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CLEAN ENERGY: CRITICAL FOR 5G'S SUCCESS?

Webinar: Questions and Answers

MARCH 2021

Clean energy: critical for 5G's success? – Questions and Answers

This document outlines the questions and answers received from the STL Partners and Vertiv webinars, Clean energy: critical for 5G's success? which were hosted on Tuesday 2nd March 2021.

You can watch the recording of the session, and also access the slides, using the link [here](#). In this document, we seek to address the questions raised during the webinar that we were unable to address in the time available.

If you have any questions not addressed in the webinar or this Q&A document, or want to hear more about our latest research or from our panelists, please contact:

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9am GMT

1. At what server inlet is PUE estimated as 1.3 to 1.35?

Vertiv: Inlet air at 22C.

4pm GMT

2. Can you clarify the report source and estimation basis for 5G requiring up to twice as many cell sites to achieve the same levels of coverage as 4G?

STL: The estimate of twice the cell sites for 5G vs 4G is based on numerous conversations with operators. There are many factors that determine the number of cells for coverage, not least the 5G spectrum available and the fact that operators will rely on existing sites for much of their 5G deployment. We should also be careful not to equate cell sites with power use and peak power with average power used. Finally, the interplay between 5G and 4G networks means that energy impacts need to be considered across both.

3. The new London Plan has recently been made available and calls for embedded carbon reporting. How will this policy and other policies impact the construction of digital infrastructures?

STL: The new London Plan includes some policies on sustainability and digital infrastructure. The policy SI 2 only applies to Major development proposals. SI 3, SI 4 and SI 6 reference this. However, there are no specific targets or obligations of digital infrastructures

4. In the latest sustainability and environmental reports from the hyperscale cloud service providers they show Scope3 at 95%. What percentage of a telcos' GHG emissions are Scope3?

STL: Few operators report on scope 3 emissions. BT has done, and concluded that scope 3 constitutes 94% of their e2e net CO2eq footprint: see [here](#). For the benefit of other readers Scope 3 covers embedded and indirect emissions as opposed to Scope 2 – emissions from supplied power and Scope 1 – direct emissions from activities such as combustion. A high percentage of emissions arising from scope 3 suggests that the company has made good progress on reducing its Scope 1 and Scope 2 emissions. Given the lack of emissions reporting from telecoms as a sector, it is not possible to offer a sector level figure comparable to the one provided for HCPs. I would however question the HCPs' scope 3 figures which are going to be estimates based on standard industry factors – this is far from ideal. For example, one of HCPs' biggest suppliers is telecoms operators, who are not providing information on the emissions arising from the use of their services, yet HCPs must include these.

5. Telefónica has 180,929 tCO2eq due to refrigerant gases – could you please let me know what the strategy is for dealing with Scope1 emissions due to F-gases?

Telefónica: First, I would like to clarify that the value is 144.632 tCO₂eq in 2020. Our main actions are:

- i. Replace equipment with less polluting gases
- ii. Restrict use/purchase of R22
- iii. Reuse gas from uninstalled equipment in future refills (with proper pre-treatment)
- iv. Identify recurrences in equipment to generate replacement plan

6. In the Telefónica Integrated Report it shows a Circular Economy strategy. What percentage of the existing hardware is repurposed circular economy hardware today and what will the percentage be by 2025?

Telefónica: By 2020, 80%-85% of home equipment recovered (Churn + Substitutions) was re-used in new installations or maintenance services (nearly, 4 million devices). Our target for 2025 is to increase these figures to 90-95%, ensuring that most of the recovered equipment (mainly routers and decoders) is given a second life.

7. Apart from improving power system efficiencies, does Vertiv have a plan to convert their power system to run in micro-grid smart-grid arenas to provide grid services, especially in European grids?

Vertiv: Yes, this is an emerging area Vertiv is paying close attention to with a number of active customer projects. We have deployed systems with customers integrating grid service support into Vertiv UPS and are working with customers exploring alternatives to the grid and traditional generator backup. Vertiv sees an evolution of the traditional use of a UPS in a critical power system going beyond power conditioning and backup. We can expect further enhancement of control capability and integration with on-site energy sources.

Vertiv also has ongoing initiatives in the DC microgrid space – both in applying our Hybrid Power System portfolio (Grid + Batteries + Solar power sources managed by our DC System and Controls) at cell sites and off grid locations, as well as applying 240V and 400V DC Systems to in-building applications.

Overall, this is a space Vertiv is paying active attention towards in our customer engagement and R&D investments.

8. Do you have any projections on how much energy consumption 5G will offset and reduce in other sectors (transportation, logistics, industry, etc.)?

STL: We have not conducted any modelling of what is called the 'enablement effect', i.e. 5G causing a reduction in carbon emissions in other industries, for example by reducing the need for travel by enabling HD video streams. One of the reasons for this is that it would be extremely complicated and would require a very high level of assumptions. Moreover, it is not a given that 5G will necessarily offset carbon emissions in other industries, 5G will help industries such as oil and gas and mining as well.

9. What is the best practice to "educate customers towards trade-off" for those that are used to worry-free consumption, e.g. by full flat rate and anywhere streaming? Could this even be influenced by "best network competition" to choose the fastest, most reliable and secure network operator and thereby leaving the attribute of energy efficiency aside as qualification criterion?

STL: We hope that network efficiency can be improved without affecting the QoS. Steps such as shutting down parts of the network in the middle of the night will not have any impact on the network when 99% of users need it. It is important to maintain a balance between efficiency, resiliency, and cost, but with best practice deployed on the network and across telco infrastructure customer QoS does not need to suffer. That said, there will be many customers who increasingly do base their purchase decisions on a company's sustainability record, and companies who have taken real action and then are transparent with their reporting will be rewarded. While there is a balance to be struck, QoS does not need to suffer as a result.

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