

## **Silver Spring Networks: RSPG Public Consultation on the RSPP**

**9 April 2010**

Silver Spring Networks is grateful for the opportunity to provide comments to the RSPG regarding the public consultation on the Radio Spectrum Policy Programme. As you will see in our consultation response, we respectfully assert that spectrum regulators such as the RSPG should engage in direct dialogue with energy regulators and utilities on the topic of how best to ensure that affordable, robust, and reliable energy information networks be made available for the benefit of all EU citizens. We have therefore additionally provided in a separate document, for your reference, our public consultation responses to ERGEG and OFCOM.

More specifically, we assert that peer-to-peer sub-GHz wireless mesh, a foundational technology which is enjoying tremendous adoption and proven success in Australia and the Americas, is uniquely positioned to provide reliable, ubiquitous, and affordable networking for energy applications, including smart metering. Unfortunately, this technology is from a practical standpoint unavailable in Europe due to lack of spectrum allocation. We hope that spectrum regulators will agree that a highly competitive, widely adopted open technology with proven benefits for consumers, businesses, and utilities should be made available for the benefit of the EU.

Yours sincerely,  
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No comment

*9) How and to what extent should the production and use of radio equipment increase its environment-friendly aspects? What are the trade-offs in terms of costs?*

The environmental, economic, and security consequences of our dependence on foreign fossil fuels have moved to the forefront of the public and governmental agenda in recent years. It's clear that energy technology and policy will be a key competitive differentiator for EU member states in the 21<sup>st</sup> century. Governments that create the conditions for market-driven energy innovation will enjoy globally competitive industry, lower environmental impact, improved insulation against unstable international energy markets, and a more affordable quality of life for all citizens.

How can the EU lay the regulatory groundwork to catalyze this energy innovation, and why is radio spectrum relevant?

Humanity faces a massive challenge in confronting a low-carbon future, so we expect the set of solutions will be correspondingly large. Solutions will run the gamut from new generation technologies like wind, solar, and geothermal to advanced efficiency efforts and new financing models. But one thing is clear: without the ability to measure and act upon consumption data of electricity, natural gas, and water in a way that is ubiquitous, affordable, secure, and based on open standards, innovative market-based solutions to our environmental challenges will languish. In the words of Lord Kelvin: “If you cannot measure it, you cannot improve it”. With the Smart Grid, not only can you measure energy usage, you can improve it transparently and in near real-time.

Smart Grid technologies can act as foundational infrastructure for a 21<sup>st</sup> century EU economy where effective use of natural resources is not only an environmental necessity but also an economic advantage. The Smart Grid, broadly defined, is a data network and applications that allow consumers, businesses, and utilities to actively measure and act upon their energy usage, becoming more efficient, more environmentally friendly, and more competitive in the process. Like the Internet, a true standards-based Smart Grid allows many applications to run over a common infrastructure, and in so doing, will serve as the foundation for a diversity of new business models, energy applications, and green jobs.

The most immediate application of the Smart Grid is Smart Metering, which allows for precisely what is described above: affordable, ubiquitous, and secure measurement of electricity flows. There are many technologies competing on the worldwide market today, including sub-GHz wireless mesh. In fact, in Australia and the Americas, over 80% of all smart meter business currently awarded (over 35 million meters) is served by peer-to-peer, wireless mesh networking technology from a wide variety of vendors operating below 1 GHz. RF mesh networks were picked by some of the world’s leading utilities to implement the Smart Grid because the technology has the proven capability to provide affordable, ubiquitous, and reliable coverage for energy applications. We assert that a lack of suitable radio spectrum currently deprives EU member states of this critically important smart meter/smart grid communications option – wireless mesh.

### **Sub-GHz spectrum is important for this application**

Many utilities and organizations representing utilities are advocating the allocation of spectrum similar to the recent allocation of 1800 - 1830 MHz for utility applications in Canada<sup>1</sup>. This class of spectrum is useful for backhaul. While backhaul might be construed as a commodity, many utilities view end-to-end control of critical infrastructure as a requirement.

The existence of spectrum for backhaul does not obviate the requirement for sub-GHz spectrum at the appropriate transmit power levels. Infrastructure built atop sub-GHz

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<sup>1</sup> <http://www.ic.gc.ca/eic/site/smt-gst.nsf/eng/sf08972.html>

spectrum exhibits superior range, resulting in vastly lower CAPEX for infrastructure build out; superior building penetration results in effective **premise-to-premise meshing** of indoor metering assets, providing for vastly improved coverage (ubiquity is a requirement) and further lowering CAPEX. Lastly, many of Europe's distribution network assets (e.g., Medium/Low Voltage substations) are underground, where sub-GHz spectrum is necessary for signal penetration. Providing connectivity between meters, devices such as electric vehicle charging stations, and MV/LV transformer monitors will be required with the imminent electrification of transport.

The reliable delivery of electricity to consumers is the ultimate responsibility of electric utilities. While some applications can be outsourced to carriers of public traffic, many functions critical to grid reliability are best served by a cost effective network owned and operated by the utility. This is evidenced by the deployment of many power line carrier technologies for simple meter reading; unfortunately, power line carrier has not proven to meet the expansive requirements (in particular, reliable and responsive communications) demanded by the Smart Grid. The Smart Grid is critical infrastructure and, as such, it should not contend with consumer applications.

Spectrum and energy regulators should be aware of their overlapping interests with respect to Smart Grid and ensure that appropriate spectrum is made available. In Australia recently the spectrum regulator has done just that by recognising, "...its unique position and perspective to the benefit of all Australians...dealing with Australian's for whom radio communications is not its core business but an increasingly important enabler"<sup>2</sup>.

This consultation therefore provides an opportunity to lay the regulatory groundwork for a robust, affordable, and future-compatible energy information network built on global state-of-the art standards that in turn will catalyze an explosion of energy innovation in the EU. Indeed, a recent report<sup>3</sup> from the UK's House of Commons Energy and Climate Committee concluded that, 'The Government should work in closer partnership with the utility companies, the electro-technical industry and other stakeholders to ensure that an open two-way dialogue is achieved between them and consumer groups about the potential benefits of smart meters and a smarter energy network.'

In short, we hope spectrum regulators such as the RSPG will engage in direct dialogue with energy regulators and utilities on the topic of how best to ensure that affordable, robust, and reliable energy information networks be made available for the benefit of all EU citizens.

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No comment.

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<sup>2</sup> Developing a nationwide approach to smart grid spectrum. Speech by Chris Chapman, Chairman and Chief Executive of the Australian Communications and Media Authority, National Smart Grid Forum, Tue 24 March, 2010

<sup>3</sup> <http://www.publications.parliament.uk/pa/cm200910/cmselect/cmenergy/193/193i.pdf>

*15) What measures, in particular regarding assignment of spectrum, could be needed at EU level to ensure that spectrum re-farming best promotes service and technology innovation and progress?*

The Smart Grid will depend on a highly capable communications platform. This communications platform must meet a demanding set of requirements, principally ubiquitous coverage, data rates to support future applications, low latency, high reliability, utility-grade longevity, state of the art security and affordability for all citizens.

None of the communications technologies currently available in the member states (such as power line carrier, GPRS or 3G cellular, or fixed consumer broadband) can fully meet these requirements. The combined requirement of ubiquitous, reliable coverage at very low operating cost are particularly challenging for current technologies. As mentioned above, the difficulty in meeting these manifold, inter-related requirements is, in large part, why greater than 80% of Smart Grid communications network awards have been awarded to wireless mesh technologies.

Peer-to-peer mesh wireless technologies at operating frequencies of less than 1 GHz provide an ideal transport mechanism for the Smart Grid and are being standardized at IEEE, ETSI and IETF. Much in the same way that early data communications standards lay the groundwork for the Internet, this mesh standardization will give the EU access to a worldwide ecosystem of vendors, expanding choice and driving down cost, and allowing EU consumers, retailers and distributors to benefit from the efforts of innovators all over the world.

Sub-GHz spectrum is essential for RF-enabled Smart Grids to form robust, reliable connectivity, to serve sparsely populated rural communities, and to penetrate to indoor meters and subterranean locations such as Medium / Low Voltage substations (many of the EU's distribution network assets are underground). As evidence in defence of these assertions, utilities representing over 40 million homes in the Australia and the Americas are now implementing wireless mesh-based communications using sub-GHz spectrum.

By allocating sub-GHz spectrum on a lightly regulated basis for “smart utility networking”, member states can enable the rapid deployment of cost-effective, standards-based communications technology with substantial benefits to EU consumers, the energy sector and the environment. Making such an allocation will unlock substantial competition and innovation in Smart Grid communications, both between rival suppliers and operators of wireless mesh technology as well as with suppliers of other communications technologies. The result for EU consumers and energy providers can only be increased choice, greater innovation and lower prices.

EU member states need the ability to quickly and affordably implement a world-class Smart Grid to combat climate change, address supply-demand imbalances, increase energy independence, and empower consumers, private industry, and utilities to save

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money and become more efficient. With this in mind, we hope that RSPG will dedicate for utility use sub-GHz spectrum for Smart Grids/Meters.