**IEEE 802.24**

**Vertical Applications TAG**

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# Describe why TSN is needed in a utility

Define what “realtime” means in the context of specific grid use cases and applications

# Describe how TSN works

Don’t focus on the standards themselves, but focus on basic capabilities.

Goal of low latency vs maximum worst case latency, and leading to zero congestion loss.

A new optimization, compared to best-effort packet world.

It is not just low latency, but bounded, deterministic worst case latency. That enables the application.

Shifting paradigm from acting on the packet to acting when the packet says to act.

Secondarily, ability to guard against equipment failure.

Informational material: 802.1Qbu, 802.3br, 802.1Qbv, 802.1Qat, 802.1Qca, CB, Qcc, Qch, Qci, Qcn, Qcr, AEcg

Discuss 802.1CM and BA, as an example of industry profiles for the use of TSN

# Understand IEC 61850 activities and relationships

How standardized APIs are integrated into 61850

What is the set used for grid applications? Relate to IEC TC57 Profiles

Harmonization of TC65 (automation) with TC57 profiles

# Explain relationships to time synchronization in 802.1AS

Profiles of IEEE 1588

# Relationship to IETF DETNET

DETNET works over a routed network.

What is the opportunity for wireless standards to leverage?