# Drive innovation and streamline advanced distributed energy resource market acceptance

Enable a smarter, safer, reactive grid interconnection with UL 1741 SA advanced distributed energy resource testing and certification for Rule 21, 14H, and other grid support source requirement documents

Modernizing the world's electric grids is a critical enabler for achieving the societal benefits and avoiding brownouts or blackouts that come from optimizing the way we generate, distribute and use electricity. If implemented properly, distributed generation with advanced functionality and communications capability may even increase the reliability and stability of the grid.

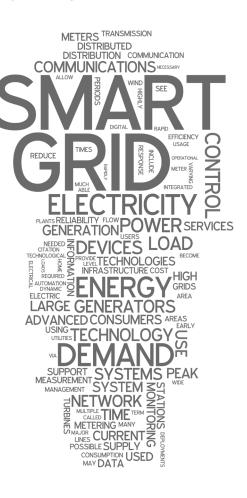
As electric utilities continue to modernize their grids through the use of larger amounts of distributed generation and renewable energy sources, the UL service portfolio expands to meet the ever-changing needs for safety, performance, and grid support functionality.

## What is UL 1741 SA advanced distributed energy resource testing and Rule 21?

Advanced distributed energy resource testing is smart, reactive control of distributed generation (DG) for support of ongoing modernization of grids utilizing increasing levels of DG and renewable energy resources. Traditional utility interconnection requirements (IEEE 1547) require DG devices to disconnect when the grid is experiencing stability issues. The UL 1741 SA specifies the test methods needed to build the foundation for DG devices to stay online and adapt their output and overall behavior to stabilize the grid during abnormal operation rather than simply disconnecting.

The Rule 21 source requirement document is the distributed energy resource related revisions to the State of California Electric Tariff Rule 21 made by the California Public Utility Commission (CPUC). Rule 21 is a Source Requirement Document (SRD) to be used with the UL 1741 SA. SRDs set the specific parameter settings to be used with the test methods of the UL 1741 SA. Other SRDs may also be used with the UL 1741 SA as other markets look to build smart grid functionality into the modernization of their local area electrical power system.

The state of California implemented phase 1 of the California Solar Initiative requiring distributed energy resources and DERs to comply with UL 1741 SA configured with Rule 21 on September 8th, 2017. Hawaii implemented UL 1741 SA configured with the 14H SRD in March of 2018. More states are expected to implement SRDs. Looking forward to the future, IEEE 1547 and IEEE 1547.1 aim to standardize grid support smart distributed energy resource requirements nationally. UL remains dedicated as a subject matter expert for these products. As such, UL will be continually updating and expanding our services as the industry refines and modernizes grid support advanced distributed energy resources and implementation rules for grid tied applications.





### Speed to market through expertise and automation

UL has taken the lead working with industry to develop the UL 1741 SA to set the guidelines for modern smart grid interconnection. UL's staff has been there from the onset, drafting the requirements, leading the comment and revision process culminating the industry consensus standard, and streamlining the implementation to result in smooth, structured certifications of advanced distributed energy resources. As part of our commitment, UL has built two state of the art distributed energy resource testing laboratories for advanced distributed energy resources. These labs utilize automation to minimize time to market such that the average test time is reduced from over 2 months to less than 3 weeks. Alternatively, UL has a well versed engineering staff which can do witness testing at client's facilities already equipped with laboratory facilities able to run the required test plan.

The UL 1741 SA consists of the following advanced distributed energy resource grid support utility interactive test plan:

#### **Required Tests** (utilized by all SRDs)

Anti-Islanding (with advanced features active during test) Low/High Voltage Ride Through Low/High Frequency Ride Through Must Trip Test Ramp Rate (Normal & Soft-Start) Specified Power Factor Volt/Var Mode Optional Tests (depends on SRD being utilized) Frequency Watt Volt Watt

### 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. UL is committed to being a world leader in the testing of interconnected systems and products for the electric utility grid. Utilities' and consumers' familiarity with the UL brand 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. Our global network of expert engineers, help you understand the various requirements for your specific market application.

**Speed & Efficiency** – Our cost-effective systems and state-ofthe-art advanced distributed energy resource testing facilities eliminate inefficient manual test time through the use of automation and modern data acquisition methods accelerating your time to market.

**Single 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.

For more information, call 1-877-UL-HELPS, email: ULHELPS@UL.com or visit www.UL.com



UL and the UL logo are trademarks of UL LLC © 2018. 113.01.0918.EN.EPT

