**3GPP TSG SA WG5 Meeting #155 S5-242723 Jeju, South Korea, 27 - 31 May 2024**

**Source: Huawei (moderator)**

**Title: Rel-19 New WID on charging aspects for energy efficiency of 5G**

**Document for: Approval**

**Agenda Item: 7.2**

3GPP™ Work Item Description

Information on Work Items can be found at <http://www.3gpp.org/Work-Items>
See also the [3GPP Working Procedures](http://www.3gpp.org/specifications-groups/working-procedures), article 39 and the TSG Working Methods in [3GPP TR 21.900](http://www.3gpp.org/ftp/Specs/html-info/21900.htm)

Title: New WID on Charging Aspects for Energy Efficiency of 5G

Acronym: EnergySys\_CH

Unique identifier:

Potential target Release: Rel-19

# 1 Impacts

{For Normative work, identify the anticipated impacts. For a Study, identify the scope of the study}

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Affects: | UICC apps | ME | AN | CN | Others (specify) |
| Yes |  |  | X | X |  |
| No | X | X |  |  | X |
| Don't know |  |  |  |  |  |

# 2 Classification of the Work Item and linked work items

## 2.1 Primary classification

### This work item is a …

|  |  |
| --- | --- |
|  | Study  |
|  | Normative – Stage 1 |
| X | Normative – Stage 2 |
| X | Normative – Stage 3 |
|  | Normative – Other\* |

**\* Other = e.g. testing**

## 2.2 Parent Work Item

For a brand-new topic, use “N/A” in the table below. Otherwise indicate the parent Work Item.

|  |
| --- |
| Parent Work / Study Items  |
| Acronym | Working Group | Unique ID | Title (as in 3GPP Work Plan) |
|  |  |  |  |

### 2.3 Other related Work Items and dependencies

|  |
| --- |
| Other related Work /Study Items (if any) |
| Unique ID | Title | Nature of relationship |
| 870022 | Enhancements on EE for 5G networks | The Rel-17 work item in SA5 on 5G energy efficiency. |
| 940036 | Study on new aspects of EE for 5G networks Phase 2 | The Rel-18 study in SA5 on 5G energy efficiency and energy saving. |
| 940037 | Enhancements of EE for 5G Phase 2 | The Rel-18 work item in SA5 on 5G energy efficiency and energy saving. |
| 960019 | Study on Energy Efficiency as service criteria | The Rel-19 study in SA1 describes use cases and potential requirements in relation with this study. |
| 1000033 | Energy Efficiency as Service Criteria | The Rel-19 work item in SA1 provides Stage 1 requirements in relation with this study. |

# 3 Justification

Energy efficiency, the ratio between the useful output and input of an energy conversion process, is the hot topic in 3GPP.

According to the stage 1 service requirements specified by SA1 in Clause 6.15a TS 22.261, "*The 5G system shall provide a mechanism to include Energy related information as part of charging information*"*.*

According to SA5 OA&M, TS 28.554 clause 6.7 defined a set of Energy Efficiency KPI and TS 28.541 defined a set of attributes to support energy efficiency and energy saving. For example,

- Energy Consumption KPI, per Network Slice in clause 6.7.3.3 in TS 28.554. The unit of this KPI is J.

- Energy Efficiency KPI, per Network Slice in clause 6.7.2 in TS 28.554. This KPI indicates the ratio between the performance of a network slice or the useful output of 5GC and its energy consumption when assessed during the same time frame. The performance of a network slice depends on the type of network slice, for example, the performance of a network slice of type MIoT is the maximum number of registered subscribers or mean number of active UEs in the network slice. The useful output of 5GC depends on which 5GC network functions are considered, for example, the useful output of the 5GC user plane is obtained by summing up UL and DL data volumes at N3 interface.

- "energyEfficiency" attribute in the Service Profile, per Network Slice in clause 6.3.3 TS 28.541. This attribute describes the energy efficiency of a network slice, i.e. the ratio between the performance of a network slice and its energy consumption (EC) when assessed during the same time frame, see clause 3.4.7 of GSMA NG.116.

The existing service requirements specified by SA1 and the collected energy related information per network slice provided by MnS should be considered in the charging aspects of energy efficiency.

# 4 Objective

The objective of the work item is to support the inclusion of energy related information per network slice as part of charging information, with the following tasks.

- WT-1: specify the charging principles, charging requirement and message flow.

- WT-2: specify the corresponding enhancements to charging information, open API and CDR ASN.1.

## TU estimates and dependencies

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Work Task ID** | **TU Estimate****(Study)** | **TU Estimate****(Normative)** | **RAN Dependency****(Yes/No/Maybe)**  | **SA Dependency****(Yes/No/Maybe)** | **Non-3GPP Dependency** |
| WT-1 | 0 | 3 | No | Yes | No |
| WT-2 | 0 | 3 | No | Yes | No |

**Total TU estimates for the study phase: 0**

**Total TU estimates for the normative phase: 6**

**Total TU estimates: 6**

# 5 Expected Output and Time scale

|  |
| --- |
| New specifications {One line per specification. Create/delete lines as needed} |
| Type  | TS/TR number | Title | For info at TSG#  | For approval at TSG# | Rapporteur |
|  |  |  |  |  |  |

|  |
| --- |
| Impacted existing TS/TR {One line per specification. Create/delete lines as needed} |
| TS/TR No. | Description of change  | Target completion plenary# | Remarks |
| TS 32.240 | Introduce the charging aspects for energy efficiency  | TSG SA #108(June, 2025) |  |
| TS 28.201 | Enhance the NSPA Charging with energy related charging information | TSG SA #106(Dec, 2024) |  |
| TS 28.202 | Enhance the NSM Charging with energy related charging information | TSG SA #106(Dec, 2024) |  |
| TS 32.291 | Enhance Open API to support the energy related charging information | TSG SA #108(June, 2025) |  |
| TS 32.298 | Enhance CDR ASN.1 to support the energy related charging information | TSG SA #108(June, 2025) |  |

# 6 Work item Rapporteur(s)

# 7 Work item leadership

SA5

# 8 Aspects that involve other WGs

# 9 Supporting Individual Members

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| --- |
| Supporting IM name |
| HiSilicon |
| Huawei |
| MATRIXX  |
| Nokia |
| Ericsson |
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