

Calendar Of Events

This Month's Articles

Featured Advertisers

Chair's Corner

A reflection on the volunteering that made the **Chicago Section's award as Exemplary Section** possible. [\[more\]](#)

Save These Dates:

- > **Chicago Tribune Personal Finance Columnist Gail MarksJarvis**, author of *Saving for Retirement without Living Like a Pauper or Winning the Lottery*, will be the keynote speaker at the IEEE-Chicago Section half-day [Financial Planning Seminar](#) on **Saturday, November 3rd**. [\[more\]](#)
- > Northern Illinois University is hosting the **Region 4 Student Leadership Training and Ethics Competition** on **November 10th** [\[more\]](#)
- > **November 13th** will be first meeting of the newly reconstituted **Chicago Chapter of the Dielectrics and Electrical Insulation Society (DEIS)** will feature a talk by IEEE Fellow Edward A. Cherney on the ["Impact of Inverter Drives on Form Wound AC Motor Stator Coil Insulation."](#) [\[more\]](#)

Chicago Section Named "Exemplary"

IEEE Region 4 recognized the **Chicago Section** as its most outstanding section in 2006. [\[more\]](#)

Vista Provides More Secure View

At the September **Fox Valley Subsection** meeting, **Jeremy Hayek**, Computer Systems Manager for the **Illinois Institute of Technology, Rice Campus**, gave Vista, Microsoft's new operating system, a positive endorsement. [\[more\]](#)

Powerful Answers are "Blowing in the Wind"

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Chair's Corner



Congratulations to all the members of the section!! The Chicago Section has been chosen as the recipient of the **Region 4 "Exemplary Section Award" for 2007**. It is a well-deserved recognition for the time and energy you have volunteered to section events. It is also a good basis on which to build as we look for ways to meet the evolving needs of the Chicago Section.

We wouldn't have gotten the award without lots of member volunteers. I have had an opportunity to talk with some of you, as well as to some of the participants at the Leadership Conference, about why you volunteer. A year ago, past Chicago Section Chair John Zulaski summarized the benefits as: 1) you meet great people who understand your language and have the same interests, 2) you have the opportunity to learn or improve skills such as organizing and running meetings, and 3) you positively affect the lives and careers of your fellow IEEE members. This is a good list, but when I

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This Month

November 1, noon
[Election Ballots Due](#)
- IEEE International

November 3, 8:30am
[Financial Planning Workshop](#) - Chicago Section

November 4, 8:30am
[Student Leadership & Ethics](#) - Region 4

November 13, 7:30pm
[Impact of Inverter Drives](#)
- Dielectrics

November 13, 7:00pm
Executive Committee
DeVry - Addison
Chicago Section

November 14 5:30pm
[IEC Standard 61850](#) -
Power Engineering

November 14 6:30pm
[MIL-STD Testing](#)- Fox
Valley & EMC

November 21, 5:30pm
[Interfacing Old Electrical Systems with New Ones](#)
- Industry Applications

ask myself the question "Why do I do the things I do?" or "Why do I volunteer?," it comes down to the way I feel about my contributions. It is because I am enriched by those experiences. I have made a difference in my world. I am a changed, a better and more capable person because of what I have learned from those volunteer experiences.

So I invite all of you to take advantage of the volunteer opportunities offered by the IEEE Chicago Section. You, too, can make a difference and be enriched by the experience. As you probably know, your IEEE Chicago Section is always looking for volunteers to fill a wide variety of roles – from planning activities to filling officer positions. I plan to spend the initial half hour of the November 13th Executive Committee meeting matching volunteers with needs in the Chicago Section. If you would like to learn more or are interested in volunteering, please contact me via [email](#) or come to any Executive Committee meeting at 7:00 PM on the 2nd Tuesday of each month.

Thanks for your continued support. I hope to meet you at one of our upcoming meetings.

[Bernie Sander](#)
Chair – Chicago Section

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Save these dates:

> Financial Planning Seminar on November 3rd

Chicago Tribune Personal Finance Columnist [Gail MarksJarvis](#), author of *Saving for Retirement without Living Like a Pauper or Winning the Lottery*, will be the keynote speaker at the IEEE-Chicago Section [Financial Planning Seminar](#) on **Saturday, November 3rd**. The half-day seminar is for IEEE members interested in taking control of their financial future using established and proven techniques.



Gail MarksJarvis provides personal finance advice weekly on WBBM radio.

Steven Weydert, a certified financial planner and executive vice president of **Bowyer,Weydert Wealth Planning Partners**, will lead a track for younger and mid-career professionals. Steven, who has been quoted in the *Wall Street Journal and Business Week*, will address defining goals, managing investments (and debt), minimizing taxes, and tracking progress. Certified financial planner and president of Bowyer, Weydert Wealth Planning Partners, **Gary Bowyer**, will lead another track for IEEE members preparing for retirement. Gary, who had been named a top financial advisor by *Worth Magazine, Mutual Funds Magazine, and Wealth Manager Magazine*, will review how to determine whether savings are adequate and investments are appropriately balanced. He will also examine what types of insurance are necessary and which are not. The seminar will be at **Rec-Plex**, 420 Dempster Street, in Mount Prospect. [Register at the door.](#)

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> Student Training & Ethics Competition on November 10th



Students broke into focused small group discussions during the Student Branch Leadership workshop last year.

IEEE Student Branch officers and members are invited to attend the IEEE Region 4 one-day fall event for students and branch leadership to be hosted by Northern Illinois University on November 10th. In addition to the IEEE Region 4 [Ethics Competition](#), the day will include Leadership Training for student branch officers including valuable information on annual plans, online and annual reports, and awards. Travel and lodging will be reimbursed. For more information, contact Region 4 Student Activities [Chair Professor Anu Gokhale](#).
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> First DEIS Meeting on November 13th

The first meeting of the newly reconstituted Chicago Chapter of the Dielectrics and Electrical Insulation Society (DEIS) will feature a talk by IEEE Fellow Edward A. Cherney on the ["Impact of Inverter Drives on Form-Wound AC Motor Stator Coil Insulation."](#) Ed, who works at EACH Engineering and is an Adjunct Professor at the University of Waterloo in Ontario, Canada, will examine how voltage pulse width modulated (PWM) drives impact the insulation system of motors. The meeting will begin with a social hour with sub sandwiches at the IIT Rice Campus in Wheaton. A receipt for one hour of professional development (PDH) will be given upon request.

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Chicago Section Named "Exemplary"

At the Region 4 meeting at the Marriot O'Hare on September 29th, current Section chair Bernie Sander had the honor of accepting the [Region 4 Exemplary Section Award](#) on behalf of last year's Chicago Section executive committee and all the volunteers who made the award possible.

Chicago Section Chair Bernie Sander accepts the Exemplary Section Award from Region 4 Director Bob Dawson.



The comprehensive award recognizes one section's superior efforts to sustain the core activities of the section, such as suitably publicized and reported meetings, membership relations and

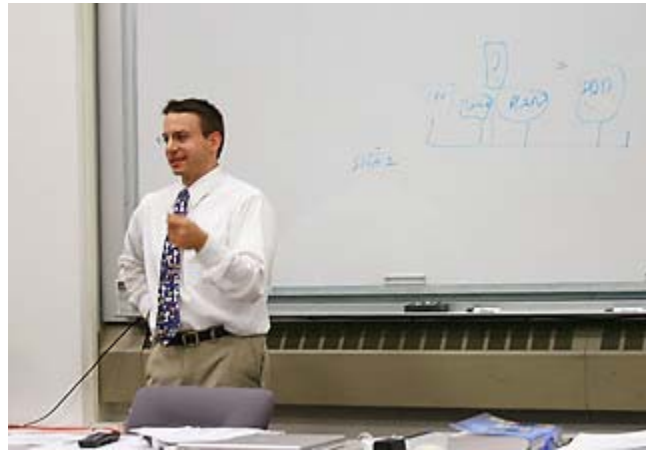
development programs, special programs and projects, communications, administration, and member participation. It also recognizes the section's innovative and creative efforts to develop new and grow existing programs.

Chicago Section Awards Chair Safoora Fatima worked tirelessly to put the application together. She contacted section officers and the chairs of the society chapters and student branches and scoured their websites to obtain information on their activities. She filled in as much information as she was able to obtain and wrote a letter of recommendation based on the tremendous improvements she's seen since becoming involved in the Section.

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Vista Provides More Secure View

At the September **Fox Valley Subsection** meeting, **Jeremy Hayek**, Computer Systems Manager for the **Illinois Institute of Technology, Rice Campus**, gave Vista, Microsoft's new operating system, a positive endorsement. In his presentation, "**Windows Vista – cutting through the hype to understand the real improvements in Microsoft's new operating system**", Jeremy pointed to Vista's increased security as its main benefit.



A lively speaker, Jeremy Hayek explained the benefits of the new Vista operating system.

A lively and dynamic speaker, Jeremy outlined six ways in which the weak points of previous operating systems have been plugged. Vista's multi-layered approach, for example, prevents users from operating by default at an administrator level and thereby providing hackers full and ready access to all features. In contrast to previous operating systems, in Vista, user accounts have levels of privileges and require passwords to access administrator level features. In addition, exploitation of buffer overflow, a traditional entry point for hackers, has been almost completely blocked, as hackers won't be able to execute statements accessed by taking advantage of that hacking technique. The hard drive is also now encrypted, and there is a virtual registry so that the operating system, rather than developers, determines where the actual software will be located.

Many of the 65 attendees were anxious to know whether they could take advantage of the new software on their existing computers. They were happy to learn that, contrary to popular wisdom, Vista does not require two gigabytes of memory to operate and it will work well on a three-year-old computer. There were lots of questions, enough to go on for a long time, but Fox Valley Chair **Fabrizio Devetak** stepped in at 9:00PM to call it a night. And, a good night at that.

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Powerful Answers are "Blowing in the Wind"

American Wind Energy Association data show that installed capacity of U.S. windfarms is increasing at a rate of 25-30% per

year. And that phenomenal growth rate is expected to continue, as the U.S. strives to meet the Department of Energy goal of wind energy generating 6% of U.S. energy needs – the equivalent of what hydropower now supplies – by the year 2020. Windfarm developers are scrambling to keep up with skyrocketing demand, ordering turbines, which now have lead times upwards of 18 months, even before finalizing where they will be installed.

With the investment in windfarms growing exponentially, electrical engineers need to learn the specific technical challenges posed by this renewable energy source. This October, the Chicago chapters of the **IEEE Power Engineering Society (PES)** and of the **Industry Applications/Industrial Electronics Societies (IAS/IES)** had programs focusing on the intricacies of windfarm design.

Windy City Lacks Wind

Stephen Williams, Senior Engineer at S&C Electric Company, began his presentation to the Chicago IAS/IES, with a U.S. annual average wind power map, which, he said, wind power developers use as their starting point. In contrast to its nickname, the wind map showed a lack of developable wind in “the Windy City.” Chicago got her nickname from her “long-winded” politicians, not from meteorologically measurable lake breezes, and although there is a fair amount of the latter, the existing development precludes installation of any significant amount of wind generation.

Stephen Williams reviews single line diagrams behind wind power technology during his presentation.



According to Stephen, developers “make in depth analyses and site measurements before they commit to putting wind turbines on the ground.” Quantity and consistency of wind is just one of the considerations. Stephen’s presentation, “**Windfarm Generators and Grid Interconnection**,” showed how connecting to the grid can present technical challenges for individual windfarm planners, even though, in the big picture, grid interconnection issues can be resolved with existing technology and more transmission infrastructure investment. The intermittent power generated by a windfarm can overwhelm a weak grid, and because windfarms are often located in sparsely populated areas with weak grids, the interconnection must be carefully analyzed and properly engineered.

The variable nature of the wind means that utility engineers do not plan for windfarms to consistently contribute toward meeting peak capacity needs. As Stephen pointed out, you can’t “schedule the wind” to blow on the hottest days of the year when air conditioning spikes power demand. Options for managing this lack of “dispatchability” include more accurately forecasting the wind, complementary generation, and energy storage. However, the benefit of harnessing the nearly inexhaustible supply of wind remains worth the effort, because every watt generated with renewable power lessens our consumption of fossil fuels and lowers carbon dioxide emissions into the atmosphere.

From Many to One

In his **Chicago PES** luncheon presentation, “**Fundamentals of Wind Power Plant Design: The Collector System**,” another **S&C Electric Company** engineer, **Jon Saxon**, explained that collector

systems are the networks of underground cable and overhead wire that bring the power harnessed from the many wind turbine generators on a windfarm to a common point, typically a substation, which interconnects to the utility grid. Jon pointed out that a collector system “looks a lot like what you’d see in a residential distribution system.” Indeed, the electrical infrastructure that collects the energy produced on a windfarm is sometimes referred to as a “reverse-distribution system.” Rather than distributing power to many locations, it collects it from multiple sources.

Jon reviewed the technical issues involved in designing the type, size, and materials of the cables that bring wind-generated power to the point where it connects to the grid. One of the first decisions involves determining whether the system will use underground cable, overhead wire, or a combination of both. Not surprisingly, many factors go into that decision, including economic and reliability issues, safety, aesthetics, and site conditions. Although underground cable is more reliable than overhead wire, trenching is more expensive than putting up poles. For some sites, rock blasting, high soil thermal resistivity, and wetlands preservation may make underground cabling even more expensive, but aesthetics may dictate that overhead wiring is not an option.



Presenter Jon Saxon (center) talks with an attendee after his presentation as PES Chicago Chapter Arrangements Chair Paul Pabst and PES Chicago Chapter Vice Chair Jim Niemira stand by.

Getting the Dirt on the Dirt

Jon noted that obtaining accurate soil thermal resistivity values, or “rho,” is a crucial first step. These “rho” values determine whether the excess heat generated by the power moving through an underground cable will be safely conducted away from the cable. The denser the soil, the more surface contact, the lower the “rho,” and the greater the ability to conduct the heat away. Dry, sandy, loosely packed soil will have a higher “rho” and require larger cables, wider spacings, or more expensive cable and construction than dense, waterlogged soil. And of course, many sites have multiple soil types, so engineers need to obtain samples of each type and account for seasonal variations in moisture. Soil “rho” values will dictate the type and size of cables and the construction of trenches, including the use of select thermal backfill materials.



Paul Pabst stands at the center of a turbine during the Twin Groves windfarm tour.

Windfarm Fieldtrip

To get an up close understanding of wind power technology, the **IEEE PES Chicago Chapter** chartered a bus to tour the **Twin Groves windfarm** near Bloomington, IL on Saturday, October 13th. The Twin Groves windfarm, operated by **Horizon Wind Energy**, currently consists of 120 Vestas V82 1.65 MW wind turbines with a wing rotor diameter of 82 m. When the additional 120 wind turbines now under construction are added, the maximum output of the windfarm, which is now 198MW, will double. A group of 36 adventurous students, IEEE PES members, and non-members viewed and stepped inside the assembled wind turbines and visited the Twin Groves interconnection substation and the **ComEd**-owned transmission station that was built to support the windfarm.

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