

FIRE SECTOR FEDERATION

Scoping Study Briefing

Economic Cost of Fire

21 April 2013

This Briefing outlines a study into a number of areas of interest that the Fire Sector Federation wishes to explore to extend data and understanding of fire economics in the United Kingdom

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1. Introduction

The Fire Sector Federation [FSF]¹ has determined that it wishes to consider the publication of statistical data with a commentary that objectively reports periodically upon the financial impact of Fire, initially within England and Wales but preferably extended to the whole of the UK.

It therefore wishes to contract a suitable organisation to undertake a short-term initial scoping study into the practicalities and costs of securing this objective to enable its members to consider how they might best advance the above objective.

The task of periodical reporting estimates on the cost of fire has historically, and at present remains, within official Government responsibilities. However, this situation is changing and the FSF is both keen to see this form of statistical analysis continue and, if possible, enhanced to reflect current practices by the Fire and Rescue Services [FRS] and to incorporate known and predictable changes in the natural and built environment.

The first step in this process is viewed as a two-stage action with (a) the existing model, adopted in 2006, being continued to produce what will be a third report in the current series using data captured up to 2012, whilst (b) modest variations are considered that will enhance the existing model.

In addition to this first step, which is essentially the continuation and updating of the current statistical model, the FSF wishes in a second stage that; (c) introduces a new cost and value model capable of wider use as a cost benefit analysis tool; including (d) extension into the area of predictability. The second stage would thereby allow, for example, policy variations to be tested; alternative fire protection systems evaluated; or critical financial investments reassigned and evaluated, and offer quantification and assessment tools to support intra and inter sector boundary mapping insight into the important integrated relationships, impacts and outcomes that underpin the UK philosophy of integrated risk management planning.

Fundamental to the study is the requirement of data integrity; the use of only statistically acceptable methodologies in constructing the database including collation, manipulation and derived outcomes so that any discussions arising from any published periodic reports relate to the arguments and interpretations constructed and not to the quality and objectiveness of the published data.

This paper explains the FSF ambition in this area and invites research organisations to express interest and offer opinion with ideas of costs to enable the FSF to determine how it may achieve its ambition.

¹ *www.firesectorfederation.co.uk* The Fire sector Federation is a representative organisation of those who work with or within the built, natural, fire and rescue and national resilience environments in the UK and expertly consider issues of common interest.

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2. Concept

Over many years, Central Government has published statistical information regarding the financial cost of fire within England and Wales. The current statistics published by the Department for Communities and Local Government [DCLG] is, 'The Economic Cost of Fire: estimates for 2008'², using a model broken down into three distinct categories:

- Costs in Anticipation – the costs of measures designed to either prevent fires or protective measures to mitigate the damage caused by fires, such as: total costs of active (e.g. sprinklers) and passive (e.g. fire walls) fire protection in buildings; resource and capital costs of training and fire safety; non-pay related costs; and total insurance administration
- Costs as a Consequence – the costs as a result of fire, including damage to properties, loss of business, and the costs of human injury and death, such as total cost of fatal and non-fatal casualties; total cost of lost business; costs of property damage; and costs to victims, the police, criminal justice system and prison service
- Costs in Response – the costs because of reported incidents, including the cost to the Fire and Rescue Service of responding to fires, false alarms, etc., such as: Fire and Rescue Service resource costs in response to fire related incidents; and capital costs in response to fire related incidents.

The Department of Communities and Local Government has indicated that it will publish or provide for publication by the Fire Sector Federation 'The economic cost of fire: estimates for 2010' as a closing action on its current work. Thereafter the Federation has agreed to take forward this work, using the current 2006 model perhaps slightly modified, to produce a similar publication of estimates for 2012. This action will allow time for this scoping study and for the Federation to consider recommendations and further work to implement action to introduce an enhanced and wider ranging model.

The Federation has discussed the current approach and considered it alongside other statistics, like the 2009 the RISC Authority report 'Insured Large Loss Fires Project'³ and other international reports⁴. This discussion concluded that a comprehensive scoping study into estimated fire costs is necessary that will:

1. Review all the statistical data options available for analysis
2. Consider a web based platform to increase accessibility to the wider community
3. Provide a comprehensive, expanded and summarised data collection
4. Allow generation of an objective commentary on economic costs to underpin Fire policy

² *Fire Research Report 3/2011 – February 2011 –*
<http://webarchive.nationalarchives.gov.uk/+http://www.communities.gov.uk/documents/corporate/pdf/1838338.pdf>

³ *FPA [2009] Report to Insurers R19*

⁴ *The Geneva Association – www.genevaassociation.org and CTIF World Fire Statistics – www.ctif.org*

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5. Review the current methodology and mathematical models and suggest improvements
6. Recommend a methodology to reflect on-going contemporary practices
7. Enable estimates and evaluations to be produced for cost benefit risk analysis
8. Use both open source data and other restricted data including routes of access to that data
9. Enable periodic reporting of estimates that are robust and can withstand accepted professional challenge, and has
10. Sufficient sustainability for at least 10 years from the date of introduction.

The scoping study will therefore have to take into account the existing and on-going concepts embedded within the existing model and recognise that extension of concepts detailed as areas of interest and outlined in this document are aspirational in the context that the study is about recommending options. The recommended options are required to allow informed decisions on the nature of any future model and the methodologies and presentations that might best be used post 2012.

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3. Objective

The objective of the study based upon the above concept is therefore to:

“Consider existing practices and conduct research, report and recommend options to the Fire Sector Federation in a fully costed proposal, including a plan for implementation and an assessment of all pertinent risks, that will allow the Federation to determine how best to introduce a Cost of Fire report process based upon a methodology that is sustainable and reflects best international practice”.

4. Duration

The anticipated duration for the study should allow presentation of the final recommendations to a steering group of FSF members ideally before 26 July 2013.

5. Expert Support

Although advice from FSF members through a steering group will be available, the expectation is that the contractor will administer and undertake all work using their own allocated resources. The FSF will assign a Project Liaison Manager to work with the contractor to assist with interpretation as to scope and when possible identification of support or organisational contacts.

6. Geographic Inclusion

The initial geographic area for the study is England and Wales. The contractor is however required to demonstrate how practical it might be to extend in whole or part of the proposed methodology to include Scotland and Northern Ireland.

7. Scope

The Reasoning for an Extended Model

The FSF wishes to extend the current model's scope so that it may better represent inputs and outcomes when considering the economic cost of fire. The strands of the current model [anticipation, consequence and response] may illustrate established practice but are viewed as less reflective of other positive and negative outcomes. The strands are also, in part, a result of what can be easily collected as data. The FSF wishes the contractor to explore wider options to assess if extension of the model is feasible to demonstrate the most comprehensive model that is practically achievable; one that reflects value in both absolute terms and in those terms that can be demonstrated to have been reasonably interpreted and hence likely to be accepted.

The reasoning for this shift in approach is because both the primary response service, the FRS, has and will continue to evolve its' strategic objectives; and there is a continuing evolution of technological solutions to detect, warn and respond to fires. Consequentially the model must be both flexible, to support evaluation of alternative strategies, and consistent, allowing over a period trends to be seen and judged.

In the first case, the role of the FRS has continued to change over the past decades and considerably since the introduction of the 2004 Fire and Rescue Services Act⁵. Originally described in simple terms as moving "from response to prevention" the FRS is now engaged in multiple actions that reduce harm and physical damage and loss and not just from fire. The FSF hold a view that it is therefore important that the cost of the FRS is not disproportionately applied only to the cost of fire and reflects the wider distribution of costs between the duties and discretionary tasks undertaken by the FRS.

In this regard the following examples serve to illustrate the changes:

7.1 Environment

The extended role [beyond water rescue] undertaken by the FRS in flooding situations to save and protect property. The carbon dividend impact of effective prevention and response activities and activities conducted to reduce and control wildfires and control through enforcement of storage facilities for waste products and stockpiles of carbon rich materials like tire and rubbish dumps. The positive environmental impacts of these and other operational response activities are currently not quantified but clearly represent tangible benefits.

7.2 Export and Employment

There is no current presentation of the contribution made by the UK Fire industry, in GDP terms to the export market and domestically, through employment and financial contribution for people directly employed in the

⁵ Elizabeth Chapter 21 Fire and Rescue Services Act 2004

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fire industry and in downstream activities like component suppliers and service industries. UK FRS and associated enforcement regimes also create a positive impact from what is seen normally as a negative regulation restriction helping maintain employment, adding marketing value and helping promote the UK fire industry as world class all have impact on the 'Cost of Anticipation'?

7.3 Legacy

There is no financial quantification of the gains made from protecting UK cultural heritage locations [Royal and Public Palaces etc.] and facilities [Cathedrals and Museums] and the value of associated actions [Heritage planning] to prevent loss of iconic structures and irreparable items with the associated advantage gained from technological innovation in protective systems. These fire protection measures and operational FRS response requirements are vital to maintenance of the UK's cultural status, tourism and the actual quantification of the effectiveness of this net of protective measures could be incorporated.

7.4 Special Services

The costs (and associated and consequent costs) of special rescues are very traceable as are the costs of preparation for services provided to meet non-fire situations [Road Traffic Collisions, water rescue etc.]. Extracting these costs from the overall cost of FRS provision and then improving and actual costing of those activities both in absolute terms [specialised equipment and training] and pro rota [primarily personnel, vehicles and facilities] to cover associated costs that offer added value activities [health and road accident prevention, e.g. life safety skills] undertaken in support of partners, would dynamically reduce the 'Cost of Response'.

7.5 Social Costs

Although identification of non-statutory activity costs is difficult the FRS undertake many programmes that reduce social costs. Participation in social improvement and good citizen programmes [Princes Trust Volunteers, abuse avoidance and rehabilitation, elderly care support], work with unemployed, vulnerable and disadvantaged groups, often through associated with partners help to reduce overall societal vulnerability and save costs falling to other services. Again using some experiences from FRS that have done work to establish the effectiveness of this type of program might offer an extrapolation indicator and again alter 'Cost of Response'.

7.6 Consequential Loss

Perhaps the largest issue is the 'Cost as a Consequence' reflecting the downstream costs of fires. Robust data on death and injuries, drawn from correlations between FRS and NHS data, exists but less of those losses associated with industrial and commercial fires on communities, like loss of employment and service industries and loss of public facilities, education buildings and cost of welfare when rehoming. The insurance picture cannot be comprehensive, because both under insurance and non-insurance exist, and costs borne by individuals and authorities, like transportation costs due to schooling or work relocation and other detrimental outcomes requiring public or private expenditure to meet negative impacts arising from fire losses are not

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captured. Insured losses are known to have risen and the underlying trend is a most important factor in assessing the economic loss.

7.7 Technological

In the area of technological development the continued introduction of systems designed to prevent and detect ignition, action containment or suppress fires places demand upon the model. Currently highlighted by suppression and containment through the association of control over fire by automatic sprinkler suppression systems the cost model needs to have the capability of adaptation that would allow demonstration of physical protection, for example illustrating the value of saved property.

7.8 Technology Industry

This feature needs to be capable of demonstrating far more clearly the cost benefit of a mixed solution that involves activities that are currently absorbed in the 'Cost of Anticipation' and 'Cost of Response'. The model must demonstrate the contribution made by the protective industries and allow purposeful evaluation of property protection strategies alongside response options so aiding a better and more comprehensive understanding of integrated risk management approach.

7.9 Property Protection

One example of the integration of risk is the protection of property by suppression and passive systems that contain and control fire spread thus allowing resumption of business without undue interruption whilst reducing environmental and social costs. The protection of property in a number of specific cases exceeds the effectiveness of FRS response because of determinate factors like building design and construction, risk from hazardous materials or difficulties of accessibility.

Current work, exemplified by the automatic water sprinkler initiative, is believed to aid discussion on the cost and benefits of different solutions and this process, with the assistance of the fire industry, needs extension into other forms of protection. The example of portable fire extinguisher provision, a regulatory requirement in premises, is an example of a fire suppression provision that could be subject to assessment of cost effectiveness.

The 'Cost of Anticipation' therefore needs equating with 'Protection Gain'. Even basic fire suppression provision in the form of portable fire extinguishers, included as a cost of anticipation can have a positive impact and a protection gain if an incipient fire is extinguished and prevented from growing.

7.10 Life safety

A further example of this integrated contribution is the use of alerting and warning systems that support safe evacuation and activate automatic mechanical ventilation systems to reduce fire spread, aid visibility, allow safer firefighting and reduce fire impacts on structures. Costs savings from safer buildings accrue to NHS services and employers and need estimation.

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7.11 Industrial Fire Brigades

Although there are few industrial fire brigades currently practicing in the UK those that do exist often provide highly professional fire prevention and protection services. These services, recognised by external observers like the public FRS and insurers, are often used to protect high economic value or high risk facilities, oil refineries, nuclear installations, power plants, military bases, airport facilities and large commercial and manufacturing plants. The model should incorporate the contribution from these specialised industrial fire brigades.

Supporting an Extended Model

Given the above statements the scoping study should seek to comprehensively consider, in the wider context outlined, all of the following:

7.12 Review all the statistical data options available for analysis

This includes both current and suggested databases with limits on accessibility, ownership and reliability to meet the model criteria for sustainability.

7.13 Consider a web-based platform to increase accessibility to the wider community

The recommended platform must be capable of FSF control as to inputs and updating and not require high costs or specialisms in skills to ensure its maintenance.

7.14 Provide a comprehensive, expanded and summarised data collection

The style of ultimate presentation, which will need to be demonstrated in the final presentation, must be user friendly and capable of interpretation by non-specialists.

7.15 Allow generation of an objective commentary on economic costs to underpin Fire policy

The study will need to illustrate how the data might be used and subjected to professional interpretation.

7.16 Review the current methodology and mathematical models and suggest improvements

A critique on the existing model will be expected together with recommendations for improvement to match the FSF aspirations and future proofing.

7.17 Recommend a methodology to reflect on-going contemporary practices

Reviews conducted to acquire knowledge of existing fire sector practices, their relevance to the future model and methodology to capture and use data will require description.

7.18 Enable estimates and evaluations to be produced for cost benefit risk analysis

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Illustrations should be used to demonstrate how the model might effectively be used to show what tools have been incorporated to assess cost benefit factors.

7.19 Use both open source data and other restricted data including routes of access to that data

All recommended data sources will need to be fully described as to their quality, sustainability and accessibility together with any restrictions, licence cost or other constraints

7.20 Enable periodic reporting of estimates that are robust and can withstand accepted professional challenge

The study will have to demonstrate how outputs of data may be realised, including provision of any propriety software that has been used and describe in detail the results and qualifications of the evaluation used to ensure the data is professionally acceptable.

7.21 Sufficient sustainability for at least 10 years from the date of introduction

The study must describe in practical terms how the model will be established and capable of being future proofed to last a minimum of 10 years from the date of its introduction

In addition the following issues are also to be considered:

7.22 Methodologies for Presentation

The study will need to consider and recommend to the FSF Steering Group the most appropriate method of presenting any new data that it is proposed to include in any extended model. This is in addition to the narrative and statistical tables used in the current reporting format. It is expected that the forms of presentation, for example case studies or sampling data, chosen will allow as many as possible of the selected areas identified in the scope to be used. The contractor may suggest formats and styles of data presentation that best illustrate the issue in question and, where there are alternatives in data and presentation including streaming data from other sources, suggest and offer options.

7.23 Integrated Risk Management Planning

The scope includes cross-referencing of the national statistics to the present process of integrated risk management planning [IRMP], as adopted by Fire and Rescue Authorities and implemented by the FRS. In particular there is an expectation that progressively the data derived from IRMP and the extended model will be used to support initiatives, conclusions and debate on the effectiveness of the IRMP process as a policy and strategic tool.

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7.24 Options for Ownership of the Model

The objective ultimately is that data derived and used in the model will be freely available to registered users, including the public, ideally without charge creating a freely open data source. It will be essential to maintain the integrity and quality of the process, updating and collating data and professionally assessing and analysing the data. Although it is envisaged that initially the Federation as the promoter will undertake this governance role alternative approaches that facilitate the work while ensuring transparency and integrity are requested as recommendations.

7.25 Funding Options

Although the Federation and its members will fund this scoping study all future work will require sustainable funding. Recommendations are therefore required together with a cost model that is judged as capable of maintaining the cost of fire model proposed by the contractor. The options may include bids to appropriate National and European research institutions, advertising and service marketing on any associated suggested internet or web site, partnerships or alliances with suitable organisations or similar ethical linkages. The use of subscriptions may also be demonstrated but, as outlined above, the clear objective is to secure a freely open public source data system.

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8. Expected Deliverables

The outcome is a detailed methodology that allows introduction of Cost of Fire model. This will need to be demonstrated to the FSF Steering Group; described in three copies of a written report; and provided electronically in Microsoft WORD.

9. Work Plan

The foundation of the scoping study is seen as based upon a detailed work plan that has detailed tasks and dated milestones. The work plan will be used to set priorities, assess progress and confirm direction and will be requested before any work commences on the study. The FSF Steering Group will be asked to agree the plan before work is taken forward.

10. Finance and Reporting

The study will have at least three defined formal reporting stages Kick Off, Mid Stage [10 weeks] and Final; subject to weekly progress reports; and have scheduled meetings with arrangements suitable for both parties. Contract scope extension and variations are not foreseen and ultimate arbitration will be subject to UK law if resolution or default occurs. Payment will follow the reporting stages in three 25% increments and one final 25% payment following certification of acceptance. Failure to progress or deliver will result in the withholding of payment(s).

11. Individuals

The names of all individuals likely to be assigned to the study together with sufficient personal information to assess their competency are expected to be submitted and the name of the individual who will manage the project on behalf of the contractor with all necessary contact details.

12. Data Privacy

The contractor will need to assure that any personal data gathered remains anonymous and any data used will protect any individual, describing how compliance with UK legislation and good practice regarding data protection will be satisfied.

13. Gender and Ethics

The contractor will be required to identify any gender or ethical considerations that might arise

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14. Intellectual Property Rights

The contractor will be required to describe how the intellectual property rights of any contributors are to be protected.

15. Risks

The contractor will be asked to undertake a risk assessment on the proposed Work Plan and on the Final Recommendations to identify in particular any probability and consequence of increasing costs or decline or loss of access to any recommended data sources associated with the proposed cost of fire model.

16. Compliance

The contractor will be asked to provide a statement of compliance with this briefing document as part of the contract and may suggest alternative arrangements and possible improvements.

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The Fire Sector Federation

The Fire Sector Federation (FSF) seeks to give voice to and exert influence in shaping future policy and strategy related to the UK Fire Sector.

The Federation is a not for profit non-government organisation established to act as a forum for the discussion of fire-related issues of interest to its membership and to evolve as a central source of information on all aspects relating to fire. It brings together representatives from a range of stakeholders, which make up the UK Fire Sector.

Originally formed in 2011 as the Fire Sector Partnership, the Fire Sector Federation was established in June 2012 following a merger with the Federation of British Fire Organisations (FOBFO).

The FSF was originally established in response to the Fire Futures review. Launched in July 2010 by the Fire and Rescue Minister Bob Neill MP, this was a strategic review of fire and rescue provision designed to enable sector partners to shape the future direction of fire and rescue services in England. It was undertaken and led by the sector with contributions from a wide range of representative bodies and organisations.

As a result of the review, the Government made it clear that it no longer intended to control and direct the way fire and rescue services are delivered and instead expects the fire sector to take a lead in shaping policy.

The FSF provides a broad spectrum of opinion from the fire sector. It encourages horizontal integration and attempts to cut silo mentality in working practices by addressing both the built and natural environment, as well as fire and rescue service issues.

The FSF meets regularly in open forum, bringing together the broad knowledge, experience and skills that exist across the sector, with the intent of maximising effective use of this accumulated expertise to improve the safety of the nation. It seeks to articulate unambiguously, opinions and advice on behalf of the unified sector for the overall benefit of UK communities. It aims to improve communications and cooperation to help drive efficiency, common policy and common standards.

The Federation is a forum for debate, available to any member to convey and hear the views of other members on areas of common concern. Its aim is to share useful information, reduce barriers and improve communications between different areas of the industry.

All partners within the FSF aim to contribute, through collaboration, coordination of effort, expertise and resource, to the UK's national preparedness, resilience, response, mitigation and recovery from fire.

www.firesectorfederation.co.uk

Telephone: +44 (0)1608 812543 Email: admin@firesectorfederation.co.uk