

SSE Overview and Phase 1 Summary



Smaller Sheds With Target
Without Wind



Smaller Sheds With
Target With Wind



Larger Sheds Without Wind



SSE Project Timeline

SFR= Single Family Residence

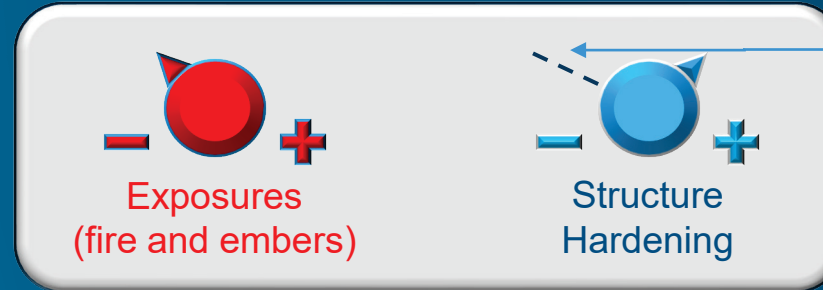
	January	February	March	April	May	June	July	August	September	October	November	December
2022	NIST No Wind Report											
					RV fire Literature Reviews/Findings				NOSSE Report		IBHS Shed Report	
						Dissemination WUI Day & Summary Table			Test Plan Cars/RVs/Procurement		Texas RV Burn Observations	
						IBHS Shed Burns w/Wind			Shed Burn Wind Report			
						Test Plan/Eaves/Vents Hazard Reviews/Procurement			Eaves/Vents Tests at NIST 205		Eaves/Vents Report	
			ADU and Contents Design								Test Plan ADU	
2023	Test Plan Cars/RV/Procurement (includes exp. w/wind)				Cars/RV Tests at NIST 205						NIST RV Test Report	
	Test Plan ADU		ADU Tests at IBHS (without and with wind)							ADU Report		
	NEVE TP											
		NEVE Experiments		ADU TP*			NEVE Report	RV TP	RV Burns			
2024	RV Report		Cars/RV Test w/Target and SFR at IBHS (all with Wind)					RV Tests w/Target and SFR Report	Dissemination WUI Day & Summary Table			
	ADU Report		RV TP IBHS									



Phase 1 Summary

- July/August 2023 IBHS Shed + Target w/Wind Experiments
- Reports:
 - - NIST Indoors – no wind: July 2023 (four series)
 - - NIST outdoors w/ wind: Sept 2023 (source and target)
 - - IBHS Outdoor w/wind: Nov 2023 (source and target)

Exposures and Structure Hardening



Baseline - ember hardening

➤ **UNDERHARDENED**

✓ **EFFECTIVE HARDENING**



BCA TOOLS – utilize available
exposure reduction options

✓ **EFFECTIVE HARDENING**

➤ **OVERHARDENED**

Phase 1 Outputs

- Model validation data
- Effects of construction material on exposures
- Effects of shed size on exposures
- Effects of wind on exposure
- Target Response to different exposures
- SSD for different shed sizes
 - on flat ground
 - with some geometries



Example of Shed with Fuels



Phase 1 Results Implementation

- Sheds and other auxiliary structures are part of the HMM
- Difference between “defensible” and “stand alone” in:
 - addressing new construction and
 - In mitigating existing community/parcel hazards
- Utilize Phase 1 findings to address both new and existing communities



Implementation Paths forward:

- Compare findings to existing national codes and adjust if necessary (consensus process)
- Address unregulated hazards – identify hazard mitigation pathways (national, state, and/or local level policies, rules and best practices)
- Address parcel to parcel shed exposures – issue not limited to Sheds.
- Assess performance of test methods and revise adjust if necessary (consensus process)



NIST WUI Research Overview

July 2022

2022

NIST WUI DAYS
2022

2023

2024

NIST WUI DAYS
2024

Case Studies

FALL 2022

CAMP #4 NETTRA –
Notification/ Evacuation/ Traffic
and Temporary Refuge Areas

CAMP #5 Emergency Response/
Defensive Actions and Damaged
Structures

Hazard Mitigation Methodology (HMM)

NIST TN 2205

SPRING 2023

Graphical User Tool

Laboratory Research

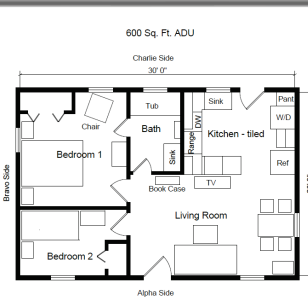
SSE

SPRING & FALL 2022

Sheds



RVs, ADUs and Single Family



Fences, Wood Piles

Emberometer

Sealants and Gaskets

Fed: IWG (including FEMA, USFA, HUD)
States: CA, OR, WY, CO, SC
Codes and Standards/ Best Practices
CA Chapter 7A & Chapter 49
ICC IWUI
NFPA 1140 & Firewise

HMM



CAMP



SSE



Agenda

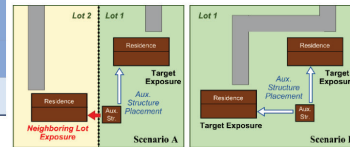
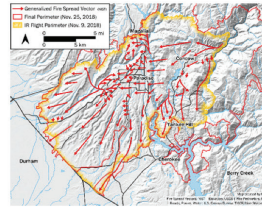
NIST WUI FIRE DAYS 2022 Research Presentations Agenda



Day 1 — July 6, Starting at 1:00 pm Eastern

Session	Time (ET)	Title
1.0	1:00 – 1:15 (15 min)	Opening Remarks – NIST Engineering Laboratory (EL) Director
1.1	1:15 – 1:45 (30 min)	Camp Fire Case Study Overview
1.2	1:45 – 2:30 (45 min)	Camp Fire – Fire Progression Timeline
	2:30 – 2:40 (10 min)	Q&A
	2:40 – 2:45 (5 min)	Break
1.3	2:45 – 2:55 (10 min)	Update on Camp Fire – NETTRA (Notification, Evacuation, Traffic, Temporary Refuge Areas) Report
1.4	2:55 – 4:10 (75 min)	WUI Structure/Parcel/Community Fire Hazard Mitigation Methodology (HMM)
	4:10 – 4:20 (10 min)	Q&A

Total Day 1: 3 h 20 min



Day 2 — July 13, Starting at 1:00 pm Eastern

Session	Time (ET)	Title
2.1	1:00 – 1:20 (20 min)	Structure Separation Experiments (SSE) Overview
2.2	1:20 – 2:05 (45 min)	SSE Phase 1 – NIST Indoor Experiments
2.3	2:05 – 2:15 (10 min)	Update on SSE Phase 1 – NIST Outdoor Experiments
	2:15 – 2:25 (10 min)	Q&A
	2:25 – 2:30 (5 min)	Break
2.4	2:30 – 2:50 (20 min)	SSE Phase 1 – IBHS Outdoor No Wind Experiments
2.5	2:50 – 3:00 (10 min)	Update on SSE Phase 1 – IBHS Cold-Flow Measurements
	3:00 – 3:10 (10 min)	Q&A
	3:10 – 3:15 (5 min)	Break
2.6	3:15 – 4:15 (60 min)	SSE Modeling
	4:15 – 4:25 (10 min)	Q&A
2.7	4:25 – 4:45 (20 min)	SSE Phase 1 – Summary

Total Day 2: 3 h 45 min



NIST WUI FIRE DAYS 2022 Research Presentations Agenda



Day 3 — July 20, Starting at 1:00 pm Eastern

Session	Time (ET)	Title
3.0	1:00 – 1:15 (15 min)	Parcel-level Hazard Mitigation Introduction
3.1	1:15 – 2:00 (45 min)	NIST Fences Research and Findings
	2:00 – 2:10 (10 min)	Q&A
	2:10 – 2:15 (5 min)	Break
3.2	2:15 – 2:50 (35 min)	NIST Woodpiles and Landscape Timbers Research and Findings
3.3	2:50 – 3:25 (35 min)	NIST Emberometer Research
	3:25 – 3:35 (10 min)	Q&A
	3:35 – 3:40 (5 min)	Break
3.4	3:40 – 4:00 (20 min)	HMM WUI Structure/Parcel/Community Design Considerations
3.5	4:00 – 4:10 (10 min)	Closing Remarks – NIST EL Director

Total Day 3: 3 h 10 min



Day 4 — July 27, Starting at 1:00 pm Eastern NIST Grantees Presentations

Session	Time (ET)	Title
4.0	1:00 – 1:10 (10 min)	WUI Fire-related NIST Grants Introduction
4.1	1:10 – 1:55 (45 min)	WUI-NITY 3: Multi-method traffic movement data collection for WUI fire evacuation modeling – Prof. Steve Gwynne Ph.D., Lund University
	1:55 – 2:05 (10 min)	Q&A
	2:05 – 2:10 (5 min)	Break
4.2	2:10 – 2:55 (45 min)	Developing AI-Based Wildfire Evacuation Behavior (AI-WEB) model – Prof. Xilei Zhao Ph.D., University of Florida
	2:55 – 3:05 (10 min)	Q&A
	3:05 – 3:10 (5 min)	Break
4.3	3:10 – 3:55 (45 min)	Measuring source terms of firebrand generation numbers for physics-based models – Prof. David Blunck Ph.D., Oregon State University
	3:55 – 4:05 (10 min)	Q&A
	4:05 – 4:10 (5 min)	Break
4.4	4:10 – 4:55 (45 min)	Quantification of firebrand production from WUI fuels for model development – Prof. Michael Gollner Ph.D., the University of California, Berkeley
	4:55 – 5:05 (10 min)	Q&A
4.5	5:05 – 5:15 (10 min)	Closing Remarks

Total Day 4: 4 h 15 min

