Comments from the Danish Energy Agency to the BEREC Guidelines on Geographical surveys of network deployments

Regarding definition of speeds

Normally available speed

It would be relevant to include the phrase "marketed speed" in the definition. This makes it easier for the consumer to validate the information.

Maximum available speed

It is difficult to find relevance of maximum available speeds. It is unclear what the definition is for _"at least some of the time"._ Even with a clear definition, it is difficult to find relevance for such a key figure.

Instead, it is more relevant to map the technical ability of the infrastructure (at an address level preferably). It is not always the case that the ISP for commercial reasons is marketing technical ability of the infrastructure. However, it is an interesting key figure because it illustrates the potential of the infrastructure.

NRA's or OCA's will need some guidelines for what speeds that may be report as potential ability of the infrastructure. This definition could be potential speeds on existing infrastructure that will be accessible within a limited effort (for example for a small cost for digging, new equipment etc.).

Regarding technology codes

Taken into account the complexity of performing broadband mapping it seems too complicated to perform mapping at a higher granularity than medium codes. The more detailed and complex mapping, the greater the risk of errors.

The DEA suggests that mapping only should be performed at 'medium code' level but that the national NRA's or OCA's of course may choose a higher granularity. This suggestion is to some degree already included in the guidelines draft.

Regarding speed classes

It seems a lot easier just to collect absolute speeds rather than collecting data in the suggested speed classes. The data will obtain a better quality, when the operators do not have to sample their absolute speeds to these classes. Also it is possible to make more granular analyzes for example it will possible to analyze how many households that have access to for example 50 Mbit/s rather than speeds within a wide speed range. At last, it will be more future proof, because it is possible to scale the speeds upwards.

Regarding collection of data regarding physical location of the infrastructure

The Danish Energy Agency do not have any usage for a mapping of physical location infrastructure. One reason is that the DEA does not calculate speeds in the mapping. Instead ISP's report the speeds.

When using such a methodology it is important that the NRA/OCA will perform appropriate assurance of data quality. To some extent, you can perform some quality assurance of coverage data using physical location of infrastructure but it is a methodology that will be extremely resourceful for both the ISP's as well as for the NRA/OCA to implement because it will require a separate mapping. In Denmark we do not perform such a mapping. So the burden for the ISP's and for the Danish Energy Agency will be big if member states will be obligated to collect data regarding physical location of infrastructure.

There are many other ways to perform quality assurance of data that at the same time adds value to consumers, ISP's, municipalities etc. As examples for quality assurance tools in Denmark:

- Developing algorithms to identify potential mistakes in data reported by an ISP. For example if an ISP has reported coverage on number 10 and 14 on a street but not reported number 12. This will most certainly be a mistake and should be a part of the dialogue with the ISP in the data quality assurance process. Such a dialogue will most likely also be helpful for the ISP.

- Displaying the mapping on a consumer portal, which allows consumers and other stakeholders to look up coverage information (technology, speed and ISP) at an address. If an ISP has reported inaccurate information for example if coverage has been overestimated consumers will get upset because the ISP cannot deliver the reported broadband connection. So it will important for the ISP to report correct coverage to avoid potential bad publicity.

- Allowing access for other stakeholders to use the mapping for external usages. For example in Denmark we have developed an API function at the before mentioned consumer portal which allow external stakeholders to visualize results of the broadband mapping on their own website. A large website displaying all houses for sale is using the API function visualizing the broadband options at each house for sale. If this information is incorrect the seller and/or buyer as well the realtors will be upset and most likely will complain about the information.

- Shortly the DEA will give access to raw data regarding fixed broadband coverage. This gives for example a municipality access to analyze local coverage. If the municipality finds mistakes in coverage data they most likely will report it to the DEA.

- The mapping is used when defining which addresses that are eligible to seek for state aid in Denmark. If an ISP has reported coverage by mistake an address/citizen will lose the right to seek for state aid. The citizen will therefore complain to the DEA.

All of the bullets will be included in the dialogue between the DEA and each ISP in the process of quality assuring data. Therefor the DEA has many different tools to perform quality assurance of data so there is no necessity for the data regarding physical location of infrastructure. Instead, the guidelines should focus on helping the member states to share more data, which will contribute to quality assurance of data because stakeholders will report potential inaccuracies in data to the NRA/OCA.

Regarding mapping of mobile broadband
The DEA suggests a low degree of harmonization regarding mapping of mobile broadband. As BEREC already has communicated, it is very complicated to perform mapping of mobile broadband.

In Denmark the DEA has developed a mapping methodology together with the Danish mobile operators. All of the mobile operators now uses the same methodology when reporting mobile coverage to the DEA. Together with the operators the DEA have used substantial resources in the development of the methodology. If through a high degree of harmonization, the DEA and the Danish mobile operators will be obligated to implement a new methodology the consequence will be substantial and disproportional. It could also lead to a less correct mapping methodology.

Also collecting information about uploads speeds served on mobile broadband, is a very difficult task, much more complex than download, therefore the DEA suggest to delete that part from the document. Because off the high complexity when

calculating a representative upload speed the possibility of mismatch between mapped and experienced speeds is likely.

However if some degree of harmonization is necessary, it could be useful to make some common guidelines on which elements a mobile coverage model should include, e.g. network load, GIS data and Signal-to-Noise Ratio instead of signal strength. It should still be up to the member states, or their mobile operators, to implement it into a model that suits their needs.

Regarding QoS-2 and QoS-3 mapping
BEREC will not begin the work with guidelines for QoS-2 and QoS-3 mapping until next year. However, there are relevant issues that should be taken into account already at this preliminary stage.

In BEREC's presentation from the meeting on November 22 it is mentioned that performing QoS-2 and QoS-3 mapping is relevant for the verification of QoS-1 data. However, QoS-2 and QoS-3 mapping will not be valid to conclude whether the speeds in the QoS-1 mapping are over- or under-estimated. In the QoS-1 mapping the NRA or OCA will collect the highest speed available on an address or in an area. This information is relevant in the purpose of mapping for state aid.

However, in the QoS-2 or -3 speed measurements you will not find information on whether the broadband subscription on the address is for the highest available speed.

- For example: A consumer has chosen to buy a broadband subscription, which gives access to 100 Mbps download at an ISP. The consumer also had the opportunity to buy a subscription at a higher price with access to 500 Mbps download, which is the information regarding speed that the ISP has reported in the QoS-1 mapping. If the consumer performs a speed test (either QoS-2 or 3) the result will of course not show higher speeds than the 100 Mbps that the consumer has paid for. From this, you are not able to conclude that the QoS-1 mapping on the address (500 Mbps download) is invalid because the consumer simply has chosen another subscription than the fastest available.

In addition, there is nothing in the EECC article 20, stating that it is obligatory for member states to perform a QoS-2/3 mapping.