

Wednesday, February 3, 2010 (members-only)			
	Track 1	Track 2	Track 3
	Ballroom Salon III&IV	Ballroom Salon I&II	Willow Glen I&II
8:00	Registration		
9:15	State of The Green Grid		
9:45	DCiE Survey Results (all regions)	European Union Commission (Code of Conduct) Report	Connecting Utilities to The Green Grid
10:45	Break		
11:00	Obstacles to Adoption of Higher Voltage Direct Current Power in the Data Center	Global Harmonization of Metrics	The Green Grid Alliance Reports - ASHRAE, BCS, DMTF, GIPC, and SNIA
12:00	Lunch		
1:00	PUE/DCiE Current Status and Future Developments	PUE Calculator	Regional Report from EMEA
2:00	DCPro IT Module Update	Calculating Partial PUEs	Regional Report from Japan
3:00	Break		
3:15	PUE Public Reporting and Usage Guidelines/Building a Database for the Industry	A Metric for Measuring the Re-use of Waste Heat	
4:15	Members Meeting Key Contributor Award Ceremony		
5:00	Reception		

Super Sessions
Technology and Tools
All Things PUE/DCiE
Liaison and Region Reports
IT Operations

Thursday, February 4, 2010			
	Track 1	Track 2	Track 3
	Ballroom Salon III&IV	Ballroom Salon I&II	Willow Glen I&II
7:30	Registration		
8:15	State of The Green Grid		
9:00	Keynote by Robert F. Kennedy Jr., Green Gold Rush: A Vision for Energy Independence, Jobs, and National Wealth		
10:00	Break		
10:15	Global Regulatory and Legislative Trends		
11:45	The Green Grid Data Center Design Guide		
12:30	Lunch		
1:30	The Green Grid Academy	End User Bird of a Feather Session Report Out/Data Center Pulse Report	
2:15	EPA Data Center Assessment Report	Measuring Data Center Productivity: The Latest & Greatest	Climate Savers Computing Initiative Update
3:00	Free Cooling Tool/Power Configuration Efficiency Estimator	ENERGY STAR for Data Centers	Unused Server Study
3:45	Real-Time Energy Consumption Measurements in Data Centers by TGG and ASHRAE TC 9.9	Interactive Discussion on The Green Grid's Toolbox (present and future)	Effects of Virtualization on Data Center Physical Infrastructure
4:30	Closing Ceremony and Q&A Session		

Keynote Speaker:



Robert F. Kennedy, Jr.

Visionary Environmental Business Leader and Advocate

Robert F. Kennedy, Jr.'s reputation as a resolute defender of the environment stems from a litany of successful legal actions. Mr. Kennedy was named one of *TIME* magazine's "Heroes for the Planet" for his success in helping Riverkeeper lead the fight to restore the Hudson River. The

group's achievement helped spawn more than 160 Waterkeeper organizations across the globe. In 2009, he was named one of *Rolling Stone's* "100 Agents of Change."

Mr. Kennedy serves as senior attorney for the Natural Resources Defense Council, chief prosecuting attorney for the Hudson Riverkeeper, president of Waterkeeper Alliance, is a partner in the clean tech work of Silicon Valley's VantagePoint Ventures, and is the environmental advisor to Napo Pharmaceuticals. He is also a clinical professor and supervising attorney at Pace University School of Law's Environmental Litigation Clinic and is co-host of *Ring of Fire* on Air America Radio. Earlier in his career, he served as assistant district attorney in New York City.

He has worked on environmental issues across the Americas, and has assisted several indigenous tribes in Latin America and Canada in successfully negotiating treaties protecting traditional homelands. He is credited with leading the fight to protect New York City's water supply. The New York City watershed agreement, which he negotiated on behalf of environmentalists and New York City watershed consumers, is regarded as an international model in stakeholder consensus negotiations and sustainable development. He also helped lead the fight to turn back the anti-environmental legislation during the 104th Congress.

Speakers:

Anand Akela

Product Marketing Manager, Hewlett-Packard
Data Collection & Analysis WG Vice Chairman, The Green Grid

Anand is the product marketing manager for scale-up HP ProLiant servers. Although he currently focuses on scale-up x86 server solutions and data center energy efficiency, Anand has worked on various data center solutions like HP Open View and HP Utility Data Center. He is an active

participant in various data center industry consortiums and currently serves as vice chairman for the Data Collection and Analysis Work Group at The Green Grid. Anand holds a bachelors degree in Computer Science from Pune University in India and MBA from Fuqua School of Business, Duke University, NC.



Dan Azevedo

IT Director of Data Center Architecture, Strategy & Innovation, Symantec
Metrics and Measurement WG Chairman, The Green Grid

Dan Azevedo is responsible for the data center program including architecture, engineering, implementation and operations globally. He currently supports 20 locations comprised of Colocation, Managed Service Provider, and



in-house data centers. Dan is also responsible for the Green IT Program. Dan Joined Symantec in February 2002 and managed the Network Operations Center. In 2004, responsibilities grew to manage the Data Center Operations team. In 2006, Dan managed the Data Center Engineering and Global Backup Operations teams additionally. Prior to Symantec, Dan was with Terraspring supporting the IT Operations Control Center.



Yoshiko Bannai

Japan Marketing Team, APC by Schneider Electric
Japan Communications WG Chairman, The Green Grid

Yoshiko Bannai has over 20 years in the IT industry. She started out in the semiconductor industry in engineering, sales and marketing then went on to work in software marketing. She is currently leading the Japan marketing team at APC Japan in Tokyo.



John Bean

Director of Innovation for Racks & Cooling, APC by Schneider Electric
Technology & Strategy WG Member, The Green Grid

John Bean is the Director of Innovation for Racks and Cooling at APC by Schneider Electric. Previously, Mr. Bean was the Director for R&D Cooling Solutions at APC by Schneider Electric, developing several new product platforms and establishing engineering and laboratory facilities in both the USA and Denmark. Before joining APC by Schneider Electric, Mr. Bean was the Engineering Manager for other companies involved in the development, and manufacture of mission critical cooling solutions. His career has presently spanned over 29 years dedicated to the design, support, manufacture, and research of thermal solutions for demanding applications and environments. Design activities have included thermal solutions for: commercial data center, military mission critical mobile platforms and aerospace.

John has also served on the ASHARE Standard Committee for Method of Testing for Rating Computer and Data Processing Room Air-Conditioners and has contributed to the Technical Committee for Mission Critical Facilities, Technology Spaces and Electronic Equipment. His contributions have included work on the TC9.9 Series of Books.



Ron Bednar

Strategic Marketing and Marketing Service Team Lead, Emerson Network Power
Data Collection and Analysis WG Chairman, The Green Grid

Ron Bednar leads the strategic marketing and marketing services teams for the Liebert division of Emerson Network Power. His groups are responsible for customer-centric research activities, as well as marketing communications, marketing programs, and outreach to channel partners,

current and prospective customers, consulting engineers, online and print media, and industry analysts. He has been with Emerson Network Power since 2007.

Bednar is the chairman of The Green Grid's Data Collection and Analysis Work Group. He also manages programs and industry research for the Data Center Users' Group (DCUG), which meets bi-annually to discuss data center trends

and issues. He holds a bachelor's degree in environmental engineering from the University of Illinois and a master's degree in business administration from the University of Michigan.



Paolo Bertoldi, Ph.D.

Program Manager, European Commission DG JRC

Paolo Bertoldi earned his Doctorate Degree in Electrical Engineering in 1985 at the University of Padova (Italy). He has been working with the European Commission since 1986. From 1986 to 1993 he was working in the EU nuclear fusion project, Joint Undertaking Torus (JET) in the UK. From 1993 until April 2001, he was Administrator with

the European Commission, DG Energy and Transport (DG TREN, Brussels Belgium), in charge of EU regulatory and voluntary programs for the rational use of energy in end-use equipment, buildings and industry. He was also in charge of negotiated and long-term agreements with industry and tertiary sectors and the GreenLight program. Since May 2001, he is the Principal Administrator at the European Commission Joint Research Centre (Ispra, Italy), in charge of research activities on energy efficiency policy, the efficient use of electricity (ICT, data centers, digital TV) and innovative policy instruments (e.g. white certificates, financing mechanisms, emission trading). He continues to manage the GreenLight, Motor Challenge and Standby Initiative programs.

Tom Brey

Senior Technical Staff Member, IBM

Board Member and Operations WG Chairman, The Green Grid

Tom Brey is a Senior Technical Staff Member in IBM's Systems and Technology Group. Tom has 29 years of experience within IBM in the architecture and development of IT equipment. Joining IBM in 1979, Tom worked in mainframe hardware development and systems

management. Currently, Tom is working on hardware and software systems architectures, strategies and services which allow data centers to operate at high productivity levels while consuming a minimum amount of energy. This is part of Project Big Green, IBM's commitment of \$1 billion per year to deliver technologies that help customers increase the level of energy efficiency in their data centers. Since launching the project in May 2007, IBM has engaged with more than 2,000 clients to deliver a variety of hardware, software and services technologies that help businesses reduce data center energy consumption and cut energy costs by more than 40 percent by certain measures. As a key evaluator and decision-maker in energy management within the data center, Tom takes responsibility for keeping IBM at the forefront of emerging technologies and standards bodies in this area.



Kevin Bross

Modular Systems Architect, Intel

Power Sub WG Member, The Green Grid

Kevin W. Bross is a modular systems architect in Intel's Embedded and Communications Group. He has held a variety of engineering and marketing roles over his 20



years at Intel. Kevin has been involved in the development of several telecommunications-related standards including the AdvancedTCA and AdvancedMC standards from PICMG. He has also been involved in the design of several Intel server products and has worked with both data center and telecommunications customers. Most recently, Kevin has been involved with several energy-efficiency and facilities design projects at Intel.

Kevin earned a Bachelor of Science degree in Computer Science and in Mathematics along with a Bachelor of Arts degree in Business Administration from Principia College.



Tahir Cader, Ph.D.

Power & Cooling Strategist, Hewlett-Packard

Alt. Board Member, Technical Committee Member, The Green Grid

Dr. Tahir Cader is a Power & Cooling Strategist within HP's Scalable Computing & Infrastructure organization, dealing with Power & Cooling issues from the product through the data center level for HP's Cloud Computing, Web 2.0, and High Performance Computing spaces. In particular, his emphasis has been on issues relating to the integrated data center and data center energy efficiency, encompassing existing and future technologies. Dr. Cader is also active with external standards bodies and public policy organizations. He is an Alternate Director of The Green Grid, is a member of The Green Grid's Technical Committee, is The Green Grid's Liaison to ASHRAE Technical Committee 9.9, and is a member of ASHRAE TC 9.9. With over 16 years of experience in the thermal management and data center industries, Dr. Cader is both a sole inventor as well as a co-inventor on 18 issued and 10 filed patents, and is a co-author for more than 40 peer-reviewed journal, conference, and trade journal technical articles. He is the lead editor/author for an ASHRAE/TGG joint book on real-time data center energy consumption measurements, and is also a significant contributor to several published ASHRAE Datacom Series books.

Mark Carlson

Senior Architect, Sun Microsystems

Mark A. Carlson, Senior Architect at Sun Microsystems' Systems Group, has more than 30 years of experience with networking and storage development and more than fifteen years experience with Java technology. He has spoken at numerous industry forums and events. He is the chair of the SNIA Cloud Storage, NDMP and XAM SDK

Technical Working Groups, chair of the DMTF Policy working group, serves on the SNIA Technical Council, and represents Sun Microsystems on the DMTF Technical Committee as well as the DMTF Board of Directors where he serves as VP of Alliances.



Daryn Cline

Senior Manager of Environmental Technologies, EVAPCO

Daryn Cline began his career as a Reliability Engineer with the Westinghouse Electric Corporation in Baltimore, MD providing reliability forecasts of electronic components and subsystems for defense electronics. He transferred to the



evaporative cooling industry and has been with EVAPCO, Inc., a global manufacturer of heat transfer systems for 20 years. He has held various managerial positions in the cooling tower, cooler, non-chemical water treatment and thermal storage product groups. He is currently Senior Manager, Environmental Technologies and is responsible for the application and promotion of EVAPCO's energy efficient and water saving products in the sustainable building market.

Daryn co-authored "Evaporative Cooling Choices to Maximize Waterside Economizer Use in Datacom Installations" sponsored by ASHRAE TC9.9, and participated in the development of ASHRAE Guideline 12 *Minimizing the Risk of Legionellosis Associated with Building Water Systems*. He is participating in the development of the new ASHRAE Standard SPC 191 *Efficient Use of Water in Building, Site and Mechanical Systems*. Daryn graduated with a BS in Physics from West Virginia University and also holds a MBA from the University of Baltimore. He is a LEED® Accredited Professional and a member of the USGBC and ASHRAE.



Jud Cooley

Senior Director of Engineering for the Sun Modular Datacenter, Sun Microsystems

Container Assessment TF Lead, The Green Grid

Jud Cooley is the Senior Director of Engineering for the Sun Modular Datacenter also known as "Project Blackbox" from Sun Microsystems, Inc. Jud also plays a coordinating role amongst the platform development teams at Sun on energy initiatives. Prior assignments at Sun include

Director of Central Engineering, Director of the Physical Sciences Lab in the CTO organization, and various roles in developing Sun's Enterprise class server products. Prior to Sun, Jud worked at Cray Research, Floating Point Systems, Celerity Computing, and NCR Corporation in various capacities developing hardware, firmware, and IO protocols. Jud has a BSEE from Michigan State University, and an MSEE from MIT. Jud leads the Green Grid's Container Assessment Task Force.



Lex Coors

Director of Engineering, Interxion

EMEA Technical WG Member, The Green Grid

As Interxion's Director of Engineering, and latterly VP Data Centre Technology & Engineering Group, Lex has supervised the design, build, and upgrade of nearly 50,000m² of data center space in 22 locations in 12 countries. A founder member of the Uptime Institute, Lex is

also a member of European Commission DG Joint Research Committee on Sustainability and the European Data Centre Code of Conduct Metrics Group. He studied Mechanical Engineering and then Management and Economics in Rotterdam. During his time with Interxion, Lex has pioneered several new approaches to data centre design and management, including the improvement of power ratio efficiency between server load and transformer load, and the industry's first ever modular approach to data centre design.



Andrew Fanara

U.S. Environmental Protection Agency, Climate Protection Partnership Division

Team Leader, ENERGY STAR Product Specifications Development Group

Mr. Fanara works on the ENERGY STAR Product Specifications Development Team which helps businesses and individuals protect the environment by identifying products with superior energy efficiency and water

savings.

Mr. Fanara's team is responsible for writing product specifications and for teaming with manufacturers to encourage the design, manufacture, and sale of products that meet them. More than 50 product categories have been created for the residential and commercial sectors. To date, American consumers have purchased more than 2 billion ENERGY STAR qualified products. In 2007 alone, Americans with the help of ENERGY STAR – avoided greenhouse gas emissions of more than 37 million metric tons, equivalent to those from 27 million vehicles, while saving \$16 billion in utility bills.

Mr. Fanara is currently leading the effort to develop ENERGY STAR specifications for datacenter IT equipment. He is also responsible for managing policy coordination with countries using ENERGY STAR in their markets. This includes Japan, Australia, New Zealand, Taiwan, Canada, China, the UK and the European Union; many of which are coordinating with EPA on data center energy efficiency efforts.

Previously with the agency, Mr. Fanara worked on the EPA's Green Lights Program, which assisted commercial enterprises with the implementation of energy-efficient lighting upgrades. He is a graduate of the University of Wisconsin - Madison and has worked for the EPA for more than 10 years.



Kathleen Fiehrer. Ph.D

Technical Program Manager, Climate Savers Computing Initiative

Kathleen Fiehrer is the Climate Savers Computing Initiative Technical Program Manager with Intel's EcoTechnology Program Office. She received her PhD in Physical Chemistry from the University of Wisconsin-Madison. She joined Intel in 1997 where she worked as an environmental engineer at Intel's development site focusing on

environmental roadmaps and setting technology environmental goals. Currently, Kathleen drives CSCI's technical work group agendas and aligns their strategies to CSCI's mission of reducing computer energy consumption through the adoption of energy efficiency products and the use of power management. In addition, Kathleen supports Intel's customers on E-waste, life-cycle analysis and EPEAT issues.

Dean Garfield

President and CEO, Information Technology Industry Council

Dean C. Garfield was elected President and CEO of the Information Technology Industry Council (ITI) in October 2008 by the association's board of directors. As the premier voice, advocate, and thought leader for the information and communications (ICT) sector, Dean regards innovation as the key driver for the private sector becoming more prominent in spurring sustainable job growth in the

United States. By building public-private sector partnerships to cultivate the world's best and brightest workforce, and preserving our nation's global competitiveness for the next generation of Americans, Dean recognizes that the ICT sector can be part of the solution to the significant challenges and opportunities currently before our country.

Dean came to ITI after serving most recently as Executive Vice President and Chief Strategic Officer for the Motion Picture Association of America (MPAA). While there, he was a member of the senior management team and was responsible for developing the association's global strategies, securing accomplishment of key operational objectives, and forging industry alliances on behalf of the MPAA.

Jon Haas

Director in Intel's Eco-Technologies Programs Office, Intel
Alt. Board Member and Technical Committee Vice Chair, The Green Grid
Jon Haas is a Director in Intel's Eco-Technologies Programs Office, part of the Digital Enterprise Group at Intel Corporation. The Digital Enterprise Group creates Intel architecture server products and server industry technologies while driving new server, workstation and



desktop platform capabilities. In support of that mission, Jon manages technical and marketing teams that work with the industry's key energy efficiency technology forums and vendors, in developing and bringing to market, complimentary products based upon new capabilities and technologies for server platforms, enterprise computing and data centers. Jon is a 22-year Intel veteran spending most of his career working on server and I/O technologies. Jon participates in The Green Grid Technical Committee as the vice chair and chair of the Data Center Design Guide Work Group. Jon has authored and co-authored many papers for The Green Grid and participates in the organization's Liaison Committee.

Andy Hawkins

Product Manager, 1E
Data Collection & Analysis WG Member, The Green Grid

Andy Hawkins is a Product Manager at 1E, a global role he has held for three years. Reporting to the Head of Software, Andy is an integral part of the innovations team and is responsible for the development of new innovations which enable end user organizations to reduce IT costs. Most



recently, Andy spearheaded the development of the hotly anticipated NightWatchman Server Edition, a power and efficiency management tool, which launched in October 2009.

During his eleven year tenure at the company, Andy has held a number of roles at 1E, including principal consultant, where he led a team of people tasked with designing some of the UK's largest IT infrastructures. He was seconded to EMC in 2000 as a storage architect, working with large organizations in the UK such as Orange and Norwich Union. Andy holds a BSC in Physics and Acoustics from the University of Surrey and has a passion for music production in his spare time.



Tom Kiernan

Vice President of Global Training, APC by Schneider Electric

Tom Kiernan is Vice President-Global Training for APC by Schneider Electric. He has over fifteen years of senior leadership experience in training design, development and delivery. Since joining APC over eight years ago, Tom has lead the functions of Global Sales Training and Global Services and Technical Training for the company. During his tenure in these roles, APC was awarded placement in *Training's* Top 100 companies two years in a row. Prior to APC, Tom managed training at the national level for Amica Companies. He has a BA from Tufts University and is currently finishing his Masters in Education at the University of Rhode Island. Tom's interests include writing screenplays and ice hockey.

Michinori Kutami

General Manager of Corporate Environmental Affairs Unit., Fujitsu Limited
Chairperson of the Survey and Evaluation Committee, Green IT Promotion Council of Japan



Michinori Kutami received his Masters Degree of Engineering at Tokyo Metropolitan University in 1978, and entered Fujitsu Laboratories Ltd., in 1978. Since then, he has been engaged in the research and development of

micromachining and environmentally conscious technology. Since 2007, Kutami-san has been the General Manager of the Sustainable Development Planning Div. in the Corporate Environmental Affairs Unit at Fujitsu Ltd. He has been managing the overall planning of Fujitsu group's Environmental policy, Green IT, Environmental management systems and Environmental social contribution activities. In 2007 he received a Doctorate of Engineering from Tohoku University. He is a member of IEICE, the Institute of LCA of Japan, a special researcher of the Science Technology Trend Research Center of Japan run by MEXT, and has been the Chairperson of the Survey and Evaluation Committee of the Green IT Promotion Council of Japan since 2008.

Corban Lester

Energy Conservation Incentive Developer, Lockheed Martin
Utilities TF Lead, The Green Grid



Corban Lester develops energy conservation incentives for Lockheed Martin Energy & Environmental Services and currently leads the Efficient Data Centers initiative for the Energy Trust of Oregon.

Zahl Limbuwala

Chairman, British Computing Society Data Centre Specialist Group



Zahl has been in the information technology and telecoms sectors for over 15 years. Holding senior operational management posts in both FTSE100 and pre-IPO startups. Having a strong academic engineering background, Zahl has worked in real-time systems, process control engineering, software development, managed IT services, system integration in both public and private sectors. Zahl also has strong international experience having worked in central Europe, North America and

Asia. Zahl now provides strategic planning advice within the data center/managed services/service provider world. Zahl has been involved with the evolution of the data center over the last 10 years and founded the DCSG after realizing the industry needed an independent body through which it could develop and share best practice. Zahl speaks regularly on behalf of the BCS and DCSG at public events and conferences in the information technology sector. More recently Zahl was elected onto the BCS-SGEC (Specialist Groups Executive Committee) as well as the BCS advisory council.



Steve McCluer

Manager of External Codes and Standards, APC by Schneider Electric Technology & Strategy WG Member, The Green Grid
Steve McCluer is Manager of External Codes and Standards at Schneider Electric's Information Technology Business Unit (APC). Steve serves on technical committees NFPA-75 (Information Technology Equipment), NFPA-110 (Emergency & Standby Power Systems), and NFPA -111 (Stored Electrical Energy Systems). Steve is on several technical working groups of the IEEE Stationary Battery Committee and represents them on NFPA task groups. He serves as liaison for a joint ASHRAE/IEEE standard on battery room ventilation and is a member of ASHRAE. He is a member of the BICSI Data Center Design and the Bonding and Grounding Technical Committees. Steve is a technical committee member and contributor to The Green Grid. He is also a member of the International Code Council(ICC), the International Association of Electrical Inspectors (IAEI), the National Conference of States on Building Codes and Standards (NCSBCS), and the International Fire Marshal Association (IFMA). Steve has 25 years experience in the power quality industry and holds a battery rack patent. He has authored many papers and articles on power quality and data center design. He holds a Master Degree in International Management.



Mark Monroe

Director of Sustainable Computing, Sun Microsystems
Board Member, The Green Grid
Mark Monroe is the Director of Sustainable Computing for Sun Microsystems. He applies a degree in solar energy and 25 years of IT industry experience to the design and operation of environmentally responsible data centers. Mark is Sun's representative for The Green Grid board of directors, and works with IT industry associations, Colorado governments and the University of Colorado on sustainability. He is also a certified Six Sigma Blackbelt.



George Navarro

Technical Solutions Engineering Specialist, Eaton
Power Sub WG Member, The Green Grid
George Navarro is a Technical Solutions Engineering Specialist for Eaton Corporation. Mr. Navarro has worked in the design and development of power products for 23 years specializing in UPS power electronics hardware and firmware development. As a Technical Solutions Engineer,

he serves as the bridge between the customer, business development and product development. An Eaton UPS Product technical expert, he creatively applies existing products and technology to support and resolve challenging customer application needs and establish product vision tied to market dynamics. Mr. Navarro has a Bachelor of Engineering degree from Stevens Institute of Technology and an MBA degree from Monmouth University.



Dean Nelson

Sr. Director of Global Data Strategy, Architecture and Operations, eBay
Advisory Council Member, The Green Grid
Dean is the Sr. Director Global Datacenter Services for eBay Inc. This role includes the Strategy, Architecture and Operations functions of eBay's mission critical infrastructure supporting the activities of ebay.com, paypal.com, shopping.com, IT and other eBay Inc Adjacencies. Dean is also a core member of the eBay Green Team. He described the move to eBay in his blog <http://datacenterpulse.org/blogs/geekism>. Previously, Dean was the Sr. Director of Global Lab & Datacenter Design Services (GDS) in the Work Environments (WE) business unit of Sun Microsystems. GDS bridged the gap between Facilities & IT/Engineering and is responsible for managing Sun's multi-billion dollar global technical infrastructure portfolio including datacenter design, standards and strategy. The GDS work resides in the Act portion of Sun's Eco strategy, and was showcased at Sun's Eco Launch in August, 2007 and the Colorado Data Center grand opening in January, 2009. Because of overwhelming customer interest, the GDS processes and design became a Sun service offering through the Data Center Efficiency practice (DCE) in December, 2007. Dean has been in the technology industry for 20 years, of which 17 have been with Sun. He spent four years in Sun manufacturing in roles ranging from component level debug to managing quality. Dean joined the Sun Engineering community in 1993. He led systems and network administration support for some of Sun's largest and most complex R&D lab environments. Dean left Sun in 2000 to join a networking startup company called Allegro Networks. At Allegro, he built a world-class QA team, state of the art global R&D lab environments and fully integrated automation system.

Vaughn Noga

Acting Director, Office of Technology Operations & Planning Office of Environmental Information U.S. Environmental Protection Agency



Michael Patterson, Ph.D.

Senior Thermal Architect, Intel
Technology and Strategy WG Chairman, The Green Grid
Michael K Patterson is a Senior Thermal Architect working in the Eco-Technology Program Office in the Digital Enterprise Group at Intel Corporation, Hillsboro, OR, where he works in the power, thermal, and energy-efficient performance areas. The work covers silicon level activity, through platform and rack level solutions and on up to interface with Data Center power and cooling technologies. He did his undergraduate work at Purdue University, received his MS degree in Management from Rensselaer Polytechnic

Institute, and was awarded his MS and Ph.D. in Mechanical Engineering from the University of Vermont. His current technical interests include server power and thermal management technologies, server/data center interaction, and high density data center concepts. He has been with Intel for 15 years. He is a registered Professional Engineer. He is also a member of ASME and ASHRAE and represents Intel in a number of activities for The Green Grid.



Jim Pappas

Director of Initiative Marketing, Intel
Liaison Committee Chairman, The Green Grid

Mr. Pappas is the Director of Initiative Marketing in Intel's Server Platforms Group. In this role, Jim is responsible to work with the industry on the development of products that comply with server I/O, power, and memory initiatives such as PCI Express, Geneseo, InfiniBand™ architecture, The

Green Grid, and Fully Buffered Dimm (FBD). Mr. Pappas has 25 years of experience in the computer industry. He has served on the board of directors for a number of technology initiatives, most notably the PCI Special Interest Group as a founding member, and the USB Implementers Forum as the founding chairman.



John Pflueger, Ph.D.

Technology Strategist, Dell
Technical Committee Chairman, The Green Grid

John Pflueger, Ph.D., is a technology strategist in Dell's Data Center Infrastructure organization, driving strategy and implementation efforts aimed at improving data center efficiency. In this role, he is responsible for a number of data center issues including defining and leveraging the

relationship between facility and IT resources. John has 16 years of experience working in the computer and semiconductor equipment industries, including product development, product marketing and product management roles. John attended the Massachusetts Institute of Technology, receiving Mechanical Engineering degrees in 1985 (B.S.), 1988 (M.S.), and 1991 (Ph.D.).



Paul Scheihing

Technology Manager, U.S. Department of Energy

Paul Scheihing is a Technology Manager within the Department of Energy's Industrial Technologies Program (ITP). He's currently leading DOE's participation in the development of the Superior Energy Performance program in partnership with US industry and also manages DOE's Data Center energy efficiency program.

Paul has worked for DOE since 1988. He has developed with US industry a variety of research, development and technology deployment partnerships and initiatives that all aim to encourage the more rapid adoption of energy efficient industrial technologies. In the 1990s, he managed DOE's voluntary industry partnerships such as Motor Challenge, Steam Challenge and Compressed Air Challenge that were then integrated within ITP's current Best Practices initiative. Previous to DOE, he worked for five years at the Garrett Turbine Engine Company in Phoenix, Arizona, and five years with Westinghouse Electric

Corporation in Concordville, Pennsylvania. Both jobs were as a Gas Turbine Development Engineer with a specialty of gas turbine combustor design, test and development.

He has a Bachelor of Science in Mechanical Engineering from the University of Connecticut in Storrs, Connecticut and a Masters of Science in Mechanical Engineering from Drexel University in Philadelphia, Pennsylvania.



Eddie Schutter

Senior Technical Director, AT&T
Advisory Council Member, The Green Grid

Eddie has managed and operated data centers for Pacific Bell, SBC, and AT&T since 1996. He currently leads the Data Center Architecture & Planning organization for AT&T Enterprise Data Centers, which manages a portfolio of data center space greater than 3 million sqft and over 120

MW of generation. Additionally, Eddie is the Technical Lead for AT&T's IT Sustainability Program, and is a Technical Consultation Leader in the AT&T Executive Energy Council.

Eddie has been an active member of The Green Grid since June 2008, and is a member of several committees in TGG, including Advisory Council, Technical Committee, Data Center Design Guide.

Eddie is located in Dallas, Texas.

Associations: BICSI, Board Member of 7x24 Lone Star Chapter, 7x24 National member, AFCOM, Uptime Institute, ASHRAE, The Green Grid, ANSI, ASME



Vic Smith

Senior Technologist, Dell
EMEA Technical WG President, The Green Grid

With 25+ years experience in the computer industry, Vic Smith is a Senior Technologist with the Strategic Technology Group at Dell, Inc. EMEA headquarters based in the UK. Dell Technologists provide industry & technical knowledge, best practices, guidance and pre-sales support

throughout EMEA. With Dell since 1997, Vic is responsible for strategy relating to Data center matters including Energy Efficiency & Environmental solutions (Green IT), Virtualization and Management Solutions for EMEA.

Alexandra Sullivan

Technical Development Manager, Environmental Protection Agency

Alexandra Sullivan leads the technical tools and development team at the US Environmental Protection Agency's ENERGY STAR Program for commercial buildings. She oversees the development and maintenance of technical resources for the program, including EPA's Portfolio Manager, an online tool that allows users to enter and track energy, water, and emissions in commercial buildings.

Alexandra coordinates statistical analyses and evaluates measures of energy performance in order to update and expand national energy performance rating system, which expresses the performance of commercial buildings on a scale of 1-to-100. Those buildings that earn a rating of 75 or higher are eligible to apply for the ENERGY STAR for buildings.

Portfolio Manager and these national energy performance ratings are widely used to evaluate the performance of a diverse group of commercial buildings including offices, schools, supermarkets, hospitals, and hotels.

Alexandra holds a BS in chemical engineering from Brown University and has professional experience in soil and groundwater remediation systems.

She began work at the EPA in 2005, after completing an MPA in environmental policy at Columbia University's School of International and Public Affairs.



Eiji Taguchi

Enterprise Specialist, Intel
Japan Technical WG Chairman, The Green Grid

Eiji has been working more than a quarter of a century in the IT industry. He joined Intel in 1982 and took a wide range of IT responsibilities to enable Intel's rapid growth, such as Design Engineering Computing Services Manager, Japan Site IT Manager, Greater Asia Region IT

Engineering Manager, Asia Internet Data Center Manager and IT Consulting Manager. Currently, he is in charge of strategic marketing programs, such as data center marketing, to enable Intel to design new generation enterprise products & platforms.



John Tuccillo

Vice President of Global Industry and Government Alliances, APC by Schneider Electric
President and Chairman, The Green Grid

John Tuccillo serves as the Vice President of Global Industry and Government Alliances at APC by Schneider Electric in West Kingston, RI. John is responsible for building collaborative technology and business alliances with key industry leaders as well as policy and standards

bodies in the variety of markets served by APC by Schneider Electric. Previously, John served as Global Director of Data Center Systems where he led a team of systems engineers, application engineers, product management and marketing professionals focused on delivering interoperable infrastructure and management systems. Mr. Tuccillo has 25 years experience within the IT and manufacturing industries working within the hardware, software, components and services categories.



Kenneth Uhlman, Ph.D.

Director of Data Center Business Development, Eaton
Technology & Strategy WG Member, The Green Grid

Kenneth Uhlman is the Director of Data Center Business Development for Eaton Corporation, where he is responsible for Eaton's global data center strategy for the Electrical Sector's offering and a liaison for Eaton IT. Previously, he has held leadership roles GE, Siemens, and

Schneider Electric.

He holds 3 U.S. patents, is a published author, and has been honored with many awards including Eaton's Pinnacle and GE's Musketeer Award. His degrees include a doctorate in Organizational Development from the University of Phoenix and a BSEEE from North Dakota State University. His dissertation was

titled, "Corporate Transformations and Collaborative Partnerships in Mission Critical Facilities." He is a licensed Professional Engineer in California.



Lawrence Vertal

Executive Director, The Green Grid

Lawrence (Larry) Vertal is the Executive Director of The Green Grid. In this role, Mr. Vertal champions the organization's mission to advance energy efficiency in data centers and the broader ecosystem of business computing. He drives the development of collaborative, vendor-neutral best-practices, metrics, and specifications by working with

the organization's global membership, Board of Directors, alliance organizations, and end-user Advisory Council.

Mr. Vertal, who was named by *InformationWeek* magazine as one of the "15 Innovators & Influencers for 2008", brings to the role more than two decades of operational management, strategic relations, corporate governance and marketing experience with technology companies. With a range of success spanning from startups to Fortune 100 corporations, he was most recently a Senior Strategist for AMD, where he was responsible for both the strategy and execution of corporate and commercial initiatives, and was a Director of The Green Grid.

Mr. Vertal holds a bachelors degree in Bacteriology with a minor in Philosophy from California State University, Los Angeles followed by graduate research in Chemistry focused on paramagnetic resonance.



Alan Yoder, Ph.D.

Chairman, SNIA

Alan Yoder, Ph.D. is a Senior Member of Technical Staff at NetApp, Inc., in Sunnyvale, California. Alan has been at NetApp since earning his Ph.D. in distributed systems in 1997, working on protocols, management frameworks, management applications, management partnerships, the Manage ONTAP™ SDK, and other projects. He also has

experience in construction and industrial accounting, CAD design and programming, GUI design and development and project management. He holds Bachelors, MSEE and Ph.D. degrees from Goshen College and the University of Notre Dame.

February 3, 2010

9:15am-9:45am:

State of The Green Grid

John Tuccillo, APC by Schneider Electric, The Green Grid Chairman of the Board and President [Ballroom Salon III & IV]

During this time of unprecedented change in the global economy, the positive economic and ecologic values of energy efficiency has moved to the front of the global stage. The ongoing work of The Green Grid continues to offer valuable foundational as well as forward-looking materials to aggressively advance energy efficient IT globally. The overall strength and momentum of the organization is what drives the good work and this forward-looking session will present The Green Grid vision and proposed focal points around improving energy efficiency.

9:45am-10:45am:

DCiE Survey Results

Ron Bednar, Emerson Network Power, Data Collection & Analysis WG
Eiji Taguchi, Intel, Japan Technical WG [Ballroom Salon III & IV]

In 2009, The Green Grid conducted surveys in North America and Japan to better understand how data centers are measuring energy consumption, the challenges they encounter and the actions they take when they learn more about their energy efficiency. This presentation will detail some of the survey's most significant results and what data center operators indicated regarding the current and potential future state of data center energy efficiency.

European Union Commission (Code of Conduct) Report

Paolo Bertoldi, EU Commission [Ballroom Salon I & II]

This Code of Conduct (CoC) was created by the European Commission Joint Research Centre in 2008 in response to increasing energy consumption in data centers and the need to reduce the related environmental, economic, and energy supply security impacts. The CoC aims to inform and stimulate data center operators and owners to reduce energy consumption in a cost-effective manner without hampering the mission critical function of data centers. The CoC aims to achieve this by improving understanding of energy demand within the data center, raising awareness, and recommending energy efficient best practice and targets. This CoC is a voluntary initiative aimed at bringing interested stakeholders together, including the coordination of other similar activities by manufacturers, vendors, consultants, and utilities. Parties signing up are expected to follow the intent of the CoC and abide by a set of agreed commitments, in particular monitoring energy consumption and implementing the best practices. In late 2009 the CoC was updated to reflect stakeholder comments.

Connecting Utilities to The Green Grid

Corban Lester, Lockheed Martin, Operations WG [Willow Glen I & II]

Electric utilities know that efficient IT equipment presents a major energy savings opportunity but very few offer targeted incentives for energy efficient IT products. Utilities should have a role in promoting a greener high-tech industry but face barriers which inhibit their meaningful participation. This session will reveal some of the opportunities which can result from cooperation between The Green Grid and utilities, and will shed light on the barriers encountered to date. The session will conclude with the introduction of a Utility Task Force for 2010 which will promote more robust cooperation between The Green Grid and electric utilities.

11:00am-12:00pm:

Obstacles to Adoption of Higher Voltage Direct Current Power in the Data Center

Kevin Bross, Intel, Power Sub WG [Ballroom Salon III & IV]

Higher Voltage Direct Current (HVdc) power in the data center is a hot topic in the industry and numerous discussion papers have been published, including several by The Green Grid. Broad deployment of HVdc is becoming more possible, but many obstacles and issues still need to be addressed before HVdc can be a viable solution for a broader set of end users. The Green Grid is working to identify the current obstacles, issues, and considerations that lie on the road to adoption of HVdc. During this session, the group will review a list of obstacles in the current HVdc path, discussing the pros and cons of the possible solutions for each.

Global Harmonization of Metrics

Dan Azevedo, Symantec, Metrics & Measurement WG [Ballroom Salon I & II]

This session will review the progress and current status specific to the Global Harmonization of Metrics effort. In 2009 The Green Grid in collaboration with the following organizations began driving toward a set of metrics and indices which can be formally adopted by all participant organizations to improve data center energy efficiency globally. Groups participating in this effort are the Department of Energy, the Environmental Protection Agency, the European Union Code of Conduct, Japan's Green IT Promotion Council, Ministry of Economy, Trade and Industry, and various additional industry groups.

The Green Grid Alliance Reports – ASHRAE, BCS, DMTF, GIPC, and SNIA

Jim Pappas, Intel, Liaison Committee [Willow Glen I & II]
Mike Patterson, American Society of Heating, Refrigerating & Air-Conditioning Engineers
Zahl Limbuwala, British Computing Society
Mark Carlson, Distributed Management Task Force
Michinori Kutani, Green IT Promotion Council
Alan Yoder, Storage Networking Industry Association

This session will provide an overview of the Liaison Committee and discuss Alliances in the IT, Facilities, and Government sectors. Representatives from

ASHRAE, BCS, DMTF, GIPC, and SNIA will present a synopsis of their relationship with The Green Grid and key deliverables that are in development.

1:00pm-2:00pm:

PUE/DCiE Current Status and Future Developments

Dan Azevedo, Symantec, Metrics & Measurement WG [Ballroom Salon III & IV]

In light of the recent Environmental Protection Agency announcement to support the PUE metric as the foundation for the Data Center Energy Star Rating system, this session will briefly outline the previous PUE/DCiE publications, the current progress within The Green Grid respective to PUE/DCiE, and the future developments that will be released in 2010.

PUE Calculator

Jud Cooley, Sun Microsystems, Technology & Strategy WG [Ballroom Salon I & II]

PUE is an important data center metric. An online tool has been developed that will assist in the proper estimation of the static design-level PUE. This interactive tool allows results to be saved as pdf or csv files or with a unique url so the results can be shared and saved. The tool includes the concept of physical boundaries within a data center such as containers, rooms, or buildings and reports Partial PUE for these physical boundaries. The tool also includes help prompts and well-defined categories for Power and Cooling delivery components such as CRAC, CRAH, UPS, Transformer, etc. The talk will show how to use the tool, discuss the limitations, and explain how to get access.

Regional Report from EMEA

Vic Smith, Dell, EMEA Technical WG [Willow Glen I & II]
Lex Coors, Interxion, EMEA Technical WG

This session reviews the events affecting our members and the data center industry in EMEA, including the carbon trading landscape and how this is likely to affect other geographies and countries going forward. Also covered are the EMEA Technical Work Group plans for 2010, the updated version of the EU Code of Conduct on Data Center Efficiency and the liaison with the British Computing Society. also In addition, the presenters will preview plans for connecting with the myriad of other energy efficiency bodies moving forward.

2:00pm-3:00pm:

DCPro IT Module Update

Rey Rodriguez, IBM, Data & Collection & Analysis WG [Ballroom Salon III & IV]

This presentation will describe the design bases and input being provided to Lawrence Berkeley National Laboratory for the development and release of the IT module of the follow-on DCPro Assessment Tool. The presentation will provide a tour of the spreadsheet tool created by The Green Grid to deliver the requested input, design bases, and assessment process for the DCPro IT

Module. This presentation is also to acknowledge and thank SNIA, ASHRAE, and other member companies for their input and assistance.

Calculating Partial PUEs

Jud Cooley, Sun Microsystems, Metrics & Measurement WG [Ballroom Salon I & II]

The measuring and management of the PUE for an IT facility is an effective tool in the overall management of the energy use of a facility. While PUE is a valuable tool, it can be used inappropriately. One common misuse occurs when a PUE number is quoted that only considers part of the overall PUE equation such as the facility and IT components inside a container or a room. While a complete PUE must also take into account components outside of this area, it is useful to be able to analyze and discuss the efficiency of components inside the container or room boundary. Partial PUE is a formal way of measuring and managing the efficiency of components within such a boundary.

Regional Report from Japan

Eiji Taguchi, Intel, EMEA Technical WG [Willow Glen I & II]
Yoshiko Bannai, APC by Schneider Electric, EMEA Communications WG

This session will include Japan Communications Work Group and Technical Work Group activity updates including 2009 accomplishments, a Japan organizational update, annual Japan events report, technical activities status, and the 2010 activity plan.

3:15pm-4:15pm:

PUE Public Reporting and Usage Guidelines

Building a Database for the Industry

Jon Haas, Intel, Data Collection & Analysis WG [Ballroom Salon III & IV]
Anand Akela, Hewlett-Packard, Data Collection & Analysis WG

During this first part of this session the presenter will provide a review of the published PUE/DCiE Usage and Public Reporting Guidelines, an overview of The Green Grid PUE reporting database forms and a discussion on potential recognition programs. The Green Grid PUE reporting tool allows data center managers to enter brief information about the data center in addition to the PUE results. Federal agencies like US Department of Energy (DOE), US Environmental Protection Agency (EPA), and the European Union (EU) Code of Conduct for Data Centers also require key information about the data center to participate in various energy efficiency programs for the data center.

During the second part of the session, the presenter will discuss The Green Grid's efforts to develop a database for recording key data center information as well as measurement results and contextual information about those results. The Green Grid shares a vision with DoE, EPA, and EU to have a common database of key data center characteristics across the industry that can be used by The Green Grid, DoE, EPA and EU tools. This presentation provides an overview of the common database vision and potential options to realize the vision.

A Metric for Measuring the Re-use of Waste-Heat

Mike Patterson, Intel, Metrics & Measurement WG

[Ballroom Salon I & II]

This session will review ongoing work within The Green Grid and select national labs on developing a metric for measuring the benefit of reusing excess or waste energy from the data center. PUE is the industry standard metric for data center infrastructure and, on occasion, there are reported values of less than 1.0, claiming to be taking credit for that energy re-use. This is an incorrect use of the PUE metric. The Green Grid will present a new metric that properly accounts for this beneficial reuse. The presentation will look at the theory of the metric including when it should and should not be used, the math behind it, as well as interesting case studies where it can be applied.

4:15pm-5:00pm:

Members Meeting and Key Contributor Award Ceremony

Larry Vertal, The Green Grid Executive Director

[Ballroom Salon III & IV]

The Annual Members Meeting will be lead by Larry Vertal, Executive Director of The Green Grid. This meeting will include organizational information and updates about the current status of The Green Grid. Following the meeting, recipients of the newly established Key Contributor Award will be recognized for their contributions to The Green Grid.

February 4, 2010

8:15am-9:00am:

State of The Green Grid

John Tuccillo, APC by Schneider Electric, The Green Grid Chairman of the Board and President

[Ballroom Salon III & IV]

During this time of unprecedented change in the global economy, the positive economic and ecologic values of energy efficiency has moved to the front of the global stage. The ongoing work of The Green Grid continues to offer valuable foundational as well as forward-looking materials to aggressively advance energy efficient IT globally. The overall strength and momentum of the organization is what drives the good work and this forward-looking session will present The Green Grid vision and proposed focal points.

9:00am-10:00am:

Keynote – Green Gold Rush: A Vision for Energy Independence, Jobs, and National Wealth

Robert F. Kennedy Jr.

[Ballroom Salon III & IV]

The creation of a green economy is an increasingly promising solution to multiple challenges. According to Robert F. Kennedy, Jr., sustainable business

and energy independence are keys to our economic revitalization. During this session, Mr. Kennedy will discuss the role that natural resources play in our work, our health, and our identity as Americans and the important role that the American legal system continues to play in preserving our natural environment for future generations, and the invaluable part that we can all play in supporting this system.

10:15am-11:45am:

Global Regulatory and Legislative Trends

[Ballroom Salon III & IV]

Dean Garfield, Information Technology Industry Council, Moderator

Paul Scheihing, Department of Energy

Andrew Fanara, Environmental Protection Agency

Alexandra Sullivan, Environmental Protection Agency ENERGY STAR

Zahl Limbuwala, European Union Commission

During this session, representatives from the United States Department of Energy, the United States Environmental Protection Agency, and the European Union Commission will discuss not only the current status of regulatory and legislative initiatives focusing on data center efficiency, but potential near-term future implications as well. A lively dialogue around energy reporting, cap and trade and other carbon to energy connections will be moderated by Dean Garfield, President and Chairman of ITIC leading into an interactive discussion with the audience about global regulatory and legislative interests in these areas and the implications they can have on IT. Key topics will include end goals for the industry, barriers to more rapid adoption of energy efficiency technology and practices, what programs and actions would help address these barriers, and others.

11:45am-12:30pm:

The Green Grid Data Center Design Guide

Jon Haas, Intel, Data Center Design Guide WG

[Ballroom Salon III & IV]

The goal of the Data Center Design Guide program is to provide the industry with a set of design guides to be used by operators and designers to build and operate energy efficient data centers. The presentation will describe the status of the program, examples of the first drafted chapters, and discuss next steps in completing the first complete draft of the Design Guide.

1:30pm-2:15pm:

The Green Grid Academy

Tom Kiernan, APC by Schneider Electric

[Ballroom Salon III & IV]

In this session, The Green Grid Academy, we will introduce highlights and objectives of our latest released course titled, "Recovery Stranded Data Center Capacity". Attendees will also discuss their impressions of The Green Grid's

Brandon Hall award-winning eLearning "Measures and Metrics" course. Based on the group's feedback, the presenter will introduce 2010 plans including the creation and charter of the newly formed Education Committee.

End User Birds-of-a-Feather Session Report Data Center Pulse Report

Eddie Schutter, AT&T, TGG Advisory Council [Ballroom Salon I & II]
Dean Nelson, eBay, Data Center Pulse, TGG Advisory Council

What are the energy efficiency concerns and experiences of end user data centers operators? What are some of the top challenges/requests of data center end users? How can The Green Grid focus its efforts on the initiatives that make the most difference in the industry and end user experiences? How can manufacturers and end users work together to support the industry in energy efficiency goals and best practices?

The Green Grid asked these questions in 2008 at the first "Birds-of-a-Feather" (BOF) session at the Technical Committee meeting in Seattle, WA. The event resulted in many of The Green Grid's current initiatives and the development of The Green Grid Advisory Council. This end user council works directly with the Board and Committees on behalf of The Green Grid end users.

In 2009, the Advisory Council conducted another BOF session and recognized that The Green Grid needed even greater access to end users. This coupled with new membership in the Advisory Council led to a new relationship between The Green Grid and Data Center Pulse, an exclusive end user community representing over 1300 end users in 55 countries.

In this session, representatives from the Advisory Council will share the readout results of the 2009 BOF session and provide the updated "top 10" from Data Center Pulse. Additionally, Data Center Pulse's "Chill Off 3", an industry test comparing efficiencies of different cooling products in the data center will be introduced to forum attendees.

2:15pm-3:00pm:

EPA Data Center Assessment Report

Mike Patterson, Intel [Ballroom Salon III & IV]
Vaughn Noga, Environmental Protection Agency

In 2008 The Green Grid and the Environmental Protection Agency (EPA) signed a Memorandum of Understanding (MOU) to promote energy efficiency in small to mid-sized data centers. This effort promotes the innovative efforts of the IT industry and EPA to facilitate improvements in the energy efficiency of computing facilities. This session will review the work performed to assess an EPA data center in Washington, D.C., the results of that assessment, and the challenges and opportunities for this type of an installation. Many of the lessons learned by both the EPA and the assessment team will be shared. Opportunities for improvements in that data center as well as opportunities for education for the industry to avoid some of the issues found will be discussed.

Measuring Data Center Productivity: The Latest

Mark Monroe, Sun Microsystems, Metrics & Measurement WG [Ballroom Salon I & II]

Last year, The Green Grid introduced the concept of measuring data center productivity through the use of proxies: simplified metrics that closely indicate the amount of real work done in data centers without the expense and difficulty of measuring work directly. This year, results of the feedback surveys are analyzed, progress on the metrics is discussed, and directions for the coming year are explained.

Climate Savers Computing Initiative Update

Kathleen Fiehrer, Climate Savers Computing Initiative [Willow Glen I & II]

Climate Savers Computing Initiative (CSCI) is a non-profit group of consumers, businesses, and conservation organizations working together to reduce computing energy consumption and the resulting greenhouse-gas emissions. CSCI has largely addressed reducing computing energy consumption by focusing on system energy efficiency and client power management. During this session, CSCI will review recent activities associated with the program goals as well as planned technical activities for 2010. In addition, the talk will address opportunities for synergy and collaboration between CSCI and TGG.

3:00pm-3:45pm:

Free Cooling Tool and Power Configuration Efficiency Estimator

Mark Monroe, Sun Microsystems, Metrics & Measurement WG [Ballroom Salon III & IV]
George Navarro, Eaton, Power Sub WG

The Green Grid free cooling map and web tool was introduced at the 2009 Technical Forum with a promise that suggestions for enhancements were welcome and would be enacted. This year, The Green Grid free cooling maps and tools have been updated to include maps of Europe and Japan, and the web tool has been enhanced to include common practices in economization, such as return air mixing and humidification. The enhancements will be discussed and a brief demonstration is planned.

The Power Configuration Efficiency Estimator is an interactive online tool that The Green Grid will be launching shortly. The tool serves as a companion to TGG white paper #16, "Quantitative Analysis of Power Distribution Configurations for Data Centers". This presentation is the first introduction of the tool to general users and will touch on the major features of the tool.

EPA ENERGY STAR for Data Centers

Alexandra Sullivan, Environmental Protection Agency [Ballroom Salon I & II]

ENERGY STAR is a government program designed to help businesses and organizations save energy and fight global warming with superior energy efficiency. This session will provide a brief introduction of the ENERGY STAR program offerings for commercial and industrial organizations, including the new rating system for data centers. It will then take a detailed look at ENERGY STAR research and planned program enhancements for data centers. In 2008 and

2009 the ENERGY STAR program administered a data collection effort to gather measured energy use and operational information for data centers. This project produced a diverse set of over 100 observations, with broad representation of size, climate, computing functions, and technologies.

The session will share the results of a detailed energy performance analysis on this unique data set. Based on this analysis, the EPA has developed a 1-to-100 energy efficiency rating for data center infrastructure. This rating will be released into the ENERGY STAR software tool, Portfolio Manager, in spring 2010. The session will provide an overview of the software tool and new recognition opportunities that will be available for data centers later this year.

Unused Server Study

Andy Hawkins, 1E, Data Collection & Analysis WG

[Willow Glen I & II]

We often hear advice telling us to “make better use of what you have” and technology such as virtualization has helped achieve exactly that. But are we skipping the basics? For instance, how do we monitor the data center to ensure powered devices are actually being used at all? This session explores the problem of unused servers. Whether they’re running old applications with no users, used briefly and then abandoned, or even never used, it’s all a waste of energy which can easily be avoided with tools and guidance. This session will discuss the results of the survey that was given and conclusions that can be drawn from it.

3:45pm-4:30pm:

Real-Time Energy Consumption Measurements in Data Centers by TGG and ASHRAE TC 9.9

Tahir Cader, Hewlett-Packard

[Ballroom Salon III & IV]

Steve McCluer, APC by Schneider Electric

Mike Patterson, Intel

Ken Uhlman, Eaton

Daryn Cline, EVAPCO

John Bean, APC by Schneider Electric

Power & Cooling, and by association energy efficiency, are widely accepted as the top concerns of many data center owners/operators today. As a result, there is an industry-wide push to improve data center energy efficiency. In turn, there is increasing adoption of The Green Grid’s PUE metric as a proxy for data center energy efficiency. In order to be able to calculate and optimize the PUE, the data center owner/operator needs to know what, where, and how to measure the necessary energy consumption data. In a collaborative effort between ASHRAE TC9.9 and The Green Grid (TGG), the topic of real-time energy consumption measurements in data centers has been tackled and documented in a book entitled “Real-Time Energy Consumption Measurements in Data Centers”. The presentation will be based upon the book and will provide an overview of what, where, and how to measure the energy consumption for the power and cooling infrastructure. In addition, an overview of software and sensor systems that can be used for these measurements is provided. Finally, the topics of calculating the

PUE for data centers housed in mixed-use facilities, and data centers that deploy Combined Cooling, Heat, and Power (CCHP) systems, are addressed.

Interactive Discussion of TGG’s Toolbox (present and future)

John Pflueger, Dell, Data Collection & Analysis WG

[Ballroom Salon I & II]

In 2009, The Green Grid published its first online tools: The free cooling tool and maps for North America, Europe, and Japan. In early 2010, work is nearing completion on additional tools such as the Power Configuration Efficiency Estimator and a PUE Calculation Tool. These projects all address needs in the industry for neutral tools to provide guidance for common decisions faced by data center designers and engineers.

This session will present a brief overview of these tools and other tools available in the industry as background for an interactive discussion on where The Green Grid’s Technical Committee should focus tool-related efforts in 2010. The discussion will include not only facility-related issues, but also how best to provide guidance to individuals and groups responsible for IT decisions that affect power consumption and energy efficiency.

Effects of Virtualization on Data Center Physical Infrastructure

Tom Brey, IBM, Operations WG

[Willow Glen I & II]

The energy savings gained from server and storage virtualization and consolidation can be further maximized if data center managers adjust their power and cooling infrastructure to accommodate the reduced loads. The cycle of initial reduced load followed by load growth should incorporate adjustments to power and cooling. This presentation examines several approaches for efficiently cooling consolidated loads.

4:30pm-5:00pm:

Closing Ceremony / Q&A

Board of Directors

[Ballroom Salon III & IV]

During the final session, The Green Grid Board of Directors will entertain questions from the audience and lead a closing ceremony which will include a raffle for exciting prizes drawn from completed event surveys.