**3GPP TSG-SA5 Meeting #162 *S5-254008d1***

Goteborg, Sweden, 25 - 29 August 2025

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| *CR-Form-v12.3* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **28.554** | **CR** | **0236** | **rev** | **1** | **Current version:** |  |  |
|  | | | | | | | | |
| *For* [***HE******LP***](http://www.3gpp.org/3G_Specs/CRs.htm#_blank)*on using this form: comprehensive instructions can be found at* [*http://www.3gpp.org/Change-Requests*](http://www.3gpp.org/Change-Requests)*.* | | | | | | | | |
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| ***Proposed change affects:*** | UICC apps |  | ME |  | Radio Access Network | **X** | Core Network | **X** |

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| ***Title:*** | Rel-19 CR TS 28.554 Add the calculation of renewable energy related KPIs | | | | | | | | | |
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| ***Source to WG:*** | China Mobile | | | | | | | | | |
| ***Source to TSG:*** | SA5 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | Energy\_OAM\_Ph3 | | | | |  | ***Date:*** | | | 2025-08-12 |
|  |  | | | |  | |  | | |  |
| ***Category:*** |  |  | | | | | ***Release:*** | | | Rel-19 |
|  | *Use one of the following categories:* ***F*** *(correction)* ***A*** *(mirror corresponding to a change in an earlier release)* ***B*** *(addition of feature),* ***C*** *(functional modification of feature)* ***D*** *(editorial modification)*  Detailed explanations of the above categories can be found in 3GPP [TR 21.900](http://www.3gpp.org/ftp/Specs/html-info/21900.htm). | | | | | | | | *Use one of the following releases: Rel-8 (Release 8) Rel-9 (Release 9) Rel-10 (Release 10) Rel-11 (Release 11) … Rel-17 (Release 17) Rel-18 (Release 18) Rel-19 (Release 19)  Rel-20 (Release 20)* | |
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| ***Reason for change:*** | | New aspects of energy related information, e.g., renewable energy consumption of a UPF, renewable energy consumption of a gNB, are expected to be provided by the 5G system. A solution of renewable energy consumption measurement is needed. | | | | | | | | |
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| ***Summary of change:*** | | Introduce renewable energy consumption calculation for UPF and gNB. | | | | | | | | |
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| ***Consequences if not approved:*** | | Solutions of renewable energy consumption measurement would be missing. | | | | | | | | |
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| ***Clauses affected:*** | | 6.7.x (new) | | | | | | | | |
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|  | | **Y** | **N** |  | | | |  | | |
| ***Other specs*** | |  | **X** | Other core specifications | | | | TS/TR ... CR ... | | |
| ***affected:*** | |  | **X** | Test specifications | | | | TS/TR ... CR ... | | |
| ***(show related CRs)*** | |  | **X** | O&M Specifications | | | | TS/TR ... CR ... | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

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| **First change** |

### 6.7.x Renewable Energy Consumption (REC)

#### 6.7.x.1 Renewable Energy Consumption (REC) of UPF

##### 6.7.x.1.1 Definition

a) RECUPF

b) This KPI provides the Renewable Energy Consumption of a UPF (RECUPF) over a time period. The Renewable Energy Consumption of a UPF (RECUPF) is the Energy Consumption of the UPF (ECUPF) multiplied by the Renewable Energy Factor (i.e., the ratio of renewable energy) of the energy source which powers the UPF (REFUPF). The unit of RECUPF is J.

b-1) Unit of RECUPF: Integer.

b-2) Type of RECUPF: CUM

c) This calculation formula is obtained as:

, where:

ECNF is the Energy Consumption of the UPF as defined in clause 6.7.3.1. Its unit is J;

REFUPF indicates Renewable Energy Factor, as defined in TS 28.310[9], of the UPF, i.e., ratio of the renewable energy to the total energy of the UPF. Its unit is percentage. This factor can be configured as operator specific.

d) ManagedElement

NOTE: This KPI is applicable for the UPFs that are powered using multiple energy supply including renewable energy supply and non-renewable energy supply.

#### 6.7.x.2 Renewable Energy Consumption (REC) of gNB

##### 6.7.x.2.1 Definition

a) RECgNB

b) This KPI provides the Renewable Energy Consumption of a gNB (RECgNB) over a time period. The Renewable Energy Consumption of a gNB (RECgNB) is the Energy Consumption of the gNB (ECgNB) multiplied by the Renewable Energy Factor (i.e., the ratio of renewable energy) of the energy source which powers the gNB (REFgNB). The unit of RECgNB is J.

b-1) Unit of RECgNB: Integer.

b-2) Type of RECgNB: CUM

c) This calculation formula is obtained as:

, where:

ECgNB is the Energy Consumption of the gNB as defined in clause 6.7.3.4.2. Its unit is J;

REFgNB indicates Renewable Energy Factor, as defined in TS 28.310[9], of the gNB, i.e., ratio of the renewable energy to the total energy of the gNB. Its unit is percentage. This factor can be configured as operator specific.

d) ManagedElement

NOTE: This KPI is applicable for the gNBs that are powered using multiple energy supply including renewable energy supply and non-renewable energy supply.

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| **End of change** |