



**ZERO NET ENERGY (ZNE) BUILDING AND ENERGY SYSTEMS PROFESSIONAL (BESP)
PROGRAM ADVISORY COMMITTEE MEETING**

Friday, March 16, 2018		8:30 am-11 am	Applied Sciences, AS107
COD Staff:	B. Bentley, B. Bitanga, G. Brown, J. Caffery, R. Galicia, V. Izurieta, B. Lee,		
Attendees:	Sandice Alaska, Alaska Electric; Kevin Bibo, PDHS/DSUSD; Jennifer Brown, My Vertical Attitude; Matthew DeLaTorre, Renova Energy; Jeanne Fricot, Center for Sustainable Energy; Isaac Gamez, Renova Energy; Persell Green, Freevolt USA; Kjrsten Haaland, Alaska Electric; Stanford Rollins, 1 Earth; Jeremy Roos, Freevolt USA; Patrick Sheehan, Renova Energy; Maria Song, Interactive Design Corp.; Linda Snowden, Remodeling Contractor; Steven Valpy, Valpy Construction, COD Instructor; Mateusz Wis, Freevolt USA; Anna Zepeda, Rivco EDA/WDC		
COD Energy Students:	Alexis Canas, Diego Delao, Belle Segev, Ilia Torres		
Recorder:	Gloria Vilorio		

AGENDA

1. Welcome and Breakfast	
2. Greetings and Introductions – Jon Caffery	
<p>Jon opened the meeting by introducing the members of the COD faculty and staff to the committee members. He explained the background of the TAACCCT Grant and BESP program.</p> <ul style="list-style-type: none"> • 2015 received funding from DOL to start the Building and Energy Systems Program • Started a structure for students to come and choose from different career pathways • Program started with 10 pathways and has grown to 16 over the past 3 years • We have served approximately 400 students with 100 completers in various pathways <p>Currently we are working on Construction Technology with more programs including electrical, plumbing, framing, site prep, etc. Students will be trained in a not-for-credit pilot program training general construction laborers. Safety, tool handling, and general construction practices will be taught. After basic training they will be ready for defined pathways such as electrical and solar electrical for alternative energy technicians, etc. We are updating curriculum and textbooks and we need input from the industry. NCCER texts and certifications will provide skills and credentials for construction industry. Work Based Learning is the most important component and we appreciate the input and help from our industry partners here today.</p> <p>BESP started out at COD. This year we received \$1.6 million grant to take BESP regionally to 7 colleges and we are applying for a \$4 million grant to take the program statewide. BESP will be a statewide program with aligned pathways that mean the same thing at all community colleges throughout the state.</p>	
3. ZNE/BESP Overview - Please refer to BESP – ZNE Agenda and Handouts (attached documents)	
3.1 Student Presentations – Ramiro Galicia and Energy Students Alexis, Diego, Bella, and Ilia	
DISCUSSION	<p>Ramiro presented the core BESP Degree and various certificates/pathways. The students build real life HVAC equipment; they are being taught new office/e-business procedures; and the structure of ESYS005, HVAC, Energy, Architecture and Construction Management all taught in one class by four instructors, each specializing instruction in their area of expertise.</p>

Ramiro introduced his ESYS students: Alexis Canas, Diego Delao, Belle Segev, and Ilia Torres.

- Diego said so far they have had the first 2 instructors (in ESYS 005) Architecture and Construction. It's great to see the different point of views with everyone working together. It's exciting to see how it all fits and he is looking forward to the next two instructors for Electrical and HVAC
- Alexis said each of the teachers explain things differently even though it all has to do with the same program.
- Bella said the lab connects the dots giving you an understanding of the full picture
- Ilia said in 2017 she started HVAC courses and it was an eye opener. "I learned so much I thought I knew and found out I had much to learn. I highly recommend the program." Currently she is chief engineer at Embassy Suites in Palm Desert and this program has helped her in her job.

Maria, Interactive Design asked students if they were from the area. **Diego** is from Cathedral City. He graduated in 2014 and started the ESYS program in 2015. He loves the program and is inspired by the energy concept of Zero Net Energy. He is interested in General Contracting; **Alexis** is from Indio, she graduated in 2015 and is almost finished with her program at COD. Now she wants to continue to learn more about Energy Efficiency; **Bella** is from Israel. She has changed from career paths a few times and is now interested in Energy **Ilia** graduated in 1990 and has changed careers, is now back in school for HVAC

Matt, Renova Energy asked students about their future plans –

- most would like a 4 yr. degree;
- want to learn more about solar and the ZNE building industry;
- earning a certificate and working in the Solar field; and
- getting a contractor's license is Diego's goal this year

3.2 Approved BSP Stackable Certificates

3.3 Approved Non-Credit Certificates

Building Energy System Professional (BESP)			
Program Title	Credit Status	Program Award	Program Start Date
Air Properties & Economizer Performance	Noncredit	Certificate of Completion	Fall 2017
Building Automation Control	Credit	Certificate of Achievement	Fall 2017
Building Commissioning Technician	Credit	Certificate of Achievement	Fall 2018
Building Energy Consultant	Credit	Certificate of Achievement	Fall 2018

Commercial Gas Heating	Credit	Certificate of Achievement	Fall 2017
Facilities Operations Technician	Credit	Certificate of Achievement	Fall 2017
Green HVAC Commercial	Credit	Certificate of Achievement	Fall 2017
Green HVAC Residential	Credit	Certificate of Achievement	Fall 2017
Heat Pumps	Credit	Certificate of Achievement	Fall 2017
Proper HVAC System Preparation & System Charging	Noncredit	Certificate of Completion	Fall 2017
Refrigerant Management & EPA-608 Preparation	Noncredit	Certificate of Completion	Fall 2017
Residential Gas Heating	Credit	Certificate of Achievement	Fall 2017
Residential Solar Installation	Noncredit	Certificate of Completion	Fall 2018
Residential Solar Surveying & Planning	Noncredit	Certificate of Completion	Fall 2018
Solar Battery Storage Installation & Maintenance	Noncredit	Certificate of Completion	Fall 2018
Solar Site Planning Project	Noncredit	Certificate of Completion	Fall 2018
Zero Net Energy (ZNE)	Credit	Certificate of Achievement	Fall 2017
Zero Net Energy (ZNE) Technology	Credit	Certificate of Achievement	Fall 2017

DISCUSSION

Ramiro discussed the BEBP handouts (see attached pages)
Page 2 (above) Review of stackable certifications – ZNE and ZNE technology

- free non-credit classes available
- designed for workers returning for a specialization or updated technology – new methods
- approved courses will be added to the college catalog

Page 3 Solar Surveying and Planning - updated SLO's

- Non-credit and for-credit students can study in the same class
- We want to update Student Learning Outcomes (SLO's) for the Solar Certificate classes – review of SLO's

Ramiro asked the industry of this is what they are looking for:

- Stanford Rollins of 1 Earth asked if the solar surveying and planning course taught radiance measurements and what equipment is used
- Students go out to the house and perform a survey then compare their results to the information that was done by the solar company

ESYS 311 AB&C are one-unit courses (3 modules) allowing more flexible hours for workers; 18 hours per module. Bert explained the class - quizzes, exams, labs, and tests are given throughout to track the progress of the

	<p>student. SLOs assess how the students do then we tweak course according to assessment.</p> <p>Ramiro asked industry what skills they like to see in an interview</p> <ul style="list-style-type: none"> • Isaac from Renova Energy said the key skill for a surveying technician is how good their documentation is: Information, recording, putting on paper, measurements, photos, taking measurements on the roof, bringing back accurate data; design issues, clearances, etc. • Another is using tools – tape measures, cameras, data analysis • Patrick from Renova said a site technician goes on a ladder working on 2 story roof tiles through heat and wind. They need to use an energy management software system, shade analysis software, documentation tools (excel, tablet); good handwriting is important. • Maria from Interactive said the student should learn to tell the story -explain back at office; teach to tell the story; role play • Isaac agrees and in telling a story - terminology comes first; interview story telling skills; • Labs to teach the use of ladders and equipment <p>Patrick from Renova said alternative energy is the future wind and solar are predominant and battery storage/energy storage when there is too much energy on the grid. The “future” future will have micro grids and hyper-connected communities. Germany has hyper connected communities;</p> <ul style="list-style-type: none"> • (Ramiro) The future workforce will require tech support networks • Change name of certificate to <u>renewable</u> energy technician (Jon) • Future workforce needs to have IT, electrical, network skills • Jeanne Fricot, CSE, talked about energy efficiency – you need an energy efficient structure to reduce the number of solar panels needed • Linda Snowden said you need energy efficiency first • Title 24 will drive energy efficiency across the state going forward
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4. Faculty Certificate Brief

4.1 Energy Systems (ESYS) – Ramiro Galicia

DISCUSSION	<p>Building Energy Consultant Certificate (Handout/Attached) <u>Page 5</u> - list of courses in the certificate and what they include and the expected outcomes.</p> <ul style="list-style-type: none"> - The first cohort of 15 students came to Jon’s house to perform an energy audit and they did an excellent job. They discovered a blockage in the ducts that obstructed airflow and they were able to correct it. This fix saved \$50/month on energy bill. <p>Linda asked if it is valuable to do energy auditing before you install solar.</p> <ul style="list-style-type: none"> - Jeremy Roos from Freevolt – check for drafts, measure heat, check windows and advise client – if you want what’s best for the client you do the audit.
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	- Sandice from Alaska Electric said we should include roofing- loads - electric grids – how do you get under a house - how do you get in an attic – safe travel in attics – equipment in workspace, etc.
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4.2. Heating, Ventilation, Air Conditioning, Refrigeration (ACR) – George Brown

DISCUSSION	<p>George and the attendees discussed the BESP Degree Program and the Specialties and related industry recognized credentials:</p> <ol style="list-style-type: none"> 1. Alternative Energy Technician / NABCEP, CSPV-1, CPVT – S 2. Building Operator / BPI, NCI 3. Green HVACR Commercial Technician / NATE, HVAC Excellence, EPA 608, BPI, NCI 4. Green HVAC Residential Technician / NATE, HVAC Excellence, EPA 68, BPI, NCI 5. Control Systems Specialist/NCI, GBA 6. Advanced Lighting Technician/CALCTP-AT 7. Building Energy Consultant/CEA, HERS, BPI, CABEC 8 Construction Manager/CSLB, LEED-AP Building Inspector/PBI, ASHI 10. Commissioning Technician/ACG, BPI, CABEC, CxT 11. Zero Net Energy Technician/LEED-GA, NCI, BPI 12. Power Generation and Distribution/NECA/IBEW 13. Applied Construction Technology/CSLB 14. Water Technology/SCATA 15. Welding Technology/AWS 16. Facilities Management/IFMA <p>The industry attendees were impressed at the number of available specialties being made available to students.</p> <p>George also talked about Refrigerant Management and EPA 608 Preparation- (ACR 078) broken into 3 separate non-credit courses – Workers need a license to work on HVAC systems they don’t need college credit but they need the license.</p> <p>This is an overlay class of non-credit mixed with credit – SLO’s include skills for the test. We can run this class on a Friday or Saturday or whatever works for industry. Industry members like the idea and want to know how they will be notified when the class is available. Faculty will talk to contractors and students to spread the word. Updates will be posted on our CODtoCareers webpage.</p>
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4.3 Architecture/Building Inspection Technology/Construction Technology – Bert Bitanga

DISCUSSION	<p>In order for us to develop certificates and programs, it is important for us to have advisory meetings, get input from our industry partners, and get consensus that what we are doing is something that industry needs. We need you to let us know if these are viable pathways. Your input, guidance will be used in our course outline.</p> <p>BIT certificate – California Codes (see attachment BIT and CT handout): This series of courses has been approved by the college. We have undergone a major transformation based on the California building codes. We removed the residential portion and concentrated on the commercial because we now have a course on California Residential Codes (BIT025)</p>
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that fits with Title 25. California Energy Codes (BIT024) is taught on line for the first time.

One of our main objective is to get all of the BIT courses on line:

Required Courses:

BIT 010 California Building Codes 4
BIT 020 California Mechanical Codes 2
BIT 030 California Plumbing Codes 2
BIT 040 California Electrical Codes 2
BIT 024 California Energy Codes 3
BIT 025 California Residential Codes 3
BIT 026 California Fire Codes 3
ARCH 002 Materials Of Construction 4
ARCH 011 Architectural Blueprint Reading 3

This is a 26 unit certificate and now we can create 12 unit certificates giving us more flexibility, splitting these into smaller certificates based on the input from the advisory committee.

- Stanford asked if California Energy Codes is an energy modeling course. Bert said we are teaching the code and also going into modeling. However, the code is covered more extensively in Title 24 is BIT 024 First learn the code then the software. Energy pro software is being used for training. Stanford agreed this is excellent.

Big problems he's finding is with general contractors who don't understand energy code, this creates big expensive problems down the line. Increases the burden on other consultants. Incorporating knowledge of the energy code is a huge bonus. **Core courses in BESP include Codes.** Jeanne Fricot may be teaching the modeling course.

Another exciting program we are working on is Applied **Construction Technology**. We will have core classes and specialties (see attachment). After the students complete the 14 unit core they can go into specialties: Framing carpentry, finish carpentry, electrical, plumbing, concrete, masonry. With an 18 unit certificate students come out employable and knowledgeable with practical experience. The first four classes are theoretical and then on site. These are entry level positions – adding skills – perform on the job – learning the trade. The important components are internships and apprenticeships. Jon asked the industry if this a valuable pathway?

Yes! Alaska Electric – wants interns – likes the core courses – learning the different trades for general contracting. Students can take all these courses and learn electrical – job shadowing and internships make it more exciting.

ACT 020 – is the class for safety, soft skills, OSHA, tools, similar to OSHA 10 – but not enough hours to issue OSHA 10. Maria said all certificates need to require employability skills. Administrative skills/soft skills.

CIS 012 – is the employability skills course (includes word, excel, resume, etc.) There are no prerequisites, but all of our courses cover some office skills – not required in the certificate but required with the degree. Maria

	<p>says by far it's more important than any other skill is the employability skills. It should be required for every certificate. At the high school level office procedures will be implemented. Jon said every course has a soft skills element. Employer does not want to teach basic manners. George said soft skills are a part of every class syllabus. George said his students treat class like a job. We talk about soft skills in every class. We can't make it a prerequisite because returning students or incumbent workers will be discouraged. The degree will require the CIS 012 course. ESYS 5 also brings in all aspects of the jobs in the energy field.</p> <p>Isaac agreed in the importance of soft skills – reinforce the skills or you won't get very far inside or outside the company.</p> <p>Jen said students have an agreement classroom and lab expectations. Unemployable students won't be able to finish the class.</p> <p>Everyone agreed that soft skills are the most critical aspect for every student.</p>	
CONCLUSION	<p>Ramiro asked Maria 5 things that she considers soft skills: No cell phone, presentation skills, explain needs - understanding customer needs, have student give a class, is it understandable? Presentation skills, professional manner, reasoning, confidence.</p>	
5. Internship Information – Bryan Lee		
5.1 Energize Colleges Partnership		
DISCUSSION	<p>We have internships opportunities for students to get hands on experience - the best way for students to learn. Funding is available through COD and our partnership with non-profit Strategic Energy Innovations (SEI). We pay \$13 hr. for 85 hrs. We also provide workers comp through SEI. We work with the students and they are hired based on their interest, resumes, career objectives, and interviews. Work experience college credit is given (work experience is required for the core program.)</p> <p>Anyone interested in hiring an intern should contact Bryan or Jonathan. We are recruiting now for summer internships starting June 11th for a minimum of 75 hours for college credit (8 – 10 hrs./week).</p> <ul style="list-style-type: none"> - Jon added that we are very interested in turning internships to apprenticeships. It's available now to the employers that want it – talk to Jon if you are interested. 	
CONCLUSION	<p>Interns must be 18 and be enrolled in work experience</p>	
FOLLOW-UP ITEMS		
Renova Energy and Alaska Electric expressed an interest in hiring interns.	Bryan/Jonathan	Summer
5.2 Employers Partnerships - Many of our advisory partners have already had interns from our program.		
5.3 Available Internships - Now recruiting for summer internships.		
6. Next Steps Jon thanked everyone for giving their time to come today. Watch for our Newsletter for updates to the program and please send us your feedback.		
7. Lab tour & Adjourn - Meeting adjourned at 11 a.m.		