.edu

10/20/09 Teaching Strategies training

Faculty Professional Development Seminar Schedule

I. **Andragogy – Helping Adults Learn**

Andragogy has been traditionally defined as the art and science of helping adults learn. Because many of the RET and CTE students are adults, there are specific issues and assumptions to be considered when conducting formal teaching. This introductory session will examine five predominate issues and the implications for teaching.

II. **Lesson Planning and Design**

Simply stated, a teacher needs to know first where he or she wants the students to end up at in order to help them get there. The development of course objectives and their corresponding lesson plans are key to successful teaching. This module will review the material covered in the faculty in-service break out session -*Backward Design*, a proven method of sequential steps for creating a lesson plan and course learning objectives.

12/3/2009 Northwest Renewable Energy Institute. Meeting at Brand X Cheap and dirty. Not impressed with their program. Too quick and doesn't teach anything about electricity. I doubt many will find jobs as a result of this class.

>>> Thomas Lieurance 11/20/2009 12:51 PM >>>

Hi, everyone,

Would you be available to meet with Tom Barquinero the morning of Dec. 2? He'd like to discuss a potential workforce training partnership with the RET program in conjunction with wind turbine service and maintenance, and also the related project described below.

-- Dan

David and I are exploring another opportunity that has recently captured our attention -- the development of the first dedicated warehouse/distribution/service center targeting clean tech companies. The City of Prineville's railway enhancement project is really quite remarkable. They've upgraded 18 miles of city-owned rail track to 286,000 lb.-compliant Class One Railroad status so they can connect up with Burlington Northern Santa Fe and Union Pacific to ship freight everywhere across North America. And their indoor depot terminal, staging areas and brand new warehouse facilities are exceptional...and in need of a tenant. So David and I now want to explore the feasibility of offering in-transit component assembly operations and shippable product maintenance & repair at this transport hub location. In fact, we're hoping to get study funding from a Connect 3 grant the City of Prineville is about to submit into ODOT. May I ask your take? Do you think this centralized supply chain services hub concept make sense for the wind industry? I'm still interested in getting together when you're available.

12/14-15/9 Teaching strategies training Cont.

1/12/2010 AWEA visit

This may be the "official" visit for their seal of approval. I will let you know when we hear back from them.

2/4-5/2010 LabVolt Training session for the EMS trainers. Hands on training

2/7-9/10 The 10th annual Harvesting Clean Energy conference

Good info about different kinds of power generation, some worked out and in production, some were just a dream. Incorporated technologies in the classroom.

2/19/2010 eSyst: A Systems View of Electronics Education The Division of Academic and Student Affairs at the Maricopa Community Colleges is pleased to present you with this professional growth opportunity produced by **eSyst: A Systems View of Electronics Education**. We invite you to attend our eSyst Implementation Webinar Series for Electronics Educators. These web seminars are FREE and can be attended via an internet connection from virtually anywhere.

4/15/2010 Gradient Lens. Auditorium. Demonstrated to students their Boroscope products.

4/21/2010 Solar lecture with Tod LeFevre of Common Energy

4/27-30/2010 Northwest Solar and clean technology showcase.

Portland Expo center

Training for NABCEP certificate

5/12/2010 Tom/Jim- SolarWorld on May 12**7/13-15/2010 LabVolt Conference***Took a camera and photographed the LV equipment on display so we could build our own. Yes, I am that cheap.***7/30/10 RET retreat** We filled out paperwork at the discovery center. Don't remember if we actually learned anything other than discussing the goals of the RET program.**8/17-19/2010 Center for Construction Education and Research (NCCER)**

May 17, 2010

To: NCCER Sponsors, Partners, and Affiliates

Fr: Daniele Stacey, Director of Product Development

Re: Wind Turbine Maintenance Technician Curriculum Development Meeting August 17 - 19

The National Center for Construction Education and Research (NCCER) is about begin the development of a Wind Turbine Maintenance curriculum August 17 through 19 in Dallas, Tex. I am writing to you today to ask for your assistance in this project. Specifically, in order to develop state-of-the-art training, NCCER needs your help in providing wind turbine maintenance Subject Matter Experts to help guide this ground breaking effort.

These experts will meet with technical writers in a series of three meetings over the next year. The first meeting will take place August 17- 19. At this meeting, we build the course structure for the wind turbine maintenance technician, using the American Wind Energy Association's (AWEA's) Core Skill Sets as our guide. We will also develop comprehensive objectives and outlines for Year 1 of the program.

Candidates for this committee should:

- Ø have an outstanding knowledge of the trade
- Ø have the ability to communicate verbally
- Ø if possible, be familiar with NCCER's ContrenÒLearning Series
- Ø have experience teaching the trade to others
- Ø be able to attend a total of two meetings over a one-year period

Sponsors who provide SME assistance are asked to cover travel and lodging costs for the development meetings. NCCER will provide all meeting materials, breakfasts, and lunches during the meetings. Meetings will be scheduled approximately every six months. After the first meeting, a location will be selected that will be most cost-effective for all of the committee members.

For their contribution to this project, committee members and their sponsoring organizations will receive special recognition, including acknowledgment in every edition of the textbooks.

9/13/2010 Oregon BEST <http://oregonbest.org/oregon-best-fest-10>

Lech Muszynski (<http://oregonbest.org/replacing-plastics-biobased-wood-composites>), OSU professor of wood science & engineering, on a bioplastics composite material for use in the transportation sector
 Lorie Wigle (http://blogs.intel.com/csr/2008/08/profile_lorie_wigle.php), General Manager, Eco-Technology Program Office (<http://www.intel.com/technology/ecotech/index.htm>), Intel Corporation
 Ihab Elzeyadi (<http://oregonbest.org/solar-awnings-green-walls-and-love-light>), UO professor of architecture, on a solar awning/light shelf prototype

Eden Brukman (<http://cascadiagbc.org/people/staff#eden-brukman-leed-ap>), LEED AP, Vice President, International Living Building Institute (<http://ilbi.org/>) (<http://cascadiagbc.org/>) Renewable Energy (four 15-min. presentations focused on industry technology needs and academic research) Speakers include:

Kevin Reynolds (<http://www.pdx.edu/clas/profile/dr-kevin-a-reynolds>), PSU professor of chemistry, on a biofuels project

Steve Hummel (<http://www.pvpowered.com/about/company/execTeam/>), VP of Engineering for PV Powered (<http://www.pvpowered.com/>)

Gregory Herman (<http://cbee.oregonstate.edu/people/faculty/herman.html>), OSU professor of chemical engineering, on a Generation III solar energy project with Sharp Laboratories (<http://www.sharplabs.com/>)

Jaisen Mody (http://www.portlandgeneral.com/renewables_efficiency/default.aspx), PGE's Director of Generation Projects on coal substitutes at the Boardman Power Plant (http://www.portlandgeneral.com/community_environment/initiatives/boardman_plant_air_emissions.aspx).

12:00 - 12:45: Catered Lunch

12:45 - 1:15: Panel Presentation: the Oregon Sustainability Center's (<http://oregonsustainabilitycenter.org/>) research agenda, industry collaboration, and more.

1:15 - 2:30: The Oregon BEST Innovation-Collaboration Challenge, a dynamic, interactive exercise to generate and explore five top revolutionary renewable energy and sustainable built environment projects that Oregon BEST will help advance

2:30 - 3:15: Research Poster Session/Networking Break

3:15 - 4:15: Funding Sessions (two tracks):

Public Funding Speakers include:

Ravi Prasher (<http://arpa-e.energy.gov/About/Team/DrRaviPrasher.aspx>), Program Director in charge of thermal devices, U.S. Dept. of Energy's ARPA-E Program (<http://arpa-e.energy.gov/>)

Gregory Rorrer (<http://oregonstate.edu/engr/rorrer/>), Program Director, National Science Foundation's Energy for Sustainability Program (http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=501026)

Innovative Financing Speakers include:

Brad Zenger (<http://www.pivotal-investments.com/team.html>), Co-Founder & Managing Director, Pivotal Investments (<http://www.pivotal-investments.com/index.html>)

Ash Awad (<http://vimeo.com/2174833>), VP, Energy & Facility Services, McKinstry (<http://www.mckinstry.com/>)

David Chen (<http://www.linktv.org/video/3668>), Principal, Equilibrium Capital (<http://www.eq-cap.com/index.php>)

GOALS OF OREGON BEST FEST '10:

Help Oregon university researchers increase federal research funding through collaboration and contact with funding agency personnel

Spark collaboration between university researchers and Oregon businesses engaged in renewable energy and green building

Fuel Oregon's green economy by speeding commercialization of research into tomorrow's green products, technologies, and jobs

12/7-9/2010 Small wind conference

Learn the Latest on Small and Community Wind

AWEA Small and Community Wind Conference & Exhibition

December 7 - 9, 2010 > Portland, OR

The Small and Community Wind Conference & Exhibition is designed to foster networking and encourage strategic thinking for the use of small wind technology and community-owned wind.

As one of the few major trade events that focuses on these unique target markets of the wind industry, this is an event that cannot be missed if you are serious about small and/or community wind.

Learn through two exceptional educational tracks:

* The latest on national renewable energy legislation

- * Zoning requirements for wind projects
 - * Wind power and utility interconnectivity
 - * Technology costs, tax revenues, and investment opportunities
- Walk the exhibition hall full of the latest wind technology to show:

- * Consumers
- * Renewable energy professionals
- * Dealers
- * Installers

www.smallandcommunitywindexpo.org

References

1. <http://www.smallandcommunitywindexpo.org/index.cfm>
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6. <mailto:emoulin@awea.org>
7. <http://www.smallandcommunitywindexpo.org/registration.cfm>
8. http://www.smallandcommunitywindexpo.org/exhibition_information.cfm
9. http://2010.windpowerexpo.org/schedule_at_a_glance.cfm
10. <http://www.smallandcommunitywindexpo.org/>
11. http://2010.windpowerexpo.org/special_events.cfm
12. <http://www.awea.org/events/sponsorship/>
13. http://www.awea.org/membercenter/business_membership.html
14. http://www.smallandcommunitywindexpo.org/contact_us.cfm
15. <http://https://app.icontact.com/icp/core/message/forward?m=4384048&s=1025947942&c=H9oW&cid=26095/>
16. <http://www.powerofwind.com/>
17. <http://www.facebook.com/pages/American-Wind-Energy-Association-AWEA/9423488774?ref=ts>
18. <http://www.flickr.com/photos/awea/>
19. <http://twitter.com/awea>
20. <http://www.youtube.com/user/americanwindenergy>
21. <http://www.awea.org/blog/>
22. <http://www.smallandcommunitywindexpo.org/>

1/28/2011 EV roadmap

E.V. Road Map 3

Leading the Charge in 2011-12

Friday, January 28, 2011

8:00 a.m. - 5:00 p.m.

Oregon Convention Center

777 N.E. MLK Blvd

Portland, Oregon USA

About the Event

The next two-years will be a pivotal time in automotive history when a range of electric vehicles from a growing number of manufacturers enter the market. During the same period, significant clusters of charging infrastructure will become operational. Portland State University and Portland General Electric, in partnership with the Portland International Auto Show, the Columbia Willamette Clean Cities Coalition, and the Oregon Department of Energy, are producing E.V. Road

Map 3 to accomplish the following aims:

Review Oregon's E.V. progress to date;

Consider how it compares with other leading places;

Preview what to expect in the next couple of years; and,

Identify the most important activities and outcomes that will keep our region's E.V. agenda moving forward.

This day-long program is being designed for a series of general sessions in the morning that will include an array of leaders. To talk about the current status of international, North American, and statewide and local efforts in the Pacific Northwest to prepare for the arrival, deployment, and adoption of electric vehicles. A special luncheon speaker will weigh-in on the care and feeding of electric vehicles from both a personal and civic perspective. And a variety of afternoon breakout sessions will work on cataloging and reporting the most significant initiatives that need to be accomplished over the next two years. The results from each breakout group will represent key elements of our region's E.V. Agenda for 2011-2012.

2/24-24/2011 Wind Turbine Maintenance SMEs:

Wind Turbine Maintenance Technician Level One Volume One webinars attached.
The three modules being covered in the webinars should be available for review the 1st week of February.
If you haven't already, please let me know which modules you would like to review

4/21/2011 Moventas guest lecture

Moventas is a gearbox manufacturer/repair facility in Portland. They have been a great source of information for the mechanical systems part of the program.

4/30/2011 Zag Ops, Spokane

Can you say cooooo! This is a power grid training system. 4 students and I traveled to Spokane on a Saturday to experience the training. All computer generated. It took about ½ hour and a bunch of hacks (us) overloaded and crashed the entire power grid! Just on the computer simulation. Four other students stayed the week M-F for the training also.

7/13/2011 Lab Volt Vancouver Training on LV equipment at Clark College.

Clark College bought more equipment and invited Jim and I for training.

7/29-31/11

SolWest Renewable Energy Fair 7/29 to 7/31. Below is a summary of that event.

This was a small education fair held on sustainable living and renewable energy in the Eastern Oregon town of John Day. This fair was hosted by Eastern Oregon Renewable Energies Association, and it was a weekend event. The website is located here: <http://www.solwest.org>.

The fair attracted an audience of mostly "off-the-grid" type folks interested in RE technology for their personal endeavors. There were two other RE schools present at the event: OIT from Klamath Falls and Lane Community College. Only a few attendees (less than 3) were interested in attending our RET program, and most people stopping by our booth were only interested in talking about the technology/politics of the wind industry. This might not have been the best location to attract new recruits, but it provided a valuable venue to communicate with other schools with RE training and make our presence known in eastern Oregon. Several people commented that it was good to see CGCC in John Day.

Overall, this was a good event for education and networking. OIT brought a group of their students to staff the OIT table and attend workshops. We might consider doing something similar in following years. The event provides free camping with a 5-dollar admission fee.

Other opportunities for Articulation agreements: Connections with the other two schools proved fruitful. We met Jamie Zipay from OIT in Klamath Falls. He was not aware of our articulation agreement with OIT in Portland, but he seemed interested in investigating the feasibility of an articulation agreement with OIT in Klamath Falls. He would like to visit our campus. His contact information is

james.zipay@oit.edu. We met Erik Westerholm from Lane Community College. LCC has a robust RE program in solar installation. At the same time, they speak highly of the RE program in wind at CGCC. Erik is a great contact for learning more about preparing our students to work in the solar industry. His contact information is westerholme@lanec.edu. Attached are a few of his quick-links, and these would be great to include in the RET website.

9/17/2011 *Robotics Fest on Sept. 17*

Gorge Youth Robotics News: *Don't Miss Robotics Fest on Sept. 17!*

Attended this event with a couple students with the idea of getting CGCC name in Google and Insitu's face. One student got an interview with Google. No word from Insitu. From what the people who work there describe the employment needs they have, CGCC RET program fits the bill perfectly.

Google and the GTA are proud to invite you to the **Gorge Robotics Fest** on September 17. Join us for robotics demonstrations for kids ages 2 to 99, team sign-ups for the GTA's FIRST LEGO League Tournament on December 10, astronaut appetizers and space food snacks! Help kick off the robotics Revolution in the Gorge!

Event details:

Saturday, September 17, 2011

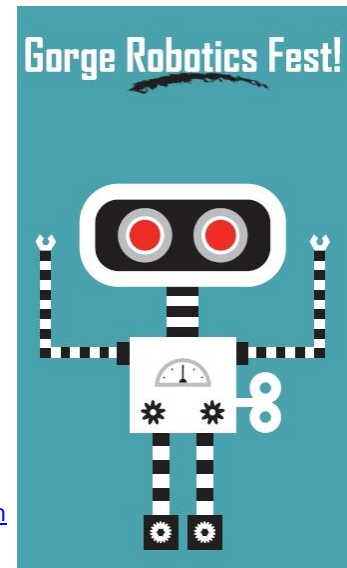
1:00 to 4:00 pm

The Dalles Civic Auditorium (323 E 4th St.)

[Read more...](#)

The FIRST LEGO League robotics programs are a great way to introduce kids to engineering, computer science, math, design, and teamwork. The Google team at The Dalles data center wants to help establish a strong robotics program in each school in the five county region (Wasco, Sherman, Hood River, Klickitat, Skamania) for the 2011-12 school year.

Google wants to get more students, parents, teachers, administrators and community members involved to help build and continually improve robotics programs in each of the schools. To this end, **Google is covering the cost for registration and robot kit for any new FIRST LEGO League Robotics team in any of the region's public schools.** For more information, visit www.gorgerobotics.com



11/4/2011 **Arduino Workshop**

Incorporated this into the Industrial controls curriculum right away. This is a micro controller board that is programmed in pseudo-C. I purchased a model called a Freeduino that students have to put together themselves. When done with the course, they can keep them because it is a consumable item since they can't take them apart.

Hello Tom (cc Jim, Dan, Denis, Dale, Dave),

I'm glad I put one extra kit in our materials order (which went out last week). So, Yes, we would be honored to have Tom participate in our rather-modest Arduino workshop on Fri 04 Nov, and Best Regards to Jim who can't be here. Tom's price of admission will be letting us pick his brain about future workshops which can focus on microcontrollers and the RET work you're doing at CGCC. Yes, I noticed that Jim remarked "If anything interesting is happening in our neck of the woods I'll let you know" and indeed there are lots of such things. We're particularly interested in wind energy of course... [I think we're the only place around here that has a couple of 120' turbine blades (removed from service) as lawn ornaments (classier than pink flamingos...)]

As I mentioned, our parts order for the 04 Nov workshop has gone out. However, the parts & books are very standard items and you'll get a complete list.

Again, we're honored that you're interested in visiting us and participating in the workshop. I hope you find it enjoyable.

"Introduction to using Arduino microcontrollers and networked sensors in applications usable for renewable / alternative energy applications"

We look forward to working with you!

We'll meet:

Where: LBCC Main Campus, Albany, Madrone Hall lab room 106

When: Fri 04 Nov 2011

0800-1700 with breaks, including "no-host" lunch

Suitable things to bring on Fri 04 Nov:

- Laptop PC and power supply (we'll be using them all day). The PC can be running Windows (XP, or Linux, or Mac OS-X. A wireless interface will be very helpful; we'll have a "guest" account available on the LBCC wireless network for you to use. If you can't bring a laptop, we'll provide one - but in that case, of course, you'll need to install the software (freely downloadable) you'll use at your school yourself, after the workshop.

What we'll do:

- "Buon Giorno, Arduino!": begin your relationship with a fascinating Italian celebrity.
- Install the Arduino software development environment on your PC.
- Program your Arduino to:
- Collect sensor data:
- From both analog and digital sensors (we'll use temperature sensors for this workshop).
- Display data on the PC.
- With PC disconnected from your Arduino:
- Store data (time stamped) on a microSD chip as a data logger
- Use your Arduino as a web server to publish the data as a live feed on a Local Area Network
- Use your Arduino as an upload client to publish the data as a live feed on the Pachube Internet web server (world-readable!)(This will probably be a demo by Parker...)
- Take your new Italian friend & family (they always have one) back to your school

Here's a list of the materials you'll receive FREE as part of attending the 04 Nov 2011 workshop:

Books:

Arduino Cookbook

ISBN 978-0-596-80247-9

Beginning Arduino (1st Edition; 2nd Edition should be published soon!)

ISBN 978-1-4302-3240-7

Electronics:

Arduino Uno microcontroller

Arduino Ethernet plug-in "shield"

MicroSD data store 1 GB

Real-Time-Clock module

LM335A analog temp sensors (2)

Plug-in breadboard

DS18B20 digital temp sensors (2) and here are some other great references (if you like books, as I do) to get you started:

Practical Arduino 978-1-4302-2477-8

Building Wireless Sensor Networks 978-0-596-80773-3

Arduino Robotics 978-1-4302-3183-7

Any questions or comments please contact: parker.swanson@linnbenton.edu

11/12/2011 ZagOps training Here it is again, more students.

12/5/11 TENTATIVE - AWEA Student Club Conference Call

AWEA chapter at CGCC is active now. WE told AWEA we weren't interested in paying a fee to be part of the group. We are interested in an AWEA group though. Student can't afford more \$\$\$. Arranged how this is to be done.

12/12/11 AWEA Safety Skill Sets Discussed the Skill sets and recommendations to AWEA.

1/19/12 PILOT STUDENT CHAPTER CALL

Columbia Gorge Community College

Thursday, Jan. 19th @ 11am PST

3/19-22/2012 OSHA class

Pacific Northwest OSHA Education Center
 Department of Environmental and Occupational Health Sciences
 University of Washington
ce@u.washington.edu

February 15, 2012

Standards for the Construction Industry course on 3/19/2012 -3/22/2012 sponsored by the Pacific Northwest OSHA Education Center.

The course will be held at EnergX Hanford Training Center, 1812 Terminal Drive, Richland, WA 99352.

SCHEDULE:

8:00am to 4:00pm | Monday – Wednesday

8:00am to 2:00pm | Thursday

4/9-13/2012 OSHA 500 Class**4/14/2012 HS Wind Challenge**

9 am to 3 pm on Saturday, April 14 at Columbia Gorge Community College. All teams should arrive by 9 am to the Class Act Café in Building One.

The students will have a fun-filled day. The morning will start out with an official welcome presentation, students will build wind turbines all morning, a free lunch will be provided mid-day, and the competition will start in the afternoon. See the attached Event Program for more information. All teams should wear High School Wind Challenge T-shirts. No materials for building the turbine or giving the presentation will be allowed in the building. We will provide all materials to your team.

4/19/2012 UAV initiative

Subject: Meeting April 19th in Portland to discuss UAV initiative - You Are Invited

Government and vendor discussion on UAV's post war. Is there a need for them, what will their capabilities be, politics, legalities, etc.

4/26-27/2012 Field Programmable Gate Array (FPGA) workshop

The Evergreen Aviation & Space Museum is hosting a two day Field Programmable Gate Array (FPGA) workshop in McMinnville on April 26-27, 2012 from 8:30 am to 4:30 pm. The workshop funding is to support community college instructor engagement and learning. If you are copied on this message, you are registered for the workshop. If you are not able to attend, please let us know so that another person can attend.

The field-programmable gate array (FPGA) is a semiconductor device that can be programmed after manufacturing. Instead of being restricted to any predetermined hardware function, an FPGA allows you to program product features and functions, adapt to new standards, and reconfigure hardware for specific applications even after the product has been installed in the field—hence the name "field-programmable". You can use an FPGA to implement any logical function that an application-specific integrated circuit (ASIC) could perform, but the ability to update the functionality after shipping offers advantages for many applications.

The workshop is funded by the National Science Foundation, and instructed by Craig Kief of Cosmiac. This is a beginning level workshop targeting 2 year schools (Community College Instructors) which produce a technician workforce. Attendance will be capped at 20 participants. If you are working at a more advanced level, this first workshop may not be a good fit as it is a beginner course.

5/12/2012 Robotics Fest

Good morning, Tom-

I hope you're having a great weekend. I want to let you know that there is a robotics exhibition happening in Stevenson on May 12th, from 10 AM to 2 PM. I know you attended one of these, with Abby, and set up a booth with information and models showing how a wind turbine is like a robot.

Would you be interested in attending this one? I will be attending; I'm no expert but you sure are, and I would much appreciate it if we could work together on this. If you're unable to attend, would it be possible to get the models from you and get a short lecture on how a wind turbine is like a robot?

By the way - Abby mentioned to me that you guys had a student come along. Would any of your students be interested in doing this? It would look great on their resume.

Brought several students and student projects along to demonstrate to the roboteers.

6/13-14/2012 LabVolt (LV) training on nacelle and blade pitch trainers

Purchased LabVolt nacelle and both blade pitch trainers. LV came and trained up on their use.

8/24/2012 Forklift certification training. Operator only.

Thank you for enrolling in Norlift of Oregon's forklift training program. We have reserved you 1 seat(s) at our classroom session at the Days Inn, on Friday, August 24, 2012 at 8 a.m. You are also scheduled for the Extended Training at Norlift of Oregon, which will take place after the class.

Extended Training: Norlift of Oregon

7373 SE Milwaukie Expressway
Clackamas, OR 97222

10/18/2012 Accelerating Data Acquisition and Maximizing System Performance in Time-Critical Applications:

We're glad you're joining us for Atmel Technology on Tour! In order for us to provide the optimal hands-on training session for your level of expertise, we'd like to gather a few details about your background.

By completing this brief survey, the presenter will be able to customize the content at the "Accelerating Data Acquisition and Maximizing System Performance in Time-Critical Applications" session.

- Hands-on training with an Atmel Technology Expert on the AVR® XMEGA® microcontrollers, Atmel Software Framework and Atmel Studio 6 integrated development environment (IDE)
- Step-by-step training materials
- Atmel XMEGA-A3BU Xplained board and ATJAGICE3

Summary:

In many embedded applications, deterministic ADC sampling is critical—for example, motor and power control, metering and control systems/control loops. This training focuses on data acquisition applications where high performance and deterministic response to time events are critical. The Atmel AVR XMEGA microcontroller is designed with a number of specific relevant peripherals to address that challenge: DMA, Event System, multi-level interrupt controller, and I/O modules such as timer/counter, analog comparator, ADC, DAC and USB.

2/21/2013 stakeholder meeting on classifications of wind turbine spaces.

Appendix J

Assessment Criteria	
Criterion No.	Assessment Criterion
1	Operational Skills
1.1	Turbine Fundamentals
1.1.1	Identify the component, component location and describe the general function and purpose of the following components: foundation, tower, ladder, nacelle, hub, blades, main shaft, gear box, high speed shaft, generator, brake system, down tower controllers, up tower controllers, power converter, transformers (pad mount & internal), yaw assemblies (motor, slew ring, counter), pitch systems (hydraulic & electric), hydraulic station, tower cables, safety cable, service lift & climb assist, anemometer, wind vane, FAA lighting, internal crane, sensors and general operation (temperature, flow, pressure and level), WTG Operating schemes, general operation).
1.1.2	Understand importance of referring to work instructions or maintenance manuals to determine how each job function is accomplished.
1.2	Maintenance Operations
1.2.1	Understanding SCADA basics; (what it is, how and why it's used, and who uses it to obtain information).
1.2.2	* Understand maintenance operations in general.
1.2.3	Describe the function of a service report, demonstrate how to properly complete a service report, what happens when a service report is completed, describe or explain where does it go after it is completed.

1.2.4	Explain purpose and difference between scheduled and unscheduled maintenance.
1.2.5	Identify methods of environmental protection and hazardous chemical control.
1.2.6	Understand blade composites & inspection- ability to inspect blades to identify damage.
1.2.7	Describe function and general operation of sensors and instrumentation used in wind turbines to monitor pressure, temperature, flow, and level.
1.3	Cranes & Rigging
1.3.1	* Identify and demonstrate proper rigging hand signals.
1.3.2	* Identify and demonstrate proper rigging techniques.
1.3.3	* Demonstrate proper lifting and leveling of a load.
1.3.4	* Identify and demonstrate the proper location and use of tag lines with a suspended load.
1.3.5	Identify rigging equipment on a wind turbine, e.g. proper and safe use of the service hoist.
1.3.6	Able to describe cribbing and its use.
1.3.7	* Describe and demonstrate safe and proper inspection of rigging equipment. Describe proper procedures for removal of service of rigging equipment.
1.4	Project Operations

1.4.1	Balance of plant (BOP) requirements & expectations pertaining to wind turbine operation. Identify components that make up balance of plant including: roles and responsibilities of wind farm personnel positions, and chain of command. Not specific to maintenance of wind turbine.
1.4.2	Describe the general siting and wind farm development process.
2	Mechanical Skills
2.1	Bearings
2.1.1	Understand basic bearing types designed for different loads.
2.1.2	Understand installation.
2.1.3	Understand maintenance/ visual inspection.
2.1.4	Understand replacement.
2.1.5	Understand lubrication.
2.1.6	Understand Do's and Don'ts (best practices).
2.2	Cooling/Heating systems
2.2.1	Understand inspection maintenance and operation: Types of coolant, function, flow meters, types of systems for air and fluid (heat exchange systems).
2.3	Fasteners & Torquing
2.3.1	Basic understanding of metallurgical characteristics as it pertains to fasteners.
2.3.2	Demonstrate safe use of various torque & tension equipment including the difference

2.3.3		Understand basic hi-torque use and proper techniques of mechanical, electrical, & hydraulic torque wrench assembly and use.
2.3.4	*	Define the difference between torquing and tension.
2.3.5	*	Demonstrate proper use and storage in handling of mechanical torque wrench, use of a skidmore and torque log.
2.4 Gearboxes		
2.4.1		Basic characteristics of gearboxes: types of gear systems in gearboxes, maintenance, filter, cleanliness, lubrication, pumps, impurities.
2.4.2		Understanding process and significance of oil sampling (understanding of steps and purpose, not required to physically take the sample).
2.4.3		Understand inspection methods: normal wear or damage, gear ratios, input/output torque and force requirements.
2.4.4	*	Do's and don'ts, functions, general operations.
2.5 Hydraulic Systems		
2.5.1		Basic theory of hydraulics.
2.5.2		Basic understanding of hydraulic symbols and charts.
2.5.3	*	Demonstrate component verification and component function including: function and of various pumps, meaning of pump parameters, and types of hydraulic cylinders.
2.5.4		Understand function, implementation, and disassembly and assembly of hydraulic components: cylinders, pumps, valves, filters, concepts of hydraulic circuit construction and uses.

2.6	Lubrication	
2.6.1		Basic principles of lubrication: sampling, different types of lubricants and uses, lubrication methods, basic knowledge of auto lubers.
2.6.2		Contamination control and effects of poor lubrication.
2.6.3		Oil and grease; oil base (soap, clays, synthetic, animal byproduct); impurities, byproducts; self lubricators, grease gun; maintenance and troubleshooting.
2.7	Shaft Alignment	
2.7.1	*	Demonstrate knowledge of basic principles, methods and techniques of shaft alignment such as laser equipment in the laser alignment process.
2.8	Tools & Test Equipment	
2.8.1	*	Demonstrate proper tool inspection and inventory tool control.
2.8.2		Steps for taking care of a defective tool.
2.8.3	*	Demonstrate ability to measure and interpret information from test equipment and tools. Multi-meter voltage detectors.
2.8.4	*	Demonstrate proper selection of test equipment.
2.9	Yaw Systems	
2.9.1		Basic understanding of Yaw systems.
2.9.2		Maintenance routines: potential failures and preventative maintenance.
2.9.3		Function of Yaw control system including: wind vane, anemometer, yaw angle (alignment vs. misalignment), and Yaw drive system.

3	Electrical Skills	
3.1	Electrical Theory	
3.1.1	*	Understand and comprehend basic electrical theory.
3.1.2	*	AC/DC voltage and current principles; resistance (series & parallel circuits), inductance, and capacitance.
3.1.3		Understand power generation principles.
3.1.4	*	Understand and identify electrical components such as: motor starters, manual switches, control relays.
3.1.5	*	Demonstrate ability to work safely around transformers.
3.2	Basic Wiring	
3.2.1	*	Ability to inspect conductors and connectors used in wind turbines through visual inspection to identify the following: open circuit, shorted circuit, grounding, and turbine type wiring connectors.
3.2.2		Understand the limitations of wire gauge capacity.
3.2.3	*	Circuit diagnostics tools used in basic wiring such as: voltage testing, ohm meter testing, basic wiring tools.
3.2.4	*	Describe the methods of conductor strain relief, insulation and termination of conductive paths. Demonstrate insulation testing.
3.2.5		Wiring diagrams, schematics, US and European component symbols.
3.3	Bonding & Grounding and Lightning Protection	
3.3.1		Ability to inspect bonding and grounding points (to include lightning protection) inside and outside of turbine.

3.3.2	Understand proper grounding techniques, theory, significance.
3.3.3	Basic understanding of how a wind turbine detracts and dissipates lightning.
3.4	Motors & Generators
3.4.1	Basic theory and operation of motors and generators.
3.5	PLC -- Basic Fundamentals
3.5.1	Basic functions of PLC and applications.
3.6	SCADA Basics
3.6.1	General aspects of SCADA including: operability and limitations, how general fiber optics operate (general components, how they're connected, data extracted from it), type of data collection in industry (use of data).
4	General Work Skills
4.1	Basic Computer Skills
4.1.1	Able to create, save and modify documents. Online learning, e-mail etiquette.
4.1.2	Able to transfer reports electronically with picture documentation.
4.1.3	Possess Technical communications skills.
4.1.4	Fluent in basic use of Microsoft Word and Excel®.
4.2	Basic Writing & Reading Comprehension of Technical Documents

4.2.1	Ability to clearly and properly convey technical information to others in written format.
4.2.2	Ability to read, comprehend, and plan work from a technical inspection or condition report.
4.2.3	Ability to use manufacturer documents in the O & M of the WECS.
4.3	Conversion of Units
4.3.1	* Understanding of metric symbols and ability to distinguish between metric and English (SAE) units in volume, pressure, distance, force, mass, temperature, and length.
4.4	Schematics
4.4.1	Basic reading and component identification of schematics (symbols and difference between European vs. American schematics).
4.5	Soft Skills
4.5.1	Ability to communicate, work in small-group operations, and in teams.
4.5.2	Professional conduct, respect, courteous.
4.5.3	Customer service-skills to meet customer needs.
4.5.4	Cultural awareness and the ability to work with people of other cultures, age, gender, and beliefs.
5	Safety Skills
	THIS SECTION LEFT INTENTIONALLY BLANK

Appendix K:

Fall 07	Registered	Success	Percent Successful
EET 111	32	28	88%
EET 112	29	24	83%
EET 113	25	23	92%
EET 121	17	17	100%
EET 122	16	16	100%
EET 123	15	13	87%
EET 221	19	17	89%
EET 222	17	16	94%
EET 254	21	19	90%
EET 255	16	15	94%

Fall 10	Registered	Success	Percent Successful
EET 111	32	30	94%
EET 112	31	27	87%
EET 113	31	29	94%
EET 121	22	19	86%
EET 122	21	16	76%
EET 123	19	18	95%
EET 221	22	15	68%
EET 222	21	17	81%
EET 254	20	20	100%
EET 273	19	19	100%

2007



2010



Appendix L:

There are a finite number of renewable energy projects being built in the next few years. All of them will draw from the local/regional labor pool both for construction and Operations and Maintenance (O&M). Our students are ready for both aspects of the job.

Each installed megawatt of generation capacity has a minimum number of workers required for maintenance. O&M positions are usually very stable, long-term jobs vs. short-term construction jobs. Our students are more and more employable as they widen the scope of their job search.

Raw Data behind the Tri-state chart are available for inspection from RET or Institutional Researcher. Raw Data for the National numbers is at the Bureau of Labor

Renewable Energy O&M Jobs Projection		
Washington	Solar	127.5
	Geothermal	0
	Wind	741.7
Idaho	Solar	127.5
	Geothermal	691.9
	Wind	612.4
Oregon	Solar	52.9
	Geothermal	377.7
	Wind	1220.9
Three-state Total		3952.5

STEM Committee members and other industry professionals have indicated their need for well trained technicians to work on UAVs, maintain highly automated manufacturing facilities, perform repair and installation of electronic equipment, etc. Because the training as it currently stands is so broadly applicable we feel it is reasonable to view related positions. Below is a list of projections for job growth from the Bureau of Labor.

2010 National Employment Matrix title and code		Employment				Change, 2010-20		Job openings due to growth and replacements
		Number		Percent distribution		Number	Percent	
		2010	2020	2010	2020			
Supervisors of Installation, Maintenance, and Repair Workers	49- 1000	431.2	482.6	0.3	0.3	51.4	11.9	164.9
First-Line Supervisors of Mechanics, Installers, and Repairers	49- 1011	431.2	482.6	0.3	0.3	51.4	11.9	164.9

Electrical and Electronic Equipment Mechanics, Installers, and Repairers	49-2000	611.2	683.1	0.4	0.4	71.8	11.8	201
Miscellaneous Electrical and Electronic Equipment Mechanics, Installers, and Repairers	49-2090	260.2	291.2	0.2	0.2	31	11.9	91.8
Avionics Technicians	49-2091	18.6	19.8	0	0	1.3	6.9	5.8
Electric Motor, Power Tool, and Related Repairers	49-2092	19.8	20.8	0	0	1	4.9	2.7
Electrical and Electronics Installers and Repairers, Transportation Equipment	49-2093	12.7	13	0	0	0.3	2.1	3.4
Electrical and Electronics Repairers, Commercial and Industrial Equipment	49-2094	69.1	69.9	0	0	0.8	1.1	17.7
Electrical and Electronics Repairers, Powerhouse, Substation, and Relay	49-2095	23.4	24.6	0	0	1.1	4.9	6.9
Vehicle and Mobile Equipment Mechanics, Installers, and Repairers	49-3000	1,627.10	1,894.30	1.1	1.2	267.3	16.4	680.9
Aircraft Mechanics and Service Technicians	49-3011	123.8	131.6	0.1	0.1	7.8	6.3	45.2
Automotive Technicians and Repairers	49-3020	894.3	1,051.80	0.6	0.6	157.5	17.6	386.2
Mobile Heavy Equipment Mechanics, Except Engines	49-3042	124.6	144.8	0.1	0.1	20.2	16.2	52.5
Small Engine Mechanics	49-3050	68.8	83.1	0	0.1	14.3	20.7	32
Other Installation, Maintenance, and Repair Occupations	49-9000	2,759.00	3,168.70	1.9	1.9	409.7	14.8	979
Control and Valve Installers and Repairers, Except Mechanical Door	49-9012	43.8	43.8	0	0	0	-0.1	8.1
Industrial Machinery Installation, Repair, and Maintenance Workers	49-9040	395.6	460.5	0.3	0.3	64.8	16.4	142.6
Industrial Machinery Mechanics	49-9041	287.1	349	0.2	0.2	61.9	21.6	117.1
Maintenance Workers, Machinery	49-9043	69.9	74.4	0	0	4.5	6.5	17.4

Millwrights	49-9044	36.5	34.8	0	0	-1.8	-4.8	7.6
Line Installers and Repairers	49-9050	269.1	305.3	0.2	0.2	36.2	13.5	104.1
Electrical Power-Line Installers and Repairers	49-9051	108.4	122.8	0.1	0.1	14.4	13.2	52.7
Telecommunications Line Installers and Repairers	49-9052	160.6	182.5	0.1	0.1	21.9	13.6	51.4
Precision Instrument and Equipment Repairers	49-9060	65	78.9	0	0	13.9	21.4	31.8
Precision Instrument and Equipment Repairers, All Other	49-9069	15	16.4	0	0	1.4	9.3	5.5
Maintenance and Repair Workers, General	49-9071	1,289.00	1,431.00	0.9	0.9	142	11	379.1
Miscellaneous Installation, Maintenance, and Repair Workers	49-9090	224.6	264	0.2	0.2	39.4	17.5	115.2
Riggers	49-9096	15.2	16.8	0	0	1.6	10.6	4.4
Helpers--Installation, Maintenance, and Repair Workers	49-9098	125	148.1	0.1	0.1	23	18.4	80.4
Installation, Maintenance, and Repair Workers, All Other	49-9799	143.6	160.3	0.1	0.1	16.8	11.7	43.2
Totals		12733.4	14271			1526.9	11.307	3995.5

April 11th, 2013

RET Program:

Thank you for providing me with a copy of the 2013 Renewable Energy Technology Program Review document and for inviting me to the in-service presentation. I have found the review to be readable and informative, and the presentation was an excellent opportunity to ask some clarifying questions. Per the [Instructional Program Review process and timeline](#), I am providing a written summary of my feedback, which is to be included as an addendum or appendix to the review. You then have until May 31st to respond to the feedback, address any concerns and submit a final version of the review.



COLUMBIA
GORGE
COMMUNITY
COLLEGE

*building dreams,
transforming lives*

Generally speaking, I found the RET review meets the letter and spirit of the requirements. In addition, I appreciate and support the noted recommendations and am willing to help make them a reality. With that said, I have specific feedback that I think would improve the review and benefit future readers:

- In several areas the idea of creating multiple training tracks within the existing program is discussed. (See pages 6, 13 and 14). I encourage you to add some examples of the tracks under consideration, how many new tracks there may be, and reference appendix B in the narrative.
- One of the recommendations listed in section four is to hire a third full-time faculty member. To maximize support for a future proposal, I would ask that you review and where possible strengthen the rationale for such a position (both in the recommendation itself and elsewhere in the review), especially in light of the program's enrollment numbers. Perhaps tie the position more directly to the multiple tracks that are currently under consideration.
- The student retention section might benefit from some clarification. Perhaps adding headings for certificate and degrees might help to distinguish the two categories. In addition, in the first paragraph on page 12 there is language as to why a RET student might postpone earning a certificate. Are there other reasons or does this explain why typically less than half of the cohort earns a certificate within one year?
- I suggest adding some language to explain that while the AAS degree has the same outcomes and uses the same measurement tool as the certificate, the level of mastery is different (see page 10). In addition, reference appendix d in that section. As an aside, I urge the program to review its program-level outcomes assessment methods to ensure they are effective. For example, is it truly the case that the grading for EET 113 is such that a student who fell short in 'applying ethical and professional practice with the field of renewable energy' (#5) would not be able to pass the course with a C or better?
- I noticed a handful of minor typos. Consider looking the document over again and/or asking me and I can point some out to you.

Again, thank you for providing a thorough review of your program. I look forward to receiving the final version and taking it to the Board.

Sincerely,

Brian Greene

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Response to the feedback from the review committee

The RET program greatly appreciates the time and effort put in by our reviewers to give pertinent and insightful feedback on our program review. Several changes have been made to the text in response to the feedback. We also felt that it would be helpful to give this separate response to clarify any remaining questions.

- Since the program review process started there have been many meetings with industry partners, faculty and staff here and at other institutions, and the STEM committee. To avoid spreading our resources too thinly, across many different possibilities, two alternative tracks were put forward. After much discussion it has been determined that the “Transfer track” being considered would be impractical for CGCC to pursue at this time. That leaves us with one new track, Manufacturing Engineering Technology (MET). This is the track supported by the majority of folks surveyed and the easiest to implement with our existing training equipment and the integration of those systems in the new facility available to us next year. A chart outlining the proposed track is available in Appendix B.
- Hiring a third full-time faculty member is directly related to implementing the new MET track, supporting current faculty and reducing the program’s need to hire adjunct faculty on a regular basis. Finding qualified folks to fill technical instructor positions will only become more difficult as the job market improves. The programs enrollment numbers have been all over the place due to the beginning and ending of multiple cohorts as well as other economic and social factors. Adding the MET track is a direct response to the perceived lagging enrollment numbers. One of our recommended goals is to implement a program of faculty mentors working with local high schools. Currently this goal is unfulfilled because full-time instructors have no free time for these activities. Some language has been added to pages 8 and 14 to add clarity.
- Student retention and achievement issues have been addressed with additional language on page 11. In the vast majority of cases, students starting the second year have completed all of the requirements for a certificate. All students are actively encouraged not to apply for the certificate if they have any interest in BPA or other internships in their second year.
- The original language used in the review was confusing and has been modified. The measurement tool and targets for the degree and certificate are the same in that the measurement tool is the final performance assessment for a particular class and the targets are the same with 70 percent of students passing with a C or better and 30 percent passing with a B or better. However, completely different classes are used in the assessments. For the certificate one class, EET113, is used as the assessment tool. For the degree, three classes are used, RET 273, RET 223 and RET1 22. The level of mastery is not the differentiating factor. More information on the assessment tools used in the RET program can be found in Appendix D.