

Charles J. Hanley
Sandia National Laboratories
P.O. Box 5800
Albuquerque, NM 87185-1033

EMPLOYMENT:

2005 – Present Manager, Photovoltaics and Distributed Systems Integration Department, Sandia National Laboratories, Albuquerque, NM

Line and programmatic management of Sandia's photovoltaic and distributed systems integration activities. Lead a team of more than 20 technical staff and support contractors (plus many matrixed individuals from across the Labs) in executing new approaches to developing cost effective, highly reliable photovoltaic components and systems. Develop and execute new strategic directions for Sandia PV program, and maintain close contact with DOE EERE sponsors. Responsible for ownership and operation of two multi-lab facilities – the Distributed Energy Technologies Laboratory (DETL) and the Photovoltaic Systems Evaluation Laboratory (PSEL).

Examples of successes in this position:

- Growth of Sandia's DOE-sponsored PV program from \$3M in 2006 to \$12M currently, plus \$20M over the last three years in external contracts with industry partners. These contracts are part of Sandia's SEGIS program – DOE's most widely recognized and arguably most successful effort in PV power electronics developments to date.
- A dramatic increase in the number of technical publications and related citations showcasing Sandia's technical leadership across several aspects of the PV field.
- Established key strategic partnerships with several organizations, including the Electric Power Research Institute (current CRADA), Fraunhofer USA (CRADA in process), and several US industry leaders.
- Secured a large-scale PV systems testbed at the National Solar Thermal Test Facility, first through direct industry partnerships, and subsequently through a proposal to DOE that will provide full-scale evaluation of up to 2MW of new systems technologies.
- Established a new PV systems reliability subprogram that is receiving accolades from US industry. Sandia's unique value proposition comes through direct application of 60 years of nuclear weapons expertise and leadership in our industry partnerships.
- Established a grid-integration program that represents a new core competency at Sandia, currently funded at over \$2.5M per year.
- Revitalization of facilities and equipment through securing over \$3M in capital funds for enhancements.

2002 – 2005 Principle Member of Technical Staff, Sandia National Laboratories, Albuquerque, NM
Solar Energy Programs

Team leader for systems-integration activities within Sandia's solar technologies program. Principal responsibilities included strategic planning for DOE's Solar Energy Technologies Program and Sandia's role in that program. This comprised establishing technical targets for program R&D, and defining/developing the tools to identify pathways to meet these targets, including modeling, analysis, and data collection needs within the program.

2000 – 2002 Principle Member of Technical Staff, Sandia National Laboratories, Albuquerque, NM
Renewable Energy Office (Temporary Assignment at Winrock International, Arlington, VA)

Managed Sandia's and Winrock's activities in Central America related to reconstruction in the wake of Hurricane Mitch (replicating the Mexico model, described below). Also support development of new programs in rural water and rural communications, new initiatives with American Indians, and the provided technical assistance to Multi-lateral Development Banks as they develop innovative rural electrification programs in Mexico and Central America.

1994 - 2000 Senior Member of Technical Staff, Sandia National Laboratories, Albuquerque, NM

Renewable Energy Office

Program manager for Mexico Renewable Energy Program, sponsored by DOE and USAID, with annual expenditures of approximately \$US2 million. Program is designed to create sustainable markets in Mexico for U.S. renewable technologies and demonstrate the viability of renewable energy technologies in combating global climate change. Responsibilities included negotiation of goals and reporting to sponsors; definition of strategic plans and new directions; and oversight of all program activities, including technical aspects of project implementation. Oversaw the implementation of more than 400 demonstration solar and wind projects. Major success was the initiation of a \$32M World Bank rural electrification program as direct follow-on to the Sandia-led effort.

1992 - 1994 Senior Member of Technical Staff, Sandia National Laboratories, Albuquerque, NM
Strategic Technologies Department

Developed an automated computer modeling environment to assess the impacts of urban policy on trends in land use, vehicle congestion, and mobile pollution emissions. Used a geographic information system (GIS) as the user interface, allowing qualitative visual assessments of results along with quantitative outputs. Through the use of Albuquerque area models and close coordination with local planners, real-world scenarios were modeled and the results were directly applied to regional planning activities. Also designed activities to transfer defense-related technologies to peacetime applications, such as the development of a national computerized patient care database and the application of advanced combustion research to improvements in pest control.

1988 - 1992 Member of Technical Staff, Sandia National Laboratories, Albuquerque, NM
Safeguards Systems Development Dept.

Developed and implemented control algorithms for stabilized surveillance platforms. Designed and constructed systems to simulate the acoustic, thermal, and radar signatures of ground and air vehicles, and developed advanced computer algorithms to identify and locate the sources of simulated and real vehicle sounds in open air environments. Designed and conducted extensive field tests of several different sensor systems under a variety of environmental conditions. Maintained communications with several DoD customers, including DARPA and Army.

1984 - 1986 Manufacturing Engineer, Datapoint Corp., San Antonio, TX

Conducted mechanical design of new components in the computer industry, such as enclosures and cabinets for electronic equipment. Wrote computer programs for the automatic fabrication of components.

EDUCATION: M.S., Electrical Engineering, Rensselaer Polytechnic Institute, May 1988 (GPA 4.0/4.0)
B.S., Engineering Science, Trinity University, May 1985 (GPA 3.7/4.0)

RELATED SKILLS AND INTERESTS:

- Spanish Language Fluency (learned on-the-job in Mexico and Central America)
- Outdoor sports: skiing, camping, bicycling

PRESENTATIONS/ CONFERENCES:

- PV Rollout Conference, 2011-2013: Advisory Committee member for event co-sponsored by Fraunhofer USA and Fraunhofer GE
- Solar Power International, 2006-2011: Planning Committee member for largest PV event in US. Have personally presented several times; moderated a PV systems reliability session in 2009.
- PV Summit Conference 2010: Invited Plenary Presentation, "PV Modeling Challenges in Going from Power Ratings to Energy Production"

- 4th International Conference on Integration of Renewable and Distributed Resources, 2010: member of scientific committee and organizer of an associated workshop.
- SEIA Solar Siting conference, 2010: Invited plenary presenter, "Solar Technologies 101: Photovoltaics"
- National State Park Administrators

RECENT PUBLICATIONS:

- Author: "Technology Development Needs for Integrated Grid-Connected PV Systems and Electric Energy Storage", presented at the 34th IEEE PV Specialists Conference, June 2009.
- Co-author: "Solar Energy Grid Integration Systems – Energy Storage," Sandia National Laboratories SAND Report 4247, July 2008.
- Co-author: "Candidate for Solar Power: A Novel Desalination Technology for Coal Bed Methane Produced Water," presented at the joint American/International Solar Energy Societies conference in Orlando, FL, August, 2005. (with Allan Sattler, Michael Hightower, and Marc Andelman)
- Co-author: "Multi-Year Performance Assessment of Two PV Installation Clusters," presented at the joint American/International Solar Energy Societies conference in Orlando, FL, August, 2005. (with Steve Wiese and Larry Moore)
- Author: "Benchmarking of Solar Technologies for the Systems Driven Approach," presented at the DOE Solar Program Review, Denver, CO, October, 2004.
- Author: "Renewable Energy Technologies for Rural Development in Latin America," presented at the Third General Meeting of the International Electric Research Exchange, San Jose, Costa Rica, November, 2003.
- Co-author: "Renewable Energy for Protected Areas of the Yucatan Peninsula," presented at the Annual Conference of the American Solar Energy Society, Austin, Texas, June, 2003.
- Co-author: "Photovoltaic Water Pumping for Rural Uses," presented at the Solar Forum of the American Solar Energy Society, April, 2001.
- Author: "Developing Sustainable Renewable Energy Markets in Mexico: Results and Future Challenges," presented at the annual conference of the International Solar Energy Society in Mexico City, Mexico, September 2000.
- Co-author: "Photovoltaics in Mexico: A Model for Increasing the Use of Renewable Energy Systems to Enhance Economic and Social Development in Rural Areas, Realize New Opportunities for US and Mexican Businesses, and Offset Greenhouse Gas Emissions," a chapter in *Advances in Solar Energy*, published by the American Solar Energy Society, 1999.
- Co-author: "USDOE/USAID Renewable Energy Development Program Results in Mexico," American Solar Energy Society annual meeting, June 1998.
- Author: "The USAID/DOE Mexico Renewable Energy Program: Using Technology to Build New Markets," presented at the NREL/SNL Photovoltaics Program Review, November, 1996.
- Co-author: "Opportunities and Issues in International Photovoltaic Market Development," presented at the 25th IIEE Photovoltaics Specialists Conference, May, 1996.