



A Quality and Technology Network

PERCH

Production of Electricity with RES & CHP for Homeowners



Contract No:
EIE/06/107/SI2.446527
Duration: 1/11/2006 – 31/10/2008

2007 C3P & NASA TECHNICAL WORKSHOP

Partnership for Energy and Environmental Stewardship

November 7,8 & 9, 2007

PENICHE, PORTUGAL

Main theme

The project deals with interconnection (technical, contractual, tariff rates and metering issues) for electricity generation using small RES and micro CHP applications for home and small business power solutions in EU and candidate countries

Main theme

Small RES & CHP applications for grid connected electricity generation may include:

- ✓ PV in buildings.
- ✓ Small wind applications.
- ✓ Mini CHP.
- ✓ Fuel cells
- ✓ Or combinations of these technologies.

Main theme

Typically, cogeneration includes cogeneration power plants that can be in excess of 500 MW.

In today's era of higher efficiencies, lower costs and emissions, cogeneration (and trigeneration) power and energy plants in the "micro" sizes are becoming more prevalent. We define the term "micro-cogeneration" as meaning to cover the sizes under 1.0 MW.

In PERH





Main theme

The interconnection subject of small RES applications refers to **the technical, contractual, tariff rates and metering issues**, that must be confronted between the **owner**, the **utility** and **permitting authorities** before the small RES electricity or micro CHP generation system is connected to the grid.



Main theme

These interconnection issues can be grouped in three major categories:

Feed in tariffs, rates and supporting schemes including net metering comprise **a major issue** for the interconnection of small-scale RES & CHP applications to the electricity grid.

Member states, Associated & Candidate countries introduced a variety of supporting mechanisms and incentives with accordingly different results.



Main theme

Safety, power quality and system impacts are the **second category** regarding interconnection issues for small RES & CHP applications.

These must be addressed both from the systems owner view perspective, as also from the utility perspective.

National safety codes deal with this technical subject.



Main theme

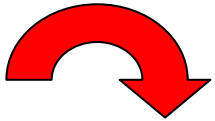
Procedural and legal issues are playing a major role in the decision process as time delays and procedure complications are major barriers for a successful interconnection.

Standardizing procedures and clear defined processes are the tools for overcoming these barriers.

Objectives

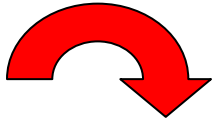
- To map and communicate the status regarding interconnection and supporting schemes
- To exchange experiences and provide guidelines

The most relevant policy and legislative initiatives and their relevance with the project are the following:



Renewable Electricity directive (2001/77/EC)

It is in accordance with the RES-e directive that guaranteed access must be given to green electricity producers, through objective and transparent rules for grid connection costs and must not discriminate against RES producers.



Directive on the energy performance of buildings (2002/91/EC)

Electricity consumption of buildings (commercial & residential) in EU members states accounts for the 60% of the total final electricity consumption. More than 50% of this quantity is consumed for residential purposed (source: IEA Energy Statistics). The aim of meeting this electricity demand with the increased use of RES outlined in the Directive on the energy performance of buildings.

A large red arrow pointing from the top left towards the title.

Directive on the promotion of cogeneration based on a useful heat demand in the internal energy market (2004/8/EC)

Member States may particularly facilitate access to the grid system of electricity produced from high-efficiency cogeneration from small scale and micro cogeneration units.

Mapping of the conditions in the EU-25 and the candidate countries provides a tool to the national policy makers for a direct comparison of different European policies, regulatory frameworks, codes & standards and supporting schemes for small RES-e and micro CHP applications.

Background

– Key issues to be addressed

- Formation of local steering committees will provide feedback for market problems and needs
- Homeowners and the potential users of small RES –e & micro CHP applications will be informed with the up to date information

Background

– Key issues to be addressed

- Minimize the possibility of hazards both for end users and their equipment together with more efficient use of hardware.
- Equipment suppliers and installers to be informed about the National market conditions
- Exchange of experience for policy makers, and dialogue for new National policies

Background

The project is interesting and relevant because of:

- ❖ Renewable Electricity directive (2001/77/EC) - requires Members States to ensure guaranteed access for green electricity to the grid.
- ❖ Different interconnection status in EU25 and candidate countries including:
 - Feed in tariffs and supporting schemes,
 - Safety and power quality regulations and National standards,
 - Procedural and legal issues.

Main steps

- Assessment of national interconnection procedures, codes and incentives (WP2)
- Creation of interconnection and homeowners guides (WP3)
- Development of an interactive web site (WP4)
www.home-electricity.org
- Dissemination of project results, organization of 6 National workshops and final event



Main steps

- Contents of homeowners guide (WP3)
 - *Introduction*
 - *Solar Electric (photovoltaic)*
 - The technology
 - Design considerations and cost analysis
 - Installation tips
 - Healthy, safety and quality standards
 - Additional information
 - *Wind Turbines (Small scale, building mounted)*
 - *Micro CHP systems*
 - *Net metering*
 - *Best practices and case studies*





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Main steps

- Contents of interconnection guide (WP3)
 - *Introduction*
 - *Solar Electric (photovoltaic)*
 - The technology
 - Operating requirements
 - Equipment Installation
 - Safety and Power Quality
 - *Wind Turbines (Small scale, building mounted)*
 - *Micro CHP systems*
 - *Legal and Procedural Issues (Regulatory authorities...)*
 - *Local and National Regulations*
 - *Supporting programmes*



Expected results

Creation of European Database for small systems interconnection issues including:

- Supporting schemes
- Safety and power quality issues
- Procedural and legal issues

Expected results

Through the web site and the events:

- Homeowners will be informed with the interconnection requirements for their installations.
- Professionals and experts will find up to date data for all the European Union countries for business development or further research.

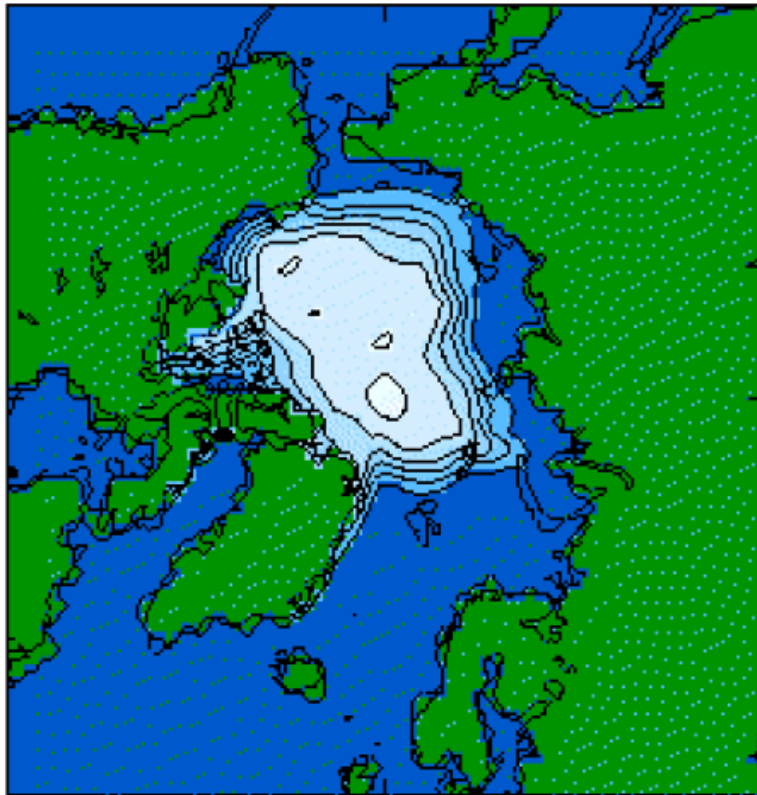
Geographical coverage

EU 25 and candidate countries

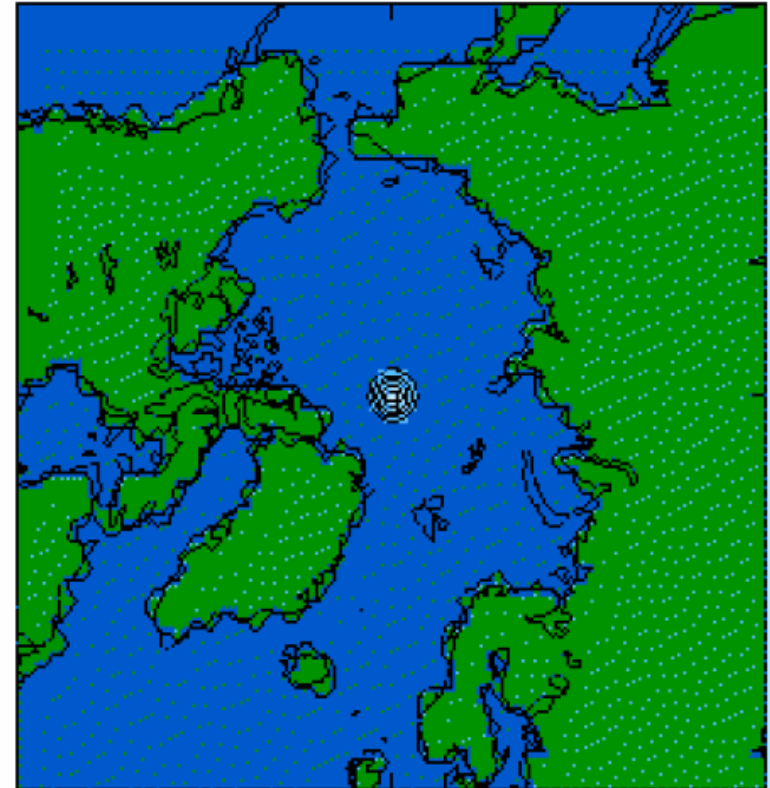
Consortium

- **CRES**, Centre for Renewable Energy Sources (coordinator- Greece).
- **BEA**, Berliner Energieagentur GmbH – Berlin Energy Agency (Germany).
- **CP**, CITYPLAN spol. s.r.o. (Czech Republic).
- **ISQ**, Instituto de Soldadura e Qualidade (Portugal).
- **SEC**, Sofia Energy Centre (Bulgaria).

CLIMATE CHANGE EFFECT – A REALISTIC VIEW OF ARTIC



Present day



In 2080



Thank you for your attention!

Instituto de Soldadura e Qualidade

Norberto J. Pereira Duarte, BSc. Mar. Eng.

Phone: +351 21 4228100

Fax: +351 21 422 90118

E-mail: njpereira@isq.pt

