



Advanced Inverter and DER Communications

IEEE 2030.5, CA Rule 21, and the Sunspec Common Smart Inverter Profile (CSIP) Test Procedure

An Evolving Certification Landscape

Advanced inverters and other distributed energy resources (DER) continue to expand their functionality requiring additional regulatory requirements. UL helps guide OEMs of inverters, aggregators, and other DER devices through the evolving certification landscape.

CA Rule 21 is the Source Requirement Document (SRD) for DER interconnection within the state of California. In 2014, a process was created to promote and accelerate the integration and deployment of smart inverters and grid support functionality. General grid support functionality for autonomous functions was the focus of Phase 1 of the California Solar Initiative (CSI) and became a requirement in September 2017. Communication standardization between the DER(s) and utilities was made a priority starting in 2017.

Phase 2 of the CSI and Rule 21 combined the requirements of the IEEE 2030.5 Smart Energy Profile Application Protocol Standard and the Sunspec Common Smart Inverter Profile (CSIP) Test Standard. California requires that testing of devices (inverters, aggregators, and other DER devices) be conducted by a qualified national recognized test laboratory (NRTL) and that a Sunspec qualified test tool is utilized during testing. UL has collaborated with Quality Logic to offer a combined service. The combined service is composed of a Phase 1 advisory and training module in IEEE 2030.5 and the Sunspec CSIP Test Procedure, followed by a Phase 2 design review with optional pretesting module, and concluded with a Phase 3 certification testing module. Figure 1 illustrates the combined modular UL certification process leveraging UL's collaboration with Quality Logic.



One project with separate phases | One shared process | One client facing invoice



Figure 1. The combined modular UL certification process leveraging UL's collaboration with Quality Logic

Why Choose UL

UL drives global research and standards to continually advance and meet ever-evolving product safety, performance and interoperability needs. We partner with businesses, manufacturers, trade associations and international regulatory authorities to bring solutions to a more complex global supply chain. We are committed to being a world leader in the testing of interconnected systems and products for the electric utility grid. Utilities' and consumers' familiarity with UL helps manufacturers achieve higher levels of acceptance and faster time to market.

Knowledge & Experience

UL has led the effort to establish advanced distributed energy resource requirements culminating in the creation of the UL 1741 SA and now offering communication testing and certification to support advanced inverter and DER integration with utilities. Our global network of expert engineers helps you understand the various requirements for your specific market application.

Source Provider

UL meets all of your compliance needs and, by bundling safety, performance and interoperability services, also helps save you valuable time and money. UL's collaboration with Quality Logic provides unparalleled expertise in the area of advanced inverter and DER communications.

For more information, please contact renewableenergyquote@ul.com, or visit Industries.UL.com/energy/inverters



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