

3GPP MRP Workshop on RAN Rel-18 for Industry Verticals: 5G Smart Energy Infrastructure

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Smart Energy Infrastructure study in SA1

- Status: the FS_5GSEI study has nearly completed, normative work will complete 80% by 09.21, 100% by 12.21.
- Rel-18 stage 2 studies may take up SEI requirements, in RAN and SA.
- The EUTC has contributed to this study actively.

KPIs – representative SA1 study conclusions

Use case	Availability	Max latency	Service Area	Density / notes
Advanced Metering	>99.99%	<100ms	<10000/km ²	Density expected to increase 5-10x
Distributed Feeder Automation	99.999%	<10ms Latency jitter <50 μs	<100/km ²	
High speed current differential protection	>99.999%	5 ms	Several km ²	
DER and microgrids	99.9999%	3 ms		
Uninterruptable MTC	99.9999%			
Surveillance video <i>live</i>	99.9%	<10 ms	100s per km ²	UL > 5Gbps
IEC 61850-9-2 PTP sync			100 UEs in 20 km ²	<250 ns – 1 μs

Non-KPI SEI Service Requirements

- This is the area that EUTC contributed to the study.
- Requirements to support enhanced management of cellular networks
 - Report changes to the configuration, radio access services, USIM status to alert the utility operator of potential reduction of stability and availability of service.
 - Report (periodically) on performance to enable modeling of service to allow continual identification of potential problems / incidents. This allows the operator to respond proactively to ensure high availability the DSO to troubleshoot more effectively.
- Enable standards based security on the N6 interface (from the 5GS to a 3rd party network or server).
- Requirement to enable sharing information between the energy utility and MNO during an interruption of electrical service to facilitate recovery.
 - The MNO can inform the utility operator of their uninterruptable power supply status and regions affected – indicating what topology remains in service and for how long in an outage.
 - The Utility can inform the MNO the location and timetable of energy outage recovery.
 - As there is a mutual dependence (the utility on communication, the MNO on energy) it may benefit the recovery to share this information.

An aerial night view of a city, likely New York City, with a network of glowing orange lines and nodes overlaid on the image, representing a communication network. The city lights are visible in the background, and the network lines are in the foreground.

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Thanks for Listening !
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