

Hospital Energy Alliance (HEA) Executive Roundtable

April 29, 2009
National Building Museum
401 F Street NW
Washington, DC 20001

Executive Summary

On April 29, 2009, the Department of Energy's (DOE) Building Technologies Program (BTP) convened a roundtable to launch the Hospital Energy Alliance (HEA), which aims to improve energy efficiency and reduce greenhouse gas emissions of healthcare systems throughout the country. HEA provides a national forum to document and publicize best practices in energy efficiency, offer DOE research on emerging technologies, and share practical experiences and insights peer-to-peer.

Attended by healthcare sector leaders and representatives from DOE and national energy laboratories, the meeting convened charter members to discuss how their healthcare systems are currently managing energy use, challenges specific to the healthcare industry, and how HEA members can work with one another and DOE to lead the industry in energy-efficiency initiatives.

Richard Moorer, U.S. Department of Energy

Our nation is facing difficult challenges: a struggling economy, climbing unemployment, rising healthcare costs, dependence on foreign oil and related national security issues, and climate change. The President signed the American Recovery and Reinvestment Act in an effort to jumpstart the economy, create or save millions of jobs, and address long-term challenges so our country can thrive in the 21st century. Improving our nation's energy efficiency is a fundamental step toward achieving these goals.

As healthcare leaders, you understand the stakes as well as the opportunities. Concerns about growing hospital energy use, energy reliability and price volatility, and the potential impact of greenhouse gas reduction policies on operations and profitability are driving the industry's demand for innovative, cost-effective, energy-efficient solutions.

The Hospital Energy Alliance is a groundbreaking initiative that will spur major energy-efficiency improvements in our hospitals and help the nation address critical issues. In fact, the mission of HEA intersects with several of the President's key policy objectives:

- reduce energy consumption,
- cut carbon emissions,
- accelerate development and deployment of energy-efficient and renewable energy technologies,
- lower the cost of healthcare, and
- create green jobs.

Andrew Persily, Vice President, ASHRAE

Hospitals spend more on energy per square foot than any other commercial building type. ASHRAE, with 50,000 members all over the world, supports HEA in reducing the energy consumption and operating costs of hospitals. Many of our committees are addressing subjects related to healthcare energy use and I will ask that our members work with you on related HEA subcommittees.

ASHRAE is working to develop standards and guidance documents including an Advanced Energy Design Guide for Small Hospitals and Healthcare Facilities, an HVAC Design Guide, and

a guide on ventilation for healthcare facilities. ASHRAE also offers certification for healthcare systems designers.

Paul Mustone, Chair, Hospital and Healthcare Facilities Committee, IES

Lighting is exciting. IES is a 103-year-old organization. Lighting is our area of expertise, but we are also concerned about integrated building design and are committed to collaborating with you and our colleagues at ASHRAE, BOMA, USGBC, and DOE in changing how we design, construct, and operate our buildings. Today, lighting is a \$12 billion industry nationwide and a \$40 billion industry worldwide. With advancements in solid-state lighting, there are many ways we can help you reduce energy consumption and operating costs related to lighting in your healthcare systems. When the student is ready, the teacher will be here.

Joe Colella, Vice President, Facilities Operations for New York-Presbyterian and HEA Steering Committee Member

I bring greetings to the HEA from Barry Duignan, president of the Hospital Engineering Society of Greater New York, who was unable to make it today due to train interruptions from New York to D.C. Barry wanted me to communicate on his behalf that many of the more than 300 member hospitals in his New York, New Jersey, and Connecticut regional chapter have committed to joining HEA and participating in this effort to reduce energy consumption in our nation's hospitals.

Facilitation questions and answers from the HEA event are captured below.

1. What opportunities/challenges have informed your hospital energy-efficiency policies?

- Meeting the cost-effectiveness test: five-year payback
- Nonprofits do not have the same access to Federal tax credits as for-profits
- Balancing the cost of new construction vs. greening
- Capital dollars are shrinking
- Solar transfer from coal incentives
- Solutions are not there
- Current market forces in healthcare will not drive energy-efficiency policies; need regulations
- Health implications of coal generation for electricity are not in the equation; there is a lack of awareness of how energy efficiency relates to public health
- Efficiency issues become regional and make it hard to go national: utilities and climates differ per region
- Reluctance to interfere with medical staff getting equipment they need
- Hospitals think of energy efficiency as “product” rather than “process”
- Architects do not consider energy efficiency from design phase
- Making a stronger case for energy-efficiency projects: from boardroom to boiler room

2. What cost and technology barriers must be overcome?

- Lack of metering
- Unique regulatory environments of hospitals (e.g., require certain number of air exchanges per hour)
- Need for life cycle analysis, measures that support shift toward energy efficiency in new buildings
- Continuous training to maintain high-performance healthcare facilities
- Competition for money that goes toward the hospital's core mission of caring for the sick
- Need to demonstrate the value of each energy dollar saved: one dollar saved equals 50 dollars coming in

3. What specific tools/resources from DOE and others would help achieve energy/environmental performance goals?

- R&D on hospitals of the 21st century
- Green Guide to Healthcare
- New financial modeling tools, such as information about impact on public health
- Information on what is good performance by hospital type
- Guidance on how to use power purchasing agreements (PPAs)
- HEA buyers' guide for products by region
- Mock-ups of an energy-efficient surgical suite of the future
- Scientific partner to assist with measuring and data interpretation
- Smart grid systems that provide basic knowledge on where energy is being used
- Revolving loan fund to support energy-efficiency projects based on three- to five-year paybacks
- Checklists of quick-win opportunities

4. How can HEA and DOE work together to advance an energy-efficiency policy agenda to spur innovation and accelerate solutions in the hospital sector?

- Act as change managers
- Engage manufacturers and persuade suppliers to be more energy efficient
- Articulate the need for a revolving loan fund to support energy-efficiency projects so they do not have to compete for money going toward health care
- Promote current resources available from DOE and national laboratories
- Serve as a clearinghouse for information
- Offer education and training programs
- Explore entire "family of healthcare," including medical offices and medical transportation
- Work with members' government relations departments to better understand energy agenda, policies, and procedures
- Frame as an environmental and health issue, rather than an energy issue, linking it to hospitals' primary health mission
- Create new incentives for energy efficiency
- Sell the business case for energy efficiency to hospital leadership

Attachment A: Attendees


Industry Attendees (alphabetically by organization)

Matt Fenwick, American Hospital Association
Richard J. Umbdenstock, American Hospital Association
Dale Woodin, ASHE
Rick Hermans, ASHRAE
Andrew Persily, ASHRAE
Kai Abelkis, Boulder Community Hospital
Dennis Smith, Catholic Health Initiatives
John D'Angelo, Cleveland Clinic
Steven Cutter, Dartmouth-Hitchcock Medical Center
Clark Reed, Environmental Protection Agency
Bob Eisenman, Global Health & Safety Initiative
Jerry Arndt, Gundersen Lutheran Health System
Joan Curran, Gundersen Lutheran Health System
Gary Cohen, Health Care Without Harm
Jim Moxley, HealthSouth
Brian Weldy, Hospital Corporation of America
Paul Mustone, Illuminating Engineering Society of North America
Brad Hollomon, International Sustainable Technology
Christine L. Malcolm, Kaiser Foundation Health Plan and Hospitals
Tom Cooper, Kaiser Permanente
Lt. Commander Titania B. Cross, Navy Bureau of Medicine
Joe Colella, NewYork-Presbyterian
Nick DeDominicis, Practice Greenhealth
Gina Pugliese, Premier Safety Institute
Amanda Foster, Premier Safety Institute
Richard Beam, Providence Health & Services
Steve Swinson, Texas Medical Center/TECO
Kent Bein, TRICARE Management Activity

Commercial Building Initiative

Dru Crawley, U.S. Department of Energy
Pat LeDonne, U.S. Department of Energy
Richard Moorer, U.S. Department of Energy
Guenter Conzelmann, Argonne National Laboratory
Brett Singer, Lawrence Berkeley National Laboratory
Paul Torcellini, National Renewable Energy Laboratory
Dave Hunt, Pacific Northwest National Laboratory
Marylynn Placet, Pacific Northwest National Laboratory
Doug Brookman, Public Solutions
Kellan Dickens, Booz Allen Hamilton
Bette Hughes, Akoya
Simone Katz, Akoya
Mike Miller, Booz Allen Hamilton
Sucheta Puranik, Booz Allen Hamilton
Kiran Srivastava, Booz Allen Hamilton

Attachment B: Presentations




**Hospital
Energy Alliance**

**Net-Zero Energy
Commercial Building Initiative**

Dru Crawley
Team Lead – Commercial Buildings
U.S. Department of Energy

Commercial Buildings' Share


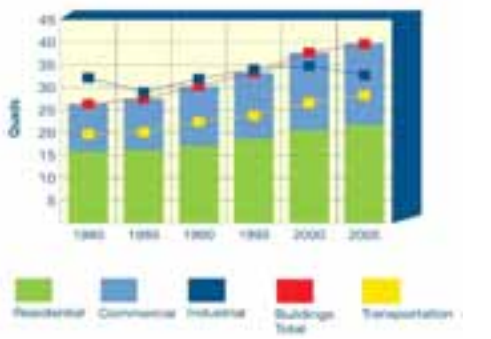
- 18% of U.S. energy
- 18% of U.S. greenhouse gas emissions
- 4% of world greenhouse gas emissions—equal to the emissions of India



Fastest Growing Energy Sector

- Energy consumption by commercial buildings sector rose 70% between 1980 and 2005.

Growth in Buildings Energy Use Relative to Other Sectors



2030 Commercial Buildings Projection for “Business as Usual”

- 1,210 square miles of new commercial floor space to add 580 million metric tons of CO₂
- Commercial buildings to use additional 7 quads of energy use, 90% of it electricity
- Commercial buildings to contribute 53% of total growth in electricity usage or 100 GW

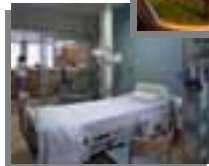


DOE’s Alternative to “Business as Usual”



- Turn tomorrow’s buildings into domestic energy assets

- Construct energy-efficient, high-performance buildings that expeditiously and cost-effectively achieve sustainable carbon reductions



- Enable, through energy-efficient buildings, higher ROIs for building owners and occupants as well as for economy as a whole



Commercial Building Initiative: EISA Authorizations

Energy Independence and Security Act of 2007

- Calls for development of Net-Zero Energy Commercial Building Initiative [EISA Section 422]:
 - Commercial buildings newly constructed by 2030;
 - 50% of commercial building stock by 2040;
 - All commercial buildings by 2050.
- Authorizes DOE to collaborate with national labs, private sector, other federal agencies, non-governmental organizations to advance high-performance commercial buildings.
- Directs DOE to recognize High-Performance Green Building Partnership Consortia and competitively select Consortium.



Net-Zero Energy Commercial Building Initiative

Transforming the Built Environment

- Public-private partnerships created to achieve and promote continuous technology improvement and commercialization of advanced building technologies at an accelerated pace
- Enable market-ready net-zero energy commercial buildings no later than 2025 in all climate zones



Commercial Building Energy Alliances

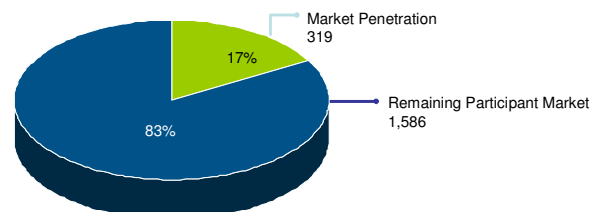
Informal associations of building owners and operators who want to reduce energy consumption

- CBEAs launched:
 - Retailer Energy Alliance
 - General merchandise, grocery store, restaurant, warehousing/distribution
 - Commercial Real Estate Energy Alliance
 - Office, shopping center, hospitality, medical office, GSA
 - Hospital Energy Alliance
 - In-patient facilities
- CBEAs to be launched:
 - Other Institutional Energy Alliances
 - Federal/state/local government
 - Colleges/universities/K-12 schools



HEA Market Share

HEA Market Penetration (Million Sq. Ft.)



Assumptions:

- Includes properties that are owned and/or managed
- HEA numbers do not include outpatient facilities or medical office buildings
- Market sq. footage figures drawn from U.S. Department of Energy 2008 Buildings Energy Data Book <http://buildingandfabook.eere.doe.gov/>



HEA Mission and Goal

- HEA will use member insight and DOE technical expertise to investigate, objectively evaluate, and broadly deploy technologies that promote the integration of advanced energy efficiency and renewable energy in hospital design, construction, retrofit, and operations and maintenance.
- The goal of HEA is to reduce energy consumption and greenhouse gas emissions while lowering operating costs and enhancing healthcare delivery.



Benefits of HEA Membership

- **Technology Procurement**
 - Specifications to standardize equipment and create price consistency
 - REA developed parking lot LED procurement specs; working on Rooftop HVAC
- **Supplier Summits**
 - Dialogues between alliance members and vendors on how to overcome barriers to cost-effective, energy-efficient strategies
- **Technology Evaluation**
 - Lab expertise to vet unproven technologies
 - Provide input on technologies to be reviewed
 - REA closed first round of screening in February
- **Efficiency Standardization and Tools**
 - Commercial Technology Solutions
 - Commercial Lighting Solutions launching in early May
 - Commercial Unitary HVAC Solutions/Central HVAC Solutions under development
 - Test Procedures for “plug loads” equipment (refrigeration, medical, other)



HEA Subcommittees

- Medical Equipment and Plug Loads (launching first)
- Lighting
- Power Alternatives
- HVAC
- Benchmarking and Integration

Developing the Business Case:

- Case studies (relevant data from successful building retrofits currently in operation)
- Position papers (O&M, green leasing best practices)
- Evaluation of ROI for commercially available tools and technologies

