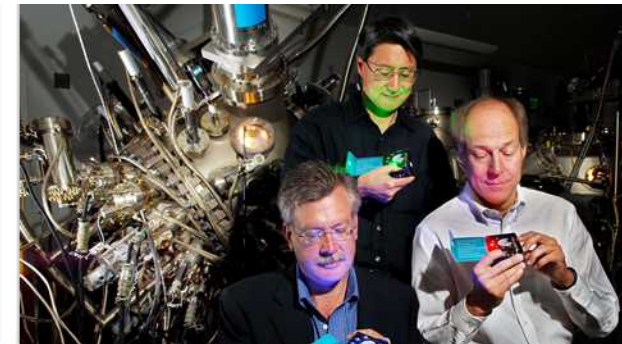


*Exceptional service in the national interest*



# The Center for Energy Systems Reliability (CESR)

Bruce Thompson

Manager, Readiness & Sustainment Technologies

August, 2013



Sandia National Laboratories is a multi-program laboratory managed and operated by Sandia Corporation, a wholly owned subsidiary of Lockheed Martin Corporation, for the U.S. Department of Energy's National Nuclear Security Administration under contract DE-AC04-94AL85000. SAND 2013-XXXXX.

# The Challenge

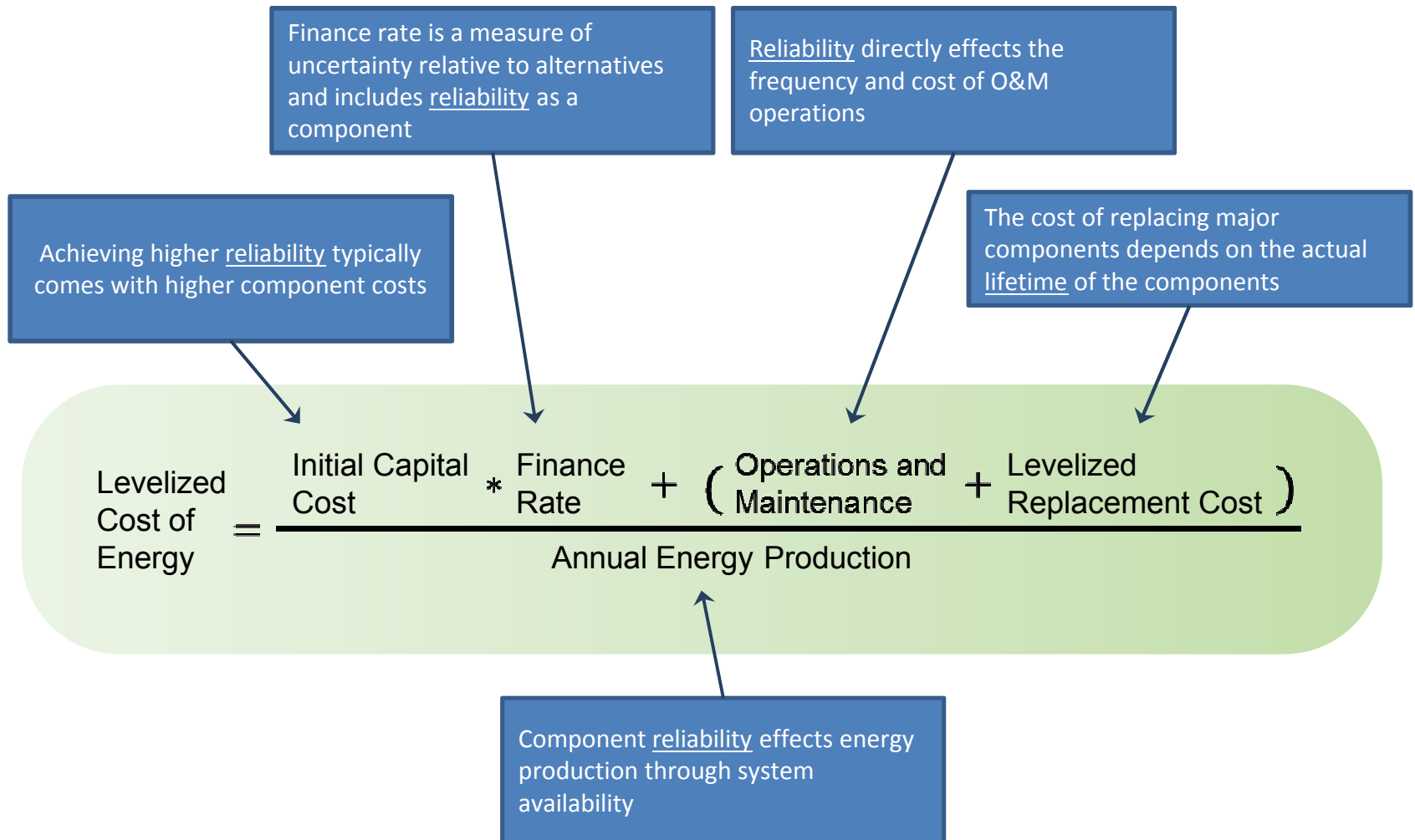
## Problems

- ▶ As renewable energy (RE) market penetration increases, reliability becomes increasingly important.
- ▶ Field failures impact O&M costs and RE project “bankability.”
- ▶ Industry doesn’t have all the resources needed to address increasing reliability needs.
- ▶ Undetected faults in fielded systems can lead to catastrophic failures and fires.
- ▶ Field operations often generate huge volumes of data that are difficult to analyze.

## Needs

- ▶ Advanced reliability data and models are needed to drive down maintenance costs and maximize uninterrupted RE plant operations.
- ▶ Information sharing across renewable energy sectors is needed about methods, statistics, and tools.
- ▶ A core capability of renewable energy reliability expertise that can be leveraged across sectors is needed.
- ▶ Technology roadmaps should be driven by reliability data.

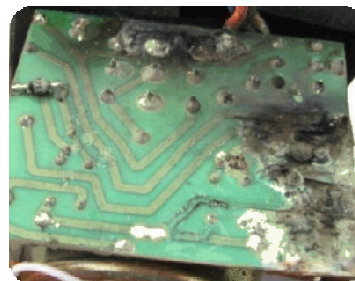
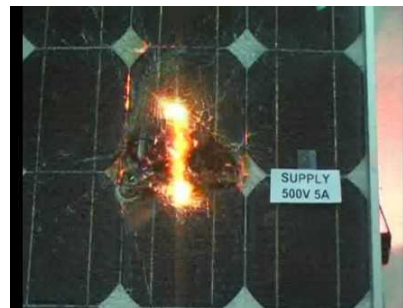
# Reliability and the Bottom Line



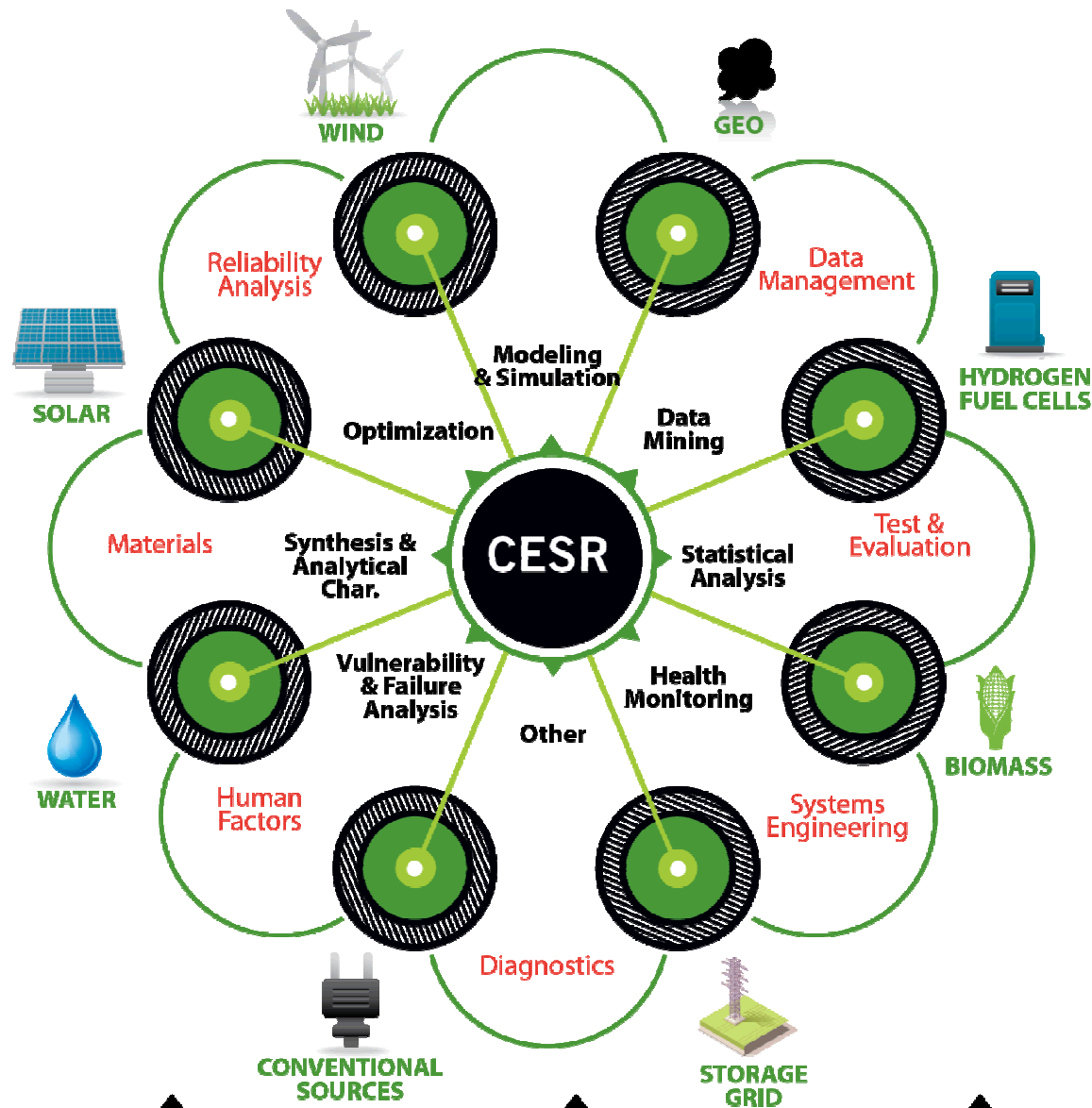
**Reliability is a key driver in reducing LCOE and is therefore critical to maximizing market penetration of all renewable energy technologies**

# The Opportunity

- Establish a multi-disciplinary approach to reliability: capabilities, tools, technologies, and facilities
- Coordinate reliability capabilities, facilities, and R&D
  - Coordinate cross-cutting reliability capabilities across EERE programs and RE sectors
  - Identify capability gaps and fundamental R&D needs
- Establish a center to coordinate, drive and sustain reliability capability development looking across current investments



# Center for Energy Systems Reliability (CESR)



# Feedback & Discussion

- What's your take on CESR?
- Are there any aspects of the CESR concept that should be refined?
- What major barriers do you see as we further develop the CESR approach?