MSI has a history of developing patented solutions for electrical hazard detection and preventing electrical fires since 2002. MSI has been supported by the New Mexico Small Business Assistance (NMSBA) Program receiving technical assistance from Sandia National Laboratories (SNL) and Los Alamos National Laboratory (LANL) to prevent electrical fires in PV systems since 2011.

Support by Sandia National Laboratories

In 2011, our first project with SNL was to innovate an affordable technology to locate defective solder joints and parallel arcing to frames of solar modules to prevent PV module electrical fires before they happen by detection of overheating of solar module conductors. In 2013, a team of SNL scientists led by Jay Johnson evaluated MSI's solution (US Patent # 9,464,946) in the SNL DC arc fault generation facility. SNL Technical Report SAND2018-0876 documents this support. In 2016, SNL supported MSI in innovating a product that addressed the problem of detecting PV connectors overheating above the Underwriter's Laboratory rating. In 2020, SNL evaluated the Solar Guardian® internet of things (IoT) connectors for alerting of safety. 2022, the SNL team led by Dr. Kenny Armijo tested prototypes of Solar Guardian® PV Connectors (US Patent # 9,816,877).

It is important to realize that the SNL PV system testing facility is unique and vitally important to assure the efficacy, cybersecurity, and performance in microgrids and PV arrays on the path to commercialization.

Support by Underwriter's Laboratory (UL)

UL Certification is required for PV system components. The new UL PV Innovations Program was established to develop test procedures for innovations like the Solar Guardian®. UL recognized the value of the Solar Guardian® and proposed to develop a test procedure and then test the Solar Guardian® to the test procedure.

Need for Continued DoE and Underwriter Laboratory Support

Rapidly moving the Solar Guardian® to market readiness will benefit from continued support by SNL and UL. These organizations have the necessary equipment, instrumented solar arrays and expertise to perform independent testing, to meet requirements for efficacy, safety, cybersecure communications, reliability, durability.

For example, SNL has the ability to perform tests developed by the Underwriter Laboratory PV Innovations program.