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5G Best Practices Technical Guidance Report

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National Electrical Manufacturers Association

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5G Best Practices Technical Guidance Report

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Foreword

The purpose of this report is to provide the membership of NEMA with a technical guidance document on 5G technology and will describe use cases/applications that apply across markets for electrical equipment and medical imaging manufacturers. The report will also identify emerging Standards and regulations related to 5G as well as appropriate end-users and the benefits they will receive from implementing 5G technology to assist NEMA in prioritizing future 5G activities.

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1. Introduction

Fifth Generation (5G) cellular connectivity is here: As of September 2020, we are counting more than 15,000 full commercial 5G deployments globally, with 137 communication service providers (CSPs) who have launched 5G services in the consumer domain. China, South Korea, Japan, and the United States are currently leading the world in 5G deployment. Partnerships and collaboration amongst regulators, network operators, and infrastructure providers have paved the way for China Mobile, China Unicom, and China Telecom to offer their 5G services at affordable prices. In South Korea, 5G subscriptions have reached 7 million at the end of May 2020, with an increase of around 535,000 subscribers—a figure that surpasses the monthly record of 521,000 additional subscribers.

Meanwhile, in the United States, AT&T, Verizon, and T-Mobile are steadily progressing their 5G coverage. ABI Research is projecting a total of 244.4 million U.S. 5G subscribers by 2024. Aside from benefitting the end-user market, 5G's true potential lies in its ability to facilitate a wide range of applications and services in the enterprise vertical domain.

Considering enterprise verticals, 5G is much more than just "4G + another G." The distinct features of 5G allow for completely new applications for connectivity on several enterprise verticals:

- The supported bandwidth of 10 Gigabits per Second (Gbps) in the uplink and 20 Gbps in the downlink (through Enhanced Mobile Broadband Capabilities (eMBB) will furthermore enable automating, particularly data-intensive processes.

- Massive Machine Type Communication (mMTC) capabilities will support the connectivity of up to 1 million devices per Square Kilometer (km^2). Increased pervasiveness of connected equipment and devices in enterprise settings would create highly contextualized decision-making in processes like predictive maintenance and energy management in smart grids.

- Even though 5G on its own will not solve every single pain point that potential enterprise vertical implementers are facing, several new capabilities, including Ultra-Reliable Low-Latency Communication (URLLC), as well as support for Time Sensitive Networking (TSN) and deterministic networking, make 5G particularly useful for enterprise applications.

- To quantifying the revenue opportunity for 5G in the enterprise domain, ABI Research has recently undertaken an ROI study, which shows that enterprise 5G deployments will reach ROI much faster than in the consumer domain.

Even though revenue opportunities in the enterprise vertical domain are much higher than in the consumer market, different industries are highly fragmented and, therefore, hard to address with a traditional telco approach. To unlock new revenue streams and achieve new optimized efficiencies, tighter collaboration between all parties will be necessary to address enterprise client connectivity needs. Manufacturers can leverage system integrators to help orchestrate the specific roles of the network operator, network

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