



NET-ZERO EMISSIONS AT SANDIA'S LIVERMORE SITE

THE CHALLENGE

Climate change is an urgent threat to national and global security that requires a whole-of-society approach. Sandia National Laboratories is empowered by its foundational research and engineering excellence to address the national and global security threats associated with the rapidly evolving climate crisis. Our vision is to advance climate security through science, technology, and action.

As part of that effort, Sandia is committed to meeting or exceeding *Executive Order (EO) 14057: Catalyzing Clean Energy Industries and Jobs Through Federal Sustainability*, which outlines a path to net-zero greenhouse gas (GHG) emissions by 2050 with interim milestones for zero-emission vehicles, carbon-free electricity, reductions in on-site emissions and emissions from purchased energy, and net-zero procurement.

THE SANDIA APPROACH

The Sandia CA Net-Zero Plan frames the energy, resiliency, and value chain initiatives we can take at our Livermore, CA site to address GHG emissions. We are targeting net-zero emissions at the Livermore site by 2040, 10 years ahead of the federal mandate.

We envision a holistic sitewide approach to achieving net-zero that engages Sandia CA's personnel, state-of-the-art research, and emerging technologies.

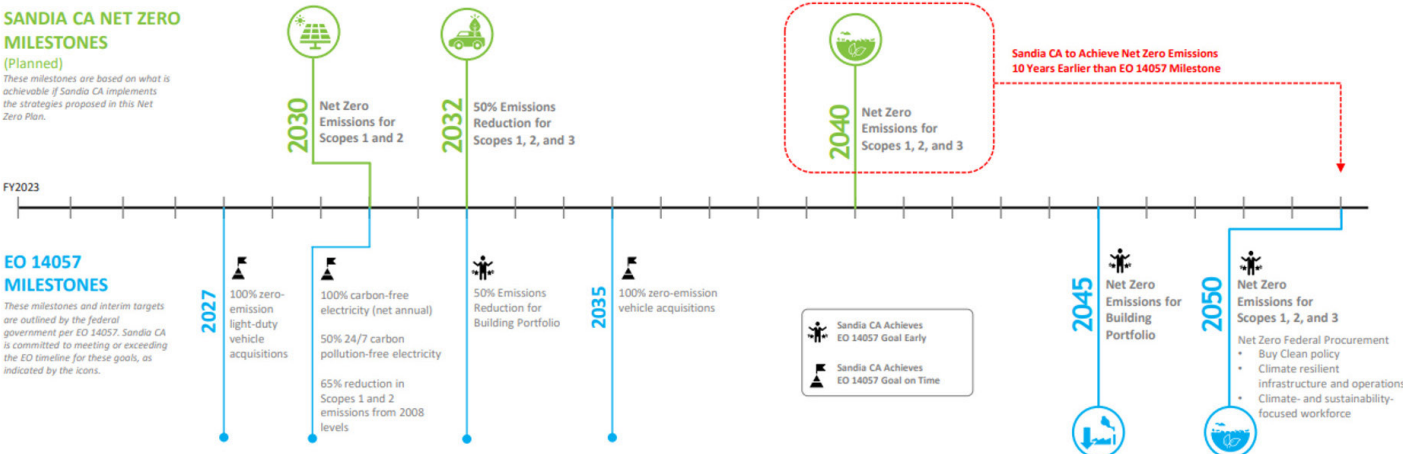
The vision has four main components:

1. Reduce energy consumption through energy conservation measures for existing facilities, efficient space and master planning, and new facility design standards
2. Improve system efficiency using district energy and geothermal storage
3. Optimize renewable energy with solar photovoltaic cells and wind power
4. A climate and sustainability-focused California workforce

To achieve net-zero emissions and resiliency at our Livermore site, Sandia will draw on diverse technologies, many of which contain capabilities derived from Sandia R&D, including:

- Resilient microgrid design and operation to ensure power to critical services during electric grid disruptions (e.g., earthquakes, cyberattacks)
- Interoperability of distributed energy resources (solar PV, batteries, etc.) with controllable loads (heating and cooling, electric vehicle charging, etc.), including cybersecurity considerations
- Energy storage materials, sizing, and controls to enable safe, resilient, and efficient operations
- Characterization, modeling, and performance assessments of new and emerging renewable energy technologies

Sandia CA is targeting net zero GHG emissions (scopes 1, 2, and 3) by 2040 with interim targets that either align with or exceed EO 14057 milestones.



energy.sandia.gov/modeling-sustainability

