

eceee Summer Study proceedings

Digital version

eceee 2013 Summer Study
Rethink, renew, restart

3–8 June 2013
Belambra Les Criques, Toulon/Hyères, France

PROCEEDINGS PRODUCTION

Project manager and editor

Therese Laitinen Lindström
Borg & Co, Stockholm, Sweden

Proceedings layout and production

Josefine Höglund, Therese Laitinen Lindström & Ylva Blume
Borg & Co, Stockholm, Sweden

Nina Hampus
Hampus Media, Stockholm, Sweden

Cover design

Klas Björkman
Björkman & Mitchell, Stockholm, Sweden

© eceee and the authors 2013
Printed at ABA Intercopy, Stockholm, Sweden, 2013

ISSN 1653-7025
ISBN 978-91-980482-3-0

The proceedings are also available in a printed
version (ISBN 978-91-980482-2-3).

Proceedings can be ordered from:

eceee secretariat
Sveavägen 98, 4 tr
113 50 Stockholm
Sweden

tel: +46 (0)8 673 11 30
fax: +46 (0)8 673 04 44

eceee@eceee.org
www.eceee.org

Acknowledgements

The eceee board would like to convey a special thanks to the partners, whose support makes this event possible. The board also would like to thank all the authors and the panel leaders for their intense efforts to contribute to these proceedings. We gratefully acknowledge the support of all the anonymous helpers who have assisted in making the eceee 2013 Summer Study a success.

GOLD PARTNERS

ADEME
Enova
Swedish Energy Agency

BRONZE PARTNERS

CLASP – Collaborative Labelling and Appliance Standards Program
Eurima
GBPN – Global Buildings Performance Network
Glass for Europe
yetu

PARTNERS

BPIE – Buildings Performance Institute Europe
EuroACE
RAP – The Regulatory Assistance Project
Rockwool
VELUX

PANEL LEADERS

PANEL 1 **Foundations of future energy policy**

Jacky Pett Pett Projects, United Kingdom
Lars J. Nilsson Lund University, Sweden

PANEL 2 **Energy efficiency policies: What delivers?**

Tina Fawcett Environmental Change Institute, Oxford University Centre for the Environment, United Kingdom
Aleksandra Novikova Climate Policy Initiative, Germany

PANEL 3 **Local action and national examples**

Olivier Pol ATP Architekten und Ingenieure, Austria
Katri Kuusinen City of Helsinki, Finland

PANEL 4 **Transport and mobility: How to deliver energy efficiency**

Jonathan Köhler Fraunhofer Institute for Systems and Innovation Research, Germany

PANEL 5A **Cutting the energy use of buildings: Projects and technologies**

Anja Bierwirth Wuppertal Institute for Climate, Environment and Energy, Germany
Yvonne Boerakker DNV KEMA Energy & Sustainability, The Netherlands

PANEL 5B **Cutting the energy use of buildings: Policy and programmes**

Even Bjørnstad Enova SF, Norway
Marina Economidou European Commission, Joint Research Centre, Italy

PANEL 6 **Appliances, product policy and ICT**

Paula Fonseca University of Coimbra, Portugal
Egil Öfverholm Sweden

PANEL 7 **Monitoring and evaluation**

Mirjam Harmelink Harmelink consulting, The Netherlands
Andra Blumberga Riga Technical University, Latvia

PANEL 8 **Dynamics of consumption**

Isabelle Garabuau-Moussaoui EDF R&D, France
Kirsten Gram-Hanssen Danish Building Research Institute, Aalborg University, Denmark

SUMMER STUDY CONFERENCE MANAGERS

Christel Broussous, Therese Laitinen Lindström & Anne Bengtson

SUMMER STUDY CO-CHAIRS

Rob Kool, Agneta Persson & Barbara Schlomann

EXECUTIVE DIRECTOR

Nils Borg

ECEEE BOARD

Board members

Peter Bach, Danish Energy Agency, Denmark (President and chair of the board)
Andreas K. Enge, Enova SF, Norway (Vice-President and vice-chair of the board)
Agneta Persson, WSP Sweden (Vice-President and vice-chair of the board)
Didier Bossebœuf, Agence de l'Environnement et de la Maîtrise de l'Energie, ADEME, France
Randall Bowie, Rockwool, Denmark
Adrian Joyce, EuroACE
Rob Kool, The Netherlands
Juraj Krivošík, SEVEn, Czech Republic
Marianne Moscoso-Osterkorn, Austria
Lorenzo Pagliano, Kyoto Club, Italy
Barbara Schlomann, Fraunhofer Institute, Germany
Hal Wilhite, University of Oslo, Norway

Alternates

Aude Bodiguel, ADEME, France (alternate for Didier Bossebœuf)
Kjersti Hasfjord, Enova SF, Norway (alternate for Andreas K. Enge)
Hans Nilsson, FourFact, Sweden
Andrea Roscetti, Politecnico di Milano, Italy (alternate for Lorenzo Pagliano)
Clemens Rohde, Fraunhofer Institute, Germany (alternate for Barbara Schlomann)

PLENARIES ETC.

More information about the plenaries, solution workshops and the Summer Study can be found at www.eceee.org/summerstudy

Table of contents

eceee Summer Study proceedings

The proceedings from the 2013 edition of the eceee Summer Study consist of four volumes with continuous page numbering as follows: Volume 1, pp. 1–620 (panels 1 & 2); Volume 2, pp. 621–1348 (panels 3, 4 & 5A); Volume 3, pp. 1349–1904 (panels 5B & 6); Volume 4, pp. 1905–2410 (panels 7 & 8). Author and keyword indexes are found at the end of Volume 4.

PANEL 1 FOUNDATIONS OF FUTURE ENERGY POLICY

Introduction to panel 1

	Panel leaders: Jacky Pett & Lars J. Nilsson	1
1-003-13	Energy efficiency in low-carbon and energy roadmaps Bengt Johansson	3
1-004-13	How can improved energy efficiency affect energy security? Daniel K. Jonsson, Bengt Johansson	13
1-006-13	The iron triangle: Integrated energy efficiency funds link project finance to performance and spark large-scale investment Milton Bevington	19
1-015-13	Analysis of behaviour change due to electricity crisis: Japanese household electricity consumer behaviour since the earthquake Chiharu Murakoshi, Sho Hirayama, Hidetoshi Nakagami	29
1-055-13	Complexities of saving energy in Qatar Alan Meier, Sinan Sabeeh, Mohamed Darwish	41
1-072-13	International Microgrid Assessment: Governance, INcentives, and Experience (IMAGINE) John Romankiewicz, Chris Marnay, Nan Zhou, Min Qu	47
1-086-13	The double challenge: Limiting electricity demand growth while pushing forward electrification of energy demand – lessons from recent low-carbon roadmaps and scenarios for the EU Stefan Lechtenböhrer, Sascha Samadi	59
1-112-13	Improving energy efficiency policies: the role of international projects Thibaud Voita	71
1-121-13	Building Expertise: industry responses to the low-energy housing retrofit agenda in the UK and France Gavin Killip, Tina Fawcett, Kathryn B. Janda, Véronique Beillan, Stanislas Nösperger	77
1-160-13	Implications of maximizing China’s technical potential for residential end-use energy efficiency: A 2030 outlook from the bottom-up Nina Zheng Khanna, David Fridley, Nan Zhou, Jing Ke	87
1-163-13	Smart grids, local adoption of distributed generation and the feed in tariff policy incentive J. Richard Snape	93
1-183-13	Closing the loop between theory, policy and practice: IEA DSM Task 24 on behaviour change Sea Rotmann, Ruth Mourik	101
1-198-13	Quantifying the potential impact of energy efficiency and low carbon policies for China Nan Zhou, David Fridley, Michael McNeil, Nina Zheng Khanna, Wei Feng, Jing Ke	111
1-217-13	Renovation of the EU buildings stock: an opportunity for the EU gas dependency Yamina Saheb, Aurelien Saussay, Charlotte Johnson, Vida Rozite	123
1-242-13	Advocating energy efficiency with a proverbial approach Hans Nilsson	131
1-286-13	Housing crisis: efficiency opportunity Jack Carrington	141
1-306-13	Somewhere between a ‘Comedy of errors’ and ‘As you like it’? A brief history of Britain’s ‘Green Deal’ so far Pedro Guertler, Sarah Royston, David Robson	153
1-320-13	An “acceptable” low carbon scenario for France: Participatory scenario design and economic assessment Sandrine Mathy, Ruben Bibas, Meike Fink	165

1-340-13	The role of energy and efficiency in economic development: policy implications Timothy J Foxon, Julia Steinberger	177
1-351-13	Efficient and service oriented infrastructure operation; the role of the Energy Efficiency Directive in driving change towards multi-utility service companies Katy Roelich, Julia Steinberger, Christof Knoeri	185
1-367-13	A spanner in the works? Are ambitious energy efficiency policy objectives frustrated by the standardisation processes or can ambitious technical standards accelerate progress? Mark Ellis, Vida Rozite	195
1-379-13	Redirecting research about energy and people: from “if only” to “social potential” Mithra Moezzi, Kathryn B. Janda	205
1-387-13	The role of technology-forcing standards and innovation to dramatically accelerate product energy efficiency Kevin Lane, Fiona Brocklehurst, Hans-Paul Siderius, Mark Ellis	217
1-406-13	Closing the loop: using hero stories and learning stories to remake energy policy Kathryn B. Janda, Marina Topouzi	229
1-413-13	Carbon revenues: possibly the greatest opportunity to cut carbon and costs Louise Sunderland	241
1-414-13	Everyday life energy-related innovations in the harsh light of social reality: turning energy efficiency policy foundations upside down? Sylvie Douzou, Sophie Bouly de Lesdain	251
1-449-13	Driving market transformation and international collaboration through the super-efficient equipment and appliance deployment (SEAD) initiative Gabrielle Dreyfus, Kavita Ravi, Matthew Wittenstein, Mark Friedrichs, Steve Pantano, Amol Phadke, Michael A. McNeil, Robert Van Buskirk	261
1-457-13	Towards a better understanding of local reorganization processes – empirical findings from two case studies Andreas Huber, Jens Koehrsen, Jannika Mattes	271
1-501-13	Going deep in energy consumption in buildings: How to achieve the best case scenario for deep savings in building energy consumption Peter Graham, Jens Laustsen, Diana Üрге-Vorsatz	283
1-513-13	Characterising domestic energy related behaviours Tim Chatterton, Charlie Wilson	289

PANEL 2 ENERGY EFFICIENCY POLICIES: WHAT DELIVERS?

Introduction to Panel 2

	Panel Leaders: Tina Fawcett & Aleksandra Novikova	301
2-022-13	Energy efficiency feed-in-tariffs: key policy and design considerations Chris Neme, Richard Cowart	305
2-047-13	ACEEE international scorecard self-scoring tool Sara Hayes	317
2-105-13	Rethinking energy efficiency delivery – what can we learn from sport? Jo Hamilton, Stephen Berry	323
2-117-13	Reviewing successful and/or innovative policies to drive an energy efficiency strategy: case study for France Carine Sebi, Bruno Lapillonne, Jean-Sébastien Broc, Fanny Fleuriot	333
2-138-13	Building Expertise: Identifying policy gaps and new ideas in housing eco-renovation in the UK and France Tina Fawcett, Gavin Killip, Katy Janda	339
2-145-13	The EU air quality review: What role for energy efficiency, clean energy and demand response? Sarah Keay-Bright, Christopher James, Kenneth Colburn	351
2-148-13	White certificate schemes – can commodification and financialisation of energy efficiency solve energy market failure, or risk just adding to it? Iain MacGill, Stephen Healy, Rob Passey	359
2-155-13	What makes a good policy? Guidance for assessing and implementing energy efficiency policies Lena Tholen, Dagmar Kiyar, Maike Venjakob, Chun Xia, Stefan Thomas, Vera Aydin	369
2-161-13	The leading role of the public sector in energy end-use efficiency in the EU: Where do we stand? Veronika Czako	375
2-175-13	Resident engagement strategies in low and zero net energy communities Claudia A. Barriga, Alan Meier, Nicole Biggart, Dina Biscotti, Ben Finkelor, Toshihide Tanaka, Natsuko Enomoto	383
2-188-13	Trading in energy efficiency in Australia: What are the lessons learnt so far? Regina Betz, Martin C. Jones, Iain MacGill, Robert Passey	395

2-199-13	The regulatory arrangements required for a distributed energy market	
	Robert Passey, Muriel Watt	407
2-254-13	Barriers to domestic energy efficiency – an evaluation of retrofit policies and market transformation strategies	
	Aaron Gillich, Minna Sunikka-Blank	417
2-274-13	Revising EU energy label: evolution or revolution?	
	Stéphane Arditi, Luigi Meli, Edouard Toulouse	429
2-276-13	Energy policy in transition: evidence from energy supply and demand in the UK	
	Jan Rosenow, Darryl Croft, Nick Eyre	439
2-284-13	Energy efficiency policies in contracting parties of the energy community – an integrative and innovative approach	
	Violeta Kogalniceanu, Borko Raicevic	449
2-285-13	Methodology for developing ambitious strategies for energy renovation of national building stocks	
	Dan Staniaszek	461
2-302-13	Take a closer look! Improvement of energy efficiency policies in the framework of the Energy Services Directive	
	Thomas Madry, Vera Aydin, Ralf Schüle, Stefan Thomas, Daniel Becker, Nikolas Bader	471
2-312-13	A global assessment of appliance energy consumption and coverage gaps in energy efficiency standards and labels	
	Neal Humphrey, Debbie Karpay	477
2-343-13	Meeting legislation and enhancing reputation: Working within the contextual pressures of regulatory, social, economic and other drivers to reduce building energy consumption	
	Craig Robertson, Dejan Mumovic	489
2-354-13	On the way to change of scale: review of NEEAPs' energy efficiency strategies for buildings	
	Jean-Sébastien Broc, Paolo Bertoldi, Veronika Czaková	503
2-417-13	Effects of energy-efficiency measures and climate change mitigation policy instruments on primary energy use in district-heated buildings	
	Nguyen Le Truong, Ambrose Dodoo, Leif Gustavsson	515
2-418-13	Market transformation for clothes dryers: lessons learned from the European experience	
	Christopher Granda, Christopher Wold, Eric Bush	523
2-424-13	Energy renovation of single-family houses: importance of economic aspects and suggested policy measures	
	Krushna Mahapatra, Leif Gustavsson	529
2-451-13	Towards new national policy instruments for promoting energy efficiency in Norway	
	Henrik Karlstrøm, Marianne Ryghaug & Knut Holtan Sørensen	537
2-452-13	Trading appliance efficiency for electricity subsidies: the potential in emerging economies	
	Anand Gopal, Greg Leventis, Stephane de la Rue du Can, Nihar Shah, Amol Phadke	547
2-454-13	What works and what doesn't: renovation roadmaps for buildings	
	Frank Klinckenberg, Mia Forbes Pirie	557
2-459-13	Investment in energy efficiency by large-scale consumers: an innovative audit programme	
	Catherine Cooremans	569
2-490-13	Developing dynamic building energy efficiency codes – what can Europe learn from best practice around the world?	
	Niamh McDonald, Karl Wakelin, Jens Laustsen & Rosa Sitjà Gibert	581
2-506-13	Overview and assessment of the energy efficiency and energy conservation policies and initiatives of the Republic of South Africa	
	Theo Covary, Ulrich Aversch	591
2-517-13	Accounting for innovation in energy efficiency regulation	
	Margaret Taylor, Sydney Fujita	601
2-522-13	The role of NEEAPs, measurement methods and national targets to achieve the EU 2020 energy saving goal	
	Paolo Bertoldi, Caiman Cahill	613

PANEL 3 LOCAL ACTION AND NATIONAL EXAMPLES

Introduction to Panel 3

	Panel leaders: Olivier Pol & Katri Kuusinen	621
3-005-13	Making energy efficiency bankable: Lessons learned from a global market transformation effort	
	Christopher C. Seeley, Milton Bevington	627
3-031-13	Local energy governance: communities and energy efficiency policy	
	Joanne Wade, Nick Eyre, Jo Hamilton, Yael Parag	637

3-046-13	Evaluating China's pilot low-carbon city initiative: national goals and local plans Nina Zheng Khanna, David Fridley, Lixuan Hong.	649
3-058-13	Managing behavioral risks in large-scale social housing sustainable retrofit projects in the UK Will Swan, Phil Brown, Richard Fitton.	661
3-060-13	Energy-efficient neighborhood development in Apeldoorn (NL) and Hillerød (DK), implementation and results R. Rooth, Y. Boerakker, P. Weitzmann, J. Uitzinger	671
3-071-13	37 sustainable urban development areas and their approaches to sustainability and energy efficiency Agneta Persson, Sara Elmén, Elin Salomonsson.	683
3-074-13	The role of open house events to improve energy efficiency: reaching the new or preaching to the converted? Stephen Berry, Anne Sharp	693
3-083-13	Residential electricity audit impact study: an Ontario (Canada) case-study Ian H. Rowlands, Julia Hawthornthwaite.	703
3-108-13	Scaling up local energy action: the role of partnerships, networks and policy Ruth Mayne, Jo Hamilton, Noam Bergman, Yael Parag.	709
3-115-13	The District Energy Concept Adviser: a software tool to support urban decision makers in planning district energy supply schemes Heike Erhorn-Kluttig, Hans Erhorn, Juri Weber, Simon Wössner, Eike Budde.	721
3-123-13	Achieving behaviour based energy efficiency in professional kitchens Rose Maria Laden Holdt.	729
3-157-13	SERVING the nation – applying lessons from the SERVE CONCERTO project to Ireland Seamus Hoyne, Paul Kenny	735
3-158-13	An evaluation of local authority social network interventions for the promotion of energy-efficiency measures in the domestic sector Catherine Bale, Timothy Foxon, Nicholas McCullen, William Gale.	747
3-182-13	The domestic energy supply business model: why it should sell services rather than commodities Charlie Morris-Marsham, Steven K. Firth.	757
3-195-13	Building efficiency policies in world leading cities: what are the impacts? Adam Hinge, Hilary Beber, Jonathan Laski, Yuko Nishida.	771
3-201-13	Rethink the target: drivers, barriers and path dependencies for a low-carbon-transition in shrinking cities – the case of Oberhausen Steven März, Anja Bierwirth, Dorothea Hauptstock	783
3-221-13	Alternative financing schemes for energy efficiency in buildings Adrien Bullier, Christophe Milin	795
3-223-13	Shifting baselines: the interdependency of local and national policies to reduce GHG emissions Jan Kaselofsky, Steven März, Ralf Schüle.	807
3-234-13	A strong process for a weak policy? An analysis of stakeholder participation processes in French local climate plans Albane Gaspard, François Mouterde, Clément Lacouette-Fougère, Christophe Abraham, Guillaume Gourgues.	819
3-245-13	Overcoming the implementation gap in urban climate policies: The CASCADE experiment Ralf Schüle, Anja Bierwirth, Sophie Arens	831
3-257-13	Designing live energy performance feedback for public buildings in Leicester Graeme Stuart, Caroline Wilson, Katherine Irvine, Richard Bull	839
3-282-13	Information needs for community-level energy investments: some insights from a CONCERTO questionnaire Kilian Seitz, Russell McKenna, Wolf Fichtner, Karoline Fath, Julian Stengel, Frank Schultmann.	845
3-310-13	Towards post carbon cities: Why? How? Eric Vidalenc, Jacques Theys	855
3-321-13	Transition towards low energy housing: Implementing energy efficiency in a large-scale refurbishment project Josefin Thoreson	867
3-360-13	Barriers for energy efficient public procurement in south-east Europe – a market perspective Louiza Papamikrouli, Angelika Tisch, Lucia Catalani, Polona Lah, Gabriela Macoveiu, Angel Hronev, Maria Stark, Nemanja Balac	877
3-399-13	ELITE Cities: A low-carbon eco-city evaluation tool for China Gang He, Nan Zhou, Christopher Williams, David Fridley	887

3-435-13	Home energy makeover contests – who are the winners and losers in motivating existing homeowners to make “whole house” energy saving improvements? Ed Thomas, Tiger Adolf	899
3-436-13	Energy efficiency in public buildings – local transition strategies Pia Laborgne, Henning Wilts.	911
3-472-13	ESCo market development: A role for facilitators to play Jan W. Bleyl, Nathalie Adilipour, Markus Bareit, Charles-Henri Bourgois, Johan Coolen, Ger Kempen, Kim Kil-Hwan, Jang Hye-Bin, Cho Sung-Hwan, Lieven Vanstraelen.	921
3-476-13	Mapping communities and neighbourhoods for local carbon reductions Rajat Gupta, Rohini Cherian	935
3-480-13	Energy modelling to support local authorities in the transition towards greater energy efficiency of building stock: a case study in North London Mark Jennings, Luis Munuera, Minka McInerney	943

PANEL 4 TRANSPORT AND MOBILITY: HOW TO DELIVER ENERGY EFFICIENCY

Introduction to Panel 4

	Panel leader: Jonathan Köhler	949
4-056-13	Los Angeles Air Force Base vehicle to grid pilot project Chris Marnay, Terry Chan, Nicholas DeForest, Judy Lai, Jason MacDonald, Michael Stadler, Tobias Erdmann, Andreas Hoheisel, Markus Müller, Scott Sabre, Ed Koch, Paul Lipkin, Robert W. Anderson, Spence Gerber, Elizabeth Reid.	953
4-092-13	Saving energy in passenger car transport: between efficiency improvement and increasing car size Amela Ajanovic	965
4-093-13	Acceptance of electric vehicles by commercial users in the electric mobility pilot regions in Germany Joachim Globisch, Uta Schneider, Elisabeth Dütschke	973
4-096-13	Prospects for alternative transport fuels in EU-countries up to 2050 from an energetic and economic point-of-view Reinhard Haas, Amela Ajanovic	985
4-102-13	The future is electric! The EV revolution in Norway – explanations and lessons learned Håvard Vaggen Malvik, Ole Henrik Hannisdahl, Guro Bøe Wensaas.	995
4-133-13	Alternative fuels for mobility and transport: Harnessing excess electricity from renewable power sources with power-to-gas Gerda Gahleitner, Johannes Lindorfer	1007
4-153-13	Integration of smart grid technologies in households – how electric vehicles and dynamic pricing change social practices in everyday life Freja Friis, Kirsten Gram-Hanssen	1019
4-169-13	Boom and bust of flex-fuel vehicles in Sweden Frances Sprei	1031
4-304-13	Moving to a life with no car in a system of automobility? A practice-theory approach Françoise Bartiaux.	1041
4-319-13	What is the future of public charging infrastructure for electric vehicles? – A techno-economic assessment of public charging points for Germany Till Gnann, Patrick Plötz, Michael Haag	1049
4-342-13	The potential of electric and non-electric bicycles to reduce energy consumption and emissions in private transport Simon Árpád Funke, Patrick Plötz	1061
4-361-13	Who should buy electric vehicles? – The potential early adopter from an economical perspective Patrick Plötz, Till Gnann	1073
4-437-13	Mobility towers: Improving transportation efficiency policy by persistent evaluation of city-wide travel behaviour Laura Schewel, Anand Gopal, Amol Phadke.	1081
4-509-15	Influence and innovation – peers and priuses Alison Pridmore, Jillian Anable	1089
4-514-13	Electric vehicles: Improving consumer information to encourage adoption Neil Wallis, Ben Lane	1099

PANEL 5A CUTTING THE ENERGY USE OF BUILDINGS: PROJECTS AND TECHNOLOGIES**Introduction to Panel 5A**

	Panel leaders: Anja Bierwirth & Yvonne Boerakker	1111
5A-012-13	Typology of the energy performance-based contractual models for comprehensive refurbishment in the buildings sector Laziza Rakhimova, Natalia Zugravu-Soilita, Christophe Milin	1115
5A-025-13	Holistic renovation and monitoring of residential buildings Davide Cali, Rita Streblov, Dirk Mueller, Tanja Osterhage	1127
5A-079-13	Are people the problem or the solution? A critical look at the rise of the smart/intelligent building and the role of ICT enabled engagement Richard Bull, Katherine N. Irvine, Paul Fleming, Martin Rieser	1135
5A-098-13	'Retrofit for the future': reducing the carbon emissions of the UK's housing stock Jaryn Bradford, Geoff Stevens, Tom Byrne, Paul Ruysevelt	1147
5A-099-13	The role of energy efficiency in decarbonising heat via electrification Luis Munuera, Nick Kelly, Jaryn Bradford Adam Hawkes	1159
5A-104-13	Technical procurement of heat recovery systems in existing apartment blocks in Sweden Åsa Wahlström, Tomas Berggren, Therese Rydstedt	1165
5A-162-13	Enhancing energy efficiency through smart control: paths and policies for deployment J Richard Snape, Peter Boait	1173
5A-179-13	Introducing (energy) design processes into Austria's largest public real estate company Gerhard Hofer, Dirk Jäger, Klemens Leutgöb	1183
5A-204-13	Thermal energy storage for electricity peak-demand mitigation: a solution in developing and developed world alike Nicholas DeForest, Wei Feng, Judy Lai, Chris Marnay, Gonçalo Mendes, Michael Stadler	1191
5A-206-13	The German load curve in 2050: structural changes through energy efficiency measures and their impacts on the electricity supply side Tobias Boßmann, Rainer Elsland, Fridolin Lickert, Martin Wietschel	1199
5A-228-13	Technical restrictions on retrofit insulation of buildings Peter Mellwig, Martin Pehnt, Patrick Jochum	1213
5A-237-13	Evaluating the benefits of a solar home energy management system: impacts on photovoltaic power production value and grid interaction Joakim Widén, Joakim Munkhammar	1223
5A-275-13	Comparative analysis of energy efficient technology innovation in buildings: the case of passive houses in Germany, Sweden and China Jingjing Zhang, Lars J. Nilsson	1235
5A-309-13	Does energy efficiency reduce inequalities? Impact of policies in residential sector on household budgets Jean-Michel Cayla, Dominique Osso	1247
5A-325-13	Interaction between building design, management, household and individual factors in relation to energy use for heating in residential buildings in Stockholm Karin Engvall, Erik Lampa, Per Levin, Per Wickman, Egil Öfverholm	1259
5A-338-13	Do U-value insulation? England's field trial of solid wall insulation Geoffrey Stevens, Jaryn Bradford	1269
5A-373-13	Optimizing buildings energy performance with a new perspective – lesson learned by HOMES programme: possible savings up to 50 % with short payback Olivier Cottet, Jean Jacques Marchais, Bertrand Deprez	1281
5A-397-13	Implications of energy efficiency renovation measures for a Swedish residential building on cost, primary energy use and carbon dioxide emission Farshid Bonakdar, Ambrose Doodoo, Leif Gustavsson	1287
5A-426-13	A global strategic approach to energy efficiency in the building sector Christopher Anthony Moore, Dietmar Schüwer, Stefan Thomas	1297
5A-428-13	Participation as a driver for energy efficiency and universal design: learning from case studies of ambitious upgrading of post-war multi-residential buildings Erica Löfström, Åshild Lappégard Hauge	1307
5A-483-13	Tackling the performance gap between design intent and actual outcomes of new low/zero carbon housing Rajat Gupta, Matt Gregg, Rohini Cherian	1315
5A-518-13	ECONirman & third party assessors: innovative approaches to energy code compliance and enforcement in India Rajan Rawal, Prasad Vaidya, Vinay Ghatti, Sanyogita Manu, Smita Chandiwala	1329
5A-524-13	ESCOs for residential buildings: market situation in the European Union and policy recommendations Wolfgang Irrek, Paolo Bertoldi, Nicola Labanca, Felix Suerkemper	1339

PANEL 5B CUTTING THE ENERGY USE OF BUILDINGS: POLICY AND PROGRAMMES**Introduction to Panel 5B**

	Panel Leaders: Even Bjørnstad & Marina Economidou	1349
5B-016-13	Ensuring efficient government expenditure on alleviating fuel poverty in Ireland Jim Scheer	1353
5B-042-13	Integrated assessment modelling for building sectors – a technical, economic and ecological analysis for Germany and the EU until 2050 Kjell Bettgenhäuser, Andoni Hidalgo	1365
5B-064-13	Development of cost optimal building performance requirements for housing in a Mediterranean climate Alan Abela, Mike Hoxley, Paddy McGrath, Steve Goodhew	1377
5B-076-13	A strategy for the efficient renovation of Germany's building stock Martin Pehnt, Peter Mellwig, Ulf Sieberg	1389
5B-103-13	Strategic policy packages to deliver energy efficiency in buildings – their international evidence Stefan Thomas, Vera Aydin, Dagmar Kiyar, Lena Tholen, Maike Venjakob	1399
5B-135-13	The UK's Green Deal: a modelled case study impact review Vicky Ingram, David P. Jenkins	1411
5B-149-13	A successful marriage: Linking energy efficiency with social well-being and industrial development – the Basque building refurbishment roadmap case Andoni Hidalgo	1421
5B-165-13	The age of positive energy buildings has come Hans Erhorn, Heike Erhorn-Kluttig	1433
5B-185-13	EPBD and poverty: from threat to opportunity François Grevisse, Marie Brynart	1445
5B-214-13	eViz – energy visualisation for carbon reduction in buildings Sabine Pahl, Pieter de Wilde, Julie Goodhew, Christine Boomsma, Rory Jones, Steve Goodhew	1455
5B-227-13	BUILD UP skills – analysis of the current state of the Swedish construction industry and its training in energy-efficient building Åke Blomsterberg	1461
5B-233-13	Nearly zero-energy buildings in Central and Eastern EU: Possible definitions and implementation roadmaps for Poland, Romania and Bulgaria Bogdan Atanasiu, Markus Offermann, Jan Groezinger, Bernhard Manteuffel, Thomas Boermans, Piotr Pawlak, Konrad Witzczak, Horia Petran, Zdravko Genchev, Stanislav Andreev	1473
5B-235-13	Energy renovations of EU multifamily buildings: do current policies target the real problems? Kaisa Matschoss, Eva Heiskanen, Bogdan Atanasiu, Lukas Kranzl	1485
5B-250-13	Monetising the multiple benefits of energy efficient renovations of the buildings of the EU Adrian Joyce, Sigurd Næss-Schmidt, Martin Bo Hansen	1497
5B-273-13	How to make efficient buildings a reality in Russia? Tatiana Zhitenko, Yamina Saheb, Aurelien Saussay, Ellina Levina, Isabel Murray	1509
5B-315-13	Definition of nearly zero energy building and cost-optimal energy performance in 2020 Francesco Madonna, Franco Ravasio	1519
5B-372-13	Cost optimality – brake or accelerator on the way towards nearly zero energy buildings Klemens Leutgöb, Lorenzo Pagliano, Paolo Zangheri	1531
5B-376-13	Cutting the energy use of buildings: How deep can the planet go? Diana Üрге-Vorsatz, Ksenia Petrichenko, Miklos Antal, Maja Staniec	1543
5B-393-13	The landscape of climate finance in Germany: a case study on the residential sector Aleksandra Novikova, Hermann Amecke, Kateryna Stelmakh, Barbara Buchner, Ingmar Juergens	1555
5B-442-13	Ongoing energy performance: ratings and savings for existing buildings Jason Steinbock, Chris Baker, David Eijadi, Ryan Schwartz	1567
5B-466-13	Comparing building performance policies: how can we all speak the same language? David Leipziger, Jayson Antonoff, Adam Hinge, Jens Laustsen	1577
5B-471-13	Out of the wild: An energy retrofit prospective from the remote communities of Alaska Daniel Berube	1587
5B-479-13	Taxing carrots and sticks: Incentivising efficiency through property taxes Darryl Croft, Ian Preston	1591
5B-485-13	Fuel poverty alleviation as a co-benefit of climate investments: evidence from Hungary Sergio Tirado Herrero, Diana Üрге-Vorsatz, Ksenia Petrichenko	1605
5B-498-13	How can we renovate deeply if we don't know what that is? Sophie Shnapp, Rosa Sitjà Gibert, Cathy Higgins	1617

PANEL 6 APPLIANCES, PRODUCT POLICY AND ICT**Introduction to Panel 6**

	Panel leaders: Paula Fonseca & Egil Öfverholm	1627
6-067-13	An agent-based modelling approach for domestic load simulation Ana Soares, Álvaro Gomes, Carlos Henggeler Antunes	1631
6-068-13	Speeding up adopting ecodesign and energy labelling measures – analysis, challenges and solutions Hans-Paul Siderius	1637
6-069-13	Is enough electricity being saved? Impact of energy efficiency policies addressing electrical household appliances in Germany until 2030 Rainer Elsland, Barbara Schlomann, Wolfgang Eichhammer	1651
6-081-13	UNDP/GEF market transformation of energy efficient appliances: upgrading energy labelling and eco-design policies and programmes in Turkey – an accession country example Tom Lock, Necmettin Tokur	1663
6-120-13	French higher domestic electricity consumption for captive uses compared to Germany: assessment of explanatory factors Didier Bosseboeuf, Bruno Lapillonne, Carine Sebi, Sophie Attali	1673
6-124-13	The new energy label: assessing consumer comprehension and effectiveness as a market transformation tool Paul Waide, Rowan Watson, Sophie Attali, Anita Eide, Juraj Krivosik, Pernille Schiellerup	1683
6-152-13	Is smart efficient? Vida Rozite, Yuruan García Rangel, Yamina Saheb	1695
6-172-13	Finding the most energy efficient TV in China and in Europe: not such an easy job ... Anette Michel, Eric Bush, Hu Bo	1707
6-180-13	Policy into practice: the SEAD global efficiency medal Kavita Ravi, Peter Bennich, John Cockburn, Naoko Doi, Sandeep Garg, S.P. Garnaik, Shane Holt, Mike Walker, Elizabeth Westbrook-Trenholm, Anna Lising, Steve Pantano, Amit Khare, Won Young Park	1719
6-186-13	Market analysis for China energy efficient products Hu Bo, Li Jiayang, Zheng Tan, Zeng Lei	1727
6-187-13	Energy efficiency and minimum standards: a market analysis of recent changes in appliance energy efficiency standards in the United States C. Anna Spurlock, Hung-Chia Yang, Larry Dale	1739
6-190-13	Trends in the cost of efficiency for appliances and consumer electronics Louis-Benoit Desroches, Karina Garbesi, Hung-Chia Yang, Mohan Ganeshalingam, Colleen Kantner, Robert Van Buskirk	1751
6-191-13	Energy efficiency appliance standards: Where do we stand, how far can we go and how do we get there? An analysis across several economies Virginie E. Letschert, Stephane de la Rue du Can, Michael A. McNeil, Puneeth Kalavase, Allison Hua Fan, Gabrielle Dreyfus	1759
6-241-13	Who uses smart home technologies? Representations of users by the smart home industry Tom Hargreaves, Charlie Wilson	1769
6-277-13	Monitoring and control platform for energy efficiency in smart buildings Pedro S. Moura, Gregorio L. López, José I. Moreno, Anibal T. de Almeida	1781
6-289-13	Modelling the dynamics of appliance price-efficiency distributions Robert Van Buskirk	1793
6-301-13	Can Europe continue deciding on product policies (MEPS, labels, etc.) without monitoring the market? Sophie Attali, Eric Bush, Anette Michel, Edouard Toulouse	1803
6-317-13	Server room guide helps energy managers reduce server consumption Jan Viegand	1813
6-329-13	Market surveillance – the prerequisite for realising the large expected savings from the Ecodesign Directive Karolina Petersson, Peter Nielsen	1819
6-333-13	Constructing the Norwegian smart grids: To fix what is not broken? William Throndsen	1831
6-359-13	Halving worldwide electricity demand for residential cold appliances through appropriate policy packages Claus Barthel, Lena Tholen, Thomas Götz, Antoine Durand	1841
6-363-13	Energy efficient IT-technology for data centers and server rooms: case studies, procurement guidelines and educational experience from the PrimeEnergyIT European project Carlos Patrão, Anibal T. de Almeida, Bernd Schaeppi, Andrea Roscetti, Philipp Tepper, Alexander Schloesser, Thomas Bogner, Laurent Lefèvre, Lorenzo Pagliano	1851

6-408-13	Comparative inventory model of conventional end-user devices and thin clients Marina Proske, Lutz Stobbe	1861
6-458-13	Zero energy devices (ZED): Stopping the increasing demand of electronics for grid-based electricity James E. McMahon	1873
6-463-13	Smart grid appliances case study: anatomy of a demonstration pilot Curt D. Puckett, Nathan Mathis, Jolyn Newton	1879
6-491-13	On the bright side of life: International efforts to accelerate market adoption of LEDs while avoiding the pitfalls of CFLs Peter Bennich, Nils Borg, Michael Scholand	1891
6-499-13	Easy-to-adopt lessons for organisers of large scale energy consumption studies in households Chris Evans	1899

PANEL 7 MONITORING AND EVALUATION

Introduction to Panel 7

	Panel leaders: Mirjam Harmelink & Andra Blumberga	1905
7-014-13	Evaluation of the effects of a tariff change on the Italian residential customers subject to a mandatory time-of-use tariff Simone Maggiore, Michele Benini, Massimo Gallanti, Walter Grattieri	1909
7-018-13	How much shift in demand? Findings from a field experiment in Germany Joachim Schleich, Marian Klobasa	1919
7-027-13	Method for development and segmentation of load profiles for different final customers and appliances Andrei Z. Morch, Hanne Sæle, Nicolai Feilberg, Karen Byskov Lindberg	1927
7-033-13	Evaluation of the German national climate initiative: Lessons learned and steps ahead Katja Schumacher, Julia Repenning, Christine Wörlen, Sarah Rieseberg, Christina Heldwein, Kerstin Tews, Maria Rosaria di Nucci, Benjamin Görlach, Max Grünig, Hans-Joachim Ziesing	1935
7-043-13	Energy labels in Dutch dwellings – their actual energy consumption and implications for reduction targets Daša Majcen, Laure Itard, Henk Visscher	1947
7-070-13	From top-down to bottom-up: two ways to monitor energy-efficiency in Dutch voluntary agreements C. Abeelen	1953
7-084-13	Overestimation of actual savings in supplier obligation schemes Simon Moser	1963
7-100-13	The UK heat pump field trial: findings from phase 2 Jaryn Bradford, Tom Byrne	1971
7-111-13	Monitoring the energy efficiency service market in Germany Ruth Offermann, Markus Duscha, Wolfgang Irrek, Friedrich Seefeldt	1979
7-122-13	From local to national: Tackling fuel poverty in Austria Karl-Michael Brunner, Sylvia Mandl, Anja Christanell	1989
7-131-13	Spending to save: evaluation of the energy efficiency obligation in Denmark Sirid Sif Bundgaard, Mikael Togeby, Kirsten Dyhr-Mikkelsen, Tina Sommer, Vibeke Hansen Kjørbye, Anders E. Larsen	1997
7-192-13	Why the light bulb is no longer a textbook example for price elasticity: Results from choice experiments and demand modeling research Andrew Stryker, Kathleen Gaffney	2007
7-194-13	What do we know about comparative energy usage feedback reports for residential customers? G. Kennedy Agnew, Mitch Rosenberg, Kathleen Gaffney, Gomathi Sadhasivan	2017
7-213-13	Methodology for screening of Intelligent Energy Europe programme projects Dagnija Blumberga, Silvija Nora Kalnins, Andra Blumberga	2027
7-224-13	How energy efficiency programs influence energy use: an application of the theory of planned behaviour David Lynch, Peter Martin	2037
7-294-13	Using simulated co-heating tests to understand weather driven sources of uncertainty within the co-heating test method Samuel Stamp, Robert Lowe, Hector Altamirano-Medina	2049
7-305-13	Back to reality: How domestic energy efficiency policies in four European countries can be improved by using empirical data instead of normative calculation Marie-Hélène Laurent, Benoît Allibe, Tadj Oreszczyn, Ian Hamilton, Casper Tigchelaar, Ray Galvin	2057

7-377-13	Smart gas meters: assessment of customer response to improved information about their energy consumption	
	Roch Drozdowski, Marion Vandamme	2071
7-389-13	Measure costs – the forgotten child of energy efficiency analysis	
	Mike Ting, Mike Rufo, Mike Messenger, Joe Loper	2081
7-402-13	Scenario based evaluation of policies addressing the German heating and cooling sector: A bottom-up modeling approach integrating buildings, industry and district heating	
	Jan Steinbach, Lukas Kranzl, Andreas Müller, Marcus Hummel, Judit Kockat, Andrea Herbst, Felipe Toro, Felix Reitze, Eberhard Jochem, Max Fette, Wolfgang Schulz, Veit Bürger	2093
7-425-13	How to calculate energy savings and costs of energy saving obligations in a harmonized way?	
	Demet Suna, Reinhard Haas	2105
7-431-13	Experience with ecodesign and energy labelling market surveillance in Denmark	
	Annette Gydesen, Pia Westphalen, Peter Nielsen, Charlotta Castenfors Laursen	2117
7-475-13	Ex-ante estimation of the EU Ecodesign Directive's impact on the long-term electricity demand of the tertiary sector	
	Martin Jakob, Giacomo Catenazzi, Tobias Fleiter	2125

PANEL 8 DYNAMICS OF CONSUMPTION

Introduction to Panel 8

	Panel leaders: Isabelle Garabuau-Moussaoui & Kirsten Gram-Hanssen	2137
8-011-13	The electricity impacts of Earth Hour and other coordinated energy demand shifting actions	
	Sarah J. Olexsak, Alan Meier	2141
8-013-13	Creating new energy orders: Restrictions and opportunities for energy efficient behaviour	
	Helena Karresand	2147
8-020-13	Effectiveness of demand side management by variable energy tariffs in the households – results of an experimental design with a fictive tariff model	
	Rainer Stamminger, Verena Anstett	2159
8-030-13	Energy efficient technologies in the UK – installing, adopting, learning and everyday lives	
	Philip Brown, Will Swan, Richard Fitton	2167
8-053-13	The effect of age on residential energy demand	
	Matthias Deutsch, Philip Timpe	2177
8-078-13	First steps towards a deeper understanding of energy efficiency impacts in the age of systems	
	Nicola Labanca, Paolo Bertoldi	2189
8-082-13	Rebound effects in residential lighting – conceptual psychological framework and empirical findings	
	Elisabeth Dütschke, Anja Peters, Joachim Schleich	2201
8-094-13	Understanding household decisions to become electricity producers and their role in the future energy landscape: Case studies in France with photovoltaic electricity producers	
	Véronique Beillan, Aurélie Goater	2211
8-132-13	Articulating the body in the theorizing of consumption	
	Harold Wilhite, Grégoire Wallenborn	2221
8-134-13	Energy and energy-saving publics in Provence Alpes Côte d'Azur	
	Mathieu Brugidou, Caroline Escoffier	2229
8-164-13	Changed norms of comfort in different energy cultures: The case of heat pumps	
	Nina Heidenstrøm, Kirsten Gram-Hanssen, Pål Strandbakken, Toke Haunstrup Christensen	2241
8-203-13	Rethinking the energy-efficiency gap: producers, intermediaries, and innovation	
	Carl Blumstein, Margaret Taylor	2251
8-287-13	Sharing conventions for energy efficient lighting?	
	Charlotte Louise Jensen	2261
8-290-13	Comparing community energy development in Finland and the UK	
	Mari Martiskainen	2273
8-297-13	The role of households in the smart grid: A comparative study	
	Toke Haunstrup Christensen, Ainhoa Ascarza, William Throndsen, Kirsten Gram-Hanssen, Freja Friis	2285
8-313-13	Low-carbon refurbishments: How passive or active are technologies, users and their interaction?	
	Marina Topouzi	2297
8-316-13	Behaviours, technologies and markets: the influence of the (p)rebound effect, the energy efficiency gap and refurbishment market heterogeneity on energy demand dynamics	
	Benoît Allibe, Aurélie Estève, Dominique Osso, Marie-Hélène Laurent	2311
8-318-13	Focus on electricity tariffs: experience and exploration of different charging schemes	
	Sarah J Darby, Ioana Pisica	2321

8-371-13	The conditions of normal domestic life help explain homeowners' decisions to renovate Charlie Wilson, Lucy Crane, George Chryssochoidis	2333
8-381-13	Energy saving targets – tested in households in the Swedish largest electricity saving experiment Jurek Pyrko	2349
8-398-13	Daily temperature profiles, household size, and ageing: the shape of things (to come) Gesche M. Huebner, Mathieu Durand-Daubin, David Shipworth, Michelle Shipworth, Alex Summerfield, Megan McMichael	2355
8-420-13	Widening the scope? How intermediary actors can shape energy consumption Davide Maneschi	2367
8-469-13	Moving home and changing behaviour – implications for increasing household energy efficiency Daniel Gnoth	2379
8-502-13	Ventilation in energy efficient UK homes: A user experience of innovative technologies Carrie Behar, Lai Fong Chiu	2389
AUTHOR INDEX		2401
KEYWORD INDEX		2405