Regulatory frameworks for SmartGrid implementation in Europe and the next steps

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Cired 2008 - SmartGrids for Distribution
Frankfurt, 23rd – 24th June 2008
THE INSTITUTIONAL FRAMEWORK

Role of the Government
- incentives at generation level
- addresses to the Autorità (*)

Role of the Autorità. Regulation for:
- (*) access to grid services
- (*) power transferred to the grid
- investments addressed to the automation of active networks

Smart grids

Role of the Research
DEFINITION OF DISTRIBUTED GENERATION

Despite the definition given by the 2003/54/CE directive, currently in Europe it doesn’t exist an effective and common definition that identifies unambiguously the Distributed Generation.

In Italy the following definition has been adopted:

all generation plant with nominal power < 10 MVA
INCENTIVES AT GENERATION LEVELS

• Green certificates for the electricity generated by renewable sources (as from 1999: on average 100 €/MWh)

• Incentives for the electricity generated by photovoltaic plants (as from 2005: around 0.45 €/KWh, excluded supply income)

• Incentives for the electricity injected into the grid by non photovoltaic plants with power up to 1 MW (as from 2007: 0.18 – 0.34 €/kWh, included supply income)

• Simplified conditions for high efficiency cogeneration plants and renewable sources
• Discounts and faster/simplified procedures for connections to HV, MV and LV networks
• Recognized costs for transportation and dispatching services (avoided losses)
• Simplified conditions/procedures for the electricity injected into the grid and generated by renewable sources of any nominal power and by each source of nominal power < 10 MVA
• Simplified conditions for the “exchange on-site” (for high efficiency cogeneration and renewable sources up to 200 kW)
• +2% WACC (2008-2019) for investments on automation, protection and control systems of MV active networks
Distributed Generation, year 2005

Total: 13.15 TWh
(4.3% of the national generation)
Distributed thermoelectric generation from renewable sources, year 2005 (generation of only electricity)

Total: 1,65 TWh
Distributed thermoelectric generation from renewable sources, year 2005 (combined generation of electricity and heating)

- Natural gas: 82%
- Cultivation and agro-industrial waste: 3.6%
- Municipal waste: 4.9%
- Other fuels: 1.9%
- Coal: 0.2%
- Other gaseous fuels: 1.1%
- Fuel oil: 1.6%
- Gas oil: 0.7%
- Biogas: 3.0%
- Municipal waste: 4.9%
- Other fuels: 1.9%
- Coal: 0.2%
- Other gaseous fuels: 1.1%
- Fuel oil: 1.6%
- Gas oil: 0.7%
- Biogas: 3.0%
- Total: 4.45 TWh
NUMBER OF REQUESTS OF CONNECTION TO ENEL DISTRIBUZIONE GRIDS

Monthly average of requests (P< 10MVA) received by Enel distribuzione

Source: Enel distribuzione
EFFECTS OF THE DISTRIBUTED GENERATION ON GRIDS - Research

- Voltage quality: more voltage variations, different voltage profile, more harmonics
- Short circuit power: increasing
- Network operation (automation, selectivity of protection relays, communication systems): review
- Network planning: review
- Losses: reduction?