

Sandia National Laboratories – 50001 Ready

WHY 50001 READY?

The U.S. Department of Energy's 50001 Ready program is a self-paced, no-cost way for organizations to build a culture of structured energy improvement that leads to deeper and sustained energy and GHG savings. Recognition is available for facilities and organizations that self-attest to the implementation of an ISO 50001-based energy management system without external audits or certifications.

Overview

Sandia National Laboratories delivers essential science and technology to resolve the nation's most challenging security issues. Since 2009, Sandia's workforce has increased by over 5,000 persons to meet national demands. Planning for mission change before it occurs and managing change during program implementation increases the probability of achieving the labs' goals, one of which is sustainability.

Sandia's headquarters in New Mexico (NM) is located on Kirtland Air Force Base (KAFB) in southeastern Albuquerque. The site includes a variety of facility types totaling over 6.5 million square feet. Sandia California's (CA) site, located three miles east of downtown Livermore and 40 miles east of San Francisco, is comprised of facilities totaling over 900,000 square feet. Combined, the two sites employ over 14,000 personnel. Sandia NM (Albuquerque Campus) and Sandia CA (Livermore Campus) are Sandia's largest sites and they both achieved 50001 Ready status in August 2023.

Using Executive Order 14057 (Catalyzing Clean Energy Industries and Jobs Through Federal Sustainability) to guide their goals in reducing energy consumption and greenhouse gas emissions, Sandia leveraged 50001 Ready to also support their wider sustainability goals, including energy savings, security, and resiliency. Developing energy performance indicators and sitewide energy models for significant energy uses analysis helped propel Sandia towards its institutional energy management goals, in addition to supporting its existing metrics and reporting activities.



Sandia New Mexico Energy Management Team. Courtesy of Craig Fritz, Sandia National Laboratories Corporate Journalist

Solutions

In implementing the 50001 Ready program, Sandia witnessed several benefits at their participating sites. These benefits were not only energy-related but also team-oriented in nature, with staff citing increased interdepartmental collaboration among the advantages of engaging with 50001 Ready. Other benefits included increased energy efficiency (due to the promotion of best practices across departments), reduced emissions, potential utility cost reductions, and progress toward net-zero goals.

"Going through this process to become recognized by the DOE as 50001 Ready underscores the importance of energy management at Sandia and makes the institution sustainable long-term. Meeting the program's requirements emphasizes and supports what we are doing and gives us credibility moving forward as we continue to make our operations more energy-efficient."

– Molly Blumhoefer, 50001 Ready Team Coordinator
Sandia National Laboratories

Key Takeaways: Implementing a 50001 Ready Energy Management System

- ▶ **Guided by Executive Orders:** **Executive Order 14057** (Catalyzing Clean Energy Industries and Jobs Through Federal Sustainability) guides Sandia's goal to achieve net-zero emissions at their sites by 2050. The executive order includes a federal building performance standard that serves as guidance for organizations to electrify their buildings, and these standards helped Sandia staff justify their pursuit of 50001 Ready. **DOE Order 436.1A**, which establishes a performance-based approach to achieving sustainability at DOE operations, further supported Sandia's energy conservation efforts, explicitly recommending that sites become 50001 Ready or certified to ISO 50001.
- ▶ **Documentation:** A key component leading to the Sandia sites' 50001 Ready designation was the tightening and formalizing of their documentation protocol. In implementing their new energy management system, Sandia staff uncovered some gaps in the documentation of their previous energy improvement efforts and were able to respond by eliminating those gaps and improving their data collection processes. Thorough documentation is essential to pinpointing areas both of success and for improvement, and thus, the Sandia sites were able to gain greater insight into what they were already doing well and what changes they could make to yield better results.
- ▶ **Collaboration and Partnerships:** To examine strategic risks and opportunities, the Energy Management Team sought advice from other departments, including colleagues who led Sandia's efforts to be certified under the ISO 14001 environmental management standard, who were helpful in assessing risks in frameworks. This line of inquiry was pursued so that Sandia could use frameworks already in place for 50001 Ready. Sandia also brought in a subcontractor, Global Strategic Energy, to assist in working through the 50001 Ready tasks. This work included performing a faux audit, wherein potential nonconformities were flagged, along with areas of concern and improvement. This faux audit was followed by an

internal audit carried out by another subcontractor, allowing Sandia to tighten its protocols and boost improvements as much as possible in place ahead of an official audit.

- ▶ **Communications:** As part of a communications plan meant to complement site staff's efforts, Sandia developed both an internal and **external** webpage featuring each site's wider energy system. The internal webpage acted as an information resource that all staff could be directed to and included training slide decks, as well as a link to report energy conservation ideas. In developing and offering this resource, Sandia was able to pull strategies from the collective wisdom of its employees.

"Just like you would in your own home – if you have a leaky faucet, if you notice something wasteful, put in a ticket. We want Sandia staff to be the eyes and ears of what is going on in our buildings. If you have an idea, let us know – because all those little things add up."

– Casiano Armenta, Acting Manager Energy and Infrastructure Data Management Group
Sandia National Laboratories

Other Benefits

Sandia indicated significant improvements to their communications between different buildings and teams. The focus on significant energy uses led to increased communications between building operators and occupants, who now have conversations about potential energy conservation measures. Various groups now work together to examine different buildings, including possible efficiency improvements and energy savings within the spaces.

The control charts that were developed as a part of the 50001 Ready program integrated Sandia's building-specific Energy Performance Indicators (EnPIs) into their energy data tracking/collection process. Sandia has already used these EnPIs to illuminate a site-wide spike in energy use and investigate immediately. Building teams now know who to contact if they recognize energy-related issues and opportunities at their sites.

Focusing on significant energy uses also provided a template for other buildings to normalize their energy data for weather and look at individual energy performance improvements depending on the building type/activities. Sandia was also able to learn more about how their individual buildings operate against one another and how they fit into site-side performance. For example, gaps in metering data and impacts of dehumidification on energy consumption in lab activities were identified, as well as variables in individual buildings that may be beneficial to measure in the future. 50001 Ready allowed for synergies between Sandia employees working in separate departments and spaces, improving overall communication.



Manuel Torres, left, and Tony Tafoya check the liquid cooling system in Sandia's high-performance computing building.
Photo by Craig Fritz/Sandia National Labs Courtesy of Craig Fritz, Sandia National Laboratories Corporate Journalist

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