

# SFPE



*Engineering A Fire Safe World*



# Today's Presentation

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- SFPEs Research Roadmap
- SFPE Foundation
- SFPEs Standards & Guidelines
- 6<sup>th</sup> edition of the SFPE Handbook (2022)

# SFPE Research Roadmap

Published in October 2017

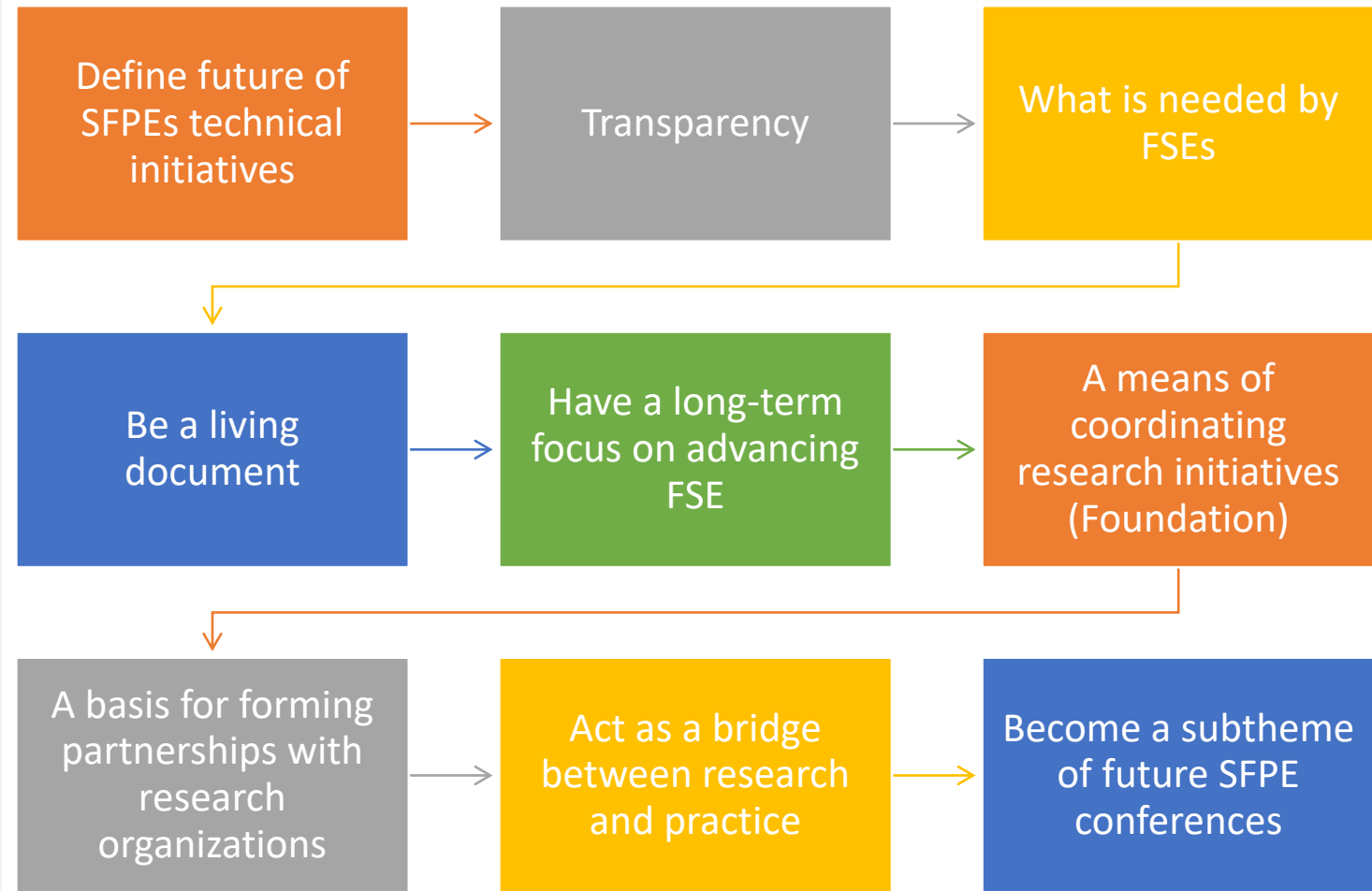
- Purpose: Identify research needs for Fire Safety Engineering Profession
- Can be found on SFPE Website at can be found at:

<http://www.sfpe.org/page/SCRI> or Click “Technical Areas/Research and Innovation”

- SFPE in Process of Updating in 2020



# Vision for a Roadmap



# Research Needs for the Fire Safety Engineering Profession

## TOOL, APPLICATIONS, & METHODS

THREADS		Data	Innovative Technology /Materials	Design Tools	Risk /Probabilistic Approaches
	Human Behavior	✓	✓	✓	✓
	Building Fires	✓	✓	✓	✓
	Resilience/Sustainability	✓	✓	✓	✓
	Fire Service	✓	✓	✓	✓
	Fire Dynamics	✓	✓	✓	✓
	Fire Safety Systems	✓	✓	✓	✓
	Forensics/Investigations	✓	✓	✓	✓
	Wildland/WUI Fires	✓	✓	✓	✓
	Non-Building Fires	✓	✓	✓	✓

## TOOLS, APPLICATIONS, AND METHODS

		Data	Innovative Technology/ Materials	Design Tools	Risk/Probabilistic Approaches
THREADS	Human Behavior	<p><b>Demographics</b></p> <ul style="list-style-type: none"> <li>▶ Vulnerable populations</li> <li>▶ Anthropometry</li> <li>▶ Cultural differences</li> </ul> <p>Basis for numbers in codes</p> <p>Response to notification</p>	<p>Smart egress systems</p> <ul style="list-style-type: none"> <li>▶ Cameras</li> <li>▶ Cell phones</li> <li>▶ Exit usage</li> <li>▶ Other</li> </ul> <p>LED strobes</p> <p>Occupant evacuation elevators</p>	<p>Design egress scenarios</p> <p>Behavior based models</p> <ul style="list-style-type: none"> <li>▶ Cultural</li> <li>▶ Pre-evacuation time</li> <li>▶ Actions other than evacuating</li> </ul> <p>Combined fire and evacuation models</p>	<p>Residential buildings</p> <p>Large populations</p> <p>Community level</p> <p>High-challenge environments</p> <p>Quantify level of “life safety” in a building</p> <p>Effects of fire</p> <ul style="list-style-type: none"> <li>▶ Visibility</li> <li>▶ Gases</li> </ul> <p>Impact of public education on fire risk</p>
	Building Fires	<p>Combustibility of external cladding systems</p> <p>Fire loads for structural fire engineering</p> <p>Material testing data (new materials)</p> <p>Effectiveness of existing/new fire safety solutions</p> <p>Quantification of building code performance criteria</p>	<p>Building information modeling</p> <p>Smart buildings</p> <p>Big data</p> <p>Improved test methods</p>	<p><b>Standardization of design fires and analysis approaches</b></p> <p>Best practices for retrofitting existing buildings to achieve equivalent level of safety</p>	<p>High-rise building design</p> <p>Risk-informed PBD</p> <p>Single family homes</p> <p>Risk assessment/management systems</p> <p>Structural FP performance</p>



- Mission -- advance the science and practice of fire protection engineering internationally by advocating and supporting engineering research, technology transfer and education.
- Published New Strategic Plan -- <https://www.sfpe.org/mpage/Foundation>
- Linking the SFPE Roadmap to Future Activities
- Current Awards:
  - Proulx Scholarship
  - Arthur B. Guise
  - Student Scholar
  - Jack Bono Awards

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## SFPE Foundation -- Linking the SFPE Roadmap to Future Activities

- Anthropomorphic Data and Movement Speeds – Report on SFPE Foundation Website
- Estimating Occupant Loads in Retail Buildings – Report on SFPE Foundation Website
- New Research Project -- Development of Fire Engineering Practitioner Tools.





# SFPE Technical Documents

- Currently Develop Guides and Standards
- Under Direction of Subcommittee for Standards Oversight
- Became ANSI Standards Developer
- SFPE Handbook

# SFPE Guide to Human Behavior in Fire

*Second Edition*

## Published in 2018 -- Guide to Human Behavior in Fire, 2<sup>nd</sup> Edition

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- Can be found on Springer Website ([www.springer.com](http://www.springer.com))
- New Information on:
  - Incapacitating Effects of Fire Effluent & Toxicity Analysis Methods
  - Occupant Behavioral Scenarios
  - Movement Models and Behavioral Models
  - Egress Model Selection, Verification, and Validation
  - Estimation of Uncertainty and Use of Safety Factors
  - Enhancing Human Response to Emergency Notification and Messaging



GUIDELINES FOR PEER REVIEW  
IN THE FIRE PROTECTION  
DESIGN PROCESS

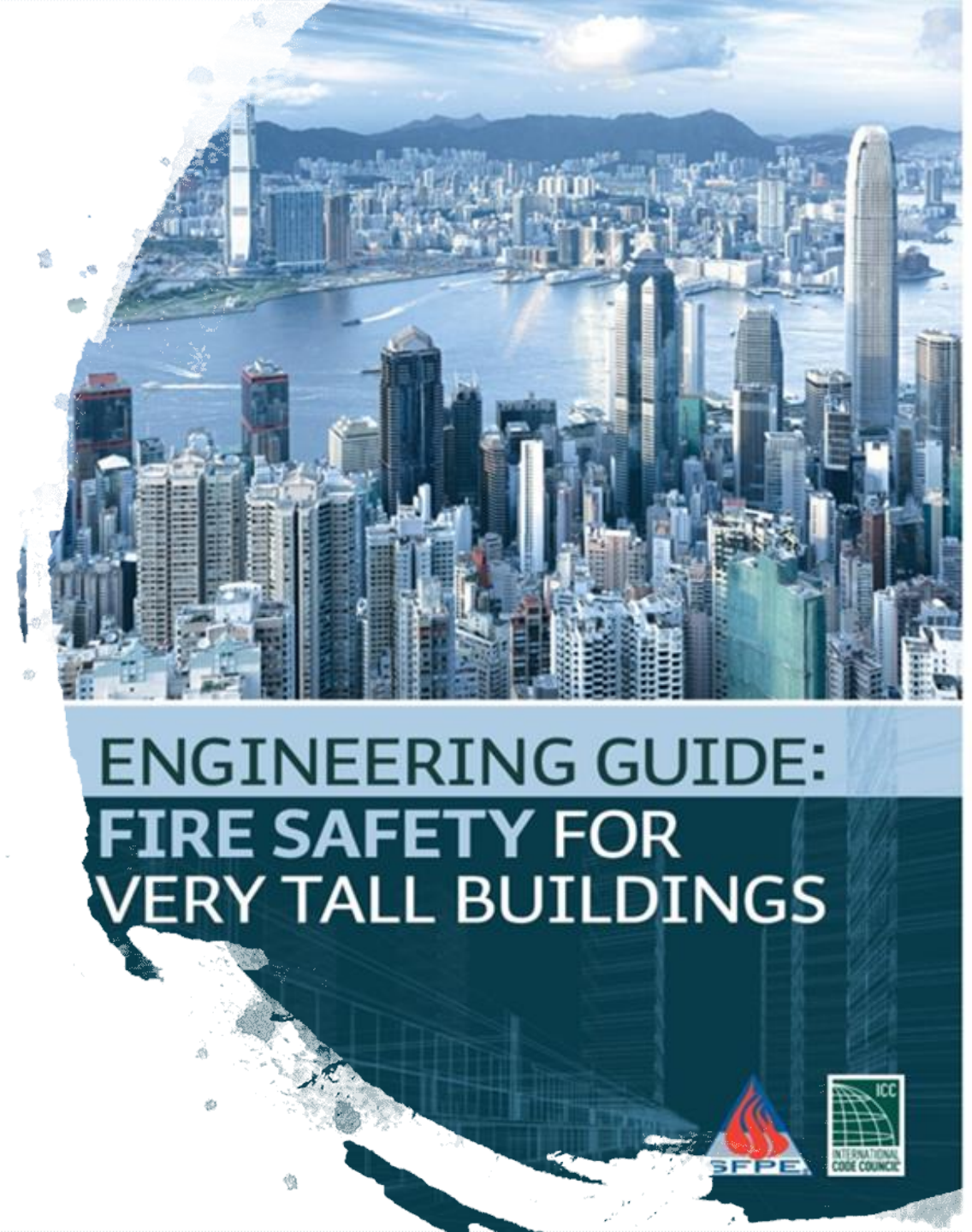
# SFPE Peer Review Guidelines

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- Published in June 2020
- Available for “FREE” on SFPEs Website
- Encourage Passing on to AHJ Community
- New Information on:
  - A list of definitions related to peer review terminology
  - A more defined description of qualifications inline with the SFPE Recommended Minimum Technical Core Competencies for Practice of Fire Protection Engineering
  - A complement to the current version of the SFPE Code of Ethics for Fire Protection Engineers
  - Added details on the important components of a peer review
  - Identification of the document’s limitations

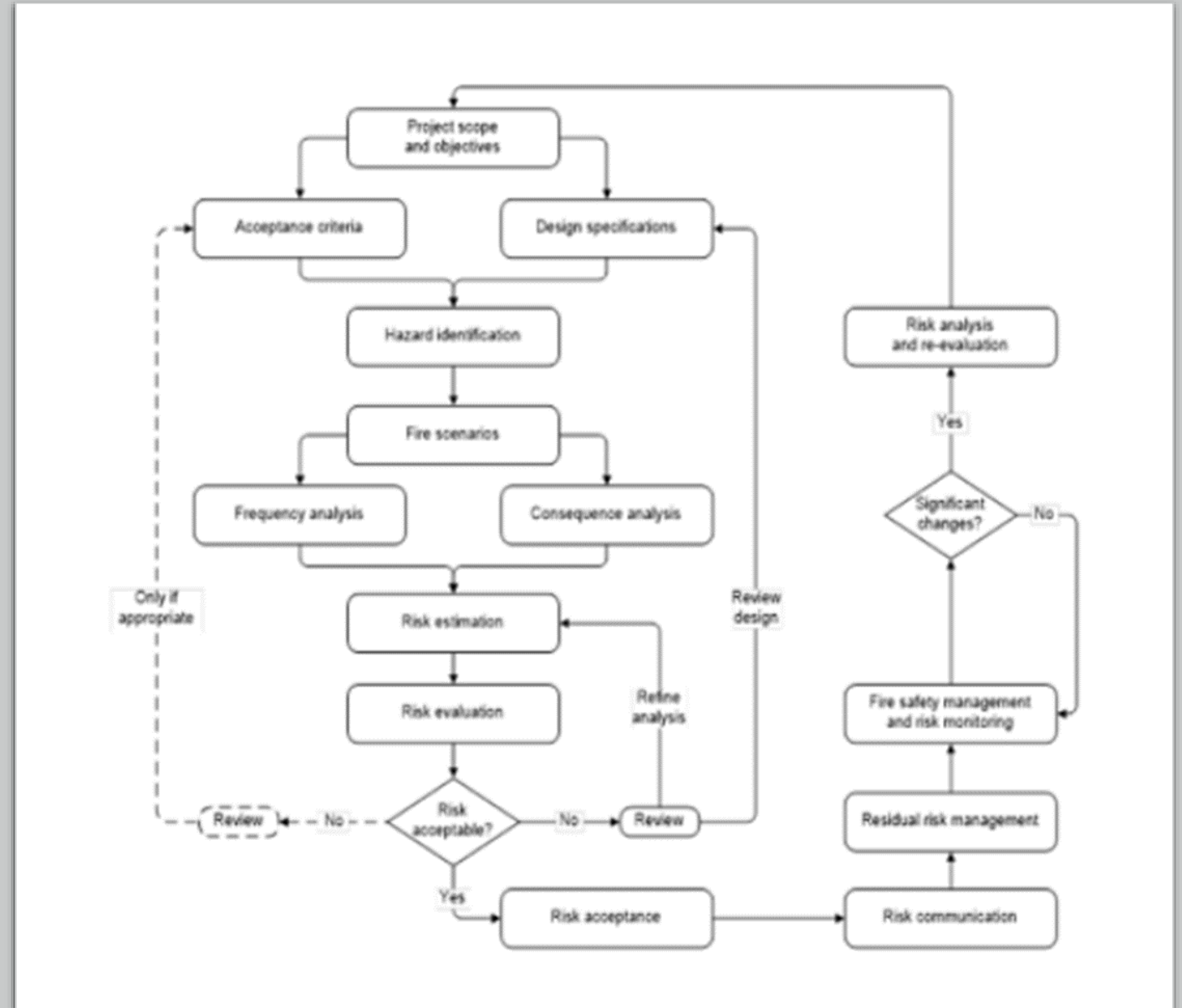
# SFPE Tall Building Guide

- 1<sup>st</sup> Draft Public Comment
- Comments Due 25 September
- Comment at [www.sfpe.org](http://www.sfpe.org)
- New Information:
  - Structural Fire Protection
  - Facades/Building Envelope
  - Evacuation
  - Notification/Situational Awareness
  - Energy Storage
  - Special Structures



# Guide to Fire Risk Assessment

- 1<sup>st</sup> Draft Public Comment Period to Start at end of September 2020
- Includes New Flowchart
- Specific Section on Quantitative & Qualitative Analysis
- More Examples



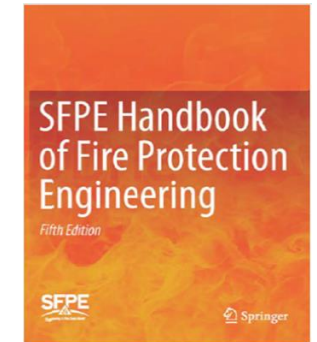
Architectural blueprints are shown on the left side of the slide, featuring various technical drawings, dimensions, and annotations. The drawings are partially unrolled, showing floor plans and structural details with numerous numerical values and lines.

# Current Projects

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- **Standard on Performance-Based Design**
- **Standard on Design Fire Scenarios**
- **Standard on Fire Exposures to Structures**
- **Guide on Assessments of Existing Building Fire Safety –  
New Project Looking for Task Group Members**

# SFPE Handbook of Fire Protection Engineering



# SFPE Handbook – What's New in 6<sup>th</sup> Edition

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New Sections on Fire Testing and WUI

Significant Changes to Structural Section (larger focus on performance-based structural fire engineering)

User guide and introduction to fire safety engineering

New Chapters: passive fire protection, fire investigations, flame extinction by active suppression, li-ion batteries and energy storage, refrigerants, and oxygen reduction systems.

Significant changes to data in appendices

Effort to use common terminology



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**Thank you for your time.**



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