



# ESIF USER GUIDE

Energy Systems Integration Facility



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## Energy Systems Integration Facility User Program

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- Heather Newell, User Onboarding Specialist, 303-275-3185
- Sarah Truitt, User Program Manager, 303-275-4684

## Energy Systems Integration Facility Laboratory Operations

- Greg Martin, Research Engineering Manager, 303-384-7039
- Joseph Shekiro, Research Operations Manager, 303-384-7952
- Chad Blake, ESIF Research Operations Director, 303-630-2403

## Environment, Safety, and Health

- Phil Clark, 303-384-7240
- Mike Day, 303-275-3820
- Patty Goodman-Holdridge, 303-384-7338

## NREL Security

- From an NREL desk phone, dial x1234
- From a cell phone, call 303-384-6811.

## Nurse's Office

- From an NREL desk phone, dial x6525
- From a cell phone, call 303-384-6525



# AROUND THE NREL CAMPUS

The National Renewable Energy Laboratory (NREL) campus is a living laboratory that incorporates energy-saving technologies and renewable energy integration at all levels of research and operations. This includes a strong focus on reducing waste through recycling, composting, and repurposing materials.

NREL strives to maintain an environmentally friendly campus. You can help us achieve our goal of a near-zero-waste campus by using the recycle (blue) and compost (green) bins throughout the Energy Systems Integration Facility (ESIF). Look for signs above each bin showing which materials are compostable and recyclable.

## Arriving on Campus

- All visitors and external users must check in at the East Entrance via Denver West Parkway: 15013 Denver West Parkway, Golden, CO 80401.
- External users will be asked to park in the main parking garage. See the NREL Campus Map in the Maps section of this guide for the garage location.

## Parking

- Parking for the ESIF is located in the main parking garage. Please observe the signs and park only in designated spots. Remember to display your parking placard at all times while parked on NREL property. If you need to leave your vehicle overnight, please contact NREL Security.
- Temporary parking next to the ESIF is available to unload tools, lab supplies, or equipment. These spaces are limited and require a temporary parking permit. Parking permit requests should be made through the User Program coordinator.

## Shuttles

- NREL shuttle services provide transportation options for staff to navigate the NREL campus and to connect with local transportation hubs to commute to metro Denver.
- The circulator shuttle provides service to and from the main parking garage and the ESIF as well as other main buildings on campus from 6 a.m. to 6:30 p.m. See the NREL Campus Map in the Maps section of this guide for shuttle stops.
- For on-demand shuttle service between buildings on campus, call 303-275-3111 approximately 5 to 10 minutes before your desired departure time. The on-demand shuttle runs every workday, weather permitting, from 8 a.m. to 5 p.m.

## Where to Eat on Campus

- NREL Café
  - › The NREL Café is the primary on-site dining location for staff and visitors to purchase snacks and meals.
  - › Open Monday–Friday, 7:30 a.m. to 2 p.m.
    - Breakfast: 7:30 a.m. to 10 a.m.
    - Lunch: 11 a.m. to 1:30 p.m.
- Golden Grounds
  - › The Golden Grounds coffee shop is located in the Research Support Facility (RSF) A Wing. In addition to coffee, the shop serves limited breakfast and lunch items, including sandwiches, soups, and pizza.
  - › Open Monday–Friday, 7 a.m. to 3 p.m.



# CAMPUS SAFETY

## Nurse's Office

- NREL provides occupational medical services that are appropriate and necessary for the health hazards presented by laboratory operations and activities.
- Open Monday–Friday, 8 a.m. to 5 p.m.

## Fitness Center

- The RSF Fitness Center is located on the second-floor hallway between the A and B Wings, across from the library. It offers cardio equipment such as treadmills, spinning bikes, and stair climbers as well as some strength training equipment. Each locker room has four showers, several benches, and lockers.
- The fitness center has one room dedicated to group exercise classes. All group classes are self-managed. You can find a schedule of classes on the bulletin board in the fitness center.
- All NREL locker rooms and lockers are provided for convenience during workouts only. Lockers are not available for full-day or overnight use. NREL locker rooms do not supply soap, shampoo, towels, or hair dryers.

## Library

- The NREL Library is located in the RSF on the second-floor hallway between the A and B Wings, across from the fitness center.
- The library is staffed Monday–Friday, 9 a.m. to 12 p.m. and 1 p.m. to 4 p.m.

The Office of Security and Emergency Preparedness (NREL Security) helps with emergencies and works to protect people and property against security threats at NREL facilities. If you see a potential threat to NREL or the U.S. Department of Energy (DOE), please contact NREL Security immediately.

### **The following articles are prohibited on NREL sites:**

- Alcoholic beverages
- Drugs or controlled substances
- Firearms (including concealed carry)
- Explosives
- Dangerous weapons or materials
- Cameras, unless permission has been given by the research program.

**All vehicles, persons, and packages are subject to search upon entering NREL sites.**

## Traffic Safety

- Please obey all traffic signs and posted speed limits.
- Note that the use of personal electronic devices is not allowed while operating a vehicle on NREL property.
- Helmets are required when riding a motorcycle, bicycle, or scooter on NREL property.
- If a violation of safety is witnessed, security staff has the authority to conduct traffic stops.

## Emergencies & Natural Disasters

If there is an emergency, you should:

- Exit the area, shutting down and/or de-energizing equipment if it can be done safely.
- Contact NREL Security. Dial x1234 from any NREL phone or pick up any red phone (it will dial automatically). State the nature of the emergency and actions already taken. **Important:** Please do not call 911 while at NREL. NREL Security coordinates directly with emergency personnel to provide the fastest response for on-campus emergencies.
- Initiate first aid or render assistance if it is safe to do so. In the C Wing of the ESIF, defibrillators are located across from the elevators on each floor. In the A and B Wings, defibrillators are located across from the restrooms. First-aid kits are located at the entrance to the restrooms in all wings of the building.
- Wait for emergency responders—do not rush an injured person to the hospital yourself.

If there is a natural disaster, you should:

- Listen for a notification via the building intercom. If no instruction is provided, go to the nearest Building Protective Area and wait for instructions via the intercom.
- Do NOT pull the fire alarm if you see a tornado or a wildfire. Building Protective Areas are designed to withstand these hazardous events.
- You can help in an emergency natural disaster situation by being prepared:
  - › Familiarize yourself with your buildings and lab spaces.
  - › Know at least two exits from your building.
  - › Know the location of the ESIF Evacuation Assembly Area.
  - › Know the location of your Building Protective Areas.

Building Evacuation Assembly Area

- No matter where you exit the ESIF, everyone will assemble on the sidewalk adjacent to the bus stop on the southwest corner of the ESIF.

Building Protective Areas

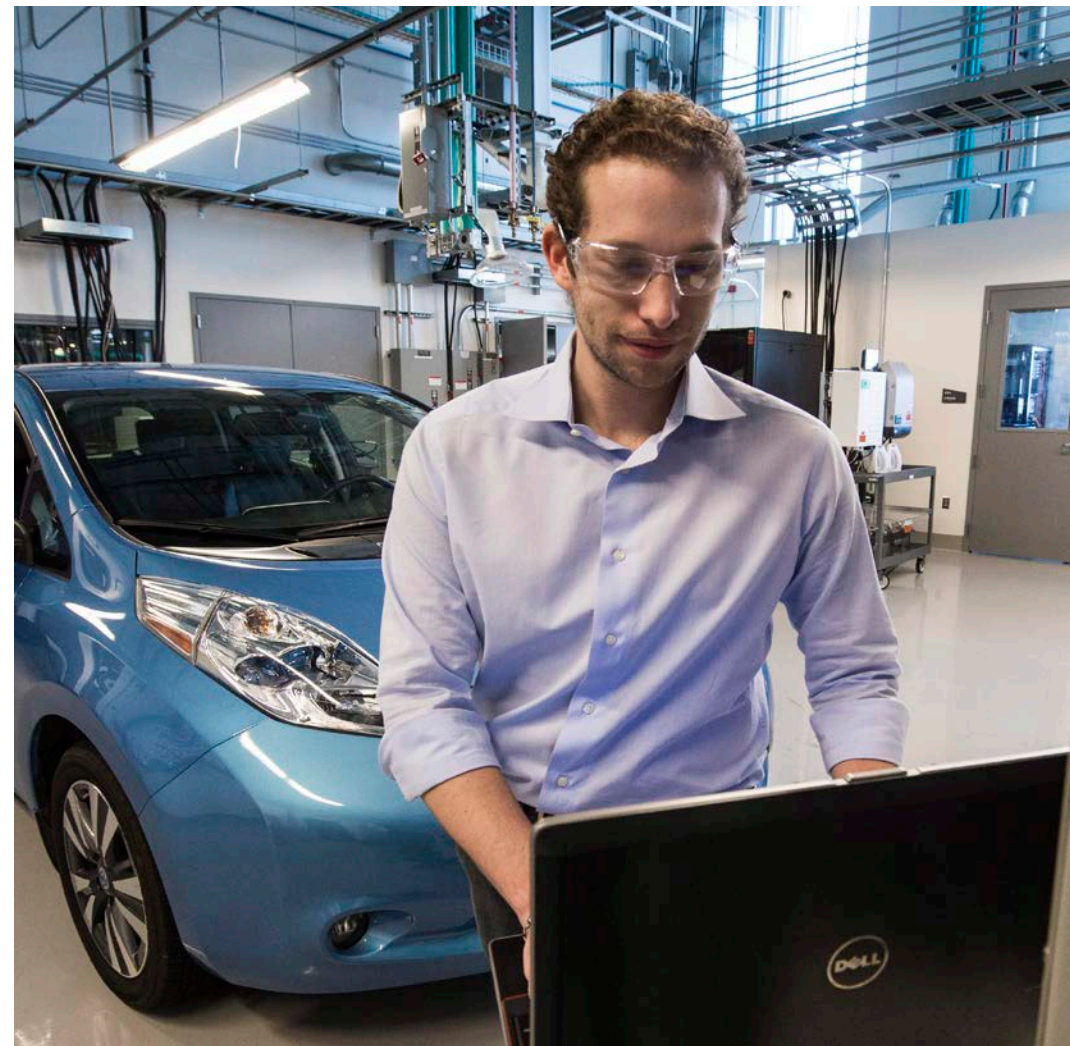
- See the Emergency Information Maps in the Maps section of this guide to find your closest Building Protective Areas.



Photo by Dennis Schroeder / NREL 49104

## Workplace Violence

- Respect for the rights, differences, and dignity of others are the cornerstones of a safe and supportive work environment and integral to NREL's mission and values. It is prohibited to engage in harassment based on race, color, religion, gender, gender identity, national origin, age, marital status, ancestry, sexual orientation, disability, veteran status, or other legally protected status. It is also prohibited to retaliate against workers who file harassment complaints or assist in investigations.
- The early identification and assessment of potential threats is the best defense. Do not hesitate to report threats of violence, unusual or erratic behaviors, and/or derogatory or demeaning references.
- Contact NREL Security with any concerns regarding workplace violence.





# THE ESIF: A DOE TECHNOLOGY USER FACILITY

## What is a DOE technology user facility?

- DOE technology user facilities are government-sponsored facilities offering unique capabilities beyond what individual research institutions or companies typically provide.

## Who can use the ESIF?

- As a user facility, the ESIF is available to the research community and is open to qualified individuals from institutions around the world. Allocation of facility resources is determined by the scientific merit of the proposed work.

## Standards and Certifications

The ESIF is a world-class research, development, and demonstration facility that is certified to the following international standards recognizing green building leadership, quality management, environmental management, and occupational health and safety management:

- LEED Platinum-certified
- ISO 9001:2008-certified
- ISO 14001:2004-certified
- OHSAS 18001-certified.

# PERMISSIBLE USE OF GOVERNMENT RESOURCES

All work performed by users in ESIF laboratories is governed by a DOE-approved contract or agreement. All equipment shipped to the ESIF must be associated with an existing, active agreement before it will be accepted by NREL's shipping and receiving department.

## CONTRACTING

- The ESIF has been designated as a user facility for both proprietary and nonproprietary work. NREL offers multiple contracting vehicles that provide proprietary and nonproprietary terms and conditions. Full cost recovery is required for proprietary work and is negotiated at the time of contracting.
- All users must enter a contract (i.e., agreement) through NREL's Technology Transfer Office. NREL offers many types of agreements; descriptions are available at <https://www.nrel.gov/workingwithus/technology-partnership-agreements.html>.
- Modifications to the terms of any agreement may be requested, but any changes require approval by DOE.

*Photo by Dennis Schroeder / NREL 26385*



# USER RESPONSIBILITIES WHILE ON CAMPUS

## BUILDING & LABORATORY ACCESS

### Office Space

- Users may access office spaces (including the ESIF Tour Corridor) from 5 a.m. to 8 p.m., 7 days/week, excluding holidays.
- Office access before 5 a.m. or after 8 p.m. requires approval from the NREL User Program manager.
- External users have access to common areas in the ESIF and RSF office buildings and may be provided with cubicle office space if available.
- External users may request conference rooms for meetings by emailing the User Program coordinator with the meeting time, duration, and number of attendees.

### Laboratory Space

- Users are granted access to the specific laboratories in which their work will take place. Site-specific orientation is required for each laboratory a user intends to use.
  - › Laboratory access hours are from Monday–Friday, 8 a.m. to 5 p.m. (excluding holidays).
  - › After-hours laboratory access must be arranged at least 2 business days in advance. Please contact the User Program coordinator to coordinate.
- External users may be granted access to limited systems for research purposes through a virtual private network (VPN) token, issued by NREL's Information Technology Services Department. Request VPN access through the User Program coordinator.

Users who are granted access to the ESIF must adhere to the following protocols. Failure to comply with the protocols may result in the loss of access to ESIF facilities.

## Entry to Campus and Badges

- NREL buildings are locked at all times, so you will need to “badge in” at each card reader prior to entering. You are granted access to buildings and areas based on your job requirements.
- Everyone must wear an NREL badge while on the premises. NREL Security personnel will escort anyone without a badge off campus.
- Additional important things to remember:
  - › Please display your badge prominently on your outermost garment.
  - › If you lose your badge, immediately notify NREL Security so it can be deactivated.
  - › If you forget your badge at home, please report to the East Site Entrance building to obtain a 1-day temporary badge.

## Shipping

- All items shipped to the ESIF must be in project-ready condition and specifically associated with an active agreement. The agreement number must be included on the shipping form. Please notify the User Program coordinator at least 2 business days prior to shipping items to ESIF.

*Photo by Dennis Schroeder / NREL 25569*



## WORKING SAFELY IN THE ESIF LABS

- Only authorized visitors are allowed on NREL's campus. All visitors must be arranged with the User Program coordinator.
- Please allow 2 business days to process paperwork for U.S. citizens and 15 business days to process paperwork for visitors from foreign countries. Foreign nationals with ties to sensitive countries will require additional processing time (30 calendar days). Visitors are not guaranteed entry to NREL.
- Users are responsible for meeting their guests in the RSF lobby upon check-in and are responsible for their visitors once they have been granted access to NREL's campus.
- NREL staff must be aware of visitors' whereabouts at all times when on campus. External users are obligated to provide an agenda in advance of all visits and act in good faith to follow the submitted agenda.

NREL is proud to be among the best in class for safety and sustainability. The commitment of staff and visiting partners is critical to maintaining the safe and responsible work environment we all enjoy. Following is information on safety guidelines and the training you will need to work in the ESIF labs.

### Required Training

- Anyone entering the ESIF lab area must have completed the ESIF orientation or be accompanied by a host who has completed this orientation.
- Additional activity- and lab-specific training is also required. You are not authorized to enter the ESIF labs without a host or approach or use lab equipment, testing equipment, or tools until you have been properly trained and approved to operate that equipment.
- For questions about required training, please coordinate with the appropriate Environmental, Safety, and Health (ESH) contact for the desired lab. ESH contacts are listed on the door to each lab.



## Potential Hazards

The following hazards might be present in the ESIF labs:

- High pressure (hydraulics, compressed gas, hydrogen, cooling and heat exchange systems)
- Flammable and toxic gases
- Electrical shock up to 13,200 V
- Electrical arc flash
- Confined spaces and asphyxiation hazards
- Noise
- Toxic chemicals
- Burn and fire risks (overheating, welding, abrasive grinding, smoking)
- Cranes, suspended loads, hoisting and rigging
- Mechanical oscillating/rotating apparatuses and machinery shop and power tools
- Research-and-development (R&D) testing to anticipated failure (i.e., purposely pushing equipment to and above operating limits in accordance with test objectives), typically under safe work permits.

## Safe Work Notification

- The monitor in front of the High Bay Control room on the third floor has up-to-date information on current activities in the ESIF, including:
  - › ESIF Plan of Day activities
  - › Hazards, area work supervisors, authorized personnel, and emergency contacts
  - › Approved activities, safe work permits, and safe operation procedures.

## Working Alone

- All work in the ESIF labs and test areas must be evaluated for the risk of working alone. ESIF Operations and ESH must approve any work intended to be performed alone. Contact the appropriate ESH personnel to begin the approval process.

## Outages and Maintenance

- Users will be notified of planned and unplanned outages and maintenance via text or email.
- Users must request to be added to the maintenance and outage distribution list. Contact the ESIF User Program coordinator to be added.

## Lab Area Access Requirements and Restrictions

- When in the ESIF labs, it is important to adhere to the following basic rules in addition to rules specifically indicated for your project. When in doubt, as a member of the ESIF Operations staff:
  - › Do not enter any laboratories, shops, high bays, mechanical/electrical rooms, fenced-in-areas, test bays, etc., for which you are not authorized.
  - › Do not assume that an open door means you can enter.
  - › Do not approach or operate equipment or test apparatuses for which you are not authorized.
  - › Never defeat physical or administrative hazard barricades (e.g., machine guards, yellow tape, rope, tarps). Be vigilant of warning signs—even handwritten warnings on paper.
  - › Do not approach other workers from behind or in any way that might be unexpected or cause them to be startled.
- **Important note on hosting visitors in the lab:** Because of the potential hazards present in the ESIF laboratories, general tours in laboratory areas are discouraged. The ESIF Tour Corridor is set up to accommodate general tours and is accessible to any NREL employee who has badge access to the ESIF building.



## Safety Points to Remember

- The ESIF lab spaces contain many different pieces of equipment, each with hazards and associated training. Before you act, please:
  - › **Be trained, qualified, and approved.** If you are not trained, qualified, and approved to operate equipment, do not approach it.
  - › **Stay within authorized areas.** Only enter lab areas that you are authorized to access.
  - › **Respect others' work.** If laboratory test articles and setups are custom-configured for R&D and testing, owners assume that their equipment will not be touched or disrupted.
  - › **Stay alert.** It is possible to become too comfortable when conducting potentially hazardous activities on a daily basis. Always be aware of what you are doing and the associated risks.
  - › **Put safety first.** Research and results are important, but do not allow work goals to shortchange safety considerations.
  - › **Everyone has stop work authority.** If you are concerned about the safety of activities taking place, you have the ability to request that work stop immediately.

## Safety in Action

- Being proactive about safety is a requirement of working at the ESIF. If you see something unsafe, do not ignore it! You should:
  - › IMMEDIATELY question or request others to stop any activities perceived to be unsafe. If this is not possible, or if you have any doubt or concern, notify an EHS contact person or your manager as soon as possible.
  - › Comply in a professional and courteous manner with stop work requests or questions from anyone concerned about the safety of activities underway.
  - › Identify the unsafe activity and collaborate with EHS to develop a safer process.





# TYPES OF ALARMS

## Emergency Gas Alarm (Blue)

- What you will see and hear: A steady blue light on the tricolor alarm and a steady horn sound
- What it means: There is a high-level concentration of gas in the lab. All power to the lab will be shut off, except for lights and ventilation, and flow from house gases will be stopped and purged.
- What you should do: Exit the laboratory and proceed to the nearest red phone to report the incident. Do NOT return to the lab until authorized to do so.

## Warning Alarm (Yellow)

- What you will see and hear: A steady yellow light on the tricolor alarm
- What it means: There is a low-level concern within the lab (e.g., a low-level concentration of gas, a communications issue).
- What you should do: Exit the laboratory and notify the ESIF Operations Manager and the EHS point of contact to initiate an investigation into the cause of the alarm. After notification, authorized personnel may investigate the cause following safe operating guidelines.

## Emergency Power Off (Red)

- What you will see: A steady red light on the tricolor alarm and a steady horn sound
- What it means: There is an emergency in the lab. All equipment, gases, and power will be shut off, except for lights and ventilation.
- What you should do: Exit the laboratory and proceed to the nearest red phone to report the incident. Do NOT return to the lab until authorized to do so.

## Fire Alarm (White)

- What you will see and hear: A flashing white strobe light and siren
- What it means: There is a fire in the building.
- What you should do: Use the nearest laboratory exit and go to the identified outdoor Evacuation Assembly Area.

**Note: During a drill, everyone in the ESIF is required to participate.**



# USER SUPPORT SERVICES

## NREL Provides the Following:

*(Users conducting proprietary work are required to pay for these services. There is no charge to users conducting non-proprietary work.)*

- Inspection of all user equipment to ensure readiness and safety, for connection and operation with ESIF systems and equipment
- Setup and decommissioning of laboratory experiments (limited to connecting and disconnecting user equipment to ESIF systems)
- Lab orientation, specialized training, and relevant protective equipment training for all users
- Oversight of work in ESIF laboratories
- Maintaining ESIF-owned laboratory equipment and systems
- Receiving and delivering equipment associated with active contractual agreements
- Operating necessary ESIF systems to complete project work, such as the research electrical distribution bus (REDB).

## NREL May Provide the Following for a Fee:

- Troubleshooting experimental equipment or setups
- Consumables such as chemicals, gasses, and other supplies specific to project equipment
- Labor associated with project equipment connections other than connections/disconnections to ESIF systems
- Facility modifications such as installation of power disconnects for use in a research project
- Additional equipment needed to ensure safety and/or equipment integrity
- Experiment operation, data acquisition, or analysis

- Collaboration on research tasks
- Facilitation of lab work outside of normal laboratory operation hours (see p. 12)
- Preparation of shipping containers that exceed \$500 in total cost
- Transporting user laboratory materials and equipment associated with active contractual agreements to and from user's storage unit (within 5 miles of NREL).

## NREL Does Not Provide the Following:

*(For non-NREL users)*

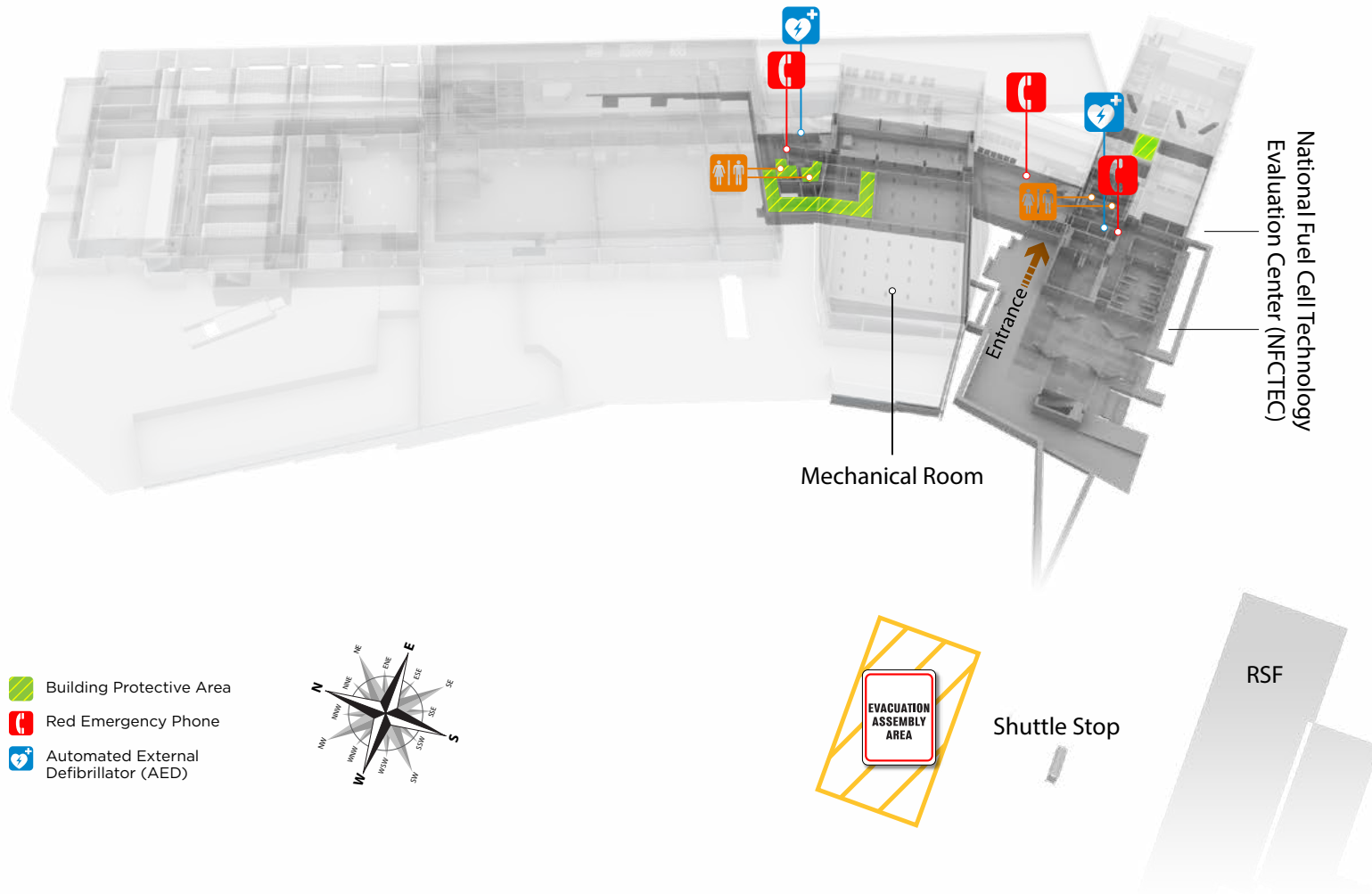
- Lodging
- Office supplies, laptops, headsets, digital devices, or other electronic devices
- Access to NREL's business systems or email accounts
- Access to NREL meetings intended for internal staff (unless invited by organizer)
- Marketing or communication support; NREL may include user projects in communications materials and events that NREL initiates
- Storage for user equipment or consumables that are not directly needed for an active project; users with storage needs must lease a commercially-available storage unit to store items needed for work in the ESIF
- Calibration services for user equipment; users must have their equipment calibrated and ready to use when it arrives at the ESIF
- Free shipping for user equipment; users are required to cover the costs for shipping services and must provide a valid, authorized customer account number for payment of shipping or freight costs from freight companies (FedEx, UPS, DHL, etc.).

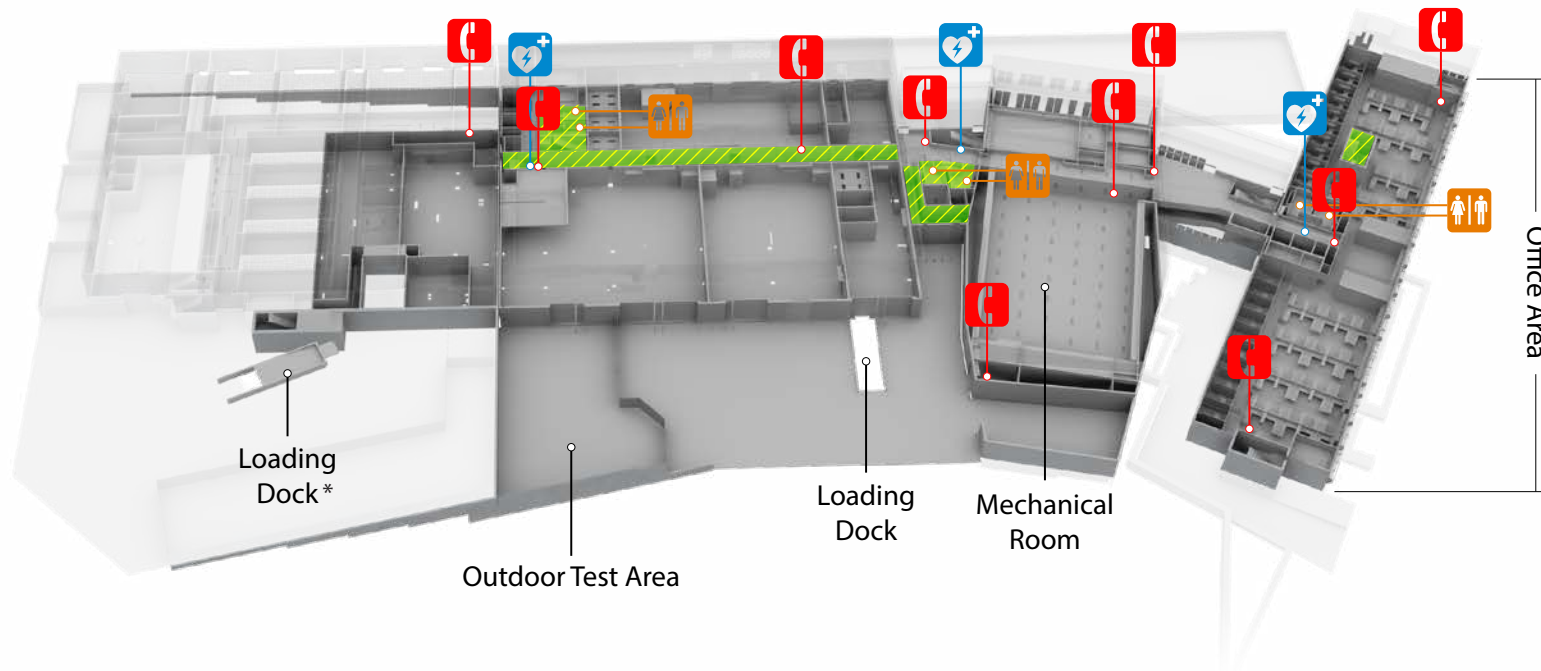
# MAPS




 **NREL**  
NATIONAL RENEWABLE ENERGY LABORATORY

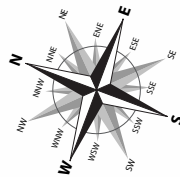
Emergency Information Map  
Energy Systems Integration Facility (ESIF)

First Floor

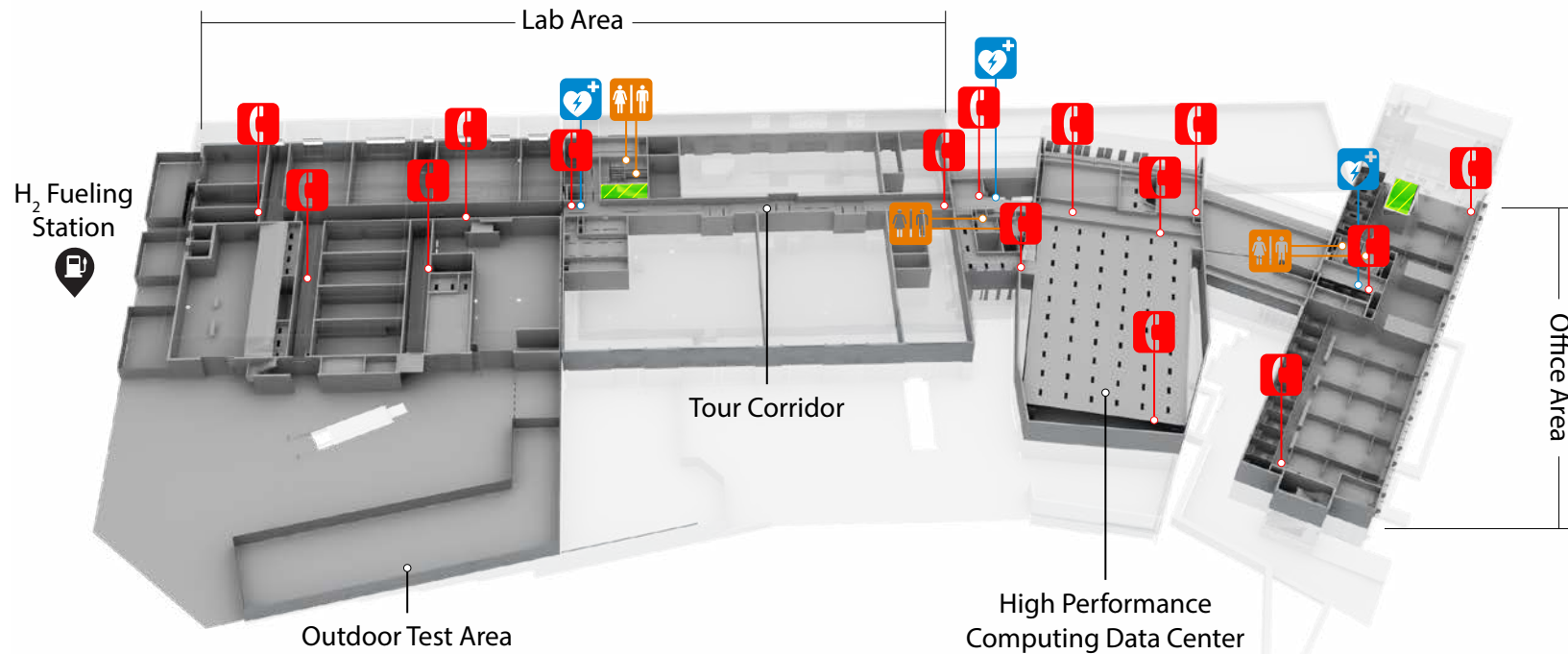







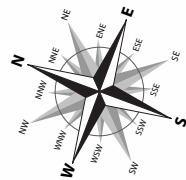
-  Building Protective Area
-  Red Emergency Phone
-  Automated External Defibrillator (AED)



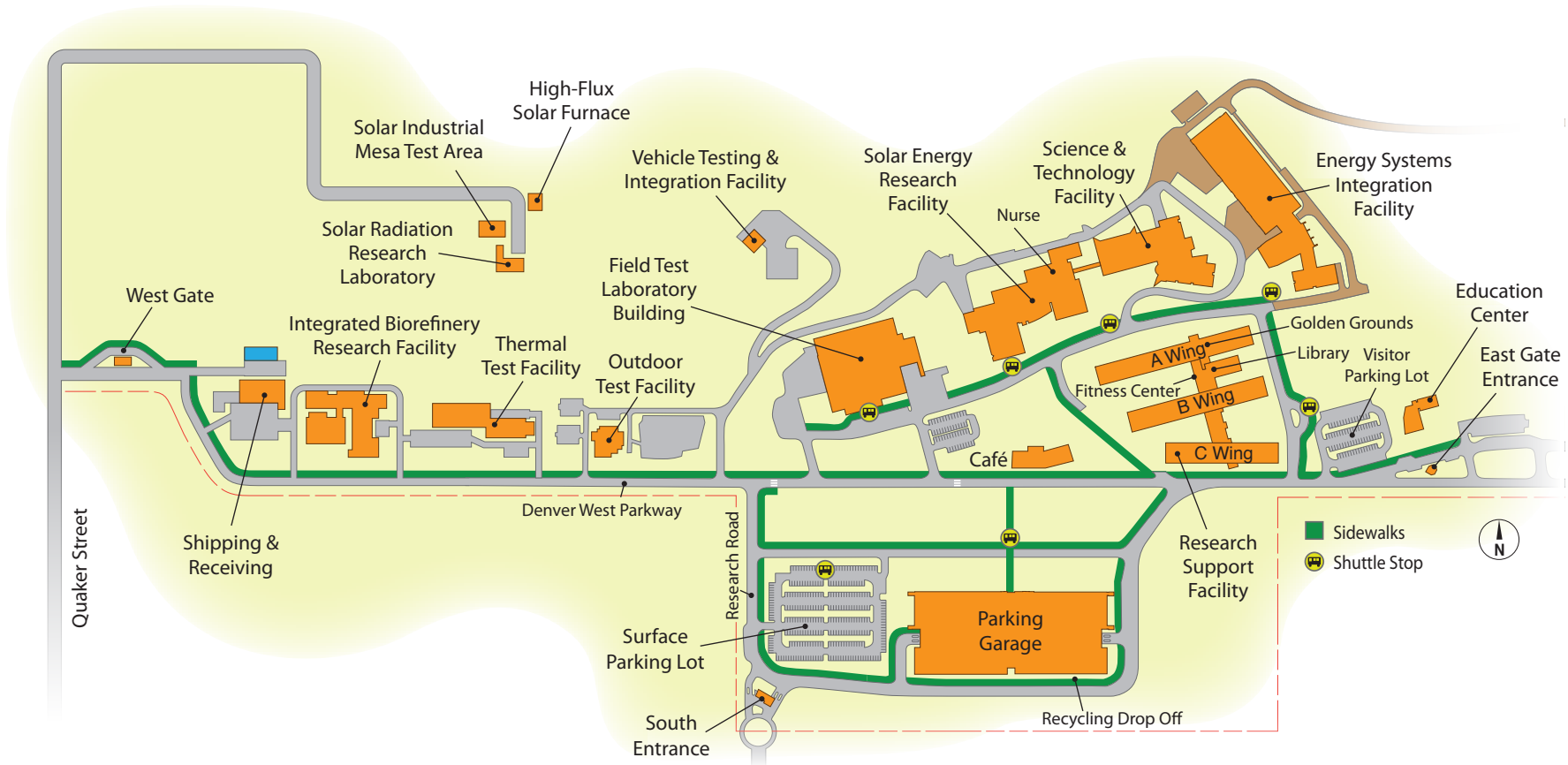
\*See p. 13 for information on shipping.



-  Building Protective Area
-  Red Emergency Phone
-  Automated External Defibrillator (AED)



# NREL CAMPUS MAP





# EVACUATION ASSEMBLY AREAS



## ESIF



**ALL EXITS** – Assemble on the SIDEWALK section (dark bricks) of the road in front of the RSF A-wing.



EXIT POINTS



POINT OF ASSEMBLY

## National Renewable Energy Laboratory

15013 Denver West Parkway  
Golden, CO 80401

303-275-3000 • [www.nrel.gov](http://www.nrel.gov)

NREL is a national laboratory of the U.S. Department of Energy  
Office of Energy Efficiency and Renewable Energy  
Operated by the Alliance for Sustainable Energy, LLC

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