



The Resilient Home Program

- Timothy Smail – Savannah River National Laboratory
- Alicia Compere – Oak Ridge National Laboratory
- Thomas Napier – US Army Corp of Engineers
- Dr Heshmat Aglan – Tuskegee University
- Dr Scott Schiff – Clemson University
- Dr David Tilotta – North Carolina State University





Contact Information

Timothy Smail
Savannah River National Laboratory
Building 781-A
Aiken, SC 29808
(803) 725-3466
timothy.smail@srnl.doe.gov

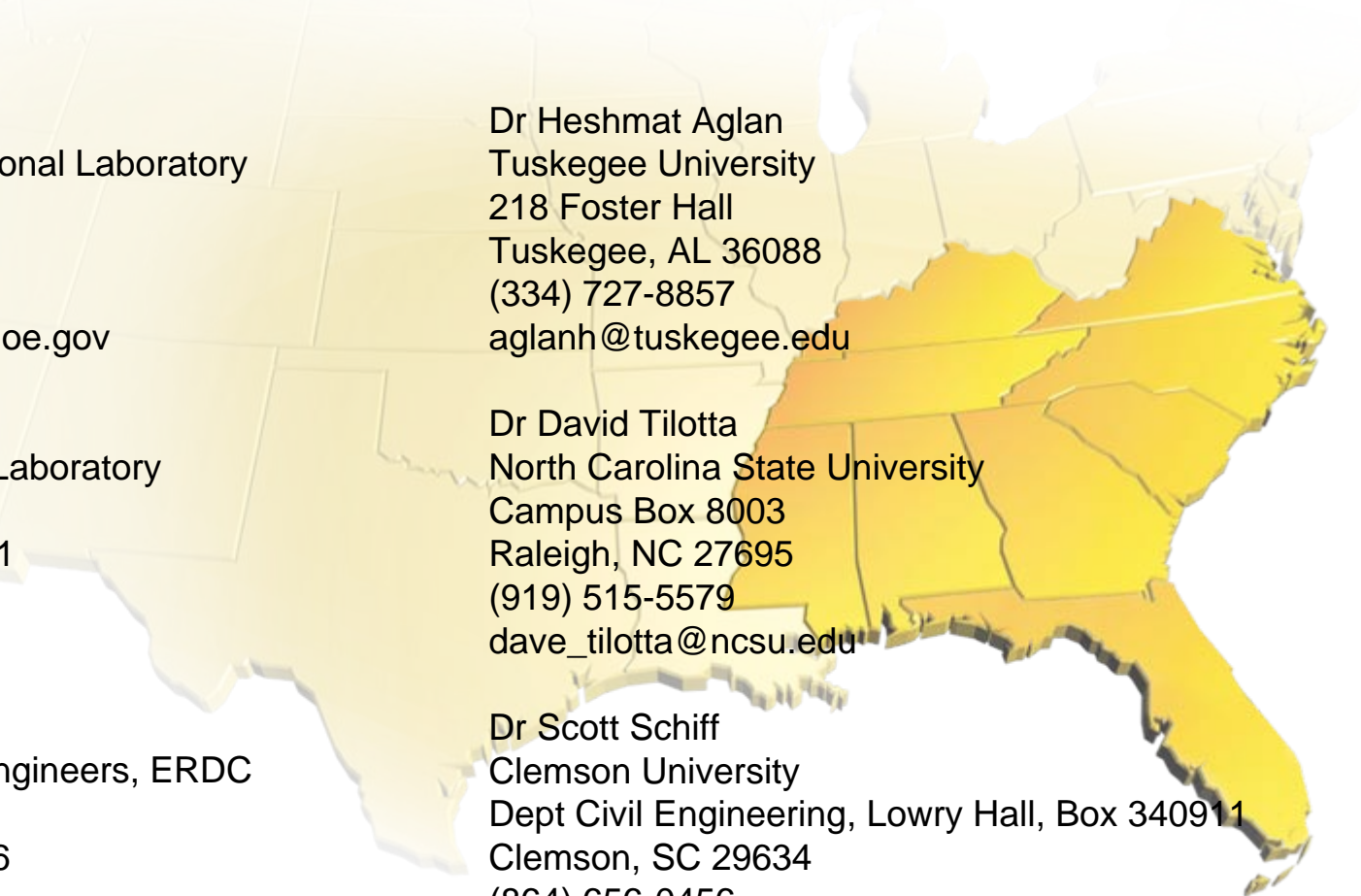
Alicia Compere
Oak Ridge National Laboratory
PO Box 2008
Oak Ridge, TN 37831
(865) 574-4970
compereal@ornl.gov

Thomas Napier
US Army Corps of Engineers, ERDC
PO Box 9005
Champaign, IL 61826
(217) 373-3497
thomas.r.napier@erdc.usace.army.mil

Dr Heshmat Aglan
Tuskegee University
218 Foster Hall
Tuskegee, AL 36088
(334) 727-8857
aglanh@tuskegee.edu

Dr David Tilotta
North Carolina State University
Campus Box 8003
Raleigh, NC 27695
(919) 515-5579
dave_tilotta@ncsu.edu

Dr Scott Schiff
Clemson University
Dept Civil Engineering, Lowry Hall, Box 340911
Clemson, SC 29634
(864) 656-0456
scott_schiff@ces.clemson.edu



Program Description

Goal: To enable community recovery following a natural disaster by dramatically speeding the return of the residents to their homes.



This program aims to assist with DHS Presidential Directive #5
“Management of Domestic Incidence.”



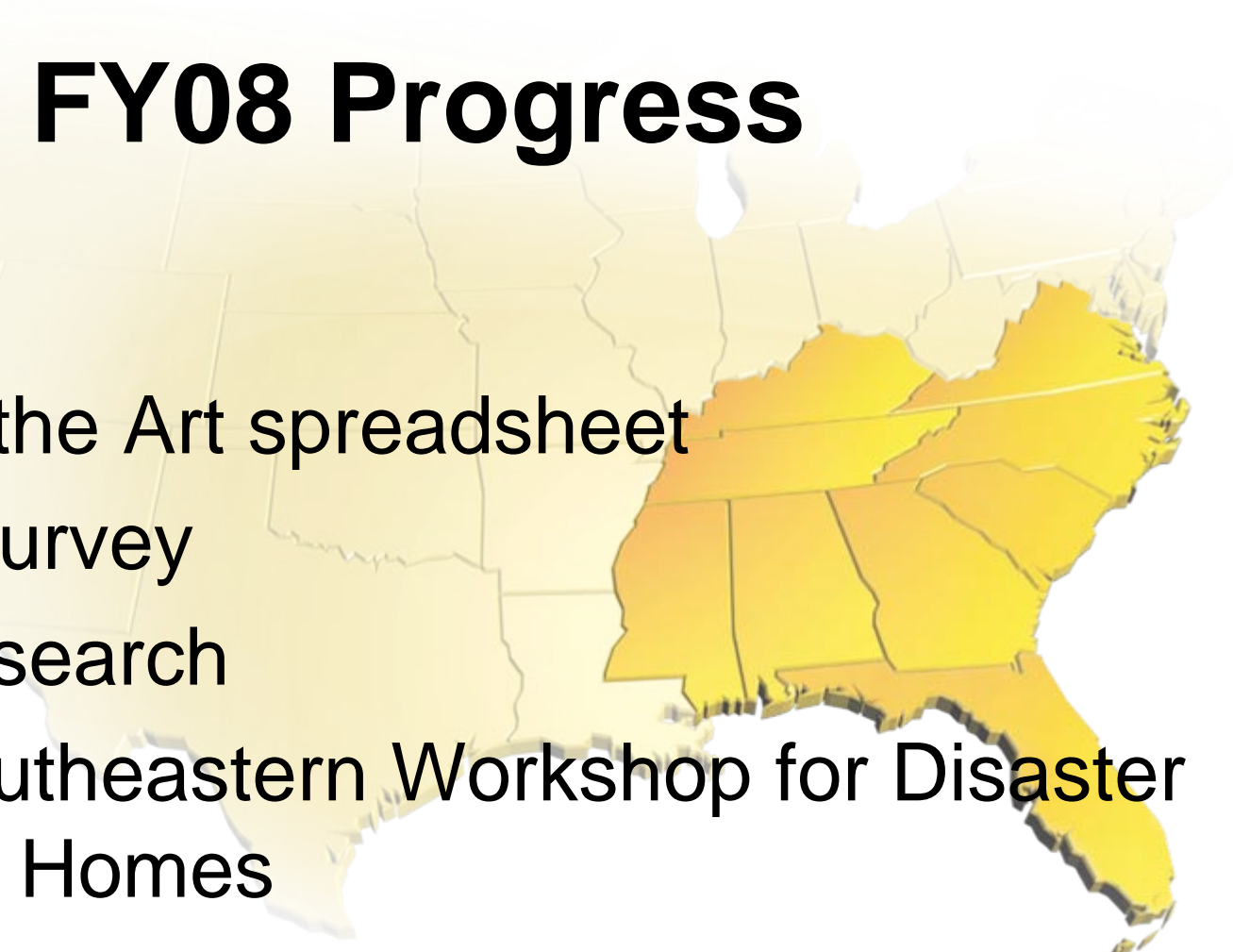
Landscape Assessment

- The results of the Resilient Home Program are aimed directly at the stakeholders (specifically home owners) after the natural disaster
- Other government programs are aimed at the community level or organizations involved in the recovery process.



FY08 Progress

- State of the Art spreadsheet
- Needs Survey
- Mold Research
- 2008 Southeastern Workshop for Disaster Resilient Homes





State of the Art Technologies/Practices

Element	Element Classification	Element Subcategory (Materials)	Event	Current Technology	Source	Program Elements				Applicable Disaster			
				"State of the Art"		Prevent	Assess	Respond	Rebuild	Hurricane	Tornado	Earthquake	Flood
Roof	Structural	Roof Damage	Roof damaged by high winds	Using Complex Equations to Determining Damage	scientific journal???		x			x	x		
Roof	Structural	Roof Damage	Roof damaged by high winds	Brace Gable End Roof Framing	FEMA Handout (Protecting Your Property from Wind)	x				x	x		
Roof	Structural	Roof Damage	Roof damaged by high winds	150 MPH Roof Trusses	www.tarponcoastbuilders.com	x			x	x	x		
Roof	Structural	Roof Damage	Roof damaged by high winds	each shingle should be hold by at least six nails or staples	www.fema.com	x			x	x	x		
Roof	Structural	Roof Damage	Roof damaged by high winds	build hip roofs without roof tiles	www.fema.com	x			x	x	x		
Roof	Structural	Roof Damage	Roof damaged by high winds	Hip roof with 30 degree pitch	South Carolina Emergency Management Division	x			x	x	x		
Roof	Structural	Roof Damage	high winds and rain	waterproof underlayment	www.fema.com	x			x	x	x		
Roof	Structural	Roof Damage	high wind uplift the roof	increase the overhang of the roof	www.fema.com	x			x	x	x		
Roof	Structural	Roof Damage	high wind uplift the roof	glued plywood roof sheathing	http://www.tarponcoastbuilders.com/fw/main/Standard_Features-31.html	x			x	x	x		
Roof	Structural	roof sheeting loss	due to uplift by high wind	closer/heavier nailing schedule at the edges and corners	Van de Lindt, J. W. et al. (2007). Performance of wood-frame structures during Hurricane Katrina. J. Performance of Constructed Facilities, Amer. Soc. Civil Engineers, Vol. 21, No. 2, pp. 108-116. DOI: 10.1061/(ASCE)0887-3828(2007)21:2(108)		x		x	x	x		



Needs Survey

- Over 400 stakeholder responses to date
- Distributed through
 - Building shows
 - Professional Societies
 - Response Networks
 - Government Agencies

THE RESILIENCE OF HOUSING TO NATURAL DISASTERS IN THE SOUTHEASTERN UNITED STATES
NEEDS SURVEY

1. What is your primary affiliation? (SELECT ONE)

<input type="radio"/> Builder/Developer	<input type="radio"/> Code Enforcement Official
<input type="radio"/> Architect	<input type="radio"/> Insurer
<input type="radio"/> Engineer	<input type="radio"/> Educator
<input type="radio"/> State Government Official	<input type="radio"/> Extension Agent/Specialist
<input type="radio"/> Federal Government Official	<input type="radio"/> Researcher
<input type="radio"/> Trade Association Representative	<input type="radio"/> Realtor
<input type="radio"/> Manufacturer	<input type="radio"/> Home Owner
<input type="radio"/> Professional Remodeler	<input type="radio"/> Banker
<input type="radio"/> Other _____	

2. Where do you primarily do your work?
City _____ State _____

3. Are you a home owner?
 Yes No

4. If you have looked for information concerning the impact of natural disasters (hurricanes, floods, and/or earthquakes) on housing, were you easily able to find information that allowed you to:

	Yes	No	Never Looked
Prepare a home for an impending natural disaster	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Assess the damage to a house	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Perform temporary repairs in an appropriate manner	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Permanently rebuild a home quickly	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Permanently rebuild a home at reasonable cost	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

5. Have you ever experienced, either as a homeowner or through your work, the effect of a hurricane, earthquake, or flood on a home?
 Yes *Please continue with questions 6 and 7.*
 No *Skip to question 8.*

Mold Research

Mass Spectrometer



Developed Mold Brochure



- Oak Ridge National Laboratory
- Savannah River National Laboratory
- Tuskegee University



2008 Southeastern Workshop for Disaster Resilient Homes

- Approximately 100 people registered to attend
- Geared to include all stakeholders in the decision process
- Keynote Speakers
 - Mayor Warr, Gulfport
 - Mayor Riley, Charleston



2008 Southeastern Workshop for Disaster-Resilient Homes

September 9-10, 2008
Stern Center, College of Charleston,
Charleston, S.C.



Resilient Home Program
The Resilient Home Program is part of the Southeastern Region Research Initiative (SERRI), a Department of Homeland Security Program, and is managed by the Savannah River National Laboratory.



Collaborative Opportunities

- Other research being completed by the SERRI Program could potentially feed the RHP gap analysis
- Out year program includes tech transfer and partnering with private entities, including the Insurance companies

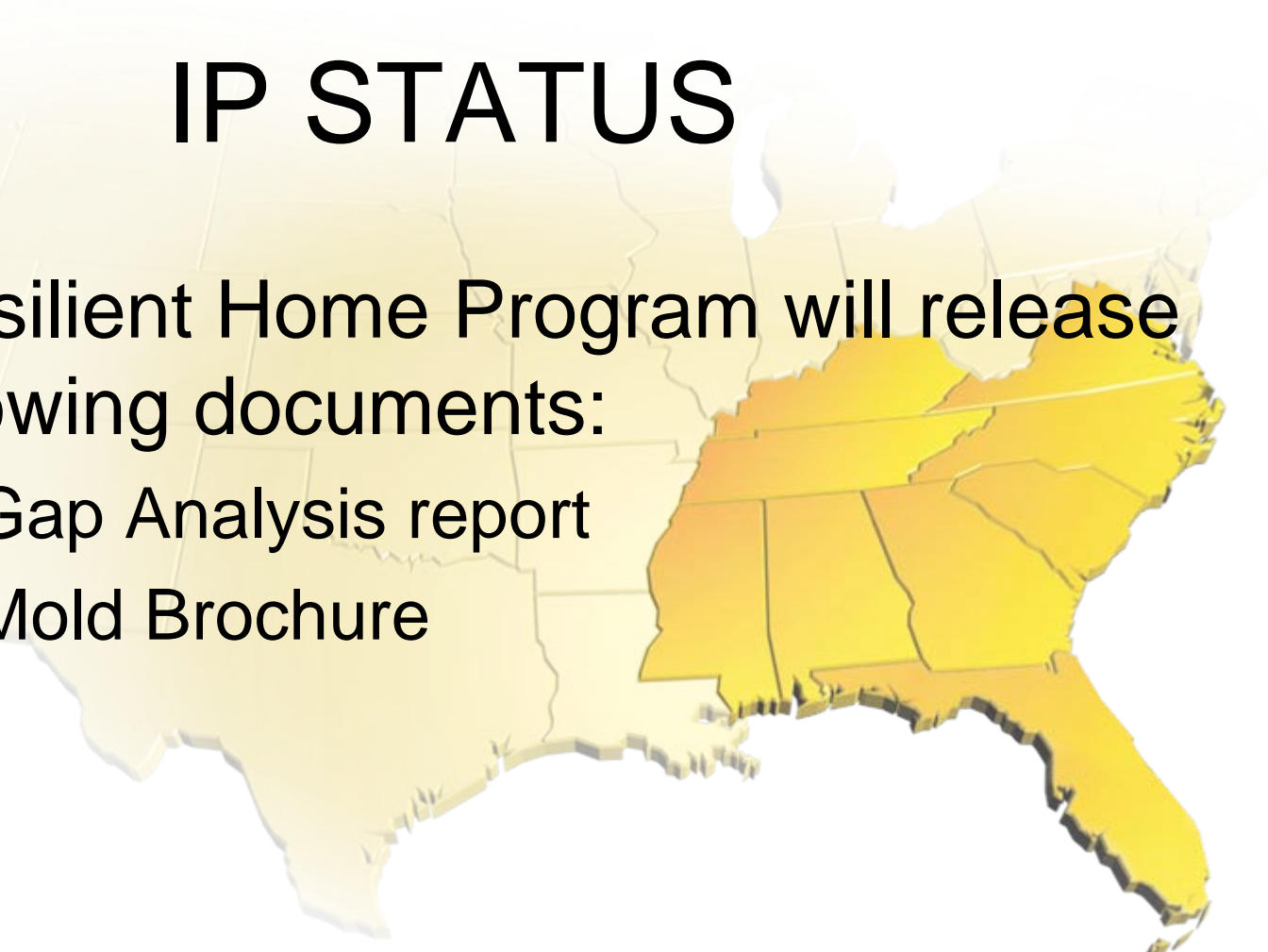


Commercialization Progress

- The first year of the RHP was not geared towards commercialization of the products
- Out-years include the following opportunities:
 - Incentive programs for insurance companies, home-owners, builders
 - Training opportunities for small business
 - New and improved building products for material providers

IP STATUS

- The Resilient Home Program will release the following documents:
 - RHP Gap Analysis report
 - RHP Mold Brochure



Resilient Forests

- Over 10% of region's economy depends on forests
- Over half of its land is forested
- Katrina revealed vulnerability of forests/FPIs, and that downed timber is a significant hazard
- GOAL: develop action plan to protect economy, and reduce hazard of downed timber



Progress

- Partnered with federal Woody-BWG (DOE, DOI, EPA, USACE, USDA)
- Workshop – 4/15/08, with all stakeholder groups represented
- Plan in development – key aspects:
 - Owners: Make arrangements with loggers, haulers; develop business continuity plans
 - Owners and states: Set up and permit wet storage areas
 - States and federal: identify regulations that can be temporarily loosened (e.g., load limits), and process
 - Forest products industries: Ensure owners do their part
- Plan should be completed by end of CY08