

Energy Resource Center Meeting
September 22 - 23, 2005
Embassy Suites—Rosemont, Illinois

Note: Discussion at this meeting encompassed two distinct, but related ATEEC grant proposals: 1) the energy professional development (PD) grant proposal (submission Oct 05) and the energy resource center (ERC) grant proposal (submission Oct 06).

KEY POINT SUMMARY

Energy Resource Center proposal:

- Reached group consensus on need for ERC
- Identified the preliminary target audience for the ERC—educators at the high school and community college levels.
- Compile additional needs assessment information:
 - List of stakeholders, in order to survey a wider group of educators and business/industry and to begin forming a network
 - Existing labor market information (e.g., labor market assessments, job descriptions, job and type projections)
 - Existing program information (e.g., programs, degrees, institutions, needs assessments (including labor market assessments))
 - Existing curricular materials (e.g., syllabi, lesson plans, case studies, lab equipment lists, program templates)
- Compile quality (unbiased, scientific, reliable) resources:
 - Emphasis on energy efficiency and energy conservation
 - Develop effective jurying process
 - Curricula (with criteria on why it's valuable, where it's from, is it being taught, etc.)
 - Materials (see above)
 - Labor market information (see above)
 - Professional development opportunities
 - All resources need to be balanced and address the transition from traditional to renewable sources
- Develop evaluation plan to show eventual student benefit from Center

Professional Development grant proposal:

- Reached group consensus on need for PD
- Identified audience as high school, post-secondary, and industry teachers and trainers
 - Some will be content experts (need teacher training)
 - Some will be instructors in specific areas (need content training)
- Identified preliminary content:
 - Teaching skills
 - Methodologies (e.g., project-based, anchored, contextual, etc.)
 - Program/course/module development
 - Curriculum integration across disciplines
 - On-line resources
 - Technical skills (using existing curriculum whenever possible)

- Site visits, hands-on, equipment use
 - Philosophy of sustainability (specific to different audiences)
 - General and discipline-specific case studies, activities, best practices
 - Identified preliminary delivery modes:
 - Must have component for product development by participants
 - Followup (mentoring, network, train-the-trainer)
 - Consensus to develop hybrid model to include:
 - Hands-on, with equipment/materials to take back to classroom
 - Interactive online
 - Modules/toolboxes
 - Webcasts
 - Mentoring
 - Listservs
 - Faculty internships
 - Incorporate local, regional, national tie-ins
 - Provide incentives for the instructor-students, and the trainers
 - Develop evaluation plan to show benefit to the end-user students
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THURSDAY DISCUSSION

Great need for professional development; teachers need:

- PD on Web
- Opportunity for practice in order to train others
- Resources to gain experience before teaching
- Something simple to supplement what they already have. Ex: (\$30 kit on how solar energy works; teachers can't afford it)
- What level of instructors will receive professional development?

Discussion questions in addition to agenda items:

- What is the new technology of the future?
- What's current, practical and cost effective?
- What's important and what should students receive training on?
- Where are the jobs?
- Who are the technicians?
- What does sustainable mean? What resources should be we putting together?

What resources should the Center provide?

- Where to find the right information...unbiased, scientific, reliable
- One definition of sustainable: "Meeting the current needs without compromising the needs of the future"
- All resources need to be balanced and address the transitioning from traditional to renewable sources
- Emphasize energy efficiency and energy conservation (white roofs)

- Description of jobs, number and type, include administrators (need to be aware) in this audience, not just technicians
- Clearinghouse of current curricula with criteria on why it's valuable, where it's from, is it being taught, etc. Very time-intensive effort for collection & upkeep, but ends up a huge timesaver for teachers.
- Sharing of: case studies, curricula, needs assessments (including labor market assessments), lab equipment lists, etc.
- Program templates
- Nuclear energy...decide how to handle info in this area. Tabled for further discussion & group consensus
- Focus on conservation and efficiency end of it...can't put a stigma on fossil fuels if the message is to be widely accepted/effective
- Energy innovations ...futuristic
- Link all of this together (internal and external). Need an inventory of the current efforts available. Find places that have the reliable information
- Too much information on Web, too time-consuming to research, need to list best sites and put on energy Web site (juried like eERL)
- Database to search for case studies, links, curriculum, etc. so teachers don't need to reinvent the wheel
- Look at Smart Communities network (link contains case studies, etc.)
- Include eERL in energy resource center grant if NSDL doesn't fund it this fall
- Link participants to each other
- Listservs are very valuable (including those specific to each category of technicians)
- Summarize top information from listservs
- Initiative to get this info to liberal arts teachers
- Include links to the bigger picture of economics and environment
- List of textbooks that includes this curriculum
- K-12 initiative to get info to them
- Professional development network
- "Energy education integration" for all curricula
- Educating the public will push smarter political decisions
- Useful classroom activity: role-play for real-life issue-oriented debates (e.g., Brownfields in a Box)
- Greater impact if students hear about it in all classes, across curricula
- Has to be systemic and has to start with kids
- Needs to be positive and exciting to grab & keep interest of kids
- Hook into something that's recognizable (contextual teaching & learning)
- Need online list of programs/degrees currently available. List institutions and degrees. Time-intensive, but a big help to teachers & students.
- Gather and include global information
- Tap into international companies--could be a pipeline for what's going on outside US (AGS, Alliance for Global Sustainability). Research needs to be translated to appropriate levels.
- Knowledge from manufacturers (e.g., technology descriptions, maintenance) needs to be transferred to students
- Do-it-yourself plans for the general public
- Marketing techniques

- Links to scientific & policy issues regarding sustainable energy (e.g., climate change, international government agreements (e.g., Kyoto))
- Links to sustainable development in addition to sustainable energy
- Overall reasons for sustainable energy education: health, resource depletion, climate change
- On Web site, include portals for each audience type
- Utility company rate structures, state energy portfolio policies

Who is the Center's audience?

- Teachers and instructors K-24 (2+2+2)
- Entrepreneurs
- Technicians
- Marketers
- Administrators
- General public
- K-12 students
- Architects
- Engineers
- Trades people
- Facility managers
- Building owners
- Real estate sales people
- State, local and federal government officials
- Property owners
- Small business owner
- Utility companies
- Will need to be narrowed down for focused grant efforts

FRIDAY DISCUSSION

Who is our professional development audience?

Group 1 overview

- Adjunct
- High school teachers
- Existing instructors

Group 2 overview

- Administrators to give approval and support
- High school teachers
- 2-year teachers
- 4-year teachers
- Educate kids to educate parents
- HVAC
- Provide high school awareness to teachers and students
- Building trades and governing boards
- Auto – electric, hybrid, biodiesel

- Staff needs to prepare technical installers in each discipline
- Electricians
- Mechanical engineers
- Plumbers
- Teacher education programs – introduce curriculum at this level

Group 3 overview

- Content experts (don't necessarily have teaching knowledge)
- Existing instructors in specific areas (don't necessarily have content knowledge)
 - Environmental science, biology, different levels of teachers
 - Building trades – local labor, IBEW, and other associations (Note: May need to work through the unions, not always directly with the students)
 - Occupational - automotive, HVAC, civil engineering, industrial, architecture, agriculture
 - Independent energy consultant
- Trainers (content and teaching experts)

What should the professional development contain?

Group 1 overview

- Train-the-trainer for adjuncts (teaching skills, technical skills as needed)
- Existing technical skills

Group 2 overview

- Need stepping stone to attract students and instructors
- Information network
- Venue to remain networked/relationships (thru ATEEC Fellows? train-the-trainer?)
- Curriculum should include site visits, etc. (assessments, equipment: e.g., green energy machine)
- Be prepared for huge demand for professional development during periods when energy issues are at the forefront of public awareness (e.g., recent hurricanes, terrorist attacks, etc.)
- Building curriculum in steps beginning with core curricular foundation, with modular parts to apply to other areas depending on needs
- Include in combination with existing programs
- Include services and technical side

Group 3 overview

- Technical content
- How to teach for trainers
- How to integrate into curriculum across disciplines
- Philosophy of sustainability (specific to different audiences)
- Lesson plans, case studies, Best Practices
- Existing curriculum from formal education/training, labor unions, B&I
- Juried, reliable, concise, quality resources
- Content and presentation – juried by peers to add to resource list (e.g. NREL teacher resources)

- Who would oversee the jurying process and standards?
- Also use jurying for cross-referencing and selection/categorization

How should the professional development be delivered?

Group 1 overview

- Webcast
- Modules
- Mentoring
- Listservs – use paid facilitator?
- Hands-on
- Online
- Live chat
- Faculty internships
- Toolbox
- FSEC
- NREL
- CC'S
- SEI
- MREA
- State energy agencies
- AEE
- AIA
- ASHRAE
- CEFPI
- Renewable energy meetings
- Local utilities
- Speakers bureau to access organizations such as Rotary to inform local communities
- Monthly presentation of a component
- Present an interactive experience

Group 2 overview

- Organizations w/available textbooks – not currently available for high school and 2-year
- Contextual—use in conjunction with current events (war, hurricanes, etc.) – we are at a peak now
- Use hands-on materials
- Provide incentives
- Career fairs to provide awareness on future jobs
- Co-ops
- Magazine to educate general public
- Include curriculum/training/continuing education in license renewal courses, include benefits received
- FEMA materials – can they be accessed?
- Train one person to provide train-the-trainer
- Forecast new technologies, if possible

- Get representation at national level (IBEW and JATC)

Group 3 overview

- Workshops w/product, don't just promote "familiarization" with the topics
- Materials (Best Practices, case studies, textbooks, lesson plans, recommendations, references)
- Webcasts – use for communication within workshops, not stand-alone
- Hands-on (e.g. installation, location important)
- Be sure teachers have mentor followup, after workshop
- Tie to real-world project – getting permit, installing, maintaining, etc.
- Be patient & plan to present learning over a period of time (e.g., 2-3 years with a summer on-site workshop, communication between workshops) – how do we capture growth over the time span?
- Tie-in grant writing as an addition to workshop – teachers need resources to help implement content, obtain administration buy-in, etc.
- Provide equipment/materials to take back into classroom
- Business participation (intern, equipment training) – how to identify and get them to partner? – will they supply internships, equipment, train, etc)
- Travel support for attending related industry conferences – good networking, partnering opportunity

Extra info on evaluation from group 3:

- Does the jurying process work?
- Student benefits (STEM)/impact – pilot in class – does professional agenda support this loop?
- Pre- and post-data require small-scale group

Large group consensus on who, what and how:

WHO

- Point person/champion: Find a single point of contact (FT faculty best for ATE grant) at each college/org who will be funded through the grant & take info back to others (FT, adjunct, trainers, etc.) who need it & be the "word spreader" at their institution
- Team from each organization or area, maybe liberal arts, technical (2/3), K-12 (1/3); then this becomes a model team template—more buy-in/success at local levels
- How do we touch adjuncts? Stipend for time, teams of liberal arts/technical/high school teach adjunct staff

WHAT

- Hybrid delivery: Use both hands-on, face-to-face workshops and hands-on equipment/lab (Kid Win: source for equipment); content specific; installation; model pedagogy; and Webinar-type continuation pieces to pick & choose.
- Ongoing, follow-up
- Industry involvement, internships, money to continue
- Dissemination of tested curricular outcome
- Outreach to other instructors, government, media, et al

- Lists of resources

KEY AREAS FOR PROFESSIONAL DEVELOPMENT FOR NEXT 5 YEARS

- Energy efficiency – academic (systems analysis) and applied levels, new building/old building, green building, transportation
- Energy conservation – academic (systems analysis) and applied levels, new building/old building, green building, transportation
- Renewables – solar, thermal, electric, PV, design, small and large wind, biomass, geothermal, fuel cells/hydrogen, alternative fuels, hydro, small hydro
- Nuclear
- Environmental impacts/stewardship
- Water use and reuse
- Emerging technologies – tidal energy, ocean energy sources, desalinization, carbon capture/sequestration
- Energy management
- Distributed generation
- Policy and regulations
- Co-generation

SUBCOMMITTEES

Business & Industry

Joe Bannon – MidAmerican Energy
 Andrea Buren – Siemens Building Technologies, Inc.
 Dave Pearson – IEFM Consulting Engineers
 Blanche Sheinkopf – The Sheinkopf Group

Education

Edward Brown – University of Northern Iowa
 Mary Jane Curran – Cape Cod Community College
 Roger Ebbage – Lane Community College
 Raymond Griego – Crownpoint Institute of Technology
 David Inman – Wilbur Wright College
 Kirk Laflin – Partnership for Environmental Technology Education
 Reginald Luke – Middlesex County College/New Jersey Higher Education Partnership in Sustainability
 Joy McMillan – Madison Area Technical College/Consortium for Education in Renewable Energy Technologies
 Awilda Melendez – University of Puerto Rico at Aguadilla
 Bill Nash – Barton County Community College
 Steve Power – Lakeshore Technical College
 Debra Rowe – Oakland Community College
 Jeffrey Steinfeld – Massachusetts Institute of Technology
 Reid Streiby – Bronx Community College/Center for Sustainable Energy
 Aaron VanDyke – North Scott High School
 Alden Zeitz – Iowa Lakes Community College/Wind Energy & Turbine Technology

Agencies

Cynthia Howell – National Renewable Energy Laboratory

Peter Sheehan – North American Board of Certified Energy Practitioners

Jane Weissman – Interstate Renewable Energy Council

NEXT STEPS

- Listserv of participants – established by end of September 05
- Meeting minutes – out to participants by end of September 05
- Summary/abstract of PD grant – first week of October 05
- Letter of support – submittal of PD grant – need back into ATEEC October 13, 2005
- Progression of planning grant (center) – subcommittee work, input, conversation
- Reconvene group in summer 06
- Submittal of center grant (Oct 06)

Web Sites of Interest

- **LOOK AT: rebuild.org before it goes away at the end of September**
- Ateec.org
- Ceret.us
- Uspartnership.org
- Ases.org
- Irecusa.org