



5G KEY TO ENABLING A CARBON-NEUTRAL FUTURE

Webinar Q&A

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Q1) Why is 5G mmWave in 2023 worse than 5G NR in 2020 in Gwh.EB?

Philip Laidler: This is based on the assumption that at initial deployment, mmWave will perform poorly. This is a cautious assumption based on how other deployments have evolved in the past. Arguably, mmWave could benefit from better power management and quality from the outset.

Q2) When you use the term "telecoms networks" does that include the cable network which carries a majority of the backhaul of 4G/5G wireless communications?

Philip Laidler: Yes... if by the term "cable networks" you mean the fibre backhaul.

Q3) Regarding the 1W/Mbps target - what's the current number?

Philip Laidler: We estimate the current number (across 2/3/4G) to be around 400. Although this seems considerably higher than the target, the current "theoretical" 5G network performance that vendors are promising is actually below the 1 W target.

Q4) Laws of physics say bandwidth is determined by 'joules/bit/km²', so to deliver more bandwidth will always mean more energy, so to be more efficient surely 5G has to fix the so far low bits/Hz numbers?

Philip Laidler: That law needs to be applied within the context of MIMO and beam forming. Essentially, these technologies dramatically reduce the km² that the signal must cover, while still providing geographical coverage. The best way to think of this is a lighthouse beam which concentrates power into a narrow, sweeping beam, thereby achieving a bright, powerful light over many km, with only a fraction of the power that would be required to "cover" the area with a single fixed (or segmented) light source.

Q5) Why should the single metric be on a per second basis instead of a per volume basis?

Philip Laidler: We feel it sounds snappier. Alliteration.

Q6) Can you provide specific examples of operators who are implementing best practice?

Philip Laidler: Telefonica and Telia are good examples.

Q7)How has Huawei introduced innovative business models to drive emissions reductions?

Ian Mash: Huawei has a key focus on energy efficiency as the way to reduce emissions across our product range. Efficiency is designed into our products at the very earliest stages of gestation. Some examples are:

- Our Smart energy focus which has the target of 'zero bit, zero watt', in essence, closing down equipment when not in use rather than have it sit on standby
- Overall our 5G portfolio is considerably more efficient than previous generations of equipment in a like for like comparison
- Additionally, beamforming can reduce the power required to provide connectivity in specific areas
- We have developed software which optimizes the use of Diesel power generation with solar power generation across our Lithium battery range, and which can result in savings in diesel circa 12%
- Finally we have developed a state of the art range of Lithium Batteries, which in addition to having a shorter cycle time, with more recharges possible by the battery, have up to 50% longer life than a traditional lead acid battery

Q8)What more can operators do drive emissions innovation?

Philip Laidler: Many things. We will be producing research in the coming months on this theme.

Philip Laidler is a Partner and Consulting Director at STL Partners, specialising in Telco cloud, Edge computing and Sustainability / CO₂.

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