Secure Against Fire and Embers (SAFE)

Christopher Doyle
Director
Infrastructure Geophysical Division
Science and Technology Directorate
Department of Homeland Security

"Putting First Responders First"

Homeland Security
Science & Technology
• DHS Science and Technology (SAFE Team)
  – Infrastructure and Geophysical Division
  – TechSolutions
  – Office of National Laboratories

• DHS Wildfire response elements
  – FEMA
  – US Fire Administration

• Other Federal technology assets
  – DOE National Laboratories / S&T Laboratories
  – TSWG
  – NIST
  – US Forest Service
Southern California Wildfires

• Unlike 2003 wildfires, with 13 fires in 8 days; 2007 23 fires in 24 hours

• Urban conflagration problem
  – rapid fire spread between buildings

• Building code changes after 2003 fires taking effect January 2008

• Seven counties covered under the Governor’s Proclamation

• Presidential Declaration FEMA-1721-DR

• Largest mass evacuation in California history.

Homeland Security
Current Protection Technologies

Foams and gels

• Rely upon water entrapment for thermal protection
• Break down in extreme heat
• Not always easy to apply
• Can wash off due to rain
• Fire trucks can carry enough for one structure only

Building Shelters

• Labor and time intensive
Fact Finding Mission (November 1-2)

• California State Operations Center, Sacramento
• Joint Field Office, Pasadena
• Multi-agency Coordination Center, Riverside
• Santiago Fire, Orange County
Preliminary Findings

• Improve practicality, logistical requirements, and affordability of protection technologies

• Develop low cost systems to protect legacy homes

• Need to improve situational awareness and accountability across levels of government and between disciplines

• Need for an ember test facility that can reproduce comparable winds

• Research in expeditious erosion mitigation science and technology to prevent cascading disasters
HSI Analysis of Potential Technologies

**Overall Objective:** To provide analytic support for S&T Project SAFE Working Group

- **Technology Survey:** HSI to describe technology by specific analytic categories
- **Working Group Assessment:** HSI to build assessment tools (organized by survey category) to assist the Working Group’s assessment of technologies
- **Analysis and Recommendations:** Based on Working Group assessments HSI to create assessments, analyses and recommendations for support of technologies

Flowchart:

1. Develop Methodology for Assessment & Analysis
2. Research Technology Providers and Identify Potential Technologies
3. Structured Technology Survey
4. Working Group Assessment
5. Analysis and Recommendations
Technology Survey: Schematic of Categorization & Assessment

• Mission Phase:
  – Prevent
  – Protect
  – Respond
  – Recover
  – Information Sharing

• Fire Functions:
  – Sensors & Surveillance
  – Remote Imagery
  – Fire Detection & Monitoring
  – Urban Codes/Zoning
  – Structure Protection
  – Evacuation & Rescue
  – Fire Fighting Equipment
  – Responder Safety
  – Equipment Testing
  – Post Fire Remediation
  – Post Fire Analysis & Lessons Learned
  – Situation Awareness/COP
  – Command & Control
  – Planning/Fire Behavior Modeling

Technology Survey will also categorize by self-reported criteria that will subsequently be evaluated by the Project SAFE Working Group. Examples are technology maturity (TRL), anticipated cost, deployment feasibility, schedule to deployment.