SAFER-ROI:

A risk-based tool for evaluating the economic benefits of fire safety investments

What we are doing:

SAFER-ROI is a decision-support tool that translates the impact of fire-safety measures into measurable economic value. It models how measures influence fire escalation and consequence severity, then expresses those changes in terms of expected annual loss and standard investment metrics. Designed for safety professionals, it supports transparent prioritization and budget justification.

Why we are doing it:

Fire safety is often viewed as a sunk cost, rather than a value-generating investment. Yet decision-makers need clear, comparable evidence to evaluate options. SAFER-ROI enables this by providing a consistent and auditable framework for assessing and comparing the return on investment of fire safety upgrades.

How we are doing it:

Impact of fire safety measures on risk reduction:

The tool models fire progression in code-compliant buildings (as a baseline) and then applies fire safety measures that users choose. Baseline escalation paths, from origin to compartment, floor, and beyond, are adjusted based on the effectiveness of the chosen measures in various escalation scenarios. This produces a risk reduction approximation for property damage, business continuity, and fatalities.

Economic valuation:

Benefits are calculated by comparing outcomes with and without added measures based on the estimated risk reduction. The tool computes NPV, IRR, payback, and reduction in expected annual loss. All economic and effectiveness assumptions are user-editable. Defaults are conservative; real-world performance may exceed projections

Your Input:

- Building layout and use
- Selected measures and effectiveness assumptions
- Economic data: CAPEX, OPEX, service life, discount rate, maintenance

The outputs you get:

- Baseline and post-measure risk profiles
- Quantified impacts: damage, downtime, fatalities
- Investment metrics: NPV, IRR, payback (individual and bundled measures)

Use and limitations:

SAFER-ROI supports comparative evaluation, not prescriptive conclusions. It guides choices and tests assumptions. When data are missing, rational defaults are used, all of which are fully adjustable. Outputs should inform decisions, not replace expert judgment.

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