Fairfax County Tornado Exercise
Staff from multiple county departments and some partners
(Photo courtesy of Fairfax County)

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Risk Management
from a County of City Perspective

Applying probabilistic risk analysis to Counties and Cities

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Why bother with risk-based management?

Every county and city in the United States expends resources on addressing a range of threats, from hurricanes to accidents to terrorist attacks. The annual investment in security planning, training, exercises, and day-to-day operations often are legacy programs, processes, and activities that have evolved over time. Government financial pressures demand more for less. Legal and moral obligations to protect citizens and infrastructure weigh on leaders.

So, the basic question: “Is our program delivering effective return-on-investment (ROI) considering risk reduction and cost?” (Figure 1)

In other words, can we measure the effectiveness of our threat and disaster management programs? Can we adjust plans, procedures, and security measures to achieve improved return-on-investment? This question applies to large and small jurisdictions.

The answer is yes. For large organizations like the US Coast Guard (USCG), this is a daunting problem as there are thousands of prospective targets spread across the nation’s ports and waterways. For a city or county, the same probabilistic risk theory can and should be applied as it is for the Department of Homeland Security (DHS) and USCG terrorism risk management programs.

Since 9/11, the United States Coast Guard (USCG) has conducted an aggressive terrorist risk analysis and management program focused on direct and exploitation attacks. This program is known as the Maritime Security Risk Analysis Model (MSRAM). The MSRAM methodology and supporting software tool are used to identify, characterize, and quantify risks from terrorist threats. These threats consist of potential attacks carried out on targets, on or near national coasts and waterways by archetypal attack modes, such as boat bombs, assault teams, ramming by hijacked vessels, and weapons of mass destruction (WMD).

To execute MSRAM across the nation USCG has developed a rigorous analytic method, with a sophisticated threat analysis model, a robust process of consequence and vulnerability data collection, analysis, and review. Furthermore, USCG has supporting risk management tools and data analysis to support risk-based policy, resources allocation, and day-to-day operations.

The concept outlined below, is how a city or county can apply the risk analysis concept the US Government uses, with the appropriate level of detail and sophistication.

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1 The Department of Homeland Security (DHS) has produced a Risk Management Fundamentals doctrine, which asserts that Risk is a function of threat (T), vulnerability (V), and consequence (C). Consistent with this definition, MSRAM applies a Probabilistic Risk Assessment (PRA) approach to compute the relative risk of terrorist maritime threats as a product of estimated T, V, and C.
Risk-Based Management Concept

The concept is to employ a collaborative approach to develop strategies to manage risk of natural disaster, terrorism, accident, criminal activity, cyber, and insider threats. This requires three sequential risk analysis and risk management steps (see Figure 1):

1) **Threat Analysis**: Identify and weigh the threats challenging your county/city. The threats vary significantly from a wide range of natural disasters (hurricanes, tornadoes, floods, fires), accidents (chemical spills, fires, explosions), terrorism (eco, lone wolf or international jihadist, anarchists), to disgruntled employees and mentally unstable persons.

2) **Risk Analysis**: Analyze the consequences of these threats and associated vulnerabilities given the current capabilities/programs.

3) **Risk Management**: Consider risk mitigation strategies that reduce vulnerabilities, consequences; and estimate costs for a rough return-on-investment for each strategy. Prioritize these based on ROI.

Collaborative Approach

It has been our experience that the quality of a plan is improved when participants with ‘skin in the game’ are involved. That is, include the leadership, operations staff, security staff, and law enforcement and other agencies with a role in mitigating the range of threats facing the county/city.

Regardless of how effective the staff is at risk analysis, unless leadership is on board from the start, there is a high risk that the proposed CONOPS, programs, training, exercises and other recommended changes will not resonate. Leaders must have an appreciation of the method and processes, and be involved at key steps to achieve changes that significantly improve security based on ROI. It is also important to include county/city operations staff, since changes may impact their operations. They need to have been at the table to contribute to the analysis, and have an understanding of the underlying rationale for the recommended risk management strategies. In many cases, counties and cities rely on state and federal agencies (FEMA, USCG, FBI, and CDC, to mitigate threats. If the risk analysis reveals significant risks, they should be invited to participate on combined planning and to take action to mitigate risks.

Finally, in cases where a threat scenario poses a significant risk, we recommend a combined system security plan and exercise program with key stakeholders. This strategy can have significant payoff at modest cost.
Risk Analysis and Management Methods and Tools

Depending on the scope of the county/city and the range of threats faces a number of tools are available to support risk analysis and risk management. We have developed a simple tool in MS Excel (Figure 4) that helps walk through and document threat analysis, risk analysis and risk management.

There are a number of other tools available to jurisdictions that can help apply the probability risk analysis method. For terrorism threats the Federal Government developed a simple terrorism treat analysis tool for industry (IRAM – Figure 5).

City and County Governments may be able to request and use Tools developed by Government Agencies such as the USCG Maritime Security Risk Analysis Model (MSRAM – Figure 6).

In any case, city and county jurisdictions have a number of options in terms of tools to support effective multi-threat risk management. By applying the concepts summarized here the outcomes of risk mitigation planning will lead to more effective outcomes.

**Conclusion**

**Outcomes**

The bottom line should be a better focus of resources, procedures, materiel, and a case to present to citizens, taxpayers, and federal partner that asserts that the county/city is applying limited resources as effectively as possible.

If a county/city goes through the three risk-management steps described above, the following outcomes will be an indication of a successful planning effort:

1) Shared vision of the threat by leaders, operators, response and LEA agencies
2) An accepted picture of the baseline risk, represented by relative risk scores.
3) If the baseline risk is not acceptable, a list of risk management strategies ranked by ROI, as well as a risk management plan with milestones, costs and savings, if required.
Project Risk Mitigation

Not all counties/cities are able to execute the risk management approach described above. To enhance the chance for success, county officials and their staff should consider conducting a risk management seminar to develop a baseline understanding of the method and processes that will lead to an effective and efficient risk management effort.