

Grid Research Innovation and Development Center

Integrated
Electrification Research





32
INVENTION
DISCLOSURES &
PATENTS (FY20)

15
R&D 100
AWARDS

100+
INDUSTRY
PARTNERS

12
NATIONAL
LABORATORY
PARTNERS

17
UNIVERSITY
PARTNERS

112
PUBLICATIONS
SINCE 2017

Advancing the Integrated, Modern Grid

The Grid Research Innovation and Development Center (GRID-C) at Oak Ridge National Laboratory combines multiple electrification research activities across the utility, buildings, and vehicle space into one 52,000 sq. ft. facility. The combination of innovative research and development in power and energy systems, vehicle and buildings science, power electronics, energy storage, sensors and controls, data science and modeling, and cybersecurity enables breakthroughs to support a resilient and secure power grid.

ORNL's mission at GRID-C is to develop technological solutions from materials to devices to systems in order to advance the dynamic and efficient interaction of the electric grid, buildings, and vehicles. The unique, multipurpose research environment at GRID-C is available to industry, academic, and government partners who wish to access its state-of-the-art capabilities and world-class expertise to mutually develop innovative technologies for grid security, resilience, and reliability. Across its energy science and technology user facilities, ORNL delivers breakthroughs from generation to distribution and storage to end use, accelerating America's transformation to a clean, efficient, flexible, and secure energy future.



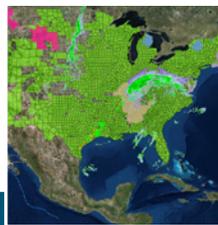
Advanced Devices and Components

Developing and evaluating hardware and software, including advanced power electronics, low-cost, high-fidelity sensors, protective relays and advanced packaging solutions.



Data Analytics and Controls

Creating and deploying cybersecurity advanced algorithms to analyze data from sensors and other grid-connected devices to monitor and manage systems such as microgrid networks for the intelligent grid of the future.



Modeling and Simulation

Developing national power system models and simulations for situational awareness, testing of integrated hardware and software, and planning for a secure and resilient grid system.



Energy Storage

Developing advanced materials, manufacturing and recycling processes for vehicle and grid-scale batteries, as well as novel control systems to accelerate energy storage solutions.



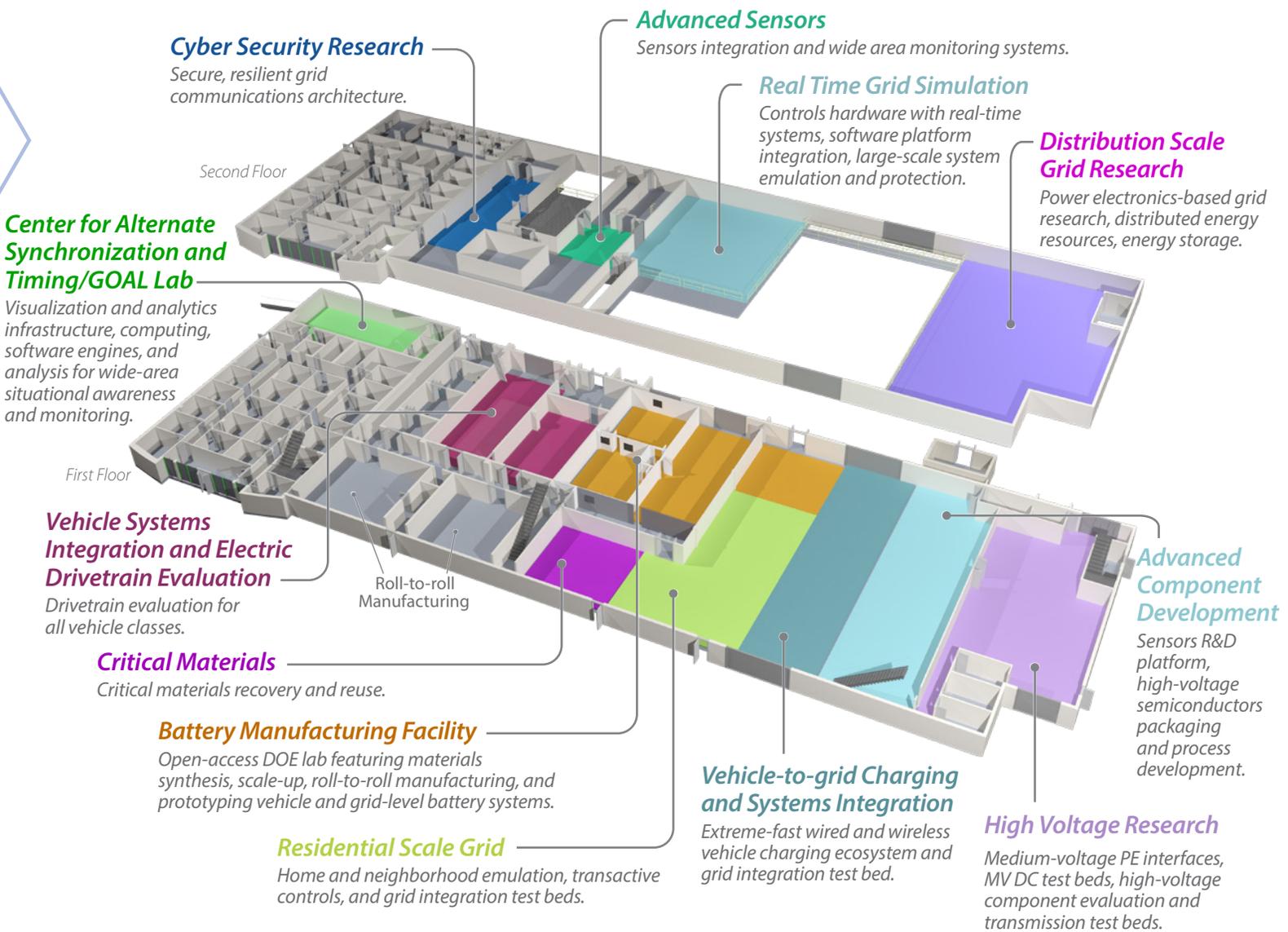
Integrated Systems

Developing and testing components and controls for the grid, buildings and vehicles, including transactive energy controls, wireless vehicle charging and secure communications architecture to support an integrated, clean and efficient power system.



At-Scale Testing and Evaluation

Providing at-scale testing of integrated technologies across the grid, vehicles and buildings space to realistically evaluate hardware and software innovations for an efficient, clean, secure and resilient grid.



Working with ORNL

More than 100 industry partners and 17 universities annually work with ORNL to advance and commercialize power grid technologies. Industry and academic partners can leverage ORNL's world-class grid research, development, and testing capabilities through user agreements and collaborations approved by DOE. For more information on how to work with ORNL, visit www.ornl.gov/partnerships.



DOE's GRID-C

The Grid Research Innovation and Development Center at ORNL combines electrification research activities across the utility, vehicles, and buildings areas into one 52,000 sq. ft. facility. This multidisciplinary environment enables the most impactful innovation across the electric ecosystem.



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