Published on *Digital Agenda for Europe* (https://ec.europa.eu/digital-agenda)

Author: Editor Connect [1], published in DAE blog [2] on 02/10/2012
To launch the debate on "Spectrum for wireless innovation in Europe", Peter Moray (Director, EUTC) has provided us with his recommendations on the spectrum needs for smart grids.
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--- Posted by Daniel Kitscha (DG INFSO, Radio Spectrum Policy, Digital Agenda Assembly - Coordinator Workshop 17) on behalf of the author: Peter Moray (Director, EUTC).

To launch the debate on "Spectrum for wireless innovation in Europe" (Digital Agenda Assembly Workshop 17 [3] - #daa11spectrum [4]) **Peter Moray** **[5]** (Director, EUTC [6]) has provided us with his recommendations on the spectrum needs for smart grids. Please join the discussion and provide your input by commenting on this blog post until June 10!

SPECTRUM RECOMMENDATIONS FOR SMART GRIDS:

1. The world faces major challenges in energy sector – CO2 reduction, energy security and affordability. The European Union has committed themselves to the 20-20-20 targets:

- 20% reduction in EU Greenhouse gas emissions compared with 1990;
- Increase in renewable energy to 20% of all energy consumed; and
- 20% increase in energy efficiency.

2. The Western world is an interconnected society, highly dependent on a wide range of integrated services, the most critical elements being energy and water. 21st Century living requires reliable utility services to sustain a lifestyle not viable if these services are disrupted.

3. Utility services are under not only competitive and commercial pressures to improve efficiency and reduce costs, but political and societal imperatives to reduce their environmental impact, increase sustainability and ensure affordability. Recently, nations have become concerned at the threat posed by cyber-terrorists disrupting utility services and sabotaging the economy.

4. In response, utility companies have stimulated innovation and business practices which have reduced manpower, increased automation and empowered the mobile workforce, yielding efficiencies not achievable previously. Now, the passive networks of the past are being transformed into active, intelligent networks of the future. This will require a step change in the telecommunications required to support network operations in terms of:

- ubiquity of coverage;
- speed of response;
- resilience of communication infrastructure;

- volumes of data; and
- cost

5. Although much of this increased telecoms capacity will be provided by commercial telecoms services and fixed networks, increased provision through private radio networks will be essential:

- Utility infrastructure is often located in sparsely populated areas of little attraction to commercial operators.
- Many renewable energy sources are in remote locations.
- Although most utility companies have extensive copper and fibre networks, many do not and cannot implement them in the timescale mandated by Energy Policies.
- Radio networks can be deployed quickly to provide intelligence for energy networks: other technologies will take too long to achieve the necessary connectivity.
- As commercial telecom networks move towards IP, some utility applications requiring low and predictable latency associated with guaranteed symmetrical performance cannot be serviced by commercial carriers.
- Private networks can be designed to provide redundant routing and tested for independence from mains power supplies to support restoration of power supplies.
- Private networks can more easily be protected from cyber-terrorism than services shared with networks accessible to the public.

6. Much work remains to be done, but preliminary studies point to these recommendations:

(1) 2x2MHz below 1 GHz, possibly in 400-470 MHz for critical narrowband communications.

(2) 2x5MHz above 1 GHz possibly in the region of 1.5 GHz for higher data-rates for wide-area coverage configured for up-load centric data from dispersed utility assets.

(3) Deregulated or lightly regulated spectrum below 1 GHz for Smart Meters.

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