National Wildlife Federation

Inspiring Americans to protect wildlife for our children's future

Search

Home   About   Wildlife   Global Warming   Outside in Nature   Magazines   Shop   Donate Now

ClimateEdu™
News for the Green Campus

National Wildlife Federation®
CAMPUS ecology®

Campus Ecology Home   My Involvement   My Campus Involvement   Resources   News

White-Collar, Green Tech

Maryruth Belsey Priebe

March 30, 2010

Green IT is a booming industry, but how can students interested in smart grid or renewable energy technologies distinguish themselves in the field? We asked several experts to describe the way forward in the land of green information technology.

"This is a growth area, and a student that maintains a narrow focus in computer science would find it difficult to get immediate employment in [the renewable energy sector]," explains Dr. Ravi Prakash, associate professor in computer science at the **University of Texas at Dallas**. Traditional information technology (IT) programs, whether they are offered by a community college or through a university graduate program, maintain a narrow focus on one subject area such as software engineering, computer science, applied information systems technology, network administration, or data analysis and reporting. He recommends that regardless of the focus students should augment their education by participating in seminars and electives that focus on issues like smart grid technology, renewable energy, and other clean tech topics, even if they are offered by other academic departments.

This sentiment was echoed by Michelle Naquin, CEO of the **Green Technology Alliance** (GTA), who says that students "Should look for programs in known areas of certification that include specific modules on green, clean and sustainability. The scope of the work and areas of impact make it difficult to create 'specialist' programs."

Prakash goes on to say, "It is extremely important for students to have an interdisciplinary focus-if I'm going to make a tool [for an electrical utility, for instance] that will be used by a different area of specialization, it behooves me to understand how it will be used. Students need to use their electives to broaden their outlook."

Prakash fosters this interdisciplinary approach by encouraging grad students to work with him on various research projects. In particular, Prakash is researching how the renewable energy sector will be integrated with the smart grid. "It's a large-scale networking problem," he says. As tax incentives lead to thousands, if not millions, of home-installed solar systems networked into the utility grid for net-metering purposes, many new IT problems will be created.

Consider, for instance, what happens when thousands of homes are fitted with solar panels, each producing several hundred kilowatts of energy. By comparison, a single coal burning plant will produce thousands of megawatts. "The rate at which energy is produced [by these solar panels] and the time at which it is produced is unpredictable, which creates interesting issues for electric utilities trying to meet demands, explains Prakash. "Normally they have baseline amounts and they have backup sources that come online when peak is high. When you add a large number of smaller sources, the variability significantly increases."

As a result, utility companies will need to find ways to manage many points of data, especially how much energy is being produced at any given

point. "The utilities will need to react very quickly to these changes and demand so that they can bring their surplus generators online or offline as needed. Then, all of these data points have to be accumulated in databases. And we need experts in statistical analysis who can optimize pricing, etc so that they can avoid peaks in energy demand to flatten it out as much as they can."

Fairfield University's **School of Engineering** also lacks a formal green focus, but they are developing research opportunities for students interested in exploring renewable energy and smart grid issues. "I have a solar project on campus and we're collecting data-every 16 minutes we get 20 points of data (during daylight)," explains Dr. Evangelos Hadjimichael, dean of the school of engineering. "I'm using IT to analyse the data-data collection is accumulated by a computer and the data is collected by a data logger and transmitted to a computer and then we use that computer to collect and manage and deduce the data."

Beyond formal education, Angela McClowry, co-founder of **open-sustainability.org**, an organization dedicated to developing a free and open standard for sustainability based on information management, suggests that students can also look to expand their education by getting training in environmental engineering, degrees in sustainability, or certification with **LEED**.

Students can also get traditional degrees and then learn on the job. Ian Thomson, one of the co-founders of **CleanTechies**, is working on a number of different projects that make use of conventional software tools for green purposes. Using modified CAD (computer-aided design) programs on **ProjectFrog**, they're developing software that makes buildings more efficient, "We show our customers how a building is going to look and how it will perform in terms of its energy," says Thomson.

In another application, **People Power**, users can interface with their homes using an iPhone or computer to adjust plug loads, see which plugs are being used, etc. "These are essentially micro smart grids," explain Thomson. Both People Power and ProjectFrog are being developed by programmers with traditional skills.

So, does specializing in green technology limit IT professionals in any way? On the subject of job security and growth in the green IT job market, Naquin had these thoughts: "IT has and will continue to be a major cost center for every kind of organization and industry. Building skills that improve efficiency from any angle will make a candidate more marketable and ultimately employable. Skills that are in demand are those that can identify and demonstrate improvements in efficiencies, whether in the development or management of IT. Employers are specifically interested in any that impact cost and/or improve the life cycle management of IT resources for an organization."

Naquin isn't the only one who has a positive outlook for green IT professions. Mary Vincent, founder of **Green Star Solution** (an organization working on green tech innovation) and co-founder of the **Green Software Unconference**) suggests, "International, governmental, and company regulations and policies are driving many software opportunities, including carbon accounting software."

Several institutions are in the process of developing green-focused IT programs. The GTA is working on professional certification programs by functional area, but the programs are not scheduled to roll out until sometime in late 2011. The **Software Engineering Institute** of CarnegieMellon is also researching smart grid technology and working on energy issues using the **Smart Grid Maturity Model** (SGMM). Additionally, UT-Dallas is making plans to develop an interdisciplinary research center, though this won't likely be launched for several semesters.

Though the way is not clear cut, with or without these specialized programs students interested in the intersection between technology and clean energy should be able to find their way to a fulfilling career. And though the future looks bright for this sector, our experts seem confident that even those who specialize should fare well should the green IT market fall flat. Prakash says, "When I look at an IT professional who specializes in green energy, they'll still have done the basic courses in software engineering, etc. They would be easily able to retool and move to other areas."

See More:

Get Smart with a New Grid: ClimateEdu

Green Jobs Vary by Region and Field: ClimateEdu

Campus Ecology...It takes a big step to make a smaller footprint.

Free Monthly E-Newsletter   Your email   >>

donate now | send an ecard | email this page to a friend