



United States Government Accountability Office
Washington, DC 20548

December 23, 2008

Congressional Committees

Subject: Homeland Security Grant Program Risk-Based Distribution Methods: Presentation to Congressional Committees - November 14, 2008 and December 15, 2008

This report formally transmits the attached briefing in response to P.L. 110-329, the Consolidated Security, Disaster Assistance and Continuing Appropriations Act, that required GAO for the fourth year to review the methodology the Department of Homeland Security (DHS) and the Federal Emergency Management Agency (FEMA) use to allocate Homeland Security Grant Program (HSGP) grants, including the risk assessment methodology they use to determine which urban areas are eligible to apply for grants. HSGP includes the State Homeland Security Program (SHSP) and Urban Areas Security Initiative (UASI) grants. Our objective was to identify any changes in the methodology for risk assessment and grant allocation for 2009 and to assess the reasonableness of the methodology. We analyzed DHS and FEMA documents including the fiscal year 2008 and 2009 risk analysis models and grant guidance and interviewed DHS and FEMA officials about the changes in the 2009 model. We did our work between October and December 2008 in accordance with generally accepted government auditing standards. We briefed the mandated reporting committees with two briefings in November 2008 and December 2008 on the results of our analysis. A copy of the final briefing is enclosed.

DHS has adopted a process of continuing improvement in its methods for assessing risk and measuring grant applicants' effective use of resources. SHSP and UASI grant allocations continue to be based on a three-step process: (1) risk assessments to determine areas eligible to apply for grants, (2) effectiveness assessments of the grant applicants' investment justifications, and (3) final grant allocations. The methodology is described in detail in our 2008 report.¹ There were minor changes in the risk assessment for 2009 and no changes in the process used for the effectiveness assessment and final grant allocations. Generally, we found that DHS has constructed a reasonable methodology to assess risk and allocate funds. DHS uses empirical risk analysis and policy judgments to select the urban areas eligible for grants (all SHSP grantees are

¹ GAO, *Homeland Security: DHS Risk-Based Methodology is Reasonable, But Current Version's Measure of Vulnerability is Limited*, [GAO-08-852](#) (Washington, D.C.: June 2008).

guaranteed a specified minimum percentage of available grant funds) and to allocate SHSP and UASI funds.

DHS continued to include three basic variables in its risk assessment—threat, vulnerability, and consequences. For fiscal year 2009, DHS changed some elements of the inputs used for the threat, economic, and national security indexes used in the model. The value of each of these indices is given a specific weight in the risk assessment (for example, the threat index is weighted at 20 percent and the population index at 40 percent of the final risk score). DHS continued to consider all areas of the nation equally vulnerable to a successful terrorist attack and assigned every state and urban area a vulnerability score of 1.0 in the risk analysis model. Thus, as a practical matter, the final risk scores are determined by the threat and consequences scores.

The result of the UASI risk assessment is a list of UASI jurisdictions eligible for grants. A total of 62 urban areas were eligible for grants in 2009 (60 were eligible in 2008). In response to grantee feedback, in 2009, DHS for the first time provided each eligible State and UASI area its estimated target grant allocation in the Fiscal Year 2009 Homeland Security Grant Program Guidance and Application Kit. FEMA believes this change will enable grantees to better target their investment justifications in their grant applications as the amounts requested should more closely match final actual allocations. Applicants may submit applications for up to 110 percent of their targeted allocation. Final 2009 allocations will be based on the targeted allocations as adjusted by applicants' effectiveness scores, up to a maximum of plus or minus 10 percent of their targeted allocation. As in 2008, the seven urban areas with the highest risk scores (Tier I) will be collectively allocated 55 percent of total available fiscal year 2009 funds and the remaining 55 urban areas (Tier II) will be collectively allocated 45 percent.

We are not making any new recommendations for congressional consideration or agency action. However, we note that DHS has not taken action to address our recommendation from last year's report that "the Secretary of DHS formulate a method to measure vulnerability that captures variations across states and urban areas, and apply this vulnerability measure in future iterations of this risk-based grant allocation model." FEMA and DHS concurred with the recommendation. In its comments on a draft of our briefing slides, FEMA officials stated that their ability to make a substantial change to the vulnerability calculation was limited by (1) the timing of the fiscal year 2009 roll-out "on the heels" of the fiscal year 2008 allocations and (2) DHS leadership's desire to minimize year-to-year changes. We continue to believe that FEMA should formulate a method to measure vulnerability that captures variations across jurisdictions. DHS has completed vulnerability assessments for critical infrastructure and surface transportation modes that could be of potential use in assessing variations in vulnerability across jurisdictions.

FEMA's officials also told us that the Grant Directorate is developing a Cost-to-Capability (C2C) initiative that could, among its other purposes, potentially serve as a proxy measure for vulnerability to an international terrorist incident. Still in its early stages, C2C focuses on efforts to measure a jurisdiction's capability to prevent and respond to various types of disasters compared to a target level of capability. To measure

capability, the C2C initiative will use DHS's 15 National Planning Scenarios of terrorist and nonterrorist disaster incidents, and the target capabilities developed using those scenarios. Those target capabilities are currently being revised. With regard to vulnerability, the concept behind C2C is that the more capable an area is to prevent and respond to a terrorist attack, the less vulnerable it is. However, as designed, C2C results will not directly measure vulnerability. In its agency comments FEMA noted that the extent to which C2C will help measure vulnerability is yet to be determined.

We are sending copies of this report to the appropriate congressional committees, the Secretary of Homeland Security, and other interested parties. This report will also be available at no charge on our Web site at <http://www.gao.gov>. Should you or your staff have any questions concerning this report, please contact me at (202) 512-8757 or jenkinsWO@gao.gov. Contact points for our Offices of Congressional Relations and Public Affairs may be found on the last page of this report. Key contributors to this report were Chris Keisling, Assistant Director; Charles Bausell, Assistant Director; John Vocino; Orlando Copeland; and Perry Lusk.

A handwritten signature in black ink that reads "William O. Jenkins". The signature is written in a cursive style with a large, sweeping flourish at the end.

William O. Jenkins
Director, Homeland Security and Justice Issues

List of Committees

The Honorable Robert C. Byrd, Chairman
The Honorable Thad Cochran, Ranking Member
Committee on Appropriations
United States Senate

The Honorable David R. Obey, Chair
The Honorable Jerry Lewis, Ranking Member
Committee on Appropriations
House of Representatives

Enclosure: Briefing Slides



Homeland Security Grant Program (HSGP) Risk-Based Distribution Methods

**Presentation to Congressional Committees
November 14, 2008 and December 15, 2008**

Introduction

According to the Department of Homeland Security (DHS):

- DHS will make available approximately \$1.7 billion to states and urban areas through its FY 2009 Homeland Security Grant Program (HSGP) to prevent, protect against, respond to, and recover from acts of terrorism or other catastrophic events.
 - The HSGP risk-based allocation process is used for the State Homeland Security Program (SHSP) and Urban Areas Security Initiative (UASI).
 - DHS's grant programs are managed by the Federal Emergency Management Agency's (FEMA) Grants Program Directorate.
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Objectives

Since FY 2006, GAO has responded to a legislative mandate to review the grant program and assess its allocation method.

This year we are addressing the following question:

- What methodology did DHS use to allocate HSGP funds, including any changes DHS made to the eligibility and allocation processes, and how reasonable is DHS's methodology?

Scope and Methodology

We analyzed DHS documents including the FY 2008 and FY 2009 risk analysis models and grant guidance, and interviewed DHS officials about:

- The changes, if any, to the HSGP FY 2009 grant eligibility and allocation processes:
 - The process by which DHS's risk analysis model is used to estimate relative risk: Risk = *Threat* x "*Vulnerability & Consequences*."
 - How the effectiveness assessment process is conducted.
 - How final allocation decisions are made.

We did our work from October 2008 to December 2008 in accordance with generally accepted government auditing standards.

We initially briefed congressional staff on November 14, 2008, adding information on the Cost-to-Capability initiative for the December 15 briefing.

Results in Brief

Our 2009 review found that compared to 2008:

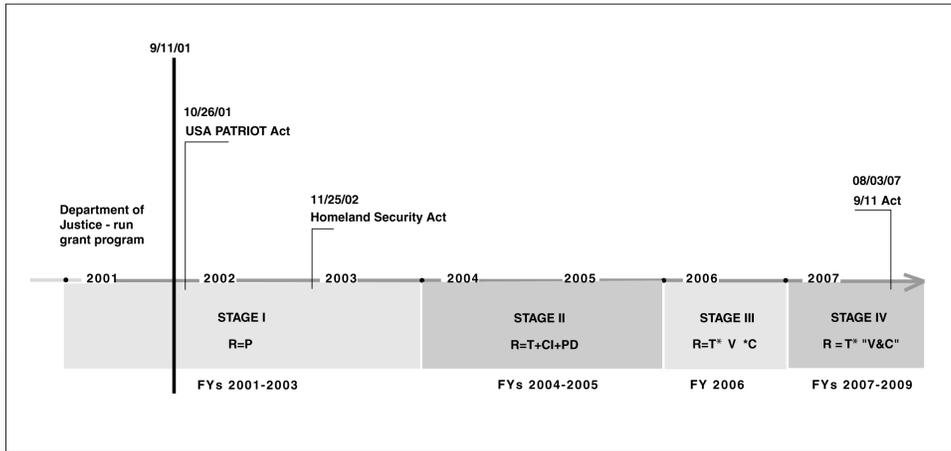
- There was no change in DHS's basic approach.
 - Allocation method remains reasonable, but *Vulnerability* measure remains limited.
 - DHS used same three-step process: (1) risk analysis to determine eligible UASI areas, (2) effectiveness assessment of applicants' investment proposals, and (3) final allocation decisions.
 - Risk analysis model = minimal changes.
 - Criteria for one *Threat* Index tier changed.
 - Data source within Economic Index changed; two sources added in National Security Index.
 - Risk analysis results in list of UASI areas eligible for funding. New in FY 2009, DHS provided grantees their estimated target allocations in the Homeland Security Grant Program Guidance and Application Kit.
 - Effectiveness assessment process = no changes.
 - Final grant allocation = no changes
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Background

We've reviewed this program for the last four grant cycles. In previous reviews we reported:

- Inherent uncertainty is associated with estimating risk of terrorist attack, requiring the application of policy and analytic judgments. The use of sensitivity analysis can help to gauge what effects key sources of uncertainty have on outcomes.
- DHS has adopted a process of “continuing improvement” to its methods for estimating risk and measuring applicants’ effectiveness.

Background: Evolution of DHS's Risk-Based Formula



Source: GAO analysis based on Congressional Research Service.

Definitions for the formulas above:

- R = P represents Risk = Population
- R = T+CI+PD represents Risk = Threat plus Critical Infrastructure plus Population Density
- R = T*V*C represents Risk = Threat times Vulnerability times Consequences
- R = T* "V&C" represents DHS's presentation of the risk calculation formula used in their risk analysis model for 2007–2009.

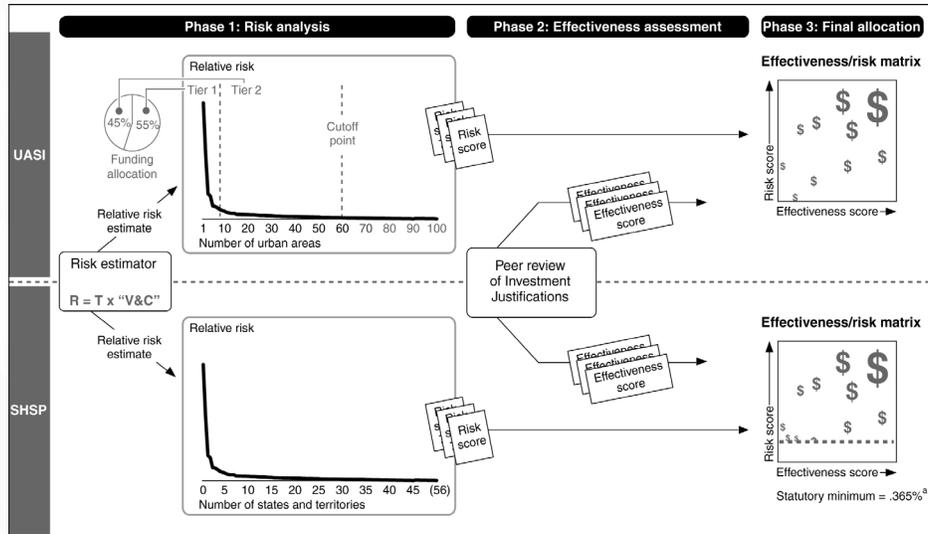


Background: Overview of the HGSP Grant Determination Process (UASI and SHSP)

Since 2006, DHS has applied a three-step process—using analytical methods and policy judgments—to select eligible urban areas and allocate SHSP and UASI funds:

1. Use of a **risk analysis** formula ($R = T$ times “V&C”) with the same basic indices (e.g., threat, economic), and weights results in list of eligible UASI areas.
 2. Implementation of an **effectiveness assessment**, including a peer review process, to assess and score the effectiveness of the proposed investments submitted by the eligible applicants.
 3. Calculation of a **final allocation** of funds based on state’s and urban areas’ risk scores as adjusted by their effectiveness scores.
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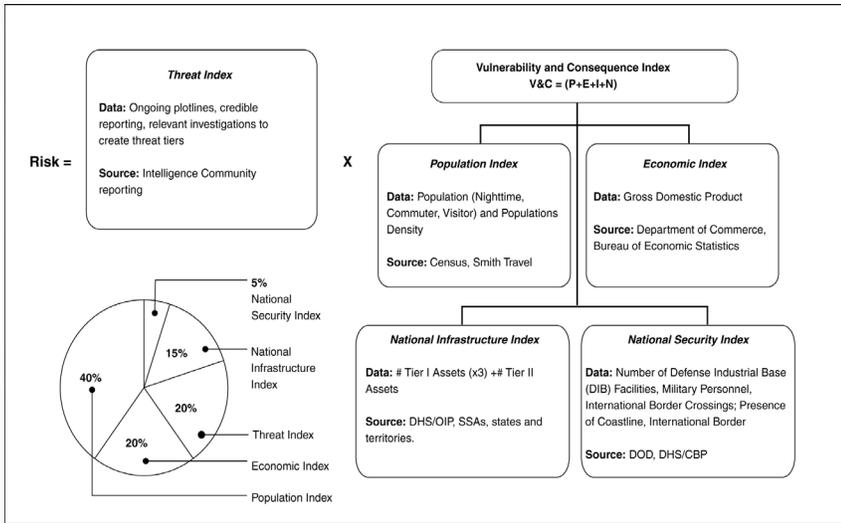
Background: Overview of the Grant Allocation Methodology for UASI and SHSG



Source: GAO analysis of DHS documents and information provided in interviews.

^a Statutory minimum for FY 2009 = 0.365% of the total amount of funds appropriated for SHSP plus UASI grants.

Risk Analysis in FY 2009: Model Used in Determining Relative Risk Scores



Source: DHS.

Note: "DHS/OIP" stands for DHS's Office of Infrastructure Protection. "SSAs" stands for Sector-Specific Agencies, which are federal departments and agencies identified in the National Infrastructure Protection Plan as responsible for critical infrastructure protection activities. "DOD" stands for the Department of Defense. "DHS/CBP" stands for the DHS's Customs and Border Protection.



Risk Analysis Model: Calculating *Threat*

Threat Index:

- Reflects the intelligence community's best assessment of areas of the country and potential targets most likely to be attacked.
- Process considers threat information from the intelligence community of ongoing plotlines and credible threats from international terrorist networks and affiliates.

For FY 2009 model, criteria for one of the four threat tiers changed to reflect updated intelligence assessment.

DHS—Intelligence and Analysis (I&A)—reported additional processes implemented to consult with states on threat information.



Risk Analysis Model: Calculating *Vulnerability* and *Consequences* (“V&C”)

- Few changes made to the model, primarily data and process improvements, according to DHS officials.
- ***Vulnerability*** is still considered to be constant across all jurisdictions and in the risk formula is assigned a value of 1.0 for all jurisdictions.

Consequences:

Population Index:

- No changes.

Economic Index:

- Data source changed from that of a private company to an annually updated data set from the U.S. Commerce Department’s Bureau of Economic Analysis.



Risk Analysis Model: Calculating *Vulnerability* and *Consequences* (“V&C”) (continued)

National Infrastructure Index:

- No changes.

National Security Index:

- Additional data sources were added to improve the index.
 1. The number of military personnel and the number of critical defense industrial base facilities.
 2. Presence of borders or coastline as determined by U.S. Customs and Border Protection inspection.
 - Each jurisdiction received either full credit or none.



Risk Analysis Model: Calculating *Vulnerability* and *Consequences* (“V&C”) (continued)

Vulnerability is a crucial component of risk assessment.

In June 2008, we reported that¹

- While DHS has constructed a reasonable methodology to allocate funds within a given year, the Department needs to measure *Vulnerability* to capture variations in vulnerability across states and urban areas.

As a result, we recommended

- “that the Secretary of DHS formulate a method to measure *Vulnerability* that captures variations across states and urban areas, and apply this *Vulnerability* measure in future iterations of this risk-based grant allocation model.”

¹GAO, *Homeland Security: DHS Risk-Based Grant Methodology Is Reasonable, But Current Version's Measure of Vulnerability is Limited*, GAO-08-852 (Washington, D.C.: June 2008).



***Vulnerability* Element of DHS's Risk Analysis Model Has Limitations that Reduce Its Value**

Status of DHS's response to our recommendation:

- FEMA and I&A agreed that the current methodology for determining *Vulnerability* is not the optimum approach.
 - FEMA officials told us they have not identified a means of measuring *Vulnerability* effectively across all states and urban areas, but had little time between the 2008 and 2009 cycles to consider alternatives.
 - Instead, FEMA's Grant Directorate has focused its resources on launching an inverse approach called Cost-to-Capability (C2C) that is in its early stages. C2C focuses on efforts to measure a jurisdiction's capability to prevent and respond to various types of disasters compared to a target level of capability.
 - As its organizing structure, the C2C initiative uses DHS's National Planning Scenarios of terrorist and nonterrorist disaster incidents, and the target capabilities developed using those scenarios.
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Grant Programs Directorate's Cost to Capability Initiative (C2C) Being Developed

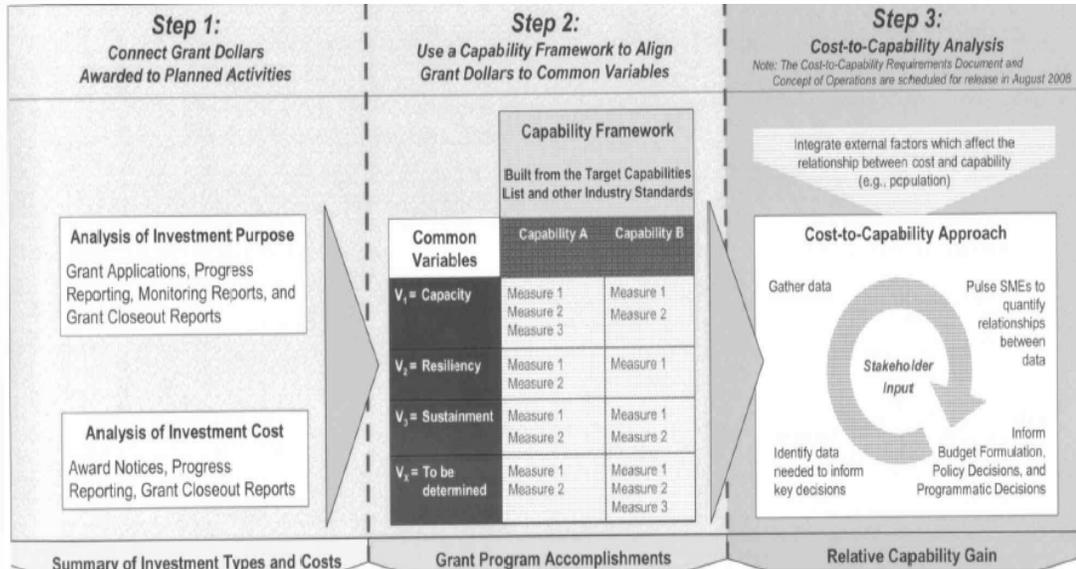
- C2C is being developed by FEMA's Grant Management Directorate and is intended to be a decision support system to enable that Directorate to effectively manage FEMA's grant portfolio and to assist grant recipients optimize the use of their grant funds.
 - One critical element of C2C—identifying the importance of each capability to each of the 15 planning scenarios used to develop target capabilities—is still under development.
 - FEMA's intends to provide C2C as a tool that uses a common language and analytical framework to help state and local stakeholders make better investment decisions.
 - Grantee use of C2C will not be mandatory.
 - As designed, C2C results will not directly measure *Vulnerability* or preparedness.
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Cost to Capability Initiative (C2C) Faces Implementation Challenges

- To date, national capability assessments have been based on state self-assessments whose comparability, reliability, accuracy, and data validity are uncertain.
 - Input data for C2C is to be based on self assessments of capabilities from state preparedness plans, estimates of baseline capability, and the estimated relative capability improvement expected from a requested level of investment.
 - For states to use C2C effectively, the state and local data used for assessing state and local capabilities must be in the common language of Target Capabilities and must have metrics that are compatible with C2C. These metrics are being developed by FEMA's National Preparedness Directorate.
 - The potential for successful use of C2C as a national capability assessment tool is limited by the variations in the analytical skill levels across state and local users of C2C, according to FEMA.
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FEMA/ Grant Programs Directorate's Cost to Capability Initiative (C2C)



Source: FEMA/ Grant Programs Directorate.



DHS Has Not Used Data that Could Inform Risk Model *Vulnerability* Inputs

DHS has made some efforts to measure vulnerability for specific assets across the nation. We reported in 2007 that DHS had¹

- Assessed vulnerability of assets within surface transportation modes (mass transit, freight rail, and highway infrastructure).
- Conducted over 2,600 vulnerability assessments on every critical infrastructure sector through the Comprehensive Review program, the Buffer Zone Protection program, and the Site Assistance Visit program.²

DHS and FEMA could evaluate how these assessments could be used to provide some differentiation in measures of *Vulnerability* used for its risk model formula.

¹GAO, *Department Of Homeland Security: Progress Report on Implementation of Mission and Management Functions*, GAO-07-454 (Washington, D.C.: August 2007).

²DHS describes the Comprehensive Review as a structured, collaborative government and private sector analysis of high value critical infrastructure and key resources facilities. Through the Buffer Zone Protection Program, and with the support of DHS, local authorities develop Buffer Zone Protection Plans, which DHS reported have several purposes, including identifying specific threats and vulnerabilities associated with the buffer zone and analyzing the level of risk associated with each vulnerability. DHS describes the Site Assistance Visit Program as an information gathering visit with several goals, such as better understanding and prioritizing vulnerabilities of critical infrastructure and key resources and increasing awareness of threats and vulnerabilities among critical infrastructure and key resources owners and operators.

Sensitivity of the Risk Analysis Model

GAO's analysis of the FY 2009 model:

- It takes moderate changes to the weights of the model's risk indices, such as the weights given to the threat or economic indices, to change the urban areas that compose the Tier 1 list, which are those areas with the highest risk scores.
 - The current model is more sensitive than the FY 2008 model.
- For those urban areas ranked near the bottom of the Tier 2 list, modest changes in the weights for the indices used to quantify risk can result in changes in eligibility.¹
 - The current model is more sensitive than the FY 2008 model.

¹The specific data on these changes is Sensitive Security information.



Effectiveness Assessment

- No change in process for FY 2009.



Final Allocation Process – FY 2009 Grants Based on Both Risk and Effectiveness Scores

DHS/FEMA plans to allocate FY 2009 funds based on the risk scores of states and urban areas, adjusted by a maximum of +/-10% by their effectiveness scores.

2009 HSGP Grant Guidance provided grantees with their estimated target grant allocations, rather than get allocations after effectiveness assessment:

- FEMA responded to grantees' input in the 2008 grant after-action conference.
- FEMA believes it enables grantees to better target the grant justifications in their applications as amounts requested should more closely match final actual allocations.
- FEMA officials anticipate this change will encourage grantees to develop more targeted and realistic proposals that will be better linked to capabilities and performance measures.



Final Allocation Process – Ranking UASI Grantees by Tiered Groups

62 eligible UASI areas in FY 2009 (60 in 2008):

- Tier 1 = 7 highest risk areas and eligible for 55% of available funds.
- Tier 2 = 55 areas (2 more than FY 2008) and eligible for 45% of available funds.
- Same allocation between Tiers 1 and 2 as 2008.

According to DHS officials:

- Expansion from 60 to 62 eligible UASI areas for FY 2009 is a policy decision driven by desire to provide program consistency for grantees.
 - Department intends to review all Urban Areas for next grant cycle -- with the new DHS leadership -- to determine the appropriate number for the UASI program.
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Concluding Observations

The FY 2009 HSGP risk allocation method continues the same approach we deemed reasonable in 2008 and provides program continuity.

FEMA's continuing improvement efforts are reflected in changes including data sets used, and providing grantees their target allocations at the beginning of the FY 2009 grant cycle. Previously, grantees did not receive target allocations, but only their final allocations following the completion of the effectiveness assessment.

GAO's 2008 recommendation on *Vulnerability* measure remains unaddressed.

- FEMA's C2C initiative does not address our concerns about measuring *Vulnerability*.

GAO is not issuing new recommendations with this report.

Agency Comments

FEMA provided comments on both the November 14 and December 15 versions drafts of this briefing. With respect to the *Vulnerability* element of DHS's Risk Analysis Model, FEMA provided written comments via e-mail that:

- It believes its ability to make a substantial change to the *Vulnerability* calculation was limited by (1) the timing of its FY 2009 roll-out “on the heels” of FY 2008 and (2) the department's leadership desire to minimize year-to-year changes.
- “it has been suggested that DHS should identify a distinct *Vulnerability* term for each of the four risk indices and multiply it against the *Consequence* terms, which would result in a more precise risk allocation that reflects *Vulnerability* as well as *Threat* and *Consequence*.”

FEMA also provided technical comments that we incorporated as appropriate.

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