**3GPP TSG-WG SA2 Meeting #164 S2-2408988**

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**Source: China Mobile, SK Telecom, Rakuten, China Unicom, NEC, ETRI, Tencent, Interdigital, Toyota, KPN, Orange, Deutsche Telekom, OPPO, MediaTek,**

**Title: TR 23.700-66 KI#1 Conclusion update based on the way forward proposal**

**Document for: Approval**

**Agenda Item: 19.4.1**

**Work Item / Release: FS\_EnergySys / Rel-19**

*Abstract: This pCR proposes to update the conclusion of KI#1.*

# 1 Discussion

This paper provides conclusion update of KI#1: Network energy related information exposure.

# 2 Proposal

It is proposed to include the below changes into TR 23.700-66.

*First Changes*

## 8.1 Conclusion for KI#1: Network energy related information exposure

The following bullets are recommended for normative work for KI#1:

1) A new network functionality is defined to collect and calculate the energy related information and exposes to the authorized consumer subject to operator's policy:

- If the authorized consumer is AF, the granularities include: per UE, per UE per application, per PDU session;

- If the authorized consumer is 5GC NFs, the granularities include: per UE, per PDU session;

NOTE: The new network functionality can be deployed standalone or co-located with other NFs under SA2 responsibility.

- The energy related information for the granularities above include:

- Energy consumption information;

- Renewable energy information.

2) The consumer NFs including 5GC NFs and /or AF, may request the energy consumption information exposure with reporting request e.g. Periodic reporting or Threshold based reporting.

3) The new functionality supportingthe calculation of the Energy Consumption information includes the following aspects:

a) OAM provides the Node-level energy consumption information at the gNB(s) and UPF(s) serving the UE to the new functionality.

b) OAM: provides the overall data volume of the gNB to the new functionality;

c) The Node-level information of a) and b) received from OAM, could be used by the new functionality for all the UEs serving by the NF Node.

NOTE: There is coordination between SA2 and SA5 to help OAM provides Node level EC information in normative phase.

d) UPF: provides the overall data volume of the UPF;

e) UPF: provides the data volume for the QoS flow or the SDF.

f) When the gNB and/or the (I-)UPF(s) which serving the UE are changed, the serving gNB ID and UPF ID will be sent to the new functionality through AMF/SMF.NOTE: It is assumed that the measurement time period T is aligned over the UPF/NG-RAN nodes for which information is collected, i.e. the start/stop of the time periods is time-synchronized.

4) The new functionality determines the E2E energy consumption based on energy consumption per the granularities above at serving NF (i.e. NG-RAN and UPF).

5) In the current release of the specification, only the energy-related information of user plane communication (not control plane signalling) is supported.

NOTE 1: The exposure and collection of renewable energy information depend on the coordination with SA WG5.

NOTE 2: In this Release, the gNB neither supports per-UE-per-PDU session nor per-UE-per-QoS flow level energy consumption reporting.

Editor's note: Whether in this release the NG-RAN will provide per UE level energy consumption information and state depending on RAN WGs.

NOTE 3: This work will coordinate with SA WG5 for OAM and charging part.

*End of Changes*