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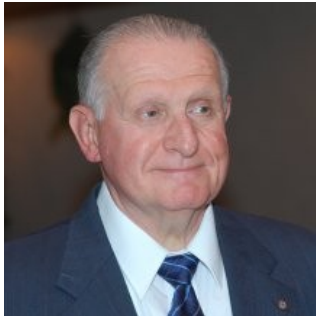
# THE APRIL 2008 IEEE NEW HAMPSHIRE SECTION NEWSLETTER

[http://ewh.ieee.org/r1/new\\_hampshire/newsletters.html](http://ewh.ieee.org/r1/new_hampshire/newsletters.html)

## Chairman's Thoughts

By Jim Anderson

[james-w-anderson@ieee.org](mailto:james-w-anderson@ieee.org)



### Help Us Grow!

Unfortunately I can not report that anyone volunteered to be our Publicity Committee Chair.

This month the focus is on support officers for our chapters and additional active members for our WIE group.

Our three main chapters have been run for some time by three very competent and energetic people, but eventually they will burn out. I would like to get them some help before that happens, so that we can assure the continuity and vitality of our chapters. Specifically we could use people willing to run for Vice Chair or Secretary of our chapters. Naturally, you must be a member of the particular society in order to become an officer of the chapter.

For information about serving the **Computer Chapter**, please contact Jim Isaak  
[CSNH2007@JimIsaak.com](mailto:CSNH2007@JimIsaak.com)

For information about serving the **MTT-S Chapter**, please contact Tom Perkins  
[tomperkins@ieee.org](mailto:tomperkins@ieee.org)

For information about serving the **Power Engineering Chapter**, please contact Paul Krell  
[p.krell@ieee.org](mailto:p.krell@ieee.org)

Our new **Joint Communications - Signal Processing Chapter** is being Co-Chaired by Ravi Subrahmanyam [Ravi.Subrahmanyam@ieee.org](mailto:Ravi.Subrahmanyam@ieee.org) and Kenric Nelson [Kenric.Nelson@ieee.org](mailto:Kenric.Nelson@ieee.org) and they could use a Secretary. Please contact one of them if you are interested in helping.

For information about serving the **EMBS Chapter**, please contact Wayne Smith  
[wjsmith@cisunix.unh.edu](mailto:wjsmith@cisunix.unh.edu)

While our **WIE Group** has a full contingent of officers, they are always looking for new members who are interested in becoming involved. For more information please contact Liberty Gunter [Liberty.Gunter@baesystems.com](mailto:Liberty.Gunter@baesystems.com)

## Thank You Jennifer!!!



It is with great sadness that I report that Jennifer Ng Ain Kin is leaving the section. She has accepted a terrific job at Abbott Laboratories in Ottawa, Canada. She says that "The product at Abbott (i-STAT) is simply fabulous and it saves lives! What else to expect from a profession that I just love."

She assisted me with the creative aspects of the newsletter and website, and has written many articles for the newsletter. She was the section's Outstanding Young Engineer of the Year in 2006.

Jennifer formed and chaired the WIE Group in late 2006 and 2007. She quickly recruited a Vice Chair and Secretary and did substantial fundraising for WIE NH activities. She also created their website.

She was the 2007 Section Vice Chair, spearheaded our very successful Senior Member upgrade program, works with the Student Activities Committee, and contributes her time generously to our Pre-University Educational Activities Committee where she has led our outreach to other organizations involved in this area.

Jennifer has represented the Section at numerous

conferences and supports the IEEE peer mentoring program as well as the McGill University Alumni students mentoring program.

I have asked Jennifer to be a guest columnist and write occasional columns comparing IEEE in Ottawa and in NH.

I hope that it will not be “Goodbye” but “Until we meet again!”

## Tin Whiskers

We have a first this month in my seven or eight years experience of editing section newsletters, namely a technical paper.

I have been talking for several months with Bob Landman, an IEEE Senior Member of the section and President of H&L Instruments, about the unintended consequences of the EU's RoHS (Removal of Hazardous Substances) requirements which, among many other things, mandate the removal of lead from solder. Bob graciously offered to prepare an article, which turned into a technical paper, on this topic. See Bob's “article” on [Tin Whiskers](#) on Page 4.

## Geographic Distribution of Society Members

In the November 2007 Editor's column I discussed a beta tool that IEEE developed to let sections see the geographic distribution of their members. That tool appears to still be available at: [http://jape.ieee.org/sandbox/NH/NH\\_Demographics.html](http://jape.ieee.org/sandbox/NH/NH_Demographics.html).

Last month they developed another beta tool that can be tried at: [http://jape.ieee.org/sandbox/NH/NH\\_Demographics\\_by\\_society.html](http://jape.ieee.org/sandbox/NH/NH_Demographics_by_society.html)

This tool allows us to see where the members of specific societies are located in NH. It is better than the previous tool in that it shows the number of members by town, rather than by individual zip codes, which reduces the visual clutter in the display. It also shows all the members and not just those in zip codes with 10 or more members.

I had hoped that we might find clusters of members of a specific society around a university or an employer's location. That would allow us to hold our chapter meeting where you our members are located.

Unfortunately, in all but one case, the members of societies are distributed just about the same as the total membership, and I guess this is what I should have expected. The one exception is the EMBS Society whose membership is clustered more to the North and meetings in the Concord area might be more central for them.

In case the tool is taken down, I have included the distribution of the Computer Society at: [http://ewh.ieee.org/r1/new\\_hampshire/Docs/2008-04-CS.jpg](http://ewh.ieee.org/r1/new_hampshire/Docs/2008-04-CS.jpg) and the EMBS at: [http://ewh.ieee.org/r1/new\\_hampshire/Docs/2008-04-EMBS.jpg](http://ewh.ieee.org/r1/new_hampshire/Docs/2008-04-EMBS.jpg)

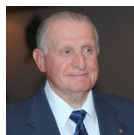
The green dots on the maps = 1-5 members, yellow = 6-10 and red = >10. In the Computer Society map I placed a number on the red dots to indicate the exact number of members.

### Feedback

Contact me at [james-w-anderson@ieee.org](mailto:james-w-anderson@ieee.org) if you have any comments about, or suggestions for, the newsletter or the Section.

# In This Issue

## Chairman's Thoughts



This month I will update you on the Help Us Grow campaign; say "Till We Meet Again" to Jennifer Ng Ain Kin; introduce our first technical paper; and discuss the geographic distribution of our society members.

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## Meet the Ex Com



This month it is my pleasure to introduce Paul Krell, a long time member of the Ex Com and the Chair of the Power Engineering Society Chapter.

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## Chapter and Group News

### Computer Society



Professor Jim Isaak announces a Tuesday, April 15, 7:00 - 8:00 PM, Panel on Serious Games at SNHU in Manchester. The panelists are:

Prof. Tom Adamson, Alfred Thompson, and Prof. Greg Walek. For more details go to:

[http://ewh.ieee.org/r1/new\\_hampshire/Docs/2008-04-CS.pdf](http://ewh.ieee.org/r1/new_hampshire/Docs/2008-04-CS.pdf).

Please support us by posting this meeting notice at work or school.

### Joint Com-Sig Society



Ravi Subrahmanyam and Kenric Nelson report on their recent planning meeting and plans for future meetings.

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### Techniques Society



Tom Perkins reports on the March 12th presentation "Whatever Happened to Design Productivity?" by Dr. Michael Heimlich. Tom invites us to

attend the International Microwave Symposium (IMS), in Atlanta, GA on June 15 - 20, 2008 and asks us to get involved in planning the IMS in Boston on June 7 - 12, 2009.

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### Power Engineering Society



Paul Krell announces a Tuesday, April 15, 6:00 - 8:00 PM meeting and plant tour at the GE Meters Facility in Somersworth, NH. Mr. Robert E. Lee

will give a presentation on Metering in the Smart Grid. Pizza and beverages will be provided. RSVP required by noon on Monday April 14<sup>th</sup>. For more information go to:

[http://ewh.ieee.org/r1/new\\_hampshire/Docs/2008-04-PES.pdf](http://ewh.ieee.org/r1/new_hampshire/Docs/2008-04-PES.pdf).

Please support us by posting this meeting notice at work or school.

### WIE New Hampshire News



This month WIE Vice Chair Jennifer Schelly announces a tour of the Seabrook Nuclear Facility on Tuesday, May 20<sup>th</sup>, 6:00 - 9:00 PM.

Dinner will be provided. Reservations are limited. **RSVP required** by May 13th.

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## Other Chapter Contact Information

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### Pre-University Activities



Don Sherwood reports on the Bow 2<sup>nd</sup> Graders "Sound Off". Don invites us to participate in the Newmarket Spring Career Fair on Thursday April 17 from 8:30 until 11:15 AM and he

passes on a request for Science and Engineering Fair Judges in Worcester, MA on May 7<sup>th</sup> and June 7<sup>th</sup>.

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### PETAC - Reduced Funding



Jennifer Ng Ain Kin reports on the elimination of the federal Career and Technical Education State Grants which will result in a reduction of 28% in NH's budget in this area. She suggests the people that we should contact.

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### Student Activities



Garrett Partridge reports on the Guitar Hero III competition at the IEEE UNH Durham Student Branch. He also announces a presentation by Fairchild Semiconductor.

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Nita Patel announces the section's participation in the Dartmouth Engineering Open House and Exposition on Friday, April 11 from 5:30 to 8:00 PM.

We hope that you will join us. (Page 9)

## Other Articles

### Tin Whiskers



Section member Bob Landman, President of H&L Instruments, [rlandman@hlinstruments.com](mailto:rlandman@hlinstruments.com), has written a technical paper on the effect of the EU's RoHS regulations on the growth of tin whiskers and the reliability of electronic equipment. Bob has graciously provided us with a PowerPoint presentation based on the paper at: [http://ewh.ieee.org/r1/new\\_hampshire/Docs/2008-04-Tin-Whiskers.ppt](http://ewh.ieee.org/r1/new_hampshire/Docs/2008-04-Tin-Whiskers.ppt) and the paper at: [http://ewh.ieee.org/r1/new\\_hampshire/Docs/2008-04-Tin-Whiskers.pdf](http://ewh.ieee.org/r1/new_hampshire/Docs/2008-04-Tin-Whiskers.pdf) There is also list server you can subscribe to by sending email to [tinwhiskers-request@freelists.org](mailto:tinwhiskers-request@freelists.org) with 'subscribe' in the Subject field.



[Madeleine Lowe](#) fills us in on her activities as she prepares for the launch of the PACE committee. (Page 9)

### New Hampshire in 2018??



Jim Isaak reports on the forum "What Will NH be like in 2018?", sponsored by Leadership NH on March 11<sup>th</sup> and he speculates how this may affect the section and its members. (Page 10)



### NH Joint Engineering Societies Conference

Tom Perkins announces that this year's theme is "A Symposium on Green Energy Applications." The program for the Thursday,

October 9<sup>th</sup> conference is available at: [http://ewh.ieee.org/r1/new\\_hampshire/Docs/2008-04-NHJES.pdf](http://ewh.ieee.org/r1/new_hampshire/Docs/2008-04-NHJES.pdf)

Please support us by posting this meeting notice at work or school.

### UNH Durham Energy Conference



Professor Gordon Kraft announces the June 20-21 Energy Conference at Kingsbury Hall. For more information check their website at:

[http://www.ece.unh.edu/energy\\_conference/energy.pdf](http://www.ece.unh.edu/energy_conference/energy.pdf)

Please support UNH Durham by posting the flier below at work or school.

[http://ewh.ieee.org/r1/new\\_hampshire/Docs/2008-04-UNH-Conf.pdf](http://ewh.ieee.org/r1/new_hampshire/Docs/2008-04-UNH-Conf.pdf)

### Membership Activities



Stuart H. MacPherson congratulates two new Senior Members, Robert Roy and Martin Wybourne, and reminds us about retirement options and the Senior Member Campaign. (Page 11)

### Brain Teaser Challenge



Butch Shadwell provides us with the answer to last month's challenge about kamikaze fruit flies, and this month he challenges us to calculate the effect of a 10,000 stereo on a car's millage and acceleration. (Page 11)

### Safeguarding Your Business Facility

UNH is holding a one day seminar on Wednesday, April 16<sup>th</sup> at UNH Pease Tradeport, Portsmouth. [http://ewh.ieee.org/r1/new\\_hampshire/Docs/2008-02-UNH-Security.pdf](http://ewh.ieee.org/r1/new_hampshire/Docs/2008-02-UNH-Security.pdf)

### Other Meetings of Interest (Page 12)

### WANTED

We need additional Section Photographers, and "How I Became interested in Engineering" articles. (Page 13)

### Questions and Answers (Page 14)

## Meet the Ex Com

By *Jim Anderson*

[james-w-anderson@ieee.org](mailto:james-w-anderson@ieee.org)



It is my pleasure to introduce Paul Krell, a long time member of the Ex Com.

Paul A. Krell graduated from the Georgia Institute of Technology in 1987 with a BSEE. He served for ten years as an engineer for Public

Service Company of New Hampshire, working in both the Distribution Engineering and the System Protection and Control departments. Since 1998, Paul has served as the Senior Distribution Engineer in the Distribution Engineering Department at Unitol Service Corporation, an electric utility with operations in New Hampshire and Massachusetts. He has twenty-one years experience in the planning, design, analysis and protection of electric utility distribution systems, and is a licensed Professional Engineer in the State of New Hampshire.

Paul is presently the chair of the New Hampshire Chapter of the IEEE Power Engineering Society. He joined the IEEE as a student member in Georgia in 1986, and became an IEEE member in 1987. In 1988, he became a member of the IEEE Power Engineering Society, and has been active with the PES and served various officer positions for most of the years since then.

When he's not working, Paul loves spending time with his family, hiking, skiing, and watching the Red Sox. He enjoys the variety of activities that New Hampshire and northern New England offer – the mountains, the beach, Boston, the winter

snow, maple sugar time in the spring and the fall foliage.

## Chapter and Group News

### Joint Com-Sig Society

By *Ravi Subrahmanyam and Kenric Nelson*

[Ravi.Subrahmanyam@ieee.org](mailto:Ravi.Subrahmanyam@ieee.org)

[kenric.nelson@ieee.org](mailto:kenric.nelson@ieee.org)



The paper-work for the Joint Chapter of the Communications and Signal Processing Societies in the NH Section

has been finalized and the chapter is now official. The next step is to hold elections and formalize the section officers. An announcement regarding this will be made in next month's newsletter.

A planning meeting was held at the Giant of Siam restaurant in Nashua, NH, on March 27th where we discussed activities for the remainder of the year. As of now, we are planning to hold two more major talks, one in late spring (before the start of the summer vacation season), and one in the fall. In addition, we plan to have informal dinner meetings approximately every 6-8 weeks. The idea is to meet other members, and possibly give short 10 to 15 minute talks on topics of interest to the attendees; this would be a golden opportunity for members to tell others about their areas of expertise, so please contact the chapter chairs if you would be interested in attending, and also watch for the notice in the

newsletter.

For the next talk, we are tentatively planning a lecture on "Introduction to 40Gbit /100Gbit Ethernet" in the late May to early June time frame. This will be an introduction to the emerging discussion on the next step in the Ethernet story, and should be of interest to many of our members from the area who work in telecommunications. A detailed announcement will be made in next month's newsletter.

We have made a mailing list of the members who signed the chapter petition and a few others who have expressed interest in the joint chapter's activities. We will use this list to announce plans and activities. Please inform us if you would like to be included in the mailing list. You don't have to be a Society member or even an IEEE member to be on the list, so members of other societies who might be interested are welcome to join as well.

## Microwave Theory and Techniques Society

By *Tom Perkins*

[tomperkins@ieee.org](mailto:tomperkins@ieee.org)



On March 12 Dr. Michael Heimlich of Applied Wave Research spoke on the subject; "Whatever Happened to Design Productivity?" at BAE Systems, Nashua. There were 13 engineers in attendance, 11 members, and 2 non-members. Dr. Heimlich is

a local member of our NH Section. Several folks who could not attend have asked for copies of

the presentation which we hope to post on the Section website soon.

Prior to IBM's introduction of the personal computer, RF / microwave design engineers have endeavored to apply computing technology to the automation of product development. Electronic Design Automation (EDA) has seen many great successes but have all of the promises been fulfilled? Does design productivity ride Moore's Law year after year or have we hit the Sound Barrier that can only be punched through by looking at the design process in a fundamentally new way? This talk provided an overview of design flow, a brief history of what has been accomplished in microwave EDA, and a discussion of what seems to be lacking and what lies ahead for high frequency design.

The talk was quite thought provoking and put the whole evolution of microwave CAD in an interesting perspective. We thank Dr. Heimlick and his associate Randy McAdam for this talk.

Microwave Theory and Techniques International Microwave Symposium, Atlanta, GA - June 15 - 20, **2008**. Registration is now open on the website; [www.ims2008.org](http://www.ims2008.org). Hotel rooms are booking quickly. The complete Program book (about 100 pages) is also posted. See you there!

Microwave Theory and Techniques International Microwave Symposium, Boston, MA - June 7 - 12, **2009**. Several of our NH Chapter members are on the Symposium Steering Committee including Candice Brittain, Dr. George Duh, Dr. Jim Komiak, Tom Perkins, Don Sherwood, and Dr. Philip Smith. Boston always draws record attendance and this one promises to have some interesting innovations. If you wish to assist, contact me or the General Chair; Fred Schindler,

[MSchindler@rfmd.com](mailto:MSchindler@rfmd.com).

## WIE New Hampshire News

By *Jennifer Schelly*

[Jennifer.Schelly@baesystems.com](mailto:Jennifer.Schelly@baesystems.com)



**Powering the Future - Behind the Scenes Tour of Seabrook Nuclear Facility - Tuesday, May 20<sup>th</sup>**

Have you ever wondered what it'd be like for Homer Simpson at a real Nuclear Power Plant? Here's your chance to find out, come

join us for an intriguing look behind the scenes at a nuclear reactor! Reservations are very limited. RSVP at [www.swesnh.org/Seabrook](http://www.swesnh.org/Seabrook) by May 13<sup>th</sup>. This is a joint SWE and WIE Event.

### Agenda:

6:00-7:00 - Dinner, Presentation, Q&A, Paperwork

6:15 - CUTOFF, IF YOU ARE NOT HERE, YOU WILL NOT BE ALLOWED ON THE TOUR!

7:00-7:30 - Walk into Plant, Security In-Processing

7:30-9:00 - Tour, Security Out-Processing

IEEE Women in Engineering (WIE) is dedicated to important issues for Women Engineers. Affinity groups provide the opportunity for members to network at a local level. All members (male and female) are encouraged to join and participate in their local group activities to promote growth within the WIE. For more information go to: [http://ewh.ieee.org/r1/new\\_hampshire/wie/index.html](http://ewh.ieee.org/r1/new_hampshire/wie/index.html)

## Other Chapter Contact Information



### Engineering in Medicine and Biology Society

By *Wayne Smith*

If you have any suggestions for meeting topics or speakers; or if you would like to become active in the Chapter please contact me at:

[wjsmith@cisunix.unh.edu](mailto:wjsmith@cisunix.unh.edu)



### Power Electronics Society

By *Kenric Nelson*

The Chapter is dormant at the present time. If you would like to explore reactivating the Chapter please contact me at:

[kenric.nelson@ieee.org](mailto:kenric.nelson@ieee.org)

## Pre-University Activities

### Bow 2<sup>nd</sup> Graders "Sound Off"

By *Don Sherwood*

[donsherwood@ieee.org](mailto:donsherwood@ieee.org)



I was delighted to be invited by my granddaughter's teacher, Lois Ambra, to present a short exercise on sound to her students in the second grade class at the Bow Elementary School.

The demonstrations and hands on activities were selected to reinforce the concepts of pitch and intensity, which the students had already learned. A great website that has a number of sound related activities applicable for grade school students can be found at:

<http://wow.osu.edu/experiments/sound/soundlist.html>.



Granddaughter Haley assists with “Slinky Waves”

After getting through the necessary definitions, the fun stuff could start. A slinky provided a great visual demonstration of how sound waves travel forward and reflect back, like an echo. The students were paired together, given a string telephone, and asked if they could hear the difference when the string was loose and then tightened. This simple toy works remarkably well and demonstrates that sound can travel through material other than air.



Students trying out string telephones

Two sections of different length pipes were resonated so the students could hear how pitch relates to length. I could never get these to sound as good as the ones used in Blue Man Group. A speaker was used to demonstrate intensity. As the volume of a low frequency tone was increased, the student could see the cone extend further and feel the air being moved as the sound got louder.



A speaker provides touch, visual, and auditory feedback

For a class project, each student assembled a simple single stringed instrument using an elastic band. Half the class was given a short string; the other half had a long string. After the instruments were assembled and “tuned”, they were asked to compare the difference in sound. I’m happy to report that they all understand how pitch is related to length.



Students discussing difference in pitch due to length of string

I had a lot of fun preparing the activities for this exercise. The kids were great. They were attentive during the demonstration periods and enthusiastically completed all the hands on activities within the time limit. Congratulations to Ms Ambra’s second grade students!

## Newmarket Spring Career Fair

The NH Section has reserved a table at the Newmarket Spring Career Fair on Thursday, April 17. This program runs from 8:30 until 11:15 AM. During this time students will approach the participants’ tables. There will be three ‘waves’ of students beginning with juniors and seniors, then ninth and tenth graders, and then students in grades six through eight. Each group has about 45 minutes in the gym. Hopefully, they will be prepared to ask meaningful questions and to interact with us. We will have hands-on demonstrations and handouts available.

The fair is a wonderful opportunity for you to share your expertise about your work with very curious and motivated students, as well as a chance for you to showcase your company /

organization / discipline and network with other professionals

I know this is short notice, but it would be great if a representative from each of our chapters could be present at our table to talk to the students. It would be even greater if each chapter could bring a demonstration of their technology to provide a hands-on activity for the students to get excited about. If interested please contact me at: [donsherwood@ieee.org](mailto:donsherwood@ieee.org)

## Judges needed for Engineering and Science Fairs in Worcester, MA

Judges are such a key component to the success of the Fairs that I want to let you know of the dates this year as soon as possible and invite you to please volunteer to judge at either or both the regional or state middle school fairs. Each year these relatively new fairs get better and larger. The students are amazing and can benefit greatly from talking with a scientist or engineer about their projects.

The Worcester County Regional Middle School Science and Engineering Fair judging will be on Wednesday, May 7, 2008 from 8:30 AM to noon in Alden Hall at Worcester Polytechnic Institute.

The Massachusetts State Middle School Science and Engineering Fair judging will be on Saturday, June 7, 2008 from 8:30 AM to noon in Worcester (specific location will be announced soon).

If interested, please contact Karin Spahl at 508-856-1529 or [Karin.Spahl@umassmed.edu](mailto:Karin.Spahl@umassmed.edu) Please include phone and /or e-mail contact information.

## PETAC - Reduced Funding

By Jennifer Ng Ain Kin  
[jng@ieee.org](mailto:jng@ieee.org)



### Pre-Engineering Technology Advisory Council (PETAC)

In February the U.S. Department of Education gave a summary of the 2009 Fiscal Year Budget and listed the programs to be eliminated. See

link at:

<http://www.ed.gov/about/overview/budget/budget09/summary/edlite-section3.html#overview>

One line item (Career and Technical Education State Grants) from the list will directly affect the pre-engineering programs (such as Project-Lead-The-Way and Engineering-by-Design) in NH. It is as follows:

*Career and Technical Education State Grants - \$1,160.9*

*Provides funds to strengthen career and technical education programs at the secondary and post-secondary levels. Funds would be redirected to support programs that aim to improve the quality of high school education, particularly for students who are struggling academically and are likely to drop out or to graduate without the education needed to succeed in postsecondary education or the workforce.*

The current estimated budget for New Hampshire's Tech Prep program for next year will be decreased by **28%**.

## What does that mean to New Hampshire?

Some background: New Hampshire's Tech Prep funds are primarily used to identify new and emerging curriculum that results in high skill, high wage employment. The Tech Prep staff work with NH schools and colleges to implement and / or upgrade career based high tech educational programs to meet industry standard. Substantial curriculum development, professional development and equipment upgrades have occurred as a direct result of Tech Prep funds. There are also design programs with the colleges to offer dual high school and college credit, early college and other advanced standing opportunities that have saved NH's youth money as to go on to college.

In general, these could be the expected cuts and reduction due to the decrease:

- Professional development for teachers and guidance counselors to enhance curriculum and gain knowledge of various career technical programs could be eliminated.
- Curriculum development support for career programs to meet industry standards will be impacted.
- Marketing efforts to assist NH students / parents / counselors in understanding the nature of NH's economy could be eliminated. For example: Working with NH manufacturers to develop materials that show the high skill, high wage nature of NH's advanced manufacturing companies.
- Inability to hire the staff to market engineering and pre-engineering curricula to NH schools. This directly impacts that states matching funds to assist grades 6-12 schools to build pre-engineering education.



## What can you do?

Please email to the following people to express your concerns and demand some explanations on the cuts and engage them into re-instating the funds.

Senator Judd Gregg, (R - NH)  
Approp. Budget Education  
<http://gregg.senate.gov/sitepages/contact.cfm>

Senator John Sununu (R - NH)  
[mailbox@sununu.senate.gov](mailto:mailbox@sununu.senate.gov)

Representative Carol Shea-Porter (D - 01)  
<http://shea-porter.house.gov/?sectionid=84&iontree=84>

Representative Paul Hodes, II (D - 02)  
<http://hodes.house.gov/contact.aspx>

If you are interested to know more about PETAC activities, do not hesitate to contact me at [jng@ieee.org](mailto:jng@ieee.org)

## Student Activities

### UNH Durham Student Branch

By Garrett Partridge  
[gwp@unh.edu](mailto:gwp@unh.edu)



The Durham Student Branch has been actively thinking of events for the semester. There was a Guitar Hero III competition on April 3rd, 2008. Prizes and food were offered and Microsoft promoted DreamSpark. We have contacted Fairchild

Semiconductor and they will be giving a technical lecture on Moore's Law sometime in April.

Elections will be later in the year and the soda machine sales have been doing well for fund raising.

### Dartmouth Engineering Open House and Exposition

By Nita Patel  
[nita.patel@ieee.org](mailto:nita.patel@ieee.org).



Interested in touring the student project labs at the new MacLean Engineering Sciences Center at the Thayer School of Engineering at Dartmouth. Here's your opportunity! On Friday, April 11, 2008 from 5:30 - 8:00 PM, you can visit their machine shop, laser lab, ice lab, bone lab, ethanol lab,

and the Dartmouth Formula Racing and Formula Hybrid workshops. You can view a promotional video and obtain directions at <http://engineering.dartmouth.edu/news-events/events/openhouse.html>.

Stop by the IEEE NH Section exhibit while you are at Dartmouth and meet the NH Section Chair, Jim Anderson. If you would like to help man the exhibit, please contact me.

## OTHER ARTICLES



My name is Madeleine Lowe and I've volunteered to take over the position of PACE chairman from

Duncan Morrill who served in that capacity for as long as I can remember. I moved to NH over 25 years ago and have been involved in the NH section on and off for most of those years including holding most of the executive committee positions. I am currently self employed as a consultant.

PACE (or the Professional Activities Committee for Engineers) is new to me and I hope to share my observations as I come up to speed with my new responsibilities. I will be jump starting this by attending the 2008 IEEE-USA Annual Meeting "Green Engineering: A Push Toward Sustainability" next month.

Currently there has been a lively discussion among members of the executive committee regarding the licensure of software engineers. If you have any thoughts on the matter, please email me at [m.lowe@ieee.org](mailto:m.lowe@ieee.org).

I look forward to learning more about this aspect of IEEE and organizing activities for our section.

## New Hampshire in 2018??

By Jim Isaak

[NHIEEE04@jimisaak.com](mailto:NHIEEE04@jimisaak.com)



A forum on "What Will New Hampshire be like in 2018?", sponsored by Leadership New Hampshire, was held on March 11th. Here is a summary of key points raised that will / may affect the IEEE NH Section and our members.

### 1. New Hampshire is aging faster than the rest of the U.S.

Peter Francese presented a film trailer and a disconcerting trend which will be documented in an upcoming NH NPR special: Communities and Consequences which will air on PBS (Channel 11) on 4/14/2008 at 8:00 PM and again on 4/16/2008 at 9:00 PM.

The aging of New Hampshire is the result of two trends, beyond the baby boomers getting older:

- a) We are attracting 50+ retirees, just like Florida, but presumably for different reasons.
- b) Our kids are leaving the state (from high school, or after college) and the influx of high-tech 30-45 year old professionals is slowing.

This means few entry level professionals in the state creating a pressure on businesses, and in some cases causing them to leave the state. The film points out that the recent "keep kids out" movement of towns is working. An example is Hollis, which is buying up development rights on land to hold down the growth of new housing that would draw more kids into the school systems. I can speak personally to the accuracy of this rationale.

See:

<http://www.communitiesandconsequences.org/> for details (copies of the book are in every NH Library) and <http://www.nhfuture.org/> the NH Forum for the Future for a related event on April 22.)

This impacts how the Section's pre-university activities play out.

### 2. Well educated immigrant community

Demographic trends were addressed by Steve Norton of the NH Center for Public Policy Research <http://www.nhpolicy.org>. Besides confirming the above, he pointed out that this is changing the balance of NH's electorate. Also that a fast growing segment of college educated professionals in NH are foreign born. There is an interesting potential in seeking to connect with these communities (and maybe other segments of our immigrant community) to build a broader technical community. [a report "What is New Hampshire?" is available at [nhpolicy.org](http://nhpolicy.org) with lots of good demographic info.]

### 3. "Retiring" boomers influencing opportunities

Ross Gittell of UNH, the leading expert on the NH economy, indicates that the 50+ influx is going to redefine retirement, probably by starting up virtual corporations that will be very small, global in operations, and involve significant networking as part of their operations. (this being people to people networking, but infrastructure can facilitate that)

Jim Isaak's take: Many of these will be in IEEE's areas of interest, and we should consider how we can set up the environment where these folks can make it happen. If we can tie into this set of activities, these professionals can become key

players in our mentoring activities, speakers at our various functions, targets for supporting pre-university programs, etc. A resource base that we should draw upon.

### 4. We are under-utilizing professional women

Katie Merrow, Executive Director of the Woman's Policy Institute, presented some interesting numbers including that there are more college educated women in NH, in the key 30-45 age range for employment, than men.

Most frustrating: in the top ten job growth areas in NH, the greatest salary is in Software Engineering, which is dominated by men (shouldn't be, but it's a fact) and the greatest opportunities in jobs dominated by women are in below sustainable wage incomes (health services jobs are largest) <http://www.nhwpi.org/>.

### 5- Summary of opportunities for the IEEE NH Section:

- Find a way to engage the 50+ entrepreneurs involved in our areas of interest (mentors, professional network, etc.)
- Get the message out to pre-college students about the top jobs and viable wages
- Find ways to draw the educated base of women in our areas of interest into our activities, etc.
- Find a way to engage our college educated immigrant communities.
- Engage (PACE?) with some of these forums on a closer basis to see where we can partner and bring value to the table.

## Membership Activities

By Stuart H. MacPherson

[stuart.macpherson@ieee.org](mailto:stuart.macpherson@ieee.org)



### Congratulations to Two New Senior Members

Congratulations to Robert Roy and Martin Wybourne! They are the first two Senior Members in the NH Section this year. We have

one more member who was before the review board two weeks ago.

Your NH Section will continue this year in taking an active role in supporting those who desire and qualify to become a Senior Member. Now is a good time, before spring is in full swing, to seriously consider upgrading. If you already have a resume, the process is simple, straightforward and not time consuming. I have not heard of any issues with the process. Over the past year, there has been a steady stream of Senior elevations and everyone who has applied, has passed the review board. The process is based upon success. Please send me an email with your request!

If you are considering retirement, you need not retire from IEEE. You may be qualified as a Life Member. Life Members are IEEE members who are at least 65 years of age and who have been a member of IEEE long enough that the sum of their years as a member and their age are 100 years or greater. The great benefit of a Life Membership is that your dues and regional assessments are waived every year! You are encouraged to stay as a member and to stay active. If you are about to be qualified as a Life

Member, you will be contacted by the end of the year and you become a Life Member automatically on January 1<sup>st</sup>. Also, if you have been a Society member for at least five years, Society fees are waived too! Therefore, if you are considering retirement, determine when you will qualify. Keep your membership active and become a Life Member!

Remember, qualifications are straightforward: "... a candidate shall be an engineer, scientist, educator, technical executive or originator in IEEE-designated fields. The candidate shall have been in professional practice for at least ten years" (a PhD is equivalent to five years practice, or an MS to four years, or a BS to three years) " and shall have shown significant performance over a period of at least five of those years." .

If you believe you have met the fundamental requirements, your colleagues are willing to support you in seeking Senior Membership.

The Section Membership Development Committee has created a web page describing the simple steps to guide you through the process: simply go to [http://www.ewh.ieee.org/r1/new\\_hampshire/sm.html](http://www.ewh.ieee.org/r1/new_hampshire/sm.html) for details. Highlights are:

- Besides the application, three references must be submitted supporting your nomination. The references must be Senior or Fellow grade Members.
- If you are being nominated by a Section, Society or Affinity Group, only two other references are required.
- It is understood that it may be difficult for some candidates to find references. However, your Section is willing to support you: provide us with a recent CV or resume and a draft applica-

tion form, we can then write a nomination letter from the Section.

- We have gathered a short list (~20) of Senior and Fellow Members who are willing to review your application and CV/resume, and based on those materials (and possibly emails and phone calls) will provide you with a reference.

The other members of the committee are: Tom Perkins, Past Section Chair; Jim Anderson, Section Chair; Duncan Morrill, and Jennifer Ng Ain Kin. If you are considering Senior Member elevation, please contact us at [nhieee-membership@ieee.org](mailto:nhieee-membership@ieee.org)

## Brain Teaser Challenge

By Butch Shadwell

[b.shadwell@ieee.org](mailto:b.shadwell@ieee.org)



### Last Month's Solution

Last month I told a story about suicidal fruit flies. A high school student was trying to determine "...how many fruit flies it takes to screw in a light bulb. The feat was accomplished by taping a tongue depressor to a light bulb forming a lever arm, and training the insects to hurl their tiny bodies at it at full speed, 1 m/s. Let's say that all of them will hit the tongue depressor (at an angle normal to the surface) at exactly the same place, 10cm to one side of center axis of the bulb. If a fruit fly weighs .05 grams and the bulb requires 200 dyne-cm of torque to overcome the thread friction, how many flies must hit the depressor per second to supply the correct average force to advance the bulb? Assume elastic collisions where

all momentum is converted to driving force, no heat and no bounce.”

I'm sure that all of you as you read this problem were remembering your physics professors telling you that the units always have to come out right if the equation is correct. In answering this problem, we are actually calculating the deceleration rate required for the given momentum, in order to generate 20 dynes of force (due to the mechanical advantage provided by the tongue depressor). So the equation could take the form of  $X/s * (.05g * 100cm/s) = 20 g\text{-cm/s}^2$ , where X is the number of flies. Of course I converted all units to CGS, and if you check, the units do come out right, i.e. all units cancel. So the correct answer to this BTC is 4 fruit flies per second, bashing their little heads into the wooden stick, is the least that is required to screw in this light bulb. Even though only one person has sent me the correct answer at the time I am writing this, I bet you all already knew that.

### This Month's Challenge

My wife really hates the road noise outside our home in Jacksonville. She thinks the DOT has intentionally used a special paving material just to bug her. On top of the usual tire noise there is a lot of construction going on as well. We find there is a constant supply of fresh dust in our air from all of the earth movers. And perhaps the biggest annoyance is of course the cars with the 10,000 watt sound systems that shake the house as they go by. I wish someone would explain to them how much that excessive noise also costs them in gas mileage and acceleration ability.

Maybe we can calculate something meaningful. Let's say we start with a Scion sedan that weighs

1800 pounds. I suspect they are actually lighter than this. And we will say the little engine produces 90 horsepower. For this calculation we will assume that there is a linear relationship between the mass of the vehicle and its miles per gallon of fuel, and the rate of acceleration at a given engine available horsepower. So if this car normally can get from 0 to 60 mph in 9 seconds and gets 35 mpg, what would the stats be if we added a 350 pound sound system that pulls 10,000 watts? I think I will pass on this sound system upgrade.

Reply to Butch Shadwell at [b.shadwell@ieee.org](mailto:b.shadwell@ieee.org) (email), 904-223-4510 (fax), 904-223-4465 (v), 3308 Queen Palm Dr., Jacksonville, FL 32250-2328. (<http://www.shadtechserv.com>) The names of correct respondents may be mentioned in the solution column.

### Other Meetings of Interest

Please let me know if you are aware of other meetings that might be of interest to our members. We each belong to different societies, read different publications, work in different industries, and surf different web sites. So if you see any interesting meetings or conferences please send me the notice or the URL.

To keep the list manageable I have limited it to meetings in North America during the next six months.

Jim Anderson [james-w-anderson@ieee.org](mailto:james-w-anderson@ieee.org)

#### April 14 - 17, 2008

Spring Simulation Multiconf.  
Crowne Plaza Ottawa, Canada  
<http://www.scs.org/confernc/springsim/springsim08/cfp/springsim08.htm>

#### April 14 - 18, 2008

Embedded Systems Conf. and Expo.  
McEnergy Convention Center, San Jose, CA  
<http://www.cmp-egevents.com/web/esv/home>

#### April 21 - 23, 2008

Organic Photovoltaics  
Doubletree Hotel, Philadelphia, PA  
[www.intertechusa.com](http://www.intertechusa.com)

#### April 21 - 24, 2008

Transmission & Distribution Conf. and Expo  
Chicago, Illinois  
[t.w.mayne@ieee.org](mailto:t.w.mayne@ieee.org)

#### April 25 - 27, 2008

33<sup>rd</sup> Annual Trenton Computer Festival  
The College of New Jersey, Ewing, NJ  
<http://www.tcf-nj.org/web/>

#### April 28 - 30, 2008

IEEE Sarnoff Symposium  
Nassau Inn, Princeton, NJ  
[http://ewh.ieee.org/r1/princeton-centraljersey/2008\\_Sarnoff\\_Symposium/index.html](http://ewh.ieee.org/r1/princeton-centraljersey/2008_Sarnoff_Symposium/index.html)

#### April 29 - May 1, 2008

Green West Expo & Conf.  
Los Angeles Calif.  
<http://www.greenwestexpo.com/>

#### April 30 - May 2, 2008

Small Fuel Cells  
Omni Hotel at CNN Center - Atlanta, GA  
<http://www.knowledgepress.com/events/8011207.htm>

**May 12 - 13, 2008**

IEEE Conf. on Technologies for Homeland Security  
Westin Hotel, Waltham, MA  
[www.ieeehomelandsecurityconference.org](http://www.ieeehomelandsecurityconference.org)

**May 13 - 15, 2008**

NIST - ATIS - IEEE Workshop on Synchronization in  
Telecommunication Systems (WSTS '08)  
Broomfield, Colorado  
<http://tf.nist.gov/seminars/ATIS/ATIS.html>

**May 14, 2008**

IEEE Workshop on Critical Infrastructure, Critical  
Embedded Systems & Design Methodology for  
Global Security  
Westin Hotel, Waltham, MA  
[www.critical-embedded-sys.com](http://www.critical-embedded-sys.com)

**May 18 - 20, 2008**

IEEE Conf. on Electro/Information Technology  
Ames, Iowa  
<http://www.eit-conference.org/eit2008/cfp.asp>

**May 27 - 30, 2008**

International Conf. on Information Systems,  
Logistics and Supply Chain (ILS)  
The Pyle Center, 702 Langdon Street, Madison, WI  
<http://exed.wisc.edu/ils/default.asp>

**May 27 - 31, 2008**

IEEE International Power Modulator Conf.  
Mandalay Bay Resort and Casino  
[www.cavs.msstate.edu/pmc2008](http://www.cavs.msstate.edu/pmc2008)

**June 8 - 12, 2008**

International Symposium on Electrical Insulation  
Renaissance Vancouver Hotel Harbourside,  
Vancouver, BC, Canada  
<http://ewh.ieee.org/conf/isei/index.html>

**June 15 - 20, 2008**

International Microwave Symposium  
Atlanta, GA  
[www.IMS2008.org](http://www.IMS2008.org)

**June 20 - 21, 2008**

UNH Energy Conf.  
Durham, NH  
[http://www.ece.unh.edu/energy\\_conference/](http://www.ece.unh.edu/energy_conference/)

**June 29 - July 2, 2008**

2nd International Symposium on Bio- and Medical  
Informatics and Cybernetics: BMIC '08  
Rosen Centre Hotel, Orlando, Florida  
<http://sciiis.org/BMIC2008>

**June 29 - July 2, 2008**

6th International Conf. on Politics and  
Information Systems, Technologies and  
Applications  
Rosen Centre Hotel, Orlando, Florida  
<http://www.socioinfocyber.org/pista2008>

**June 29 - July 2, 2008**

2nd International Conference on Knowledge  
Gener-ation, Communication and Management:  
KGCM 2008 Rosen Centre Hotel, Orlando, Florida  
<http://www.sciiis.org/KGCM2008>

**July 13 - 16, 2008**

IEEE International Professional Communication  
Conf.  
Concordia University, Montréal, Canada  
email [IPCC2008@gmail.com](mailto:IPCC2008@gmail.com)

**July 20 - 24, 2008**

PES General Meeting  
David L. Lawrence Convention Center and Westin  
Convention Center Hotel Pittsburgh, PA  
<http://ewh.ieee.org/cmte/PESGM08/>

**September 4 - 5, 2008**

Battery Power 2008  
New Orleans, LA  
[http://www.batterypoweronline.com/bp08\\_reg.php](http://www.batterypoweronline.com/bp08_reg.php)

**WANTED**

**Wanted - Additional Photographers**

Ravi Subrahmanyam has volunteered to be our  
photographer but his schedule will not allow him  
to cover all our events. Therefore, we need one  
or more additional volunteers to take pho-  
tographs at our Section events and meetings. If  
you are interested to help out, please email the  
Editor, Jim Anderson, at [james-w-anderson-  
@ieee.org](mailto:james-w-anderson@ieee.org)

**Wanted - Articles on “How I became  
interested in engineering.”**

Was it because you were always interested in tak-  
ing things apart and putting them back together  
(with “extra pieces”)? Was it by chance? Was it  
because you come from generations of engineers  
and this was your destiny? What was it? Please  
send me, Jim Anderson, ([james-w-anderson-  
@ieee.org](mailto:james-w-anderson@ieee.org)) your story on how you became inter-  
ested in Engineering and chose this profession.  
Every month, we will try to feature an article in  
the newsletter.

## Questions and Answers

**Q: Who are the NH Executive Committee members?**

A: The list of all the members and their contact information is found on the section website at [http://www.ewh.ieee.org/r1/new\\_hampshire/Officers.html](http://www.ewh.ieee.org/r1/new_hampshire/Officers.html)

**Q: Who do I contact about suggestions for the newsletter?**

A: The Editor, Jim Anderson, can be reached at [james-w-anderson@ieee.org](mailto:james-w-anderson@ieee.org)

**While we have had the most snow in 100 years, there are other places that appear to be worse.**



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**Q: How can I be removed from the mailing list or update my email address for section news?**

A: Send email to the NH Section Administrative Assistant, Donna Davis, at [NHIEEE@aol.com](mailto:NHIEEE@aol.com)

**Q: How do I start a new society chapter?**

A: Please refer to this site for details on eligibility and requirements: <http://www.ieee.org/portal/pages/tab/cha/newchap.html>

**Q: Why doesn't the URL [http://www.ieee.org/nh\\_section](http://www.ieee.org/nh_section) work?**

A: The URL is case sensitive and you must use [http://www.ieee.org/NH\\_Section](http://www.ieee.org/NH_Section).