1. y09 ms 1/6/2010

CITY OF CHICAGO
DEPARTMENT OF PROCUREMENT SERVICES
ROOM 403, CITY HALL, 121 N. LASALLE STREET

JNCP Form Rev ____

S. S. R. B.

DATE _08/04/09_

~~APPROVED~~

CONDITIONALLY APPROVED 3-0

RETURN TO DEPT ____

~~DISAPPROVED~~

JUSTIFICATION FOR NON-COMPETITIVE PROCUREMENT

COMPLETE THIS SECTION IF NEW CONTRACT

For contract(s) in this request, answer applicable questions in each of the 4 major subject areas below in accordance with the Instructions for Preparation of Non-Competitive Procurement Form on the reverse side.
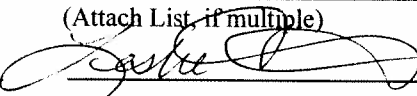
Request that negotiations be conducted only with **Office of Emergency Management and Communications** for the product and/or services described herein.

(Name of Person or Firm)

This is a request for _____ (One-Time Contractor Requisition # _____, copy attached) or _____ X _____ Term Agreement or _____ Delegate Agency (Check one). If Delegate Agency, this request is for "blanket approval" for all contracts within the

_____ (Attach List) Pre-Assigned Specification No. _____
(Program Name) Pre-Assigned Contract No. _____

COMPLETE THIS SECTION IF AMENDMENT OR MODIFICATION TO CONTRACT

Describe in detail the change in terms of dollars, time period, scope of services, etc., its relationship to the original contract and the specific reasons for the change. Indicate both the original and the adjusted contract amount and/or expiration date with this change, as applicable. Attach copy of all supporting documents. Request approval for a contract amendment or modification to the following:

Contract #: _____

Specification # _____

Modification #: _____

Company or Agency Name: _____

Contract or Program Description: _____

_____
(Attach List, if multiple)

Leslie Cain	6-9421	*[signature]*	OEMC	8/28/2009
Originator Name	Telephone	Signature	Department	Date

Indicate **SEE ATTACHED** in each box below if additional space needed:

❑ PROCUREMENT HISTORY
The OEMC initiated a contracting process with Argonne National Laboratories in 2008 this contract was never executed due to lengthy scope development. The OEMC has never contracted with the OEMC.

❑ ESTIMATED COST
$2M

❑ SCHEDULE REQUIREMENTS
Project duration is estimated to be 10 –12 months from contract award to acceptance testing. Compensation will be paid according to milestone payments. We are requesting a 24 month Standard agreement contract to accommodate project delays.

❑ EXCLUSIVE OR UNIQUE CAPABILITY
Design and implementation of transportation forecasting and evacuation modeling software application that uses proprietary supercomputing models only accessible through Argonne National Laboratory partnerships with the USDOT. This project also involves another proprietary principle investigating partner AECOM. Argonne's technical and scientific expertise brings national leaders under one comprehensive umbrella.

❑ OTHER
Leader in complex evacuation modeling &computing sciences that is directly in line with the OEMC scope of work.

APPROVED BY: *[signature]* Raymond Orozco *[date]* 8-28-08 *[signature]* 11/19/09

DEPARTMENT HEAD OR DESIGNEE DATE BOARD CHAIRPERSON DATE
Raymond Orozco, Executive Director OEMC

[signature] Jamie O'Dell Chief Procurement Officer 11/19/09 Date

DPS PROJECT CHECKLIST

IMPORTANT: PLEASE READ AND FOLLOW THE INSTRUCTIONS FOR COMPLETING THE PROJECT CHECKLIST AND CONTACT THE APPROPRIATE UNIT MANAGER IF YOU HAVE ANY FURTHER QUESTIONS. ALL INFORMATION SHOULD BE COMPLETED, ATTACH ALL REQUIRED MATERIALS AND SUBMIT FOR HANDLING TO THE DEPARTMENT OF PROCUREMENT SERVICES, ROOM 403, CITY HALL, 121 N. LASALLE STREET, CHICAGO, ILLINOIS 60602.

GENERAL INFORMATION:

Date: 8/25/09

REQ No.:

Contact Person: Leslie Cain
Tel: 6-9421   **Fax:**   **E-mail:**lrcain @cityofchicago.org

Project Manager: Yilmaz Halac
Tel: 6-6367   **Fax:**   **E-mail:**yhalac @cityofchicago.org

PO No.: (if known):

Modification No.: (if known):

Previous PO No.: (if known):

Project Description: OEMC Regional Transportation Simulation Tool for Evacuation Planning RTSTEP

FUNDING:

City: ☐ Corporate ☐ Bond ☐ Enterprise ☒ Grant* ☐ Other
State: ☐ IDOT/Transit ☐ IDOT/Highway ☐ Grant* ☐ Other
Federal: ☐ FHWA ☐ FTA ☐ FAA ☐ Grant* ☐ Other

LINE	FY	FUND	DEPT	ORGN	APPR	ACTV	OBJT	PROJECT	RPTG	$ DOLLAR AMOUNT
	08	0M05	058	2705	0140	220140			08FS61	2000000

Estimated Value $2,000,000

*IF GRANT FUNDED, A COPY OF THE APPROVED GRANT AND APPLICATION ARE REQUIRED and any other Terms and Conditions that may apply.

SCOPE STATEMENT:

☒ Attached is a Detailed Scope of Services and/or Specification

IMPORTANT: THIS IS A CRITICAL PORTION OF YOUR SUBMITTAL. IN ORDER FOR DPS TO ACCEPT YOUR SUBMITTALYOU MUST COMPLETE THE SPECIFIC SCOPE REQUIREMENTS AS SET FORTH IN THE SUPPLEMENTAL CHECKLIST FOR THAT UNIT.

The following is a general description of what should be included in a Scope of Services or Specification:
A clear description of all anticipated services and products, including: time frame for completion, special qualifications of prospective vendors, special requirements or needs of the project, locations, anticipated participating user departments, citation of any applicable City ordinance or state/federal regulation or statute.

TYPE OF PROCUREMENT REQUESTED (check all that apply):

NEW REQUEST
☒ Blanket Agreement
☐ Standard Agreement
☐ Small Orders

MOD/AMENDMENT
☐ Time Extension
☐ Vendor Limit Increase
☐ Scope Change/Price Increase/Additional Line Item(s)
☐ Other (specify):

FORMS: ☐ Requisition ☐ Special Approvals ☒ Non-Competitive Review Board (NCRB)

CONTRACT TERM: *3* **years**   **Requested Term (number of months):**

DPS PROJECT CHECKLIST

PRE BID/SUBMITTAL REQUIREMENTS:
Requesting Pre Bid/Submittal Conference?　☐Yes　☐No　Requesting Site Visit?　☐Yes　☐No

ARCHITECTURAL/ENGINEERING SUPPLEMENTAL CHECKLIST

Required Attachments: Scope of Services, including location, description of project, services required, deliverables, and other information as required

Risk Management
Will services be performed within 50 feet of CTA train or other railroad property?　☐Yes ☐No
Will services be performed on or near a waterway?　☐Yes ☐No

If applicable, Pre-Qualification Category No.　　　Category Description:
For Pre-Qualification Program, attach list of suggested firms to be solicited

Other Agency Concurrence Required: ☐None ☐State ☐ Federal ☐ Other (fill in)

AVIATION CONSTRUCTION SUPPLEMENTAL CHECKLIST

DOA sign-off for final design documents: ☐Yes ☐ No

Required Attachments:
Copy of Draft Contract Documents and Detailed Specifications.

Risk Management:
Current Insurance Requirements prepared/approved by Risk Management: Yes ☐ No ☐
Will work be performed within 50 feet of CTA or ATS structure or property? Yes ☐ No ☐
Will work be performed airside? Yes ☐ No ☐

*****NOTE:** Any non-construction Aviation request, complete the applicable section.

COMMODITIES SUPPLEMENTAL CHECKLIST

Required Attachments: Detailed Specifications (Scope of Services) including detailed description of the product, delivery location, user department contact, price escalation considerations, Bidder's qualification, contract term and extension options, Contractor's qualifications, citation of any applicable City/State/Federal statutes or regulations, citation of any applicable technical standards and Price Lists/Catalogs, technical drawings and other exhibits and attachments as appropriate.

If Modification request, please verify and provide the following:

Contractor's Name:

Contractor's Address:

Contractor's e-mail Address:

Contractor's Phone Number:

Contractor's Contact Person:

CONSTRUCTION SUPPLEMENTAL CHECKLIST

Required attachments:
Copy of Draft (80% Completion), Contract Documents and Detailed Specifications

Risk Management
Will services be performed within 50 feet of CTA train or other railroad property?　☐ Yes ☐ No
Will services be performed on or near a waterway?　☐ Yes ☐ No

DPS PROJECT CHECKLIST

VEHICLES/HEAVY EQUIPMENT SUPPLEMENTAL CHECKLIST

Required Attachments:
- ☐ Detailed Specifications including detailed description of the vehicle(s) or equipment, mounted equipment, if any, and options/accessories.
- ☐ Special Provisions (Delivery, Warranty, Manuals, Training, Additional Unit Purchase Options, Bid Submittal Information, etc.)
- ☐ Delivery Location(s)
- ☐ Technical Literature
- ☐ Drawings, if any
- ☐ Part Number List (Manufacturer; or   Dealer;   or Other Source:)
- ☐ Current Price List(s)/Catalog(s)
- ☐ Special Approval Form
- ☐ Exhibits and Attachments

If Modification request, please verify and provide the following:

Contractor's Name:

Contractor's Address:

Contractor's e-mail Address:

Contractor's Phone Number:

Contractor's Contact Person:

PROFESSIONAL SERVICES SUPPLEMENTAL CHECKLIST

- ☐ Detailed description of project listing obligations of each party.
- ☐ The Schedule of Compensation
- ☐ Deliverables
- ☐ Request for individual contract services (if applicable)
- ☐ The appropriate EPS form
- ☐ ITSC (approved by BIS)
- ☐ OBM (approved by Budget form/memo)
- ☐ Grant document attached

Attach any documentation indicating any previous purchase activity to assist in the procurement process

TELECOMMUNICATIONS AND UTILITIES SUPPLEMENTAL CHECKLIST

Required Attachments: Detailed Scope of Services/Specification which sets forth all of the anticipated services and products the user department wants provided, including time frame for completion, special qualifications of prospective vendors, special requirements or needs of the project, locations, anticipated participating user departments, citation of any applicable City ordinance or state/federal regulation or statute.

Has the project been reviewed by DGS?   ☐Yes ☐No
Attach copy of DGS Recommendation; Reservation(s); or participate under current contract.
Does the project include software?   ☐Yes ☐No
If yes, is signed ITSC form attached?   ☐Yes ☐No
Does the location involve:
A public way?   ☐Yes ☐No
Any concession in the City's facilities?   ☐Yes ☐No
Is it anticipated City Council approval of the project or contract will be required?   ☐Yes ☐ No

DPS PROJECT CHECKLIST

WORK SERVICES/FACILITY MAINTENANCE SUPPLEMENTAL CHECKLIST

Required Attachments: Detailed Specifications (Scope of Services) including detailed description of the work, locations (with supporting detail), user department contacts, work hours/days, laborer/supervisor mix, compensation and price escalation considerations, Bidder's qualification, contract term and extension options, Contractor's qualifications, citation of any applicable City/State/Federal statutes or regulations, citation of any applicable technical standards and Price Lists/Catalogs, technical drawings and other exhibits and attachments as appropriate.

Risk Management:

Will services be performed within 50 feet (50') of CTA train or other railroad property? ☐Yes ☐No

Will services be performed on or near a waterway? ☐Yes ☐No

Will services require the handling of hazardous/bio-waste material? ☐Yes ☐No

Will services require the blocking of streets or sidewalks which may affect public safety? ☐Yes ☐No

If Modification or Amendment request, please verify and provide the following:

Contractor's Name:

Contractor's Address:

Contractor's e-mail Address:

Contractor's Phone Number:

Contractor's Contact Person:

City of Chicago
Richard M. Daley, Mayor

**Office of Emergency Management
and Communications**

Raymond Orozco
Executive Director

1411 West Madison Street
Chicago, Illinois 60607-1809
(312) 746-9111
(312) 746-9120 (FAX)

http://www.cityofchicago.org

MEMORANDUM

To: Jamie Rhee, Chief Procurement Officer
Department of Procurement Services

Terrence Glavin, General Council & Chair
Sole Source Board

From: _Raymond Orozco_
Raymond Orozco, Executive Director
Office of Emergency Management & Communications

Date: August 27th, 2009

Re: Sole Source with Argonne National Laboratory

SUBJECT: Sole Source Request
CONTRACT TYPE: Pro-Serv
VENDOR: Argonne National Laboratory
PROJECT: Regional Transportation Simulation Tool for
                   Evacuation Planning (RTSTEP)
EST CONTRACT COST: $2,000,000

The OEMC is submitting a request to the Non-Competitive Review Board allowing the Office of Emergency Management and Communication to enter into a contract (standard agreement 3 years no extensions) with Argonne National Laboratory. Argonne has unique capabilities and qualifications for providing our office with highly sophisticated emergency modeling and visualization software. Project Manager Yilmaz Halac and I will be in attendance.

Argonne National Laboratory is a unique entity, in that they are a U.S. Department of Energy Laboratory and managed by the University of Chicago. They do not actively compete with companies in the private sector and provide a unique set of services.

In support of this request, attached please find:
1) Project Checklist
2) Justification for Non-competitive procurement
3) Scope with budget
4) Information Technology Review Board presentation
5) Grant Agreement
6) EDS
7) Copy of the No Stated Goals Request

In order for a requisition to be generated, DPS requires ITGB approval prior to assigning commodity codes. The ITGB approval is forth coming. If you have any questions, please contact me directly at 312-746-9421.

Cc: Yilmaz Halac, OEMC
       Frank Lindbloom, OEMC
       John O'Brien, DPS

NEIGHBORHOODS
Alive!
BUILDING CHICAGO TOGETHER

Dr. Harvey Drucker
Coordinator, Homeland Security Programs

Energy Sciences and Engineering
Argonne National Laboratory
9700 South Cass Avenue, Bldg. 208
Argonne, IL 60439

1-630-252-3804 phone
1-630-252-5318 fax
drucker@anl.gov
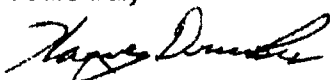
August 24, 2009

To whom it may concern,

The following items constitute sole source justification for our proposals to the City of Chicago on regional transportation modeling and emergency evacuation simulation (RTSTEP). They are not in order of importance because they are of equivalent importance.

- The Transportation Research and Analysis Computing Center at Argonne has worked closely with the Illinois Department of Transportation and the US Department of Transportation to build a complex TRANSIMS model for the Chicago Metropolitan Area, covering approximately 10,000 square miles. This model required several man years of effort to develop, and covers the region of interest to the RCPT and is thus invaluable as a starting point for this work.
- The emergency evacuation modeling project for the Illinois Department of Transportation and the Illinois Terrorism Task Force has built the extensive expertise necessary to implement the RTSTEP project. This is the only research project that deploys high fidelity computing to regional evacuations.
- Argonne has developed several extensions to the TRANSIMS application that are specific to emergency evacuation modeling, and is currently modifying the software to use high performance computing clusters more efficiently. Such in-depth knowledge of the existing code base is essential to efficiently make modification to the software as may be necessary to implement in this proposed project.
- Argonne intends write a subcontract with AECOM, a consulting company that has driven the development of TRANSIMS for traffic forecasting and sponsored by USDOT to do so. Argonne and AECOM have worked closely for three years now on the joint development of TRANSIMS, with David Roden from AECOM and Hubert Ley from Argonne being the principal developers of the open source TRANSIMS software. Argonne has developed the evacuation-related tools and methodologies, while AECOM developed the TRANSIMS framework itself. The collaboration between the two organizations will build a uniquely qualified team of experts that will ensure that the work will be implemented within the existing time constraints
- Due to the time constraints under which the project will be implemented, Argonne will also bring in highly qualified university subcontractors to work on areas of specific expertise. These university partners will work on population modeling, the development of user interfaces and tools, and the calibration and validation of the model to increase confidence in the results. This also includes the Chicago Metropolitan Agency for Planning.
- The Transportation Research and Analysis Computing Center at Argonne operates a high performance cluster computer for the US Department of Transportation. This is the largest supercomputing facility that USDOT provides to the transportation research community, and is a free resource to advance high fidelity simulations in

the field. The proposed project meets the technical objectives of USDOT, and use of this system leverages the efforts proposed for this project.

- Argonne's expertise in the use and development of TRANSIMS is widely recognized. TRACC has held eight TRANSIMS training courses for USDOT in the past two years. This is the only TRANSIMS training resource available to TRANSIMS users at this time, with about 150 to 200 participants so far.
- The Chicago TRANSIMS model has also been selected by OEMC as the basis for a collaborative project with the Illinois Institute of Technology and the Chicago Metropolitan Agency for Planning. OEMC, being responsible for transportation plans in the City (such as for the upcoming Olympics in 2016), intends to use TRANSIMS as a high resolution tool that meets their modeling needs. The proposed evacuation project will greatly leverage OEMC's efforts in this non-emergence transportation planning area.
- Argonne provides a vast computing and networking environment, and provides access to a large inter-disciplinary team and a highly regarded collaborative environment. Cyber security at Argonne has been recognized by USDOE as a model for the other national laboratories due its effectiveness while providing extensive services to scientists world-wide.

Yours truly

Harvey Drucker

Dr. Hubert Ley
Transportation Simulation Project Leader
Transportation Research and Analysis
Computing Center

Argonne National Laboratory
Energy Systems Division
2700 International Drive,
Suite 201
West Chicago, IL 60185

1-630-578-4247 phone
1-630-578-4257 fax
hley@anl.gov
www.tracc.anl.gov

August 25, 2009

Mr. Yilmaz Halac, Director
Office of Emergency Management
and Communication (OEMC)
1411 West Madison Street
Chicago, Illinois 60607

Subject: **Argonne National Laboratory Proposal P-09127:** *Regional Transportation Simulation Tool for Evacuation Planning (RTSTEP)*

Dear Mr. Halac,

We are pleased to submit the attached statement of work for the project titled "Regional Transportation Simulation Tool for Evacuation Planning (RTSTEP)" for your review. Argonne proposes to establish a transportation analysis model capable of analyzing and comparing emergency evacuation strategies to help with the establishment of regional emergency response plans in the Chicago metropolitan area. I will serve as the project manager for this project. The proposal has been prepared by the Laboratory's Energy Systems Division.

As you may know, U.S. Department of Energy (DOE) approval is required for the participation of Argonne staff and the use of Argonne equipment and facilities in work for other organizations. Accordingly, copies of this proposal have been sent to DOE for review and approval; this review will be completed soon, and you will be advised of the decision in writing. The concurrent review of the proposal by both OEMC and DOE is common practice and has been employed in previous projects between Argonne and OEMC. You will also receive an official submission of the proposal through our Office of Technology Transfer in the near future.

Sincerely,

Dr. Hubert Ley
Cc:

D. P. Weber, Argonne National Laboratory

P-09127

REGIONAL TRANSPORTATION SIMULATION TOOL FOR EVACUATION PLANNING (RTSTEP)

Statement of Work

Work Proposal by:
Energy Systems Division (ES)
Argonne National Laboratory (ANL)

Principal Investigators:
Hubert Ley, Project Manager
Young Soo Park, Principal Investigator
Vadim Sokolov, Principal Investigator
Michael Hope, Principal Investigator

Submitted to:
Mr. Yilmaz Halac, Director
City of Chicago
Office of Emergency Management and Communication
1411 West Madison Street
Chicago, IL 60607
Tel. (312) 746-6367
E-mail: yilmaz.halac@cityofchicago.org

August 2009

CONTENTS

GLOSSARY

background traffic — trips that are undertaken by individuals during an evacuation that are not directly related to leaving the affected area

capacity — a theoretical limit of traffic volume on a road segment above which congestion becomes significant

counter-flow — reversal of lanes on major highways to allow increased outbound traffic during evacuations

coupled — the relationship of science and technology systems or computer models linked with each other and/or with system hardware, such as 3D video displays

demand — a technical term used in transportation models to describe the trips being accommodated by the road network

DNTP — DuPage National Technology Park

dynamic traffic assignment — a transportation modeling technique that considers the changes in traffic on a high-fidelity time scale

EMViS — Emergency Modeling and Visualization System, being developed in a companion project between Argonne and OEMC

Equilibration — an iteration technique that creates routes for travelers on the road and transit network consistent with the capacities of these routes and the demand for travel

FHWA — Federal Highway Administration

GIS — geographical information system, an industry standard to exchange and display geographical data

GPS — global positioning system, a satellite-based technology that enables the determination of exact geographical locations

high fidelity — precise predictive capabilities of a computer model at fine resolutions; that is, the ability to track the movement, minute by minute, of a chemical or radiological agent — around, behind, and into buildings

IDOT — Illinois Department of Transportation

in-place evacuation — minimizing exposure of affected populations by keeping them in minimally ventilated environments instead of actual evacuation

MAEViz — Midamerica Earthquake Center Seismic Loss Assessment System

mode choice — the choice of travelers to take a specific form of transportation based on minimizing travel time

models or codes — mathematical computer software used to simulate real situations, such as the release and downwind movement of a chemical or biological agent or the movements of travelers in transportation simulations

multi-modal — considering all modes of transportation

network fidelity — the level of detail in the coded road or transit network

no-notice event — an emergency event that happens without advance notice and requires ad hoc emergency response based on pre-planning

OEMC — City of Chicago Office of Emergency Management and Communication

PC — personal computer

RCPT — Regional Catastrophic Preparedness Team

RTSTEP — Regional Transportation Simulation Tool for Evacuation Planning

Tier I models (simple rapid-response tools) — simple rapid-running ("real time"), emergency-response-capable, PC-based urban dispersion models applicable to city- or urban-scale resolution, with accounting for some building presence and influence

Tier II models — more robust, faster-running ("near real time" to several minutes' delay) PC-based urban dispersion models applicable to neighborhood-scale resolution, with more realistic (compared to Tier I) accounting for influences from buildings; used for response scenarios and preparedness applications

Tier III models — high-fidelity, relatively slow-running (several hundreds of hours), supercomputer-ported codes simulated for selected buildings and a variety of flow situations, assembled for quick visualization and analysis into a database coupled to urban-scale weather models and weather conditions; applicable to resolution at the building scale, with very realistic accounting for building influences on dispersion

TRACC — Argonne National Laboratory's Transportation Research and Analysis Computing Center

TRANSIMS — Transportation Analysis and Simulation System

P-09127

REGIONAL TRANSPORTATION SIMULATION TOOL FOR EVACUATION PLANNING (RTSTEP)

STATEMENT OF WORK

OBJECTIVES AND GOALS

Large-scale evacuations from major cities during no-notice events – such as chemical or radiological attacks, hazardous material spills, or earthquakes – have an obvious impact on large regions rather than on just the directly affected area. The scope of impact includes the accommodation of emergency evacuation traffic throughout a very large area; the planning of resources to respond appropriately to the needs of the affected population; the placement of medical supplies and decontamination equipment; and the assessment and determination of primary escape routes, as well as routes for incoming emergency responders. Compared to events with advance notice, such as evacuations based on hurricanes approaching an affected area, the response to no-notice events relies exclusively on pre-planning and general regional emergency preparedness. Another unique issue is the lack of a full and immediate understanding of the underlying threats to the population, making it even more essential to gain extensive knowledge of the available resources, the chain of command, and established procedures. Given the size of the area affected, an advanced understanding of regional transportation systems is essential to help with the planning for such events. The objectives of the work proposed here – to be carried out by Argonne National Laboratory under this work plan – is the development of a multi-modal regional transportation model that allows for the analysis of different evacuation scenarios and emergency response strategies to build a wealth of knowledge that can be used to develop appropriate regional emergency response plans.

The focus of this work is on the effects of no-notice evacuations on the regional transportation network, as well as the response of the transportation network to the sudden and unusual demand. The effects are dynamic in nature, with scenarios changing potentially from minute to minute. The response to a radiological or chemical hazard will be based on the time-delayed dispersion of such materials over a large area, with responders trying to mitigate the immediate danger to the population in a variety of ways that may change over time (e.g., in-place evacuation, staged evacuations, and declarations of growing evacuation zones over time). In addition, available resources will be marshaled in unusual ways, such as the repurposing of transit vehicles to support mass evacuations. Thus, any simulation strategy will need to be able to address highly dynamic effects and will need to be able to handle any mode of ground transportation. Depending on the urgency and timeline of the event, emergency responders may also direct evacuees to leave largely on foot, keeping roadways as clear as possible for emergency responders, logistics, mass transport, and law enforcement. Thus, the movement of

individual evacuees, using any mode of transportation (including walking), needs to be an integral part of the analysis.

Argonne National Laboratory has conducted previous work in this general area in a project for the Illinois Department of Transportation and the Illinois Emergency Management Agency in a project established by the Illinois Terrorism Task Force. The latter project dealt with the development of methodologies to model the response of the transportation system to a radiological dispersion device exploding near the Willis Tower (the former Sears Tower) in the Chicago Business District. The project proved the usefulness of the TRANSIMS application – a code developed by the U.S. Department of Transportation that takes a computing-intensive high-fidelity approach to traffic simulations by taking into account the microscopic interactions between pedestrians, vehicles, and the street network to determine the second-by-second movements of individual travelers – for the simulation of emergency evacuations. The code also determines the complete paths along the walk, road, and transit network that travelers can use to serve their transportation needs. The Transportation Research and Analysis Computing Center has adopted this code as one of the supported applications on the supercomputer that it operates for the U.S. Department of Transportation (USDOT) at the DuPage National Technology Park (DNTP). This computer is the largest high-performance computing cluster operated by USDOT for advanced transportation research, and a significant number of research groups across the United States have adopted TRANSIMS as their dynamic traffic forecasting tool of choice.

This RTSTEP project aims to develop a regional emergency evacuation modeling tool for the Chicago Metropolitan Area that emergency responders can use to pre-plan evacuation strategies and compare different response strategies on the basis of a rather realistic model of the underlying complex transportation system. This approach is a significant improvement over existing response strategies that are largely based on experience gained from small-scale events, anecdotal evidence, and extrapolation to the scale of the assumed emergency. The new tool will thus add to the toolbox available to emergency response planners to help them design appropriate generalized procedures and strategies that lead to an improved outcome when used during an actual event.

SCOPE OVERVIEW

The work described in this statement of work covers the development of tools and methodologies to analyze the response of the transportation network to no-notice evacuation events, such as those caused by terrorist attacks and hazardous material accidents. It will result in a model of the Chicago Metropolitan Area that can be used by emergency response planners to evaluate the likely outcome of different evacuation strategies under a set of given assumptions, such as the scope and type of the event and the probable destinations of evacuees. The goal is to develop a toolbox that can be used while establishing emergency response plans that are based on more realistic knowledge of the constraints of the transportation system. The complex approach uses the high-fidelity transportation simulation application TRANSIMS that has been developed by the FHWA over the past 12 years. An important part of the RTSTEP project is to develop tools that make the use of TRANSIMS for evacuation planning easier, add capabilities

to the software that enhance TRANSIMS capabilities important for evacuation studies, and establish a path forward to transfer this technology to emergency response planners in the region.

The overall approach is broken down into six separate tasks. The tasks overlap naturally to some degree, but the breakdown leads to a more concise description of the work covered by this statement of work. To begin, additions to the road and transit network of the Chicago Metropolitan Area are necessary. The network was developed with a focus on analyzing the Chicago Business District in great detail. Regional analysis requires refining other areas in the region to increase the fidelity of and applicability to emergency evacuations. Early in the RTSTEP project, the sponsors and implementers will mutually decide on the scope of improvements, and they will be driven, in some part, by the implementation of specific case studies highlighting the capabilities and limitations of this project.

Another important task within the overall RTSTEP project is the modeling of evacuation routes. TRANSIMS has been developed as a general purpose traffic forecasting tool and does not distinguish between normal roadways and designated evacuation routes at present. Nevertheless, the underlying components are readily available in TRANSIMS, such as the capability of prohibiting turns by time of day, preempting and manipulating traffic signals, closing and reserving lanes for specific types of vehicles, and much more. Lane reversals, such as those implemented during counter-flow evacuation scenarios, can be readily modeled and are already a standard feature of TRANSIMS. The work in this area focuses on the development of a tool that allows emergency responders to define the characteristics of emergency evacuation routes with a degree of flexibility and automation. The task also addresses similar work on rail options for mass transportation.

TRANSIMS, just like any other traffic simulation package, cannot readily predict the destinations of evacuees who are able to evacuate by car or transit. Identifying likely destinations is clearly a pressing issue for emergency responders, and a large part of the work will focus on the implementation of tools that simplify running the models under different assumptions to test and compare the responses of the transportation network to varying demand. Evacuation trips also do not exist in a vacuum; a significant portion of the traffic on the road may be driven by normal day demand, such as trips to work by people outside the affected areas. Thus, this task also focuses on creating a robust normal day model for the Chicago Metropolitan Area that forms the basis for all evacuation models.

The massive amounts of data resulting from TRANSIMS runs are not easily interpreted without the help of powerful visualization tools. TRACC has developed significant contributions to TRANSIMS visualization techniques and will develop additional tools as necessary to present results in a meaningful and easy-to-use fashion to emergency response planners. The applicability of different visualization strategies will be determined as an early part of the RTSTEP project and is an integral part of much of the proposed scope of work.

The City of Chicago is funding a companion project, EMViS, that develops tools and capabilities in the area of dispersion modeling of hazardous substance releases. The EMViS project is intended to be integrated with the TRANSIMS analysis capability. The task under this work describes the integration process and strategies; some of the integration may be delayed

because the RTSTEP project described in this document will end long before the EMViS dispersion project.

Finally, we will invest significant effort in developing a few representative case studies that highlight the methodologies used and the capabilities that result from the RTSTEP project. The case studies will be defined in greater detail early in the project in consultation with emergency response planners and OEMC. The scenarios defined during a recent RCPT Summit in Chicago (July 15 and 16, 2009) will serve as the basis for these developments. The scenarios will also form the basis for training materials and training courses planned to transfer the technology to emergency response planners before the end of the RTSTEP project.

The individual tasks will make use of a freely available open source application for advanced high-fidelity transportation planning called TRANSIMS. TRANSIMS had been originally developed by USDOT, but it was then released in late 2006 to the open source community and is now being actively developed and supported by a number of users funded independently (including other current projects at TRACC). Thus, the software is available at no cost to the RTSTEP project, with the expectation that improvements made to the software should flow back to the community, thus further contributing to the development and improvement of TRANSIMS itself.

TRANSIMS is a very demanding application when it comes to computing resources. Its approach of modeling each individual traveler in the region and following an individual traveler's activities during the day on a second-by-second basis requires a large and powerful computing facility, considering that a 10,000-mi^2 area with close to 30 million daily trips form the basis for the model. Such a computing facility is readily available at TRACC at no cost to the RTSTEP project and has been fully funded by USDOT, with the mission to promote high-fidelity computing in the transportation research community. It supports a wide variety of applications in computational fluid dynamics, computational structural mechanics, and high-fidelity computational transportation modeling. With regards to TRANSIMS, several user groups are actively running large regional models (e.g., Chicago, Los Angeles, Sacramento, and Washington, D.C.). The TRACC cluster computer is the largest USDOT-operated computing facility open to researchers and provides ample capacity for TRANSIMS models (most other applications in use on the cluster demand significantly larger computing resources). In summary, the ready availability of this free resource at TRACC means that the RTSTEP project does not incur any cost for computing services.

In addition to the software and computing resources, the RTSTEP project will be based on an existing TRANSIMS model for the Chicago Metropolitan Area. This model has been originally developed at TRACC with funding from USDOT, IDOT, IEMA, and others. The underlying raw data have been largely provided by CMAP, OEMC, and IDOT. Additional public data resources were used, such as Census Data. This Chicago Model serves as an example for the development of a large metropolitan TRANSIMS model and is being made available to other TRANSIMS projects as a resource. It will also be used by OEMC in an unrelated project for transportation planning in and around the City of Chicago (e.g., for developing transportation plans for major construction projects, for developing transportation plans for the proposed Olympic Games in 2016, and for other special event planning). Thus, similar to TRANSIMS

itself, improvements made to the Chicago Model should flow back to the community. Argonne and OEMC will review such releases with regards to the use of sensitive information for (or resulting from) the RTSTEP project to ensure appropriate protections of sensitive data.

Because of the time constraints under which the RTSTEP project is being implemented, a powerful team will need to be assembled to ensure the successful and timely delivery of all deliverables under this statement of work. TRACC has developed the underlying TRANSIMS model for Chicago and has developed methodologies for the use of TRANSIMS for emergency evacuations in a large project for the Illinois Department of Transportation. Thus, TRACC efforts will concentrate on the core implementation of the RTSTEP project, such as extending the existing Chicago model for use as a regional planning tool, software development and model building, and overall project coordination. TRACC is planning to bring in a number of subcontractors that are stakeholders and that have significant experience with the underlying technology. Appropriate alternatives will be identified should the intended organizations be unable to participate. AECOM is a well-known consulting company that has been heavily involved with the development of several TRANSIMS models (e.g., Portland, Atlanta, and Washington). AECOM is also the biggest contributor to the development of TRANSIMS software itself and is ideally suited for software modifications, model calibration, equilibration algorithms, and the development of new TRANSIMS tools. CMAP is a stake holder in this project as well, having already worked with TRACC on establishing the original TRANSIMS model for the City and being responsible for planning for the Chicago Metropolitan Area. CMAP will contribute by providing data and planning support. Northern Illinois University will provide students and faculty members to help with modifications to the network, develop case studies, and evaluate new methodologies (such as building evacuation models). The Illinois Institute of Technology, working with OEMC and CMAP on applying TRANSIMS to developing transportation plans for the City of Chicago, will serve as a technical liaison between the two projects, providing transportation planning expertise and methodologies to the project. The National Center for Supercomputing Applications (NCSA) has developed advanced user interfaces to emergency modeling tools (such as MAEViz) and will lend its expertise in this area to develop user interfaces to simplify the use of the software application resulting from the RTSTEP project.

The RTSTEP project will result in a software package that will be delivered to OEMC on appropriate media (such as DVD and tapes), through suitable online transmission, or on portable hard drives. Items delivered will include models, case studies, software, source code, documentation, training materials, and other materials developed for this project.

Task 1: Refinement and Extension of the Existing Road and Transit Network

The fidelity of any transportation model depends to a large degree on the quality and extent of the highway and transit network that is available to the RTSTEP project. These transportation modeling networks are significantly different from the more commonly known routing networks used in GPS devices and web-based cartography. The main difference is the meta-data associated with each road segment, requiring such details as the number of lanes, speed limits, road types, capacities, vehicle type restrictions, turn restrictions, merge and turn

lanes, signalization, and much more. Thus, commercially available network data are not necessarily suitable for immediate use in transportation modeling and may need significant editing and validation before being able to be relied upon in a complex transportation model.

Typical transportation modeling networks are therefore designed to balance the needs of the underlying software with the minimization of labor for the creation of such networks. Such networks will be very detailed in the primary study areas (e.g., the Chicago Business District for the Chicago Metropolitan Area Model). TRACC has even previously undertaken the effort of adding a large number of minor streets in a ring around the business district to increase the fidelity in that particular area, something that is essential to accommodate pedestrians, transit vehicles, and passenger vehicles during the high congestion periods expected during evacuation simulations. On the other hand, remote regions of the network do not typically require a similar level of network fidelity unless they become primary study areas as well.

This project deals mainly with the necessary extensions of the road and transit network for the Chicago Metropolitan Area necessary to support regional emergency preparedness planning rather than just analyzing the primary evacuation in the directly affected area. The necessary refinements will be determined, implemented, evaluated, and integrated into the larger Chicago Metropolitan Area Model, enabling the underlying application to work on the basis of a data set that is reasonably fine-grained to support the high-fidelity modeling approach with a high level of confidence.

The determination of appropriate network refinements may include both refinements to the road network and to the train network. Rail lines may serve, if actively used during evacuations, to move large numbers of evacuees out of the affected area. This situation may involve the use of rail lines that are usually used for freight trains only. Also, regular rail stations may not be suitable for loading passengers, making it necessary to add special use train stations in ad hoc or improvised locations.

Another aspect is the coverage area used for the basis for the regional model. Interstate freeways to nearby major cities may need to be added to the model, with a reasonable inclusion of major interchanges and entrances/exits to consider the effects of background traffic.

In addition to extensions to the road and transit networks, continued effort will be needed to maintain a calibrated normal day model. The normal day model, which is based on previous work performed at TRACC, will need to be refined to become more robust with regards to changing traffic patterns, an issue that becomes increasingly important when allowing more flexible emergency response strategies. This task includes the determination of more realistic connectivity at key routes across the city and improved timing and phasing of traffic signals during different times of the day. Another important aspect is that a robust normal day model serves as the starting point of any no-notice event and provides detailed information about the current location of each individual.

Key Deliverables for Task 1

1. Evaluation of data sources, methodologies, and available resources to upgrade the TRANSIMS highway network to support the regional aspects of emergency evacuation planning sufficiently. Results and recommendations will be discussed with OEMC in advance of actual network modifications.
2. Implementation of a more robust TRANSIMS normal day model. The goal is to allow more flexibility when assigning different traffic patterns that are driven by a specific event and a specific emergency response to the event.

3. Implementation of the network changes agreed upon between transportation modelers and emergency responders on the basis of a priority list. The implementation will be performed in several stages to allow stable intermediate networks to be available for the implementation of the other tasks under this statement of work.

4. Documentation of all network changes, documentation of data sources and procedures, and electronic maps and hard copies of the improvements; integration with OEMC resources as necessary.

Task 2: Development of Tools to Evaluate Evacuation Routes and Strategies

Common strategies for responding to large-scale emergencies include the establishment of evacuation routes. Such routes, if properly implemented, enforced, and used, provide large capacities for unidirectional vehicular evacuation traffic while reducing the background traffic on nearby streets, thus enabling emergency responders to use their own special routes to provide inbound access to the affected area. The concept works reasonably well if the assumptions on traffic volumes and the behavior of the evacuees are realistic and if the measures are not significantly counteracted upon by evacuees trying to follow their own often-contradictory needs.

Evacuation routes are typically used in hurricane evacuations, where pre-planning can be used to enable fundamental capabilities, such as the timely establishment of counter-flow operation on outbound Interstate highways. In advance of a specific hurricane, detailed specific plans can be derived and implemented on the basis of advance knowledge, such as the projected size of the affected area, wind directions, areas to be affected by wind (where in-place sheltering may suffice), areas affected by flooding (requiring mandatory evacuation), and a projected timeline for both the evacuation and the progression of the actual storm. Such plans can also be based on previous experience, although experience shows that the traffic on evacuation routes is difficult to predict, even with prior experience and advance notice.

During such no-notice events as the radiological dispersion event postulated as the basis of this project, specific planning will be reduced to an ad hoc implementation of evacuation routes that are based on the location and size of the affected area. The affected area will be

determined through interfacing with the EMViS project, and interaction with emergency responders will determine the current plans and likely actions taken to mitigate the consequences of the emergency.

In addition to providing evacuation routes for passenger vehicles to quickly evacuate the larger area, most evacuees from the worst affected areas will obviously have to evacuate on foot. The road network is unlikely to provide the capacity for evacuating all evacuees in personal vehicles within a reasonable time, and mass transportation assistance to evacuees is an essential capability that needs to be provided quickly. Thus, methodologies and tools will be developed to allow for configuring a variety of mass transportation options, such as scheduling emergency bus service and using regular and ad hoc rail options. This framework can be used to evaluate different strategies, to determine constraints caused by the network or the availability of suitable vehicles, and more.

The goal of this task is to establish a framework that allows emergency responders to evaluate the establishment of different emergency evacuation routes and strategies and compare them, thereby building experience with the responses of the transportation system that could not be gained by other means for no-notice events. The ability to understand the overall effects of large-scale evacuee rerouting, when calculated to a reasonable confidence level by the TRANSIMS model, will enable emergency response planners to make better decisions and to avoid the implementation of evacuation strategies that could worsen the situation.

Key Deliverables for Task 2

1. Determination of the procedures used by emergency responders to implement the establishment of emergency evacuation routes. Discussion of findings with OEMC and emergency response planners to set the priorities for implementation of modeling tools.

2. Development of tools to configure evacuation routes with a reasonable degree of simplicity and to run TRANSIMS on the basis of the resulting modified network.

3. Development of tools to evaluate rail options, to allow for capacity planning, and to determine the impact on target communities.

4. Documentation of the tools and training of emergency response planners in the use of the tools.

Task 3: Tools to Model Populations, Evacuation Trips, and Background Traffic

The regional impact of large-scale evacuations of the Chicago Business District is largely caused by the displacement of evacuees from the affected area and by the need for emergency response assistance that further drains local resources when evacuees arrive at many dispersed locations across the region. The destination choice for evacuees is also primarily driven by the

evacuation strategies themselves; if the affected area is largely evacuated by having people walk to a safe perimeter and then providing transportation to collection centers with further transportation into the region, resources in the target communities will be stressed more than if evacuees will be able to evacuate by using personal vehicles. A realistic scenario will probably consist of a combination of these extremes, making it difficult to estimate the locations to which the populations of the affected area would move.

The goal of this task is to determine potential destinations on the basis of different evacuation strategies and to make the destination choice flexible enough to allow emergency response planners to compare different assumptions and their consequences. This process may lead to the development of emergency response plans that mitigate the effects on the target communities, on the basis of results from the underlying transportation models.

Evacuation trips are, of course, significantly impacted by factors other than their intermediate or final destinations. The most important factors are the timing of the beginning of these trips and the mode choice (e.g., whether the evacuees will be able to use their personal vehicles, whether they will have to walk, or whether ad hoc mass transportation will be provided [and when]). To determine the start time of evacuation trips, simple building evacuation models may be used to determine the arrival time on the street network and thus the beginning of a TRANSIMS trip. Such building evacuation models may be important because the egress from tall buildings causes a significant delay, which may be over two hours for the tallest buildings.

Furthermore, the existing TRANSIMS approach has been developed for normal day traffic forecasting. Extreme congestion (such as that to be expected during large-scale evacuations) may necessitate the development of new algorithms that mitigate some of the artifacts of the TRANSIMS microsimulation approach, allowing limited local path modification for vehicles under gridlock conditions and thus simulating the human behavior of improvisation that is not otherwise captured in the current implementation of TRANSIMS.

All of these approaches require the development of a set of tools and methodologies that allow for the appropriate modification of trips, of individual choice and behavior, of origins and destinations based on proposed scenarios, and more. The work may also involve the use of existing surveys and socio-economic data and may be driven by a process of trip modification (similar to methodologies employed in previous work at TRACC) or an alternative approach of deriving evacuation trips from artificial activity survey data in combination with a synthetic population with appropriate socio-economic characteristics. Other data sources will be evaluated as well to develop an improved understanding of the location of people at all times during the day, such as data from OEMC, CMAP, Census, and more.

The underlying normal day transportation model for the Chicago Metropolitan Area will provide estimates for background traffic in the region, while the majority of trips originating in and around the primary sites of the events will be assumed to be driven by the need for evacuation.

Key Deliverables for Task 3

1. Evaluation of currently available methodologies for the modification and synthesis of evacuation trips and the compatibility with and impact on the existing TRANSIMS model.

2. Development of tools that allow for the creation and modification of evacuation trip destinations. This will also affect the origin of these trips and their start times, in particular for evacuees that either live in the affected area or that have already arrived there.

3. Development of algorithms and tools to increase the fidelity of the simulation and to resolve problems caused by some artifacts of the TRANSIMS approach that cause poor fidelity of the simulations in highly congested areas.

4. Evaluation and subsequent implementation of building egress models and pedestrian simulation as necessary to increase the fidelity of the model in areas where evacuation on foot will be the most likely mode.

5. Integration of the modified trip and activity data with the TRANSIMS model to simplify parameter studies and the comparison of different scenarios and assumptions fed into the process by emergency preparedness planners.

Task 4: Development of Visualization Methodologies to Compare Scenarios

The complexity of the results created by individual TRANSIMS runs makes it necessary to make use of the human visual system to derive relevant information quickly and efficiently. The development of visualization tools is a well-established area of expertise at TRACC and will be a key element for extracting important information from the wealth of results created by TRANSIMS.

TRANSIMS, as a dynamic traffic assignment implementation, simulates the movements of individual vehicles on the basis of their distance from each other, their need for lane changes, their driving characteristics, the road network, and traffic signals and other fixed elements. One of the capabilities developed at Argonne during a previous project was the batch-driven creation of videos that show the individual vehicles and their locations at all times. This video provides an under-the-hood view of the inner workings of TRANSIMS, but it is not the best possible way of comparing different evacuation strategies with each other.

This task deals with the development of visualization approaches that illustrate the differences between evacuation strategies in a manner that allows planners to determine the better strategy on the basis of key indicators, such as the movement of people away from the affected area, the congestion in larger areas interfering with effective evacuation, the performance of evacuation routes, and the use of buses and trains involved in the evacuation.

Key Deliverables for Task 4

1. Development of visualization concepts, both static and in form of videos, that will suit the needs of emergency response planners and illustrate the differences between given scenarios effectively.
2. Implementation of the necessary software and tools to create such visualizations both in batch mode and with a certain level of interactivity.

3. Documentation of the tools developed under this task. Training in the effective use of the tools.

Task 5: Integration of the Transportation Model with the Dispersion Model

The City of Chicago is implementing a companion project, EMViS, which establishes the capability of simulating the dispersion of radiological materials in a complex urban environment. The scope and timeline of the dispersion will dictate the scope and timeline of the evacuation, and TRANSIMS has the unique capability to consider the movements of individual travelers through and around a contaminated area. This capability makes it significantly easier to determine the exposure of individuals to radiological hazards because of their accumulative nature. Without a transportation component, the determination of the level of exposure would be limited to the assumption of a statistically immobile population. With TRANSIMS, the radiological exposure can be aggregated on an individual personal level while moving on complex paths through the time-dependent dispersion cloud, whether by train, bus, or walking or in a personal vehicle.

More importantly, the dispersion model will determine the size and location of the areas that should be evacuated, with possible extensions of the area over time when dispersion patterns change (wind direction, improved understanding of the radiation source, or weather). The process will involve some level of automation (e.g., determining a boundary along certain streets on the basis of safe levels of radiological contamination). From a perspective of an emergency response planner, the area to be evacuated will be likely defined manually and in broader strokes, with potential evacuation routes or mass transportation in mind. A tool would likely consist of a GIS application that allows for the definition of polygons and an automatic selection of streets contained within. Thus, the tool would benefit from a visualization of hazardous and safe radiation levels overlaid with the TRANSIMS road network.

The integration of such a dispersion model with TRANSIMS is not trivial, but it should allow emergency response planners to develop a much improved understanding of the movements of contaminated individuals and their personal exposures. Given that these individuals are synthetic and are derived from an extrapolation of socioeconomic data and other statistical data sources, their individual exposures are not very useful. But aggregated by their destinations, origins, and other characteristics, emergency response planners should be able to develop improved plans on such issues as the staging of decontamination supplies, need for medical facilities, and other mitigation strategies.

The integration will involve changes to the TRANSIMS modules and data files to read matrices containing the dynamic radiation levels varying both in place and over time; correlate the current locations of all persons in the affected area; aggregate their exposure to different types of radiation; and finally aggregate individual exposures into meaningful statistical values by area, trip destination, and similar.

The implementation of the EMViS project is expected to span 18 months. The EMViS project may not have produced actual dispersion patterns for integration with TRANSIMS by the end of the RTSTEP project, so there may be a need to use preliminary or representative data resulting from EMViS to implement the tools proposed in this statement of work.

Key Deliverables for Task 5

1. Development of strategies for integration between EMViS and RTSTEP. Evaluation of methodologies and determination of the best feasible approach. Discussion with OEMC on the level of integration.

2. Modification of TRANSIMS tools and development of utilities to implement the integration. Establishment of a framework that can be used by modelers to set up specific scenarios and start the necessary TRANSIMS runs to obtain results.

3. Documentation of the tools developed under this task. Training in the effective use of the tools.

Task 6: Case Studies

To ensure that the tools developed are useful and effective for emergency response planners, a number of selected case studies will be defined in close collaboration with OEMC and emergency responders. This effort will also require coordination with the companion project on dispersion, EMViS, because of the obvious integration issues. The case studies will be driven by the needs of the RCPT program, and a good starting point for the development of case studies are the scenarios laid out at the RCPT Summit on July 15 and 16, 2009. The analysis will focus on the regional impact caused by the postulated events. The analysis in the immediately affected areas will be modeled at a level suitable for such regional analysis, balancing the level of fidelity at the sites with the need for minimizing the amount of data needed for analysis.

Appropriate case studies will be driven by a number of important aspects: applicability to specific questions that emergency responders are concerned about, demonstration of the capabilities of the integrated models, and suitability from the perspective of training future users of the methodology. The RCPT Summit scenarios will be analyzed as separate events and as a combined series of events to compare different response strategies and the increased complexity of the consequences of simultaneous events.

Key Deliverables for Task 6

1. Detailed definition of the postulated events, determination of likely response strategies with regards to transportation, and determination of the need for additional data.

2. Determination of the need for model refinements to best address the questions to be answered by the case studies. Determination of the scope of road and transit network refinement in the affected areas.

3. Determination of likely destinations for evacuees, the establishment of mass transportation, and the location and capacities of emergency shelters that will be used.

4. Detailed results from case studies performed as part of this work, such as data, graphs, animations, and presentations.

5. Detailed documentation of the processes, assumptions, methodologies, and limitations of the scenarios developed as case studies.

6. Training materials based on the case studies that are suitable for teaching the methodology to emergency response planners to be identified by OEMC.

TRAINING

The work performed under this project constitutes original research on new and advanced methodologies to improve the capabilities of emergency preparedness planners to develop appropriate emergency evacuation plans on a regional level. The TRANSIMS approach is unique in that it enables the analysis of fine-grained time-dependent and multi-modal responses of the transportation system to dramatically changing needs for transportation. This benefit comes at the cost of a high level of complexity. TRACC's role in the development and deployment of TRANSIMS has been focusing especially on reducing complexity on the user level and has been developing tools, training courses, and methodologies to allow modelers to concentrate on the primary tasks at hand versus dealing with the intricacies of the underlying software. This is an ongoing effort, and the RTSTEP project will both benefit from and contribute to it. TRACC will hold a three-day "TRANSIMS Fundamentals" training course (similar to the eight training courses it held during the previous two years) by November 2009 at OEMC to bring all team members up to speed on the current TRANSIMS methodologies and previous work on evacuation modeling. TRACC will hold a second training course on the work resulting from the RTSTEP project; this course will provide training and training materials to emergency response planners to be identified by OEMC. The latter training, to be held for two days at OEMC in July 2010, will focus appropriately on the methodologies developed under the RTSTEP project and will be customized to fit the needs and background of the trainees.

PROJECT COMMUNICATIONS

The Argonne project manager will send monthly progress reports to the designated City of Chicago project/contract manager. The progress reports will be delivered approximately two weeks after the end of the reporting month. The monthly reports will highlight work products and tasks conducted and/or completed during the reporting month, expected work to be completed during the next month, open issues that need resolution between the City of Chicago and Argonne, and costs incurred during the month. The detail provided in the cost breakdowns will be developed on the basis of discussions with the City of Chicago contract/project manager.

In addition to the monthly progress reports, Argonne will provide the City of Chicago contract/project manager with a weekly list of issue items that highlight areas that may need the joint attention of Argonne and the City of Chicago. The issue items will be used to track key areas that require ongoing collaboration between Argonne and the City of Chicago.

PROGRAM MANAGEMENT

The Energy Systems Division and the Transportation Research and Analysis Computing Center at Argonne will be responsible for completion of the tasks described in this proposal. This proposal represents part of a comprehensive program for determining risk and evacuation response to risk. Dr. Hubert Ley is responsible for the project in general. Dr. Ley, Dr. Young Soo Park, Dr. Vadim Sokolov, and Mr. Michael Hope are responsible for making technical decisions related to the modeling described in this proposal, for developing and refining input databases, and for conducting the transportation analyses specified. Separately from this statement of work, Dr. John Krummel is responsible for the development of the EMViS dispersion model under a separately funded program.

Argonne personnel will meet periodically with OEMC managers to address questions and issues encountered in the performance of the RTSTEP project and to report on work progress. Written progress reports will be provided monthly or on an alternate, mutually agreeable schedule.

QUALITY ASSURANCE

The purpose of the Argonne quality assurance program is to establish procedures for performing high-quality work on projects and to ensure that the planned procedures are followed during the course of the work. Quality assurance procedures cover project planning, field activities, laboratory analysis, data analysis, review of reports, documentation, and records

retention. All deliverables are subjected to a thorough review by qualified technical staff members not otherwise involved in the project.

SCHEDULE, BUDGET, COMMITMENTS, AND PERSONNEL

Support for this proposal is anticipated to extend over a period of 10 months. Table 1 provides the overall proposal budget, Table 2 indicates the commitments being made for the proposed work, and Table 3 defines roles and responsibilities of the personnel involved. Figure 1 lays out the project schedule.

TABLE 1: Cost and Effort Estimates[a]

Component	FY2010		Totals	
	Person-Months	Cost ($1000)	Person-Months	Cost ($1000)
Direct Effort				
Scientific Direct	40.0	394.8	40.0	394.8
Postdoctoral Appointee	10.0	57.1	10.0	57.1
Secretarial/Clerical	1.0	4.9	1.0	4.9
Total Effort	51.0	456.8	51.0	456.8
Other Direct Costs				
Materials & Supplies		59.9		59.9
Editorial		5.5		5.5
Subcontracts		974.5		974.5
Special Term Appointment		22.4		22.4
Travel		11.0		11.0
Facilities and Infrastructure		64.0		64.0
ALD Administration		61.4		61.9
Total Other Direct Costs		1,198.7		1,198.7
Total Direct Cost		1,655.5		1,655.5
Laboratory Indirect		295.3		295.3
LDRD Indirect		49.2		49.2
Total ANL Cost		2,000.0		2,000.0

[a] *Costs may be rounded.*

TABLE 2: Commitments, Individual Responsibilities, and Target Beginning and Ending Dates

Commitment	Responsible Individuals	Target Begin Date	Target End Date
Task 1: Refinement and Extension of the Existing Road and Transit Network			
Definition of the scope of required road and transit network changes	Ley, Sokolov, Hope, Park	Oct 2009	Nov 2009
Road network extension and editing	Ley, Sokolov, NIU	Nov 2009	Feb 2010
Transit network extension and editing	Sokolov, NIU	Jan 2010	Feb 2010
Robust normal day transportation model development	Sokolov, AECOM	Oct 2009	April 2010
Calibration and validation of the normal day transportation network	Sokolov, AECOM	Mar 2010	May 2010
Documentation of refinements and extensions of the road and transit network	Ley	Jun 2010	Jul 2010
Task 2: Development of Tools to Implement Evacuation Routes			
Determination of typical rules and procedures of establishing evacuation routes	Hope, Bukema, Park	Oct 2009	Dec 2009
Research on appropriate implementation methods in TRANSIMS	Hope, AECOM	Nov 2009	Feb 2010
Implementation of model components	Hope, AECOM	Dec 2009	Apr 2010
Development of appropriate user interfaces	Sokolov, NCSA	Feb 2010	May 2010
Documentation and training	Ley	Jun 2010	Jul 2010
Task 3: Tools to Model Populations, Evacuation Trips, and Background Traffic			
Identification of available data sources	Park	Oct 2009	Nov 2009
Identification of the methodologies and modeling needs	Park	Oct 2009	Dec 2009
Implementation of data and methods in the scripting environment	Park	Dec 2009	Apr 2010
Elimination of microsimulation artifacts	Hope, Park, NIU	Nov 2009	Mar 2010
User interfaces to simplify the utilization of the scripts	Hope, NCSA	Feb 2010	Jun 2010
Documentation of models and interfaces	Park	Jun 2010	Jul 2010
Task 4: Development of Visualization Methodologies to Compare Scenarios			
Identification of visualization needs for regional emergency response analysis	Ley, Sokolov	Oct 2009	Dec 2009
Implementation of static and dynamic transportation visualizations	Ley, Sokolov	Jan 2010	Mar 2010
Development of overlays showing dispersion superimposed onto traffic	Ley, Sokolov	Apr 2010	Jun 2010
Documentation of visualization capabilities	Ley, Sokolov	Jun 2010	Jul 2010

(continued)

TABLE 2: (Cont.)

Commitment	Responsible Individuals	Target Begin Date	Target End Date
Task 5: Integration of the Transportation Model with the Dispersion Model			
Define interfaces to integrate tier I and II dispersion models with TRANSIMS	Sokolov, Ley	Mar 2010	Apr 2010
Research of appropriate integration methodologies	Sokolov	Apr 2010	May 2010
Accumulation of radiological exposure to individual travelers	Sokolov	Mar 2010	May 2010
Documentation	Sokolov	Jun 2010	Jul 2010
Task 6: Case Studies			
Definition and scope of case studies	Park, Hope, AECOM	Dec 2009	Feb 2010
Identification of data sources	Park, Hope, Buikema	Jan 2010	Feb 2010
Implementation, execution, and evaluation of case studies	Park, Hope	Mar 2010	May 2010
Parameter studies, sensitivity analysis, evaluation of alternative emergency responses	Park, Hope	Apr 2010	Jun 2010
Documentation	Park	Jun 2010	Jul 2010

TABLE 3: Roles and Responsibilities of Personnel

Role	Name	Organization	Responsibilities	Time to the Project
Principal Investigator, Project Manager	Dr. Hubert Ley	TRACC	Project Management, Visualization, User Interfaces, General Methodologies, Training	6 months
Principal Investigator	Dr. Young Soo Park	TRACC	Simulation Methodologies, Case Studies, Evacuation Demand Modeling	8 months
Principal Investigator	Dr. Vadim Sokolov	TRACC	Model Equilibration, User Interfaces, Calibration and Validation, Transit Models	6 months
Principal Investigator	Michael Hope	TRACC	Tool Development, Case Studies, Code Parallelization, Case Studies	6 months
Project Member	TBD Post Doc	TRACC	Case Studies, Demand Modeling, Population Synthesis and Socio-Economic Models	10 months
Project Member	Kanesa Nayagam	TRACC	Network Editing, Data Preparation, Case Studies	7 months
Project Member	Manli E	TRACC	Case Studies, Evacuation Routes, Model Building	7 months
Project Member	Ed Buikema	TRACC Consultant	Emergency Response Strategies, Scenario Development, Interfacing with Planners	2 months
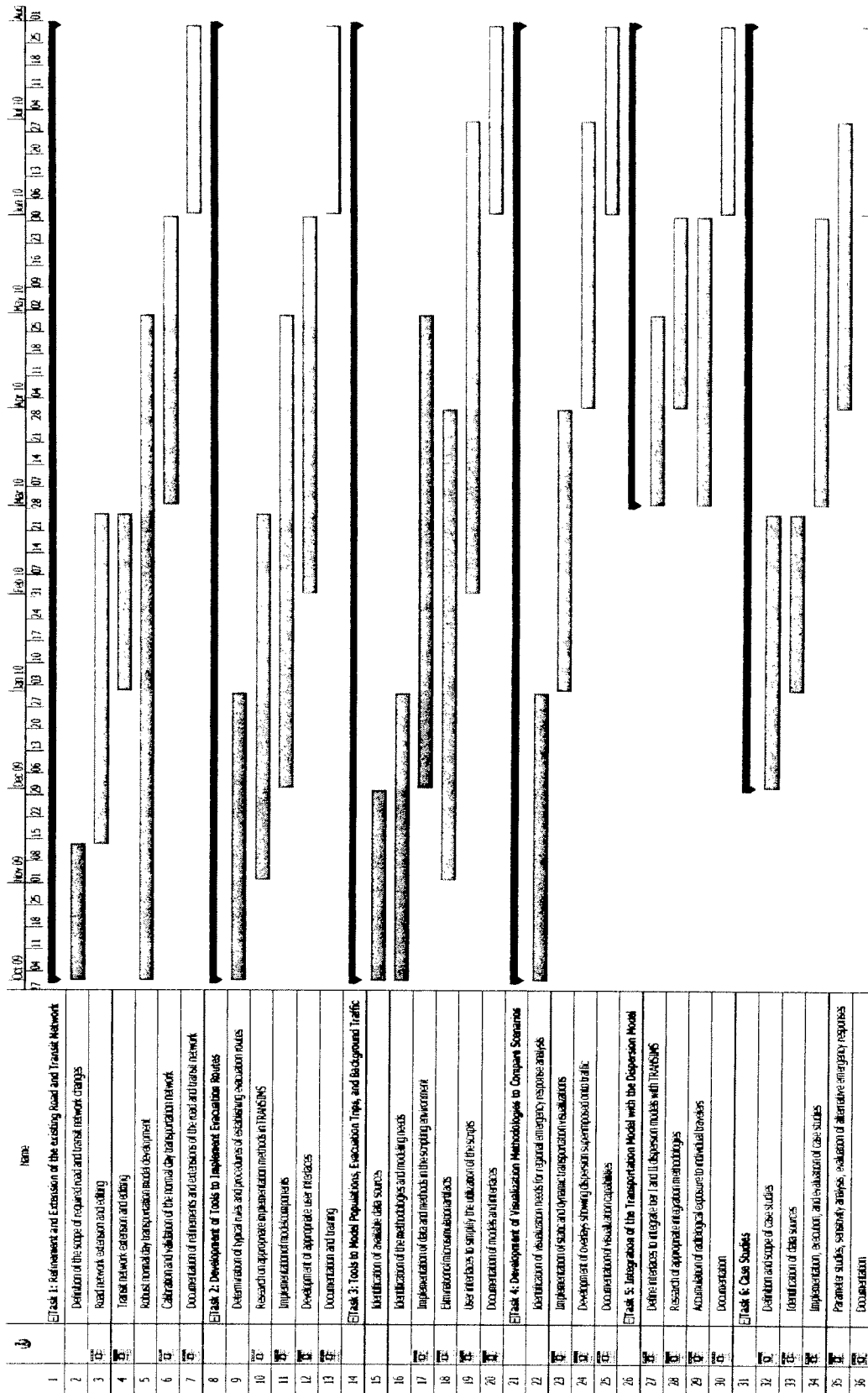
Figure 1: Time line of the RTSTEP project

REGIONAL TRANSPORTATION SIMULATION TOOL FOR EVACUATION PLANNING (RTSTEP)

Office of Emergency Management and Communication

Sole Source Justification

Argonne National Laboratory

PROCUREMENT HISTORY

The Office of Emergency Management and Communication (OEMC) has state-of-the-art emergency and crisis management systems; however, the OEMC lacks key capability in determining the spatial and temporal extent of a hazardous material incident or a terrorist attack involving the release of a chemical, biological or radiological (CBR) agent ("dirty-bomb"). Knowing the location of areas affected by an incident is essential to rapid response and developing the mitigation required when protecting public safety. Being able to determine the best evacuation routes and strategies under these complex circumstances based on a detailed analysis of the transportation system and its response to the sudden surge of evacuees is another essential capability in this context.

To address this knowledge gap, OEMC has determined that several additional priority capabilities are needed, including advanced air dispersion modeling and dispersion visualization capabilities. Furthermore, the work proposed in this project extends this capability by integrating the dispersion modeling project with high-fidelity multi-modal transportation analysis tools to help emergency response planners include the anticipated response of the transportation system into their plans. This is essential, given the current uncertainties in estimating the impact of evacuation areas and routes on the movement of evacuees in the region and the need for assistance from emergency responders. This is a state of the art capability that will greatly enhance OEMC's capability of developing emergency response plans for possible large scale evacuation events in the metropolitan region.

Argonne National Laboratory (Argonne), operated by UChicago LLC for the Department of Energy, is one of the largest research facilities in the United States and conducts work on a not-for-profit basis for federal, state, and local agencies. Argonne has a national and international reputation for providing unbiased science in support of the public good. As a national laboratory, Argonne is not in competition with other private sector companies and provides unique services not offered by others in the market place. Over the last 35 years Argonne has developed extensive and world-class expertise in simulation methodologies and advanced computing. For this specific project, Argonne has a set of unique computing and modeling technologies that have been applied to previous evacuation simulations in the Chicago metropolitan area and are based on high fidelity simulation software developed by the US Department of Transportation for next generation advanced transportation modeling. By combining Argonne expertise in evacuation modeling and advanced computing using massively parallel high performance computers with the expertise of the current developers of the TRANSIMS simulation software (AECOM) as well as a number of university partners from NIU, IIT, and UIUC, the proposal team brings together a set of capabilities unmatched by others in the market-place.

There have been numerous meetings at the OEMC and at Argonne during the past year to discuss homeland security science and technology developments including state of the art atmospheric modeling and visualization tools that are now ready for technology transfer. The meetings also covered emergency transportation evacuation planning and development of a transportation model specific to the City of Chicago. The simulator has being developed by Argonne under a separate agreement with the Illinois Terrorism Task Force and the Illinois Department of Transportation and will be adapted for large scale regional emergency evacuation planning under the proposed project. These tools and the expertise offered by Argonne and scientists and engineers can provide the OEMC with capabilities that will help the City of Chicago understand and respond to a WMD attack along with other crisis management situations involving accidental spills of hazardous materials.

ESTIMATED COST

The estimated cost to meet our requirement is $2,000,000. (See attached task and cost proposal).

SCHEDULE REQUIREMENTS

The proposed tasks are to be completed in approximately ten months from the contract award date (See attached task and cost proposal).

EXCLUSIVE OR UNIQUE CAPABILITIES

Argonne has proven and recognized scientific expertise in high fidelity numerical simulations and has performed related work recently when developing a large scale evacuation simulation model for radiological events in the Chicago Business District for the Illinois Department of Transportation. This work was established at the request of the Illinois Terrorism Task Force and was broadly supported by the Office of Emergency Management and Communications, the Illinois Emergency Management Agency, the Federal Emergency Management Agency for Region 5, DuPage County, and other regional stakeholders. The capabilities developed under this project apply directly to the success of the proposed work, and the existence of a Chicago TRANSIMS model makes it possible to implement the project within the short time frame available.

Argonne's Transportation Research and Analysis and Computing Center (TRACC) has also developed close collaborative ties with other stakeholder in the development of the underlying high-fidelity transportation software application (TRANSIMS) and is uniquely positioned to bring in the necessary resources to make the project a success. TRACC's high performance computing facilities, operated for USDOT under a grant, are the choice platform for most users of the state of the art TRANSIMS application that will form the basis for the proposed project. TRACC is one of the key developers of this application as well, making it possible to make complex modifications and improvements that cannot be achieved by normal TRANSIMS users.

Specific examples of Argonne's exclusive or unique capabilities for doing the job include experience in: 1) developing emergency evacuation models for large metropolitan areas such as Chicago and the use of high fidelity transportation simulation software; 2) TRACC's operation of the largest high performance computer USDOT offers to transportation researchers in the US; 3) access to additional unique supercomputing facilities to carryout computationally intense simulations, including "Jazz" and "BlueGene" Clusters and TerraGrid hub connections with major national research laboratories and universities, and 4) staff with unique skills and experience in advanced transportation modeling and high performance computing.

Information Technology Governance Board (ITGB)

2009

Project Review

Office of Emergency Management and Communications (OEMC)

Regional Transportation Simulation Tool for Evacuation Planning (RTSTEP)

Chicago

Project Description

The focus of this work is on the effects of no-notice evacuations on the regional transportation network, as well as the response of the transportation network to the sudden and unusual demand.
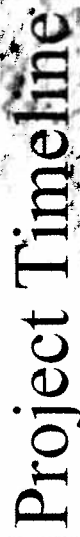
- **Summary of Major Project**
  - TRANSIMS (Transportation Analysis and Simulation System for advanced transportation and evacuation modeling)
  - EMViS

- **Major Risk of not Funding project**
  - The First Responders will be utilizing an old tools for Major Events
  - No visual planning
  - No reliable data
  - Miss use of available resource
  - Negative outcome

Chicago

Project History

Project hasn't been started.

- Start Date – The OEMC & Argonne relationship has started in 2006
- Funding - Grant funding – UASI2007 $ 2 M.
- Previous Funding - Full grant funding is still available for the project
- Current Status – The SOW has been approved by the OEMC currently requesting an approved from ITGB for a sole source.

Chicago

Project Timeline

- Start Date - Project will start in October 2009/as approved

- Duration - Project will take approximately 10 months to complete

- Dependencies - Currently there are not technical dependencies identified

- Issues for Future Research- Project does not require any further research other than what has been introduced in the SoW

Chicago

Project priority

- The RTSTEP is the only project we are requesting at this time to utilize this grant.

Release of RDD, Chemical/biological Weapon

Dispersion = Risk
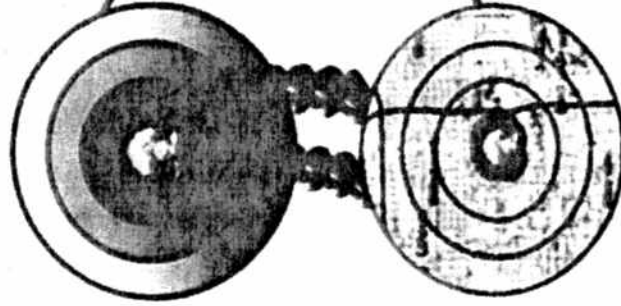
Effective Responses = Maximum decrease in Risk

Evacuation = Risk Avoidance

Chicago

2009 Grant Utilization

Total Cost for 2010 : $2,000,000

- Direct Effort in 2009 ($1,000)
  - Total Effort $ 425.8
  - Total Other Direct Costs $ 1,237.5
  - Total General & Admin. $ 289.9
  - LDRD Indirect $ 46.8

Chicago

Operating Cost

- Staff – OEMC will define application users/trainers to use the application

- Hardware – RTSTEP will utilize EMViS (existing project) hardware infrastructure

- Software – Since it is a custom developed application, no licenses will be required. 3rd party application will be covered with Argonne master contract with their vendors.

- Hosting – Application will be hosted at OEMC same as EMViS

- Trainings – The Argonne team will conduct 3 training session with instructors (train the trainer) Training is included in the Project cost

Annual Saving / Payback

- This application has not been developed and used by any other agency. Since this is a custom application, no data available to compare for Annual savings.

Chicago

Why we might not want to

- Argument is not available

Chicago

Benefits

- Advanced Chemical-biological-radiological, nuclear, or explosive (CBRNE) emergency modeling and Visualization capabilities.

- Better Utilization of available CoC resources

- Multi-agency training benefit.

- Enhancing existing tools capabilities (plum modeling, and Transportation Analysis and Simulation System - TRANSIM)

- Defining Rapid and Effective CBRNE and HAZMAT emergency Management

- Allowing public responders to work with 3D modeling

- Application will be coupled with EMViS project

Chicago

Technology

- AViGER-Wall (Advanced Visualization Next-Generation Emergency Response Wall)

- Plume modeling

- Weather Data Monitoring System

- Canopy Scale wind Flow Measurements

- Templates generated by Super computer

- TRANSIMS

Chicago

November 24, 2008

Dear Grantee:

Enclosed with this letter is your fully executed grant agreement.   Please retain the enclosed copy for your files.

If you have any questions or need additional information, please feel free to contact me at 217-557-4757.

Sincerely,

Tom Zimmerman
Illinois Terrorism Task Force

Attachment

EMAP Accredited

2200 South Dirksen Parkway • Springfield, Illinois   62703-4528 • Telephone: (217)782-7860
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IEMA

Illinois Emergency Management Agency

Rod R. Blagojevich, Governor

Andrew Velasquez III, Director

NOTICE OF GRANT AGREEMENT

PART I - Notice of Grant Award to City of Chicago, Office of Emergency Management and Communications (OEMC),

This Grant Agreement is made and entered by and between the Illinois Emergency Management Agency (Grantor), 2200 South Dirksen Parkway, Springfield, Illinois 62703, and **City of Chicago, Office of Emergency Management and Communications (OEMC),**(Grantee), **1411 West Madison, Chicago,** Illinois **60607.**

WHEREAS this Grant is to utilize funds from the Department of Homeland Security (DHS), Fiscal Year 2008 Homeland Security Grant Program, **Urban Area Security Initiative, CFDA #97.067.**

THEREFORE, the Grantor is hereby making available to the Grantee the amount not exceeding **$29,536,975.00** for the period from **September 1, 2008,** to **December 31, 2010.** The Grantee hereby agrees to use the funds provided under the agreement for the purposes set forth herein and agrees to comply with all terms and conditions of this agreement. This period of award may be amended if there is a delay in the release of these funds from the Federal Government.

It is agreed between the parties, that the agreement, as written, is the full and complete agreement between the parties and that there are no oral agreements or understanding between the parties other than what has been reduced to writing herein.

This Grant Agreement and attachments constitute the entire agreement between the parties.

PART II - Term

The term of this Grant Agreement shall be from **September 1, 2008,** to **December 31, 2010.**

PART III - Scope of Work

To provide funding for any respective Urban Area Security Strategies and the Investments identified during the application period.

The Budget Detail Worksheet, provided in Attachment A, outlines the entire Scope of Work (Part III) for this project and expenditures for which the Grantee will seek reimbursement. The Grantor will only reimburse those expenditures that are specifically listed in the Budget Detail Worksheet. All equipment listed in the Budget Detail Worksheet must reference the appropriate Authorized Equipment List code as listed in the Responder Knowledge Base web site. Each Budget Detail Worksheet submitted by the Grantee and approved by the Grantor shall be considered an authorized budget and an attachment of this Grant Agreement.

The Discipline Allocation Worksheet, provided in Attachment B, outlines the discipline specific expenditure allocation classification listed in the Scope of Work (Part III). The Grantee must submit to the Grantor the updated Discipline Allocation Worksheet as outlined in Part V – Reports.

PART IV - Compensation Amount

The total compensation and reimbursement payable by the Grantor to the Grantee shall not exceed the sum of **$29,536,975.00**.

PART V - Terms and Conditions

FISCAL FUNDING: The Grantor's obligations hereunder shall cease immediately, without penalty or further payment being required, in any year for which the General Assembly of the State of Illinois fails to make an appropriation sufficient to pay such obligation or the U.S. Department of Homeland Security, Federal Emergency Management Agency, Grants Programs Directorate (DHS FEMA GPD) fails to provide the funds. The Grantor shall give Grantee notice of such termination for funding as soon as practicable after Grantor becomes aware of the failure of funding. Grantee's obligation to perform work shall cease upon notice by Grantor of lack of appropriated funds.

EQUIPMENT: Grantor reserves the right to reclaim or otherwise invoke the Illinois Grant Funds Recovery Act on any and all equipment purchased by grantee with grant funds if said equipment has fallen into neglect or misuse according to the standards of the Grantor. Additionally, Grantee may not substitute, exchange or sell any equipment purchased with grant funds unless Grantee has the express written consent of the Grantor. The Grantee agrees that, when practicable, any equipment purchased with grant funding shall be prominently marked as follows: "*Purchased with funds provided by the U.S. Department of Homeland Security.*"

METHOD OF COMPENSATION: The method of compensation shall be reimbursement in accordance with the invoice voucher procedures of the Office of the Illinois State Comptroller. The Grantee agrees to maintain appropriate records of actual costs incurred and to submit expenditure information to the Grantor. No costs eligible under this Grant Agreement shall be incurred after **December 31, 2010**. The Grantee must submit a final Budget Detail Worksheet, and Discipline Allocation Worksheet to the Grantor within 30 days after the expiration of the Grant Agreement. The Grantee also agrees that funds received under this award will be used to supplement, but not supplant, state or local funds for the same purposes.

ACCOUNTING REQUIREMENTS: The Grantee shall maintain effective control and accountability over all funds, equipment, property, and other assets under the Grant Agreement as required by the Grantor. The Grantee shall keep records sufficient to permit the tracking of funds to ensure that expenditures are made in accordance with this Grant Agreement.

The Grantee will comply with Federal Emergency Management Agency's codified regulation 44 CFR Part 13, Uniform Administrative Requirements for Grants and Cooperative Agreements to State and Local Governments; Office of Management and Budget (OMB) Circular A-102, addressing administrative requirements for state and local governments (44CFR Part 13); OMB Circular A-87, addressing cost principles for grants to state and local governments; Common Rule for Administrative Requirements for Grants to non-profits (28 CFR 70); OMB Circulars A-122 and A-21, addressing cost principles for grants to non-profit entities; the requirements included in the Office of Justice Programs OC Financial Guide; and applicable state and federal regulations.

Funds received by the Grantee must be placed in an interest-bearing account and are subject to the rules outlined in the Uniform Rule 6 CFR Part 9, New Restrictions on Lobbying, and the Uniform Rule 28 CFR Part 70, Uniform Administrative Requirements for Grants and Agreements (Including Subawards) with Institutions of Higher Education, Hospitals and other Non-profit Organizations.

The Grantee shall not deposit funds into the Federal Civil Preparedness Administrative Fund as established by the State legislature. This fund is reserved for the use of the Grantor only.

REPORTS: The Grantee shall submit to the Grantor throughout the stated performance period documentation to support the submission of the Bi-Annual Strategy Implementation Report (BSIR). The documentation is due within 15 days after the end of the reporting period (July 15 for the reporting period of January 1 through June 30; and January 15 for the reporting period of July 1 through December 31). The documentation must include, at a minimum, (1) amount of funding received, obligated and expended for activities outlined in the Scope of Work, and (2) Discipline Allocation Worksheet (Attachment B described in Part III – Scope of Work). The Grantee further agrees to provide to the Grantor, upon the request, other project information for which funding is received through this agreement to support the completion of other Federal and State reporting requirements.

The Grantee will submit to the Grantor, upon the request, evidence the Grantee has complied with DHS FEMA GPD training and/or exercise documentation and reporting requirements as outlined in the appropriate grant guidance that governs the use of training and/or exercise funds as defined by DHS FEMA GPD.

AUDITS AND INSPECTIONS: The Grantee will, as often as deemed necessary by the Grantor, DHS FEMA GPD or any of their duly authorized representatives, permit the Grantor, DHS FEMA GPD or any of their duly authorized representatives to have full access to and the right to examine any pertinent books, documents, papers and records of the Grantee involving transactions related to this grant agreement for three years from the date of submission of the final Budget Detail Worksheet or until related audit findings have been resolved, whichever is later. The Grantee certifies that all audits submitted under the provisions of OMB Circulars A-133, Audits of States, Local Governments, and Non-Profit Organizations, have been approved by the Grantor. The Grantee acknowledges that these are federal pass-through funds that must be accounted for in the jurisdiction's Single Audit under the Single Audit Act of 1996, if required.

MODIFICATION AND AMENDMENT OF THE GRANT: This grant agreement is subject to revision as follows:

A.   Modifications may be required because of changes in State or Federal laws, regulations, or Federal grant guidance as determined by the Grantor. Any such required modification shall be incorporated into and will be part of this Agreement. The Grantor shall notify the Grantee of any pending implementation of or proposed amendment to such regulations before a modification is made to the Agreement.

B.   Modifications may be made upon written agreement of both Grantor and Grantee.

TERMINATION FOR CONVENIENCE: This agreement may be terminated in whole or in part by the Grantor for its convenience, provided that, prior to termination, the Grantee is given: 1) not less than ten (10) calendar days written notice by certified mail, return receipt requested, of the Grantor's intent to terminate, and 2) an opportunity for consultation with the Grantor prior to termination. In the event of partial or complete termination of this agreement pursuant to this paragraph, an equitable adjustment of costs shall be paid to the Grantee for expenses incurred under this agreement prior to termination.

TERMINATION FOR BREACH OR OTHER CAUSE: The Grantor may terminate this agreement without penalty to the Grantor or further payment required in the event of:

A.   Any breach of this agreement which, if it is susceptible of being cured, is not cured within 15 calendar days after receipt of the Grantor's notice of breach to the Grantee.

B.   Material misrepresentation or falsification of any information provided by the Grantee in the course of any dealing between the parties or between the Grantee and any State Agency.

Grantee's failure to comply with any one of the terms of this Grant Agreement shall be cause for the Grantor to seek recovery of all or part of the grant proceeds.

RETENTION OF PROPERTY RECORDS: Grantee agrees to maintain records for equipment, non-expendable personal property, and real property. If any litigation, claim, or audit is started before the expiration of the three-year period, the records shall be retained until all litigation, claims, or audit findings involving the records have been resolved.

NON-DISCRIMINATION: In carrying out the program, the Grantee shall not discriminate against any employee or applicant for employment because of race, color, religion, sex, national origin, ancestry, age, physical or mental handicap unrelated to ability, marital status, or unfavorable discharge from military service. The Grantee shall take affirmative action to ensure that applicants for employment are employed, and that employees are treated during employment, without regard to their race, color, religion, sex, national origin, ancestry, age, physical or mental handicap unrelated to ability, marital status, or unfavorable discharge from military service. Such action shall include, but not be limited to, the following: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination;

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rates of pay or other forms of compensation; and selection for training; including apprenticeship. The Grantee shall post in conspicuous places, available to employees and applicants for employment, notices to be provided by the Government setting forth the provisions of this non-discrimination clause.

SEVERABILITY CLAUSE: If any provision under the Grant Agreement or its application to any person of circumstance is held invalid by any court of competent jurisdiction, this invalidity does not affect any other provision or its application of the Grant Agreement which can be given effect without the invalid provision or application.

DEBARMENT: The Grantee certifies neither it nor its principals are presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation in the agreement by any Federal Agency or department.

WORKER'S COMPENSATION INSURANCE, SOCIAL SECURITY, RETIREMENT AND HEALTH INSURANCE BENEFITS, AND TAXES: The Grantee shall provide worker's compensation insurance where the same is required, and shall accept full responsibility for the payment of unemployment insurance, premiums for worker's compensation, social security and retirement and health insurance benefits, as well as all income tax deductions and any other taxes or payroll deductions required by law for employees of the Grantee who are performing services specified by the grant agreement.

WAIVERS: No waiver of any condition of this grant agreement may be effective unless in writing from the Director of the Grantor.

BOYCOTT: The Grantee certifies that neither it nor any substantially-owned affiliated company is participating or shall participate in an international boycott in violation of the provisions of the U.S. Export Administration Act of 1979 or the regulations of the U.S. Department of Commerce promulgated under that Act.

WORK PRODUCT: The Grantee acknowledges DHS FEMA GPD, and State of Illinois reserve a royalty-free, non exclusive, and irrevocable license to reproduce, publish, or otherwise use, and authorize others to use, for Federal and State purposes: (1) the copyright in any work developed under an award or sub-award; and (2) any rights of copyright to which a recipient or sub-recipient purchases ownership with Federal support. The Grantee agrees to consult with DHS FEMA GPD, through the Grantor, regarding the allocation of any patent rights that arise from, or are purchased with, this funding.

The following statement shall be prominently displayed in all publications created through this grant agreement: *"This document was prepared under a grant from FEMA's Grant Programs Directorate, U.S. Department of Homeland Security. Points of view or opinions expressed in this document are those of the authors and do not necessarily represent the official position or policies of FEMA's Grant Programs Directorate or the U.S. Department of Homeland Security or State of Illinois."*

MAINTENANCE AND REVIEW OF EQUIPMENT: The Grantor reserves the right to reallocate or repossess all equipment procured by the Grantee under this grant agreement if the property is not properly maintained by the Grantee according to the manufacturer's guidelines and Grantor's requirements. All equipment procured by the Grantee through this grant agreement shall be made available for review by the Grantor upon request.

Title to equipment acquired by a non-Federal entity with Federal awards vests with the Grantee. Equipment means tangible nonexpendable property, including exempt property, charged directly to the award having a useful life of more than one year and an acquisition cost of $5,000 or more per unit. However, consistent with a non-Federal entity's policy, lower limits may be established. A Grantee shall use, manage, and dispose of equipment acquired under a Federal grant in accordance with Federal and State laws and procedures.

LIABILITY: The Grantor assumes no liability for actions of the Grantee under this agreement, including, but not limited to, the negligent acts and omissions of Grantee's agents, employees, and subcontractors in their performance of the Grantee's duties as described under this agreement. In addition, the Grantor makes no representations, or warrantees, expressed or implied, as to fitness for use, condition of, or suitability of said equipment purchased pursuant to this agreement, except as those representations are made by the manufacturer of said equipment. As to nature and condition of said equipment, in the use of said equipment, the Grantee agrees to hold the Grantor harmless for any defects or misapplications. To the extent allowed by law, the Grantee agrees to hold harmless the Grantor against any and all liability, loss, damage, cost or expenses, including attorney's fees, arising from the intentional torts, negligence, or breach of the agreement by the Grantee, with the exception of acts performed in conformance with an explicit, written directive of the Grantor.

ENVIRONMENTAL AND HISTORIC PRESERVATION (EHP) COMPLIANCE: The Grantee shall provide to the Grantor any information requested by DHS FEMA GPD to ensure compliance with applicable Federal EHP requirements. DHS FEMA GPD, through its EHP Program, engages in a review process to ensure that FEMA-funded activities comply with various Federal laws including: National Environmental Policy Act, National Historic Preservation Act, Endangered Species Act, and Executive Orders on Floodplains (11988), Wetlands (11990) and Environmental Justice (12898). The goal of these compliance requirements is to protect our nation's water, air, coastal, wildlife, agricultural, historical, and cultural resources, as well as to minimize potential adverse effects to children and low-income and minority populations. Any project with the potential to impact EHP resources cannot be initiated until DHS FEMA GPD has completed its review.

PART VI - Assurances

The Grantee assures that no official or employee of the Grantee who is authorized in the Grantee's official capacity to negotiate, make, accept, or approve, or to take part in such decisions regarding a contract for acquisition/development of property in connection with this agreement, shall have any financial or other personal interest in any such contract for the acquisition/development.

The Grantee will initiate and complete the work within the applicable time frame after receipt of approval of the awarding agency.

The Grantee will comply, as applicable, with provisions of the Hatch Act (5 U.S.C. §§1501-1508 and 7324-7328), which limit the political activities of employees whose principal employment activities are funded in whole or in part with federal funds.

The Grantee will cause to be performed the required financial and compliance audits in accordance with the Single Audit Act Amendments of 1996 and OMB Circular No. A-133, "Audits of States, Local Governments, and Non-Profit Organizations."

The Grantee will comply with all applicable requirements of all other State and Federal laws, executive orders, regulations governing this program, and policies and procedures promulgated by the Illinois Terrorism Task Force prior to or during the performance period of this agreement.

The Grantee agrees that funds utilized to establish or enhance state and local fusion centers must support the development of a statewide fusion process that corresponds with the Global Justice/Homeland Security Advisory Council (HSAC) Fusion Center Guidelines and achievement of a baseline level of capability as defined by the Fusion Capability Planning Tool.

PART VII - Certification

The Grantee certifies that it has fully implemented all current National Incident Management System compliance activities in accordance with Homeland Security Presidential Directive 5 (HSPD-5), *Management of Domestic Incidents* and related compliance documentation provided by the Secretary of Homeland Security and State of Illinois. The Grantee further certifies that all required compliance documentation is on file with the appropriate Federal and State entity as required by the Federal Emergency Management Agency throughout the performance period of this agreement.

The Grantee certifies that it has not been convicted of bribery or attempting to bribe an officer or employee of the State of Illinois, nor has any official, agent, or employee of the Grantee committed bribery or attempted bribery on behalf of the Grantee and pursuant to the direction or authorization of a responsible official of the Grantee.

The Grantee hereby certifies that it has not been barred from bidding on, or receiving State or local government contracts as a result of illegal bid rigging or bid rotating as defined in the Criminal Code of 1961 (720 ILCS 5/33E-3 and 33E-4).

The Grantee certifies that it will comply with all applicable State and Federal laws and regulations.

The Grantee certifies that it will return to the Grantor all State or Federal grant funds that are not expended or are accidentally over-advanced. The Grantor may recapture those funds not

expended or accidentally over-advanced in accordance with State and Federal laws and regulations. The Grantee further certifies that its failure to comply with any one of the terms of this Grant Agreement shall be cause for the Grantor to seek recovery of all or part of the grant proceeds.

The Grantee certifies that it will establish safeguards to prohibit employees, contractors, and subcontractors from using their positions for a purpose that constitutes or presents the appearance of personal or organizational conflict of interest, or personal gain.

Under penalties of perjury, I certify that **36-6005820** is my correct Federal Taxpayer Identification Number and that IRS Instructions have been provided for proper completion of this certification. I am doing business as a (please check one):

___ Individual	___ Real Estate Agent
___ Sole Proprietorship	_X_ Governmental Entity
___ Partnership	___ Tax Exempt Organization
___ Corporation	(IRC 501(a) only)
___ Not-for-profit Corporation	___Trust or Estate
___ Medical and Health Care	
___Services Provider Corporation	

Part VIII - Drug Free Certification

This certification is required by the Drug Free Workplace Act (30 ILCS 580). The Drug Free Workplace Act, effective January 1, 1992, requires that no Grantor or contractor shall receive a grant or be considered for the purposes of being awarded a contract for the procurement of any property or services from the State unless that Grantor or contractor has certified to the State that the Grantor or contractor will provide a drug free workplace. False certification or violation of the certification may result in sanctions including, but not limited to, suspension of contract or grant payments, termination of the contractor or grant and debarment of contracting or grant opportunities with the State for at least one (1) year but not more than five (5) years.

For the purpose of this certification, "Grantor" or "contractor" means a corporation, partnership, or other entity with twenty-five (25) or more employees at the time of issuing the grant, or a department, division, or other unit thereof, directly responsible for the specific performance under a contract or grant of $5,000 or more from the State.

The contractor/Grantor certifies and agrees that it will provide a drug free workplace by:
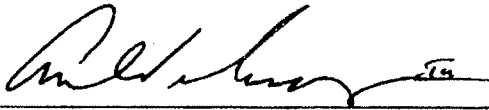
(a)   Publishing a statement:

(1)   Notifying employees that the unlawful manufacture, distribution, dispensing, possession or use of a controlled substance, including cannabis, is prohibited in the Grantor's or contractor's workplace.
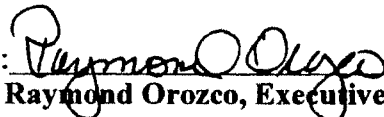
(2)   Specifying the actions that will be taken against employees for violations of such prohibition.

(3)   Notifying the employee that, as a condition of employment on such contract or grant, the employee will:

    (A)   Abide by the terms of the statement; and

    (B)   Notify the employer of any criminal drug statute conviction for a violation occurring in the workplace no later than five (5) days after such conviction.

(b)   Establishing a drug free awareness program to inform employees about:

(1)   the dangers of drug abuse in the workplace;

(2)   the Grantor's or contractor's policy of maintaining a drug free workplace;

(3)   any available drug counseling, rehabilitation, and employee assistance programs; and

(4)   the penalties that may be imposed upon an employee for drug violations

(c)   Providing a copy of the statement required by subparagraph (a) to each employee engaged in the contract or grant and to post the statement in a prominent place in the workplace.

(d)   Notifying the contracting or granting Agency within ten (10) days after receiving notice under part (B) of paragraph (3) of subsection (a) above from an employee or otherwise receiving actual notice of such conviction.

(e)   Imposing a sanction on, or requiring the satisfactory participation in a drug abuse assistance or rehabilitation program by, any employee who is so convicted, as required by section 5 of the Drug Free Workplace Act.

(f)   Assisting employees in selecting a course of action in the event drug counseling, treatment, and rehabilitation is required and indicating that a trained referral team is in place.

(g)   Making a good faith effort to continue to maintain a drug free workplace through implementation of the Drug Free Workplace Act.

IN WITNESS WHEREOF, the parties hereto have caused this contract to be executed by their duly authorized representatives.

Grantor: IL Emergency Management Agency

By: _____
Andrew Velasquez III, Director

DATE: _____

By: _____
Dennis Miner, Chief Fiscal Officer

DATE: _____

Grantee: **City of Chicago, Office of Emergency Management and Communications (OEMC),**

By: _____
Raymond Orozco, Executive Director

DATE: _____

By: _____
Kevin McClain, Chief Legal Counsel

DATE: _____

08CHGOUASI

2008 Homeland Security Grant Program - Urban Area Security Initiative
Attachment A1: Grantee Contact Information

Jurisdiction	City of Chicago	
FEIN	36-6005820	**DUNS #** 135056039

Check Box As Certified with IRS (877/829-5500)

___ Individual	___ Not-for-profit Corporation
___ Sole Proprietorship	___ Medical and Health Care
___ Partnership	___ Services Provider Corporation
___ Corporation	___ Real Estate Agent

X Governmental Entity	
___ Tax Exempt Organization	
(IRC 501(a) only)	
___ Trust or Estate	

Point of Contact	Amy Gudgeon	**Signatory Authority**	Raymond Orozco
Title	Project Manager	**Title**	Executive Director
Office Phone	312.743.7352	**Office Phone**	312.746.9111
Fax Number		**Fax Number**	
Email Address	agudgeon@cityofchicago.org	**Email Address**	raymond.orozco@cityofchicago.org

Grant Street Address	1411 W. Madison
Grant City	Chicago
Grant State	IL
Grant Zip Code	60607

2008 Grantee Contact Information (9/9/08)

2008 Homeland Security Grant Program - Urban Area Security Initiative
Attachment A: Budget Detail Worksheet

Project Name	Chicago UASI				Date		10/23/2008
Investment	Category	Description of Product/Services	Quantity	Unit Price		Total Cost	
#1 Interop. Radio		Interoperable Radio Communications-SUMMARY	1	$	4,675,000	$	4,675,000
Wireless I/O Digital Data		Interoperable Communications-Digital Data-SUMMARY	1	$	10,275,000	$	10,275,000
#3 CBRNE		CBRNE Detection and Response-SUMMARY	1	$	650,000	$	650,000
#4 IED		IED Deterrence, Prevention and Protection-SUMMARY	1	$	9,588,000	$	9,588,000
Citizen Preparedness		Planning and Citizen Preparedness-SUMMARY	1	$	532,000	$	532,000
#6Medical Surge		Medical Surge and Mass Prophylaxis-SUMMARY	1	$	1,640,000	$	1,640,000
Critical Infrastructure		Critical Infrastructure-SUMMARY	1	$	210,000	$	210,000
#8 Info Sharing		Information Sharing & Collaboration-SUMMARY	1	$	1,966,975	$	1,966,975
			1	$	-	$	-
			1	$	-	$	-
			1	$	-	$	-
			1	$	-	$	-
			1	$	-	$	-
			1	$	-	$	-
			1	$	-	$	-
			1	$	-	$	-
			1	$	-	$	-
			1	$	-	$	-
			1	$	-	$	-
						$	29,536,975

Investment Legend
#1 - Interoperable Radio
#2 - Wireless I/O Communications Digital Data
#3 - CBRNE Protection, Detection &Response
#4 - IED Deterrence, Prevention & Protection
#5 - Planning and Citizen Preparedness
#6 - Medical Surge/Mass Prophylaxis
#7 - Critical Infrastructure
#8 - Information Sharing and Collaboration

Category Legend
Planning
Organization
Equipment (Provide AEL Item #)
Training
Exercises
M&A

2008 Budget Detail Worksheet (9/9/08)

2008 Homeland Security Grant Program - Urban Area Security Initiative
Attachment A: Budget Detail Worksheet

Project Name	Chicago UASI				Date			
Investment	Category	Description of Product/Services	Quantity	Unit Price		Total Cost		
#1 Interop. Radio	06CC-01-CELL	Handheld Device-CPD	25	$	1	$		25
#1 Interop. Radio	06CC-01-CELL	Handheld Data Services Access and Monthly Service-CPD	1	$	49,975	$		49,975
#1 Interop. Radio	06CC-04-EQSD	Helicopter Antenna and Infrastructure, Fixed-site, equipment	1	$	125,000	$		125,000
#1 Interop. Radio	06CP-01-MOBL	Radio Interoperability and Portable Radios	1	$	4,000,000	$		4,000,000
#1 Interop. Radio	M&A	Salary and Fringe Benefits	1	$	500,000	$		500,000
			1	$	-	$		-
			1	$	-	$		-
			1	$	-	$		-
			1	$	-	$		-
			1	$	-	$		-
			1	$	-	$		-
			1	$	-	$		-
			1	$	-	$		-
			1	$	-	$		-
			1	$	-	$		-
			1	$	-	$		-
			1	$	-	$		-
			1	$	-	$		-
			1	$	-	$		-
						$		4,675,000

Investment Legend
#1 - Interoperable Radio
#2 - Wireless I/O Communications Digital Data
#3 - CBRNE Protection, Detection &Response
#4 - IED Deterrence, Prevention & Protection
#5 - Planning and Citizen Preparedness
#6 - Protecting Critical Infrastructure
#7 - Information Sharing and Collaboration

Category Legend
Planning
Organization
Equipment (Provide AEL Item #)
Training
Exercises
M&A

2008 Budget Detail Worksheet (9/9/08)

2008 Homeland Security Grant Program - Urban Area Security Initiative
Attachment A: Budget Detail Worksheet

Project Name	Chicago UASI				Date			
Investment	Category	Description of Product/Services	Quantity	Unit Price		Total Cost	
#2 Wireless I/O Communications	06CP-04-WADN	POD Network Infrastructure Enhancements;hardware upgd-¢	1	$	175,000	$	175,000
eless I/O Commun	04HW-01-MOBL	PDTs-CPD	1	$	1,750,000	$	1,750,000
eless I/O Commun	04MD-01-VCAM	Operation Virtual Shield-OEMC	1	$	7,005,750	$	7,005,750
eless I/O Commun	06CC-04-ESQD	Upgrade Satellite Bandwidth-OEMC	1	$	500,000	$	500,000
eless I/O Commun	04MD-03-DISP	Joint Operations Center-OEMC	1	$	350,000	$	350,000
eless I/O Commun	M&A	Salary and Fringe Benefits	1	$	494,250	$	494,250
			1	$	-	$	-
			1	$	-	$	-
			1	$	-	$	-
			1	$	-	$	-
			1	$	-	$	-
			1	$	-	$	-
			1	$	-	$	-
			1	$	-	$	-
			1	$	-	$	-
			1	$	-	$	-
			1	$	-	$	-
			1	$	-	$	-
			1	$	-	$	-
						$	10,275,000

Investment Legend
#1 - Interoperable Radio
#2 - Wireless I/O Communications Digital Data
#3 - CBRNE Protection, Detection &Response
#4 - IED Deterrence, Prevention & Protection
#5 - Planning and Citizen Preparedness
#6 - Protecting Critical Infrastructure
#7 - Information Sharing and Collaboration

Category Legend
Planning
Organization
Equipment (Provide AEL Item #)
Training
Exercises
M&A

2008 Budget Detail Worksheet (9/9/08)

2008 Homeland Security Grant Program - Urban Area Security Initiative
Attachment A: Budget Detail Worksheet

Project Name	Chicago UASI			Date		
Investment	Category	Description of Product/Services	Quantity	Unit Price		Total Cost
#3 CBRNE	030E-04-LTHH	Streamlight rechargeable lantern-CPD Public Transport Sect	1	$	9,800	$ 9,800
#3 CBRNE	07RD-01-PDGA	Canberra Personal Radiation Monitor-CPD Public Transport	60	$	670	$ 40,200
#3 CBRNE	01AR-02-APR	Avon FM-12 Respirators	1	$	400,000	$ 400,000
#3 CBRNE	Planning	Radiological Exposure Preparedness Plan-OEMC	1	$	75,000	$ 75,000
#3 CBRNE	Training	Training for the Radiological Exposure Plan-OEMC	1	$	50,000	$ 50,000
#3 CBRNE		Simulation Training Lab-CFD	1	$	60,000	$ 60,000
#3 CBRNE	Planning	PROTECT System-DoE	1	$	15,000	$ 15,000
			1	$	-	$ -
			1	$	-	$ -
			1	$	-	$ -
			1	$	-	$ -
			1	$	-	$ -
			1	$	-	$ -
			1	$	-	$ -
			1	$	-	$ -
			1	$	-	$ -
			1	$	-	$ -
			1	$	-	$ -
			1	$	-	$ -
			1	$	-	$ -
						$ 650,000

Investment Legend
#1 - Interoperable Radio
#2 - Wireless I/O Communications Digital Data
#3 - CBRNE Protection, Detection &Response
#4 - IED Deterrence, Prevention & Protection
#5 - Planning and Citizen Preparedness
#6 - Protecting Critical Infrastructure
#7 - Information Sharing and Collaboration

Category Legend
Planning
Organization
Equipment (Provide AEL Item #)
Training
Exercises
M&A

2008 Budget Detail Worksheet (9/9/08)

2008 Homeland Security Grant Program - Urban Area Security Initiative
Attachment A: Budget Detail Worksheet

Project Name	Chicago UASI			Date		
Investment	Category	Description of Product/Services	Quantity	Unit Price		Total Cost
#4 IED	Training	Training Backfill for TARA Training-CPD	1	$	500,000	$ 500,000
#4 IED	Training	Bomb & Arson Training Contract services-CPD	1	$	30,000	$ 30,000
#4 IED	Training	Travel expenses related to training-CPD	1	$	65,000	$ 65,000
#4 IED	Training	Supplies for training-CPD	1	$	5,000	$ 5,000
#4 IED	Training	Backfill for FEMA related training-CPD	1	$	20,000	$ 20,000
#4 IED	Training	Training and Workshop registration fees-CPD	1	$	30,000	$ 30,000
#4 IED	02EX-02-TLRO	Suit, IED Protective Ensemble-CPD	2	$	25,000	$ 50,000
#4 IED	Organization	JHAT-OEMC	1	$	61,000	$ 61,000
#4 IED	Planning	Continuity of Operations Plan-OEMC	1	$	150,000	$ 150,000
#4 IED	Planning	Consultant to create and manage database for NIMS Training Tracking-OEMC	1	$	125,000	$ 125,000
#4 IED	Training	Trainers NIMS-OEMC	1	$	50,000	$ 50,000
#4 IED	Training	Travel for Training NIMS-OEMC	1	$	50,000	$ 50,000
#4 IED	Training	Backfill/Overtime costs for attending Training NIMS-OEMC	1	$	115,000	$ 115,000
#4 IED	Exercise	NIMS compliant Exercises-OEMC	1	$	200,000	$ 200,000
#4 IED	Equipment - 04HW-0	Projectors/Screens NIMS-OEMC	2	$	2,500	$ 5,000
#4 IED	Equipment - 04MD-0	Laptop Computers NIMS-OEMC	2	$	2,500	$ 5,000
#4 IED	Training	High Rise Building Evacuation Training-CFD	1	$	200,000	$ 200,000
#4 IED	03SR-02-TLHN	Technical Search and Rescue Equipment-CFD	1	$	700,000	$ 700,000
#4 IED	Training	Technical Search and Rescue Training-CFD	1	$	700,000	$ 700,000
#4 IED	Training	Incident Management Team Training-CFD	1	$	200,000	$ 200,000
#4 IED	Exercise	Incident Management Team Exercises-Overtime-CFD	1	$	30,000	$ 30,000
#4 IED		Back up and regional training facility-OEMC	1	$	5,727,000	$ 5,727,000
#4 IED	12VE-00-CMDV	Command Vehicle and upgrades-CFD and OEMC	1	$	275,000	$ 275,000
#4 IED	13IT-00-ALRT	Call Notification System-OEMC	1	$	295,000	$ 295,000
			1	$	-	$ -
						$ 9,588,000

Investment Legend
#1 - Interoperable Radio
#2 - Wireless I/O Communications Digital Data
#3 - CBRNE Protection, Detection &Response
#4 - IED Deterrence, Prevention & Protection
#5 - Planning and Citizen Preparedness
#6 - Protecting Critical Infrastructure
#7 - Information Sharing and Collaboration

Category Legend
Planning
Organization
Equipment (Provide AEL Item #)
Training
Exercises
M&A

2008 Budget Detail Worksheet (9/9/08)

2008 Homeland Security Grant Program - Urban Area Security Initiative
Attachment A: Budget Detail Worksheet

Project Name	Chicago UASI			Date		
Investment	Category	Description of Product/Services	Quantity	Unit Price		Total Cost
#5 Citizen Preparedness	Planning	Program Manager salary (Citizen Corps)-OEMC	1	$ 90,000	$	90,000
Citizen Preparedn	Equip- 21GN-00-CCEQ	CERT backpacks	262	$ 36	$	9,487
Citizen Preparedn	Planning	CERT particpant manuals	261	$ 15	$	4,013
Citizen Preparedn	Planning	Consultant/CERT trainer	1	$ 50,000	$	50,000
Citizen Preparedn	Planning	Database/Web Site Creation & maintenance	1	$ 40,000	$	40,000
Citizen Preparedn	Planning	participant background checks/credentials	1	$ 5,000	$	5,000
Citizen Preparedn	Planning	Emergency preparedness planning media	1	$ 30,000	$	30,000
Citizen Preparedn	Exercises	Exercises involving CERT volunteers	1	$ 3,500	$	3,500
Citizen Preparedn	21-GN-00-OCEQ	Joint Information Center-OEMC	1	$ 130,000	$	130,000
Citizen Preparedn	Planning	Alert Chicago-website designer and consultant-OEMC	1	$ 170,000	$	170,000
			1	$ -	$	-
			1	$ -	$	-
			1	$ -	$	-
			1	$ -	$	-
			1	$ -	$	-
			1	$ -	$	-
			1	$ -	$	-
			1	$ -	$	-
			1	$ -	$	-
					$	532,000

Investment Legend
#1 - Interoperable Radio
#2 - Wireless I/O Communications Digital Data
#3 - CBRNE Protection, Detection &Response
#4 - IED Deterrence, Prevention & Protection
#5 - Planning and Citizen Preparedness
#6 - Protecting Critical Infrastructure
#7 - Information Sharing and Collaboration

Category Legend
Planning
Organization
Equipment (Provide AEL Item #)
Training
Exercises
M&A

2008 Budget Detail Worksheet (9/9/08)

2008 Homeland Security Grant Program - Urban Area Security Initiative
Attachment A: Budget Detail Worksheet

Project Name	Chicago UASI				Date		
Investment	Category	Description of Product/Services	Quantity	Unit Price		Total Cost	
#6 Med Surge	Equipment: 19MH-00	Mass Care Initiative - Storage POD's-OEMC	10	$ 8,000.00	$ 80,000.00		
#6 Med Surge	Equipment: 09ME-01	Mass Care Initiative - Cots-OEMC	10,500	$ 45.00	$ 472,500.00		
#6 Med Surge	Equipment: 08D3-01-	Mass Care Initiative - Blankets-OEMC	21,000	$ 6.00	$ 126,000.00		
#6 Med Surge	Equipment: 09MS-03	Mass Care Initiative - Hygiene Kits-OEMC	10,500	$ 2.00	$ 21,000.00		
#6 Med Surge	Equipment: 08D3-01-	Mass Care Initiative - Disposable Scrub Sets-OEMC	2,000	$ 4.00	$ 11,500.00		
#6 Med Surge	Equipment: 08D3-01-	Mass Care Initiative - Slipper, Comfor-Tred-OEMC	2,000	$ 2.00	$ 4,000.00		
#6 Med Surge	Equipment: 19MH-00	Mass Care Initiative - Containers, plastic with attached cover	400	$ 20.00	$ 8,000.00		
#6 Med Surge	Equipment: 19MH-00	Mass Care Initiative - Forklift-OEMC	2	$ 10,000.00	$ 20,000.00		
#6 Med Surge	Equipment: 19MH-00	Mass Care Initiative - Outdoor Pallet Jack-OEMC	10	$ 700	$ 7,000.00	$ 750,000.00
#6 Med Surge	Planning	Facility Surveys-OEMC	1	$ 215,000	$ 215,000		
#6 Med Surge	Equipment: 09MS-03	Pan Flu Cache - Mask non-N95 with earloop, 50/bx, 12 bx/cs	450	$ 41.79	$ 18,805.50		
#6 Med Surge	Equipment: 09MS-03	Pan Flu Cache-N95 Respirator w/ Exhalation Valve NIOSH-Approved, 10/bx-OEMC	26,000	$ 7.47	$ 194,220.00		
#6 Med Surge	Equipment: 09MS-03	Pan Flu Cahce-Antiseptic, Waterless Hand Sanitizer Gel, 24/cs-OEMC	800	$ 76.80	$ 61,440.00		
#6 Med Surge	Equipment: 09MS-03	Pan Flu Cache-Gowns, Disposable Isolation, 50/cs-OEMC	150	$ 16.95	$ 2,542.50		
#6 Med Surge	Equipment: 01EM-03	Pan Flu Cache-Gloves, Latex, Powder-Free, 100/bx, 10 bx/cs	800	$ 43.95	$ 35,160.00		
#6 Med Surge	Equipment: 09MS-03	Pan Flu Cache-Bags, Infectious Waste, 500/cs-OEMC	800	$ 35.90	$ 28,720.00		
#6 Med Surge	Equipment: 09MS-03	Pan Flu Cache-Goggles, Chemical Splash, Plain-OEMC	3,501	$ 2.60	$ 9,112.00	$ 350,000.00
#6 Med Surge	Equipment: 12VE-00-	Emergency Medical Transport Bus-CFD	1	$ 325,000.00	$ 325,000.00		
			1	$ -	$ -		
			1	$ -	$ -		
					$ 1,640,000		

Investment Legend
#1 - Interoperable Radio
#2 - Wireless I/O Communications Digital Data
#3 - CBRNE Protection, Detection &Response
#4 - IED Deterrence, Prevention & Protection
#5 - Planning and Citizen Preparedness
#6 - Medical Surge & Mass Prophylaxis
#7 - Information Sharing and Collaboration

Category Legend
Planning
Organization
Equipment (Provide AEL Item #)
Training
Exercises
M&A

2008 Budget Detail Worksheet (9/9/08)

2008 Homeland Security Grant Program - Urban Area Security Initiative
Attachment A: Budget Detail Worksheet

Project Name	Chicago UASI				Date			
Investment	**Category**	**Description of Product/Services**	**Quantity**	**Unit Price**		**Total Cost**		
#7 Protecting CI	14EX-00-BSIR	OEMC Physical Security Upgrades	1	$	140,000	$	140,000
#7 Protecting CI	Planning	Consultants for Critical Facility Assessments-DOE	1	$	70,000	$	70,000
			1	$	-	$	-
			1	$	-	$	-
			1	$	-	$	-
			1	$	-	$	-
			1	$	-	$	-
			1	$	-	$	-
			1	$	-	$	-
			1	$	-	$	-
			1	$	-	$	-
			1	$	-	$	-
			1	$	-	$	-
			1	$	-	$	-
			1	$	-	$	-
			1	$	-	$	-
			1	$	-	$	-
			1	$	-	$	-
			1	$	-	$	-
						$	210,000

Investment Legend
#1 - Interoperable Radio
#2 - Wireless I/O Communications Digital Data
#3 - CBRNE Protection, Detection &Response
#4 - IED Deterrence, Prevention & Protection
#5 - Planning and Citizen Preparedness
#6 - Medical Surge and Mass Prophylaxis
#7 - Protecting Critical Infrastructure

Category Legend
Planning
Organization
Equipment (Provide AEL Item #)
Training
Exercises
M&A

2008 Budget Detail Worksheet (9/9/08)

2008 Homeland Security Grant Program - Urban Area Security Initiative
Attachment A: Budget Detail Worksheet

Project Name	Information Sharing and Collaboration			Date		
Investment	Category	Description of Product/Services	Quantity	Unit Price		Total Cost
#8 Info Sharing	04AP-03-GISD	Facility Info Mgmt Upg & Improvements Planning Apps-CPD	1	$ 200,000	$	200,000
#8 Info Sharing	04AP-03-GISD	Facility Info Mgmt Upg; Equipment Software Apps-CPD	1	$ 69,000	$	69,000
#8 Info Sharing	04-MD-01-CMRA	Facility Info Mgmt Upgrades; Digital Camera-CPD	1	$ 6,000	$	6,000
#8 Info Sharing	Planning	Fusion Center Enhancements; Software/App Consultants-C	1	$ 150,000	$	150,000
#8 Info Sharing	Organization	Fusion Center Enhancements; Intel Analysts-CPD	1	$ 100,000	$	100,000
#8 Info Sharing	04HW-01-HHCD	Fusion Center Enhancements;Integrated Hardware-CPD	1	$ 150,000	$	150,000
#8 Info Sharing	Training	Fusion Center Enhancements-CPD	1	$ 26,975	$	26,975
#8 Info Sharing	Training	Urban Center Collaboration and Information Exchange-OEM	1	$ 5,000	$	5,000
#8 Info Sharing	Planning	Consultants for the Public Safety Incident Command Applica	1	$ 175,000	$	175,000
#8 Info Sharing	Planning	Fire Service Intelligence Enterprise-CFD	1	$ 25,000	$	25,000
#8 Info Sharing		Fire Service Intelligence Enterprise-CFD	1	$ 800,000	$	800,000
#8 Info Sharing	Training	Fire Service Intelligence Enterprise-CFD	1	$ 200,000	$	200,000
#8 Info Sharing	Exercise	Fire Service Intelligence Enterprise-CFD	1	$ 60,000	$	60,000
			1	$ -	$	-
			1	$ -	$	-
			1	$ -	$	-
			1	$ -	$	-
			1	$ -	$	-
			1	$ -	$	-
					$	1,966,975

Investment Legend
#1 - Interoperable Radio
#2 - Wireless I/O Communications Digital Data
#3 - CBRNE Protection, Detection &Response
#4 - IED Deterrence, Prevention & Protection
#5 - Planning and Citizen Preparedness
#6 - Protecting Critical Infrastructure
#7 - Information Sharing and Collaboration

Category Legend
Planning
Organization
Equipment (Provide AEL Item #)
Training
Exercises
M&A

2008 Budget Detail Worksheet (9/9/08)