

EPRI LABS: KNOXVILLE

EPRI's Knoxville Lab in Tennessee specializes in innovative research that is relevant to some of today's most significant interests and opportunities: decarbonization, electrification, and cyber security. With the acceleration of electrification, increasing demands on power delivery infrastructure, and growth in renewable energy resources, the complexity of the energy system is rapidly intensifying.

The Knoxville Lab provides a means to test new applications, technologies, and devices to advance the industry. Energy and industrial companies work with onsite experts to ensure energy remains reliable and affordable throughout the transition to a cleaner and more efficient energy future.

Researchers work with both EPRI members and non-members. At any given time, there are between 50 to 100 projects underway on the campus. With 22 distinct labs, researchers focus on issues and innovation that directly impact and improve the experience of energy consumers.

LAB CAPABILITIES:

The Knoxville facility offers a breadth of research opportunities, including:



Renewable Energy Integration



Energy Storage



Power Quality



Cyber Security



Energy Efficiency



Electric Vehicles



Distribution Grid Operations



Indoor and Outdoor Agriculture

STAFF CAPABILITIES:

Expertise is vast at the Knoxville Lab and includes professionals trained in:



Electrical Engineering



Cyber Security



Telecommunications



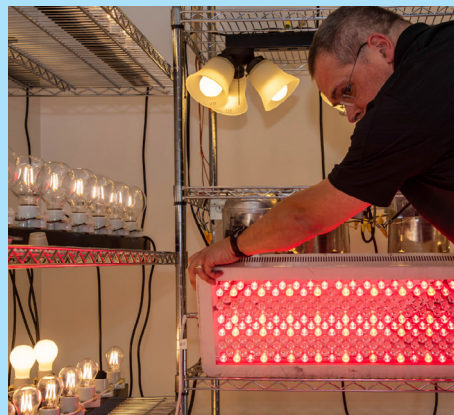
Chemistry



Mechanical Engineering



Computer Science



FAST FACTS:



Location:
Knoxville,
Tennessee, USA

Size:
45,000 sq. feet
Indoor
12,000 sq. feet
Outdoor

Unique Labs:
22

History:
Established
2000

Staff:
102
Employees

SPECIALIZED FACILITIES TO SUPPORT THE ENERGY TRANSITION

Most national, state, and local organizations are heading toward a decarbonized future, and the Knoxville Lab is helping facilitate that transition. The staff can test renewable energy and other distributed energy resources in simulated environments and field demonstrations. They can also analyze and configure:



Supporting the power implications stemming from electrification, the Knoxville facility has extensive capabilities in:



Other capabilities include energy efficiency designs and the lighting, HVAC systems, load impacts, and grid requirements for indoor and outdoor agriculture concepts.

The Cyber Security Research Lab includes more than \$2.5 million of hardware and software, 180 devices from 30 manufacturers, and configurations to support multiple operation protocols. The cyber security staff has wide-ranging abilities to evaluate new technologies and architectures and help organizations with projects such as:



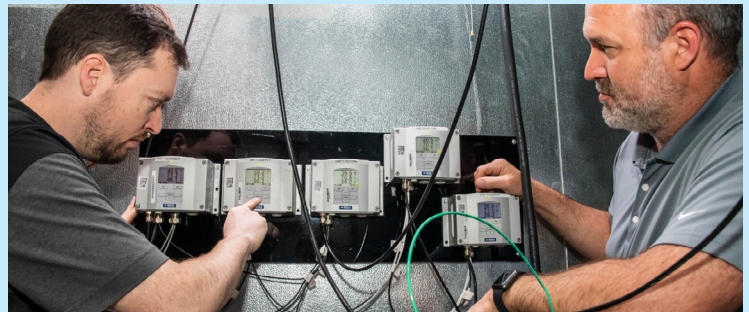
In addition, the Knoxville facility has many more capabilities. Staff can simulate an entire distribution system, including tests and analysis of the electronics in substations.

Other onsite labs are available to evaluate:



ONGOING INVESTMENTS IN TECHNOLOGY

EPRI is investing in its Thermal Lab, where research is conducted in environmental chambers for heating, cooling, refrigeration, water heating, and thermal load. With the \$1 million investment, EPRI will be installing a new dual room testing chamber, referred to as psychrometric rooms, for evaluating thermally dependent systems. The rooms will be climate controllable from sub-zero to more than 100°F. This capability will complement the existing smaller chambers, allowing the lab to test larger commercial HVAC equipment as well as electric vehicles.



ADDITIONAL EPRI LABS

The Knoxville Lab is one of three EPRI lab campuses. Depending on the breadth of the research problem, projects may utilize more than one location. The Knoxville facility is primarily focused on systems and processes that exist from the distribution grid all the way to the end-use customer. The Charlotte Lab in North Carolina addresses power generation, including nuclear, transmission and distribution (T&D) infrastructure, welding technology, and features an advanced microscopy lab for nano materials. The Lenox Lab in Massachusetts focuses on T&D infrastructure, voltage testing, stray voltage detection, and component aging.