



The First Green Technology and Service Workshop

“Trend, Innovation, and Opportunity”

Proceedings

Friday, March 20, 2009
Taipei Economic and Cultural Office in New York
1 East 42nd Street, New York, NY 10017 U.S.A.

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Workshop Theme

Concerns on the climate change, rising energy costs, resource constraints, and their potential social, economical, and political impacts, drive new trends in the development of green technologies on renewable energy production, efficient usage of energy, enabling technologies for green development, and reduction of green house gas emission. People are showing a much greater awareness of our impact on the environment and how we can minimize it.

The first EITC Green Technology and Service workshop is based on the concept that contributing to a sustainable environment is good business practice and that there are substantial economic opportunities in the field of green technology. The workshop will bring together leaders in research, design, investment, policy, and implementation of environmental practices in business. This is a fantastic opportunity for the business community to gather and explore this new challenge, and to learn how to create business value while contributing to environmental improvement.

The workshop will discuss some of the following topics:

- **Current and emerging technologies in green energy:** renewable energy sources, alternate fuel technologies, energy usage reduction technologies, etc.
- **Current and emerging technologies in green environment:** green house gas reduction, green building, green purchasing, green infrastructure, etc.
- **Current and emerging technologies in green business/services:** corporate social responsibility, sustainable manufacture, green supply chain, green workforce & operations, carbon management framework and strategy, carbon disclosure project (CDP), carbon trading, environmental compliance assessment and report, etc.

Program Topics

Green Energy

1. Energy Production

- Technology, Efficiency, and Safety Improvement of Current Generation Technologies
 - Nuclear Generation
 - Coal Gasification (Clean Coal Technology)
 - Combine Cycle
 - Combined Heat and Power (CHP)
- Renewable and Alternative Energy
 - Wind Generation
 - Solar Power (Thermal and Electricity)
 - Hydrogen Production
 - Tidal Wave
 - Geo Thermal
 - Marine Current
 - Bio Ethanol (Corn, Soy Bean, Sugar Cane, and Cellulosic)
 - Syngas Production
 - Bio Mass
 - Fischer Tropsch Fuels
 - Algal Bio Fuel
 - Bio Diesel
 - Energy Harvesting and Batteryless Operation

2. Energy Delivery

- Transmission System
 - Superconductor Cables
 - Carbon Nanotube Power Cables
- Smart Grid
 - Seamless Interconnection of Low Environmental Impact New Generation Technologies
 - Architecture & Communication Standards
 - Advanced Components & Operating Concepts
 - Advanced Monitoring & Demand Management
 - Advanced Modeling & Simulation Tools
- MicroGrid
 - Architecture & Communication Standards of MicroGrid

- Advanced Components & Operating Concepts
- Advanced Monitoring & Demand Management
- Autonomous and Non-Autonomous Operation of MicroGrid

3. Energy Consumption

- Efficient Usage of Energy
 - Demand Response
 - Smart House and Smart Appliances
- Green Technology in IT Industry
 - Green Technology
 - Green Computing
 - Green Services

Green Environment

1. Green Building

- Water Reuse
- Green Material
- Energy Saving

2. Solar Market and Trend

- Renewable Energy
- Solar Market
- Alternative Green Energy

3. Waste Management

- Waste Reduction
- Recycling
- Green Design
- Zero Waste

Green Business/Services

1. Corporate Social Responsibility
2. Sustainable manufacture
3. Green Supply Chain
4. Green Workforce & Operations
5. Carbon Management Framework and Strategy
6. Carbon Disclosure Project (CDP)
7. Carbon trading
8. Environmental compliance assessment and report

Workshop Program

Welcome remarks (09:00am - 09:10am)

Amb. Kenneth Liao (廖大使港民)
Director General of Taipei Economic and Cultural Office in New York

Opening speech (09:10am - 09:30am)

"Green Data Center"

Dr. Jen-Yao Chung (Conference Co-Chair)
Senior Manager, Industry Technology and Solutions, IBM T.J. Watson Research Center

"Renewable Energy and Future Smart Grid"

Prof. Wei-Jen Lee (Conference Co-Chair)
Director of the Energy Systems Research Center, The University of Texas at Arlington

Keynote speech (09:30am - 10:30am)

"Addressing Clean Energy Challenges with Nano Technology"

Dr. Pradeep Haldar
Professor and Head, NanoEngineering Constellation
Director, Energy and Environmental Technology Application Center
State University of New York at Albany

Break 10:30am - 11:00am

Session I: Green Energy (11:00am - 12:30pm)

Session Chair: **Prof. Wei-Jen Lee**
Director of the Energy Systems Research Center, the University of Texas at Arlington

"Smart Grid"

Mr. John Mucci
Vice President, Engineering and Planning,
Consolidate Edison Company of New York, Inc.

"Green Tech Trend, Challenges, and Opportunities"

Dr. Sean Shao-Hwa Wang
President, ITRI International Inc.
(a subsidiary of Industrial Technology Research Institute, Taiwan)

"A View on Hydrogen Economy in Large-Scale Power Generation"

Prof. Minking Chyu
Chair, Department of Mechanical Engineering and Material Science
Leighton Orr Professor of Engineering,
University of Pittsburgh

Lunch 12:30pm - 02:00pm

Session II: Green Environment/Sustainability

02:00pm - 03:30pm

Session Chair: **Dr. Chein-Chi Chang**, District of Columbia Water and Sewer Authority

"Resource Conservation and the Path to Zero Waste"

Ms. Jennifer McDonnell
Founder and President, Environmental Strategy Innovations, LLC

"Solar Market and Trend"

Dr. Ruey-Pyng Lu,
U.S. Department of Energy

"Green Building"

Dr. Chein-Chi Chang
District of Columbia Water and Sewer Authority

Break 03:30pm - 04:00pm

Session III: Green Business/Services

04:00pm - 06:00pm

Session Chair: **Dr. Jen-Yao Chung**
Senior Manager, Industry Technology and Solutions, IBM T.J. Watson Research Center

"Expansion of Renewable Energy and Clean Tech in a Dense Urban Environment: A Strategy"

Bruce Niswander
Director of the Office of Innovation Development, Technology Transfer
Polytechnic Institute of NYU

"Impact of Green Building on Global Warming"

Jeffrey S. Seigel, B.S., J.D., LEED AP
Director of Marketing & Business Development
Pavarini Construction, a division of StrutureTone

"The Green CIO – What CIOs are doing to improve the greening of the IT function"

Dr. Andres Fortino
Associate Provost, Polytechnic Institute of NYU
Board Member, Fairfield Westchester Chapter, Society of Information Management

Panel on "The Green CIO - Imperatives, Progress and Initiatives for Greening the CIO Function"

Panel Members:

Dr. Andres Fortino (moderator)
Associate Provost, Polytechnic Institute of NYU

Mr. Armand Keim
Adjunct Professor, Polytechnic Institute of NYU and former CIO

Jeffrey S. Seigel, B.S., J.D., LEED AP
Director of Marketing & Business Development, Pavarini Construction

Bruce Niswander
Director of the Office of Innovation Development, Technology Transfer
Polytechnic Institute of NYU

Abstracts and Biographies

Opening Speech

Workshop Co-Chair & Session Chair

"Green Data Center"

Jen-Yao Chung

Senior Manager
Industry Technology and Solutions
IBM T. J. Watson Research Center

ABSTRACT

Businesses are facing mounting challenges in the wake of the increasing cost of power, cooling and space requirements for the operation and maintenance of their Data Centers. And complex government environmental regulations are making this situation even more difficult. Innovative Green Technologies are emerging as a solution to these issues. Green Technology can improve energy efficiency through power aware software, efficient storage and computing systems. Using such emerging technologies as visualization, server consolidation and high density computing, "Green IT" can contribute to environmental awareness while reducing operating costs and complying with government regulations.

BIOGRAPHY



Jen-Yao Chung received the M.S. and Ph.D. degrees in computer science from the University of Illinois at Urbana-Champaign. He is the senior manager for Industry Technology and Solutions, IBM T. J. Watson Research Center, responsible for identifying and creating emerging solutions with focus on "Green Computing and Business". Before that, he was Chief Technology Officer for IBM Global Electronics Industry. Before that, he was senior manager of the electronic commerce and supply chain department, and program director for the IBM Institute for Advanced Commerce Technology office. Dr. Chung is co-Editor in Chief of the International Journal of Service Oriented Computing and Applications (published by Springer). Dr. Chung is the co-founder and co-chair of the IEEE technical committee on Electronic Commerce. He has served as general chairs and program chairs for many international conferences. He has authored or co-authored over 160 technical papers in published journals or conference proceedings. He is a Fellow of IEEE and a Distinguished Engineer of ACM.

Opening Speech

Workshop Co-Chair & Session Chair

"Renewable Energy and Future Smart Grid"

Wei-Jen Lee

Director and Professor
Energy Systems Research Center
University of Texas at Arlington
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ABSTRACT

According to Dr. Richard Smalley, a Nobel laureate, energy will remain as humanity's top ten problems for next 50 years. Though the oil price has dropped recently, the concerns on limited resources of fossil fuel and global warming remain the same. Renewable energy is a hot issue in today competitive market. Solar, wind, and hydrogen are among blistering subjects in the last few decades. This trend is expected to continue in the future.

Since most renewable energy technologies are intermittent in nature, it may have negative impact on the system security and service quality when they are direct connected into the grid. New technologies and operation strategies have to be developed to support the future smart grid development. This panel discusses the development of the renewable energy technologies as well as the opportunities and challenges to integrate them into the future smart grid.

BIOGRAPHY



Wei-Jen Lee (S'85-M'85-SM'97-F'07) received the B.S. and M.S. degrees from National Taiwan University, Taipei, Taiwan, R.O.C., and the Ph.D. degree from the University of Texas, Arlington, in 1978, 1980, and 1985, respectively, all in Electrical Engineering.

In 1985, he joined the University of Texas, Arlington, where he is currently a professor of the Electrical Engineering Department and the director of the Energy Systems Research Center. He has been involved in the revision of IEEE Std. 141, 339, 551, and 739. He is the Secretary of the IEEE/IAS, Industrial & Commercial Power Systems Department (ICPSD), the Committee Chairman of the Energy Systems Committee at ICPSD, and the associate editor of IEEE/IAS and International Journal of Power and Energy Systems. He is the project manager of IEEE/NFPA Collaboration on Arc Flash Phenomena Research Project.

Prof. Lee has been involved in research on renewable energy, power flow, transient and dynamic stability, voltage stability, short circuits, relay coordination, power quality analysis, demand response, on-line equipment protection, monitoring, and control system, and utility deregulation. He has served as the primary investigator (PI) or Co-PI of over seventy funded research projects. He has published more than one hundred sixty journal papers and conference proceedings. He has provided on-site training courses for power engineers in Panama, China, Taiwan, Korea, Saudi Arabia, Thailand, and Singapore. He has refereed numerous technical papers for IEEE, IEE, and other professional organizations. Prof. Lee is a Fellow of IEEE and registered Professional Engineer in the State of Texas.

Keynote Speech

"Addressing Clean Energy Challenges with Nano Technology"

Pradeep Haldar

Professor and Head, NanoEngineering Constellation
Director, Energy and Environmental Technology Application Center
Executive Director, Board Member and Founder of New Energy New York
State University of New York at Albany
Tel: 518-437-8684
e-mail: phaldar@uamail.albany.edu

BIOGRAPHY



Dr. Pradeep Haldar serves as Founding Professor and Head of the NanoEngineering Constellation at the College of Nanoscale Science & Engineering (CNSE) at the University at Albany, (SUNY). He is also Director of the Energy and Environmental Technology Applications Center at the College as well as Executive Director, Board Member and Founder of New Energy New York. At CNSE he has been actively involved in applying and integrating nanotechnology related innovations to solve engineering challenges related to energy efficiency, photovoltaic devices, fuel cells, thermoelectric devices, ultracapacitors and high temperature superconductors. He has partnered with several universities, start-ups and large companies in interdisciplinary technology research, development and outreach initiatives. He serves as founder, Board Member and Executive Director of New Energy New York Consortium and Chair, DOE NREL's Clean Energy Alliance. He has led and organized several initiatives including Tech Valley Energy Forum, NY Loves Energy, Power-Gen International Pavilion and New York Fuel Cell Network. Prior to joining the University at Albany, Dr. Haldar founded and served as Director of Technology and General Manager, of rapidly growing SuperPower, a new subsidiary of Intermagnetics (now Philips). His membership in professional organizations includes NYAS, MRS, TMS and AIP. Dr. Haldar is the author or co-author of over 250 reviewed technical papers, conference proceedings and has three patents issued and four pending. Dr. Haldar is a fellow of the Institute of Physics, Senior Member of IEEE and recipient of the President's Excellence in Research award and the Business Review's 40 under forty upcoming individuals in New York's Capital Region. He has played a key role in developing New York State's Hydrogen Roadmap, Superconductivity outreach programs, and the New York State Solar Roadmap. Dr. Haldar has his Ph.D. in from Northeastern University and an MBA from Rensselaer Polytechnic Institute.

Session 1: Green Energy

Session Chair

"The Opportunities and Challenges of Smart Development"

Wei-Jen Lee

Director and Professor
Energy Systems Research Center
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ABSTRACT

The electrical power system in the US has been named as "the supreme engineering achievement of the 20th century" by the National Academy of Sciences. While the power system is a technological marvel, it is also one of the major contributors of greenhouse gases. With the concern of global warming, the emission of greenhouse gases has drawn attention among the community. Many efforts have been made to fight climate change. The United Nations Framework Convention on Climate Change (UNFCCC) set out an obligation for all its signatory parties to establish national programs for the reduction of greenhouse gases. Building on the UNFCCC framework, the Kyoto Protocol (KP) sets legal binding limits on greenhouse gas emissions in industrialized countries and envisages market-based cap-and-trade mechanisms for achieving cost-effective emission reduction. The implementation of KP and some other constraints have changed the plan and operation of power systems significantly.

The current grid system of transmission lines was built on the assumption that all electricity would be generated at very large central plants. The system is inefficient because it is difficult for the system to adjust to the demand patterns efficiently. Upgrading the grid to meet the electricity needs and environmental constraints for the 21st century will be a vital step towards ensuring our economic viability and national security in the coming years.

The modernization of the electricity infrastructure leads to the concept of "smart grid". A comprehensive smart grid design should cover both top-down and bottom-up approaches. For the current centralized generation and transmission system, upgrading the power delivery infrastructure, enforcing the system security requirement, and increasing the data exchange capabilities are well known techniques to improve the reliability and the controllability of the power system. For the bottom-up approach, one of the most important features is its ability to support a more diverse and complex network of energy technologies. Specifically, it will be able to seamlessly integrate an array of locally installed, distributed power sources with smaller CO₂ footprint, such as fuel cells, photovoltaic, and wind generation, into the power system.

This presentation discusses the opportunities and challenges for the development of low emission MicroGrid and its integration with existing networks to support the future smart grid

infrastructure. Identifying the challenges paves the way to addressing the various blocking components slowing down the integration process and encourages researchers and legislators to start looking for reliable solutions. The presentation concludes with the listing of issues needed to be addressed to ensure successful integration procedures that will eventually create new structures of efficient, modular and environmentally responsive electricity infrastructure that will have an impact nationally as well as globally.

BIOGRAPHY



Wei-Jen Lee (S'85-M'85-SM'97-F'07) received the B.S. and M.S. degrees from National Taiwan University, Taipei, Taiwan, R.O.C., and the Ph.D. degree from the University of Texas, Arlington, in 1978, 1980, and 1985, respectively, all in Electrical Engineering.

In 1985, he joined the University of Texas, Arlington, where he is currently a professor of the Electrical Engineering Department and the director of the Energy Systems Research Center.

He has been involved in the revision of IEEE Std. 141, 339, 551, and 739. He is the Secretary of the IEEE/IAS, Industrial & Commercial Power Systems Department (ICPSD), the Committee Chairman of the Energy Systems Committee at ICPSD, and the associate editor of IEEE/IAS and International Journal of Power and Energy Systems. He is the project manager of IEEE/NFPA Collaboration on Arc Flash Phenomena Research Project.

Prof. Lee has been involved in research on renewable energy, power flow, transient and dynamic stability, voltage stability, short circuits, relay coordination, power quality analysis, demand response, on-line equipment protection, monitoring, and control system, and utility deregulation. He has served as the primary investigator (PI) or Co-PI of over seventy funded research projects. He has published more than one hundred sixty journal papers and conference proceedings. He has provided on-site training courses for power engineers in Panama, China, Taiwan, Korea, Saudi Arabia, Thailand, and Singapore. He has refereed numerous technical papers for IEEE, IEE, and other professional organizations.

Prof. Lee is a Fellow of IEEE and registered Professional Engineer in the State of Texas.

Session 1: Green Energy

"Smart Grid"

John Mucci

Vice President
Engineering and Planning
Consolidate Edison Company of New York, Inc.
Tel: 212 460 4263
e-mail: muccij@coned.com

BIOGRAPHY

Mr. John J. Mucci currently holds the position of Vice President of Engineering and Planning within Con Edison's Electric Operations organization. In this position, he has the overall responsibility for Distribution Engineering, Energy Services and Electric Operations Planning and Analysis. He has held this position since June 2006.

Mr. Mucci's career with Con Edison has spanned over 40 years, during which time he has held various positions of increasing responsibility, including: Vice President of Central Field Services, General Manager of Electric Operations in Brooklyn and Queens, as well as Plant Manager of the Ravenwood generating station.

Mr. Mucci earned a Bachelor's degree in Technology from the State University of New York and a Masters degree in Business Administration from Rensselaer Polytechnic Institute.

Session 1: Green Energy

"Green Tech Trend, Challenges, and Opportunities"

Sean Shao-Hwa Wang

President, ITRI International Inc. (a subsidiary of ITRI)
2880 Zanker Road, Suite #109, San Jose, CA 95134
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e-mail: seanwang@itri.com

ABSTRACT

Green technology trend, challenges, and opportunities in the areas of solar, biofuel, wind, batteries, and energy efficiency.

BIOGRAPHY



Dr. Sean Shao-Hwa Wang is the President of ITRI International (San Jose, California), which is ITRI's presence in North America, beginning from June 2005. He joined ITRI as the General Director of IEK in July 2004. Before joining ITRI, for about 15 years, Dr. Wang was with SRI International/SRI Consulting (Menlo Park, California), where he developed and implemented international proprietary projects on technology evaluation, feasibility study, strategic planning, identification of new business opportunities, licensing strategy, buy-or-build issue, and new plant investment decision. He was the managing editor of *Process Economics Program (PEP) Yearbook*, which contains production economics for 900+ processes to produce more than 550 chemical products in the U.S., Germany, Japan, and China. He also authored 32 proprietary reports on the evaluation of technologies in the areas of energy, petrochemicals, and electronics chemicals and materials. Earlier, Dr. Wang was associated with M.W. Kellogg (now KBR) and Morgantown Energy Technology Center (now the National Energy Technology Laboratory) of U.S. Department of Energy.

Session 1: Green Energy

"A View on Hydrogen Economy in Large-Scale Power Generation"

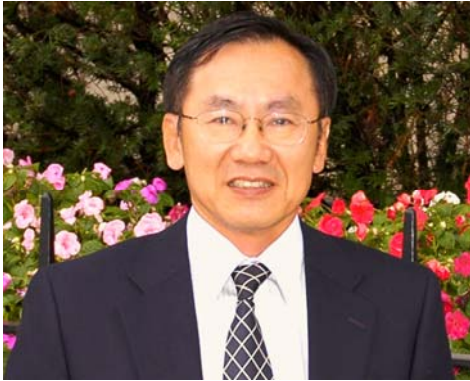
Minking K. Chyu

Leighton Orr Chair Professor and Chairman
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ABSTRACT

Striving for independence of scareced oil and gas supply and alleviation of global environment/climate change, hydrogen economy is being proposed as an enery roadmap toward the future. To realize hydrogen economy will require overcoming many technical, social, and policy chanllenges. Proponents of hydrogen economy argue that hydrogen has the potential for replacing essential all gasoline and elimiating almost all CO₂ from vehical emission over the next 50 years. Research and development programs pertaining to hydrogen economy has been gaining significant momentum since the new mellenium. While success of hydrogen economy is somewhat uncertain, there are four fundatmental technological and technical challenges: to develop (1) effective and low-cost hydrogen production processes, (2) infrastructure of hydrogen storage and transportation for light vehicles, (3) economic and durable fuel cell technology, and (4) technology to capture and sequester CO₂ byproduct of hydrogen production from coal. This presentation will begin with an overview of the worldwide energy landscape and growth in demand versus supply. The significance of large-scale power generation systems and their contributing roles in the future hydrogen economy will be elaborated. This includes the novel concepts of coal-hydrogen hybrid systems with substantially elevated cycle efficiency. This will be followed by examining various hydrogen production technologies and relevant issues pertaining to storage and transportation. Particular emphasis will be directed to high-temperature steam electrolysis and thermochemical decomposition processes in association with advanced nuclear reactors. Potential design options and technical challenges in the development of thermochemical reactors for a hybrid sulfur process in conjunction with advanced nuclear reactor will be discussed.

BIOGRAPHY



Dr. Minking K. Chyu is presently the Leighton Orr Chair Professor and Chairman of Mechanical Engineering and Materials Science Department at the University of Pittsburgh. He received his Ph.D. degree in Mechanical Engineering from the University of Minnesota in 1986. He was a faculty member at Carnegie Mellon University for 14 years before joining the University of Pittsburgh in 2000. His primary research area lies in thermal and material issues relating to energy, power and propulsion systems. He has conducted research projects sponsored by a number of government agencies and industry. Since he joined Pitt, he has initiated a number of collaborative research programs in micro- and nanotechnology, fuel cells, and biomechanics. Professor Chyu is a recipient of four NASA Certificates of Recognition for his contribution on space shuttle program, Air Force Summer Research Fellow, Department of Energy Oak Ridge Research Fellow, and DOE Advanced-Turbine-System Faculty Fellow. He is a Fellow of the American Society of Mechanical Engineers (ASME), Associate Fellow of American Institute of Aerospace and Aeronautics (AIAA), and a US delegate to the Scientific Council of the International Centre of Heat and Mass Transfer (ICHMT). He was named the Engineer of The Year by the ASME Pittsburgh Chapter in 2002. In 2007, he was appointed as Institute of Advanced Energy Solutions (IAES) Residence Fellow by the National Energy Technology Laboratory (NETL), Department of Energy (DOE). He serves as an Associate Editor for the Journal of Heat Transfer, ASME, Advisory Board Member for the International Journal of Fluid Machinery and Systems, and a Foreign Editor for the International Journal of Chinese Institute of Mechanical Engineers. He has published more than 250 technical papers in archived journals and conference proceedings.

Session 2: Green Environment/Sustainability

Session Chair

"Green Building"

Chein-Chi Chang

District of Columbia Water and Sewer Authority

ABSTRACT

In recent years, the Leadership in Energy and Environmental Design (LEED) Green Building Rating System has been used to provide the design criteria for sustainable green buildings. The LEED rating systems give the building owners a measurable performance on their units such as home, new construction, core and shell, and others. The rating criteria include an approach to sustainability by recognizing building performance in five key areas of sustainable site, water efficiency, energy & atmosphere, efficiency, materials & resources, indoor environmental quality, and innovation & design.

BIOGRAPHY



Dr. Chein-Chi Chang is a senior engineer at the District of Columbia Water and Sewer Authority and an adjunct professor of the Civil and Environmental Engineering Department at the University of Maryland, Baltimore County. Dr. Chang is also a board member on the Environmental Sustainability Board of Howard County, Maryland. This position was appointed by the Howard County Executive and approved by the Howard County Council. In addition to those positions, Dr. Chang is a member of the Community Relation Council of Howard

County General Hospital.

Dr. Chang received his bachelor's degree from Tamkang University in Taiwan, ROC. He continued his graduate studies at The Ohio State University for his master's degree and University of Missouri- Rolla for his doctorate. Dr. Chang is a registered professional engineer in the state of Maryland and the District of Columbia. Dr. Chang's specialties include green technology, green infrastructure, ecological engineering, operations research, geographical information systems, remote sensing, and civil and structural design for water distribution systems, wastewater collection systems, and wastewater treatment systems.

Dr. Chang has been involved in numerous professional associations. He has joined the Infrastructure Champion Committee of the American Society of Civil Engineers and the Collection System Committee of the Water Environment Federation. Dr. Chang was also the 2004 President of the Overseas Chinese Environmental Engineers and Scientists Association, and 2007 President of the Chinese Institute of Engineers – USA/Greater New York Chapter, the 2004 Administrator and 2006 Vice Chair of the Modern Engineering and Technical Seminar. Dr. Chang received the 2005 Excellent Service Award from the Overseas Chinese Environmental Engineers and Scientists Association and the 2007 Institute Service Award from Chinese Institute of Engineers – USA/Greater New York Chapter.

Session 2: Green Environment/Sustainability

"Resource Conservation and the Path to Zero Waste"

Ms. Jennifer McDonnell

Founder and President
Environmental Strategy Innovations, LLC

BIOGRAPHY



Environmental Strategy Innovations provides sustainability consulting for an international roster of companies including leaders in the fields of transportation, food production and distribution, bio-energy, polymer recycling, organics recycling/composting, and education. ESI also acts as a consultant to municipalities in the State of New Jersey.

Ms. McDonnell's hallmark is the combination of a strong communications program with aggressive cost effective environmental solutions. ESI's experience includes creating strategic waste reduction and recycling programs, research and copy writing for eco-friendly product and packaging criteria, the management of renewable energy installations and energy efficiency upgrades, seminars, public speaking engagements, custom designed education programs, and bringing new technologies to market.

As the Environmental Coordinator for Whole Foods Market's Northeast and North Atlantic Regions, Ms. McDonnell directed the environmental programs of thirty-four retail natural and organic food stores, designing and implementing state-of-the-art initiatives including composting, day lighting, bio-packaging. She was particularly effective in achieving across the board reductions in waste disposal volumes and costs.

One of ESI's primary missions is the proliferation of second-generation recycling programs in pursuit of "zero waste" with an emphasis on organics diversion, rigid plastics remanufacturing, and waste oils to energy. Ms. McDonnell co-founded "FOR NJ – Food and Organic Recycling/NJ" in 2007 to promote organics recycling in NJ and surrounds. She has also served as an advisor to Green Polymer Technologies, MaSer, Stella Bananas, Waste Management, Waste Reduction Systems, Organic Diversion, and Peninsula Compost, as they expand in the North American marketplace. Her international experience includes work in the UK and with companies in Turkey and the Philippines.

Jennifer's commitment to environmental stewardship is rooted in her undergraduate years spent at Brown University, in Providence, RI, where she earned a BA in Biology and Organizational Behavior. Advanced study in Australian biodiversity followed on Lady Elliot Island in the Great Barrier Reef, and in 2007 Ms. McDonnell earned certification from Rutgers University, NJ as a Recycling Professional. Ms. McDonnell is an active member of the NJ WasteWise Business Advisory Council, the Buy Recycled Alliance of New York (BRANY), the Association of NJ Recyclers, The Manhattan Chamber of Commerce Green Committee, and the NJ Food Council.

Jennifer is personally committed to local activism and serves as the chair of the West Orange Township Energy Commission. She is an Assistant Organizer for Community Green, a network of municipal activists and eco-citizens pursuing the Transition Towns movement, and an active MeetUp group. Ms McDonnell is also the host of "Planet Diaries" (www.planetdiaries.net), an internationally recognized web communications outlet, where she works to advance the use of innovative technologies such as clean energy and aquaponics to meet the eco-challenges of our time.

Session 2: Green Environment/Sustainability

"Solar Market and Trend"

Ruey-Pyng Lu

U.S. Department of Energy

ABSTRACT

Renewable energy (RE) industry is growing very rapidly in the United States due to strong consumer demand, rising energy costs, the growing concern over climate change, and financial incentives from the federal government and many states and utilities. Solar thermal and photovoltaic energy systems are part of this RE industry. What will be the prospect for solar markets? In this presentation, some sources report data from non-profit organizations and government will be discussed to forecast the future solar markets.

BIOGRAPHY



Ruey-Pyng Lu received the M.S. and Ph.D. degrees in Statistics from the Virginia Polytechnic Institute and State University. He is a Mathematical Statistician for the Energy Information Administration, US Department of Energy; His responsibility is to ensure that quality procedures throughout the agency are developed and implemented, he has extensive experience in sampling, data analysis, time series analysis, multivariate methods, and survey process improvement methods. He is the EIA lead person on agency Organizational Climate Survey, and serves as an EIA representative on Interagency Group of Establishment Nonresponse (IGEN) and Interagency Confidentiality and Data Access Group (ICDAG). Dr. Lu was detailed to the Office of Management and Budget, Executive Office of President to establish the guidelines for "Response rate achieved in Federal Surveys" in 2001-2002. He has worked on various petroleum products, natural gas, and alternative energy source projects in the last 15 years.

Session 3: Green Business/Services

"Expansion of Renewable Energy and Clean Tech in a Dense Urban Environment: A Strategy"

Bruce Niswander

Director of the Office of Innovation Development, Technology Transfer
Polytechnic Institute of NYU

ABSTRACT

Highlight an initiative by the city of New York to invest in assisting start ups in renewable energy by creating an incubator in the city. Describe a large urban area is doing to engage in green.

BIOGRAPHY



Bruce Niswander is the Director of the Brooklyn Enterprise on Science & Technology (BEST) Center at NYU Polytechnic Institute. He has a BA in Finance (1975) and an MBA (1979) for Ohio State University as well as his J.D. (1979) from Ohio State. He is a Certified Financial Analyst (1988). Since 2006 he has been Director of the Office of Innovation Development, Technology Transfer; Polytechnic University, Brooklyn, NY. As well as Director, Brooklyn Enterprise on Science & Technology Business Incubator, at Polytechnic. He is an instructor for graduate level Technology Entrepreneurship and Entrepreneurial Finance at NYU-Poly. He is also the owner and President – Founder of Synergetic Solutions of Columbus, OH. In 2003 through 2006 he was Vice President - Strategic Planning at Synoran LLC, Columbus, OH. He has worked as the Chief Operating Officer of Virtual Technologies, Columbus, OH. And was a project manager at the Battelle Memorial Institute.

Bruce Niswander is a business leader, entrepreneur and consultant with 20+ years of experience driving profitable growth in challenging and competitive business markets. This experience has provided him with outstanding leadership, communication and analytical skills, and extensive expertise in working closely with senior management of large and small corporations. He has extensive expertise in the creation and deployment of marketing and sales strategies, financial analysis, intellectual property management, business valuations, digital information forensics, and the identification and negotiation of joint ventures, marketing and sales agreements. Mr. Niswander has a proven track record of visionary, solutions-focused and results-oriented approaches to increasing organizational value through enhancements in product design and operational process improvements.

Session 3 : Green Business/Services

"Impact of Green Building on Global Warming"

Jeffrey S. Seigel

Director of Marketing & Business Development
Pavarini Construction (a division of StructureTone)

ABSTRACT

Developments in the green-building construction business by aggressively incorporating LEED practices to reduce carbon emission and impact global warming trends.

BIOGRAPHY



Jeffrey Seigel (B.S., J.D., LEED AP) is presently an Adjunct Professor in the NYU-POLY Engineering Program, prior he has taught in the NYU RE Masters Program. Since January 2002, Jeff has been the Director of Marketing & Business Development for a division of the Structure Tone Organization, a \$3+ billion international construction management / general contracting company. In addition to business development and marketing responsibilities, Jeff helps prepare the division's Business Plan & Strategic Plan.

Jeff actively participates in diverse sustainability initiatives. He is a LEED AP, participates on the NYU-POLY Center for Emerging Technologies, participates on Sustainable Stamford, participates on the NAIOP Legislative Subcommittee, invited by Darien Rotary Club to lecture on Sustainability Initiatives, asked by UCONN to help strategize their Sustainability Certification Program, and is researching becoming a Certified Sustainable Building Advisory Instructor. Jeff's primary focus is helping to develop a Global Green Building Code. He is also interested in Biomimicry, Carbon Scrubbing & Sequestration, Alternative Energy, Potable Water, Global Warming, etc.

Jeff graduated from Pace University School of Law, studied International Law at the University of London and has two International Law Certifications.

Jeff is presently on the Alumni Board of Directors at Pace University School of Law, the NYU-POLY Advisory Board and also participates on the Real Estate Division of the March of Dimes.

Session 3 : Green Business/Services

"The Green CIO – What CIOs are doing to improve the greening of the IT function"

Andres Fortino

Associative Provost, Polytechnic Institute of NYU
Board Member, Fairfield Westchester Chapter, Society of Information Management

ABSTRACT

Recent results of survey of CIOs (members of the Society for Information Management) on progress towards greening the IT functions within major corporations. The survey results show CIOs are starting to take this issue seriously but we have a long way to go. Some pressure is being felt from coming regulation as well as demands by Boards of Directors to green the IT function.

BIOGRAPHY



Dr. Andres Fortino (P.E.) has been associate provost of Polytechnic Institute of New York University and dean of the University's Westchester campus since 2006. In his role, Dr. Fortino leverages his expertise in engineering, technology and management to bring graduate education to the greater New York area companies. Dr. Andres Fortino was previously Dean of the AACSB-accredited School of Management at Marist College in 2004-2006. Prior to this he served as Associate Dean for Academic Development as well as director of the MBA and the Technology Management programs at George Mason University from 1998-2007.

He holds bachelors and master's degrees in electrical engineering from the City College of New York and received his PhD in electrical engineering from the City University of New York. Dr. Fortino has lectured extensively on technology worldwide and has led more than 180 high technology seminars for Learning Tree International over seventeen years with the company. He also worked for IBM Corp. in its advanced technology division where he was awarded two patents and ten invention disclosures and received IBM's First Invention Level Award for his work in semiconductor research.

Dr. Fortino is a member of the Society for Information Management, the Academy of Management, a Senior Member of IEEE, and the Technology Management Educational Association. He is a Visiting Professional Fellow at Cambridge Fitzwilliam College and a Fulbright Senior Technical Specialist. Dr. Fortino served as CIO for a mid-sized non-profit for twelve years. The author of eight books, Dr. Fortino has practiced the application of information technology to solving business problems for the past 30 years. His scholarship has also focused on innovation management, information systems development, intellectual property management, data networks, CIO education and the diffusion of innovation and the greening of the IT function. He has published over forty papers and made over eighty technical presentations.

Session 3 : Green Business/Services

Panel on "The Green CIO - Imperatives, Progress and Initiatives for Greening the CIO Function"

ABSTRACT

A panel discussion by industry experts and CIOs on how to make the CIO function more efficient, save money and more environmentally friendly. Panel members will discuss practical actions CIO can take to improve data center operations while reducing carbon footprint and reduce costs.

PANEL MEMBERS

Prof. Andres Fortino (moderator)
Associate Provost, Polytechnic Institute of NYU

Mr. Armand Keim
Adjunct Professor, Polytechnic Institute of NYU and former CIO

Jeffrey S. Seigel, B.S., J.D., LEED AP
Director of Marketing & Business Development , Pavarini Construction

Bruce Niswander
Director of the Office of Innovation Development, Technology Transfer
Polytechnic Institute of NYU

Session 3: Green Business/Services

Armand Keim

Adjunct Professor
Polytechnic Institute of NYU and Former CIO

BIOGRAPHY



Armand Keim is currently President of Keim Consulting Associates and an Adjunct Professor (and Research Associate) at Polytechnic University.

As President of Keim Consulting Associates he has been involved in all aspects of business and information systems support. He has consulted to firms such as: The Depository Trust and Clearing Corporation, Furman and Selz, Reuters America, Intralinks, and Global Internet. He has advised in areas such as data center operations, client service, operations, systems development, business management, telecommunications, website development and new business development. He is a member of the Steering Committee of the Westchester Not for Profit Technology Council and has advised a number of Not for Profits (on a volunteer basis).

He was the CIO of the NYCE Corporation and restructured NYCE's technology and client services organizations. He also was a member of the NYCE Management Committee.

Armand was also Managing Director and CIO of Cowen and Co. where he directed all information technology support of this brokerage firm and devised a new technology strategy for the firm. He was a member of the Operations Committee.

As Senior Vice President of Business Development at the Pershing division of Donaldson, Lufkin and Jenette, Armand founded several new businesses and directed their incubation.

With Automatic Data Processing, as Executive VP, he had P&L responsibility for a number of products.

Armand holds a BEE from Polytechnic University and a MBA from Baruch College.