7th Annual Energy Expo

"Sustaining Together"

Wednesday, October 2nd 2013

Saint Paul RiverCentre

Twin Cities Chapter

AEE The Association of Energy Engineers

ASHRAE Minnesota Chapter

U.S. Green Building Council Chapter Minnesota

Platinum Sponsor

Xcel Energy's Minnesota business customers can take advantage of our award-winning suite of energy conservation, renewable energy, energy management and billing programs. Xcel Energy's programs can help you identify and implement ways to increase your energy efficiency, reduce operating costs, lower environmental impacts and improve your bottom line. Ready to get started? Our team of energy efficiency specialists can provide recommendations tailored to your business. They can walk you through programs, explain requirements and discuss different ways to get started. Contact your Xcel Energy representative or an energy efficiency specialist at 1-800-481-4700 or by email at energyefficiency@xcelenergy.com. Visit xcelenergy.com/Rebates for additional details.

Gold Sponsors

CenterPoint Energy is a proud sponsor of the 2013 Energy Expo, and an 18-year sponsor of ASHRAE Research. Headquartered in Houston, Texas, CenterPoint Energy, Inc. is a domestic energy delivery company that includes electric transmission and distribution, natural gas distribution, competitive natural gas sales and services, interstate pipelines and field services operations. The company serves more than five million metered customers primarily in Arkansas, Louisiana, Minnesota, Mississippi, Oklahoma and Texas. Assets total more than $22 billion. With about 8,800 employees, CenterPoint Energy and its predecessor companies have been in business for more than 135 years. In Minnesota, CenterPoint Energy is the state's largest natural gas distribution utility, serving over 800,000 customers in 260 communities. The utility's local rebate programs save more gas than any other utility in the state. CenterPoint Energy also operates a non-regulated business in Minnesota called Home Service Plus®. For more information, visit CenterPointEnergy.com.

Great River Energy is a not-for-profit electric cooperative owned by its 28 member cooperatives. We generate and transmit electricity for those members, located in the outer-ring suburbs of the Twin Cities up to the Arrowhead region of Minnesota and down to the farmland region in the southwestern portion of the state. Collectively, our member cooperatives serve nearly 650,000 member-consumers — or about 1.7 million people. We are the second largest electric power supplier in Minnesota. Great River Energy offers more than 3,500 megawatts of generation capability that consists of a diverse mix of baseload and peaking power plants, including coal, refuse-derived fuel, natural gas and fuel oil, as well as wind generation.

Trane, a business of Ingersoll Rand - the world leader in creating and sustaining safe, comfortable and energy efficient environments - improves the performance of homes and buildings around the world. Trane solutions optimize indoor environments with a broad portfolio of energy efficient heating, ventilating and air conditioning systems, building and contracting services, parts support and advanced controls for homes and commercial buildings.

Green Sponsors

AMEC Environment & Infrastructure (E&I) Minneapolis office offers a wide range of consulting services including engineering, construction management, decommissioning (asset valuation), environmental, hydrogeology and unexploded ordnance. With over 30 full time employees locally and nearly 8,000 E&I employees in North America we have the experience to any of our client's needs.

The Center for Energy and Environment is a non-profit 501 (c) (3) corporation that provides pragmatic building energy efficiency solutions. CEE brought recommissioning to Minnesota in 1996 through a competitive grant from the U.S. Department of Energy, and completed a number of highly successful demonstration projects. Based off this research Xcel Energy launched its recommissioning program and CEE later administered the Public Buildings Enhanced Energy Efficiency Program (PBEEEP) for the State of Minnesota. PBEEEP provided project management and technical oversight for over 900 buildings achieving more than $1 million in energy savings through recommissioning. We've more recently developed the Energy Efficient Operations Program to provide facility managers with the tools and training needed to maintain energy savings after engineering studies. We also deliver the One-Stop Efficiency Shop, sponsored by Xcel Energy, which is a full-service rebate program designed to address the concerns small business owners face when choosing more efficient lighting.

District Energy St. Paul currently heats more than 190 buildings and 300 single-family homes and cools more than 100 buildings in downtown Saint Paul and adjacent areas. The cooling system includes two thermal storage tanks to chill water at night during off-peak electrical hours, for use during the day. Customers enjoy stable rates, unsurpassed reliability and energy efficient heating and cooling service. We serve Fortune 500 companies, start-ups, and landmark small businesses that thrive with the support of District Energy's stable and reliable heating and cooling services. According to the Building Owners and Managers Association's Experience Reports, Saint Paul consistently enjoys competitive energy rates compared to other major cities.

Uponor is a leading provider of plumbing, radiant heating and cooling, hydronic distribution, pre-insulated pipe and fire sprinkler systems for single-family, multifamily and commercial structures. The core of Uponor systems feature proven, flexible, durable crosslinked polyethylene (PEX-a) tubing and reliable ProPEX® expansion fittings for use in new construction, remodel and retrofit applications.

Our piping systems provide solutions that conserve energy and water, reduce the demand for heating and cooling resources, support sustainable building practices and provide superior, reliable performance. In addition, we are the professionals' resource for training, technical support and design services that provide the necessary tools and expertise to ensure each system is designed and installed to meet and exceed expectations.
To learn more about Uponor system solutions, vis www.uponorpro.com

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Xcel Energy

Program

7:30	Registration & Breakfast			
	Sponsored by **Trane** **Facility Manager**	Sponsored by **CenterPoint Energy** **Building Owners**	Sponsored by **Great River Energy** **Existing Buildings**	Sponsored by **Xcel Energy** **Building Design**
9:00-10:00	Minnesota's Utility Conservation Programs Joe Plummer, MN Department of Commerce	Energy Efficiency as an Investment Matt Haakenstad, Navigant	Business Case for Sustainability Richard Murphy, Murphy's Warehouse	Changes to MN Commercial Energy Code Andy Thielen, Crane Engineering
10:00-10:30	Break			
10:30-11:30	Making Your BAS System Work for You Mark Peterson, University of Minnesota	Performance Metrics Peter Dahl, Sebesta Blomberg	Commissioning for Energy Savings Rebecca Ellis, Questions & Solutions Engineering	Innovative Systems for Energy and Water Conservation Daniel Nall, Thornton Tomasetti Inc.
11:30-1:00	Lunch			
1:00-2:00	Energy Efficient Operations Chris Plum, Center for Energy and Environment & Garrett Mossiman, Center for Sustainable Building Research	Panel Discussion: Organizational Energy Saving Strategies Vin Gupta, 3M Leah Hiniker, Hennepin County Mark Schiller, Best Buy	Large Chiller Plant Optimization through Visualization Jeff Seewald, Sebesta Blomberg	ASHRAE AEDGs Daniel Nall, Thornton Tomasetti Inc.
2:00-4:00	Happy Hour			
2:30-4:00	Tours			

Know Your Sessions

FACILITY MANAGER TRACK – Sponsored by TRANE

Minnesota's Utility Conservation Programs: Past, Present & Future

This session is an overview of the important role that utility conservation and rebate programs play in meeting the State's emission reduction goals. Discussion topics will include: overview of MN energy policies, energy savings achieved through CIP, programs and technologies employed, Impact of codes and standards, new programs and regulatory policies.

Making Your Building's BAS System Work for You

Focus on unique building automation strategies the University of Minnesota-Twin Cities is using for HVAC alarm management, equipment scheduling, and trend analysis. Further remarks will be made on how using these strategies impacts energy use.

Energy Efficient Operations: Giving Facility Operators the Tools to Optimize Building Performance

The presentation will discuss two specific implementation approaches to Energy Efficient Operations: The first is a standardized method that puts the majority of the process in the hands of the facility staff, using online tools to build the Energy Efficient Operations Manual and associated analytic procedures, log books and troubleshooting guides. The second is a customized version designed to be deployed as part of a recommissioning project. Unlike standard projects where the facility is only given information about measures that should be pursued to improve energy efficiency, Energy Efficient Operations provides information on how to maintain those systems that are working optimally at the time of the project to ensure that they maintain that level of performance.

BUILDING OWNERS' TRACK – Sponsored by CenterPoint Energy

Energy Efficiency as an Investment: The Value of Investing in Energy Efficiency at your Facility

This presentation explores rates of return for typical Energy Efficiency projects, and compares these to other uses of investment capital (such as stocks, bonds, etc.). Selection of economic evaluation criteria (payback, cash flow, IRR, NPV) can have a big impact on project decision making. We will discuss risk and cost of Energy Efficiency projects versus renewable resources (wind , solar, etc.) and traditional generation sources, and finally how investing in Energy Efficiency can serve as a hedge against uncertain future utility expenses.

Performance Metrics: Post-Occupancy Performance of LEED Certified Buildings in Minnesota

The USGBC Minnesota Chapter's Performance Metrics initiative analyzed 24 months of utility data for 56 LEED certified buildings in Minnesota. Peter will discuss the results of this study and trends that appear when analyzing energy consumption based on building type, LEED rating system and certification level. Variances in energy intensity were especially present when comparing natural gas buildings with electric-only buildings. Peter will discuss the likely causes for this variance and the operational impacts. Recommendations will be provided to owners, building operators and design teams for evaluating building performance and delivering high performance facilities.

Panel Discussion: Organizational Energy Savings Strategies

In this panel discussion we will hear from three entities on how their organizations have implemented and advanced energy efficiency programs and projects. Each panelist will give a ten minute overview of their organization covering

1. Organization information and structure and what is the scope of their sustainability/energy team
2. What has been done to date for sustainability/energy projects
3. What is next for sustainability/energy efficiency projects

Following the three overview presentations, the remainder of the time will be open to the audience to ask questions to our panelist members.

EXISTING BUILDINGS TRACK – Sponsored by Great River Energy

Business Case for Sustainability – Balancing Economic & Environmental Factors

Too often when people speak about green initiatives they only discuss the environmental benefits and rarely address the financial aspects that, in reality, are critical to a business's success and decision whether to implement green practices. This session will add the crucial business component of economics to the equation and look at whether green practices can deliver economic returns and within reasonable periods of time.

The session will accomplish this by studying the details of four sustainability actions Murphy has installed on its large logistics campuses. These will include LED (vs. T-5) lighting a 350,000 sq. ft. facility, solar PV under different utilities programs and the SBA, storm water fee management, and native landscapes (vs. only manicured lawn). And finally, we will explore why Murphy has pursued the LEED and Energy Star Certification paths, how the client base was an impact in this decision, how Murphy leverages it in marketing, and all this in light of the fairly steep cost to become fully certified.

Commissioning for Energy Savings

Building owners and utilities invest significant financial resources in upgrading new and/or renovated building systems with energy conservative features in anticipation of saving future energy costs and achieving an environmentally responsible facility. Commissioning is an important process for any project but is especially critical for projects with uncommon hardware and/or non-standard control strategies designed to save energy. This presentation will briefly describe the commissioning process; provide examples of how commissioning has helped building owners achieve their intended return-on-investment; and recommend strategies for sustaining energy conservative performance after the project is complete.

Large Chiller Plant Optimization through Visualization

Many buildings and central plants are operated by control systems that collect data, lots of data. But, how do you turn that data into actionable plans for improvement in operational and energy performance? This is often the challenge. In this case, a large central chilled water plant was analyzed using visualization techniques that transformed tens of thousands of data points into pictures that illustrated key aspects of the plant's operation and performance. From there, opportunities for optimization were readily identified and evaluated.

BUILDING DESIGN TRACK – Sponsored by Xcel Energy

Changes to the Minnesota Commercial Energy Code

This presentation will cover the purpose and intent of the State of Minnesota Commercial Energy Code, which will be updated in 2014. The 2012 International Energy Conservation Code will be adopted to replace ASHRAE Std. 90.1-2004, so the key provisions and changes will be addressed, along with alternate compliance paths and federal government energy conservation requirements that pertain to states and jurisdictions. The minimum energy code requirements for building envelope, HVAC equipment efficiency, and lighting in new and existing commercial buildings will also be included in this session.

Innovative Systems for Energy and Water Conservation: Four Corporate Headquarters

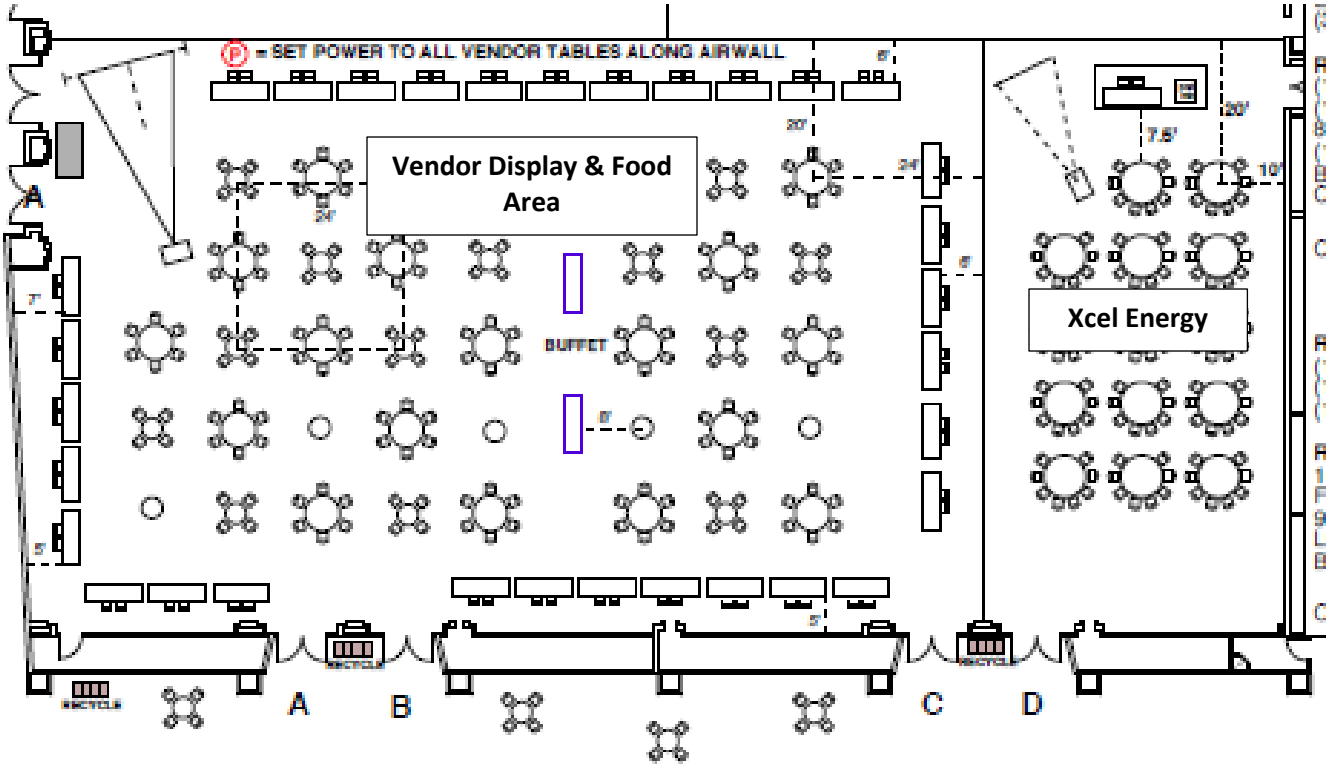
This presentation discusses the fundamentals of energy and water conservation in buildings, focusing on building mechanical systems. It then presents how these principles have been implemented in four corporate headquarters offices buildings around the world. Different approaches to energy conservation are presented, ranging from architecturally integrated HVAC systems to innovative applications of packaged equipment. Presented water conservation strategies range from water conserving fixtures through desalination of brackish groundwater.

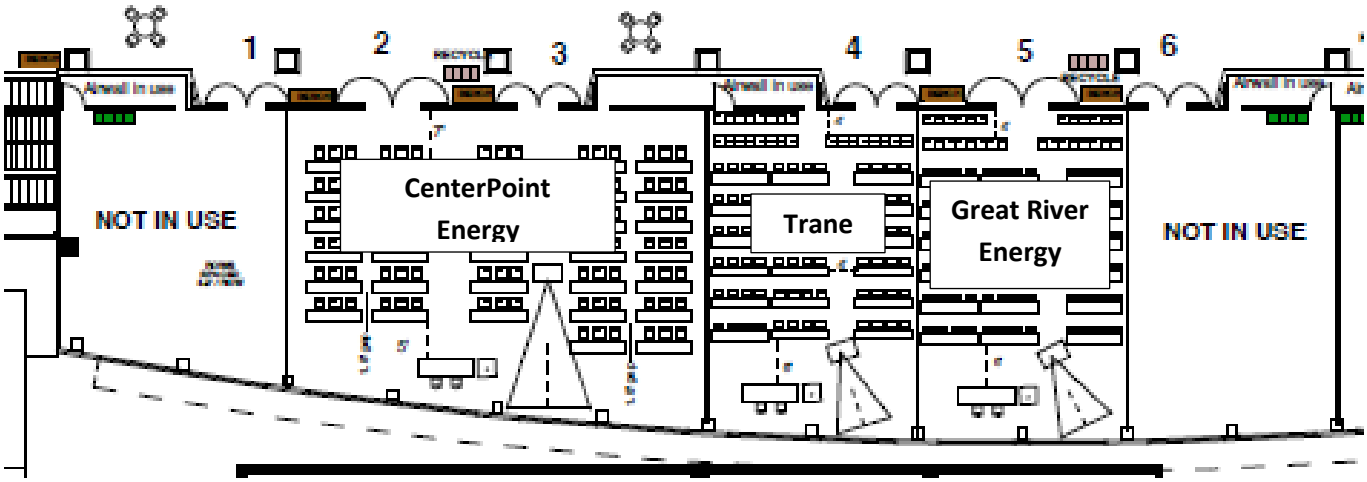
The ASHRAE Advanced Energy Design Guides

This presentation provides background on the conception, development and potential use of the ASHRAE Advanced Energy Design Guide Series. So far, AEDG volumes have been developed to guide designers in the achievement of 30 percent energy savings for Small Office Buildings, Small Retail Buildings, K-12 Schools and Warehouses. Future volumes will address Roadside Lodging and other building types and will extend the potential savings to 50 percent.

Map

Ballrooms A-C : Vendor Displays and Food
Ballroom D : Xcel Energy Room
Meeting Room 2 & 3 : CenterPoint Energy Room
Meeting Room 4 : Trane Room
Meeting Room 5 : Great River Energy Room





Get to Know the Speakers – Facility Manager Track

Joe Plummer, CEM
Analysist, Minnesota Department of Commerce, Division of Energy Resources
Minnesota's Utility Conservation Program: Past, Present, & Future
Throughout his career at the Department of Commerce, Joe has been involved in the technical and regulatory aspects of utility conservation programs. Joe currently serves as project manager for development of Minnesota's Technical Reference Manual and energy efficiency tracking and implementation system (ESP®). Joe also continues to takes a lead role in the technical and regulatory evaluation of utility conservation plans and annual reports, assists in evaluating research proposals and managing grant projects through Minnesota's conservation applied research and development (CARD) program, and serves on the Board of the Midwest Energy Efficiency Alliance. Joe is a Certified Energy Manager and has master's degrees in electrical engineering and science/technology/environmental policy, both from the University of Minnesota.

Mark Peterson
Senior Controls Engineer, University of Minnesota's Energy Management Division
Making Your Building's BAS System Work for You
Mark has been working with the University since 1999 and has provided engineering design and controls technical support throughout the years as the University migrated the campus BAS away from proprietary single vendor systems to open protocol multi-vendor BACnet systems. The UofM Energy Management group supports BAS controls in over 200 buildings on campus that span across six different control system vendors. Mark is part of a team of engineers who have successfully integrated over 900 IP level BACnet controllers together for centralized alarm management, centralized trending, & data collection through a single seat user interface.

Christopher Plum, PhD, REA
Program Manager, Center for Energy and Environment
Energy Efficiency Operations: Giving Facility Operators the Tools to Optimize Building Performance
Chris has over 20 years of experience managing projects, including research and development projects. Chris Plum is a project manager at the Center for Energy and Environment. As the manager of the State of Minnesota's Public Buildings Enhanced Energy Efficiency Program (PBEEEP) he worked with the managers of seventy state facilities containing over 30 million square feet. He is a certified residential energy auditor and a Project Management Professional.

He has a BA in Chemistry from Swarthmore College and an MBA from the University of Minnesota. Since earning his PhD in Chemistry at Cornell University, which focused on energy transfer in chemical processes, Dr. Plum has worked in the areas of carbon dioxide sequestration, atmospheric reactions leading to photochemical smog, laser induced isotope separation, commercial and industrial energy efficiency, process efficiency, market research, and property management. He is co-author of several research papers on best practices in Existing Building Commissioning.

Garrett Mosiman, LEED AP
Research Fellow, Center for Sustainable Building Research
Energy Efficiency Operations: Giving Facility Operators the Tools to Optimize Building Performance
Prior to returning to school in 2006, Garrett worked for ten years as a carpenter, model builder, project manager and architectural designer in Texas and Minnesota. His primary field of expertise is sustainable materials and their use in durable building assemblies that honor the principles of sound building science. Other areas of interest include light pollution, urban hydrology, and energy efficiency. Garrett holds a bachelor's degree in architecture from Rice University, and an M.S. in Architecture, Sustainable Design from the University of Minnesota. Presently, he teaches Introduction to Environmental Technology to undergraduate students in the Architecture program at the University of Minnesota.

At CSBR, Garrett has performed iterative energy modeling exercises to compare performance of windows in various climates, worked on community-oriented design projects, and provided architectural expertise for a team of engineers developing a residential roof panel system. Among other things, Garrett is currently responsible for administering the day-to-day operations of the B3 design guidelines and implementation of a new online compliance tracking tool.

Get to Know the Speakers – Building Owners Track

Matt Haakenstad, PE, CEM, CMVP
Associate Director of Energy Efficiency/DSM, Navigant
Energy Efficiency as an Investment: The Value of Investing in Energy Efficiency
Mr. Haakenstad manages large energy efficiency evaluation projects for utility clients. He also has experience managing energy expenditures for commercial and industrial customers through energy efficiency initiatives, energy logistics optimization, price risk management and competitive procurement.

Peter K. Dahl, Ph.D., LEED AP
Sebesta Blomberg
Post-Occupancy Performance of LEED Certified Buildings in Minnesota: A Statewide Analysis
In his role at Sebesta Blomberg, Peter leads project teams in achieving LEED certification for buildings and developing Climate Action Plans for colleges and universities. He also manages retro-commissioning projects to improve existing building performance, promote a healthy indoor environment, improve energy efficiency and conserve water. Peter earned his Ph.D. in Architectural Engineering from Penn State.

Vin Gupta, PE
Senior Principal Engineer, 3M Company
Panel Discussion: Organization Energy Savings Strategies
Vin is the Energy Technology Organization Facilities Group leader at 3M, responsible for technology development and technology transfer. He has worked on HVAC design, utility plant implementation, and energy conservation which earned him the prestigious Facilities Engineering Award at 3M.

Vin has a MS and MBA from the University of Minnesota-Twin Cities. He is currently the ASHRAE - Minnesota Chapter 2013-2014 President and has been an ASHRAE member for over 25 years with involvement including several publications and presentations in the area of energy conservation, utility plant and chiller project commissioning, multiple chiller design and HVAC installations for manufacturing facilities. He is co-chair of the ASHRAE Refrigeration and Education Committees and has received the ASHRAE Distinguished Service Award and Fellow Award.

Leah Hiniker
Energy Manager, Hennepin County
Panel Discussion: Organizational Energy Savings Strategies
A Minnesota native, Leah Hiniker graduated from Iowa State University with a degree in Environmental Civil Engineering hoping to improve and preserve the environment. Her first job was cleaning up hazardous waste sites in a white Tyvek suit – not her ideal career choice. Then she ventured into the world of sanitary sewers hoping to improve water quality – another dirty job, or atleast smelly job. Finally, after several career path changes, she came across a job at Hennepin County doing what she was searching for - conserving our natural resources, sustaining the environment and striving to make the world a better place to live. As the Energy Manager for the county, she is tasked with managing the energy use of over 60 county facilities and implementing conservation opportunities.

Mark Schiller
Senior Specialist, Enterprise Energy Management, Best Buy Company
Panel Discussion: Organizational Energy Savings Strategies
Mark Schiller is a Senior Energy Specialist with Best Buy Co., Inc. For over 5 years he's helped oversee the following areas: energy efficiency strategy, employee engagement, energy management policies, lighting, HVAC/ lighting controls strategies, reactive and proactive troubleshooting of energy management system/electrical/HVAC issues, and customizing an enterprise energy management system. He holds a B.S. from the University of Minnesota's Carlson School of Management in Marketing and Entrepreneurial Management.

Get to Know the Speakers – Existing Building Track

Richard Murphy, LA
President & CEO, Murphy's Warehouse Company
Case for Sustainability – Balancing Economics &Environmental Factors

Murphy Warehouse Company is an asset based logistics services organization. Mr. Murphy is the 4th generation of Murphy to run the enterprises since its founding in 1904. Richard is a past Chair of the global Council of Supply Chain Management Professionals (CSCMP), a member of the University Of Minnesota Carlson School Of Management's Supply Chain & Operations Advisory Board, the College of Design Board, and past Chair of the Center for Transportation Studies (CTS), past President of the American Society of Landscape Architects - MN Chapter, and recently completed 25 years teaching graduate students in the College of Design at the University of Minnesota. His MLA is from the Harvard Graduate School of Design and his BLA, BED and MBA are from the University of Minnesota.

Murphy Warehouse Company is widely recognized for its sustainability practices. It is the 5th largest solar power producer in Minnesota, has 2 LEED Gold and 1 LEED Silver certified logistics campuses with two more in process, Energy Star and ISO 14001 Certifications, has the largest LED lighted building in the upper Midwest at 350,000 sq. ft., and is known as "*the folks with all the pretty flowers on Main Street*" for their extensive use of native prairie plantings at company facilities.

Rebecca Ellis, PE, LEED AP
Questions & Solutions Engineering
Commissioning for Energy Savings

Ms. Ellis is a nationally recognized leader in the building commissioning industry. In addition to being a licensed professional engineer in 13 states, she is a LEED Accredited Professional and holds commissioning certifications from ASHRAE, the Building Commissioning Association, and the AABC Commissioning Group. She has Bachelor's and Master's Degrees in Mechanical Engineering from the University of Minnesota and MIT, respectively.

Jeffrey Seewald, PE, CEM
Senior Engineer, Sebesta Blomberg
Large Chiller Plant Optimization through Visualization

Mr. Seewald has more than 20 years of experience in commercial buildings systems engineering, having served in a variety of roles in the HVAC, building automation and controls, and energy efficiency and management arenas. Mr. Seewald's overall work experience spans a spectrum: from planning, technical analysis and engineering design for building owners, to industry and market research, to education and advocacy for energy efficiency and high performance buildings. In his role at Sebesta Blomberg, Mr. Seewald's focus is on energy efficiency and sustainability in buildings. Areas of expertise include energy management, building automation and controls, HVAC, central plants, commissioning and re/retro-commissioning. Strategic master planning for infrastructure, technology and energy performance, and central chilled water plant optimization are two of Mr. Seewald's passions.

Get to Know the Speakers – Building Design Track

Andrew J. Thielen, PE
Mechanical Engineer/HVAC Specialist, Crane Engineering
Changes to the Minnesota Commercial Energy Code

Andy incorporates nearly 30 years of experience in designing HVAC and other mechanical systems. As part of the Crane Engineering Building Science team, he provides expert consultation to clients in the construction industry on all mechanical systems, including HVAC and plumbing. Andy performs root cause failure analysis, HVAC system design, and building recommissioning for contractors and building owners. Andy has designed industrial HVAC and piping systems for leading manufacturers in the chemical, food, beverage, and medical device industries.

Andy holds a Bachelor of Science degree in Mechanical Engineering from the University of North Dakota. He has served as an adjunct professor in the Industrial Engineering department at the University of Minnesota-Duluth. He has also developed extensive continuing-education materials on building code requirements and HVAC issues for trade audiences. He was the primary editor on the Minnesota Mechanical, Fuel Gas and Commercial Energy Codes, in place from 2008-today. His prior employment includes administration of mechanical and commercial energy codes for the state of Minnesota and at private engineering firms, various project management and engineering roles.

Daniel H. Nall, FAIA, PE, BEMP, HBDP, RA, LEED AP
Senior Vice President, Thornton Tomasetti, Inc.
The ASHRAE Advance Energy Design Guides
Innovative Systems for Energy and Water: Four Corporate Headquarters

A graduate of Princeton University and Cornell University, Daniel is the author of over 30 papers in technical and professional journals. He has been a Visiting Lecturer at the University of Pennsylvania, Cornell University and Princeton University Schools of Architecture and an Adjunct Associate Professor of Architecture at Columbia University. Daniel's activities include the ASHRAE Sustainability Oversight Committee, TC 4.7, the Building Energy Quotient Ad-Hoc and Oversight Committees, and the ASHRAE Advanced Energy Design Guide Steering Committee. He helped author the 30% AEDG's for Small Office Buildings, Small Retail Buildings, Roadside Lodging and Small Warehouses, and the 50% AEDG's for Medium Office Buildings and Medium and Big Box Retail Buildings.

He received the ASHRAE New York Chapter Distinguished Service Award in 2011 and the ASHRAE Distinguished Service Award in 2012. He is a Fellow of the AIA, and a USGBC LEED Fellow and has been a member of the Board of Directors of the NY Chapter, USGBC, the vice-chairman of the USGBC Energy and Atmosphere Technical Advisory Group and a member of the AIA National Committee on the Environment. Mr. Nall was named one of the "25 Newsmakers of 2007" by Engineering News Record magazine. He was named "Outstanding Practitioner, 2004", by the US Chapter of the International Building Performance Simulation Association.

Notes