

Take a virtual field trip through tours of ORNL facilities

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New virtual tours of ORNL facilities include the Building Technologies Research and Integration Center, shown in dollhouse view. Credit: ORNL, U.S. Dept. of Energy

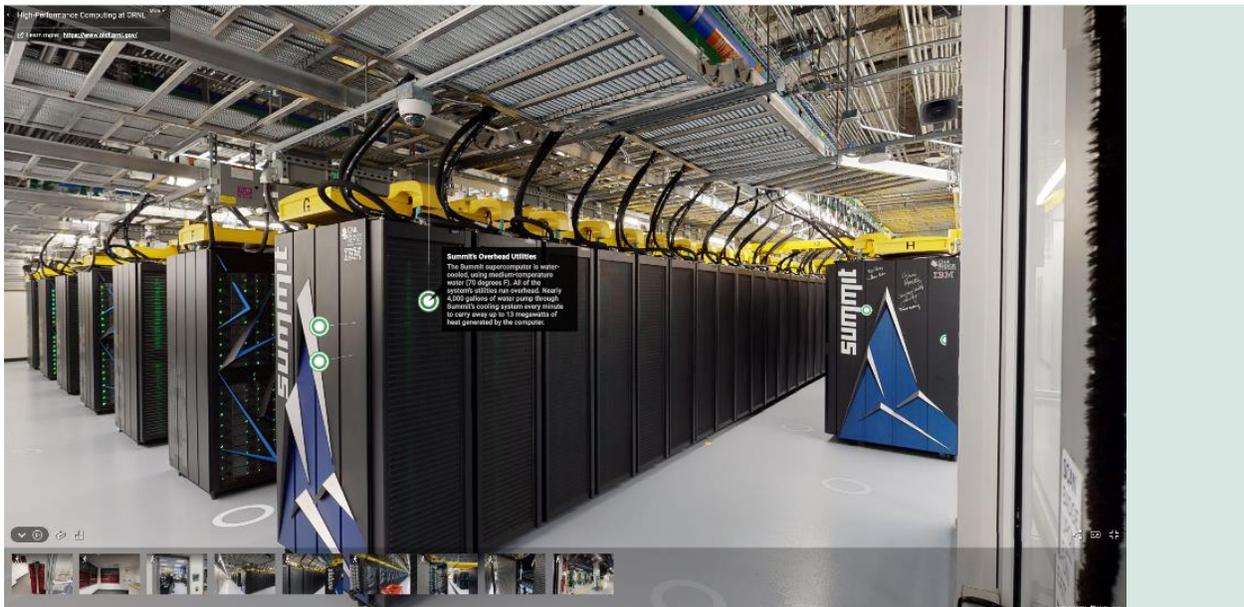
The Department of Energy's Oak Ridge National Laboratory is home to one-of-a-kind scientific research facilities and hosts a spectrum of visitors, including those from the research community, industry partners, and college and K-12 students. In an average year, thousands of people tour the lab.

ORNL has added 10 virtual tours to its [campus map](#), each with multiple views to

show floor plans, rotating 360-degree views and 360-degree navigation. As a user travels through a map, pop-out informational windows deliver facts, videos, graphics and links to other related content.

The virtual tours have allowed units such as ORNL's [Community Engagement Office](#) to continue outreach work during the COVID-19 pandemic.

“One of our primary missions is to promote the value of STEM education and opportunities in STEM career fields,” said Wade Creswell, ORNL community relations manager. “On-site tours have long been an effective way to inspire students and community groups. With COVID-related restrictions in place for visitors, the virtual tours have been instrumental in continuing to reach students of all ages.”



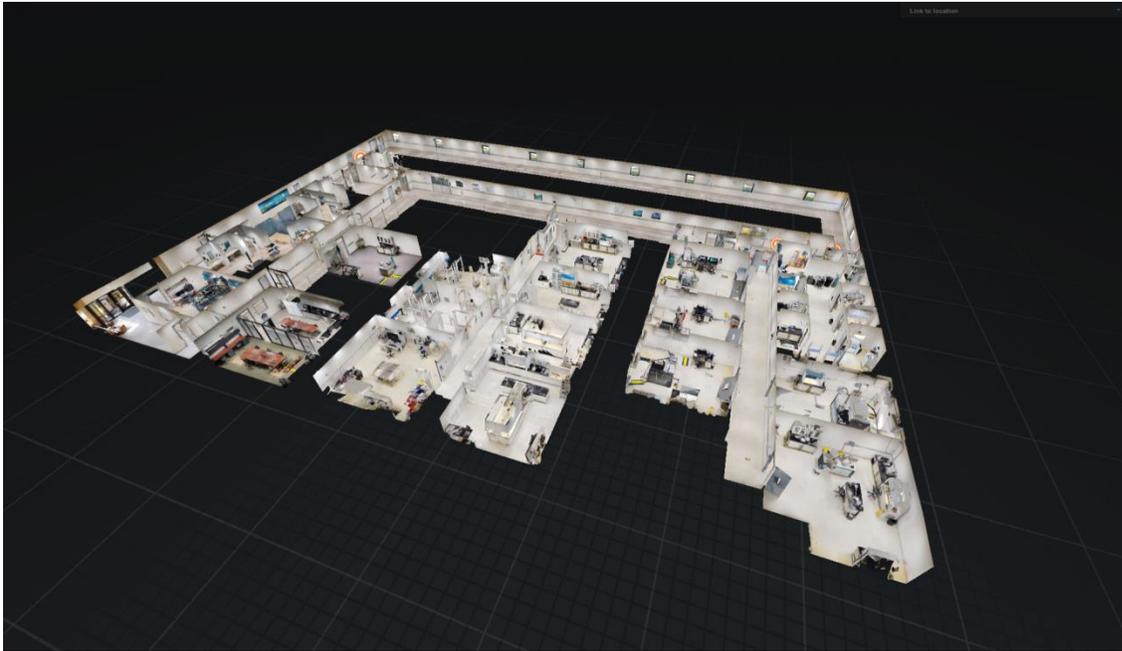
As a user travels through a map, pop-out informational windows deliver facts, videos, graphics and links to other related content. Credit: ORNL, U.S. Dept. of Energy

After in-person tours were suspended in the spring, ORNL adapted its educational tours by offering virtual scientist visits with classrooms and community groups.

Since April, 20 groups have toured the lab virtually accompanied by presentations from ORNL staff, including a cybersecurity and computer science class from Knoxville's Bearden High School.

The virtual tours have also enabled college students to continue their coursework. For the past four years, ORNL staff and University of Tennessee, Knoxville, faculty have collaboratively taught a course dedicated to data center management. This course provides hands-on experiences for UT students, giving them unique access to ORNL data centers and utility infrastructure, as well as the opportunity to design their own data center project on the ORNL campus. But, for this year's course, the team had to get creative.

"We have been able to use the virtual tours of Summit and some of the surrounding data center space to expose students to the facilities almost as directly as if they were on campus in person," said Bart Hammontree, project manager for facility upgrades at the Oak Ridge Leadership Computing Facility, home of Summit, the nation's fastest supercomputer. "They also benefit from being able to explore the spaces on their own, something they haven't been able to do in years past. Having the virtual tour available will be very helpful as they design their class data center projects."



The Ultra-Trace Forensic Science Center, shown in dollhouse view, houses high-precision chemical and isotope mass spectrometry instruments and more than 7,400 square feet of cleanroom space. Credit: ORNL, U.S. Dept. of Energy

View virtual tours of ORNL facilities and landmarks including:

- **Building Technologies Research and Integration Center:** Browse a variety of research stations in this DOE Office of Energy Efficiency and Renewable Energy user facility including an ultrasonic dryer, transactive controls and sensors, and 3D printed precast concrete molds. Go inside machinery used to test the performance of commercial and residential equipment, and a large-scale climate simulator.
- **Carbon Fiber Technology Facility:** Stroll the carbon fiber processing line to see how low-cost raw materials from textile, lignin, polymer and hydrocarbon-based precursors are processed and identified at this DOE Office of Energy Efficiency and Renewable Energy user facility.
- **Center for Nanophase Materials Sciences:** Explore a range of lab spaces and equipment used in nanoscience research, including instrumentation used in nanomaterials synthesis, nanofabrication, microscopy, and

modeling and simulation at this DOE Office of Science user facility.

- **High-Performance Computing:** Walk from the operations control room to the energy plant to the data center through more than 15,000 square feet in the building that houses Summit.
- **Graphite Reactor:** Step back in time to the birthplace of ORNL with a tour of the Graphite Reactor, which went critical in 1943, producing the first microgram quantities of plutonium.
- **Manufacturing Demonstration Facility:** Inside this DOE Office of Energy Efficiency and Renewable Energy user facility, see machine tooling in action and the large-scale additive manufacturing system that made the 3D-printed Shelby Cobra. Learn how researchers are advancing real time characterization to produce perfect parts and view MedUSA, a hybrid manufacturing machine.
- **National Transportation Research Center:** At this DOE Office of Energy Efficiency and Renewable Energy user facility, learn how wireless charging technology and sophisticated power electronics are developed and evaluated. See a variety of engines used in research to evaluate new fuels, reduce emissions, and maximize fuel efficiency, as well as research platforms for advancing connected and automated vehicle technologies.
- **New Bethel Baptist Church:** Tour the interpretive center and museum highlighting the Scarborough community, which is listed on the National Register of Historic Places. The building served as a planning office for construction of the Graphite Reactor.
- **Spallation Neutron Source:** Explore three floors of this DOE Office of Science user facility filled with state-of-the-art instruments dedicated to neutron scattering experiments. The accelerator-based system delivers proton pulses to a steel target filled with liquid mercury through a process called spallation. Those neutrons are then directed toward instruments that provide a variety of capabilities to researchers across a broad range of disciplines including physics, chemistry, biology, and materials science.

- **Ultra-Trace Forensic Science Center:** Roam the 36,000-square-foot facility dedicated to ultra-trace measurement. The center houses high-precision chemical and isotope mass spectrometry instruments and more than 7,400 square feet of cleanroom space.

Additional virtual tours will be added in coming months. For more information about customizing a virtual visit for a group, contact community@ornl.gov.

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UT-Battelle manages ORNL for the Department of Energy's Office of Science, the single largest supporter of basic research in the physical science