



Energy Smarts

Newsletter of the Energy Educators Association



A joint project of Edmonds and Cascadia Community Colleges

Spring 2012

Coming Events:

- **May 11th. Energy Educators Assoc. Meeting** at Edmonds Community College, 10:00am to noon, in Mountlake Terrace Hall, Rm. 207. Optional lunch to follow.
- **June 20th, all day: Energy Educators Institute** at the Regional Education and Training Center (RETC) at Satsop Campus in Elma, WA. For more information, and to register, click [here](#)
- **June 21st–22nd: Energy & Construction Best Practices Summit** at the Regional Education and Training Center (RETC) at Satsop Campus in Elma, WA. For more information, and to register, click [here](#)

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May 11th Meeting to Lay Groundwork for June 20th Educators Institute

On May 11th, Energy Educators from around western Washington will meet at Edmonds Community College to continue the collaboration that began at the March 9th EEA meeting.

This should be an exciting “working session” that will include the following:

- An overview of the educational pathways currently in place at Shoreline, Cascadia, Edmonds and Lake Washington IT.
- A hands-on workshop in which we’ll explore each other’s programs in a “card-game” format --- discovering ways in which the programs both align and complement one another. This process will be a preview of the

hands-on workshop to be held at the Educators Institute, on June 20th. We’ll come away with a better appreciation of each other’s programs and opportunities to collaborate. Let’s see what we can build together!

- Finally, Mel Oyler will focus in on Cascadia’s and Edmonds’ current efforts at “course-mapping”. In this NSF-funded process, all energy program courses are scored for conformity to researched-based industry needs. The resulting scores form the benchmark of a comprehensive self-assessment to be performed by both schools. Additionally, the data derived from the scoring process will in-



For more info and to register, click [here](#).

form the development of a Career Lattice between the two schools.

An optional lunch will follow at a local restaurant. Please reply to the invitation, sent previously, so we can know how many are going.

Don’t miss this opportunity to share and create together! ☘

Calls for Collaboration heard at March EEA Meeting

The Energy Association Meeting, held March 9th at Cascadia Community College, drew 16 energy educators from as far as Vancouver WA. They came to discuss their energy programs’ successes and challenges, and to brainstorm opportunities for collaboration between some neighboring institutions.

Alison Pugh (Edmonds) explained how a National Science Foundation grant is supporting the efforts of Edmonds CC,

Cascadia CC, the Centralia College Center of Excellence for Energy Technology, and WSU’s Extension Energy Program to work with industry representatives to identify specific skill sets that can inform new and existing energy curricula. And, she explained that the Energy Educators Association can be a pathway for disseminating this method of curriculum development and assessment.

Mel Oyler (Cascadia) and Randy Sibley (Edmonds) gave descrip-



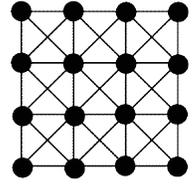
tions of Education Pathways and Career Lattices, and explained how these can grow out of a skill-based curriculum assessment process. Mel followed up with a short talk on

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“Pathways” and “Lattices”... Where is all this taking us?



In 2011, Edmonds CC, Cascadia CC, the Centralia College Center of Excellence for Energy Technology, and WSU’s Extension Energy Program were recipients of a National Science Foundation grant called “Meeting the Challenge of Energy Management in a Carbon-Constrained World”. One of the major objectives of the grant is to develop and/or enhance curricula for degrees and certificates in energy management.

Cascadia CC and Edmonds both have programs focusing on energy management, renewable energy and sustainability. These programs are the primary subjects for investigation within the grant’s research activities.

The first step of this investigation is to identify the existing “Educational Pathways” in each of the two respective programs. Next,

these pathways can be compared between institutions to discover opportunities for course alignments and program integration. The result of this activity is an “Educational Lattice”. The goal of this construct is to support faculty, advisors and students, who can access both institutions, to identify and pursue unique combinations of certificates, or a 2-year degree with unique emphasis.

But first, a few definitions: An **Educational “Pathway”** is an arrangement of courses *within a single institution* that, together with prerequisites and general education requirements, leads to a certificate or a degree. Both Cascadia and Edmonds have well-defined educational pathways in energy management. Their pathways have each been developed

in general consultation with a department-selected Technical Advisory Committee which is drawn from industry, government and labor.

An **Educational “Lattice”** is an *arrangement of courses and/or pathways from two or more institutions* that, together, depict a route to a student-chosen educational goal. While an Educational Lattice is developed by non-analytical means (by simple inspection) it is nonetheless an excellent and practical tool for advisors, students, faculty and program planners to understand how energy related pathways might be combined or supplemented with curriculum development efforts.

By contrast, the development of a **“Career Lat-**

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Satsop ‘Institute’ & ‘Summit’ will be a ‘Goldmine’ for Energy Educators

A rich opportunity to learn and to connect with over 200 energy professionals awaits those attending the Energy Educators Institute on June 20th and the Construction and Best Practices Summit on June 21st and 22nd.

The “Institute” will hold two hands-on workshops conducted by the Cascadia/Edmonds team: Morning session: “Developing Educational Pathways and Educational Lattices”. Afternoon session: “Building Career Lattices Using Industry Skill Profiles”.

For those educators interested in starting a new energy-based curriculum, please bring your best ideas with which to build your first pathways. For those wishing to assess existing curricula or build lattices – using the industry-derived skill profiles for “Energy Program/Project Manager” and/or Commercial Building Analyst” – please bring your current “pathway” documents and course descriptions. (For more on this process, see “Pathway & Lattices”, above.)

Stipends are available for participants who elect to work

with the industry-derived skill profiles for “Energy Program/Project Manager” and/or “Commercial Building Analyst” (up to \$240 for travel & \$500 for curriculum development.) Click on the link below for more information on applying for a stipend.

The “Summit” will spotlight workshops, panels and an industry trade show. Topics will include education, energy efficiency, smart grid, green construction. For more information and to register, click [here](#). ☞



By Brian Macdonald (Satsop Institute) <http://www.satsopinstitute.org/>

March 9th Meeting Recap: “Collaborate” (cont.)

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“case-based learning”, where neither the students nor the instructor know ahead of time what the “correct” answer to the problem is. He showed an example of an analysis drawn from real building energy consumption data.

Steve Addison, (Lake Washington IT), presented the framework for a new engineering program at LWIT. It seeks to provide multiple student entry points, math that is coordinated tightly with the subject matter, and extensive hands-on experience from the onset.

Finally, Tom Barr (Cascadia) conducted a brainstorming session around goals for the EEA. And, once started, the ideas just kept on flowing:

Programs or Courses:

- Establish a degree in Energy Systems within the Five-Star Consortium schools.
- Establish a Bachelor of Technology in Energy Engineering (or Energy Systems)
- Establish courses to support the maintenance of credentials in the energy field.

Pathways and Lattices, (cont.)

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“*importance*” involves more steps. These attempt to make the comparison of courses between institutions more objective and relevant by grounding them in specific industry-derived skills. Through our research, we have devised the following methodology for building a career lattice:

- First, an “*industry focus*” is identified. This can be in the form of a specific occupation or it can be an occupational function. In our study, two were selected: “Energy Program/Project Management” and “Commercial Building Analyst.”
- Second, a *focus group*, comprised of experts from industry in the career area, is convened. They develop a list of *Critical Work Functions with Key Activities* that are essential to that career area, and a detailed *list of specific skills* that are required to

- Develop courses pertaining to energy acquisition systems and data analysis.

Collaboration:

- Establish an integrated & coordinated system for learning within the Five-Star Consortium schools.
- Our efforts at collaboration should be informed by the Architecture 2030 Challenge.
- Clarify pathways within and between energy programs.
- Achieve flexible pathways through the “2 + 2 (+2) maze”.
- Advisors have access to clear, accurate information on each institution’s curriculum.
- Integration of renewable energy science, energy conservation/management, green design and construction, engineering, and IT (“Big Data” and security).
- Establish an American Solar Energy Society student chapter within the Five-Star Consortium schools.

Pedagogy:

- Identify and develop good models of on-line learning.
- Establish more robust apprenticeship

perform the Critical Work Functions. Also, these skills are given an *importance value*. Together, they constitute a *skill profile*.

- Third, each course within an existing certificate or degree program is assessed for conformity to the specific skills that were identified by the focus group. For each skill, the courses are scored with two values: The *maturity level* to which the skill is taught, and the *extent of exposure* of the skill in the course. The result is that each course can be rated on the extent to which it teaches a particular skill, weighted by the importance of that skill. Summing the ratings for each of the skills embodied across a group of courses in a program (certificate or degree), yields the extent to which the program fulfills the *aggregate skill requirements* for that *industry focus*. This provides valuable information to guide program direction.



Credit: [http://thegoldilocks.blogspot.com/ thegoldilocks.blogspot.com/]

programs for energy students.

- Develop a shared library of energy problems for case-based learning.
- Help students to reduce/overcome impediments to learning. (Home, family, financial...) to give more time for learning.

Student Recruitment:

- Step up our recruiting efforts for middle school and high school students to enter energy programs.

Graduates’ Employment:

- Develop a wiki of job profiles to help guide graduating students.
- Establish an alumni tracking data base to encourage energy graduates to stay in touch with/support current students. ☼

- Finally, these aggregated skill scores can be juxtaposed to the scores of another energy program to determine if gaps in one institution’s program are complemented by strengths in the other program.

By building career lattices in this manner, we may determine if, by good fortune, or by some specific adjustments, multiple sets of courses from different institutions can, together, more fully satisfy industry’s needs than either can separately. Building career lattices between institutions acknowledges that, in many cases, the energy field and its subject matter is so broad that no one single institution can “teach it all.” Hence the need to work together to develop complementary pathways that truly teach industry-derived requisite skill-sets.

To learn more about building pathways and lattices, come to the [Educators Institute](#) on June 20th, at Satsop Campus. ☼