



**Sandia National Laboratories**



# **Project Accomplishment Summary**

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.



## PROJECT ACCOMPLISHMENTS SUMMARY

### Cooperative Research and Development Agreement (#1752.03)

between Sandia National Labs and Forest City Residential Group, Inc.

Note: This Project Accomplishments Summary will serve to meet the requirements for a final abstract and final report as specified in Article XI of the CRADA.

Title: Aperture Center Energy Showcase

Final Abstract:

Sandia and Forest City have established a Cooperative Research and Development Agreement (CRADA), and the partnership provides a unique opportunity to take technology research and development from demonstration to application in a sustainable community. A project under that CRADA, Aperture Center Energy Showcase, offers a means to develop exhibits and demonstrations that present feedback to community members, Sandia customers, and visitors. The technologies included in the showcase focus on renewable energy and its efficiency, and resilience. These technologies are generally scalable, and provide secure, efficient solutions to energy production, delivery, and usage. In addition to establishing an Energy Showcase, support offices and conference capabilities that facilitate research, collaboration, and demonstration were created. The Aperture Center project focuses on establishing a location that provides outreach, awareness, and demonstration of research findings, emerging technologies, and project developments to Sandia customers, visitors, and Mesa del Sol community members.

Background:

In the spring of 2009, Sandia National Laboratories (Sandia) and Forest City Residential Group, Inc. (FCRG, parent company of Mesa del Sol) entered into an Umbrella Cooperative Research and Development Agreement (CRADA) that facilitates joint efforts between the two organizations. This CRADA has focused on clean and sustainable energy technologies that reduce demand and efficiency in diverse energy environments. Sandia and Mesa del Sol share a common vision and commitment to having a positive, significant impact on our environment and on our nation's energy and water resources. Both organizations share similar objectives for the integration and use of renewable energy, reducing consumption of fossil fuels, producing clean water, and creating self-sustaining communities.

Development of an Energy Showcase at Aperture Center, Mesa del Sol, in Albuquerque, NM, is a project under this CRADA. This activity demonstrates the partnership between Sandia and Mesa del Sol in energy and resource production, delivery, and consumption in sustainable communities. The goal of this project is to establish physical space in the Aperture Center at Mesa del Sol that provides square footage for technology displays and demonstrations, as well as an employee presence in several small offices. This project facilitates community outreach, customer awareness, joint discussions, and the opportunity to move forward in application and demonstration of new technologies.

The Energy Showcase provides a unique opportunity to take technology research and development from demonstration to application in a sustainable community. This "public" space offers a means to develop exhibits and demonstrations that present feedback to community members, Sandia customers, and visitors. The Energy Showcase illustrates emerging technologies and conveys research findings developed under work at Sandia and at Mesa del Sol. The technologies showcased include renewable, efficient, and resilient

systems. These technologies are scalable, and provide secure, efficient solutions to energy production, delivery, and usage.

Description:

Two main tasks were identified in the scope of this project: Establish an Energy Showcase and Establish Support Offices.

The Energy Showcase task establishes a portal at the Aperture Center that provides outreach, awareness, and demonstration of research findings, emerging technologies, and project developments to Sandia customers, visitors, and Mesa del Sol community members. Showcase elements include technology displays and demonstrations that center around renewable energy systems and sustainability.

The Support Offices task set aside approximately 2400 square feet of support office and conference space that is occupied by Sandia staff. This includes rotational space utilized by directors, managers, technical and laboratory staff. This space facilitates joint project work with Mesa del Sol, visits with external customers, and a portal for outreach efforts.

Outcomes of establishing the Showcase and Support space were negotiated within the partnership and can be categorized into three areas: Physical Space, Infrastructure, and Displays/Demos. Forest City provided infrastructure components and isolated the space with an additional wall and security. Sandia outfitted the space with technology and displays.

Physical space consists of mixed-use space within the identified 2400 sq ft and includes:

- A conference room with audio/visual capabilities
- A technology portal room
- Commons area for larger work groups
- An executive management office
- A program management office
- Three cubicle offices to support technical work

Infrastructure is identified as capabilities necessary to conduct work that are provided by Forest City as part of the occupancy agreement or partnership activities:

- Telephone and audio teleconferencing
- Additional conference room support as needed
- Wireless internet
- Utilities, custodial, and mail services
- Parking

The Energy Showcase is composed of displays and demonstrations. These displays serve a broad audience and are the core of the Sandia's outreach capabilities at Mesa del Sol, and focus on these topics:

- Sandia's history
- Clean, sustainable, and renewable energy
- Sandia – Mesa del Sol/Forest City partnership and projects
- Technology portal – illustrating modeling/simulation, lighting, energy storage, cyber capabilities, fuels, and high-performance computing
- Interactive and physical displays of solar technology, cyber, and battery storage
- Links to functioning displays such as PV/inverter/battery system, solar forecasting, etc.

As part of Sandia's space and infrastructure, a site lead was identified that works closely with the Mesa del Sol team and the Sandia program manager. This lead worked closely with security to establish and document standard operating procedures. These procedures include ES&H, incident handling, and daily operational guidance. The Sandia team continues to work closely with Sandia Security and ES&H to ensure the site operates as a standard satellite office, handles visits and events accordingly, and is prepared in the event of an incident.

Establishing this space at Mesa del Sol facilitates collaboration with universities, state/local/federal government, and with industry. The space provides the capability for outreach, learning, and discussion, as well as the collection of data from ongoing research experiments and demonstrations. This two-fold approach has served a broad community inside and outside the Labs. It serves as an external meeting space and most importantly, provides the foundation for present and future technology experimentation at Mesa del Sol.

Benefits to the Department of Energy:

Sandia's Energy Showcase and presence at Mesa del Sol forwards research, development, application of clean and sustainable energy technologies. It fosters outreach and mechanisms to apply emerging technologies through investigation and demonstration in a commercial environment. The presence at Mesa del Sol facilitates the briefing of technology in accessible location, linking research inside the Labs with a public audience, and bridging the gap between high tech solutions and application in citizens' daily life.

Economic Impact:

Data collected at this site facilitates decision making on demand reduction technologies, efficiencies and effectiveness of specific technologies. Cost effectiveness is an important driver for all energy research and demonstration, along with infrastructure and grid stability, at Mesa del Sol. It is the goal of the projects at the facility to have a positive impact on national security, the economy, and consumer energy consumption. Minimal cost was required to establish and operate this site.

Project Status:

This project is complete. Use of this space continues and provides opportunities for continued DOE activities and engagement with other stakeholders. The Sandia – Forest City team continues to expand the partnership into new areas. The space at Mesa del Sol is the foundation for future work and demonstration, including outreach, testing, analysis, and public events.

## ADDITIONAL INFORMATION

### Laboratory/Department of Energy Facility Point of Contact for Information on Project

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### Company Size and Points of Contact

Mesa del Sol onsite POC:  
Chris Anderson  
Jason Lott

### CRADA Intellectual Property

None

### Technology Commercialization

No commercialization

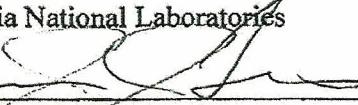
### Project Examples

None

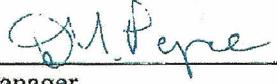
**PROJECT ACCOMPLISHMENTS SUMMARY**  
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**between Sandia National Laboratories and Forest City Residential Group, Inc**

This summary has been approved for public release by Sandia and Forest City Residential Group, Inc.

Sandia National Laboratories

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Principal Investigator

*Juan Torres*  
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Sandia National Laboratories

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Manager  
WFO/CRADA Agreements

8-8-11

Date

1/21/2011

Date

Forest City Residential Group, Inc.

By \_\_\_\_\_  
Title:

Date

In order to expedite the process, if we do not receive your signed reply by 09/08/2011  
we will assume your concurrence for the release of this document to the public.