**3GPP TSG-SA WG4 Adhoc meeting post 133e S4aI250132r03**

**Paris, France5** *revision of S4-251406*

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| *CR-Form-v12.2* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
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|  | **26.942** | **CR** | **0006** | **rev** | **1** | **Current version:** | **19.0.0** |  |
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| *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 | **x** | Radio Access Network |  | Core Network | **x** |

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| ***Title:*** | Additional use case 6.6 from TR 22.883 | | | | | | | | | |
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| ***Source to WG:*** | Nokia, Samsung, Orange | | | | | | | | | |
| ***Source to TSG:*** | S4 | | | | | | | | | |
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| ***Work item code:*** | FS\_Energy\_Ph2\_MED | | | | |  | ***Date:*** | | | 2025-07-15 |
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| ***Category:*** | B |  | | | | | ***Release:*** | | | Rel-20 |
|  | *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-16 (Release 16) Rel-17 (Release 17) Rel-18 (Release 18) Rel-19 (Release 19)* | |
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| ***Reason for change:*** | | The latest draft of FS\_Energy\_Ph2\_MED proposes to add new Key Issues as part of the on-going phase 2 study. One of the objectives of this new study is to add new use cases from SA1 has added new use cases and potential requirements in TR 22.883 and new requirements in TS 22.261 regarding enhancements on energy as service criteria.  As part of the on-going work, we propose new text the content of the description. | | | | | | | | |
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| ***Summary of change:*** | | This CR proposes new text to be added in TR 26.942 on “Clause 5.1 Baseline use cases defined by SA1”. | | | | | | | | |
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| ***Consequences if not approved:*** | | Proposed objectives will not be met. | | | | | | | | |
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| ***Clauses affected:*** | | 5.1 | | | | | | | | |
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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:*** | |  | | | | | | | | |
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| ***This CR's revision history:*** | |  | | | | | | | | |

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| 1st Change |

# 5 Use cases

## 5.1 Baseline use cases defined by SA1

In Release 19, use cases regarding enhancements to Energy Efficiency of 5G network and application service enabler aspects are listed in TR 22.882 [56]. Five of them have been identified as media-related and therefore fall within the scope of this study:

- *Use case 5.5 on service energy monitoring by an Application Server:* The Application Service Provider cares about energy consumption in the Data Network as a result of the service provided by an Application Server to UEs. This could be for one or more of the following three reasons:

- The Application Service Provider needs to demonstrate that it is reducing energy consumption;

- The service has an associated energy cost, and the Application Service Provider wants to reduce it;

- The Application Service Provider recognises that there are policies that limit energy use and controls the overall use of the service to operate within those constraints.

- *Use case 5.6 on supporting service-level energy efficiency analysis for verticals:* An Application Service Provider is running three different enterprise applications over two network slices. It proposes exposure of data volume and energy consumption of different Network Functions participating in the delivery of the service for different time periods at the request of the Application Service Provider. The Application Service Provider may use existing 3GPP procedures to infer Network Slice energy consumption and the number of PDU sessions per network slice.

*- Use case 5.8 on Application service Energy Efficiency (AEE) monitoring:* The energy consumed by an application service at the device side as well as at the network side is monitored and predicted by the 5G System and is exposed as a monitoring event to the Application Service Provider to allow an application layer action. In the context of media delivery, this action could be for example triggering multicast/broadcast delivery for a given service area and time of the day.

- *Use case 5.9 on renewable energy consumption information exposure:* Mobile Network Operators need to understand and track the proportion of energy consumed in their networks that is sourced from renewable sources, which can be made available to customers and authorized third parties.

- *Use case 5.10 on supporting carbon-aware communication service:* The Mobile Network Operator provides to end users an estimate of the carbon emissions for the services consumed, for example the equivalent carbon dioxide emissions corresponding to the data consumed by a user during a particular billing cycle.

- *Use case 5.14 on reducing GHG footprint of Application Services:* By considering the temporal and spatial information of sustainable energy source and availability, the possibility of reduction of the greenhouse gas footprint for application services is explored. Rather than optimising compute tasks for highest throughput or lowest latency, those tasks having flexibility in both when and where they are executed (e.g., some AI/ML training or video processing) are routed to a computing node using the (most) sustainable energy sources at that moment.

Th above work is complemented in Release 20 by additional use cases on energy saving and energy efficiency from end-to-end perspectives documented in TR 22.883 [85]. Selected additional use cases from that study with potential relevance to media delivery are summarised below:

*- Use case 5.1 on energy saving service for UE*: When subscribing specific network services (e.g., for AR, XR applications), users will have opportunities to choose energy saving services based on their requirements.

NOTE 1: The SA1 use case description referenced above is focused on AR and XR applications. In the context of media delivery, mapping the subscriber’s to preference for energy saving actions onto 5GMS or RTC system optimizations seems relevant to the present document.

*- Use case 5.2 dynamic service adjustment support in the network based on energy information*: Overall reduction in energy usage and prioritizing usage of renewable energy sources (whenever available) over non-renewable energy sources could lead to dynamic service adjustment at both user and network levels in order to reduce energy consumption.

NOTE 2: The SA1 use case description referenced above is focused on renewable/non-renewable energy. In the context of media delivery, it seems relevant to allow the the media delivery system to limit video quality, for example, by leveraging 5GMS or RTC system optimizations in order to ration energy usage.

*- Use case 5.7 on tolerance to QoS degradation due to network energy saving*: Network energy saving techniques try to optimize energy consumption without degrading the network QoS. Sometimes, the MNO may identify further energy saving opportunities, but at the cost of network QoS degradation. Tolerance to QoS degradation can vary case by case depending on the current UE/user activity, in particular based on the specific application/service.

NOTE 3: In the context of media delivery, QoE degradation can also be considered in addition to network QoS degradation While end user QoE could be maintained up to an acceptable QoS floor, below this level, there is likely to be an impact on the QoE.

*- Use case 5.8 on Green social media & email content download*: This use case aims to reduce the carbon impact of instant messaging and email services by postponing the download of attachments (i.e., the bulk of the data) to a moment in time when both the energy mix is and/or the radio signal conditions are favourable, considering that radio signal conditions have a major impact on the energy consumed by RF communications.

NOTE 4: This could also apply to Background Data Transfer of media.

*- Use case 5.9 on notifying UEs about network energy-related characteristics*: Energy-related characteristics can be made available to users, UEs or 3rd parties (applications, enterprise customers etc), in order to raise awareness, and also to avoid misinterpretation of limited service availability/performance.

NOTE 5: In the context of media delivery, it seems relevant to inform UEs when 5GMS System or RTC System optimizations are activated/planned, or to help authorized third parties to identify a set of target UEs for which optimizations are relevant.

Media-related requirements associated with these use cases are addressed in the following Key Issues, complemented by requirements associated with the findings identified in clause 4.

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| End of change |