

**NHERI- Network Independent Advisory Committee (NIAC)**  
**Virtual Meeting Topic: NIAC 1<sup>st</sup> Meeting in Year-5**  
**Date/Time: Apr 20, 2021 05:00 PM Eastern Time (US and Canada)**

**Zoom Meeting Details**

Topic: NIAC Meeting  
Time: Apr 20, 2021 05:00 PM Eastern Time (US and Canada)

Join Zoom Meeting  
<https://DesignSafe-ci.zoom.us/j/94923996303>

Meeting ID: 949 2399 6303  
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Dial by your location  
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+1 253 215 8782 US (Tacoma)  
+1 346 248 7799 US (Houston)  
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Meeting ID: 949 2399 6303  
Find your local number: <https://DesignSafe-ci.zoom.us/j/94923996303>

**Minutes**

1. (10') Welcome, Attendance and Review of action items and approval of the previously distributed Minutes of the 6-29-20 Meeting (Bill Hansmire)  
[Those present approved minutes of 6-29-20 without objections.](#)
2. (20') NCO Update and Plans for Renewal Period (Julio Ramirez, JoAnn Browning, Cheryl Ann Blain and Bill Holmes)(Slides will be distributed prior to the meeting)
  - a. Governance (Julio)
  - b. Science Plan (Julio)
  - c. Education (JoAnn)
  - d. Communications (Cheryl Ann)
  - e. Technology Transfer Committee (Bill Holmes)

[The update report is attached to these Minutes. The NCO renewal proposal was submitted to NSF on 4/1/21. The SimCenter and RAPID proposals went in this week. All other components have been renewed. The period of the renewal is to 9/30/25.](#)

**Action Item 1:** Julio will coordinate a virtual meeting of the NIAC with NHERI components during the Summer Institute, June 16-17, 2021. The format would be to group facilities by common emphasis, i.e. wind research labs, geotech, earthquake and cyber with Converge. Participants in each group will be given an estimate of 10-minutes/each for specific discussion.

**Action Item 2:** Julio will contact the User Forum to confirm the interest for a joint meeting and try to identify time after final schedule for the SI is known.

**Action Item 3:** JoAnn will distribute to the NIAC the final schedule/agenda for the Summer Institute as soon as it is finalized.

3. (5') NHERI Status during COVID-19 (Julio Ramirez)  
All NHERI components are open for business under the restrictions of the State and Institution with regard to COVID-19. During the more restricted time, the NHERI components switched to remote operations. Gradually, the laboratories have opened to outside researchers under restrictions of mask wearing, testing, social distancing etc.
  
4. (20') NIAC Plans for Year 5 (All)
  - a. Membership Update  
Caro Shield and Glenn Rix were welcomed as new members.
  - b. Priorities
    - Interact with TTC committee
    - Participate in the planning of the NHERI researchers meeting for 2022
    - Participate in the NHERI Science Plan Workshop in 2022
    - Develop annual report for the period of June 2020 to July 2021 to the NCO. The report is due in October 2021.
    - Other...
  - c. Annual Report to NCO  
NIAC agreed to convene virtually in executive session during the Summer Institute.
  - d. Activities- Meeting schedule and Agenda Items
  
5. (5') New Business
  
6. Adjourn  
Meeting adjourned at 6:30 PM Eastern. John van de Lindt moved and Lesley seconded the motion.



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# NIAC Meeting Report

NHERI-NCO

NHERI-Network Coordination Office

Dr. Julio Ramirez

Kettelhut Professor in Civil Engineering

PI, Director NHERI-NCO

**CMMI-1612144**

April 20<sup>th</sup>, 2021 | 17:00 -18:00 EST



# NSF's Facilities/Programs



**PURDUE UNIVERSITY**  
Network Coordination Office  
NSF Award #1612144

**UNIVERSITY OF COLORADO BOULDER**  
Extreme Event Reconnaissance Coordination  
NSF Award #1841338

**UC BERKELEY**  
Computational Simulation  
NSF Award #1612843

**UNIVERSITY OF WASHINGTON**  
Natural Hazards Reconnaissance Equipment  
NSF Award # 1611820

**UNIVERSITY OF TEXAS, AUSTIN**  
Community Cyberinfrastructure  
NSF Award #1520817

**OREGON STATE UNIVERSITY**  
Wave Basin and Flume  
NSF Award # 1519679

**FLORIDA INTERNATIONAL UNIVERSITY**  
Wind Simulation  
NSF Award #1520853

**UNIVERSITY OF TEXAS, AUSTIN**  
Mobile Field Shakers  
NSF Award #1520808

**UNIVERSITY OF FLORIDA**  
Wind Simulation  
NSF Award #1520843

**UC DAVIS**  
Geotechnical Centrifuges  
NSF Award #1520581

**LEHIGH UNIVERSITY**  
Hybrid Simulation  
NSF Award #1520765

**UC SAN DIEGO**  
Large Outdoor Shake Table



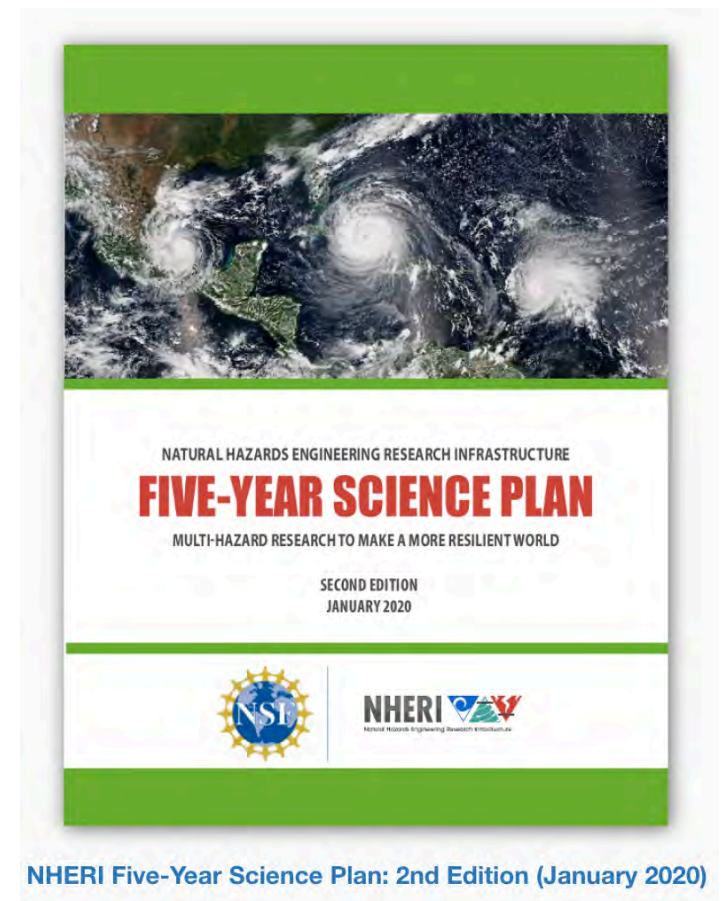


# NHERI Science Plan Purpose

A 5-year roadmap for high-impact, high-reward hazard engineering research at NHERI facilities

## Three Grand Challenges Remind Us Why NHERI Is So Vital

- Identify and quantify the characteristics of earthquakes, windstorms, and associated hazards (e.g., tsunami, surge, waves)
- Evaluate physical vulnerability of civil infrastructure and social vulnerability of populations in exposed communities
- Create technologies and tools to design, construct, retrofit, and operate sustainable infrastructure resilient to multiple hazards



NHERI Five-Year Science Plan: 2nd Edition (January 2020)



# Update NHERI Science Plan

In 2021-2022, we will convene an NCO Science Plan Task Group to:

- 1) incorporate more holistically all aspects of social science that relate to community resilience to natural hazards
- 2) fully engage the research performed by the NSF-funded Extreme Event Reconnaissance/Research networks
- 3) encourage utilization of the powerful simulation tools developed by the SimCenter and hosted at DesignSafe





# NHERI Researchers Meeting 2022

- Meeting objectives:
  - Bring earthquake, wind and coastal engineering, and social sciences together
  - Disseminate NHERI research impact
  - Build partnerships with other organizations and federal agencies
- Venue: DC area (Hybrid?)
- Date: June 2022 or Oct. 2022
- Form Governance Task Group to plan meeting



# NHERI Facility Dashboard

- The NCO Facility Scheduling and Operations Coordinator (FSOC) deploys *up to date schedule information with clear and transparent procedures* for users to access experimental facilities, and *facility resources* through a *centralized scheduling platform* in DesignSafe-Cl.



A  
streamlined  
and *fully*  
*integrated* in  
DesignSafe-  
CI  
scheduling  
dashboard  
deployed  
with the  
start of the  
renewal

## FACILITY SCHEDULING DASHBOARD

Centralized management for NSF-funded NHERI grant awards

Welcome to the NHERI Facility Scheduling Dashboard.

At any given time, dozens of research projects are underway at NHERI's eight (8) [Experimental Facilities](#). The Dashboard tool enables researchers to manage projects, help EF staff manage assets, and also offers a public view to the work underway at NHERI's Experimental Facilities.

The [Network Coordination Office \(NCO\)](#) maintains the Dashboard. See below for scheduling protocols.

### Quick Links

[Request a New Project](#)

[Contact a Facility](#)

[NHERI Scheduling Protocol](#)

Filters: -- Filter by Facility -- | -- Filter by Grant -- | -- Filter by Start Date -- | Sort by: Event Start Newer First

Start Date	Estimated End Date	Facility	Event	Description	Actions
10/5/2020 12:00 AM	2/15/2021 12:00 AM	Oregon State	<b>Test Sequence 1 - Instrumented Debris Test</b>  <i>Understanding and Quantifying Structural Loading from Tsunami-Induced Debris Fields</i>  <a href="#">NSF #1933184</a> , PI: Michael Motley	By using a statistical approach, this research will develop a physically meaningful, representative numerical estimate of the risks of debris impact and damming forces, supported by experimental results that will provide engineers and community officials with an improved confidence for designing safe and resilient coastal infrastructure in tsunami and storm surge susceptible regions.	<a href="#">Contact PI</a> <a href="#">Contact Facility</a> <a href="#">Request Payload</a>
7/27/2020 12:00 AM	10/21/2020 12:00 AM	Univ. of Florida	<b>Test Cycle 1</b>  <i>Collaborative Research Wind Tunnel Modeling of Higher-Order Turbulence and its Effects on Structural Loads and Response</i>  <a href="#">NSF #1930389</a> , PI: Michael Shields	This study will conduct a set of novel experiments at the UF-BLWT to understand the influence of terrain variations on peak wind pressures that load structures during storms. The experimental outcomes will provide a precise description of how a building's surroundings affect wind pressures and enabling engineers to cost effectively design to survive extreme winds.	<a href="#">Contact PI</a> <a href="#">Contact Facility</a> <a href="#">Request Payload</a>
3/16/2020 8:00 AM	7/21/2020 6:00 PM	UC Davis	<b>Spin Cycle 1</b>  <i>OALI Collaborative Research - Novel and Efficient Seabed Ring Anchor for Omnidirectional Loading</i>  <a href="#">NSF #1936939</a> , PI: Alejandro Martinez	This study will conduct a set of novel experiments at the UF-BLWT to understand the influence of terrain variations on peak wind pressures that load structures during storms.	<a href="#">Contact PI</a> <a href="#">Contact Facility</a> <a href="#">Request Payload</a>
10/14/2019 6:00AM	10/1/2020 6:00 AM	Oregon State	<b>Test Sequence 1 - Instrumented Box</b>  <i>Vertical Evacuation Structures Subjected to Sequential Earthquake and Tsunami Loadings</i>  <a href="#">NSF #1726326</a> , PI: Dawn Lehman	This research will investigate the interactions of the structure, soil, and tsunami waves for both traditional systems designed only for seismic loads and the new breakaway structural system.	<a href="#">Contact PI</a> <a href="#">Contact Facility</a> <a href="#">Request Payload</a>
9/3/2019 1:00 AM	12/23/2020 1:00 AM	Lehigh	<b>Test Cycle 1</b>  <i>Frame-Spine System with Force-Limiting Connections for Low-Damage Seismic Resilient Buildings</i>  <a href="#">NSF #1926326</a> , PI: Richard Sause	The novel steel frame-spine lateral force-resisting system with force-limiting connections (FLC) that will be developed in this project will control multi-modal seismic response to protect a building and provide resilient structural and non-structural building performance.	<a href="#">Contact PI</a> <a href="#">Contact Facility</a> <a href="#">Request Payload</a>
8/1/2019 1:00 AM	7/29/2020 1:00 AM	Lehigh	<b>Test Cycle 1</b>  <i>Semi-Active Controlled Cladding Panels for Multi-Hazards Resistant Buildings - Semi-Active Damper Study</i>	The experiments will include real-time hybrid simulations for wind and seismic loading that account for the complete building system and its interactions with the semi-active damping devices and cladding. Air-blast shock tube tests will be conducted to simulate blast loading.	<a href="#">Contact PI</a> <a href="#">Contact Facility</a> <a href="#">Request Payload</a>



# Implementation of NHERI wide use metrics

In 2021, we will implement agreed upon common metrics collected every 6 months (NSF NHERI reporting period)

- 1) **UTILIZATION- Calendar Days [Target 50% Science Days/reporting period (182 days)]**
  - a. Science
  - b. ECO
  - c. Inspection
  - d. Out of Service: repair, or maintenance or not in service
- 2) **USER- LAB Data: name, role (grad student, postdoc, PI, etc.), project, demographic info...**



# Research Collaboration US-Japan

- Access to Facilities
  - Testing Techniques
  - Condition Assessment
- Research Coordination Program
- Data Exchanges and Computational Simulation
- Educational and Outreach Activities



*At E-Defense, shake table tests were performed on a 5-story full scale steel moment frame building isolated with triple pendulum bearings. The isolation system consisted of 9 bearings, one beneath each column of the building.*



# Collaboration Data Sets NIED/E-Defense and NEES

Project Title	Project PI	Project Description	Start Date
<a href="#">E-Defense Shake Table Experiments (NEES)</a>	Packard, Mike	<a href="#">View Description</a>	2/23/2012
<a href="#">International Hybrid Simulation of Tomorrow's Braced Frame Systems (NEES)</a>	Lehman, Dawn	<a href="#">View Description</a>	10/15/2004
<a href="#">Large-Scale Validation of Seismic Performance of Bridge Columns (NEES)</a>	Restrepo, Jose	<a href="#">View Description</a>	9/1/2007
<a href="#">Novel Embedded Diagnostics Wireless Structural Monitoring Systems (NEES)</a>	Kiremidjian, Anne	<a href="#">View Description</a>	7/1/2012
<a href="#">NEES E-Defense: Seismic Performance of Interlocking Spiral Columns and Rectangular Columns Based on Shake Table Tests (NEES)</a>	Mahin, Stephen	<a href="#">View Description</a>	8/31/2006
<a href="#">TIPS - Tools to Facilitate Widespread Use of Isolation and Protective Systems, a NEES/E-Defense Collaboration (NEES)</a>	Ryan, Keri	<a href="#">View Description</a>	10/1/2007
<a href="#">Collaboration between E-Defense and NEES: Studying Pile Stress in Laterally Spread Ground (NEES)</a>	Boulangier, Ross	<a href="#">View Description</a>	8/29/2006
<a href="#">Controlled Rocking of Steel-Framed Buildings (NEES)</a>	Deierlein, Gregory	<a href="#">View Description</a>	1/1/2005
<a href="#">U.S. Instrumentation and Data Processing for the Four-Story Reinforced Concrete and Post-Tensioned E-Defense Building Tests (NEES)</a>	Wallace, John	<a href="#">View Description</a>	12/13/2010
<a href="#">U.S. Instrumentation and Data Processing of a Large-Scale Experiment on Soil-Structure Interaction of Underground Structures on the E-Defense Shake Table in Miki, Japan (NEES)</a>	Lemnitzer, Anne	<a href="#">View Description</a>	11/15/2011
<a href="#">Development of a Performance-Based Seismic Design Philosophy for Mid-Rise Woodframe Construction (Capstone test) (NEES)</a>	van de Lindt, John	<a href="#">View Description</a>	6/30/2009
<a href="#">E-Defense Shake Table Experiments 2016 (NEES)</a>	Lemnitzer, Anne	<a href="#">View Description</a>	2/23/2012
<a href="#">NEESR-CR: Unbonded Post-Tensioned Rocking Walls for Seismic Resilient Structures (NEES)</a>	Musselman, Eric	<a href="#">View Description</a>	9/23/2010



At E-Defense, shake table tests were performed on a 5-story full scale steel moment frame building isolated with triple pendulum bearings. The isolation system consisted of 9 bearings, one beneath each column of the building.



# Research Collaboration NIED/E-Defense - NHERI

**Test #1 Tokyo Metropolitan  
Resilience Project --Wood Homes-  
Prof. Nagae, Feb 2019)**

**RAPID/Collaborative Research:  
Japan-U.S. Collaboration on the  
Seismic Resilience of Wood-frame  
Building Systems-  
PI: Prof. Koliou, Award No. 1829433**





Natural Hazards  
Engineering  
Research  
Infrastructure

**Test #2 Tokyo Metropolitan Resilience  
Project- RC Structure-  
PI: Prof. Kusunoki, Dec. 2019**

**RAPID/Collaborative Research: Japan-  
U.S. Collaboration on the Seismic  
Performance of Reinforced Concrete  
Structures-**

**PI: Prof. Calvi, Award No. 2000478**

**PI: Prof. Moustafa, Award No. 2000560**





# Research Collaboration NIED/E-Defense- NHERI

**Test #3 Tokyo Metropolitan  
Resilience Project- December  
2020- Steel Structure-  
PI: Prof. Kurata, Dec. 2020**

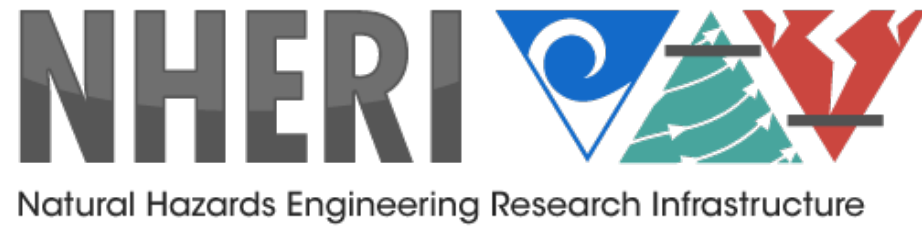
**US-Japan Seismic Resilience  
Project-“Collaborative Research:  
Frame-Spine System with Force-  
Limiting Connections for Low-  
Damage Seismic-Resilient  
Buildings.**

**PI: Prof. Fahnstock (#1928906)**

**PI: Prof. Ricles (#1926326)**

**PI: Prof. Simpson (#1926365)**





# Technology Transfer Committee

Bill Holmes  
Chair TTC  
NHERI-NCO  
NHERI-Network Coordination Office  
CMMI-1612144



# Purpose and Composition

- Purpose: To encourage implementation of NHERI research, particularly for young researchers or others not familiar with implementation paths.
- The committee is composed of 18 volunteers knowledgeable of methods of implementation of research relating to seismic, wind, hurricane, and tsunami hazards.



# Activities

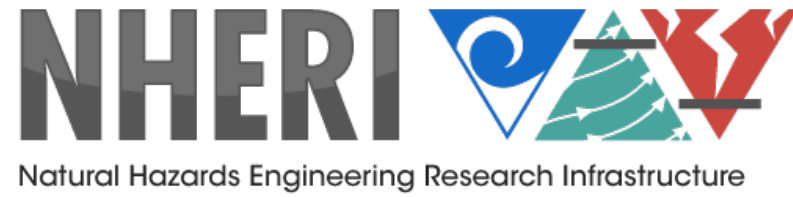
- The committee developed a “white paper,” *Common Mechanisms for Implementation of NHERI Research Results*, that documents the typical methods of implementing research. Distribution of the paper is targeted at young researchers.
- In the last year, the committee completed a review of abstracts of the 82 active NSF grants and selected 25 as having results that are potentially implementable.
  - PI’s were contacted and implementation discussed.
  - Short draft summaries were prepared for each project and existing implementation plans and additional possibilities documented.
  - An informal report of these contacts is being prepared including overall conclusions regarding
    - Current knowledge and interest among NHERI researchers about implementation
    - Potential activities of the TTC to improve effectiveness.

# Preliminary Conclusions of Study

- NSF's mission is to develop fundamental research and a knowledge base and does not emphasize immediate implementation.
- Most researchers in the study group were aware of implementation paths.
- Most researchers understand that there is typically an intermediate step between research and implementation and there is seldom funding available for this step.

# TTC Plans for Renewal Period

- Educate young researchers regarding implementation paths using the available “white paper.”
- Review progress of NSF NHERI Awards for implementation potential. Offer assistance to researchers.
- Extend the TTC reach into social science and the activity of CONVERGE.



**THE NHERI NETWORK IS SUPPORTED BY MULTIPLE GRANTS FROM THE NATIONAL SCIENCE FOUNDATION.**



# Natural Hazards Engineering Research Infrastructure

**NCO**



**Network Coordination Office**

**SUMMER INSTITUTE**

June 16-17, 2021

## NHERI Summer Institute Day 1 Wednesday, June 16, 2020

Time	Description	Location
7:30am-9:00am	<b>Registration</b> <i>Please virtually sign in and complete your COVID-19 symptom check before breakfast at <a href="https://bit.ly/NHERISummerInstitute_Registration">Bit.ly/NHERISummerInstitute_Registration</a>.</i>	UTSA Downtown Campus, Durango Building – Virtual
8:00am-9:00am	<b>Breakfast</b>	4th Floor Terrace
9:00am-10:00am	<b>*Welcome &amp; NHERI Overview</b> <b>Presenter:</b> JoAnn Browning <i>Dean, College of Engineering, University of Texas at San Antonio</i>  <i>Following a welcome by the NCO-ECO lead, participants will learn about the NHERI network, receive an overview of the Summer Institute objectives, and meet each other and their collaborative research group.</i>	Riverwalk Room B
10:00am-10:45am	<b>*NHERI Site Introduction &amp; Panel</b> <b>Presenters:</b> NHERI Site Representatives  <i>Attendees will watch NHERI site videos followed by a panel of NHERI site representatives that addresses virtual questions posed in chat during the introduction and from the Institute pre-assessment.</i>	Riverwalk Room B
10:45am-11:00am	<b>Coffee &amp; NHERI Networking Break</b>	4 <sup>th</sup> Floor Terrace and Riverwalk Room B
11:00am-12:00pm	<b>*NHERI Science Plan Discussion</b> <b>Presenter:</b> Billy Edge <i>Professor Emeritus, Texas A&amp;M University</i>  <i>Attendees will participate in an introduction, overview, and discussion of the NHERI Science Plan to address pressing research needs for the natural hazards community.</i>	Riverwalk Room B
12:00pm-1:00pm	<b>Networking Lunch &amp; Working Groups</b>	4 <sup>th</sup> Floor Terrace
1:00pm-2:15pm	<b>*Grant Writing Workshop – Research 101</b> <b>Presenter:</b> Joy M. Pauschke <i>Program Director, National Science Foundation</i>  <i>Attendees meet with NSF Program Director about their research with a focus on research merit, overview of research activities and resources, and broader impacts.</i>	Riverwalk Room B
2:15pm-2:30pm	<b>Networking Break &amp; Working Groups</b>	Riverwalk Room B
2:30pm-3:30pm	<b>*Interdisciplinary NSF CAREER Awardee Panel</b> <b>Presenters:</b> Jennifer Bridge, the University of Florida, Arindam Chowdhury, Florida International University, Teja Guda, the University of Texas at San Antonio, Gabriela Romero-Urbe, the University of Texas at San Antonio, and (Forest Masters, Elaina Sutley, or Stephanie Paal)	Riverwalk Room B

3:30pm-5:30pm	<p><b>Collaborative Proposal Writing Groups &amp; NHERI Networking</b>  <i>Attendees will collaboratively design a research proposal which incorporates NHERI experimental facility (EF), simulation center, cyber infrastructure, and RAPID resources as well as educational and social science components to engage the broader impacts of the proposed work.</i></p>	La Villita, All Riverwalk Rooms
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6:00pm-7:00pm	<p><b>*User Forum Networking Event</b>  <i>Presenter: Stephanie Smallegan</i>  <i>User Forum Chair, University of Southern Alabama</i></p> <p><i>Attendees will learn about the User Forum and have opportunities to network. Appetizers will be provided.</i></p>	TBD
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**NHERI Summer Institute Day 2**  
**Thursday, June 17, 2020**

Time	Description	Location
7:30am-8:30am	<p><b>Registration</b>  <i>Please virtually sign in and complete your COVID-19 symptom check before breakfast at <a href="https://bit.ly/NHERISummerInstitute_Registration">Bit.ly/NHERISummerInstitute_Registration</a>.</i></p>	UTSA Downtown Campus, Durango Building – Virtual
8:00am-8:30am	<p><b>Breakfast</b></p>	4th Floor Terrace
8:30am-9:30am	<p><b>*Broader Impacts Design</b>  <i>Presenter: Karina I. Vielma &amp; Robin Nelson</i>  <i>Educational Specialist, University of Texas at San Antonio</i></p> <p><i>Participants will learn to include broader impacts that address diversity, equity, and inclusion within a grant proposal and creatively link the proposed research with a meaningful outreach initiative.</i></p>	Riverwalk Room B
9:30-10:45am	<p><b>Proposal Working Meetings</b>  <i>Attendees will collaboratively design a research proposal which incorporates NHERI experimental facility (EF), simulation center, cyber infrastructure, and RAPID resources as well as educational and social science components to engage the broader impacts of the proposed work.</i></p>	La Villita Room, All Riverwalk Rooms
10:45am-12:30pm	<p><b>Proposal Presentations</b></p>	La Villita Room
12:30pm-12:45pm	<p><b>Networking Lunch</b></p>	4 <sup>th</sup> Floor Terrace
12:45pm-1:30pm	<p><b>Awards, Reflection, and Concluding Remarks</b></p>	La Villita Room

*\* All presentations will be streamed and recorded for our online early-career faculty attendees. Each recorded session will be placed on PheedLoop for on-demand viewing after the event.*