

# CONTENTS

## **PANEL 1: INTRODUCTION**

### **Updates on Revision to ASHRAE Standard 90.2: Including Roof Reflectivity for Residential Buildings**

H. Akbari, *Lawrence Berkeley National Laboratory*

S. Konopacki, *Lawrence Berkeley National Laboratory*

D. Parker, *Florida Solar Energy Center*

### **Reducing Measurement Uncertainties in Duct Leakage Testing**

John W. Andrews, *Brookhaven National Laboratory*

### **Measured Impact of Advanced Windows on Cooling Energy Use**

Michael T. Anello, *Florida Solar Energy Center*

Danny S. Parker, *Florida Solar Energy Center*

John R. Sherwin, *Florida Solar Energy Center*

Katie Richards, *Florida Solar Energy Center*

### **Factors Influencing Space Heat and Heat Pump Efficiency from a Large-Scale Residential Monitoring Study**

Matt Bouchelle, *Florida Power Corporation*

Danny S. Parker, *Florida Solar Energy Center*

Michael T. Anello, *Florida Solar Energy Center*

Katie M. Richardson, *Florida Solar Energy Center*

### **Protocol for Monitoring of Moisture in the Walls of a Home**

Dan Cautley, *Cautley Engineering*

Craig Schepp, *Energy Center of Wisconsin*

André Desjarlais, *Oak Ridge National Laboratory*

### **Impacts of Shading and Glazing Combinations on Residential Energy Use in a Hot Dry Climate**

Sara Farrar, *National Renewable Energy Laboratory*

Paul Reeves, *Partnership for Resource Conservation*

C. E. Hancock

Ren Anderson, *National Renewable Energy Laboratory*

### **Performance of Duct Leakage Measurement Techniques in Estimating Duct Efficiency: Comparison to Measured Results**

Paul W. Francisco, *Ecotope, Inc.*

Larry Palmiter, *Ecotope, Inc.*

**Effects of Equipment Cycling and Sizing on Seasonal Efficiency**

Fredric S. Goldner, *Energy Management & Research Associates*

**Energy Efficiency and Indoor Air Quality in R-2000 and Conventional New Houses in Canada**

John Gusdorf, *The Buildings Group, Natural Resources Canada*

Anil Parekh, *The Buildings Group, Natural Resources Canada*

**Improving DOE-2's RESYS Routine: User Defined Functions to Provide More Accurate Part Load Energy Use and Humidity Predictions**

Hugh I. Henderson, Jr., *CDH Energy Corp.*

Danny Parker, *Florida Solar Energy Center*

Yu J. Huang, *Lawrence Berkeley National Laboratory*

**A Case Study of a Successful Innovative Multi-Unit Residential Building**

Duncan Hill, *Canada Mortgage and Housing Corporation*

David Carruth, *Canada Mortgage and Housing Corporation*

**Measured Impact of Mechanical Thermostat Replacement**

Russ Johnson, *Northeast Utilities*

Dinesh Bhagani, *Northeast Utilities*

Steven W. Carlson, *CDH Energy Corp.*

**Transformers Efficiency: Unwinding the Technical Potential**

David Korn, *The Cadmus Group*

Adam Hinge, *Sustainable Energy Partnerships*

Fouad Dagher, *Nees Companies*

Charles Partridge, *Boston Edison*

**Payback Analysis of Design Options for Residential Water Heaters**

Alex Lekov, *Lawrence Berkeley National Laboratory*

Jim Lutz, *Lawrence Berkeley National Laboratory*

Camilla Dunham Whitehead, *Lawrence Berkeley National Laboratory*

James E. McMahon, *Lawrence Berkeley National Laboratory*

**Benchmarking Residential Energy Use**

Michael MacDonald, *Oak Ridge National Laboratory*

Sherry Livengood, *Oak Ridge National Laboratory*

**Best Practice Upgrades for Energy Efficient New Homes**

David Meisegeier, *ICF Consulting*

Glenn Chinery, *U.S. Environmental Protection Agency Climate Protection Division*

**A New Device for Field Measurement of Air Handler Flows**

Larry Palmiter, *Ecotope, Inc.*

Paul W. Francisco, *Ecotope, Inc.*

**Towards Zero Energy Demand: Evaluation of Super Efficient Building Technology with Photovoltaic Power for New Residential Housing**

Danny S. Parker, *Florida Solar Energy Center*

James P. Dunlop, *Florida Solar Energy Center*

Stephen F. Barkaszi, *Florida Solar Energy Center*

John R. Sherwin, *Florida Solar Energy Center*

Michael T. Anello, *Florida Solar Energy Center*

Jeffrey K. Sonne, *Florida Solar Energy Center*

**Hidden Power Drains: Residential Heating and Cooling Fan Power Demand**

John Proctor, *Proctor Engineering Group, Ltd.*

Danny Parker, *Florida Solar Energy Center*

**Measure Retention in Residential New Construction**

Valerie Richardson, *Pacific Gas and Electric Company*

Lisa A. Skumatz, *Skumatz Economic Research Associates, Inc.*

**Unvented-Cathedralized Attics: Where We've Been and Where We're Going**

Armin F. Rudd, *Building Science Corporation*

Joseph W. Lstiburek, *Building Science Corporation*

Kohta Ueno, *Building Science Corporation*

**A Field Study of Exhaust Only Ventilation System Performance in Residential New Construction In Vermont**

Andy Shapiro, *Energy Balance, Inc.*

David Cawley, *Vermont Energy Investment Corporation*

Jeremy King, *Vermont Energy Investment Corporation*

**Stopping Duct Quacks: Longevity of Residential Duct Sealants**

Max Sherman, *Lawrence Berkeley National Laboratory*

Iain Walker, *Lawrence Berkeley National Laboratory*

Darryl Dickerhoff, *Lawrence Berkeley National Laboratory*

**An Experimental Investigation of Cooking, Refrigeration and Drying End-uses in 100 Households**

Olivier Sidler, *Cabinet SIDLER*

Paul Waide, *PW Consulting*

Benoit Lebot, *International Energy Agency*

**Delivering Tons to the Register: Energy Efficient Design and Operation of Residential Cooling Systems**

Jeffrey Siegel, *Lawrence Berkeley National Laboratory*

Iain Walker, *Lawrence Berkeley National Laboratory*

Max Sherman, *Lawrence Berkeley National Laboratory*

**Cool Neighborhoods: The Measurement of Small Scale Heat Islands**

Jeffrey K. Sonne, *Florida Solar Energy Center*

Robin K. Vieira, *Florida Solar Energy Center*

**Non-Compressor Cooling Alternatives for Reducing Residential Peak Load**

David Springer, *Davis Energy Group*

George Loisos, *Loisos/Ubbelohde Associates*

Leo Rainer, *Davis Energy Group*

**Understanding Energy End-Use In New Zealand Houses**

Albrecht Stoecklein, *Building Research Association of New Zealand*

Andrew. Pollard, *Building Research Association of New Zealand*

Jeremy Tries, *Building Research Association of New Zealand*

Michael Camilleri, *Building Research Association of New Zealand*

Nigel Isaacs, *Building Research Association of New Zealand*

Gerard Fitzgerald, *Fitzgerald Applied Sociology*

**Residential Air Infiltration and Ventilation Study in New York State**

Peter Strunk, *Synertech Systems Corporation*

Laurence F. Kiney, *Synertech Systems Corporations, E Source, Inc.*

Robert M. Carver, *New York State Energy Research and Development Authority*

**Evaluation of Photovoltaic Power Generation Systems in Residential Homes in Japan: A Partnership Program of Utility and Consumers' Cooperative**

Takahiro Tsurusaki, *Jyukankyo Research Institute*

Akio Tanaka, *Jyukankyo Research Institute*

Hidetoshi Nakagami, *Jyukankyo Research Institute*