

Reimagining the ICCPC – Fire Service Roundtable 1 – Summary of Key Points

Participants

- Brian Meacham (BM), Moderator
- Dwayne Garris (DG), retired State Fire Marshal, Georgia, degree in architecture, worked as plans examiner, much prescriptive but several large facilities performance-based (e.g., Georgia Dome, congress center, Mercedes Benz Stadium, etc.) was performance-based, as ICC President participated in IRCC and interacted with other countries with a performance code
- Jennifer Hoyt (JH), chief fire protection engineer, represent State Fire Marshal, Massachusetts, work with code adoption, often new issues such as cannabis, hydrogen fueling, need performance-based approaches, also help jurisdictions with review of PB designs
- Robert Davidson (RD), Davidson Code Concepts, 33 years emergency services, last 22 as a Fire Marshal in New Jersey, heavy involvement in code development including chair of IFC Committee, addressed handful of changes to ICCPC for fire, have done some PBD reviews, most often see partial use of performance to address a few items
- Jonathan Lund (JL), Fire Marshal, Des Moines, IA, fire protection engineer, several PB alternatives, but not full PBD, for arenas, some high-rise buildings, interested in how PBD for fire should occur, see most do not want to invest time and effort, involved in code development, also work with local municipalities who try to adopt a uniform code locally
- Timothy Diehl (TD), retired Battalion Chief Howard County Fire & Rescue and Fire Marshal in City of Rockville, MD, spent some time in private sector, Global Fire Protection Group, experience with PB design and inspection, member of fire service membership council at ICC
- Steve Winkel (SW), architect and civil engineer, Preview Group, California, on CA building standards commission, interpretive committee for ICC, active on behalf of AIA at ICC hearings, have done a lot of alternative methods and materials (AMM) requests, AIA very interested
- Greg Rogers (GR), 27 years in fire service, most in prevention realm, currently Fire Marshal for Spokane Valley FD and Deputy Chief, Vice Chair International Association of Fire Chiefs, Fire & Life Safety Section, experience similar around use of PB as part of AMM, exemplar projects include institutional facility, Amazon warehouse project, interest is how this integrates better
- Dan Nichols (DN), Metropolitan Transportation Authority, NY,CT,NJ, fire protection engineer, Assistant VP of Code Compliance, Fire Safety and Handicap Accessibility for MTA and role like Fire Marshal for Metro North Railway, oversee \$50B capital program for code compliance and fire safety, fire service experience, chair of ICC code correlation committee, previous service on other ICC committees, also on NFPA 130 and NFPA 909 and 914, see PBD when it is inconvenient for design professional to meet the code, or when outside of the bounds of code, agree it is piecemeal, agree it would be nice to get to holistic approach, after many years with AMM, big question is how to manage ongoing level of health, safety and welfare
- Jon Nisja (JN), Minnesota State Fire Marshals Division, 44th year, inspections, prevention and investigation and since 1983, reviewed several PBDs, had a run on arenas a few years ago, often called in to assist local jurisdictions, most PBDs were one-off issues / alternatives, only 1-2 PBD from ground up, big issue is that most PBDs are trying to get out of sprinkler protection, how do you take something that is required and say it is not needed, not clear how to demonstrate equivalency, rarely seen a PBD where owner did not come back as say a change is needed, doesn't work for life of building in some cases
- Karl Fippinger (KF), VP Fire and Disaster Mitigation, ICC, here to see, hear and support, PBD coming up a lot, 30 years in fire service, helping champion fire codes and disaster resilience

Key Take-Aways

- Most performance-based design for fire are not full performance, but part of alternate methods and materials (AMM) and used when it is inconvenient for design professional to meet the code, or when the problem is outside of the bounds of code. It is often done in a piecemeal way, such that overall performances / impacts of AMM component not considered fully in design. Sometimes designs impose requirements that cannot be assured, like fire service response. Long-term assurance that performance is maintained / achieved is difficult.
- Most PBD for fire skips the way performance should be done according to the ICCPC – in particular Ch 3 and Ch 4 – setting / discussing design performance levels and reliability – and missing the initial discussions where jurisdiction and designer agree on the goals that the design should meet and provide measures to check against at end of design. Without this, nothing to compare to. Adopting the ICCPC as is could help. Upfront discussions / agreement essential.
- Challenges related to education level for both designers and code officials. More knowledge / expertise needed than just to apply prescriptions. Challenge for AHJs in time, resources, and confidence in making judgments.
- Dichotomy between fire and other areas, like structural and energy, in that for fire, engineers are trying to avoid something, where in energy or structure, trying to achieve something. In structure for example, innovations in structural design are driving PB analysis. No tall high-rise buildings in major cities with PBD for structure. Also, end up with inspectable set of criteria – have PBD, peer review, detailing of building structure and then can inspect – can check many points along the pathway. FEMA P-58 document recommended to consider as model.
- A major difference from structural and energy is that the inputs for analysis for fire and life safety is a bigger unknown than how to do the analysis. Egress time is supposedly based on time to egress theater 100 years ago where everyone got out in 3 minutes and that remains to today. Not clear this is appropriate. Lack of codified inputs for fire is a significant challenge. Chapters 3 and 4 are essential to address. A lot of work in needed quantified measures.
- Sometime solutions do not make sense. Bud Nelson, a grandfather of fire modeling and PBD for fire, once commented that *if the solution that is proposed defies the laws of physics or common sense the solution is just wrong*. It doesn't matter how many pages the computer spits out. Not enough time is spent on defining the problem, the means of analysis, validity of outputs, and effectiveness of proposed solution in meeting the need.
- Seems like we should be able to: sort of fire and life safety objectives in a way that can be measured, define loads that will test building from a societal perspective, define what the acceptance criteria are, and describe the quantitative process that must be robustly follow. If we can build this into the PBC, would that be a good first step.
- Quantification of performance good, but problem would exist if performance criteria are realistic, but not the same measures used in prescriptive: people would just default to prescriptive. Both codes / approaches need to move along in parallel. Measurable criteria would also help make more consistent in application. Also should have a performance statement associated with each clause, much like Canadian approach.
- Because we don't have that, every AMM approach is different, even if the problems and the buildings are the same. Also, all PBD / AMM should follow full performance approach – not that you have to engineer everything, but need to understand all performance expectations and show they are addressed.
- Need to keep in mind target audience and their needs.