

1	Submitter	Doc Page	Paragraph	Suggested Change	Substantiation	Committee Responses
2	Sergio Barrueto	N/A			I reviewed the minimum competencies for a fire protection engineer and I have nothing further to add, great work. This will help advance our discipline and ensure that other engineering discipline do not pretend to know fire engineering. The next step will be to promote this information in States like California where we differentiate between practice act and others and get Fire Protection Engineering to be declared a practice act.	No action required. Planned promotion of the core competencies is planned when they are completed.
3	Daniel Nilsson	0	all	It must be explicitly mentioned in the document that you are only an FPE if you have an engineering degree in a fire science discipline, ideally Fire Protection Engineering.	Although the document claims that the quickest path to becoming qualified in the area is to do an engineering degree, it does open up the possibility that one could potentially get skills in other ways. However, it is my firm belief that you should actually have an engineering degree to be allowed to call yourself an engineer. This can be either at BSc or MSc level. To call yourself an FPE, you need an engineering degree in fire science, ideally Fire Protection Engineering or Fire Safety Engineering. If SFPE opens up for anyone calling themselves FPEs, the reputation of the profession will rapidly decline. The document might describe an alternative path for people with a basic engineering degree, e.g., mechanical, chemical or civil engineering, who build up their expertise about fire protection engineering. However, these engineers are still not FPEs. This needs to change in the document if we are to still have FPE programs at universities around the world. The job of SFPE is to promote FPE education around the works - The bar needs to be higher and not lower!	Reject. The committee agrees with the proponent that the best way to become a competent fire protection engineer is with a strong education routed in engineering and focused on the fire discipline. Emphasis has been added to the document about having a foundation in engineering, with notes that someone can reach competency most efficiently with a degree in fire protection engineering. The committee does believe that it is important to recognize that someone can become a competent fire protection engineer without following the ideal path.
4	Vic Thielmann	0	concept	Needs additional clarification on the application of this document and how it can assist to ensure fire protection professionals have the appropriate level of knowledge for the job.	Whereas I believe all the Earths workers should be in a safe working environment, I also believe it is up to the locals and their insurers (even if they are only self insured) to determine the extent of safety required in their particular environment without being disturbed. You would probably not be surprised to see a lot of business termination notices in their statements and press releases on their website. Ironically, in today's working environment any employee running with scissors could potentially shut their employers business down - and I fail to understand how this helps either employer or employee.	Accept in principle. A preface has been added to the document in order to explain some of the use and background of this document's development. The intention is for local jurisdictions to have a source they can utilize in order to define fire protection engineering so that professionals working in the field can be recognized as competent, which in turn will protect the public health, safety and welfare associated with fire protection.
5	Vic Thielmann	0			I don't see where past expertise is acknowledged or dealt with appropriately. I would think this is important given that fire protection, although it is multi-disciplinary, is also highly reliant on in-depth disciplinary experience.	Accept in principle. Experience is important to achieve competency in fire protection engineering and the document has added language to describe this.

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6	Tom Gray	0			<p><b>My two cents.</b> No minimum level of experience. A graduate BSFPE (or equivalent) is a competent (qualified) Fire Protection Engineer. (1) BS Engineering or equivalent. For example, BSFPET (Oklahoma State) is equivalent with experience as engineer. If not FPE (or similar) then: (2) PE by FPE exam. CFPS and/or CRP. Professional Member SFPE. Member NFPA. Education BSE Interdisciplinary Engineering (IDE), Purdue University, West Lafayette IN, 1974 – majored in Engineering Management (Industrial Engineering IE and Industrial Management INDM &amp; ECON) AND/OR (a) Professional Engineer (PE) in Connecticut by NCEES Fire Protection Exam (1988 [redacted] 2018); (b) NFPA Certified Fire Protection Specialist (CFPS) 2014 [redacted] 2019 and UL Certified Property Risk Professional (CRP) 2015 [redacted] 2020; (c) Fellow (2004) SFPE Member 1977 [redacted] 2018; (d) Lifetime Member NFPA 1977 [redacted] 2018</p>	<p>Accept in principle. Experience is important to achieve competency in fire protection engineering and the document has added language to describe this.</p>
7	Jack Arthur	0			<p>I have no specific suggestions. But I would like to express my disappointment in finding no reference to NCEES or licensing. NCEES says that the PE exam tests for a minimum level of competency.</p>	<p>No action required. This document is intended to have global application. NCEES is only the testing organization for the exam portion of the professional engineering license, which does not apply to all locations. Where applicable, language has been added or referenced, but the focus is the actual subject matter someone needs to know in order to be qualified as a competent fire protection engineer.</p>
8	Jack Arthur	0			<p>I am also a bit disappointed in the focus on education to the exclusion of practice. The document single reference is when it says that practice is " ... done under an experienced fire protection engineer.". Seems insufficient.</p>	<p>Accept in principle. Experience is important to achieve competency in fire protection engineering and the document has added language to describe this.</p>
9	Doug Fisher	0		<p>Definitely appreciate the work of the committee. A document like this is definitely needed. Comments below are more for readability and understanding.</p>		<p>No action requested.</p>
10	Eoin O'Loughlin	0		<p>The document should be clearer as to the maturity of practitioner to which these minimum core competencies are intended to apply.</p>	<p>In its current form, it is not clear whether the document is intended to support benchmarking for those entering the profession (i.e. university graduates) or those seeking to demonstrate both educational and practical competency (i.e. equivalent to PE, CEng or similar). There appear to be contradictions in the document in this respect.</p> <p>It notes that "in addition to education, experience is also a necessary component", and discusses the importance of CPD, learning on projects, different viable career paths, etc. but the knowledge area descriptors and recommended hours (based on ECTS) are generally copied from the SFPE's 2010 model curriculum for a BSc in FPE, which suggests equivalency to university education is the minimum competency level.</p>	<p>Accept in principle. Experience is important to achieve competency in fire protection engineering and the document has added language to describe this.</p>

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11	Eoin O'Loughlin	0		The document should be clearer as to how it is intended to be used by those within the FPE profession.	<p>Although the document does refer to use by individuals and organisations involved in FPE, in its current form the document is not readily accessible in this respect. It would be useful to include a suggested mechanism or framework for progressing in each of the knowledge areas.</p> <p>There are some existing examples of this internationally. For example, the Wheel of Fire graphical framework developed by the Institution of Professional Engineers New Zealand (IPENZ) or the fire-specific clarifications added by the Institution of Fire Engineers (IFE) to the Engineering Council's UK-SPEC for EngTech and CEng registration.</p> <p>Consideration should be given to how other non-fire international professional institutions (e.g. the ICE, IStructE, IMechE, etc.) benchmark competency.</p>	Accept in principle. This document is intended to provide a basis for jurisdictions as they implement credentialing and recognized means of identifying qualified professionals. Additional language has been added to this document in an effort to improve the understanding of the document's application in the field.
12	Eoin O'Loughlin	0		The document should be clearer as to how it is intended to be used by those outside the FPE profession (e.g. authorities having jurisdiction, clients, universities, the legal system, etc.) The structure, content, language and presentation should be improved to support use by such parties.	<p>Although the document does refer to use by individuals and organisations seeking to engage with FPEs, in its current form the document is not readily accessible in this respect. The structure, content and language appear to be aimed at FPEs, reflected by the content for the knowledge areas being generally copied from the SFPE's 2010 model curriculum for a BSc in FPE. The presentation does not lend itself to being easily digested, applied or extrapolated to suit various organisations' particular needs, as the document suggests it should be used for.</p> <p>It would be useful to tailor the document to support use by those outside the FPE industry, or produce a parallel document for this purpose.</p>	Reject. The document is intended for use with a general audience. Many of the improvements made based on comments received have increased its understanding and application. This can be a reference for others to incorporate into their necessary governance language.
13	Eoin O'Loughlin	0		The document should include understanding of applicable regulatory frameworks within the knowledge areas.	The document references regulations as a synonym for codes. It does not discuss regulatory frameworks pertaining to fire safety, design, construction, health and safety, accessibility, etc. These are important aspects of operating in the FPE profession, and should form part of the minimum core competencies.	Accept in principle. See Line #154.
14	Richard Rowlands	0			<p>I am writing to you regarding the subject. I work for the Federal Government. I have reviewed what the Society has submitted its members for review. I was supposed to put my comments on an excel spreadsheet. I cannot do that. I find the entire document to be flawed. In lieu of 12 pages, just say to be a professional engineer who is competent, have a Master's degree in Fire Protection. This is a flawed document. I know a lot of fire protection engineers and they don't have a Master's degree. I fall into that category. This needs to be changed.</p>	The intention of this document was not to require a single path of obtaining a Master's Degree. This comment will be considered as other revisions are made to ensure clarity that multiple education and experience paths can produce a competent fire protection engineer.

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15	Douglas Evans	0			The substance seemed reasonable to me, but I do have a number of comments that are primarily editorial and my recommendation is to have a someone qualified thoroughly go through it, rip it apart and put it back together. After that, another draft for input may be desired if determined necessary.	Accept in principle. Based on the comments received information has been reorganized and edited. Prior to publication, the normal editorial process will also be followed.
16	Peter Sunderland	0 all		The document title should be changed to "Recommended minimum competencies for senior practicing FPEs." This change will require many similar changes elsewhere in the document.	Anyone who graduates with a BS or higher in FPE is a Fire Protection Engineer. This document concerns the requirements for senior practicing FPEs, not fresh outs.	Reject. In addition to the educational component, there is a practice/experience that someone needs to be a competent engineer. This document is intended for the recommended minimum levels necessary for a fire protection engineer; it is not a document to apply for senior level engineers.
17	CFPA via Tommy Arvidsson	0 All			We think you have produced a good document. We might give reference to the document in future.	No action required.
18	Morgan Hurley	1	2	This is considered to be a minimum recommendation document. Future revisions will occur periodically to continually address any changes in the necessary <u>knowledge and skills</u> to be a fire protection engineer.	The bulk of the document pertains to the knowledge necessary to be a fire protection engineer.	Accept change.
19	John Ivison	1	2	Revised wording to sentence 2	Wording revised to reflect evolution of needs over time. Note that significant changes have been made to entire document. <b>(see Attachment Ivison)</b>	Accept in principle. The committee believes that this has been addressed among the changes made to the document, which included some reorganization of this material.
20	Bernie Till	1	2	I defer to the committee to make the appropriate comments	The opening sentence uses the words "minimum recommendation document" as does the Scope opening paragraph. I have several concerns with this. One is how this "minimum recommendation" is to be used. Is it for curriculum development, employment qualification, expert witness qualification, et. Another is the implication that someone who doesn't meet some aspect of this is not a FPE. The statements should clearly state what the intent is and how it will be used. While some efforts to do this are provided in the following, a similar discussion of how it should not be used is appropriate.	Accept in principle. The scope and application sections of the document have been revised to more clearly indicate the content as well as the intended applications. The competencies can serve a variety of efforts including but not limited to employers, universities, credentialing bodies, and practitioners.
21	John Ivison	1	3	revised wording sentence 2.	Reworded to reflect fire protection engineering usage. <b>(see Attachment Ivison)</b>	Accept in principle. Through the volume of comments this language has been revised to reflect the clarification.
22	Amy Murdock	1	3	Sentence Reads: "It should be noted that the term 'fire protection engineering' should be viewed as synonymous with the terms 'fire safety engineering' and 'fire engineering' in that they apply to the application of engineering principles to mitigate the unwanted impact of fire." Sentence change suggested: "It should be noted that the term 'fire protection engineering' should be viewed as synonymous with the terms 'fire safety engineering' and 'fire engineering' in that they apply to the application of engineering principles to mitigate the unwanted impact of fire. Throughout the document, 'fire protection' will be used."	Suggestion to be consistent throughout the document. Use the same term throughout.	Accept.

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23	James Milke	1	3	This document should NOT serve as a credentialing program.	<p>The notion that an individual with years of fire protection experience, perhaps in a narrow portion of the field, with no university education (perhaps did not even complete high school), can take a series of short courses to be recognized as an FPE and have a similar stature to that of a registered FPE (as C.Eng., P.Eng. or P.E.) is very troubling. If such an individual is recognized, it's implied that such an individual could compete for the same type of projects (and have the same responsibilities) as a registered engineer. The concept of taking an array of CPD activities in order to be recognized as a fire protection engineer is seriously flawed. While CPD activities are an outstanding way for practicing professionals to stay current or learn a new aspect of the discipline (e.g. to learn about a new computer simulation, update on regulatory changes or perhaps learn about protection methods for a hazard not previously encountered by the participant), CPD activities should not be the self-sufficient means for an individual to be recognized as an FPE. The CPD activities rarely include a learning assessment of substance (my experience in cases where questions are asked is that they typically involve a low challenge level and are rarely graded prior to distributing certificates). An individual could acquire an array of CPD certificates by merely maintaining a physical presence in a classroom (or at least at the times in the day where a sign-in is required).</p>	<p>Accept in principle. This document is not intended to be a credentialing program, but offer the subject matter that a competent fire protection engineer needs to know. Jurisdictions and/or government bodies could use this as a basis of knowledge when structuring their credentialing programs. Experience is an important component in addition to education, as well as continuing education over an individual's career.</p> <p>The most efficient way to build the foundation for fire protection engineering competency is a university program in fire protection engineering. However, the committee does recognize, similar to existing programs and boards overseeing jurisdictional requirements, that a basis in engineering and engineering technology with additional study and practice in the field (under appropriate supervision) can yield a competent fire protection engineer.</p> <p>Language has been added to bring clarity to the intention of the committee.</p>
24	James Milke	1	3	Organizations can use this document for developing courses and programs that will help students when they become practitioners in the fire safety industry. However, universities interested in developing fire protection engineering programs should consult model curricula developed by SFPE.	A suggestion that the minimum competencies document can be used to provide guidance on the design of a university degree program is misdirected. Model curricula (developed by an SFPE committee) already exist for undergraduate and graduate degree programs in the field. The statement by the committee that this document can be used for such suggests that the committee is unaware of the previously developed documents.	Accept in principle. Language will be added to the document with a clear reference to the model curricula so that universities have a resource should they endeavor for a new fire protection engineering program.
25	Morgan Hurley	1	4	Add "Tier 5 builds on tiers 1-4 in the 'engineering competency model.' This document is intended to provide the information associated with tier 5."	Clarification	Accept. Add at the end of the 1st paragraph under Application.
26	John Ivison	1	4	Revised wording for clarity	Clarify whether it is intended to refer to more than 1 model. (see Attachment Ivison)	Accept in principle. The committee tweaked the language and added a figure to better understand where this information fits into competency models (See also Line #27).

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27	Michael James	1	4	Add the graphic shown on the front of the AAEC competency model which shows the five tiers	From a New Zealand perspective the AAEC and USDLETA competency model is relatively unknown. Without comprehending the depth of this document the SFPE competency document seems to be somewhat lacking or limited in scope as it is heavily focused on knowledge and leaves out all the important soft skills required to be a Fire Engineer. The graphic would paint a better picture of where the guidance sits for readers outside the U.S.	Accept in principle - Committee put together a figure to better understand the narrative on the tiers of knowledge expected for a fire protection engineer. Specifically, this document addresses the knowledge and experience needed in tier 5 in parallel to the AAEC competency model.
28	John Ivison	1	5	Sentence 2 added/reworded	Language is clarified to set out document intent. <b>(see Attachment Ivison)</b>	Accept in principle. This section has been revised and should have the clarity being sought.
29	Bernie Till	1	5	It is intended that a minimum level of competency is needed for professionals practicing fire protection engineering. It is the aim of this document to establish a common set of industry specific criteria for the profession of fire protection engineering.		Accept in principle in part. This sentence has been modified for clarity. See comment on line #30.
30	Doug Fisher	1	5	"It is intended" does not read well with "is needed". It is "intended" that minimum competency is needed? Recommend revising to delete "It is intended that".		Accept
31	John Ivison	1	6	See revised sentence 2	There is some confusion in language and terms throughout. Refer to the major revisions proposed throughout. <b>(see Attachment Ivison)</b>	Accept in principle. The committee modified their language to better address this. Consistency in terminology throughout the document should also offer the desired clarity.
32	Amy Murdock	1	6	Sentence Reads "This document could serve as a basis for jurisdictions that are implementing credentialing programs for fire protection engineering that confirm professional competency" Sentence is INCOMPLETE. Reference to NCEES and the Professional Engineering licensure should be included.	In the United States NCEES is the recognized agency identifying ALL professional engineers. In the United States, AHJs should be following the NCEES designations for Professional Engineers. Each State already has reviewed and accepted NCEES and/or amended by requiring additional testing/mandating continuing education for maintaining a PE designation in their State.	Reject. This document is intended to have global application. Although NCEES has parallel requirements to some of the suggestions here, NCEES does not apply in all corners of the world. Licensing and credentialing boards will implement the requirements they deem necessary based on local information.
33	Amy Murdock	1	6	change text "fire safety" to "fire protection"	Again, just for consistency. I won't make comment again but would suggest throughout to be consistent.	Accept.
34	Bernie Till	1	6	Organizations, for example universities, can use this document for developing courses and programs that will help students when they become practitioners in the fire safety industry.	It doesn't appear that the existing universities were involved in this effort. It would seem that their curriculum is already based on the needs of the industry to some extent.	Accept in principle. University representation is not currently on this committee. However, the Higher Education Subcommittee has been working in conjunction with this draft to ensure educational representation and coordination with model curriculum. In addition, curriculum from many universities were reviewed during development of the minimum core competencies.
35	Robert Jönsson	1	3 & 4	(see attachment Jonsson)	<b>(see attachment Jonsson)</b>	No action required. The committee recognizes that the local application of expected performance from a fire protection engineer may have variations from one jurisdiction to the next. However, these recommended minimum competencies can offer balance to those specifications so that all qualified professionals can be recognized as fire protection engineers.

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36	Daniel Nilsson	1	scope	The document needs to more clearly distinguish between FPE, FSE and FE.	I do realise that an FPE might be called different things around the world, but there are also places where FPE and FE are not the same. Saying that the professional titles are equal is hence too simplified. In some jurisdictions, an FPE might know how to do risk analyses, but an FE might mainly do design of suppression systems, etc. This needs to be clarified.	Reject. There are many titles used around the world for fire protection professionals. The goal of this document is to define what a competent fire protection engineer is. There may be existing terminology that does not align, but should be evaluated locally to ensure that roles are clearly defined and competent professionals are executing the work. The focus of this document is on the qualifications needed to perform fire protection engineering.
37	Eoin O'Loughlin	1		The document should be clearer as to the scope of competencies for which it is intended to apply.	In its current form, it is not clear whether the document is intended to focus on technical competencies only, or on broader competencies (e.g. equivalent to those required to attain PE, CEng or similar). Ethics are included in addition to the technical knowledge areas, but there is no discussion on communication skills, developing others, promoting best practice, promoting innovation and industry advancement, safety in design / construction, sustainability, etc.	Accept in principle. The committee has added a figure to better clarify that the document details the fire protection competencies. The other levels of knowledge are referenced in that a base of general knowledge and skills are necessary in addition to fire protection.
38	Higher Education Subcommittee	1		Under the "Application" portion of the document, the line in the third paragraph "Organizations, for example universities, can use this document for developing courses and programs that will help students when they become practitioners in the fire safety industry" should be stricken from this document.	Language on creating academic programs should reference the model curricula created by the Higher Education Subcommittee. <b>(See attachment Higher Education)</b>	Accept in principle. See comment line #24.
39	Jim Bisker	2	1	Please address whether or not similar courses of study, such as; mathematicians, physicists or chemists will need to gain an engineering degree if they are currently experienced and practicing as a fire protection engineering (via training and experience post their undergraduate course of study. Nothing is said about non engineering graduates similarly to what is said by the OPM		Accept in principle. The text has been updated to reflect what is expected for general knowledge (Tier 1 to Tier 4). The focus here is to address the fire protection specific components that someone needs to know in order to achieve competency in fire protection engineering (Tier 5).
40	Doug Fisher	2	1	"hers" should be singular "her"		Accept.
41	Morgan Hurley	2	2	The recommended minimum competencies for fire protection engineering can be achieved through different career paths. The most efficient route to gain the knowledge for a foundation in fire protection engineering is through university study specifically in a fire protection engineering program. These recommended minimum competencies for fire protection engineering are not intended to replace an in-depth university education in fire protection engineering. <del>Rather, they can be used as guidance document by universities in establishing fire protection engineering curricula, and also to provide the basis for CPD education in support of core competencies areas of fire protection engineering.</del> University courses traditionally offer a more in-depth look at a particular subject due to the length of instruction and activities, such as homework and projects, associated with the course. In additional to classroom education, becoming competent in many subject areas also involves practicing and applying the knowledge to the projects. <del>This is done under an experienced fire protection engineer.</del>	(1) Other documents prescribe the minimum requirements for academic engineering education - most notably the ABET evaluation criteria. (2) The last sentence of this paragraph is a non-sequitur.	Accept.

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42	Stephen Dale	2	2	First full paragraph it says "After obtaining an engineering degree..." what about Engineering Technology degrees? Either augment the text to read "Engineering or Engineering Technology" degrees or add to the definitions something about Engineering Degree including Engr Tech degrees	Oklahoma State University's fire protection and safety degree program is an ET program and has been ABET accredited from the beginning. (Full disclosure: that is where I graduated from.) Many (most) states allow those graduates to sit for the PE exam and to become licensed engineers in their states. The text throughout the document refers to Engineering degrees, but not Engineering Technology degrees, implying that only an Engineering degree is considered and that ET degrees are not. If the document is to outline competency, then ET degrees should be included because it is the combination of university education, CPD and experience (as indicated in the second paragraph of the "Introduction" on page 3) that makes one competent, and competency can come from an ET degree, not just an engineering degree.	Accept in principle. The document is focusing on core competencies. Text has been updated to give strong reference to both engineering and engineering technology degrees.
43	Higher Education Subcommittee	2	2	Under the "Application" portion of the document, the language "Rather, they can be used as guidance document by universities in establishing fire protection engineering curricula" should be stricken from the document.	Language on creating academic programs should reference the model curricula created by the Higher Education Subcommittee. <b>(See attachment Higher Education)</b>	Accept in principle. Language has been modified to incorporate direct reference to the SFPE model curricula. See comment #24.
44	Morgan Hurley	2	3	<del>Some practitioners may have used different career paths, for example years of study in the field with knowledge learned from other professionals and continuing education courses. Whether the base knowledge is acquired in an education setting or practice, all those working in fire protection engineering need to maintain their skills with continuing education to support the knowledge in core competencies areas of fire protection engineering.</del>	Continuing education is one way to maintain skills. For many professionals, mentoring and independent research will be used to maintain skills and knowledge.	Accept in principle. The language has been modified to reflect this.
45	Amy Murdock	2	4	Identify a minimum number of years in the profession that would be considered equivalent to obtaining a degree in Fire Protection.	A potential reference to NCEES might be appropriate? I believe that if we are providing # of hours for each knowledge area (within the core competencies) then I would think we need to identify a minimum number of years in the profession. Unless your intention is that through the # of years in the profession, the engineer is able to confirm they have reached the # of hours specified. I am not sure if the document is clear enough in that regards.	Reject. This document is not intended to replace legislation in any jurisdiction. The number of years of practice required across the United States varies, let alone globally. The document is focusing on core competencies.
46	John Ivison	2	7	Reworded to clarify: knowledgde /experiecn requ'dReworded this paragraph for clarity	<b>(see Attachment Ivison)</b>	Accept in principle. Language has been added to indicate that experience is needed in order to achieve competency. The amount of experience is based on the academic knowledge base of the individual.
47	John Ivison	2	8	Rewording to include experience	Rewording of minimum competence to include experience/ confusion between knowledge and competence. <b>(see Attachment Ivison)</b>	Accept in principle. See Line #46.
48	Robert Jönsson	2	1 & 2	(see attachment Jonsson)	<b>(see attachment Jonsson)</b>	Accept in principle. Language has been added to indicate that an engineering degree or equivalent would be the necessary basis to support the specific fire protection engineering knowledge. The committee has also added language to clarify that experience is an important component in achieving competency.



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49	Milosh Puchovsky	2	1, 3, & 4	(See attachment Puchovsky)	(See attachment Puchovsky)	Accept in principle. This language has been modified based on this and other comments received.
50	John Ivison	2	1,2,3,4,5,6	Revisions required based on conventional terms	(see Attachment Ivison)	Accept in principle. All edited versions have been evaluated and specific proposed text and concepts have been taken from some of them.
51	John Kampmeyer	2	2, 3, 4	Delete paragraphs in this section	(see Attachment Kampmeyer)	Accept in principle. With the modifications by the Committee during the revision process based on comments, reorganization of the material has been done.
52	James Milke	2	3	Add at the end of the parag: Nonetheless, a foundation of math and science courses is necessary for one to have more than a cursory understanding of fire protection engineering principles. These courses include basic math (up to and including differential equations), physics (e.g. fluid mechanics, thermodynamics, and mechanics) and chemistry.	A working knowledge of the list of fire protection engineering principles outlined in the proposed document is not viable without a foundation in math and science. As examples: a) a computer simulation of evacuation or fire behavior will be applied as a 'black box', b) fire dynamics requires an understanding of thermodynamics, fluids mechanics and heat transfer as well as basic chemistry, c) analyses of the performance of structures exposed to fire requires a foundation in mechanics and heat transfer, d) sprinkler hydraulic calculations requires an understanding of fluid mechanics and a response analysis of sprinklers requires a background in heat transfer e) smoke control analyses require an understanding of fluid statics and orifice flows and the application of the ideal gas law to adjust volumetric flows for smoke at elevated temperature. Someone who considers themselves to be a "fire protection engineer" has an ethical, if not legal, responsibility to understand the underpinnings of the engineering analysis being conducted. By neglecting to reference a basic foundation in science and math, and perhaps some engineering fundamentals, this proposal suggests that someone without ANY university coursework (in any field) can be identified as a fire protection engineer.	Accept in principle. While incorporating revisions based on the comments, the information has been better organized to demonstrate that the solid math and science information needed for engineering falls into Tier 4 as described. The committee has assumed this basis exists and describes specifically the fire protection engineering information needed in order to achieve competency.
53	Higher Education Subcommittee	2		Under the "Application" portion of the document, the last sentence in the fourth paragraph should include the term "Continuing education" in place of "Education" such that the last sentence now reads as such: "Continuing education throughout one's career is needed to maintain the core competencies required of a practicing fire protection engineer".	(See attachment Higher Education)	Accept.
54	John Ivison	3	1	Reworded and defined knowledge base	There is confusion between competency and knowledge (see Attachment Ivison)	Accept in principle. The definitions were clarified.

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55	Charles Fleischmann & Anthony Abu	3	2	Delete the sentence "Another avenue may be continuing professional development (CPD), even more so for those practitioners lacking university education specific to fire safety, to gain knowledge in core competencies areas of fire protection engineering."	<p>CPD and experience is not an acceptable substitution for engineering fundamentals knowledge as part of a formal engineering education. You cannot become a surgeon through experience as a surgical nurse. Although there are always exceptions, we have seen a large number of students fail in both Civil and Fire engineering when the student lacks the fundamentals of calculus based mathematics, physics, chemistry, and engineering sciences.</p> <p>CPD does not normally hold students accountable for the their learning. In CPD courses there is no time for the students to absorb the material and apply their knowledge through homework etc. There simply is not a substitute for university education in a FPE discipline. FPE needs to be a professional discipline and we must have a core knowledge requirement that is learned through a university where the fundamentals and core competencies can taught and assessed against minimum standards just like other professional disciplines such as medicine, law, etc.,</p> <p>The substitution of CPD and experience for unveristy engineering based knowledge is implied in other places in the document and these should be edited out.</p>	Accept in principle. The committee has modified the document to reflect more clearly that a fundamental knowledge in math and science is essential, although part of the Tier 4 described. However, this document describes the fire protection specific information, Tier 5, that an individual needs to possess in order to become a competent fire protection engineer.
56	Doug Fisher	3	3	The first sentence under Introduction is a runon sentence.		Accept. This has been reworded.
57	Morgan Hurley	3	4	It is considered important to highlight the fact that the path to achieving minimum competency may look different for each professional. University programs are essential to provide a fundamental grounding in engineering knowledge, which every fire protection engineer should possess. Focused university programs in fire protection engineering provide one avenue to combine engineering fundamentals with topics and curricula specific to the discipline and practice of fire protection engineering. <del>Another avenue may be continuing professional development (CPD), even more so for those practitioners lacking university education specific to fire safety, to gain knowledge in core competencies areas of fire protection engineering.</del> In addition to education, experience is also a necessary component to ensure that the application of fire protection engineering encompasses the broad competencies expected of a professional.	This text suggests that taking a couple of CPD courses could be equivalent to a formal academic education. Taken literally, someone with a high school diploma who took a couple of CPD courses could position him or herself as a fire protection engineer who meets SFPE's criteria. This would be a disservice to the fire protection engineering profession.	Accept in principle. See Line #55.
58	John Kampmeyer	3	4	Insert new section Titled "Paths to Becoming a Fire Protection Engineer"	Insert paragraphs 2, 3, and 4 from page 2 (see <b>Attachment Kampmeyer</b> )	Accept in principle. See Line #51.
59	John Ivison	3	4	Rewritten to reflect language of practice.	Emphasises min.knowl' base and core competency (see <b>Attachment Ivison</b> )	Accept in principle. See comment #50.

1	Submitter	Doc Page	Paragraph	Suggested Change	Substantiation	Committee Responses
60	Stephen Dale	3	4	This paragraph mentioned only three ways as a path to competency: university study in FPE, CPD and experience. This should be augmented to include university study of other engineering or technology topics, not just FPE degrees.	This paragraph excludes by omission university study of other engineering (or engineering technology) disciplines like ME, CE, EE, ChE, etc. Many (most?) FPE's study something OTHER THAN FPE (like Mechanical or Chemical), then through a combination of fire protection CPD, experience and understudy gain the requisite competency in FPE. This section does not address this path to competency and seems to imply that study of Mechanical, for example, is not a path to becoming an FPE even with CPD and experience.	Accept in principle. The language has been clarified to indicate that an engineering background supplemented by education and experience in fire protection is a described pathway. It is also noteworthy that other paths may exist, but common ones are mentioned.
61	Doug Fisher	3	4	The second paragraph under Introduction is almost identical to paragraphs 2 and 3 on page 2		Accept in principle. The committee will review this to determine if this is an intentional emphasis or the redundancy will be removed.
62	Robert Jönsson	3	4	(see attachment Jonsson)	(see attachment Jonsson)	Accept in principle. An engineering degree or equivalent as a basis has been noted in the document. Professional development can complement the knowledge base for any individual, but the committee does recognize that all professional development courses offered are not of the same quality. The judgement of academic knowledge will be left with the jurisdiction or body that is evaluating a qualified fire protection engineer.
63	Milosh Puchovsky	3	4	(See attachment Puchovsky)	(See attachment Puchovsky)	Accept in principle. Language was modified to reflect the clarifications in this comment to better identify the background needed and role of continuing professional development.
64	Morgan Hurley	3	5	Engineers within the fire safety industry must take the necessary steps to develop and maintain knowledge, skills, and expertise necessary to perform their roles successfully throughout their career. By participating in relevant training, <del>and</del> professional development programs <u>and mentoring and independent research</u> , they can remain competent through education on new technologies, new methodologies and improved ways of implementing fire protection engineering.	Continuing education is one way to maintain skills. For many professionals, mentoring and independent research will be used to maintain skills and knowledge.	Accept.
65	John Ivison	3	5	Rewritten to reflect language of practice.	Rewritten to reflect role of fire protection engineering programmes in universities/others with acquired experience/knowledge. (see Attachment Ivison)	Accept in principle. See comment #50.
66	John Ivison	3	6	Rewritten to reflect language of practice.	Minor wording changes only (see Attachment Ivison)	Accept in principle. See comment #50.
67	Doug Fisher	3	6	Why is "minimum competencies" in italics?		Accept in principle. The final read of the document will determine if additional emphasis is put on this phrase.
68	John Ivison	3	7	Clarification of document intent	See new wording and intent. (see Attachment Ivison)	Accept in principle. See comment #50.
69	Doug Fisher	3	7	This first paragraph under The Fire Protection Engineer is almost identical to the paragraph under Scope.		Accept in principle. The committee will review this to determine if this is an intentional emphasis or the redundancy will be removed.
70	John Ivison	3	8	Clarification of wording/definition	See new wording and intent. (see Attachment Ivison)	Accept in principle. See comment #50.
71	Armelle Muller	3	1 and 2	Adequate knowledge base and minimum knowledge definitions are not clear	I don't understand the utility of these concepts that are not developed or used later in the document	Rejected. Current text is considered appropriate.
72	John Ivison	3	2,3,	Minimum knowledge base and core competency def'd Clarification of min knowledge base/core competency	(see Attachment Ivison)	Accept in principle. See comment #50.

1	Submitter	Doc Page	Paragraph	Suggested Change	Substantiation	Committee Responses
73	Scott Lacey	3	last	You have already discussed similar terms to define Fire Protection Engineer on page 1 in scope		Accept in principle. The final read of the document will determine if additional emphasis is put on this phrase. Any redundancy will be removed if needed.
74	Higher Education Subcommittee	3		The second paragraph in the "Introduction" portion of the document seems to be redundant of language in the "application" portion.	(See attachment Higher Education)	Accept in principle. Modifications have been made to reduce redundancy and improve clarity.
75	Higher Education Subcommittee	3		1) Under the "Introduction" portion of the document, there is a line which states "The definition below refers to a practitioner that has an in-depth university education in fire protection engineering". We recommend removing the words "fire protection" such that it would read as follows: "The definition below refers to a practitioner that has an in-depth university education in <del>fire protection</del> engineering".	(See attachment Higher Education)	Accept in principle. Text has been removed from this section and additional text added in other sections to reflect this concept.
76	Higher Education Subcommittee	3		Please provide citation be provided for the definition of "Fire Protection Engineer" which is referenced in the introduction	(See attachment Higher Education)	Reject. Text developed by SC.
77	Peter Sunderland	3 all		Adopt the tone of the third paragraph of page 3 for the entire document. This paragraph is excellent, but contradicts much of the other prose in this document.	Universities can provide fundamental knowledge and produce FPEs. Becoming a senior practicing FPE requires extensive on-the-job training.	Accept in principle. Language has been added to describe the importance of experience in developing competent fire protection engineers.
78	Doug Fisher	3 ALL		Particularly starting on page 3, the document switches back and forth between fire protection and fire safety. This gets confusing. Need to standardize on one term.		Accept in principle. A final technical edit will ensure consistency.
79	Doug Fisher	4	1	"recognized university". What defines a "recognized" university? Who recognizes it.		Accept in principle. Text has been updated.
80	John Ivison	4	2	Clarification added around knowledge/competency	Incorporates definitions. (see Attachment Ivison)	Accept in principle. See comment #50.
81	John Ivison	4	3	Cleaned up wording	Incorporates definitions. (see Attachment Ivison)	Accept in principle. See comment #50.
82	John Ivison	4	4	Minor word added.	Editorial (see Attachment Ivison)	Accept in principle. See comment #50.
83	Armelle Muller	4	7	Add "Fire protection Engineers may be part of the design team or act as a third party expert responsible of evaluating if the design reaches the safety objectives"	Third party evaluation is a very important business for Fire Protection Engineers	Rejected. This is a general description, it does not go into specific services (such as third-party reviews).
84	Stephen Dale	4	7	This paragraph says "A fire protection engineer is expected to identify and deal with complex issues..." A better phrase than "deal with" is "manage". Also, "creatively" is fine as an adjective but needs modification.	We expect FPEs to manage hazard not "deal with" them like a nuisance. I suggest changing this word. Also, Creative solutions are fine as long as they are grounded in science and engineering concepts. Nowhere in this section do I see where it says the solutions to "complex issues" should be grounded in or based on engineering principles. That may be implied but needs to be stated, and it does not seem overt in this section of italicized text where it says that.	Accept in principle. The language has been modified to address the concerns presented.
85	John Ivison	4	8	added word often	Not always the case; i.e may work alone. (see Attachment Ivison)	Accept in principle. See comment #50.
86	John Ivison	4	8	Reworded: see text.	Clarification and additional examples to separate education from application. (see Attachment Ivison)	Accept in principle. See comment #50.

1	Submitter	Doc Page	Paragraph	Suggested Change	Substantiation	Committee Responses
87	Bernie Till	4	8	The "Fire Protection Engineer" in addition to general engineering principles is expected to <del>comprehensively</del> have a basic understanding of:	I do not believe it is possible for a person to have a "comprehensive understanding" of all of these subjects. I personally know a number of very experienced FPEs who have never practiced in some of these areas. A FPE can be a mile wide and an inch deep or a foot wide and a mile deep in the case of a FPE that specializes in an area. In my experience, it is not possible nor desirable to have a FPE who comprehensively understands all of these subjects - but there is benefit in having the very experienced subject matter experts be utilized when the need for their expertise arises. There are numerous examples but smoke control and management and Performance based design are clearly specialty areas outside the current practice of most FPEs. Similarly, the topic of mass notification with regard to fire alarm systems is an area where one should seek out knowledge of someone with experience in the field	Accept in principle. The sentence has been modified to reflect the engineer needs to understand the following list.
88	Doug Fisher	4	8	Why is "Fire Protection Engineer" in quotes and capitalized in this paragraph when not in any other paragraph.		Accept. This has been removed.
89	Doug Fisher	4	8	The bullet items in this paragraph need to be better aligned with the Core Competencies. Page 5 talks about 4 core competencies but this paragraph has 10 items. Need to coordinate and connect these two together.		Rejected. This is a general description belonging to the role description of a fire protection engineer. The intention is not to list the identified core competency topics in this section.
90	Doug Fisher	4	8	This paragraph switches back and forth between fire protection and fire safety. This gets confusing. Need to standardize on one term.		Accept.
91	Armelle Muller	4	9	Add "and the applicable standards" to the phrase "Active Fire Protection: the role of fire safety systems in fire safety design"	Installation rules are important to ensure efficiency of suppression systems	Reject. Standards are covered in the "Codes and Regulations" bullet.
92	Milosh Puchovsky	4	4, 5, & 6	(See attachment Puchovsky)	(See attachment Puchovsky)	Accept in principle. Multiple comments were received on these sections. Clarifications have been made that align with this comment.
93	John Ivison	4	5,6	Clarification of roles	Reflects FPE practice/industries (see Attachment Ivison)	Accept in principle. See comment #50.
94	Ariel Nunez	4	9 - Second bullet point	Add Protection in this item : - Active Fire Protection: the role of fire <b>protection</b> safety systems in fire safety design,	Protection should be added to denote sprinkler, fire alarm and other systems the FPE should incorporate into the design	Accept.
95	John Ivison	4	New 1	Clarification/reference to table	Ties this section into table of competencies. (see Attachment Ivison)	Accept in principle. See comment #50.
96	Allan Coutts	4		Change "Fire protection engineers identify risks and ..." to "Fire protection engineers identify hazards, characterize risks, and..."	The engineer must not just recognize risks, they must be put them into context, i.e., characterized. The engineer must also be able to recognize the hazard, not just estimate the risks of a particular outcome should an event occur.	Accept.

1	Submitter	Doc Page	Paragraph	Suggested Change	Substantiation	Committee Responses
97	Amy Murdock	4-9	ALL	Basic engineering principles seem to be missing; a reference to the basic engineering principles seems appropriate in my opinion	I find it hard to believe that the basic engineering principles (math, chemistry, physics, mechanics, dynamics, statics, etc) aren't at the core. Are we saying that FPEs don't need to have a basic engineering core? That seems opposite of every other engineering discipline...mechanical? Structural? Electrical?	Accept in principle. The committee has clarified that the fundamental engineering principles, including math and science, are assumed to be knowledge of those aiming to be a fire protection engineer. However, they are part of the Tier 4 of knowledge, where this document is detailing Tier 5, fire protection information.
98	Morgan Hurley	5	1	The "Recommended Minimum Competencies for Fire Protection Engineering" appear to be much broader than what is used in the US (e.g., the criteria developed by ABET, with SFPE's support.) Please review the "Recommended Minimum Competencies for Fire Protection Engineering" against the ABET criteria and revise accordingly.	It would be a huge disservice to the fire protection engineering profession if SFPE were to state that an ABET-accredited education is not sufficient to prepare a fire protection engineer.	Accept in principle. The focus of the document is on core competencies. The text was updated to reflect this. It is not the intention of this document to discredit programs such as ABET or not recognize the value the accreditation demarks of an engineering degree.
99	Doug Fisher	5	1	Where is "General Building Design" and "Codes and Regulations" within the 4 competencies?		No action required. General building design is covered within multiple topics as it is needed to learn fire protection analysis and fire protection systems. Building fire regulations and standards are listed specifically as part of fire protection analysis.
100	Doug Fisher	5	3	Add "the profession of" after "recommended minimum competencies for".		Accept.
101	Doug Fisher	5	3	Question: Are these the competencies for a fire protection engineer or for the profession of fire protection engineering. The document is not clear.		No action required. The competencies are for the practice of fire protection engineering.
102	Armelle Muller	5	4	Suppress "Mass transfer" for consistency	It is not mentioned in page 6	The consistency throughout the document has been reviewed as part of the comment resolution process.
103	Armelle Muller	5	4	Suppress fire modeling in the item "Fire Protection systems"	Fire modeling should go either in Fire Safety Science or in Fire Safety Analysis	Removed from bullet #3, added to #4.
104	Doug Fisher	5	4	Bullet 3, need to include passive fire protection, change "detection systems" to "fire detection and alarm" systems.		Accept.
105	Armelle Muller	5	5	Add "and the property as much as required" after "from the impacts of fire"	The protection of property from fire is also an objective especially for insurers. It must not be forgotten.	Accept in principle. The language now addresses property protection.
106	Bernie Till	5	1st after bullets	Only by a comprehensive understanding of these core subjects will the professional achieve the minimum knowledge base considered needed for professionals practicing fire protection engineering.	The way the original read, the practitioner has to comprehensively understand all of the core areas but there has always been - and in my opinion - always will be - a need for specialization. For example, there have always been people who specialized in fire protection systems - but they don't need to have a comprehensive understanding of human behavior to design a fire protection system. Similarly, a person who focuses on human behavior and evacuation shouldn't need the in depth knowledge of fire dynamics.	Accept.
107	Milosh Puchovsky	5	3 list	(See attachment Puchovsky)	(See attachment Puchovsky)	Accept in principle. These modifications were incorporated along with other comments. Many of the specifics were added from this comment.

1	Submitter	Doc Page	Paragraph	Suggested Change	Substantiation	Committee Responses
108	David Tomecek	5	3rd under Recommended Minimum...	Add fifth bullet titled "Fire Initiation, Prevention and Mitigation Methods" with a description of "A comprehensive understanding of basic fire initiation, prevention and mitigation methods. This would include common initiators such as electrical, open flames, hot work, friction/sparks, chemical reactions and similar; prevention approaches such as administrative controls and preventive maintenance and mitigation methods such as electrical shutoffs, process shutdowns and quantity segregation."	The first three bullets support much of the industry, and form the foundations and inputs for the fourth. However, to perform Fire Safety Analysis properly, a broader range of knowledge in prevention and non-suppression mitigation is needed. This bullet would support those aspects. As well, such knowledge are the foundation for many requirements in the ICC and NFPA code systems. Knowledge areas would need to be added - if this change is accepted, I can assist with additional information for the knowledge area.	Rejected. It is understood that this information would form part of the different knowledge areas.
109	Ariel Nunez	5	Last paragraph	Add wording in red--"i.e., in the application of science and engineering ..... impacts of fire" and <b>preserving property</b> .	Preserving property is also a function of an FPE	Accept in principle. The language now addresses property protection.
110	Allan Coutts	5		Add a general engineering core competency:  - General Engineering A basic understanding of engineering principles. This would include the topical areas of statics, dynamics, mechanics of materials, thermodynamics, calculus and statistics.  Update the following paragraph as follows: "For the four fire-protection specific topics a number of core knowledge areas ..."	It surprises me that the document does not list Engineering Fundamentals in addition to the four listed competencies (Fire Safety Science, Human Behavior, Fire Protection Systems and Fire Safety Analysis). SPFE has worked hard to become a recognized engineering discipline, and such a foundation is expected in the other disciplines. Without the basics it is unclear how a FPE can help support an interdisciplinary design team.	Accept in principle. The engineering principles noted in the comment have been clarified as they are in the tier 4 of the education structure proposed. This document has improved the communication of this, but is intended to detail and focus on Tier 5, the fire protection information.
111	Jim Davidson	5		Could you please see if the "Life Safety" core can be placed back into the fire protection engineering core competencies so as to protect our practice of "Life Safety" engineering/consulting.	I was going through the core competencies listed on the SFPE web site and found it lacking Life Safety competencies in the listing. From personal experience of having a disciplinary complaint filed against me as a practicing Fire Protection Engineer by the Delaware Board of Architects for practice of providing life safety consulting services to the public which the Architects Board thought was the practice of Architecture. At the hearing my attorney defended me by using the core competencies listed for fire protection engineer by the SFPE for the Fire Protection Exam. My attorney and I were able to defend the practice of providing Life Safety consulting as being part of the discipline of fire protection engineering as shown by the core competencies listed by the SFPE and NCEES at the time of trial. With NCARB and various State Board of Architects trying to define "Life Safety" consulting as being the practice of architecture since "Life Safety" deals with buildings habituated by humans which the Boards think are the realm of architecture in order to protect the practice of "Architecture".	Reject. The focus of the document is on the core competencies for fire protection engineering, which typically include life safety analysis as part of the project objectives. It is considered that no specific text is needed regarding that.
112	Charles Fleischmann & Anthony Abu	5		Short description of minimum competency only list modeling under fire protection systems which seems to be in the wrong place.	Move or include in Fire Safety Science or make it its own topic	See response line #103.
113	John Ivison	5,6	1	Revisons to bullets 1-6	Needed to be expanded to reflect conventional terms/diversity of practice. This creates six core competencies. Ties in with rest of document. <b>(see Attachment Ivison)</b>	Accept in principle. See comment #50.

1	Submitter	Doc Page	Paragraph	Suggested Change	Substantiation	Committee Responses
114	Daniel Nilsson	5-10	all	The estimate of the areas and the hours spent on each topic need to be revisited.	Looking at the requirements, you seem to need to know about everything. I think you will struggle to find an FPE programme in the world that covers each of these areas in detail, but still they provide students with engineering degrees in FPE. Does an engineer need to know all these areas to be an FPE. Some might be focused on structures and others on life safety aspects. Some diversity needs to be allowed.	Accept in principle. The focus of the document is on core competencies, the document does not show what is needed for university programs or similar. The text was updated to reflect this.
115	James Milke	6	1	Include fluid mechanics as a fundamental knowledge area. The description could be: Demonstrate a working knowledge of static and dynamic of fluid flow The objective of this topic would be to provide a knowledge of the theory and application of fluid statics and fluid dynamics principals, such as estimate pressure drop in flowing fluids in pipes and ducts, evaluate a hydraulic network with application to sprinkler design, describe buoyant flows associated with fire and fire plumes and analysis fluid statics (relative to smoke control and water supply applications).	Fluid mechanics is just as fundamental of a knowledge area as heat (and mass) transfer.	Reject. This document defines the specific fire protection engineering competencies (Tier 5). Fluid mechanics would be in the assumed engineering/science background of someone studying this field.
116	Morgan Hurley	6	2	The objective of this topic would be to provide a knowledge of the theory and application of steady state and transient heat conduction in solids, <del>the concepts and applications of Biot and Fourier numbers</del> , the principals of thermal radiation with application to heat exchange between black and non-black body surfaces, the use of radiation networks & surface radiation properties, principles of convection heat transfer.	Why single out the Biot and Fourier numbers (which pertain only to conduction.) The Froude number (convection) and Reynolds number (fluid flow) are used much more frequently in fire protection engineering. Suggest deleting these dimensionless numbers as they add little value to the brief description of heat transfer.	Accept.
117	Doug Fisher	6	2	Bullet 2, Heat Transfer: Isn't "the concepts and applications of Biot and Fourier numbers" and "the principles of thermal radiation with application to heat exchange between black and non-black body surfaces" a little too specific?		Accept in principle. The text has been revised to more generally cover the heat transfer topic.
118	Doug Fisher	6	2	Can bullet 2, Heat Transfer and Bullet 3, Fire Chemistry be combined?		Reject. The committee supports these items remaining separate. There are different learning objectives within the subject matter.
119	Doug Fisher	6	3	Bullet 1, Passive Systems: add "and systems" after "measures". Should there be some discussion on knowledge of testing passive systems?		Accept in principle. Text is updated.
120	John Ivison	6	4	Reworded to reflect the 6 areas	Paragraph revised to reflect that this is an expansion of the above 6 areas. <b>(see Attachment Ivison)</b>	Accept in principle. See comment #50.
121	Robert Hanson	6	4	Change "concepts and applications of Biot and Fourier numbers" to "concepts and applications of thermally thick and thermally thin materials"	The difference between thermally thick and thermally thin materials is a more practical competency for FPEs	Reject. The phrase has been removed. The paragraph describes the general conduction, convection and radiation of heat transfer. Additional details and applications would come from further study of the subject.
122	Robert Hanson	6	4	Remove "use of radiation networks"	Unaware of the use of radiation networks in standard FPE work. Complicated situations would be solved with models	Accept.
123	Morgan Hurley	6	5	Delete bullet on "egress and life safety"	This is duplicative of information that is in the "human behavior in fire" bullet. If someone is knowledgeable in human behavior in fire, they can handle the egress and life safety	Reject. The committee considers these separate knowledge areas. They each have individual learning objectives.
124	Armelle Muller	6	8	In the paragraph "Human Behavior and Evacuation" add egress modeling. Add also applicable regulation	Use of Egress models is very important to determine the RSET	Accept in part. Models have been noted. Yet, this is globally applicable document. Regulations are determined on a jurisdictional basis.



1	Submitter	Doc Page	Paragraph	Suggested Change	Substantiation	Committee Responses
125	Armelle Muller	6	10	Passive systems are not mentioned in page 5	For consistency add them in page 5	Accept.
126	Milosh Puchovsky	6	1, 3, 5	(See attachment Puchovsky)	<b>(See attachment Puchovsky)</b>	Accept in principle. These recommendations were incorporated along with other modifications based on other received comments.
127	Bernie Till	6	first bullet	Fire Dynamics The objective of this topic would be to understand the various stages of fire, to provide a knowledge base concerning the different methods and techniques applied in the analysis of a fire sequence and develop ability to critically examine those methods in terms of practical application. This could include pool fires, point source models, pre-flashover compartment fire dynamics and assessment, and post-flashover fire dynamics and assessment.	The typical fire dynamics class that I am aware of (using Drysdale's text for example) seems much more comprehensive than that defined here. One definition from NIST illustrates the complexity of the term: <i>Fire Dynamics is the study of how chemistry, fire science, material science and the mechanical engineering disciplines of fluid mechanics and heat transfer interact to influence fire behavior.</i>	Reject. This level of detail has not been included for any of the knowledge areas. When studying the subject these details are explored.
128	Armelle Muller	6		There is no consistency between page 5 and page 6	Review to reach consistency	The consistency throughout the document has been reviewed as part of the comment resolution process.
129	Doug Fisher	7	1	Bullet 1 Active Systems: Add "active" after "role of". Should there be some discussion on knowledge of testing active systems? Integrated system testing?		Accept in part. At this point the competency document does not intend to get into the detail of single system testing versus integrated system testing. However, testing has been added to text.
130	James Milke	7	2	Is a review of halon design relevant as a <u>minimum</u> (key word) competency for a contemporary FPE?	While this could be desirable for renovation projects, is the knowledge of halon design essential in order for someone to be considered an FPE? If so, what about other historic, now antiquated systems?	Accept. The list has been modified to address the many types of systems without calling out halon.
131	Armelle Muller	7	2	Add inhibition after oxygen displacement	Halons and halon like replacement gas suppress fire by an inhibition process	Reject. This level of detail has not been included for any of the systems. When studying the subject these details are explored.
132	Amy Murdock	7	2	Include fluid mechanics	Fluid mechanics is a necessity in fire suppression.	Reject. This document defines the specific fire protection engineering competencies (Tier 5). Fluid mechanics would be in the assumed engineering/science background of someone studying this field.
133	Scott Lacey	7	3	More emphasis needs to be placed on DESIGN of fire alarm and detection systems. This is a very weak area for most FPE's. Including intelligibility, acoustics, circuiting, voltage calcs, etc. to learn limits of system size and how many panels are required for wall space.		Reject. This document is not intended to describe how to design systems. Every component and system cannot be mentioned in detail. The general description allows for flexibility to encompass a variety of alarm and detection components and arrangements.
134	John Ivison	7	3	Added fluid mechanics	Requires knowledge base for fluid mechanics/fire suppression/hydraulics etc. This is fundamental to water supplies/fire suppression system design. <b>(see Attachment Ivison)</b>	Accept in principle. See comment #50.
135	Amy Murdock	7	3	Include specifics relating to fire detection and alarm: smoke detectors, heat detectors, flame detectors, etc... horn/strobe devices, speaker/strobe devices, etc...	The document goes into detail for fire suppression but didn't seem to do so for fire alarm systems.	Accept.
136	Doug Fisher	7	3	Fire Detection and Alarm: add "based on hazard and occupancy" after "occupant notification systems"		Accept.
137	Doug Fisher	7	4	Performance-Based Design: delete "fire" in "fire performance objectives". The objectives could be something other than fire, such as egress		Accept.

1	Submitter	Doc Page	Paragraph	Suggested Change	Substantiation	Committee Responses
138	David Banwarth	7	5	<ul style="list-style-type: none"> <li>Smoke Management - The objective of this topic would be to provide knowledge of fundamental principles, design criteria and installation requirements for smoke control systems, including how to analyze, evaluate, <b>test</b>, and specify these systems. This could include principles of smoke production and spread, entrainment, axisymmetric and spill plumes, stratification, principles of natural and mechanical smoke exhaust system design, and reliability and robustness.</li> </ul>	A practicing fire protection engineer is called upon to test smoke control systems for acceptance as part of a typical project design. There is considerable science and skill required to adequately and properly perform smoke control testing. It is a required skill of practicing fire protection engineering and therefore needs to be part of the core competencies.	Accept.
139	Amy Murdock	7	5	Include fluid mechanics	Fluid mechanics is a necessity in smoke management analysis.	Reject. This document defines the specific fire protection engineering competencies (Tier 5). Fluid mechanics would be in the assumed engineering/science background of someone studying this field.
140	Doug Fisher	7	5	Smoke Management: Add "testing" between "installation" and "requirements"		Accept.
141	James Milke	7	6	Smoke control should also include design principles of systems utilizing the development of pressure differences to limit smoke spread (e.g. stairwell pressurization, elevator shaft pressurization and zoned smoke control)	The description appears to be limited to smoke control in large volume spaces, which is only a portion of the designs developed by FPEs.	Reject. The design requirements for a smoke control system are not intended to be covered in this document. The inclusion of smoke control systems as part of smoke management are identified as a fundamental element of fire protection engineering. The passive language of the topic description provides the flexibility to encompass the design elements stated in this comment.
142	Morgan Hurley	7	6	Move bullet on "smoke management" from "fire safety analysis" into "active systems"	Proper placement.	Reject. Smoke control and smoke management involve both passive and active systems that are identified in the descriptions of fire protection systems in this document. Furthermore analysis may deem that smoke control/management may or may not be necessary based on the scenario.
143	Morgan Hurley	7	8	Delete bullet on "evacuation analysis"	This is duplicative of information that is in the "human behavior in fire" bullet. If someone is knowledgeable in human behavior in fire, they can handle the evacuation analysis	Reject. The committee considers these separate knowledge areas. They each have individual learning objectives.
144	Doug Fisher	7	8	Evacuation Analysis: The paragraph used "fire or similar events" for the first time. This implies that only evacuation analysis is for "similar events". This should pertain to the entire document.		Accept in principle. Text is updated.
145	Doug Fisher	7	8	Evacuation Analysis: Delete "special situations" at the end of the paragraph. Also, "designs" should be singular at the end of the paragraph.		Accept.
146	Amy Murdock	7	2&3	Re-think your "and" statements; some may need to be and/or OR some may need to be better explained?	As it relates to fire suppression and fire alarm systems, I am not sure that FPEs need to "knowledge of fundamental principles, design criteria and installation requirements" for ALL systems listed or ALL systems available to FPEs. An understanding of the basic parameters and the appropriate NFPA Standard should suffice. Not all FPEs need to install a halon system; there is my best example.	Accept in principle. It is not considered that having knowledge of the roles of fire safety systems mean that you should know how to design and install every system. Text has been updated in other sections to reflect this.
147	Milosh Puchovsky	7	3, 4, 5	(See attachment Puchovsky)	<b>(See attachment Puchovsky)</b>	Accept in principle. See comment #50.
148	Armelle Muller	7		Add: smoke control systems	They are active protection systems	Reject. See Line #142.

1	Submitter	Doc Page	Paragraph	Suggested Change	Substantiation	Committee Responses
149	Morgan Hurley	8	1	Delete bullet on "structural fire safety."	This is duplicative of information that is in the "passive systems" bullet. If someone is knowledgeable in passive systems, they can handle the structural fire safety	Reject. Structural fire analysis involves more than just passive fire protection systems. Analyzing the structure is not only for fire barrier systems, but for design that could include smoke control, fire exposure, or separation distances, as examples.
150	Kevin LaMalva	8	1	Add the following text: "If the prescriptive method is selected, the proposed fire protection solution must be analyzed on a component-by-component basis (i.e., individual beams, columns, floors, etc.) in the context of the standard fire test method. If the performance-based method is selected, fire resistance qualification and/or equivalence calculations should not be used, and the proposed fire protection solution should be analyzed on a system-level basis in the context of in situ thermal conditions with a structural engineer as an integral participant."	Fire engineers should not be practicing outside of their competency. As such, acknowledgement that a structural engineer is required for a performance-based approach is needed in the language. This is extremely important, and embodied in ASCE/SEI 7-16.	Reject. Engineers should not practice outside their area of competency. Protecting the structure from fire events is within the purview of a fire protection engineer. Collaboration with other engineers, such as structural, is necessary and understanding the limitations of each side is part of the professional ethics so that qualified professionals complete the appropriate tasks.
151	Doug Fisher	8	1	Structural Fire Safety: the last sentence isn't a complete sentence.		Accept in principle. This sentence has been corrected.
152	Michael James	8	3	replace FPE with what it means as it is not defined anywhere else in the document.	Does FPE mean fire protection engineer or Fire Protection Engineering.	Accept.
153	Robert Hanson	8	3	Remove "including computer-based analysis of structures exposed to fire"	The use of a structural model should be within the scope of a structural engineer. The FPE should be able to provide the fire input for the model	Reject. The language has been clarified to explain that the models referenced are fire models. The impact on the built environment is what needs to be analyzed. This is not intended to be a structural analysis.
154	Scott Lacey	8	4	More information related to Building and Fire Regulations and Standards. The FPE overlaps with so many different codes/standards. IBC/IFC, Life Safety Code, HVAC, OSHA, Process Safety Management for industrial, the obvious suppression and detection standards, NFPA 70, military standards, etc. Try to touch more on the significant overlap - not list all of them.		Accept in principle. Language was added to indicate the need for determination of the local and regional ordinances that govern the codes and standards for any specific project.
155	Doug Fisher	8	5	In the table, Fire Safety Analysis column, last bullet item doesn't match the heading used above.		Accept.
156	Nathaniel Addleman	8	Risk Mgmt	Include concept of risk management as it applies to a business that may determine the approach that should be used for fire mitigation. For example, how does a fire affect the business; how much money should be spent to provide how much mitigation. In some situations it may be preferable to allow a fire to occur and control its development rather than try to prevent it. The economics of the situation must be considered.	This essentially makes risk management a business decision, not necessarily only a safety or engineering decision. That is, not only are the safety and engineering factors considered, but also the economics.	Reject. Business risk management is a function for the owner or their representative to consider when setting the performance goals of the safety programs including fire protection. Risk management within fire protection engineering is described in general terms in this document. The risk management can be large scale or small scale varying with the scenario and objectives of the project.
157	Milosh Puchovsky	8	Table	(See attachment Puchovsky)	(See attachment Puchovsky)	Accept in principle. See comment #50.

1	Submitter	Doc Page	Paragraph	Suggested Change	Substantiation	Committee Responses
158	Kevin LaMalva	8		Structural Fire Safety - The objective of this topic is to provide knowledge regarding the impact of fire exposure on materials used in construction assemblies, the role various construction features play in the fire resistance of the assembly and the application of mechanics and heat transfer engineering principles. Thermal response of structural elements (timber, concrete, steel, composites). <b>If the prescriptive method is selected, the proposed fire protection solution must be analyzed on a component-by-component basis (i.e., individual beams, columns, floors, etc.) in the context of the standard fire test method. If the performance-based method is selected, fire resistance qualification and/or equivalence calculations should not be used, and the proposed fire protection solution should be analyzed on a system-level basis in the context of in situ thermal conditions with a structural engineer as an integral participant.</b>	<i>Fire engineers should not be practicing outside of their competency. As such, acknowledgement that a structural engineer is required for a performance-based approach is needed in the language. <u>This is extremely important, and embodied in ASCE/SEI 7-16.</u></i>	Reject. See Line #150.
159	Armelle Muller	8		Table: add smoke control systems	They are fire protection systems	Reject. See Line #142.
160	Amy Murdock	9	4	ENSURE that your # hours correlate with the Universities please!	Have you connected and coordinated with Universities? Do your # of hours relate to the Universities offering fire protection engineering? UMD? WPI? Lund University? I am a 1998 UMD FPE grad. If this document now means that I can't practice as a registered FPE after my graduation and after 3 years in the field, that's a problem...I believe I was able to take the PE exam 3 years out of college. I am a PE in multiple states...	Accept in principle. The section about recommended hours has been estimated based on input from the academic communities in the USA and Europe, and with the SFPE Higher Education Committee. In addition, the focus is on core competencies for the practice of fire protection engineering. The intent of the document is not to determine what is required by different university programs.
161	Michael Crowley	9	Recommen ded time...	I suggest more detail be added to the time section.	My background is not in acadamia. A better description of the time is needed. Contact hours is relatable to most US licensed engineers. Would people in the Middle East or Far East relate to the ECTS?	Accept in principle. The section about recommended hours was updated to give a clearer picture of what the recommended hours actually imply.
162	Morgan Hurley	9	Table	The "Recommended Minimum Competencies for Fire Protection Engineering" appear to be much broader than what is used in the US (e.g., the criteria developed by ABET, with SFPE's support.) Please review the table against the ABET criteria and revise accordingly.	It would be a huge disservice to the fire protection engineering profession if SFPE were to state that an ABET-accredited education is not sufficient to prepare a fire protection engineer.	Accept in principle. The focus of the document is on core competencies. The text was updated to reflect this. It is not the intention of this document to discredit programs such as ABET or not recognize the value the accreditation demarks of an engineering degree.

1	Submitter	Doc Page	Paragraph	Suggested Change	Substantiation	Committee Responses
163	Carl Baldassarra	9	table	Reconsider the relative weighting given certain subject areas	While important, it appears that the fundamental principles based upon knowledge of water-based suppression is being given too little time when compared to the analytical methods. For example, "active suppression" is given 60-90 hours. It is not clear how this differs from "Fire Suppression," also given 60-90 hours. It is extremely important that competent FPEs have a STRONG ability to analyze public and private water supplies to determine if they will be adequate and reliable for the various risks they will see in their practice. Unfortunately, this is becoming more evident with some programs today where recent grads do not have this ability to look at public supplies, elevated tanks, pumps, underground mains, flow tests, etc., and determine if the supply is adequate for the demand. Contrast this with the time allocated to "Performance Based Design" (160 hrs), "Fire Modeling" (160 hours) and "Risk Management" (not sure what that encompasses) with 140 hours. I also propose that Smoke Control (100-140 hrs) is not proportional to ALL water-based suppression systems. Please review the weighting.	Accept in principle. The recommended hours were updated and agreed within the subcommittee.
164	James Milke	9	Tables	The recommended hours are meaningless unless a level of the academic study is included. For example, 3 hours in a sophomore course is far different than 3 hours in a graduate course. Second, the number of hours indicated for any topic is far in excess of a semester course. A typical semester course involves 40-50 contact hours.	A review of any academic schedule of classes would easily demonstrate the contact hours for any topic. Further, because the hours are so different than the contact hours in a semester course, these numbers could be counter-productive to universities planning course offerings or harmful to the evaluation of an academic program (not helpful as suggested on p. 2).	Accept in principle. The section about recommended hours was updated to give a clearer picture of what the recommended hours actually imply.
165	Armelle Muller	9		Table: add smoke control systems	They are fire protection systems	Reject. See Line #142.
166	Bernie Till	9			The hours (especially the "academic hours" terminology) are confusing and seem to be potentially excessive. For example, NFPA would teach the life safety code in less than 40 hours. The egress and life safety part lists a minimum of 2 - 3 times that.	Accept in principle. The section about recommended hours was updated to give a clearer picture of what the recommended hours actually imply.
167	Eoin O'Loughlin	9		The document should be clearer as to the basis of the recommended hours (based on ECTS), and the various means by which they may / should be accumulated (and any equivalencies between different forms of learning) and over what period of time.	Self-explanatory	Accept in principle. The section about recommended hours was updated to give a clearer picture of what the recommended hours actually imply.
168	Higher Education Subcommittee	9		Clarification needs to be made in the table which lists recommended academic hours whether these values represent academic hours in a university setting or includes professional development and practicum hours.	If this is intended to reflect solely university academic hours, then these values need to coordinate with the BS Model Curriculum. An attached document titled " <b>Higher Education Recommended Academic Hours for Core Competency.xlsx</b> " should be referenced in the case that these values are solely academic.	Accept in principle. The section about recommended hours was updated to give a clearer picture of what the recommended hours actually imply.

1	Submitter	Doc Page	Paragraph	Suggested Change	Substantiation	Committee Responses
169	Higher Education Subcommittee	9		The model curriculum for FPET, BS and MS in FPE should be directly referenced as resources in this document. Possibly in the form of an annex.		Accept in principle. Directly referenced in the document.
170	Higher Education Subcommittee	9		Our recommendation would be to either (1) not reference ECTS, or (2) Reference additional widely used systems including ECTS and US Credit Hours all in a footnote.	It is unclear to the Higher Education Subcommittee why the European Credit Transfer and Accumulation System (ECTS) is explicitly referenced without referencing other national and international systems, such as the credit hours required by US Federal Regulation. <b>(See attachment Higher Education)</b>	Accept in principle. Text was modified to reflect this.
171	Peter Sunderland	9 all		Many sentences require that university degrees must provide a minimum level of competency (e.g., page 2 first paragraph). This requirement should be removed.	No such degree provides the hours shown on pages 9-10. If this document is adopted as is, all FPE university programs could be imperiled.	Accept in principle. The focus of the document is on core competencies, the document does not show what is needed for university programs or similar. The text was updated to reflect this.
172	Peter Sunderland	9, 10		Remove all the hour numbers in all the tables.	This document should be about competency, not time spent. The time spent varies widely among individuals and learning methods.	Reject. It was considered very important to give an indication of recommended hours considered needed to gain a comprehensive understanding of the knowledge areas belonging to the four core competencies.
173	Michael James	10	6	All fire protection engineers are expected to read, accept, and abide by the SFPE Canons of Ethics. Below is a summary of the core concepts of the Canon.	It is unclear what the relationship is between the ethics stated in this document and the Canon of ethics.	Accept in principle. Ethics are important for all fields of engineering. The SFPE Canons of Ethics are the recommended guidelines for fire protection engineers and the reference provided by this document.
174	David Tomecek	10	4th under Ethics	Suggest rewording to be more broad and encompass other ethics frameworks. Proposed wording: "All fire protection engineers are expected to abide by a recognized ethics framework, such as those supported by professional engineering laws, engineering societies (such as SFPE and its partners) and/or other fire protection and life safety organizations. The SFPE Canon of Ethics provides the framework endorsed by this organization."	It is likely that other organizations will use this document to their advantage (e.g., governments, corporations, etc.), perhaps in employment, judging candidates, evaluating contractors (as in the case of Authorities Having Jurisdiction) or other endeavors. The canon of ethics that might be adopted by those organizations may vary from SFPE's, and thus dictating compliance to SFPE's canon might be out of place.	Reject. The committee wants to tie to specific ethics guidelines in the SFPE Canons. If other organizations choose to adopt this document, it would be within their right to modify which code of ethics is implemented.
175	Daniel Nilsson	10	ethics	The part on ethics needs to be increased and perhaps added as a core qualification.	Ethics is perhaps the most important skill/qualification for an FPE. Still, it is only an add-on at the end of the document. This is something that everyone needs, and something that needs to be in any good FPE programme.	Reject. The references to the SFPE Canon of Ethics are the guidelines that have been selected and recommended for all fire protection engineers to follow. Ethics are also covered in the Tier 4 list of subjects that would apply more broadly than the Tier 5 - fire protection engineering information, which is the focus of this document.
176	Armelle Muller	10		The paragraph of Ethics is too long. Summarize with reference to SFPE document dedicated to ethics	Shall we talk so much of ethics provided that there is a SFPE document dedicated to ethics?	Accept in principle. The SFPE Canons are referenced. Some language has been removed.
177	Allan Coutts	10		Strike the line: "Distinguish between ..."	The purpose of the statement "Distinguish between a legal or management issue and an ethical matter" does not make sense. There are ethical considerations associated with all legal issues, and there are some things that are legal, which are not ethical. In terms of management issues, there are many examples where management actions overruled engineering recommendations to produce disastrous outcomes. How engineers should respond to such situations is a core topic for ethics training.	Accept.
178	Amy Murdock	11	5	Identify who on the Committee is a registered PE; graduated with a BS or MS or PHD in Fire Protection Engineering.	It would be appreciated to know if some members are registered as Professional Engineers in the discipline of Fire Protection Engineering.	Accept in principle - credential/registrations can be added as desired by committee members. Education will not be added as this is not a prerequisite for participation with this committee.

SFPE Core Competency Draft - Compiled Comments with Committee Responses

1	Submitter	Doc Page	Paragraph	Suggested Change	Substantiation	Committee Responses
179	Daniel Nilsson	11	acknowledgements	Add people from academia in the SFPE Subcommittee.	I noticed that you have no representatives from universities in the Subcommittee. I find this very odd. Universities are in charge of educating engineers, but yet they are not in the group that developed this document. I know that some representatives at universities have been consulted, but they also need to be in the group.	No action required. This is a volunteer committee. SFPE members can seek to join the committee at any time. Reminders are circulated through the membership newsletters periodically. Outreach to the SFPE Higher Education Subcommittee has been utilized throughout the document development in light of academia not presently active on this committee.
180	Allan Coutts	11		Update the bullet starting with "Select and take ..." Replace "consistent with the public health, safety, and welfare" with "consistent with the applicable norms for protection of the public, environment, workers, emergency responders, and owners."	Ethics is not just about public health, safety and welfare. There are unacceptable risks to workers and stockholders.	Reject. This language has been removed from the document. The committee supports the SFPE Canon of Ethics to be applied to all fire protection engineers.
181	James Bassett	12	Acknowledgements	Modify "Swissi AG" to "SafeT Swiss AG"	Editorial - company name change	Accept.
182	Armelle Muller	12		Reference: add the SFPE document about ethics		Accept.
183	Scott Lacey			The necessity to understand the roles of all parties such as the design professional, the contractor, the AHJ, the architect, MEP engineers, etc.		Reject. The document is intended for use with a general audience. The roles of the many stakeholders is important for the practice of fire protection engineering, but it is not intended for this document to describe the roles/functions of the stakeholders.
184	Scott Lacey			Understand the code development and adoption process.		Reject. This document will not go into the code development process. Building and fire regulations and standards are noted as a knowledge area within fire protection analysis.
185	Scott Lacey			Information related to integration with other building systems such as elevators, generators, HVAC, security/access control, etc.		Reject. Details of the design process are not in the scope of this document.
186	Jusef Liban				(see Attachment Liban)	No action required for this document. The committee recognizes that instructors for fire protection engineering information must also be qualified so that information is transferred correctly. In addition, this document aims to spread the details that a fire protection engineer must be competent in so that the global industry can rely on qualified competent professionals.
187	Eoin O'Loughlin			Consideration should be given to digitising the document.	A web-based platform with graphical content and some degree of interactivity could improve the global reach of the message and accessibility to the document content.	No action required. The committee would like to see the document used in many ways. A digital platform may be valuable down the road. The focus at this time is to develop the content for further implementation.