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The ECBCS Programme

Activities linked to the Distributed Energy Storage field

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ECBCS Executive Committee Chair, Switzerland

ECES Workshop on distributed Energy Storage Systems,
Paris 18-19 September 2012



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The ECBCS Programme

R&D Projects

Knowledge Deployment
and Demonstration

R&D Strategies

Buildings

Communities





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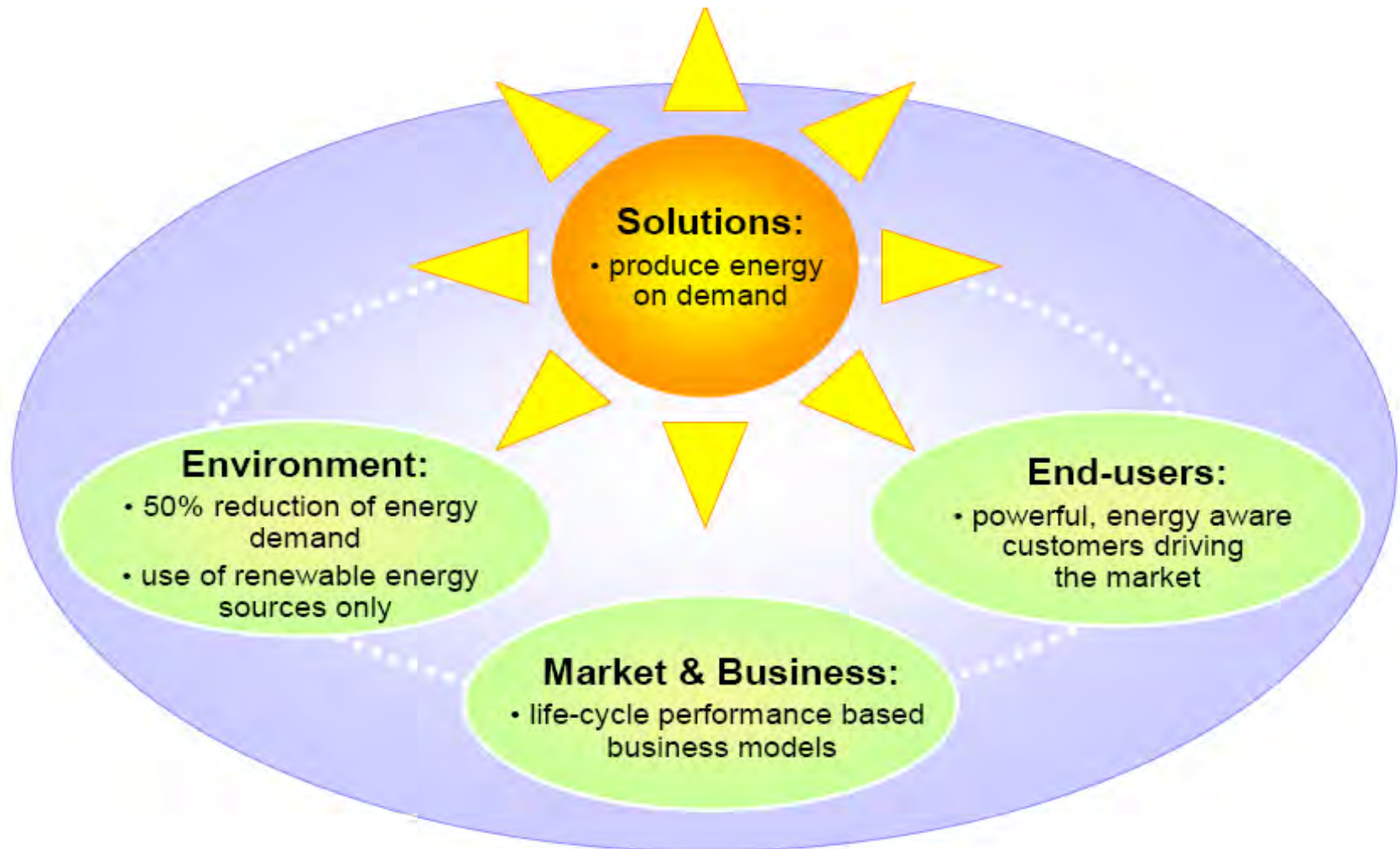
26 Participating Countries

- Australia
- Austria
- Belgium
- Canada
- P.R. China
- Czech Republic
- Denmark
- Finland
- France
- Germany
- Greece
- Ireland
- Italy
- Japan
- Republic of Korea
- Netherlands
- New Zealand
- Norway
- Poland
- Portugal
- Spain
- Sweden
- Switzerland
- Turkey
- UK
- USA



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Vision for the Built Environment: Adoption of nearly-zero primary energy use and CO2 emissions solutions





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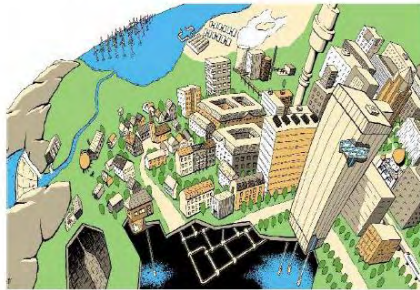
ECBCS Mission



International Energy Agency
Energy Conservation in
Buildings and Community
Systems Programme
**IEA Energy Conservation in Buildings
& Community Systems Programme
(ECBCS)**

**Strategic Plan
2007-2012**

**Towards Near-Zero Primary Energy Use &
Carbon Emissions in Buildings & Communities**



... to facilitate and accelerate the introduction of **energy conservation and environmentally sustainable** technologies into **healthy buildings** and community systems, through innovation and research in decision-making, building products and systems, and commercialization



The Sector: Buildings & Communities

Energy = 30% – 40%

CO2 emissions = +30%

Solid Waste = 25% – 40%

Primary Resources = +50%

GDP = 10% – 15%

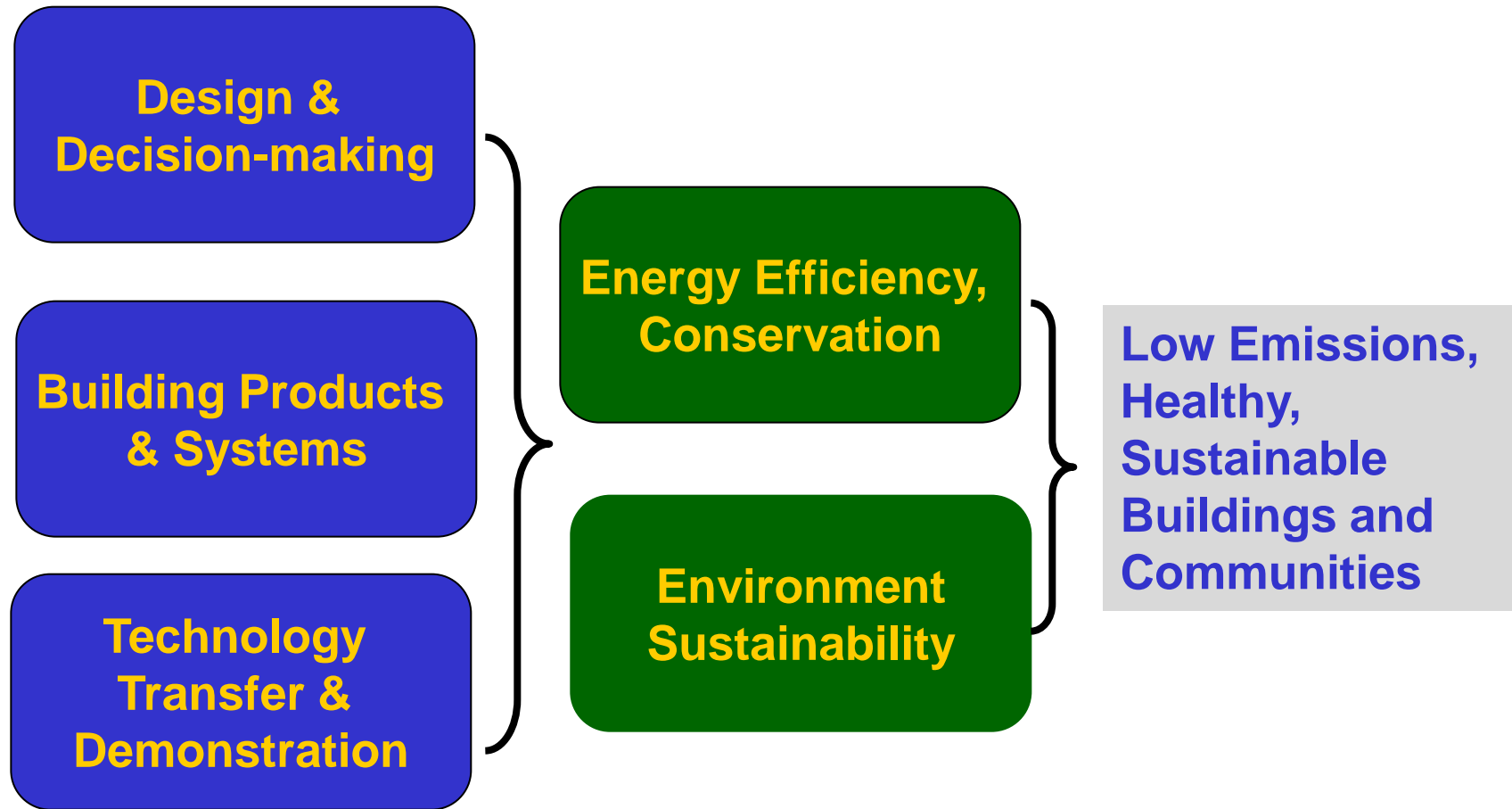
Fragmented sector





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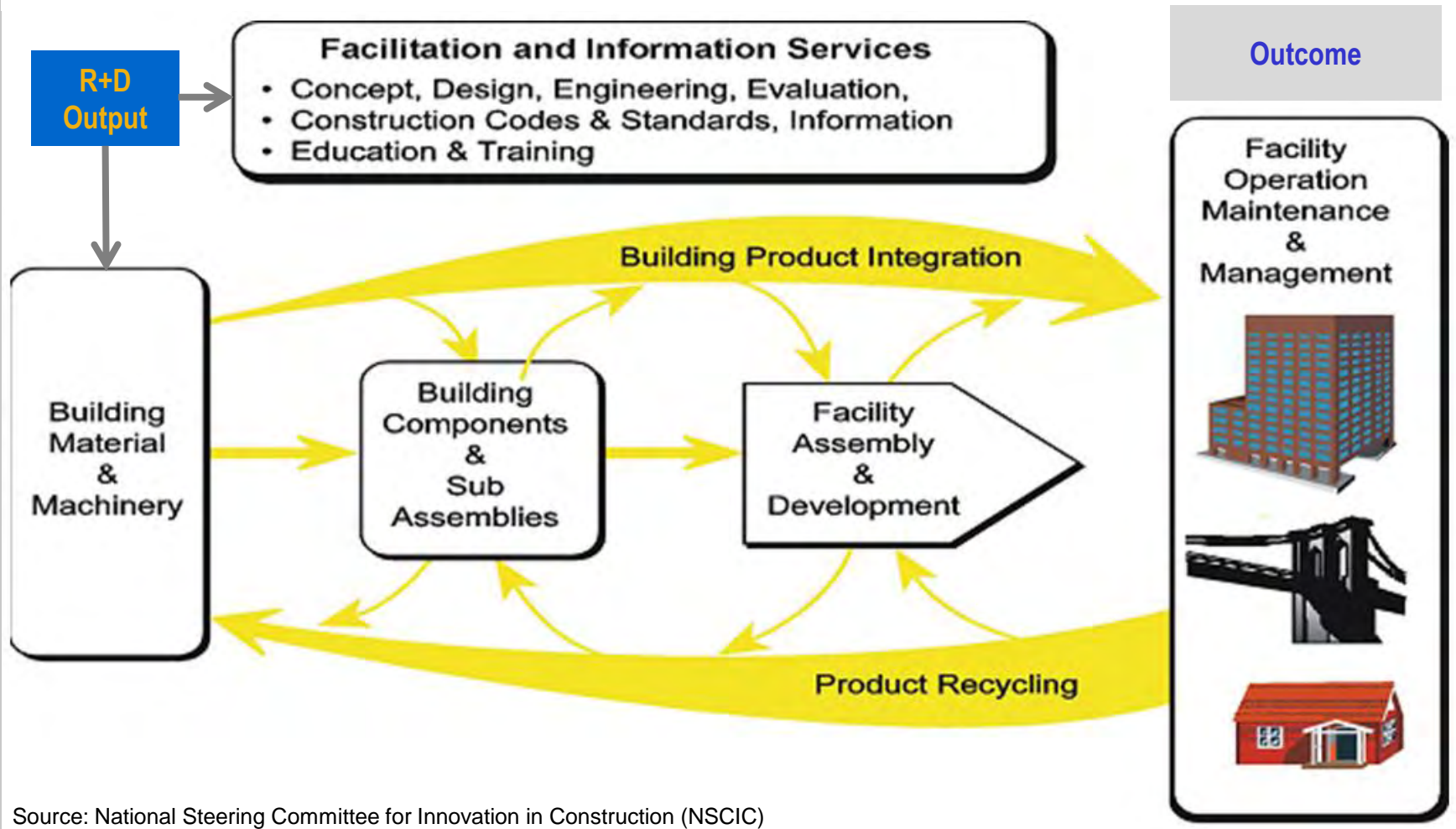
Outputs & Outcomes





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Value Chain in Construction Market



Source: National Steering Committee for Innovation in Construction (NSCIC)



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Dissemination & Outreach - Projects

Project Results

- Full Scientific Reports
- Summary Reports
- Factsheets
- Tools

Air Infiltration and Ventilation Centre
ECBCS Project Factsheet
Annex 5

Integrating Environmentally Responsive Elements in Buildings
ECBCS Project Factsheet
Annex 44

Towards Net Zero Energy Solar Buildings
ECBCS / SHC Project Factsheet
Annex 52 / Task 40

Energy use in buildings worldwide accounts for over 40% of primary energy use and 24% of greenhouse gas emissions. Energy use and emissions include both direct, on-site use of fossil fuels and indirect use from electricity, district heating / cooling systems and embodied energy in construction materials.

Several IEA countries have adopted a vision of so-called 'net-zero energy buildings' as a long-term goal of their energy policies. However, what is missing is a clear definition and international agreement on the measures of building performance that could inform 'zero energy' building policies, programmes and industry adoption around the world.

The objective of the project 'Towards Net Zero Energy Solar Buildings' is to study current net-zero, near net-zero and very low energy buildings and to develop a common understanding, a harmonised international definitions framework, tools, innovative solutions and industry guidelines. To achieve this objective the project will document and propose practical NZEB demonstration projects, with convincing architectural quality.

The project will cover major building types (both residential and non-residential), new and existing, for the climatic zones represented by the participating countries. Individual buildings, clusters of buildings and small settlements will be considered.

The planned outcome is to support the conversion of the NZEB concept from an idea into practical reality in the marketplace. Demonstrating and documenting real projects will also lower industry resistance to adoption of these concepts.

Products

- A source book, targeting specific groups such as national policy groups, industry associations, utilities, academia and funding programmes.
- An education network.
- Expansion of the US DOE High Performance Buildings Database with re-designed and 'as-achieved' net-zero energy buildings.
- Website

Responsive Building Elements

Integrating Environmentally Responsive Elements in Buildings are positive building elements and their integration in new responsive guidelines and procedures for the design of responsive building to the environmental performance of responsive building elements.

Over the last decade has focused on efficiency improvements in building services systems. Significant improvements have been made, offer opportunities for efficiency improvements, the greatest future promote integration. In this respect responsive building elements exploitation of environmental and renewable energy resources. In this concept the challenge is to achieve an optimum combination and integration of these with the building services systems and an optimal environmental performance.

Integrating Environmentally Responsive Elements in Buildings are positive building elements and their integration in new responsive guidelines and procedures for the design of responsive building to the environmental performance of responsive building elements.

Information Paper: Improving the areas of use, good indoor environment, by policymakers

Information Review

Building Elements and Responsive Building Concepts

Residential building, Norway is being studied in the project

Equilibrium (Net-Zero-Energy Healthy Housing Concept)



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Dissemination & Outreach

www.ecbcs.org

- ECBCS Bookshop and website
- Conferences / seminars
- Demonstration

Address <http://www.ecbcs.org/> Go Links

IEA Energy Conservation in Buildings & Community Systems

News

The ECBCS Research Programme

The IEA (International Energy Agency) Energy Conservation in Buildings and Community Systems (ECBCS) Programme carries out research and development activities toward near-zero energy and carbon emissions in the built environment. The ECBCS activities focus on the integration of energy-efficient and sustainable technologies into healthy buildings and communities. ECBCS projects and activities have produced long-lasting decision-making tools and integrated systems technologies. Outcomes from the Programme are publicised through many seminars and conferences.

What's New (November 2009)

NEW PROJECT: A new project has been started -

- **"Technical & Commercialisation Studies for Micro-generation Deployment in Buildings"** ([Access PDF](#)).

formally joined the ECBCS Programme.

publishing Guidebooks. These include -

- **"Energy Efficient Buildings"** ([Access PDF](#)),
- **"Energy Efficient Communities"** ([Access PDF](#)),
- **"Energy Efficient Buildings"** ([Access PDF](#)),
- **"Energy Efficient Buildings"** ([Access PDF](#)).

ologies and processes for energy efficiency and communities, through innovation and research.

International Energy Agency
Energy Conservation in Buildings & Community Systems
www.ecbcs.org

ECBCS News December 2008 - Issue 40

China Joins the ECBCS Programme

Efficient Artificial Lighting: New ECBCS Guidebook

Low Exergy: an Emerging Approach for Sustainable Buildings & Communities

How to Improve Building Performance, Save Energy & Costs

**2020 Sea Change in Sight
Low Cost & Carbon Energy for
Buildings in the Netherlands**



ECBCS

Dissemination & Outreach

- 2 Million downloads per year
- 49 completed projects
- 2 new projects under development
- 10 current projects





Scope of Innovation in ECBCS: Technology Readiness Levels

Level	Description
1	Transfer of scientific research to applied R&D
2	Identification and/ or evaluation of possible applications of the technology
3	First level of Proof of Concept
4	Bench scale study of the technology as a whole.
5	Bench scale study of integrated system in simulated application.
6	Scale up of technology and testing in simulated application.
7	Demonstration -Full scale demonstration of technology in industry setting.
8	Business- Release for commercial implementation
9	Business- Further improvements implemented



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Focus Areas

1. Building
2. Inter
3. Bu
4. Build
5. Integ

What are the issues related
to Distributed Energy Storage?



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1. Building Concepts and Methodologies

- Development & Technical Retrofits Clusters
- Cost e in Buildings
- Towards (Ax 52)

Load matching and grid interaction with on-site RE production: What are the technical and economical possibilities and limits? What indicators are relevant for the building concept?



NET ZERO ENERGY BUILDINGS

INTERNATIONAL COMPARISON OF CARBON-NEUTRAL LIFESTYLES

EnOB

DETAIL Green Books



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2. Integrated Building Systems

- Reliability of Building Re
Probabil
Perform
- Prefabric
systems
buildings
- Environmentally
elements for buildings (AX 4

No issues related to DES





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3. Building Services

- New Generation Building & on Model

- High Heating

- Integrated Techno

- Heat Pumping (Ax 48)

System integration of RE and HVAC: What is the future role of DES?





4. Building Benchmarking & Measurements

- Reliable Energy Performance Based Measurement
- Evaluation of CO2 Concentration
- Total Energy Analysis & Evaluation (Ax 53)

No issues related to storage





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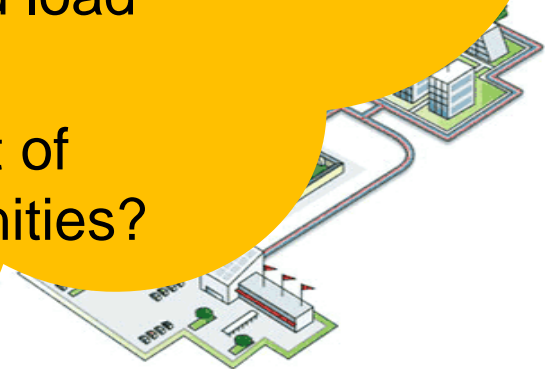
5. Integrated Community Systems

- Guidelines for Energy Conservation
- Low Performance Communities

What is the role of buildings within the discussion on interaction between smart grids and buildings or clusters of buildings?

What are the possibilities and limitations for buildings in terms of energy production, storage and load management?

Implications for development of smart cities and smart communities?





Further Information

www.ecbcs.org

Thank you