EUTC Response to the Nkom Consultation on allocation of frequencies in the band 410-430 MHz

The European Utilities Telecoms Council (EUTC) welcomes the opportunity to respond to the public consultation by the Norwegian National Communication Authority (Nkom) on the allocation of radio frequencies in the band 410-430 MHz.

Although EUTC does not at present have any members in Norway, we believe that allocation of radio spectrum can make a positive contribution to combatting Climate Change as outlined in the EU "Radio Spectrum Policy Group's work programme for 2020 and beyond"[1]. [We note that Norway sits on RSPG as an Observer Country, and is generally aligned to other EU policies, hence the references below to EU data and policies below although we recognize that Norway is not bound legally to their implementation in all cases.]

The UN Climate Action Summit in New York on 23 September 2019 declared that "Climate change is the defining issue of our time and now is the defining moment to do something about it. There is still time to tackle climate change, but it will require an unprecedented effort from all sectors of society."

Energy production and use, including the energy used in transport, account for some 80% of the EU's greenhouse gas emissions. Thus, to tackle climate change effectively, Europe will have to largely 'decarbonise' its energy systems by moving away from fossil fuels.

Because of the unique propagation characteristics of spectrum in the 400 MHz region, allocating spectrum in this band for use by utility 'smart grids' will help Norway to manage the challenges of grid development in the 21st century in accordance with European Commission initiatives encouraging the use of Smart Grids in order to deliver more efficient energy generation and consumption as required under the EU Electricity Directive, and fulfil the ambitions set out by the Commission President Ursula von der Leyen in her ambitious European Green Deal Initiative.[2]

EUTC would like to highlight that private broadband radio technologies are instrumental in facilitating the evolution of traditional grids towards the Smart Grid. As pointed out in ETSI Technical Report TR 103 401[3], Smart Grid services need to rely on a private, reliable, redundant, scalable and high-performance telecommunications network. Private broadband radio technologies such as LTE are key to achieving this challenge which necessarily comes along with the need of broadband spectrum exclusively allocated to utilities. As identified in the ETSI report ETSI TR103 492, a minimum 2x3 MHz bandwidth in frequency bands below 1 GHz is required for smart grid services and applications.

[1] https://rspg-spectrum.eu/wp-content/uploads/2019/10/RSPG19-029final-RSPG_work_programme_20_and_beyond.pdf
[2] https://ec.europa.eu/info/strategy/priorities-2019-2024/european-green-deal_en
[3] https://www.etsi.org/deliver/etsi_tr/103400_103499/103401/01.01.01_60/tr_103401v010101p.pdf

An illustrative example from another European Country

Ireland recently awarded spectrum in the 400 MHz band to facilitate telecommunications in support of utility networks, specifically reserving 2 x 3 MHz of spectrum for Smart Grids only.

The Irish National Development Plan 2018—2027 'Project Ireland 2040'[4] declared "The national objective of transitioning by 2050 to a competitive, low-carbon, climate-resilient and environmentally sustainable economy and society must influence public capital investment choices over the next ten years." (page 74). The report identified that "In addition to the public investment measures … a range of major commercial state sector energy projects will be undertaken over the period of the plan. State owned enterprises are expected to invest in excess of €13 billion in energy related investments, with a particular focus on investment in regulated energy network infrastructure to provide smart reliable electricity networks to support security of electricity supply, SMART metering and enable increased renewable generation." (page 78).

The allocation of radio spectrum to utilities is a practical commitment by the Irish Government to facilitate the achievement of these policy goals through the application of advanced telecommunications to the energy network.

The Government's National Development Plan complemented the Commission for Communications Regulation Consultation on the Release of the 410 – 415.5 / 420 – 425.5 MHz Sub-band (ComReg 18/92) published on 24 October 2018.[5]


Further Consultation on the Release of the 410 – 415.5 / 420 – 425.5 MHz Sub-band

The most relevant part of this consultation is reproduced below for convenience as this analysis applies to most European countries.

> 3.27 Smart Grids are a key component of government efforts to meet demand for increased energy requirements in a cost effective and secure way while reducing the environmental impact of consumption and associated carbon emissions. Different functions of the Smart Grid could provide substantial reductions in energy use and carbon emissions by using new technology and making renewable energy and efficiency programs more affordable and potentially more accessible.
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> 3.28 In particular, greater integration of renewable energy into electricity and gas grids is key to lowering the environmental impacts of generation and meeting climate change targets. For example:
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> - The ITU has outlined how Smart Grids can help to mitigate climate change by building more controllable and efficient energy systems;
> - The United Nations (UN) has outlined that the demands of climate change requires the development of a Smart Grid which is founded upon

[4] https://assets.gov.ie/19240/62af938dce404ed68380e268d7e9a5bb.pdf

[5] https://www.comreg.ie/publication/further-consultation-on-the-release-of-the-410-415-5-420-425-5-mhz-sub-band/

communications networks that can deliver centralised real time monitoring and control, eventually across the entire power distribution domain.

3.29 A number of seminal international and national studies have estimated the potential carbon reductions arising from the use of Smart Grids:

- the Electrical Power Research Institute (EPRI) has estimated that Smart Grid enabled electrical distribution could reduce electrical energy consumption by 5% to 10% and carbon dioxide emissions by 13% to 25%;
- a smart electrical power grid could decrease annual electric energy use and utility sector carbon emissions by at least 12% by 2030; and
- the Sustainable Energy Authority of Ireland estimates that by 2050, Smart Grids will see an accumulated reduction in energy related CO2 emissions of 250 million tonnes.

3.30 At a European Level, the European Commission has been encouraging the use of Smart Grids in order to encourage more efficient energy generation and consumption. For example, under the Electricity Directive:

- *"Member States should encourage the modernisation of distribution networks, such as through the introduction of **smart grids**, which should be built in such a way that encourages decentralised generation and energy efficiency*.
- "*In order to promote energy efficiency, Member States or, where a Member State has so provided, the regulatory authority shall strongly recommend that electricity undertakings optimise the use of electricity, for example by providing energy management services, developing innovative pricing formulas, or introducing intelligent metering systems or **smart grids**, where appropriate*.

3.31 The European Commission has an existing policy framework for climate and energy from 2020 to 2030 which proposes new targets and measures to make the EU's economy and energy system more competitive, secure and sustainable. It includes targets for reducing greenhouse gas emissions and increasing use of renewable energies noting that "*the EU and Member States will need to develop further their policy frameworks to facilitate the transformation of energy infrastructure with more cross-border interconnections, storage potential and **smart grids** to manage demand to ensure a secure energy supply in a system with higher shares of variable renewable energy*" .

3.32 In that regard, at a national level the Department of Communications, Climate Action and Environment is currently developing a National Energy and Climate Plan (NECP) as one of the key provisions of the proposed Governance of the Energy Union Regulation. The plan, which is due to be submitted to the European Commission by the end of 2018, will include trajectories for renewable energy, energy efficiency, and national emissions, and measures required to achieve these trajectories. The plan must set out how Ireland is going to achieve targets on reducing carbon emissions and increasing renewable energy up to 2030. The then Minister for Communications, Climate Action and Environment, Denis Naughten TD noted that this will be facilitated by existing work streams such as the National Development Plan (NDP). The NDP includes measures such as Smart Grid to transition to a low-carbon economy.

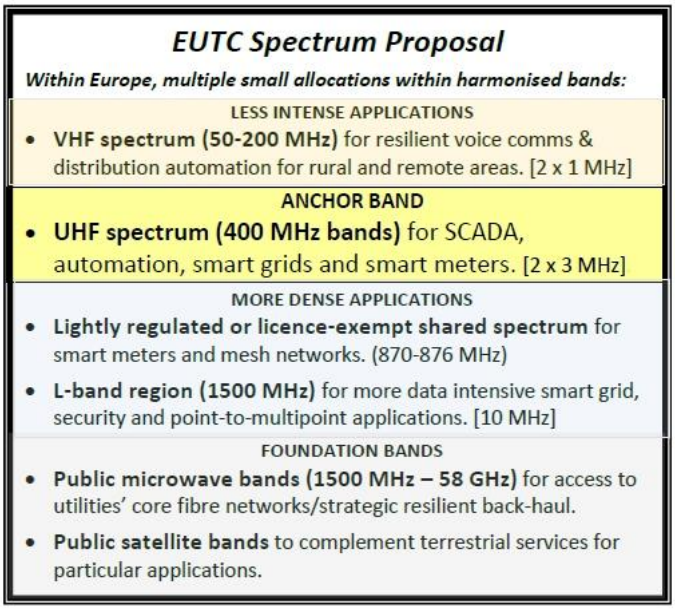
3.33 Such requirements are also broadly in line with State policy to encourage the provision of Smart Grid and other related technologies. For example:

- The Project Ireland 2040 National Planning Framework promotes a transition to a low carbon energy future which requires decisions around development and deployment of new technologies relating to areas such as wind, **smart grids**, electric vehicles, buildings, ocean energy and bio energy.
- It also commits to a roll-out of the National Smart Grid Plan enabling new connections, grid balancing, energy development and micro grid development.
- The Department of Communications, Climate Action and Environment National Mitigation Plan observes that smart operation of the power system at both transmission and distribution level and energy efficiency will enable maximisation of the existing grid.
- The National Development Plan 2018-2027 foresees the piloting of "climatesmart countryside" projects to establish the feasibility of the home and farm becoming net exporters of electricity through the adaptation of smart metering, **smart grids** and small-scale renewable technologies, for example, solar, heat pumps and wind.
- The Sustainable Energy Authority of Ireland "Smart Grid" Roadmap to 2050 notes that Smart Grid can maximise our use of indigenous low carbon renewable energy resources which is central to ensuring Ireland meets its long term target of a secure and low carbon future.

Access to radio spectrum

If utilities are to construct their own private radio networks, it will be essential for them to be guaranteed access to a small amount of dedicated radio spectrum for their operations.

The 2 x 3 MHz of spectrum in the 400 MHz region currently being sought by many utilities around Europe is only ½% of the 1200 MHz of spectrum which was identified for broadband radio services in the 2012 EU Radio Spectrum Policy Programme.[6]



Answers to Nkom's specific questions on the frequency range of 410.8–412.6 MHz / 420.8–422.6 MHz which is free and amounts to 2x1.8 MHz continuous bandwidth:

1. *What will such a provision to mobile communication enable services? Could a smaller bandwidth for mobile communications, such as NB-IoT and 200 kHz channel bandwidths, be appropriate?*

A channel bandwidth of 2 x 1.8 MHz could be used for LTE-M or 1.4 MHz LTE bandwidth channels plus NB-IoT or LPWAN in the 2 x 400 kHz of side strips. However, in a national network utility roll-out, because a single 2 x 1.4 MHz LTE channel may yield insufficient

[6] https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX%3A32012D0243

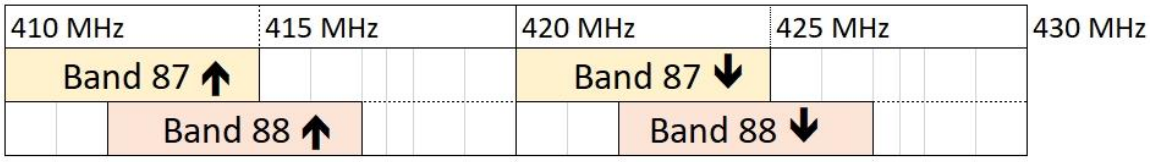
capacity in areas of overlap between cells, multiple 1.4 MHz channels may be offset from each other, possibly in 200 kHz steps to guaranteed capacity in the cell overlap areas.

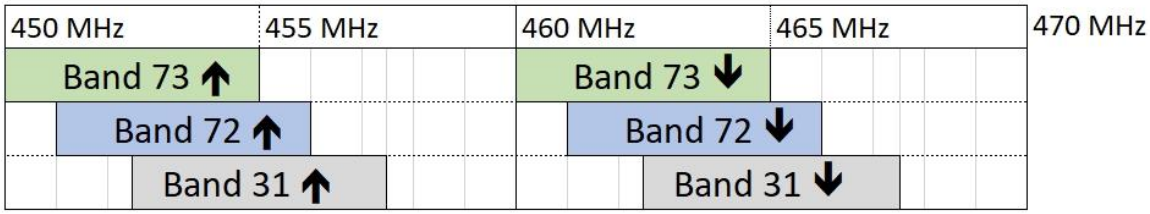
2. *Will it be appropriate to divide the frequency band and regionalize resources? What prevalence (local, regional or national) will be applicable to achieve?*

If used by utilities for critical operational communications (mainly for data devices, not voice), the utilities may wish to collaborate to operate larger shared networks; or the spectrum could be licensed on an area basis with a utility only purchasing spectrum to cover their operational area. This overcomes complex roll-out obligations where a utility may be obliged to build telecoms capacity in an area where they have no utility network simply to comply with a licence condition.

3. *Status of availability of equipment (ecosystem) and in case of any inaccessibility, when will equipment be commercially interesting and mature?*

EUTC utility members are already purchasing 410-430 MHz LTE systems for pilot trials in a number of European countries. With the completion of work in 3GPP during 2019 to create Bands 87 & 88 in the 410-430 MHz frequency range, we have no reason to believe that volume equipment prices will not be competitive with 450-470 MHz spectrum (3GPP bands 31, 72 & 73) in the near future.





4. *In the event of a lack of interest and ecosystem at this time, when should any new interest hearing take place?*

We note that although Norway's energy sources are already virtually 100% renewable, new smart grid technologies provide enhancements for operational efficiency, reliability and resilience which will still be valued by energy consumers. Optimization of Norway's energy grid may also provide enhanced opportunities for energy exports leveraging Norway's unique energy resource characteristics. If there were little utility interest in this spectrum in 2020, a repeat of the exercise in 2022 is recommended when the situation is likely to have progressed because of the major smart grid telecoms network roll-out currently underway in several countries.

The European Utilities Telecom Council (EUTC)

The European Utilities Telecom Council (EUTC) is the leading European Utilities trade association dedicated to informing its members and influencing policies on how telecommunication solutions and associated challenges can support the future smart infrastructures and the related policy objectives through the use of innovative technologies, processes, business insights and professional people.

This is combined with sharing best practices and learning from across the EUTC and the UTC global organization of telecommunication professionals within the field of utilities and other critical infrastructure environments and associated stakeholders.

Being a European association, we trust it is acceptable to respond to this consultation in English.

CONTACT DETAILS:
Adrian Grilli
Secretary of the EUTC Spectrum Group
European Utilities Telecom Council (EUTC)
email: adrian@grilli.co.uk
www.eutc.org