**3GPP TSG-WG SA2 Meeting #160 *S2-2313278***

**Chicago, U.S., November 13 – 17, 2023 (revision of S2-2312634 of 10500)**

**Source: China Mobile, Vivo, CATT, NEC, Nokia, Nokia Shanghai BellTitle: New key issue: 5GS adjustment/optimization for network energy saving**

**Document for: Approval**

**Agenda Item: 19.4**

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

*Abstract of the contribution: Propose a key issue about WT#3: Network adjustment/optimization for network energy saving.*

# 1 Discussion

This paper is to propose a new key issue according to the WT#3 of FS\_EnergySys.

The FS\_ EnergySys objectives for WT#3:

- WT #3. Study 5GS enhancements (e.g., energy usage adjustment for NF from CN aspect, energy saving related decision making, NF selection leveraging NF energy states) for network energy saving including 5GC(NFs) and NG-RAN interactions, analytics, etc. Impacts on the UE are not ruled out e. g., for scenarios specified in TR 22.882 by SA1 EnergyServ.

# 2 Proposal

It is proposed to include the below changes into TR 23.700-66 v0.1.0.

# 

*FIRST CHANGE (all the text is new)*

## 5.X Key Issue #X: 5GS enhancements for network energy saving

### 5.X.1 Description

When 5GS can collect the energy related information e.g. per QoS flow/PDU session/UE/NF, it can be considered to enhance the 5GS to leverage this kind of information to optimize the network processing or make the proper policy decision.

For example, some procedures or operations can be updated (e.g to degrade the QoS profile within an SLA agreement, or to transmit the data flows in lower bandwidth) to satisfy the energy saving requirement. Trigger the NF selection/re-selection to find a NF with lower energy state (e.g., coordination with the OAM in control plane procedures) to satisfy the energy saving requirement.

This key issue is to study 5GS enhancement for network energy saving. At least the following aspects should be studied:

* What, if any, energy related information is required to control and enhance the system operations and procedures and how it is collected.
* Whether and how to enhance NF selection and re-selection leveraging energy related information (e.g. NF energy states).
* Whether and how to enhance the existing operations and procedures (e.g. Connection Management procedures, Session Management procedure, 5GC and NG-RAN interactions) for energy saving and/or efficiency.
* Whether and how to enhance network analytics to support making decisions for network energy saving and network energy efficiency, e.g. describing the use cases, specifying the input/output information.

NOTE: Any potential enhancement impacting the NG-RAN will require coordination with RAN WGs.

*End of CHANGE*