

**Homeland Defense Equipment Reuse Program:
A Way to Redeploy Excess Materials and Reduce Waste from Federal Facilities - 11628**

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ABSTRACT

The U.S. Department of Energy (DOE) and the Federal Emergency Management Agency's Department of Homeland Security (DHS) are collaborating to reduce waste and its associated disposition costs through redeployment of emergency response equipment and materials. Items that are no longer needed by the federal government are made available at no cost to emergency first responder agencies to enhance their domestic preparedness. The primary objective of the Homeland Defense Equipment Reuse (HDER) Program is to redeploy excess federal equipment and ensure that local and state emergency responders are equipped to properly respond to an emergency. Items provided by the HDER Program strengthen the capacity to detect, prevent, respond to, and recover from a national security threat. Managing and redeploying excess items from the federal government on a national basis makes sense environmentally, financially, and socially. A nationwide approach is used to implement the HDER Program which supports a commitment to equip those on the domestic front lines in an effort to be better prepared to meet the challenges of any future incident.

The Program identifies available equipment and materials for circulation to local emergency responders, and they submit requests identifying what items they would like to receive. In order to facilitate this process as well as to expand the Program, a website is currently under development. . It is anticipated that DOE's HDER website will improve the participation process by being more responsive to the broad community it serves. The Program is focused on working to increase donations as well as deploying additional excess emergency response equipment/materials to local responder agencies across the nation at no cost to them. In venues such as this, the Waste Management Symposia, HDER intends to publicize its services and encourage others to preserve our ecological resources by participating in the Program. This Program is a "win-win" for all involved including Property Owners/Donors; Federal, State, and Local Governments; Emergency Management Groups; and Educational Institutions.

HISTORY OF THE HDER PROGRAM

The HDER Program was first established in 2002 when the U.S. Department of Justice (DOJ) provided a grant to the Health Physics Society (HPS) to support the HDER Program Pilot Project. The grant covered costs of training HPS volunteers, performing annual calibration and basic maintenance of equipment, providing hands-on refresher training, and serving as a local source of expertise for questions from participating emergency responder agencies. A substantial inventory of spare parts for the equipment that was being supplied to local responder agencies was maintained at The Oak Ridge National Recycle Center (TORNC). The parts were made available by TORNC at no cost, although shipping and

handling charges were applied. The HDER Program continued to expand over the years and in 2003, DOE entered into an Interagency Agreement with the Department of Homeland Security that formalized the agencies' commitment to jointly fund and implement this Program. From Program inception until November 2006, over 51,000 pieces of equipment and/or materials were provided to local emergency responder agencies across the country. The estimated replacement value of this equipment was approximately \$14 million. In November 2006, the Program was temporarily shut down in order to perform an evaluation of the procedures used to implement the Program. Modifications were made to improve Program accountability and it was restarted in October 2008.

CURRENT STATUS OF THE HDER PROGRAM

The Homeland Defense Equipment Reuse (HDER) Program is administered by the Department of Energy (DOE) Oak Ridge Office and the Federal Emergency Management Agency's Department of Homeland Security (DHS). It functions to provide excess detection/survey instruments, emergency response equipment, safety and Hazmat apparatus, and other items to state and local first responder agencies across the nation at no cost. Specifically, the Program locates, receives, evaluates, and refurbishes for reuse excess equipment and supplies within the DOE complex and other federal agencies in order to reduce the administrative requirements and costs associated with storage and disposal. More overly, the program enhances the capacity of state and local agencies to respond to incidents of domestic terrorism through equipment acquisition. Execution of this Program results in avoided storage, processing and disposal costs for the facilities contributing excess items while providing a valuable contribution to the homeland defense effort.

Figure 1: Equipment Deployed



Table 1: Types of Equipment Deployed

<ul style="list-style-type: none"> • Detection/Survey <ul style="list-style-type: none"> - Hand-held dose rate meters - Instrument Probes (alpha/gamma scintillation and Geiger Muller probes) - Portable beta/gamma survey meters - Self-reading pocket dosimeters - X-ray scanners 	<ul style="list-style-type: none"> • Emergency Response (Gear) <ul style="list-style-type: none"> - Fire Extinguishers - Generators - Protective gear - Open and closed circuit SCBAs - Trash pumps - Vehicles
<ul style="list-style-type: none"> • Other <ul style="list-style-type: none"> - Laboratory equipment - Test equipment - Miscellaneous tools 	<ul style="list-style-type: none"> • Safety and Hazmat <ul style="list-style-type: none"> - Full and half-face respirators - Spill control supplies - Protective gear

Daily execution of the HDER Program is performed by a DOE contractor. In October 2008, DOE signed a contract with G2 Engineering and Management, Inc., a small business

company based in Knoxville, Tennessee. In an effort to improve its programmatic operation, an assessment of HDER was conducted upon contract transition. Several areas of improvement were identified to ensure efficient operation of the Program. Of primary importance was establishing and administering an organized process for ensuring a transparent operation along with necessary supporting documentation. The Organization and Inventory Control process, dubbed OrganIC, originated to assist workers in producing explicit, complete, and applicable records for compliance with the HDER Program requirements. Various perspectives of the Lean manufacturing (Lean) philosophy derived mostly from the Toyota Production System (TPS) were reviewed for inclusion in the OrganIC process. Toyoto's 5S principles within Lean preserve value with less work by managing waste efficiently. Using those principles as a template, five areas of the OrganIC process were designated: 1) Receiving and Transfer In, 2) Sorting and Setting in Order, 3) Storing and Sweeping, 4) Standardizing and Sustaining, and 5) Shipping and Transfer Out. Crucial in assuring accurate and efficient accountability of the program's operation, each area is briefly detailed below.

- 1) Receiving and Transfer In (Donations)
Trucks delivering items for HDER are received at the rear loading dock of the warehouse that is used to support the Program. Currently, DOE leases warehouse space from a metal recycler known as 5R Processors which is located in Clinton, Tennessee. Items are unloaded and matched with the documentation that accompanies the equipment and/or materials in order to ensure correctness and completeness in accordance with the information provided by the donating organizations. Once validated, items are relocated for sorting and setting in order.
- 2) Sorting and Setting in Order
Everything has a place; and therefore, the next step is to sort the equipment and/or materials. The necessity of each item in a work area is evaluated and handled appropriately. Unneeded items are sorted and positioned for subsequent disposal, recycling, remanufacturing or reassignment. Needed items are placed in a green or yellow holding area for repair, repackaging, and/or bar coding before relocation to the designated storage areas.
- 3) Storing and Sweeping
Everything is put in its place. Efficient and effective storage methods are created to arrange items so that they are properly stored and easy to retrieve. Strategies include affixing labels and placards to designate storage areas. In addition, the storage areas are swept and kept clean; daily walkthroughs are performed to maintain a high standard of cleanliness.
- 4) Standardizing and Sustaining
All warehouse personnel are trained to process and store things in the same manner. A consistent approach for performing tasks was established to implement and achieve warehouse organization. Assigned job responsibilities, integrating duties, and checking practices help to ensure a

consistent approach to all activities. Properly maintaining the established practices prevents the accumulation of unneeded items and ensures that they are maintained in good working order. Team and management check-ins, performance reviews, placards, newsletters, and workplace tours are some tools used to reinforce an OrganIC HDER.

5) Shipping and Transfer Out (Deployment)

All orders are processed according to established procedures. Warehouse personnel are trained to these procedures and the same practices that are identified in Standardizing and Sustaining are employed for this step. Processed orders are placed in a holding area and prepared to be shipped by USPS, Fed Ex, and/or Freight lines.

One of the first steps that the new HDER contractor took after coming on board was to relocate the HDER inventory to an expanded storage footprint within the designated warehouse. As a part of the relocation effort, all inventory items were sorted and were either added to an internal HDER database used by DOE known as the Asset Reutilization Inventory System (ARIS) or were segregated for inclusion on the list of items not suitable for HDER and transferred to 5R Processors for recycle. In addition to increasing the storage capacity, the reorganization of the HDER inventory helped to establish zones to stage and store equipment which helped with (a) inventory control, visibility, and accessibility, and (b) accurate and timely processing of orders. The organization and management of inventory from receipt to deployment effectively improved as follows.

- Functional inventory accurately reflects physical inventory.
- Designated zones to stage and segregate functional and nonfunctional items support inventory control, visibility, and accessibility.
- Storage setup as Detection/Survey, Safety & Hazmat, Emergency Response Gear, or Other facilitates accurate and timely processing of orders.
- Unique barcode identification signifies how an item is sorted as well as its categorization, type, model, manufacturer, and size.

Next, the ARIS database was evaluated for modifications to more accurately reflect the revised five step equipment request and deployment process. On the basis of the evaluation, it was concluded that it was not cost effective to modify ARIS and the decision was made to establish a new database. In addition, at that time the DHS website that had previously been used to administer the program was no longer available. These two factors prompted the decision to seek funding and develop timelines to create a new HDER website.

In February 2009, discussions ensued to identify the most appropriate method for communicating with the first responder communities since the DHS data base that had been used to administer the Program was no longer available. It was concluded that DOE would establish its own system to post the HDER functional inventory, as well as accept and process orders, and that the system would be a new website. However, due to budget uncertainties it was concluded that for the remainder of 2009, an email system would be the most viable option. An introductory letter was sent via email to fifty-six Territories/State

Administrative Agencies (SAAs) to obtain information for updating the state HDER Point-of-Contact (POC) list. The state HDER POCs are the conduit through which the HDER Program transmits its inventory to local first responder agencies for review and requests for items. To date, thirty-eight have responded and provided a HDER POC. A second letter was sent via email to identified state/territory POCs for assistance with restart of the HDER Program. Sent in April 2009, the third email announced the onset of the HDER Program to recommence receiving orders. It was the first bimonthly posting via email of the HDER inventory for review and requests of orders.

In response to the first bimonthly posting, the HDER Program received 35 orders from first responder organizations of which 33 were filled and 12,292 items were shipped to 23 different counties. In June, HDER received 32 orders of which 28 were filled and 9,358 items were shipped to 27 counties within 8 states. In August, HDER received 30 orders from 28 counties within 7 states. With the collective acquisition cost of items deployed equaling more than \$882,000 over those six months, the HDER program was validated as both effective and useful.

Currently, since the inception of the email program, bimonthly postings have garnered 224 orders from 135 different emergency management organizations. Orders have been received and processed from responses to eight postings. One hundred ninety-seven of the 224 orders received were filled. The unfilled orders were due to inventory depletion.

A summary of the bimonthly posting results is presented in table 2 below. The number of orders received and filled, items shipped, agencies, counties, and states is provided as well as the estimated value of the items.

Table 2: Bimonthly Posting Results – April 2009 through August 2010

Cumulative Results	Year to Date	FY10	FY09
Number of Orders Received	224	126	98
Number of Orders Filled	197	107	90
Number of Agencies	18	73*	*
Number of Counties	18	68*	56*
Number of States	17	12*	9*
Number of Items Shipped	47,239	19,697	27542
Estimated Value of Items	\$2,102,665	\$1,081,555	\$1,021,110

* Some agencies/counties/states have received items more than once.

Given the response that has been received to date, as well as the information presented in the table above, it can be concluded that interest and desire to utilize the HDER Program is on the rise. Program use is expected to increase now that first responder organizations are receiving valuable equipment and materials. In addition, feedback from state HDER POCs and first responder organizations that have benefited has been positive. It should be noted that although to date, there have been only a few donations to HDER, government entities are beginning to seek out the Program to make donations. These donations are needed to ensure the longevity of this effective, worthwhile program. With the commitment from DOE and

DHS to equally share the Program cost for fiscal year 2011 and execution of the newly developed website, the Program is expected to continue to grow exponentially.

THE HDER WEBSITE

Overview of Website Development

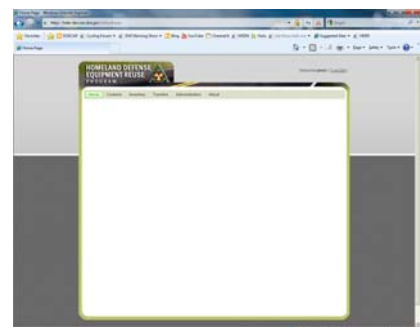
The decision was made to develop a website for both internal and external use. That is, the website will be designed to provide instantaneous reports to DHS and DOE for oversight purposes and it will be used by the States and local responder organizations to review available equipment and to submit requests. Additionally, there was interest in a website that would simultaneously support implementation of a state's ordinances (with regard to the type of equipment that is being requested) by providing POCs with a way to readily input controls to guarantee the compliance of every first responder organization subject to the ordinance. A list of minimum required functions and features have been identified to support an OrganIC HDER as well as ordinance implementation. The list below describes the design criteria, desired features and functionality, as well as other considerations.

- Menu driven inventory system
- Customer friendly Access to reports about incoming and outgoing transfer
- Points-of-contact (POCs) and first responder agencies information
- User friendly report generation

Website Test Results

The HDER website is being designed to allow federal and public entities to quickly evaluate the performance of HDER relative to state participation, federal donations, public interest/site visits, and deployment activity. Three states participated in a test phase for deployment of excess federal items and state/territories participation. The test phase involved all users of the systems in a mock process which included orders for equipment, approval of orders, shipment receipt, and report generation. Extrapolating the results of the limited test to a larger market presumes the agencies, acquisition restrictions, and order/shipment results are representative of others in the emergency management sub-categories represented here. This may or may not be the case. The following observations identify likely similarities and possible differences between the test agencies and the larger potential market.

Figure 2: Equipment Deployed



- **State HDER administrative Point-of-Contacts (POCs)** authorize the participation of agencies under their jurisdiction in the HDER Program. The assumptions made regarding the POCs role are consistent with the former bimonthly email system. That is that State HDER POCs should be able to generate significant participation within their state's borders so long as they do not hinder the order process by failing to grant authorization and/or to approve orders expeditiously. State restrictions or uniformity

- **State Emergency Organization/Responder** implements multiple best management practices (BMPs) to ensure compliance with state restrictions. State emergency organizations should be able to obtain preferred items provided they (1) periodically review the inventory for ordering and (2) do not exceed their state's monthly acquisition allotment.

These observations also support pursuing another component of the proposed website framework in which an entity such as a county would facilitate establishing and "stocking" a transfer bank with functional items that have been replaced due to process changes, policy, and/or maintenance costs. Even with items from federal sources for donation—and especially without them, if the website test results are indicative of how acquisitions in an actual market might balance—there appears to be an important role for an entity such as a county to play in implementing the banking of any transfer item for donation to help ensure an adequate supply of HDER items.

Three other factors will influence whether or not demand and supply patterns illustrated by the test agencies will apply in a larger market when agencies from all 56 states and territories are actively accessing the system. These include: inventory, participation, and redeployment of items.

- **Inventory** for HDER is limited by supply. To address this, federal programs should consider using HDER as the primary source for donating excess items that are relevant to emergency management and response.
- **Participation** requires the approval of a state HDER POC. Certainly compared to the potential acquisition cost it should be clear that the refurbishing and shipping costs incurred by HDER are less by an order of magnitude. However, in some cases the States are unable to identify a HDER POC.
- **Redeployment** is affected by inventory and policy. To maintain an adequate inventory supply, HDER currently relies on federal donations and sometime in the future it may rely on emergency management organizations' transfer banks as suggested above. State HDER POCs set exclusions based on state policies, ordinances, and/or restrictions. It is expected that if the HDER Program decided to establish policies restricting orders either on a monetary basis or based on the number of items ordered, it would create a more impartial distribution system. A policy decision could also be made to utilize an agency's operating budget as the baseline for prioritization of specialty items. This would help to eradicate the imbalance between the protective capabilities of an urban versus a rural location.

SUMMARY

The concept behind the HDER Program is both sound and proven. Federal agencies donate unneeded equipment and materials that would otherwise be disposed of at significant cost to the American taxpayer; while local responder agencies benefit by receiving much needed emergency response and management equipment at no cost. With a well stocked inventory and an adaptable website that is both interactive and able to be customized by the states, HDER will continue to expand which will benefit all parties.