

AN UPDATE OF THE PROJECTED FISCAL IMPACTS ON CLARK COUNTY AND LOCAL GOVERNMENTAL PUBLIC SAFETY AGENCIES RESULTING FROM THE TRANSPORTATION OF HIGH-LEVEL NUCLEAR WASTE TO YUCCA MOUNTAIN

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## EXECUTIVE SUMMARY

This Public Safety Impact Assessment (PSIA) report details the second quadrennial review of the public safety and emergency management fiscal cost projections for Clark County, Nevada and its associated local government public safety agencies arising from potential impacts of transporting high-level nuclear waste (HLNW) through Clark County to the Yucca Mountain repository. The Nuclear Waste Policy Act of 1982 delineated Yucca Mountain as the only site suitable for a repository of HLNW as follows: *“The Secretary shall provide for an orderly phase-out of site specific activities at all candidate sites other than the Yucca Mountain site.”*

On February 1, 2010, as this assessment was in its final stages of review, the Obama Administration released its 2011 national budget, which included the elimination of all funding for continuation of the project. The document states in part *“The administration has determined that Yucca Mountain, Nevada, is not a workable option for a nuclear waste repository and will discontinue its program to construct a repository at the mountain in 2010.”* Additionally, Energy Secretary Steven Chu announced that the Department of Energy would file a motion to withdraw its license application from the Nuclear Regulatory Commission. Secretary Chu stated that the withdrawal would be requested **“with prejudice.”** In essence, this statement would prohibit the license application from being resubmitted later and would put an end to the Energy Department’s current plan to store the nation’s high-level nuclear waste at Yucca Mountain. Secretary Chu also announced that it would prevent the project from being revived by future administrations. These actions were indeed taken by the Energy Department. However, absent from any formal activities related to the impending demise of the Yucca Mountain Project were any statements or actions relative to repeal of the Nuclear Waste Policy Act. Until such time as the Act is repealed, Southern Nevada remains the singular designated final storage site for military and civilian high-level nuclear waste. It remains prudent, therefore, to ensure that studies of the impact of transportation of the waste through Clark County are maintained.

The initial study of nuclear waste transportation through Clark County was conducted at the direction of the Clark County, Nevada Board of Commissioners in 2001, and subsequently updated in 2005. Projected fiscal costs reported in these studies, and this second update, reflect only the additional costs that would be a direct result of the repository and the shipping campaign, including the fiscal costs of these unfunded public safety mandates to public safety agencies of Clark County and the cities of Las Vegas, North Las Vegas, Henderson, Boulder City, and Mesquite. Public safety agencies addressed in this report are those that are charged with protecting the health, safety, and welfare of citizens in the event of an emergency, and include fire, police, and emergency management and are listed in Appendix C.

This study employed a refined methodology first used in the 2005 public safety impact report. In 2009, agencies were requested to review their submissions for the 2005 report and adjust them in light of current capabilities and changes in operational requirements since 2005. Specifically, the refinements in this report include methodologies to help ensure the elimination of redundancy in costs across jurisdictions to the maximum extent possible; the use of consistent modeling among all jurisdictions; and, the implementation of 24 year projection models that include maintenance, life cycle or useable life projections for equipment, inflation, and other recurring costs. These costs are projected over the entire U.S. Department of Energy's (DOE's) estimated 24-year span of the transportation campaign. Hence, cost projections are provided for both the startup in 2017 (considered the base year), as well as for the entire transportation campaign. This report, by providing cost estimates to governmental entities that span the total shipping campaign, permits decision makers to view the projected cumulative total cost and fiscal impacts on public safety agencies.

Because of the ever increasing information on DOE shipping plans and transportation modes, as well as the development of a Maximum Reasonably Foreseeable Accident (MRFA) risk evaluation, local public safety agency personnel had far more detailed information in 2009 than in 2005. In addition, the information used in projecting costs by the agencies in 2009 was much more closely aligned and tied to DOE planning and analysis than it could be in 2001 and 2005. Fiscal impact analyses increase in reliability as information about agency planning becomes finalized, and as agency personnel become more familiar with projects and their potential impacts. For the current projections, the public safety agencies have reduced some costs by eliminating some equipment and personnel needs they originally thought important while they have identified other resource needs that were previously overlooked or unknown at the time of the last update in 2005. In examining the projected cost estimates, one should remember that a case study and marginal fiscal cost analysis method has been employed and that these cost estimates represent only those directly attributable to the proposed repository and the shipment of waste. That is, the impacts and their costs are only those expenses that would not have been incurred by the public safety agency if there were no repository and shipping campaign.

The projected costs for all of the public safety agencies at the start of the proposed shipping campaign in 2017 total \$448,533,030. Over the entire 24-year period of the HLNW shipping campaign, the projected impact totals \$5,907,262,037 to the public safety agencies in Clark County and the incorporated cities. While this amount exceeds the total estimated by the 2005 study, one must understand that the report now includes costs related to Boulder City within the cost structure, increased costs projected by the cities of North Las Vegas and Henderson because of growth and annexation; and the application of an additional seven years of inflation factors. Table 1 provides the total projected costs of public safety functions for each jurisdiction at the proposed beginning of the repository in 2017, and for the entire anticipated 24-year shipping campaign.

**Table 1. Public Safety Projected Fiscal Impacts for Clark County and Incorporated Cities at 2017 and for the 24-year Shipping Campaign**

		<b>2017 Base Case**</b>	<b>24-year Totals</b>
<b>Clark County</b>	Fire	\$120,553,535	\$1,835,193,159
	Police*	\$45,076,694	\$463,246,662
	Emergency Management	\$1,716,904	\$58,735,246
<b>Total</b>		<b>\$167,347,132</b>	<b>\$2,357,175,067</b>
<b>Las Vegas</b>	Fire	\$94,506,184	\$1,078,831,184
	Police*	N/A	N/A
	Emergency Management	\$22,001,896	\$196,011,382
<b>Total</b>		<b>\$116,508,080</b>	<b>\$1,274,842,566</b>
<b>North Las Vegas</b>	Fire	\$77,017,551	\$396,592,200
	Police	\$36,561,673	\$336,593,013
	Emergency Management	\$1,363,631	\$46,370,736
<b>Total</b>		<b>\$114,942,855</b>	<b>\$779,555,950</b>
<b>Henderson</b>	Fire	\$27,325,002	\$893,866,058
	Police	\$5,439,557	\$179,640,863
	Emergency Management	\$1,361,606	\$46,362,220
<b>Total</b>		<b>\$34,126,164</b>	<b>\$1,119,869,142</b>
<b>Mesquite</b>	Fire	\$5,271,443	\$125,419,986
	Police	\$4,596,224	\$123,891,262
	Emergency Management	\$12,668	\$53,258
<b>Total</b>		<b>\$9,880,335</b>	<b>\$249,364,505</b>
<b>Boulder City</b>	Fire	\$82,340	\$1,013,900
	Police	\$4,596,224	\$123,891,262
	Emergency Management	\$1,049,899	\$1,549,645
<b>Total</b>		<b>\$5,728,464</b>	<b>\$126,454,807</b>
<b>Combined Total</b>		<b>\$448,533,030</b>	<b>\$5,907,262,037</b>

\* Police refers to the Las Vegas Metropolitan Police Department (LVMPD), which is a jointly funded police force by Clark County and the City of Las Vegas. The projections for LVMPD have all been placed under Clark County projections

\*\*Base case is the cost incurred for shipping to commence.

Table 2 shows the base year costs estimated in the previous PSIA reports, which are displayed within their original year costs.

**Table 2. Original Base Year Costs with 2017 Figures Reduced by Projected Inflation to 2010 Figures**

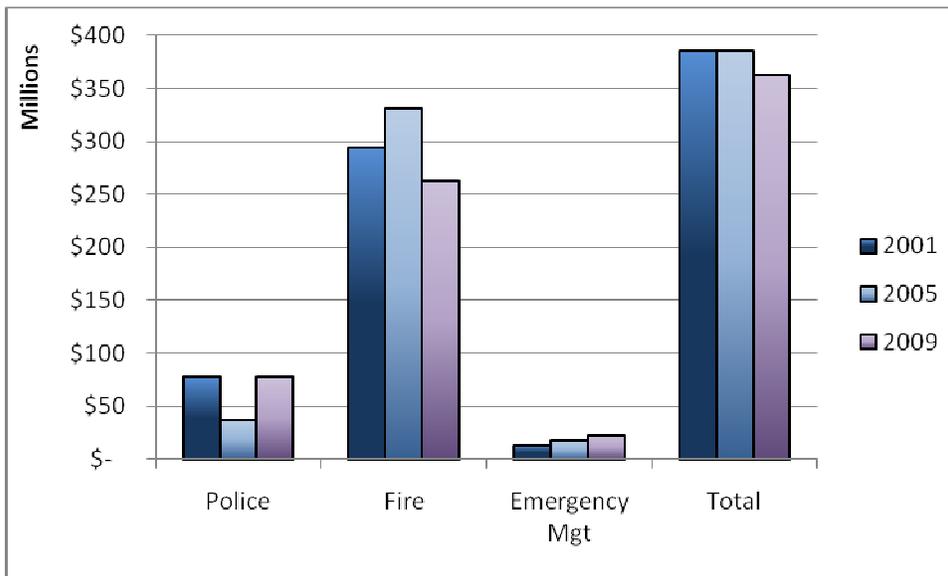
<b>Original Base Year Costs</b>					
<b>Dollars Year</b>	<b>Report Year</b>	<b>Police</b>	<b>Fire</b>	<b>Emergency Mgt</b>	<b>Total</b>
2007	2001	\$ 72,583,657	\$ 275,390,278	\$ 12,012,695	\$ 359,986,630
2010	2005	\$ 36,446,183	\$ 331,038,969	\$ 17,760,364	\$ 385,245,516
2017	2009	\$ 96,270,372	\$ 324,756,054	\$ 27,506,603	\$ 448,533,030
<b>2017 Figures Reduced by Projected Inflation to 2010</b>					
<b>Dollars Year</b>	<b>Rate:</b>	<b>Police</b>	<b>Fire</b>	<b>Emergency Mgt</b>	<b>Total</b>
<b>2010</b>	<b>3%</b>	<b>\$ 77,784,809</b>	<b>\$ 262,397,320</b>	<b>\$ 22,224,864</b>	<b>\$ 362,406,993</b>
2011	3%	\$ 80,190,525	\$ 270,512,701	\$ 22,912,231	\$ 373,615,457
2012	3%	\$ 82,670,644	\$ 278,879,074	\$ 23,620,856	\$ 385,170,574
2013	3%	\$ 85,227,468	\$ 287,504,200	\$ 24,351,398	\$ 397,083,066
2014	3%	\$ 87,863,370	\$ 296,396,082	\$ 25,104,534	\$ 409,363,986
2015	3%	\$ 90,580,793	\$ 305,562,971	\$ 25,880,963	\$ 422,024,728
2016	3%	\$ 93,382,261	\$ 315,013,372	\$ 26,681,405	\$ 435,077,039
2017	3%	\$ 96,270,372	\$ 324,756,054	\$ 27,506,603	\$ 448,533,030

Table 3 data were subjected to inflation and deflation to display all within 2010 figures. Historical inflation rates are accurately reflected for 2007 to 2010. The project report figures from 2017 were reduced with the assumed projected inflation of 3 percent based upon historical performance ten year totals. Table 4 compares figures for all three versions of the PSIA, most notably showing that the total figures for the 2009 report totaled less than the two prior reports

**Table 3. Historical PSIA Report Figures in Comparable 2010 Dollars**

Report Figures in Comparable 2010 Dollars					
Dollars Year	Report Year	Police	Fire	Emergency Mgt	Total
2010	2001	\$ 77,664,513	\$ 294,667,597	\$ 12,853,584	\$ 385,185,694
2010	2005	\$ 36,446,183	\$ 331,038,969	\$ 17,760,364	\$ 385,245,516
2010	2009	\$ 77,784,809	\$ 262,397,320	\$ 22,224,864	\$ 362,406,993

**Table 4. Historical Reports Comparison**



## INTRODUCTION

This Public Safety Impact Assessment (PSIA) report updates previous reports prepared in 2001 and 2005 to evaluate public safety fiscal cost projections for public safety agencies within Clark County, Nevada and its incorporated cities arising from the potential impacts of transporting high-level nuclear waste (HLNW) through Clark County to the Yucca Mountain Repository. The following passage from the Nuclear Waste Policy Act of 1982 and its amendments of 1987 provides the fundamental direction that identified Yucca Mountain as the site of the nuclear waste repository:

*“SEC. 160...*

*(1) The Secretary shall provide for an orderly phase-out of site-specific activities at all candidate sites other than the Yucca Mountain site.*

*(2) The Secretary shall terminate all site-specific activities (other than reclamation activities) at all candidate sites, other than the Yucca Mountain site, within 90 days after the date of enactment of the Nuclear Waste Policy Amendments Act of 1987.”*

Specifically, this report provides the fiscal cost projections of the planned transportation of HLNW for Clark County and the incorporated cities of Las Vegas, North Las Vegas, Henderson, Boulder City, and Mesquite. The focus on public safety agencies in this report is a direct result of their programmatic focus and mission, as well as their needs being explicitly recognized in the Nuclear Waste Policy Act, the Nuclear Waste Policy Act Amendments, and in the Department of Energy’s (DOE’s) Final Environmental Impact Assessment for Yucca Mountain. These public safety agencies are charged with protecting the health, safety, and welfare of citizens in the event of an emergency, and they must be prepared to respond various incidents, including radiological events.

The fiscal impacts from transporting HLNW on public safety agencies that are projected in this report utilize a refined methodology employed in the 2005 studies, as well as the studies that were performed on Nevada state agencies from 1987 through 1998 (Mushkatel, 1988, 1989; Planning Information Corporation and Mushkatel, 1998). Due to the thorough discussion of the methodological considerations of utilizing the case study and the marginal fiscal cost impact analysis in the 2001 and 2005 reports for Clark County and the previous Nevada studies, only a brief overview is provided here. This

discussion is followed by an explanation of the new scenarios that drive the study and are derived from the DOE's Final Environmental Impact Assessment for Yucca Mountain. Finally, the projected fiscal impact on public safety agencies in each of the communities is addressed. It is essential to note one important aspect of this and previous studies examining the fiscal impacts of the Yucca Mountain project on the public safety agencies. What is being projected is not the total fiscal cost, the budget of Clark County, or any of the incorporated cities' public safety agencies. Rather, the projections in this report focus on the incremental or additional cost to these agencies that would be directly attributable to the repository's placement in Nevada and the related HLNW transportation shipping campaign. Hence, the cost estimates represent the fiscal impacts associated with public safety agencies' needs to ensure public safety that would be directly attributable to the transportation of HLNW. These costs would not normally be incurred by these governmental agencies in the absence of a repository or shipping campaign.

### **1.1 An Overview of Fiscal Impact Analysis Methods**

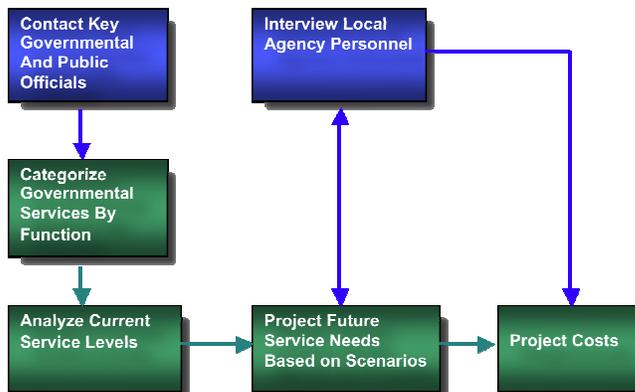
Two types of fiscal impact analyses have dominated efforts to estimate the impacts of the growth of governmental services (Ohm, 2005). These same two types of fiscal impact analyses are used in the intergovernmental literature when attempting to estimate the costs of unfunded mandates (Mushkatel and Pijawka, 1995). The first method for estimating or projecting costs is the average costing method, and the second is the marginal cost analysis. Both methods are designed to measure projected costs to government from future development or projected actions (Burchell and Listokin, 1980; Burchell, et al. 1990).

The average costing approach establishes an average cost per unit of service, and then assesses the additional demand for that service resulting from a project, focusing on population and employment multipliers. There is often little consideration of either existing excess or deficient capacity to provide the service by the local entity. That is, a new project, growth or an unfunded mandate may find that existing capacity is inadequate to provide for the new demand for a governmental service. The new demand for services may require new capital construction, equipment, personnel or additional

training and result in a community being unable to meet the new demands (or unfunded mandate requirements) without assuming excessive new costs.

The second method of estimating fiscal cost impacts is marginal cost analysis, which examines the current capacity to provide services and determines whether additional demands may push the community past the threshold of its ability to provide the needed services. Marginal analysis does not assume governmental services are linear, but rather that some are non-linear and may require new infrastructure to serve additional demand, which may have a considerably higher than average cost (Ohm, 2005). The series of 2001 studies examining the potential fiscal impact on public safety agencies in Clark County utilized a marginal costing technique based on then current capacity. The marginal cost analysis is not driven by a project or proposed development, but rather by a scenario, or three scenarios in the case of the 2009 studies. Each community and its public safety agencies are viewed as a case study for the fiscal marginal cost analysis. The underlying assumption is that they differ in the degree to which they exhibit excess or deficient capacity (Burchell and Listokin, 1980; Burchell, et al. 1990).

A second assumption of the case study method of the marginal cost analysis is



**Figure 1. Methodological Approach**

that marginal changes in service demand or need may result from the scenarios and that the cost of these changes are a reaction to service excesses or deficiencies based on the capacity of the agency or community. The third assumption underlying the projections is that local standards in large part

represent the criteria by which local excess and deficient service levels will be measured. Figure 1 illustrates the steps taken to implement the case study methodology in conjunction with the public service agencies for each jurisdiction studied. The case study method of projecting costs is discussed more fully in Appendix A.

The case study fiscal impact analysis method was used to project fiscal cost to public safety agencies for each of the governmental entities in this study. However, as

noted earlier, the scenarios used in this study differ from those used in the 2001 and 2005 studies. The current scenarios are described below.

## 1.2 The 2009 Study Scenarios

The 2009 PSIA update and all previous studies determined that the current capacity of public safety agencies is inadequate to respond to a major radiological incident or what is termed a maximum reasonably foreseeable accident (MRFA) in Clark County. Prior scenarios were based on the best available information at the time, and in 2005 included mostly truck and rail routing scenarios. These were updated and presented to the public safety personnel for the 2009 study and are provided in Appendix B. The three scenarios contained the mostly rail routing scenario, the mostly truck routing scenario, and a terrorist truck routing scenario based upon the potential DOE rail and truck shipment routes through Nevada that were contained in Chapter 6 of the DOE's Final Environmental Impact Study. The rail route map contained the 513 kilometer Caliente Corridor that DOE hopes will be constructed in order to by-pass the rail line through downtown Las Vegas (Appendix B). In all scenarios there are shipments that will pass through Clark County's urbanized population beginning in 2017.

A summary of the key details of the mostly truck scenario includes:

### *Shipments Planned Under Mostly Truck Scenario*

<b>Total number of legal-weight truck shipments over a 24-year shipping period:</b>	<b>52,786</b>
<b>Number of shipments per year:</b>	<b>2,199</b>
<b>Number of shipments per week:</b>	<b>42</b>
<b>Number of shipments per day:</b>	<b>6</b>

*There are two principal shipment routes for these truck shipments (See attached map1 for these route depictions).*

### **For 45,919 of the legal-weight shipments:**

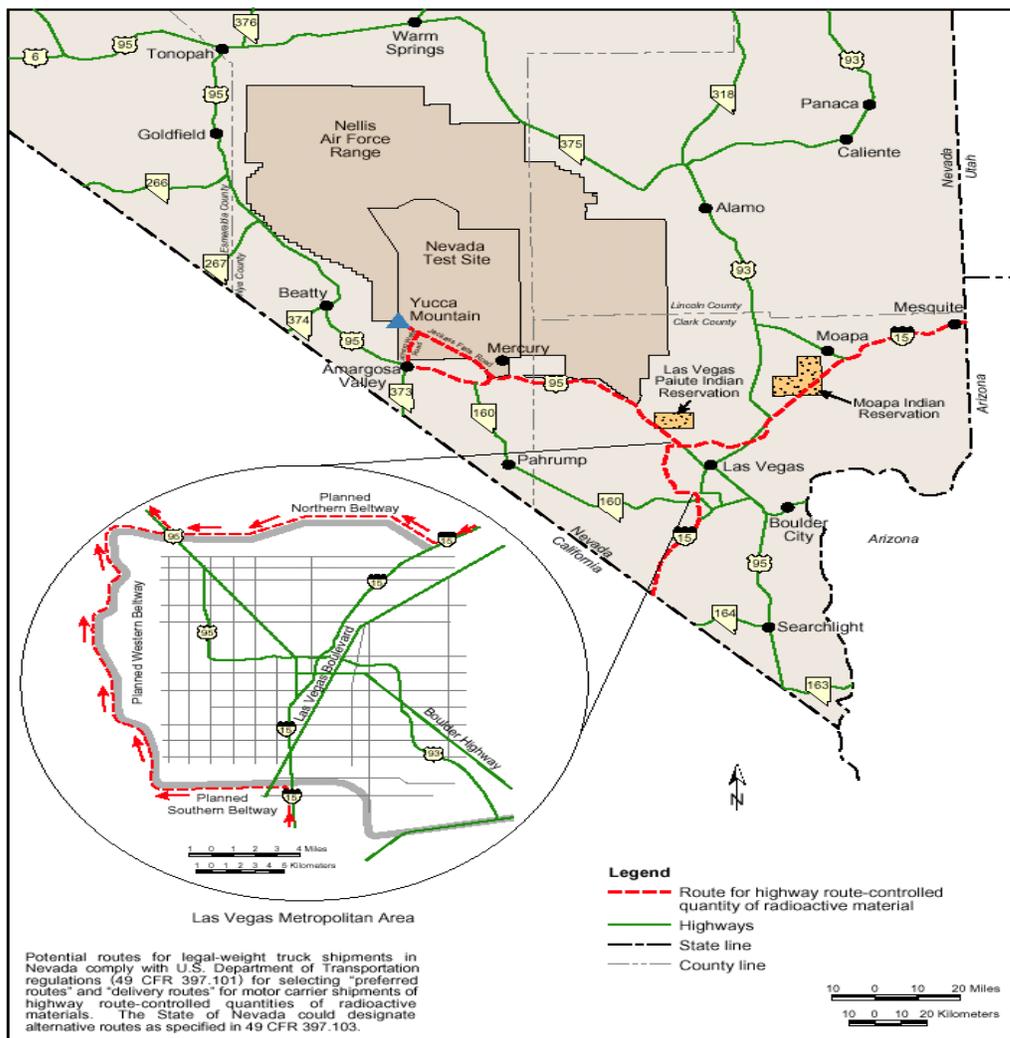
- **Interstate-15 entering Clark County from Arizona via at Mesquite**
- **Interstate-15 continuing on and traversing the Moapa Reservation to the**
- **Northern Beltway continuing on to**
- **U.S. Highway-95 north traversing the Las Vegas Paiute Reservation to the repository**

For 6,867 of the legal-weight shipments:

- Interstate-15 entering Clark County from California at Primm to the
- Southern Beltway continuing on to
- U.S. Highway-95 traversing the Las Vegas Paiute Reservation to the repository

The potential trucking routes via Interstate-15 from the north and south end of the Las Vegas Valley are further depicted in maps in Figure 2.

**Figure 2 Potential Truck Routes**



Source: Hinze, D. 2005. Potential Nevada Routes for Legal Weight Truck Shipments of Spent Nuclear Fuel and High-Level Radioactive Waste. <http://www.landercountynwop.com/Maps/s-12.gif>. retrieved July 2009.

In addition, the mostly truck scenarios contain 100 to 300 train shipments from the Idaho National Engineering and Environmental Laboratory (INEEL) involving multi-purpose canisters that will be downloaded at an intermodal transfer facility, at or near Apex, to heavy-haul trucks, refer to Figure 2. These trucks will be 200+ feet long vehicles and will be very slow moving. The vehicles will enter the Interstate-15 at U.S. Highway-93 or at State Route-604 to the Northern Beltway and traverse the Las Vegas Paiute Reservation.

The major elements of the mostly rail shipments scenario includes:

*Shipments Planned Under the Mostly Rail Scenario*

<b>Total number of rail shipments through <i>Clark County</i></b>	
<b>over a 24-year shipping period</b>	<b>194-594</b>
<b>Total number of rail cask shipments that <i>would not</i></b>	
<b>travel through Clark County</b>	<b>8,896-9,052</b>

*Principal Rail Shipment Routes*

**For the roughly 594 rail cask shipments:**

- **Enter Clark County from California on the Union Pacific Main Line and**
- **Traverse Downtown Las Vegas and**
- **Travel to the Caliente Rail Spur Traversing the Moapa Indian Reservation**

Under the mostly rail shipment scenario there are approximately 1,079 legal-weight truck shipments into Clark County.

**The shipment plan for these 1,079 legal-weight trucks:**

- **Interstate-15 entering Clark County from Arizona at Mesquite**
- **Interstate-15 continuing on and traversing the Moapa Reservation to the**
- **Northern Beltway continuing on to**
- **U.S. Highway-95 traversing the Las Vegas Paiute Reservation to the repository**

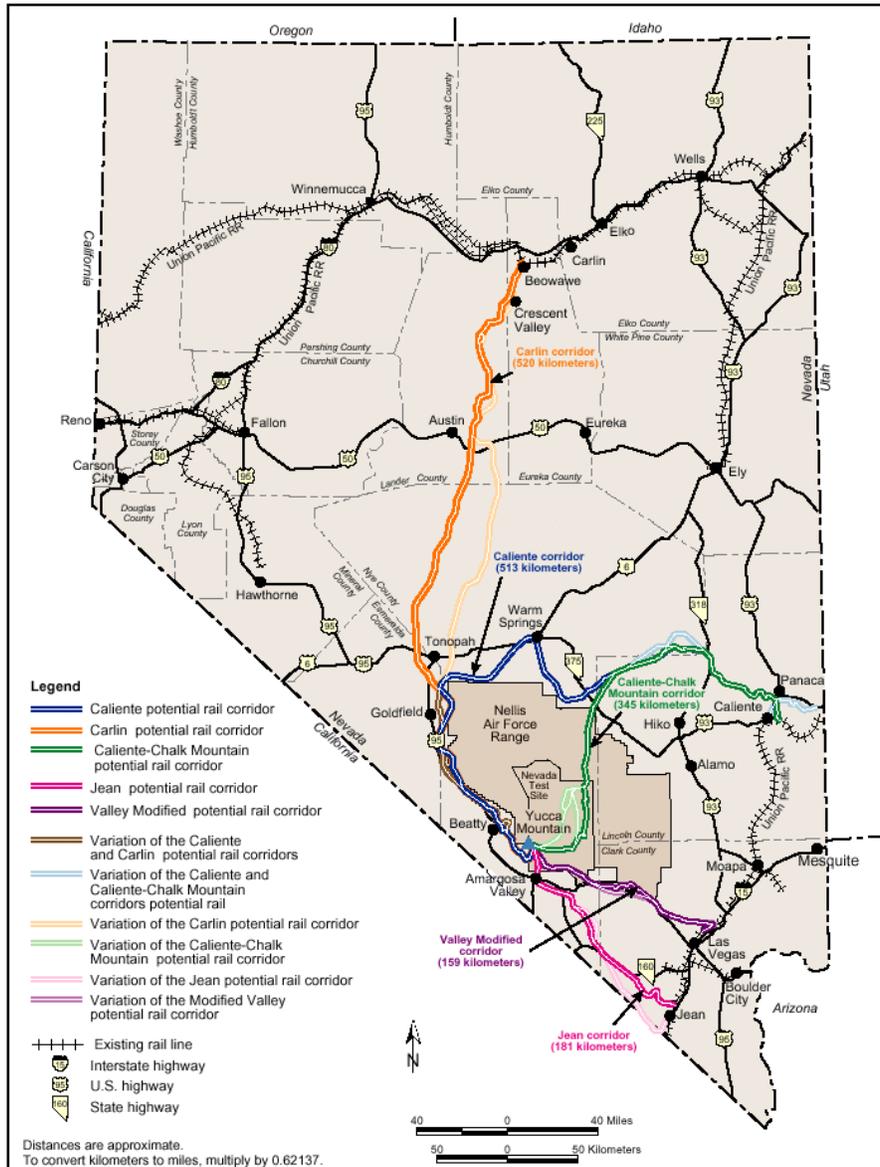
The map for the rail shipments can found in Appendix B and Figure 4.



**Figure 3 Hoover Dam Bypass Bridge**

This study contains data provided by the City of Boulder City, not previously gathered as that jurisdiction considered itself immune from shipments from the Southwest U.S. due to extremely limited travel routes through the city on US Highway-93 and across the Hoover Dam. However, with the construction of the soon to be completed Hoover Dam Bypass Bridge (Figure 3), the consideration of immunity from nuclear waste shipments, and indeed other hazardous materials has diminished. Although unlikely under current circumstances, Boulder City now sees more cogent reasons to plan for, and determine costs for waste shipment contingencies.

**Figure 4 Potential Rail Routes**



Source: Hinze, D. 2005. Potential Nevada Rail Routes Yucca Mountain <http://www.landercountynwop.com/Maps/s-26.gif>. retrieved July 2009.

The most likely MRFA for both rail and truck, according to DOE’s Environmental Impact Statement for Yucca Mountain is a long-duration, high-temperature fire that would engulf a cask. While DOE’s analysis suggests that such an MRFA is highly unlikely, it cannot be ruled out. The Baltimore Tunnel fire that occurred July 18, 2001 involved a CSX freight train, which partially derailed in the Howard Street

Tunnel. Four of the cars that derailed were tankers carrying flammable and hazardous chemicals. A fire ensued when one of the tankers ruptured creating an inferno that engulfed the tunnel and paralyzed the downtown area for several days (Associated Press, April 13, 2005:3). The MRFA with a similar scenario became that for which local first responders must plan, train, and equip in the 2005 study. However in this most recent study the same two transportation descriptions were used as in 2005 (see above Mostly Truck and Mostly Rail) but three additional MRFAs were developed (refer to Appendix B).

These three MRFAs were developed with the help of local public safety personnel who possessed familiarity with local conditions and risks that could affect either rail or truck shipments through Clark County. The scenarios were then integrated into the transportation descriptions so that when combined three scenarios resulted, a mostly truck MRFA, a mostly rail MRFA, and a terrorist scenario. Each of the scenarios that described a release of radioactive materials was given to the National Atmospheric Release Advisory Center (NARAC). NARAC then modeled the plume and created the resulting Total Effective Dose Equivalent (TEDE) maps which are found in Appendix B.

When the local public safety personnel who participated in this study were provided with the materials in Appendix B, many simply used the third scenario containing the terrorist event as their base for estimating their various personnel, equipment and other needs to effectively respond to the incident. However, other public safety personnel did not feel that the current scenarios resulted in significant differences from their 2005 estimates for what was needed in equipment and personnel to respond. Hence, for those agencies in the study that indicated no additional personnel or equipment would be required, it was appropriate to use 2005 estimates adjusted for inflation. Those agencies determined that the terrorist scenario would result in additional public safety needs and provided us with a description of these needs and their cost. Hence, the resulting cost estimates truly reflect local public safety personnell's assessments of how their respective agencies would be most affected by the scenarios.

### **1.3 The Model and Questionnaire**

A model and questionnaire were developed to obtain future fiscal impact projections for public safety agencies that would result from the shipment of HLNW to Yucca Mountain. The model and questionnaire included items that would identify future needs in personnel, capital equipment, training, and all other potential needs identified by fire departments, police departments, and emergency management agencies. Once a box was checked on the electronic questionnaire, a drop down menu populated the need area. For example, if the box on the electronic questionnaire was checked indicating that an additional department station would be needed, the drop down menu would then populate the station with personnel and equipment based upon past experience. The respondent would then be asked any additional needs or to identify specific items that might be required by the entity. In this way, the per-unit costs were standardized across jurisdictions and any idiosyncratic needs identified. Using this model, agencies were able to alter their projections in a very simple fashion through the information being entered. Finally, the model may also be used by agencies for their own budgeting processes as they attempt to estimate the cost of such items as substations or other capital equipment or operating expenses.

## **2.0 FISCAL COST PROJECTIONS**

Fiscal cost projections were estimated for the unfunded public safety mandates associated with the HLNW shipping campaign to the repository at Yucca Mountain to public safety agencies of Clark County and the cities of Las Vegas, North Las Vegas, Henderson, Boulder City, and Mesquite. Public safety agencies addressed in this report are those that are charged with protecting the health, safety, and welfare of citizens in the event of an emergency, and include fire, police, and emergency management. These respective agencies are listed in Appendix C.

There are two types of projections that are provided in this section of the report. The first projection entails cost estimates for the fiscal impacts on the public safety

agencies directly attributable to the shipping of HLNW to the Yucca Mountain Repository beginning in 2017 (the base year). These current projections, are presented in 2017 dollars, and are based on the public safety agencies' efforts to identify the equipment, capital infrastructure, training, and other upgrades to their capacity necessary for them to be prepared for an MRFA involving HLNW, refer to Appendix D. These projections follow the format used in the 2001 and 2005 fiscal impact reports. The second type of projection is for the fiscal cost of these agency requirements for the entire 24-year period of the transportation campaign. It is essential that in the 24-year projections the useful life of equipment, vehicles, and capital infrastructure be accounted for so that the projections do not underestimate or overestimate the impacts. For example, vehicles, and equipment will not be useable for the entire 24-year period. Hence, these fiscal cost projections must factor in the useful life of such equipment, the inflationary rise in cost, and build their repurchase thereof into the estimates. Using Microsoft Excel software, models were developed for both useful life and inflationary costs for all of the items addressed by these factors. Appendix E provides the useful life schedule from the base year at specific intervals (year 5, 10, 15, 20 and 24). (The schedule exists for each year, but in the interests of space conservation only these five points are provided). Appendix F provides the cost inflation percentages projected for the same five points in time. The current fiscal impact projections are provided in FY 2017 dollars. However, the model permits us to estimate these costs beginning at any point in time. The 2005 fiscal cost estimates were based on 2010 dollars. The current projections or base case fiscal projections for Clark County and incorporated cities are provided in Tables 5 to 23.

## 2.1 Fire Department Projections

Fiscal impact projections for the base year were first calculated for fire departments representing Clark County and the incorporated cities. Table 5 provides the base case estimates for the Clark County Fire Department (CCFD). The CCFD projected costs for the impacts identified as related to the repository and the shipping of HLNW total \$120,553,535. In 2005 the estimated costs totaled \$244,246,123. The department's 39 percent-reduction in cost estimates is primarily due to elimination of aviation support assets and accompanying personnel. This action acknowledges the role of the Las Vegas Metropolitan Police Department as the public safety agency responsible to provide aviation assets in Southern Nevada. Additionally, the CCFD has postponed its requirements relative to the construction of a regional training center.

**Table 5. Clark County Fire Department (2017 Base Case)**

<b>CAPITAL COSTS</b>	<b>BASE</b>	<b>TOTAL</b>
Capital Construction Costs	\$30,087,858	
Apparatus and Related Equipment Acquisition Costs	\$34,235,867	
Support Equipment Capital Costs	\$348,572	
Air Support Capital Equipment Costs	\$839,199	
Support Vehicle Capital Costs	\$2,819,375	
Communication Capital Equipment Costs	\$1,257,631	
<b>TOTAL CAPITAL COSTS</b>		<b>\$69,588,503</b>
<b>OPERATIONS &amp; MAINTENANCE COSTS</b>		
Routine Operations & Maintenance	\$1,711,379	
Personnel Costs	\$40,589,942	
Personnel Training Costs	\$4,181,110	
Communications System Costs	\$30,705	
Administrative & Planning Costs	\$0	
Miscellaneous Operations & Maintenance	\$4,451,896	
<b>TOTAL FIRE OPERATIONS &amp; MAINTENANCE</b>		<b>\$50,965,032</b>
<b>TOTAL FIRE FISCAL IMPACT</b>		<b>\$120,553,535</b>

Table 6 displays the current projection for the City of Las Vegas Fire and Rescue Department (LVFR). The LVFR current fiscal impact projection totals \$94,506,184. The 2005 estimate totaled \$51,561,334. The 2009 total represents an increase of \$42,944,850, or 120.1 percent. The increase in the fiscal cost estimate remains largely attributable to the identification of the training and equipment demands emanating from additional stations in the downtown area near the Union Pacific railroad because of the rail scenario and the additional population and structures in and around downtown Las Vegas. In addition, the LVFR believes that the construction of other stations in the northwest portion of the city near the convergence of the north Clark County Route-215 and US Highway-95 near the HLNW truck routes will require substantial additional equipment and training of personnel to mitigate potential accidents and incidents.

**Table 6. City of Las Vegas Fire and Rescue Department (2017 Base Case)**

<b>CAPITAL COSTS</b>	<b>BASE</b>	<b>TOTAL</b>
Capital Construction Costs	\$52,721,299	
Apparatus and Related Equipment Acquisition Costs	\$2,933,840	
Support Equipment Capital Costs	\$1,564,651	
Air Support Capital Equipment Costs	\$0	
Support Vehicle Capital Costs	\$0	
Communication Capital Equipment Costs	\$3,857,315	
<b>TOTAL CAPITAL COSTS</b>		<b>\$61,077,104</b>
<b>OPERATIONS &amp; MAINTENANCE COSTS</b>		
Routine Operations & Maintenance	\$436,506	
Personnel Costs	\$14,679,400	
Personnel Training Costs	\$17,943,415	
Communications System Costs	\$22,549	
Miscellaneous Operations & Maintenance	\$347,210	
<b>TOTAL FIRE OPERATIONS &amp; MAINTENANCE</b>		<b>\$33,429,080</b>
<b>TOTAL FIRE &amp; RESCUE FISCAL IMPACT</b>		<b>\$94,506,184</b>

Table 7 displays the current base case fiscal cost estimates for the North Las Vegas Fire Department (NLVF). The current estimate of the impacts is \$77,017,551. The amount represents an increase of \$47,097,551, or an increase of over 257 percent, over the 2005 fiscal impact projection. The majority of the increase is contained in aggressive planned construction programs as the City of North Las Vegas recently annexed large tracts of land straddling planned HLNW transportation routes north of the current city boundary. This annexation includes areas in close proximity to rail routes, the possible transfer facility at Apex, and follow-on truck routes along Clark County Route-215 to Interstate-15. Additionally, the increase is directly attributable to the need for a training center, equipment, and operations costs for fire fighters as the City continues to grow further into areas affected by HLNW transportation. Currently, the radiological training of firefighters for radiological incidents is inadequate for the community that has the northern outer loop intersecting it for several miles.

**Table 7. City of North Las Vegas Fire Department (2017 Base Case)**

<b>CAPITAL COSTS</b>	<b>BASE</b>	<b>TOTAL</b>
Capital Construction Costs	\$57,465,424	
Apparatus and Related Equipment Acquisition Costs	\$4,347,555	
Support Equipment Capital Costs	\$5,152,714	
Air Support Capital Equipment Costs	\$258,801	
Support Vehicle Capital Costs	\$203,443	
Communication Capital Equipment Costs	\$1,214,763	
<b>TOTAL CAPITAL COSTS</b>		<b>\$68,642,700</b>
<b>OPERATIONS &amp; MAINTENANCE COSTS</b>		
Routine Operations & Maintenance	\$516,842	
Personnel Costs	\$6,401,623	
Personnel Training Costs	\$1,403,581	
Communications System Costs	\$38,256	
Miscellaneous Operations & Maintenance	\$14,549	
<b>TOTAL FIRE OPERATIONS &amp; MAINTENANCE</b>		<b>\$8,374,851</b>
<b>TOTAL FIRE FISCAL IMPACT</b>		<b>\$77,017,551</b>

Table 8 displays the fiscal impact projections for the Henderson Fire Department. Since the 2005 study update, the Henderson Fire Department has reviewed and revised its level of participation in the PSIA process. Previously, the department saw its involvement in the shipping of HLNW as minimal because of the geographical location of the City of Henderson. Mainly situated west of highway US Highway-95 and east of Interstate-15, there was little opportunity for HLNW shipments being routed through Henderson. Now that Henderson reaches from east of US Highway-95 to Interstate-15 in the west, with subsequent closer proximity to rail lines and the soon to be completed Hoover Dam Bypass bridge, the probability of HLNW passing through or next to the city has increased. The current projection amounts to \$27,325,002 as opposed to the 2005 estimate of \$159,000. Apparatus, personnel, and appropriate training account for the majority of the increase.

**Table 8. City of Henderson Fire Department (2017 Base Case)**

<b>CAPITAL COSTS</b>	<b>BASE</b>	<b>TOTAL</b>
Capital Construction Costs	\$0	
Apparatus and Related Equipment Acquisition Costs	\$1,224,662	
Support Equipment Capital Costs	\$11,458	
Air Support Capital Equipment Costs	\$60,349	
Support Vehicle Capital Costs	\$0	
Communication Capital Equipment Costs	\$142,123	
<b>TOTAL CAPITAL COSTS</b>		<b>\$1,438,593</b>
<b>OPERATIONS &amp; MAINTENANCE COSTS</b>		
Routine Operations & Maintenance	\$49,966	
Personnel Costs	\$1,933,210	
Personnel Training Costs	\$23,898,546	
Communications System Costs	\$4,687	
Miscellaneous Operations & Maintenance	\$0	
<b>TOTAL FIRE OPERATIONS &amp; MAINTENANCE</b>		<b>\$25,886,409</b>
<b>TOTAL FIRE FISCAL IMPACT</b>		<b>\$27,325,002</b>

Table 9 displays fiscal projections for the City of Mesquite Fire Department, representing the northern portal of the study area. The fiscal cost impact for this agency is projected to be \$5,271,443. The 2005 Mesquite Fire Department projection was \$5,151,749. This minimal 2 percent increase represents an application of cost inflation adjustments, emerging technologies, and a continuing cooperative agreement with the City of Las Vegas to use their 911 Reverse Notification System in the event of an evacuation.

**Table 9. City of Mesquite Fire Department (2017 Base Case)**

<b>CAPITAL COSTS</b>	<b>BASE</b>	<b>TOTAL</b>
Capital Construction Costs	\$0	
Apparatus and Related Equipment Acquisition Costs	\$0	
Support Equipment Capital Costs	\$1,773,478	
Air Support Capital Equipment Costs	\$0	
Support Vehicle Capital Costs	\$0	
Communication Capital Equipment Costs	\$0	
<b>TOTAL CAPITAL COSTS</b>		<b>\$1,773,478</b>
<b>OPERATIONS &amp; MAINTENANCE COSTS</b>		
Routine Operations & Maintenance	\$1,773,478	
Personnel Costs	\$1,648,480	
Personnel Training Costs	\$76,006	
Communications System Costs	\$0	
Administrative & Planning Costs	\$0	
Miscellaneous Operations & Maintenance	\$0	
<b>TOTAL FIRE OPERATIONS &amp; MAINTENANCE</b>		<b>\$3,497,965</b>
<b>TOTAL FIRE FISCAL IMPACT</b>		<b>\$5,271,443</b>

Table 10 displays the projected fiscal costs for the City of Boulder City Fire Department, which represents the southern portal of the study area, to be \$82,340. This amount is solely directed to training enhancement. As stated earlier, Boulder City has identified the need to participate in the countywide public safety assessment process. While this report indicates only training enhancement funding requests, as the department’s understanding of responding to radiological incidents or accidents matures, it is expected that they will identify further assistance needs.

**Table 10. City of Boulder City Fire Department (2017 Base Case)**

<b>CAPITAL COSTS</b>	<b>BASE</b>	<b>TOTAL</b>
Capital Construction Costs	\$0	
Apparatus and Related Equipment Acquisition Costs	\$0	
Support Equipment Capital Costs	\$0	
Air Support Capital Equipment Costs	\$0	
Support Vehicle Capital Costs	\$0	
Communication Capital Equipment Costs	\$0	
<b>TOTAL CAPITAL COSTS</b>		<b>\$0</b>
<b>OPERATIONS &amp; MAINTENANCE COSTS</b>		
Routine Operations & Maintenance	\$0	
Personnel Costs	\$0	
Personnel Training Costs	\$82,340	
Communications System Costs	\$0	
Administrative & Planning Costs	\$0	
Miscellaneous Operations & Maintenance	\$0	
<b>TOTAL FIRE OPERATIONS &amp; MAINTENANCE</b>		<b>\$82,340</b>
<b>TOTAL FIRE FISCAL IMPACT</b>		<b>\$82,340</b>

Table 11 summarizes all of the fire departments' current base case fiscal projections for the impacts associated with transportation of HLNW to the repository at Yucca Mountain. As can be seen from the table the current base case dollar estimates totals \$324,756,054. In 2005, the fire departments (less the Moapa Band of Paiutes and Boulder City) estimated projections totaled \$331,038,123. The estimate is \$6,282,069 less than it was in 2005. The decrease is largely a function of the departments' refinement of requirements over the eight-year period of examining their needs to react to radiological incidents, either accidental or man caused, through terrorist-related activities.

**Table 11. Summary of Current Fire Impact Projections (2017 Base Case)**

<b>AGENCY</b>	<b>TOTAL FISCAL IMPACT</b>
Clark County Fire Department	\$120,553,535
City of Las Vegas Fire & Rescue Department	\$94,506,184
North Las Vegas Fire Department	\$77,017,551
Henderson Fire Department	\$27,325,002
Mesquite Fire Department	\$5,271,443
Boulder City Fire Department	\$82,340
<b>TOTAL FIRE FISCAL IMPACT</b>	<b>\$324,756,054</b>

Table 12 summarizes the 24-year fiscal cost projections based on the various fire departments' estimates. It includes inflationary factors and useful life span of equipment and other capital expenditures (refer to Appendices E and F). The table contains the departments' refinement of the 2005 efforts at projecting out the costs from the 24-year shipping campaign. This was a first for any public safety agencies. As can be seen from the table, for just the fire departments, the 2009 figure is \$4,330,916,488. This \$4+ billion represents projected costs that the departments would not incur but for the repository's placement in Southern Nevada and the accompanying shipping campaign of HLW.

**Table 12. Fire Departments 24-Year Fiscal Cost Projections**

<b>AGENCY</b>	<b>PROJECTED (24-year)</b>	<b>SUBTOTAL</b>
Clark County Fire Department Total Capital Costs	\$197,836,171	
Clark County Fire Department Total Operations & Maintenance	\$1,637,356,988	
<b>SUBTOTAL CLARK COUNTRY FIRE DEPT</b>		<b>\$1,835,193,159</b>
Las Vegas Total Capital Costs	\$82,292,411	
Las Vegas Total Fire- Operations & Maintenance	\$996,538,773	
<b>SUBTOTAL CITY OF LAS VEGAS FIRE &amp; RESCUE</b>		<b>\$1,078,831,184</b>
NLV Total Capital Costs	\$108,275,635	
NLV Total Fires Operations & Maintenance	\$288,316,566	
<b>SUBTOTAL NORTH LAS VEGAS FIRE DEPT</b>		<b>\$396,592,200</b>
Henderson Total Capital Costs	\$6,582,074	
Henderson Total Fire-Operations & Maintenance	\$887,283,984	
<b>SUBTOTAL HENDERSON FIRE DEPT</b>		<b>\$893,866,058</b>
Mesquite Total Capital Costs	\$7,456,076	
Mesquite Total Fire -Operations & Maintenance	\$117,963,910	
<b>SUBTOTAL MESQUITE FIRE DEPT</b>		<b>\$125,419,986</b>
Boulder City Total Capital Costs	\$0	
Boulder City Total Fire -Operations & Maintenance	\$1,013,900	
<b>SUBTOTAL BOULDER CITY FIRE DEPT</b>		<b>\$1,013,900</b>
<b>TOTAL PROJECTED FIRE DEPT COSTS</b>		<b>\$4,330,916,488</b>

## 2.2 Police Department Projections

Following the fire departments, fiscal cost projections were calculated for the police departments representing Clark County and incorporated cities. As noted in prior PSIA reports, the Las Vegas Metropolitan Police Department (LVMPD) was created as the result of a merger between the Las Vegas Police Department and the Clark County Sheriff’s Department in 1973. Both Clark County and the City of Las Vegas exercise fiscal oversight of the department through a joint Fiscal Affairs Committee consisting of elected representatives and a private citizen representative. Costs relative to the LVMPD are noted as “Clark County” in the summary Table 18.

Table 13 displays the 2009 base case estimates of fiscal impacts on the LVMPD. The projected impacts in 2017 dollars total \$45,076,694. The 2005 projection was \$31,610,989. The increase of approximately \$13.5 million in projected impacts is largely the result of different working assumptions. The department is currently in need of expanded training and exercising in radiological incident management. In addition, the issue of escorting shipments remains in need of clarification for LVMPD to be more specific about some of its equipment and personnel needs. The lingering question of which agency LVMPD, the Nevada Highway Patrol, or another police agency would have the responsibility of escorting truck shipments has prompted the LVMPD to note a greater need for personnel and equipment resources than estimated in 2005.

**Table 13. Las Vegas Metropolitan Police Department (2017 Base Case)**

<b>CAPITAL COSTS</b>	<b>BASE</b>	<b>TOTAL</b>
Support Vehicles	\$102,466	
HazMat Radiological	\$6,932,521	
Air Support	\$5,183,370	
Other Equipment	\$18,417,570	
<b>TOTAL CAPITAL COSTS</b>		<b>\$30,635,927</b>
<b>OPERATIONS &amp; MAINTENANCE COSTS</b>		
Personnel Costs	\$5,631,592	
Personnel Training Costs	\$5,828,474	
Maintenance and Supply Costs	\$2,979,105	
HazMat Emergency Administration	\$1,595	
<b>TOTAL OPERATIONS &amp; MAINTENANCE COSTS</b>		<b>\$14,440,766</b>
<b>TOTAL POLICE IMPACT</b>		<b>\$45,076,694</b>

The North Las Vegas Police Department’s 2009 base case estimate is displayed in Table 14. As can be seen from the table, projected fiscal impacts have markedly increased to a total of \$36,561,673 from \$711,022 in 2005. The increase is primarily due to the growth through annexation that places a major portion of the rail and truck corridor, and the proposed transfer station in the vicinity of Apex/US Highway-93, within the jurisdiction of the City of North Las Vegas. Additional personnel costs, hazardous material equipment and vehicles, and other equipment and radiological training for the police department is required to support transportation of HLNW through North Las Vegas.

**Table 14. North Las Vegas Police Department (2017 Base Case)**

<b>CAPITAL COSTS</b>	<b>BASE</b>	<b>TOTAL</b>
Support Vehicles	\$102,466	
HazMat Radiological	\$6,932,521	
Air Support	\$0	
Other Equipment	\$18,417,570	
<b>TOTAL CAPITAL COSTS</b>		<b>\$25,452,558</b>
<b>OPERATIONS &amp; MAINTENANCE COSTS</b>		
Personnel Costs	\$5,067,705	
Personnel Training Costs	\$5,819,001	
Maintenance and Supply Costs	\$220,815	
HazMat Emergency Administration	\$1,595	
<b>TOTAL OPERATIONS &amp; MAINTENANCE COSTS</b>		<b>\$11,109,115</b>
<b>TOTAL POLICE IMPACT</b>		<b>\$36,561,673</b>

Estimated fiscal impacts on the City of Henderson Police Department are displayed in Table 15. The 2009 fiscal cost projection for the Henderson Police Department is \$5,439,557, while the 2005 cost projection totaled \$495,870. The current estimate is \$4,943,687 more than the 2005 projected fiscal impact due to increased concerns relative to shipments of HLNW from the south on US Highway-95/93, Interstate-15, and rail routes from California. The majority of the estimated impacts on Henderson police would be for personnel, radiological and other training, and required equipment.

**Table 15. Henderson Police Department (2017 Base Case)**

<b>CAPITAL COSTS</b>	<b>BASE</b>	<b>TOTAL</b>
Support Vehicles	\$64,605	
HazMat Radiological	\$0	
Air Support	\$0	
Other Equipment	\$173,155	
<b>TOTAL CAPITAL COSTS</b>		<b>\$237,760</b>
<b>OPERATIONS &amp; MAINTENANCE COSTS</b>		
Personnel Costs	\$3,094,890	
Personnel Training Costs	\$2,093,099	
Maintenance and Supply Costs	\$13,808	
HazMat Emergency Administration	\$0	
<b>TOTAL OPERATIONS &amp; MAINTENANCE COSTS</b>		<b>\$5,201,797</b>
<b>TOTAL POLICE IMPACT</b>		<b>\$5,439,557</b>

Fiscal impact estimates for the Mesquite Police Department are displayed in Table 16. The 2009 projected impacts on this agency are \$4,596,224, while in 2005 the estimate for the Mesquite Police Department totaled \$3,628,302. The 2009 fiscal impact projection is an increase of \$967,922, or 26.7 percent. The majority of the impacts are viewed as requiring substantial additional hazardous materials training for police officers resulting from the expected truck shipments through the community on Interstate-15 and the necessary additional protective and monitoring equipment for those officers.

**Table 16. Mesquite Police Department (2017 Base Case)**

<b>CAPITAL COSTS</b>	<b>BASE</b>	<b>TOTAL</b>
Support Vehicles	\$0	
HazMat Radiological	\$0	
Air Support	\$0	
Other Equipment	\$1,162,591	
<b>TOTAL CAPITAL COSTS</b>		<b>\$1,162,591</b>
<b>OPERATIONS &amp; MAINTENANCE COSTS</b>		
Personnel Costs	\$0	
Personnel Training Costs	\$3,433,634	
Maintenance and Supply Costs	\$0	
HazMat Emergency Administration	\$0	
<b>TOTAL OPERATIONS &amp; MAINTENANCE COSTS</b>		<b>\$3,433,634</b>
<b>TOTAL POLICE IMPACT</b>		<b>\$4,596,224</b>

Estimated fiscal impacts for the Boulder City Police Department are displayed in Table 17. As with the Boulder City Fire Department, the Boulder City Police Department is new to the fiscal impact process and has provided an initial estimate of personnel training and equipment requirements. These too are expected to be revised as the department matures in its understanding of its needs relative to HLNW shipments through and around the municipality.

**Table 17. Boulder Police Department (2017 Base Case)**

<b>CAPITAL COSTS</b>	<b>BASE</b>	<b>TOTAL</b>
Support Vehicles	\$0	
HazMat Radiological	\$0	
Air Support	\$0	
Other Equipment	\$1,162,591	
<b>TOTAL CAPITAL COSTS</b>		<b>\$1,162,591</b>
<b>OPERATIONS &amp; MAINTENANCE COSTS</b>		
Personnel Costs	\$0	
Personnel Training Costs	\$3,433,634	
Maintenance and Supply Costs	\$0	
HazMat Emergency Administration	\$0	
<b>TOTAL OPERATIONS &amp; MAINTENANCE COSTS</b>		<b>\$3,433,634</b>
<b>TOTAL POLICE IMPACT</b>		<b>\$4,596,224</b>

The entire projected 24-year shipping campaign costs estimated for police agencies participating in the study are provided in Table 18. As can be seen from the table, the total police service projected fiscal impacts total \$1,227,263,062. Of this total, \$463,246,662 is projected solely for the LVMPD.

**Table 18. Police Departments 24-Year Projected Fiscal Costs**

<b>AGENCY</b>	<b>PROJECTED( 24-year)</b>	<b>SUBTOTAL</b>
Clark County/LVMPD Capital Costs	\$118,447,913	
Clark County Operations & Maintenance	\$344,798,749	
<b>SUBTOTAL CLARK COUNTY</b>		<b>\$463,246,662</b>
Las Vegas Capital Costs	N/A	
Las Vegas Operations & Maintenance	N/A	
<b>SUBTOTAL CITY OF LAS VEGAS</b>		<b>N/A</b>
North Las Vegas Capital Costs	\$102,801,588	
North Las Vegas Operations & Maintenance	\$233,791,426	
<b>SUBTOTAL CITY OF NORTH LAS VEGAS</b>		<b>\$336,593,013</b>
Henderson Capital Costs	\$1,565,611	
Henderson Operations & Maintenance	\$178,075,253	
<b>SUBTOTAL HENDERSON</b>		<b>\$179,640,863</b>
Mesquite Capital Costs	\$4,887,777	
Mesquite Operations & Maintenance	\$119,003,484	
<b>SUBTOTAL HENDERSON</b>		<b>\$123,891,262</b>
Boulder City Capital Costs	\$4,887,777	
Boulder City Operations & Maintenance	\$119,003,484	
<b>SUBTOTAL BOULDER</b>		<b>\$123,891,262</b>
<b>TOTAL PROJECTED POLICE DEPT COSTS</b>		<b>\$1,227,263,062</b>

### 2.3 Emergency Management Projections

Table 19 provides revised estimates of the cost of constructing and operating a Regional Emergency Operations Center (REOC). Coordination with emergency managers provided a 2009 figure of \$27,506,603. The 2005 estimate for this facility was \$15,472,500. A jointly prepared feasibility study involving emergency managers from entities and agencies throughout Clark County showed that the REOC concept remains viable as a method to plan for and react to a nuclear accident or incident.

**Table 19. Regional Emergency Operation Center Construction and Administrative Costs**

	<b>2017 Base Case</b>
Regional EOC CONSTRUCTION (15,000 sq. ft facility, Communication Infrastructure)	\$17,798,120
Support Equipment Capital Costs	
Routine Operations & Maintenance	\$1,456,786
Personnel Costs	\$2,574,710
Administrative & Planning Costs	\$5,207,496
Miscellaneous Operations & Maintenance	\$469,492
<b>TOTAL</b>	<b>\$27,506,603</b>

Table 20 contains all of the base case estimates for operation and maintenance of emergency management functions within Clark County, including the incorporated cities. Briefly, the base case estimate for all jurisdictions is \$9,708,484. In 2005, the estimated 2010 base case was \$2,287,864. The 2009 estimate represents an increase of \$7,420,620, reflecting the greater coordination between emergency managers and their understanding of the potential threat of HLNW transportation through Clark County.

**Table 20. Incorporated Cities Emergency Management Costs (2017 Base Case)**

ENTITY	BASE	TOTAL
<b>Clark County</b>		
<b>OPERATIONS &amp; MAINTENANCE COSTS</b>		
Personnel Training	\$142,665	
Emergency Response Administration	\$1,574,239	
<b>TOTAL OPERATIONS &amp; MAINTENANCE COSTS</b>		<b>\$1,716,904</b>
<b>Las Vegas</b>		
<b>OPERATIONS &amp; MAINTENANCE COSTS</b>		
Routine Operations and Maintenance	\$950,078	
Personnel	\$1,865,319	
Personnel Training	\$146,945	
Emergency Response Administration	\$2,254,851	
<b>TOTAL OPERATIONS &amp; MAINTENANCE COSTS</b>		<b>\$5,217,193</b>
<b>North Las Vegas</b>		
<b>OPERATIONS &amp; MAINTENANCE COSTS</b>		
Personnel Training	\$146,945	
Emergency Response Administration	\$2,254,851	
<b>TOTAL OPERATIONS &amp; MAINTENANCE COSTS</b>		<b>\$1,363,631</b>
<b>Henderson</b>		
<b>OPERATIONS &amp; MAINTENANCE COSTS</b>		
Routine Operations and Maintenance	\$253,354	
Personnel	\$354,696	
Personnel Training	\$88,674	
Emergency Response Administration	\$664,882	
<b>TOTAL OPERATIONS &amp; MAINTENANCE COSTS</b>		<b>\$1,361,606</b>
<b>Mesquite</b>		
<b>OPERATIONS &amp; MAINTENANCE COSTS</b>		
Emergency Response Administration	\$12,668	
<b>TOTAL OPERATIONS &amp; MAINTENANCE COSTS</b>		<b>\$12,668</b>
<b>Boulder City</b>		
<b>OPERATIONS &amp; MAINTENANCE</b>		
Personnel Training	\$2,534	
Emergency Response Administration	\$33,949	
<b>TOTAL OPERATIONS &amp; MAINTENANCE COSTS</b>		<b>\$36,483</b>
<b>COMBINED TOTAL</b>		<b>\$9,708,484</b>

Table 21 shows the 24-year projected fiscal impacts for Clark County and its incorporated cities for emergency management. As can be seen from the table, the total projected cost for emergency management is \$349,082,487. These projected costs are the direct result of the projected construction of the repository and the anticipated shipping campaign.

**Table 21. Clark County-wide Community Emergency Management 24-Year Projected Fiscal Costs**

<b>ENTITY</b>	<b>PROJECTED (24-Year)</b>	<b>TOTAL</b>
<b>North Las Vegas</b>	\$46,370,736	
<b>Mesquite</b>	\$53,258	
<b>Las Vegas</b>	\$196,011,382	
<b>Henderson</b>	\$46,362,220	
<b>Clark County</b>	\$58,735,246	
<b>Boulder City</b>	\$1,549,645	
<b>COMBINED TOTAL</b>		<b>\$349,082,487</b>

## 2.4 Summary of Projected Costs

Table 22 summarizes the 2017 base case costs by community and function. The table permits one to see the total base case estimated fiscal cost projections for Clark County and each community, as well as the total estimated cost for each public safety function. For example, base case fire department projected costs are \$324,756,054 of the total projected public safety cost estimated at \$448,533,030

**Table 22. Total Projected Costs for Clark County and Incorporated Cities (Base Case 2017)**

ENTITY	Fire	Police *	Emergency Management	Total Costs
Clark County	\$120,553,535	\$45,076,694	\$1,716,904	\$167,347,132
Las Vegas	\$94,506,184	*	\$22,001,896	\$116,508,080
North Las Vegas	\$77,017,551	\$36,561,673	\$1,363,631	\$114,942,855
Henderson	\$27,325,002	\$5,439,557	\$1,361,606	\$34,126,164
Mesquite	\$5,271,443	\$4,596,224	\$12,668	\$9,880,335
Boulder City	\$82,340	\$4,596,224	\$1,049,899	\$5,728,464
<b>TOTALS</b>	<b>\$324,756,054</b>	<b>\$96,270,372</b>	<b>\$27,506,603</b>	<b>\$448,533,030</b>

\* Police refers to the Las Vegas Metropolitan Police Department (LVMPD) which is a jointly funded police force by Clark County and the City of Las Vegas. The projections for LVMPD have all been placed under Clark County projections

Table 23 provides the total projected 24-year cost for Clark County and the incorporated cities by public safety function. These projected costs to public safety agencies resulting from the construction of the repository and 24-year anticipated shipping campaign represent a strong potential for significant unfunded mandates.

**Table 23. Total Projected Costs For Clark County and Incorporated Cities 24-Year Projections**

ENTITY	Fire	Police *	Emergency Management	Total Costs
Clark County (LVMPD)	\$1,835,193,159	\$463,246,662	\$58,735,246	\$2,357,175,067
Las Vegas	\$1,078,831,184	*	\$196,011,382	\$1,274,842,566
North Las Vegas	\$396,592,200	\$336,593,013	\$46,370,736	\$779,555,950
Henderson	\$893,866,058	\$179,640,863	\$46,362,220	\$1,119,869,142
Mesquite	\$125,419,986	\$123,891,262	\$53,258	\$249,364,505
Boulder City	\$1,013,900	\$123,891,262	\$1,549,645	\$126,454,807
<b>COMBINEDTOTAL</b>	<b>\$4,330,916,488</b>	<b>\$1,227,263,062</b>	<b>\$349,082,487</b>	<b>\$5,907,262,037</b>

### **3.0 CONCLUSIONS AND NEXT STEPS**

As noted in Section 2.0, the projected public safety costs resulting from the DOE's proposal to ship HLNW to Yucca Mountain will result in a significant fiscal burden to Clark County and its incorporated cities, as well as the State of Nevada. While the Nuclear Waste Policy Act requires the federal government to assist affected units of local government with public safety related impact costs, it is not likely that the DOE will provide adequate compensation for these impacts. Although the project's licensing continues to be questioned and the administration continues to move forward with plans to terminate the site, the fact that Yucca Mountain remains the singularly designated site for storage of the nation's HLNW is codified in law. Therefore, Clark County must continue to be prepared for shipments to the proposed Yucca Mountain Repository.

It is, therefore, critical that Clark County continue to update its impact assessment costs on a continuing basis and provide these costs to the DOE and other federal, state, and local decision makers. In addition, it is vital that Clark County be vigilant in continuing to monitor the full range of potential public safety impacts of the Yucca Mountain Repository and the associated shipping campaign in order to best serve the greater good of its citizens.

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## **APPENDIX A. The Case Study Method for Projecting Governmental Fiscal Costs**

The case study method employs intensive site-specific investigations to determine categories of excess or slack in public service delivery capacity. Excess capacity exists when there is capacity beyond that needed to accommodate existing service need or demand, and deficient capacity exists when the current capacity is below what is needed or near the limits of what can be provided. These excess or deficient service capacities are subtracted from or added to the projected estimates of operating and capital demands. Hence, excess existing capacity can actually mitigate the effects of a project on a community, as it may already possess the capacity to meet these future or projected service needs and demands. Alternatively, should a community be at peak capacity or deficient capacity already exists, then additional demand may have far greater impact than an average cost technique would project. In fiscal impact analysis used by planners, when a new development results in, for example a new fire station, or rescue station, the new development may be charged for the entire cost. In a similar vein, if a new project or mandate results in the necessity of new equipment, training, or various capital outlays, the Nuclear Waste Policy Act (NWPA) legislation specifies that the agent of these new costs be charged for the entire amount of the new capacity.

Several assumptions underlie the use of the case study cost projection method. Briefly, the first assumption is that communities differ in the degree to which they exhibit excess or deficient capacity. The second assumption is that marginal changes in providing various municipal and county services are a reaction to service excesses or deficiencies. A third assumption is that local standards (not national ones) in large part represent the criteria by which local excess and deficient service levels will be measured. Finally and most importantly, local department heads and personnel are the individuals that are best suited and most knowledgeable about the service capacity of their agencies, and about the future service needs associated with new projects or mandates. It is this case study method that has been used extensively on state agency personnel in Nevada to project the costs of the high-level nuclear waste repository at the state governmental level.

The case study methodology for estimating fiscal impacts was adopted for projecting fiscal costs to the Clark County government agencies. This methodology entails the following steps:

1. Contact appropriate government representatives, and their selected emergency service representative, to explain the purpose and methodology of the study and enlist their cooperation.
2. Interview the representatives to identify the likely agencies that will be impacted.
3. Contact and interview these key governmental and public officials (emergency management, police, fire, budget, planning).
4. Categorize current local governmental services by function and the administrative agencies responsible for each (particular attention to each community's governmental organization is required at this stage);

5. Determine current levels of service provision, as well as existing service excess or deficiency for various public services;
6. Project future service needs and demands using existing mandates and agency responsibilities, as well as through the interviews conducted;
7. Interview local agency personnel to determine how their departments will respond to the scenarios characterizing the nature of the future repository and transportation of waste, and how these scenarios will either result in the necessity of expanded capacities (or not) and the projected response of the agency;
8. Estimate fiscal costs that will be incurred by each affected agency and the affected units of local government as a result of their projected response to the scenarios (needed training, equipment, operational expenditures, and capital outlays over the life cycle of the project).

These steps in the methodology that were employed can be collapsed, and be viewed diagrammatically as the basic approaches to projecting fiscal impacts from the proposed repository for city agencies. Figure 1 (in text) outlines the approach to projecting the fiscal impacts and it can be seen clearly that the process is iterative and non-linear. These steps are not linear as there are several contacts and interviews with agency personnel as the study progresses. Frequently, after an interview with agency personnel, it is necessary to again interview that individual for clarification or draw on their expertise to adequately project the impacts of the project. Often interviews with agency staff members result in being referred to another member of an agency's personnel. In addition, in to increase the comparability of the projections, interview schedules contained a basic set of questions that were developed and used for each informant interviewed.

## APPENDIX B 2009 Scenarios

### Scenario 1. ALL COMMUNITIES MOSTLY RAIL BASE CASE ROUTING

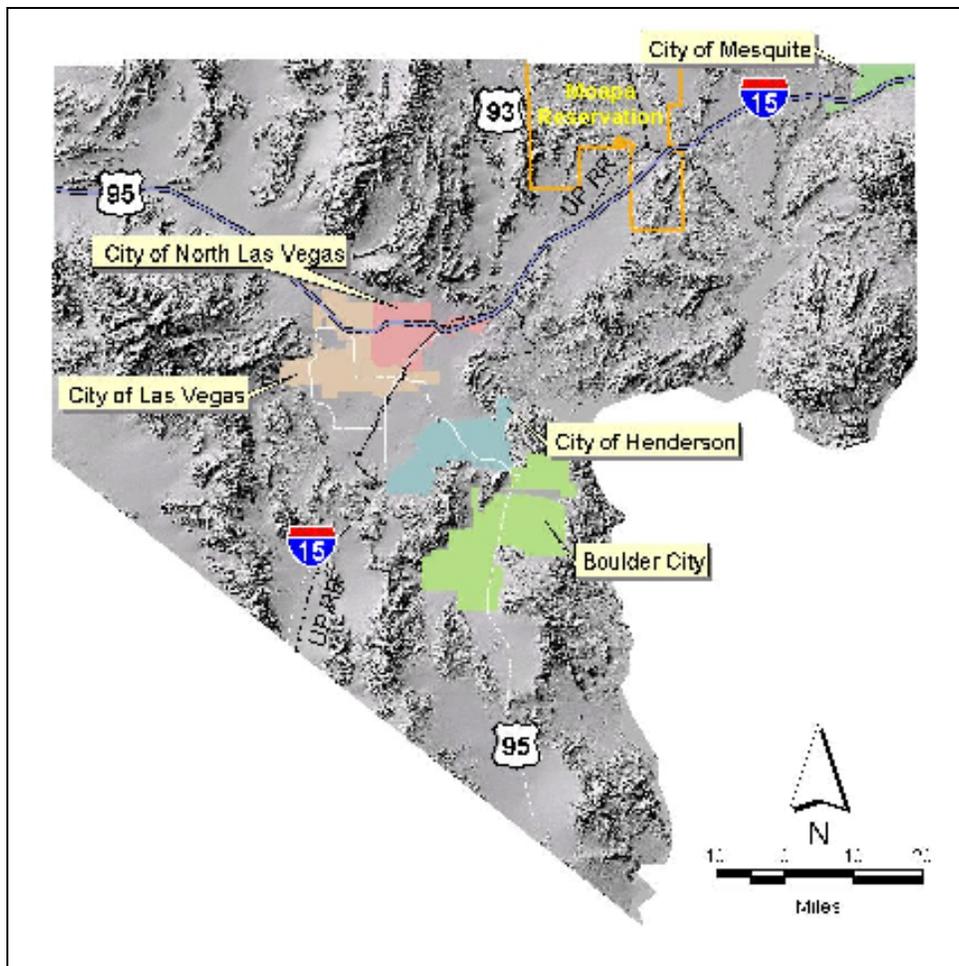
For a period of 24-years the U.S. Department of Energy (U.S. DOE) plans to ship high-level nuclear waste (HLNW) through Clark County to a repository that will be built at Yucca Mountain, Nevada. Under Scenario One, DOE would send most of its shipment by rail, as follows:

*Shipments Planned Under the Mostly Rail Scenario*

**Total number of rail shipments through Clark County over a 24-year shipping period: 194-594**

**Total number of rail cask shipments that would not travel through Clark County: 8,896-9,052**

*The principal shipment route for these rail shipments is depicted in the map below:*



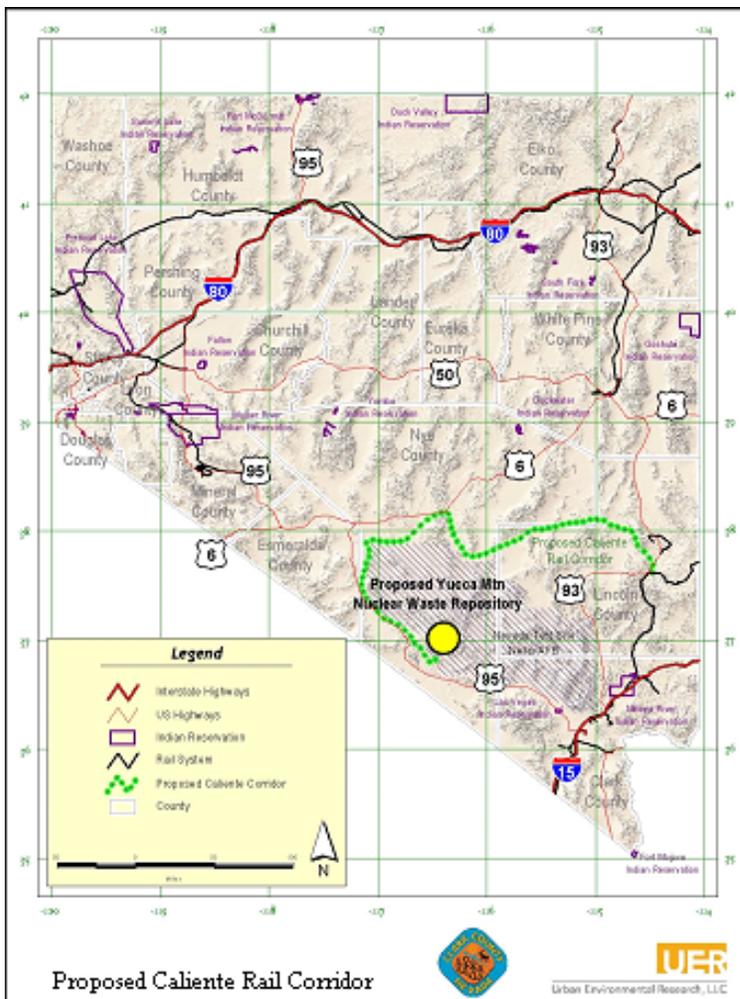
-- Principal Union Pacific Rail Road Shipment Routes --

## RAIL, TRANSPORTATION ROUTES AND THE PROPOSED CALIENTE RAIL CORRIDOR

For the roughly 594 rail cask shipments:

- Enter Clark County from California on the Union Pacific Main Line and
- Traverse downtown Las Vegas and
- Travel to the Caliente Rail Spur Traversing the Moapa Indian Reservation

Under the mostly rail shipment scenario there are approximately 1,079 legal-weight truck shipments into Clark County.



The shipment plan for these 1,079 legal-weight truck shipment is:

Interstate-15 entering Clark County from Arizona at Mesquite, continuing on and traversing the Moapa Reservation to the Northern Beltway continuing on to U.S. Highway-95, traversing the Las Vegas Paiute Reservation to the repository

Railroad Incident:

After two years of shipping HLNW to Yucca Mountain (in 2019), six to eight truck shipments are being received daily by the DOE. In Nevada the truck shipments are traveling along Interstate-15, Clark County Route-215 and US Highway-95 which are the only designated roads for

shipping HLNW. In addition, other restrictions were placed on DOE, for example in Southern Nevada the shipments can only travel from 9:00 AM to 3:00 PM and are not allowed into the Interstate-15/US Highway-95 interchange. In addition, depending on various assumptions, there are roughly two to three rail shipments through the Las Vegas

Metropolitan Area per month. A special transport truck carrying an oversized, high profile and wide load has mistakenly exited the Interstate-15 north at Charleston Boulevard and is heading east. The vehicle travels down Charleston at approximately 15 miles per hour until it gets to the underpass.

The underpass was constructed many years ago and was designed so that railroad traffic could pass over Charleston Boulevard. A loud noise is heard, and the vehicle carrying the oversized and wide shipment comes to an aborted stop. The driver of the special truck can see fuel that is shooting into the air over a hundred feet high. Suddenly, the fuel finds an ignition source and the entire underpass and railroad tracks are engulfed in fire. An approximate area of 300 feet by 300 feet is involved in the massive fire.

The special transport vehicle has just hit the two-fuel line on the west side of the underpass. These two high-pressure fuel pipelines (1000 to 1200 pounds per square inch) supply Las Vegas and Nellis Air Force Base with gasoline and aviation fuel. In addition, on the railroad overpass is a shipment of high-level nuclear waste being carried in Transport, Aging, and Disposal (TAD) containers. These

containers are using the Hi-Star 100 Overpacks which has a total of about 9 inches of steel for protection.



**Rail Car Mounted Transportation Cask**

The gasoline and aviation fuel in the pipelines is fueling the fire. It is estimated that over 40,000 to 100,000 gallons of fuel has been released and the fire engulfs the rail car carrying the nuclear waste along with the TAD. The fire temperature reaches over 2000 degrees Fahrenheit and results in a breach of tone of the TAD casks on a rail car. Public Safety responders (Clark County and Las Vegas Fire departments, along with the Las Vegas Metropolitan Police Department and Nevada Highway Patrol officers) are responding to the incident. Clark County Fire and Las Vegas Fire arrive at the scene and quickly establish a command post.

The fire has quickly engulfed six or seven cars and two tractor-trailer trucks under or near the underpass along with the special transport truck and the rail car carrying the HLNW cask. The Fire Captain at the scene declares a Level ONE Mass Casualty Incident (MCI) and a Level Three HAZMAT Incident. He requests a second alarm and third alarm for additional resources.

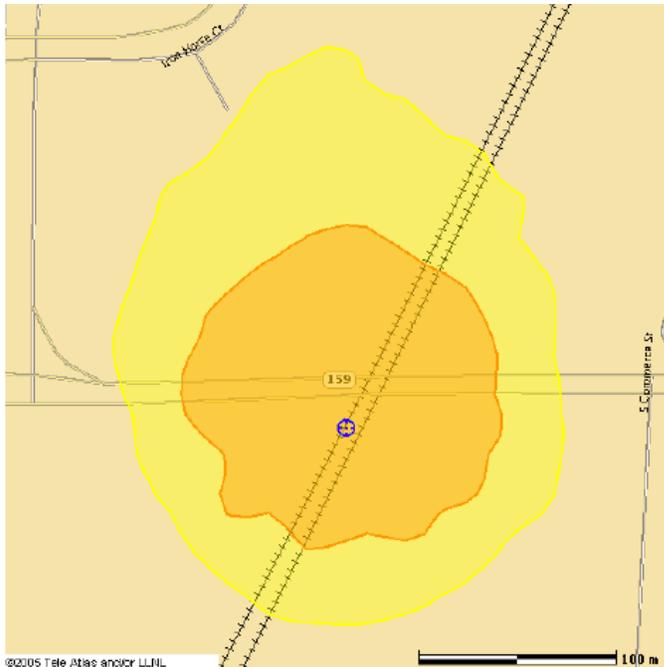
A large airborne plume has emerged from the fire that has engulfed the special transport vehicle and the rail car carrying the TAD container. Responders on scene are having

difficulty seeing the rail car as there is heavy smoke from the fire below. The fire burns for two hours but the HLNW materials that are released from the cask are released within the first 15 minutes of the fire and breach in the canister. Subsequent modeling of the plume from the release performed by the National Atmospheric Release Advisory Center (NARAC) with input from the U.S. Environmental Protection Agency (EPA) and emergency responders at the scene are provided in a series of maps below that show the Total Effective Dose Equivalent (TEDE) at one day, one week, and one month. In addition, the final two maps show the Gamma Dose Rate at one hour and two hours. In the TEDE maps, the dark yellow zones are areas where exposure rates (dose rates) will exceed 5 rem at the given amount of time displayed in each map. The lighter yellow zone indicates doses of less than 1 rem at the given amount of time indicated in the map. Dark yellow zones on these maps are zones that would require permanent evacuation until decontamination takes place, and the lighter yellow zones are areas that protective action under the EPA's Protective Action Guidance (PAG).

The Gamma maps show yellow zones where the dark yellow (orange) exclusion zones depict areas where exposures exceeding 2mR/hr occur and require responders to use radiation protective clothing. The lighter yellow exclusion zones indicate gamma radiation that is at least twice background. In this case, the exposure for these zones is above 20  $\mu$ R/hr (20 one millionth of a rem or twice normal background in the area per hour). This level of contamination in the light yellow zone, depending on guidance for the area (county or municipality) will often require evacuation until normal back ground levels are attained. The projected affected population in each of the zones is provided in the table accompanying each of the maps.

## Total Effective Dose Equivalent Maps (TEDE)

### Total Effective Dose Equivalent (One Day)



Actions and Long-Term Effects		
Description	(rem) Extent Area	Population
Exceeds upper limit HFA PAC for evacuation	>5 103m 13,788m <sup>2</sup>	10
Exceeds lower limit HFA PAC for evacuation.	>1 103m 47,781m <sup>2</sup>	30

**Note:** Areas and counts in the table are cumulative.

Effects or contamination from August 15, 2007 13:00 PST to August 16, 2007 13:00 PST at 10 m

**Release Location:** 36 158 20 N, 115 158 40 W

**Material:** I25-I37 + daughters

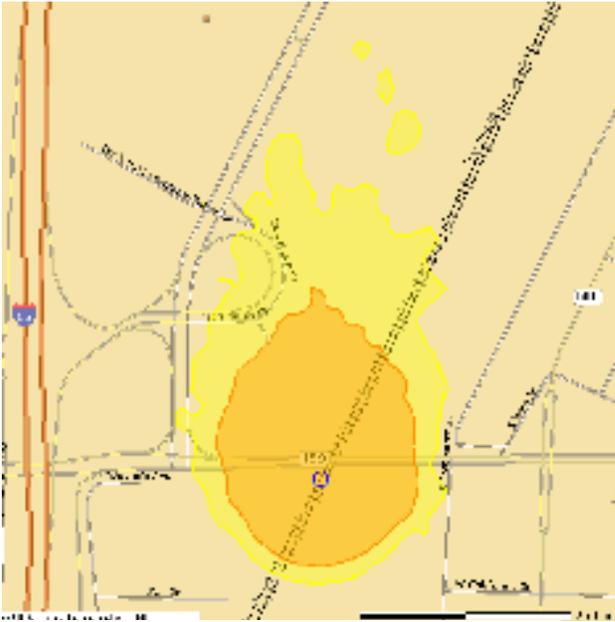
**Generated On:** December 05, 2007 15:52 PST

**Model:** ALOHA 001

**Comments:** Doses shown are total accumulated from the beginning of release  
Hypothetical release

8/15/2007 20:00 HEC for 15 min  
canned mol

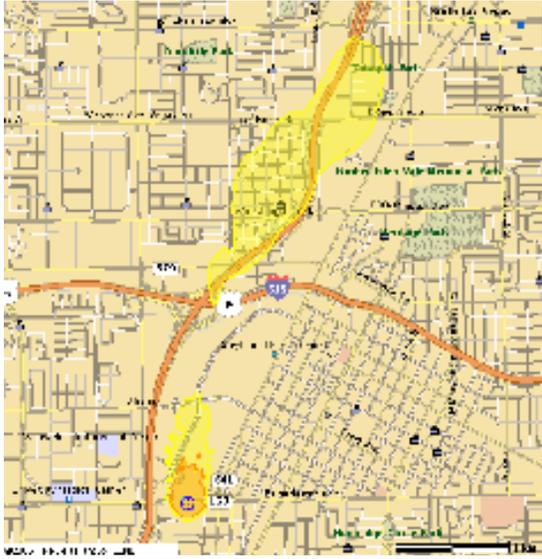
## Total Effective Dose Equivalent (One Week)



Actions and Long-Term Effects			
Description	(rem) Extent Area	Population	
Exceeds upper limit EPA PAG for evacuation.	>5 227m 55,596m <sup>2</sup>	80	
Exceeds lower limit EPA PAG for evacuation.	>1 522m 116,192m <sup>2</sup>	190	

**Note:** Areas and counts in the table are cumulative.

## Total Effective Dose Equivalent (One Month)

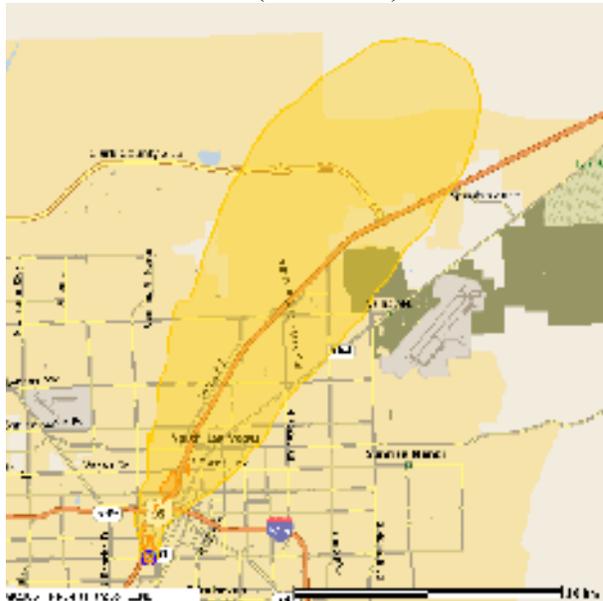


Actions and Long-Term Effects			
	Description	(rem) Extent Area	Population
	Exceeds upper limit EPA PAG for evacuation.	>5 0.5 km 0.1 km <sup>2</sup>	80
	Exceeds lower limit EPA PAG for evacuation.	>1 4.3 km 1.5 km <sup>2</sup>	2,750

Note: Areas and counts in the table are cumulative.

## Gamma Dose Rate at One Hour and Two Hours:

### Gamma Dose Rate (One Hour)



Acute (Short-Term) Effects		
Description	Isolated Area	Population
	40,000 2.3 km <sup>2</sup> 2.3 km <sup>2</sup>	1,700
	247 km <sup>2</sup> 27.9 km <sup>2</sup> 100 km <sup>2</sup>	109,000

Note: Area and counts in the table are cumulative.

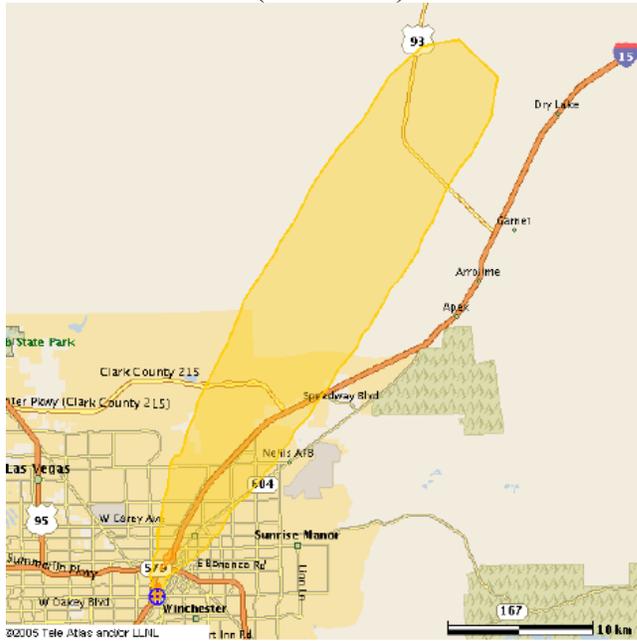
Model: Evaluation of Region 7a, 2007-2010 (10/10/07) (at source) (general)

Material: Cs-137 + daughters

Model: ADAPTLODI

Case: 10/10/07

### Gamma Dose Rate (Two Hour)



Acute (Short-Term) Effects			
Description	(rem/hr)	Extent Area	Population
	>0.002	3.8km 0.8km <sup>2</sup>	1,760
	>2.00E-5	43.8km 280km <sup>2</sup>	104,000

**Note:** Areas and counts in the table are cumulative.

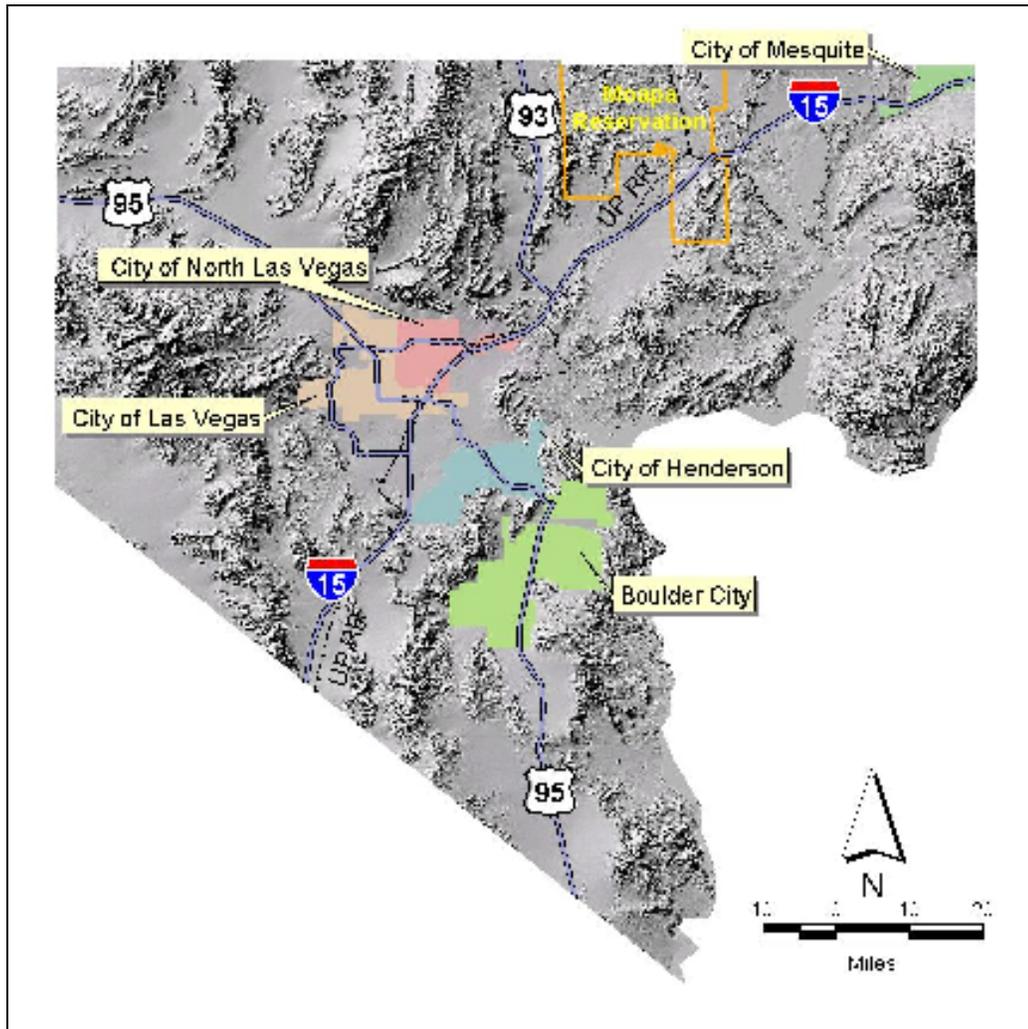
## Scenario 2. -- ALL COMMUNITIES MOSTLY TRUCK BASE CASE ROUTING

For a period of 24-years beginning in July 2017, the U.S. Department of Energy (U.S. DOE) plans to ship HLNW through Clark County to a repository that will be built at Yucca Mountain, Nevada. Under Scenario 2, DOE would send most of its shipments by truck, as follows:

### *Shipments Planned Under Mostly Truck Scenario*

<b>Total number of legal-weight truck shipments over a 24-year shipping period:</b>	<b>52,786</b>
<b>Number of shipments per year</b>	<b>2,199</b>
<b>Number of shipments per week</b>	<b>42</b>
<b>Number of shipments per day</b>	<b>6</b>

*The principal shipment route for these truck shipments is depicted on the map below:*



-- Principal Truck Shipment Routes --

**For 45,919 of the legal-weight shipments:**

- **Interstate-15 entering Clark County from Arizona via Interstate-15 at Mesquite**
- **Interstate-15 continuing on and traversing the Moapa Reservation to the**
- **Northern Beltway continuing on to**
- **U.S. Highway-95 north traversing the Las Vegas Paiute Reservation to the repository**

**For 6,867 of the legal-weight shipments:**

- **Interstate-15 entering Clark County from California at Primm to the**
- **Southern Beltway continuing on to**
- **U.S. Highway-95 traversing the Las Vegas Paiute Reservation to the repository**



-- Heavy Haul Truck --

slow moving at around 25 to 35 miles per hour.

Under the mostly truck shipping scenario there are between 100 and 300 train shipments involving the shipment of 300 Multi Purpose Canisters containing Spent Nuclear Fuel from the Idaho National Engineering and Environmental Laboratory (INEEL) in Idaho. These train shipments will entail heavy-haul truck (HHT) shipments after arriving at an intermodal transfer facility in the Apex area north of Las Vegas where they will be loaded on these heavy

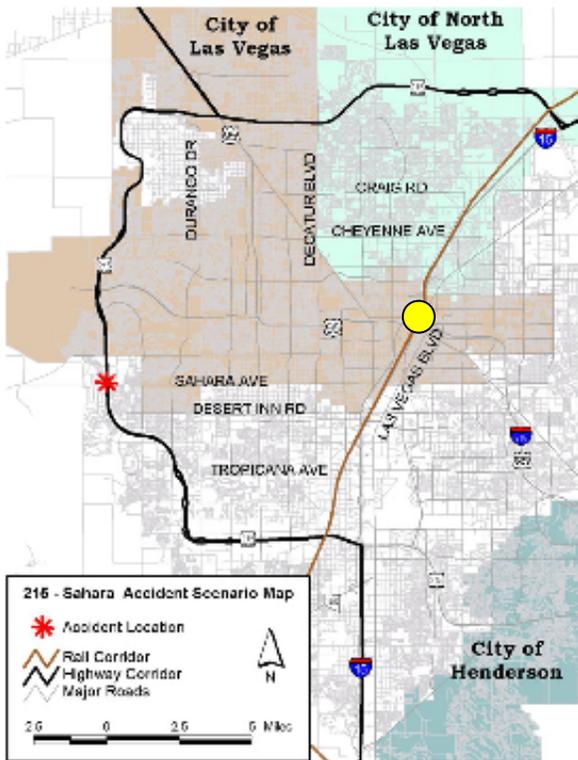
haul trucks (one cask per HHT). These HHTs are approximately 200 feet long vehicles, and will be very

**The shipment plan for the 100 to 300 rail shipments and 300 HHTs is:**

- **Union Pacific Main Line entering Clark County from Utah and Lincoln County**
- **Traversing the Moapa Indian Reservation to intermodal transfer facility in the Apex area north of Las Vegas and transferred to HHTs**
- **HHTs enter Interstate-15 at U.S. Highway-93 or at State Route-604 to the Northern Beltway and on to U.S. Highway-95 traversing the Las Vegas Paiute Reservation**

**Scenario 3. -- ALL COMMUNITIES TERRORIST CASE MOSTLY TRUCK ROUTING**

After two years of shipping to the repository at Yucca Mountain (in 2019), six to eight shipments of HLNW are being received daily by the DOE. In Nevada, the truck shipments are traveling along Interstate-15, Clark County Route-215, and US Highway-95 which are the only designated roads for shipping HLNW. In addition, other restrictions were placed on DOE, in Southern Nevada the shipments can only travel from 9:00 AM to 3:00 PM and are not allowed into the Interstate-15/Interstate-515, US Highway-93, and US Highway-95 interchange (yellow dot) which is east of the US Highway-95 intersection point of the Interstate-15.



-- Map of Clark County Transportation Corridor --



-- Sagger Anti-Armor Missile --

One of the special transportation vehicles is traveling on Clark County Route-215 heading west in the number one lane near the Sahara Avenue off-ramp. It is carrying a General Atomics (GA) 4/9 cask of HLNW. In the number two lane approximately 150 feet in front of the special transport vehicle is a liquid oxygen cryogenic tanker, and directly behind the truck carrying the cask, in lane number one, is a diesel fuel tanker carrying 8,000 gallons of diesel. Various automobiles are traveling the highway at this time.

The Southern Nevada Fusion Center has been receiving intelligence about the activities of two terrorist cells that seem to have been active in the Las Vegas area over the past few days. This information has been disseminated to both local fire and law Enforcement agencies. At the Sahara and Clark

County Route-215 Exit, a pickup truck has pulled over to the side of the road and its occupants are apparently assisting another broken down pickup truck. Suddenly, two nearly simultaneous explosions occur. The GA-4/9 cask is ruptured by an apparent hit from, what will later be confirmed as a suitcase-size, man-portable, AT-3 Sagger Anti-Armor Guided Missile that is capable of penetrating over 400 mm (1.3 feet) of armor. Almost immediately a large black cloud of smoke emerges up

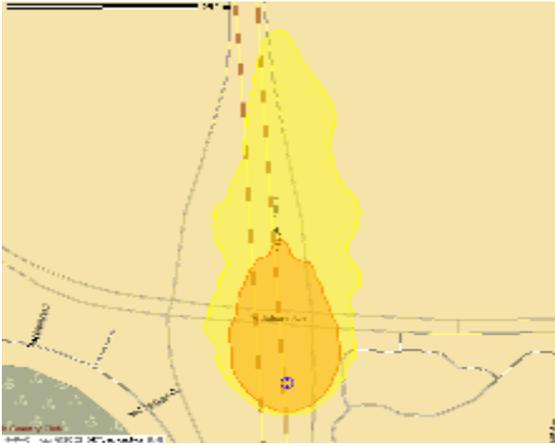
ahead as an errant missile hits the liquid oxygen cryogenic tanker and the explosion ruptures the nearby 8,000-gallon diesel tanker. There is a sudden pressure wave from an explosion and fire quickly engulfs the truck carrying the cask as the diesel fuel tanker truck slams into the truck carrying the cask. Roughly 1 percent of the GA-4/9 load or about 5 pounds of spent nuclear fuel has been released from the breach in the cask caused by the explosion.

A large airborne plume has emerged from the fire that has engulfed the special nuclear waste transport vehicle. The fire burns for two hours, but the HLNW materials that are released from the cask are released within the first 15 minutes of the fire and breach in the canister. Subsequent modeling of the plume from the release performed by the National Atmospheric Release Advisory Center (NARAC) with input from the EPA and emergency responders at the scene are provided in a series of maps below that show the TEDE at one day, one week, and one month. In addition, the final two maps show the Gamma Dose Rate at one hour and two hours. In the TEDE maps, the dark yellow zones are areas where exposure rates (dose rates) will exceed 5 rem at the given amount of time displayed in each map. The lighter yellow zone indicates doses of less than 1 rem at the given amount of time indicated in the map. Dark yellow zones on these maps are zones that would require permanent evacuation until decontamination takes place, and the lighter yellow zones are areas that protective action under the EPA's Protective Action Guidance (PAG).

The Gamma maps show yellow zones where the dark yellow (orange) exclusion zones depict areas where exposures exceeding 2mR/hr occur and require responders to use radiation protective clothing. The lighter yellow exclusion zones indicate gamma radiation that is at least twice background. In this case, the exposure for these zones is above 20  $\mu$ R/hr (20 one millionth of a rem or twice normal background in the area per hour). This level of contamination in the light yellow zone, depending on guidance for the area (county or municipality) will often require evacuation until normal back ground levels are attained. The projected affected population in each of the zones is provided in the table accompanying each of the maps.



## Total Effective Dose Equivalent (One Month)



Actions and Long-Term Effects			
	Description	(rem) Extent Area	Population
	Exceeds upper limit EPA PAG for evacuation.	>5 238 m 29,175 m <sup>2</sup>	0
	Exceeds lower limit EPA PAG for evacuation.	>1 581 m 85,260 m <sup>2</sup>	0

Note: Areas and counts in the table are cumulative.

## Gamma Dose Rate at One Hour and Two Hours:

### Gamma Dose Rate (One Hour)



Acute (Short-Term) Effects		
Description	Inventory Collected (Worst)	Population
	0.01007 0.11 km <sup>2</sup> 0.00 km <sup>2</sup>	0
	>0.00005 10.0 km <sup>2</sup> 0.0 km <sup>2</sup>	80,000

Note: Percentages shown are for total population.

Effects on contamination at August 15, 2007 21:00 UTC at or near ground level.

Release Location: 35.143622 N, 115.225290 W

Model: AERMOD (using meteorology from 08/15/07 10:00 UTC to 08/15/07 21:00 UTC)

Model: AERMOD

Model: AERMOD

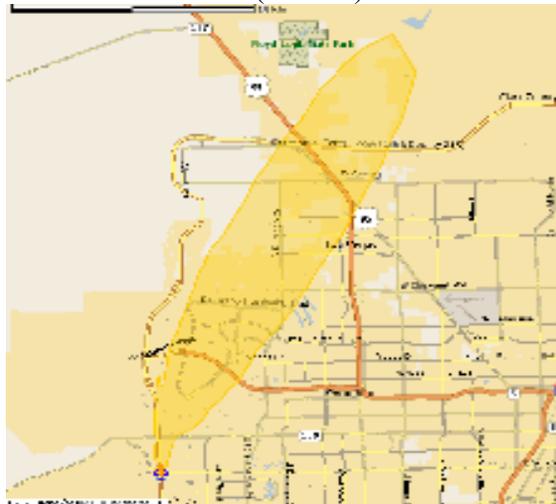
Model: AERMOD

Model: AERMOD

Model: AERMOD

Model: AERMOD

### Gamma Dose Rate (2 Hour)



Acute (Short-Term) Effects		
Description	Inventory Collected (Worst)	Population
	0.01007 0.11 km <sup>2</sup> 0.00 km <sup>2</sup>	0
	>0.00005 22.0 km <sup>2</sup> 0.0 km <sup>2</sup>	80,000

Note: Percentages shown are for total population.

## **APPENDIX C Participating Jurisdictions and Agencies**

### **Clark County:**

- Office of Emergency Management and Homeland Security
- Fire Department
- Las Vegas Metropolitan Police Department

### **City of Las Vegas:**

- Fire and Rescue Department
- Office of Emergency Management

### **City of North Las Vegas:**

- Fire Department
- Police Department

### **City of Mesquite:**

- Fire Department
- Police Department

### **City of Henderson:**

- Fire Department
- Police Department

### **City of Boulder City**

- Fire Department
- Police Department

**Project Advisor:** Nuclear Waste Division, Clark County Department of Comprehensive Planning

## APPENDIX D. Model Assumption and Cost Worksheet

PUBLIC SAFETY MODULE							
ENTITY REQUIREMENT SUMMARY MODEL (MULTIPLIER AND COST ASSUMPTIONS)							
	Units	Clark County	Las Vegas	North Las Vegas	Henderson	Mesquite	Boulder
<b>Station Construction Costs</b>							
Estimated Station Cost	\$ Per Square Foot	\$681	\$621	\$1,038	\$704	\$291	\$0
Average Size of a Station	Square Feet	10,000	10,000	15,000	9,000	10,000	-
Station Land Requirement	Acres	3	3	3	3	3	-
Station Land Cost	\$ Per Square Foot	15	23	92	15	15	-
Station Furniture, Fixtures and Equipment Costs	\$ Per Square Foot	\$21	\$22	\$7	\$93	\$93	\$0
Station Site Development Costs	\$ Per Station	\$989,347	\$861,404	\$1,045,085	\$633,385	\$633,385	\$0
Fuel Tank Farm	\$ Per Station	\$245,975	\$253,354	\$0	\$253,354	\$253,354	\$0
Station Construction Cost (Unspecified)	\$ Per Station	\$507,008	\$0	\$0	\$0	\$0	\$0
Annual Facility Operations & Maintenance Costs	\$ Per Station	\$375,112	\$11,528	\$200,150	\$0	\$0	\$0
<b>Station Equipment Costs</b>							
CBRNE Engine w/ Equipment	\$ Per Unit	\$836,314	\$1,067,887	\$760,062	\$863,633	\$863,633	\$0
Truck w/ Equipment	\$ Per Unit	\$1,352,861	\$1,007,082	\$1,393,447	\$1,203,432	\$1,121,511	\$0
Rescue w/ Equipment	\$ Per Unit	\$338,215	\$399,033	\$374,964	\$361,029	\$277,265	\$0
HazMat Unit w/ Equipment	\$ Per Unit	\$983,899	\$915,661	\$0	\$950,078	\$886,739	\$0
Heavy Rescue Engine w/ Equip	\$ Per Unit	\$1,229,874	\$1,263,389	\$0	\$950,078	\$823,401	\$0
Mobile Air Unit w/ Equipment	\$ Per Unit	\$553,443	\$475,039	\$684,056	\$544,711	\$418,034	\$0
Disaster Mitigation Apparatus 1	\$ Per Unit	\$1,709,503	\$2,024,905	\$0	\$1,760,788	\$1,760,788	\$0
Disaster Mitigation Apparatus 2	\$ Per Unit	\$1,472,159	\$1,743,772	\$0	\$1,516,324	\$1,516,324	\$0
<b>Suppression Personnel Costs</b>							
Battalion Chief	Annual Cost	\$238,596	\$290,135	\$149,732	\$189,418	\$218,743	\$0
Captain	Annual Cost	\$236,648	\$224,501	\$120,723	\$93,003	\$203,895	\$0
Engineer	Annual Cost	\$207,672	\$177,765	\$106,789	\$83,299	\$179,399	\$0
Firefighter	Annual Cost	\$143,744	\$145,534	\$107,802	\$83,299	\$155,664	\$0
<b>Communications Costs</b>							
Tower	\$ Per Unit	\$12,299	\$14,568	\$15,201	\$12,668	\$12,668	\$0
Microwave System	\$ Per Unit	\$215,228	\$254,937	\$253,354	\$221,685	\$221,685	\$0
Radios for all personnel	\$ Per Unit	\$4,600	\$5,322	\$5,700	\$4,738	\$4,738	\$0
Batteries for radios	\$ Per Unit	\$154	\$712	\$253	\$158	\$158	\$0
Battery Analyzer	\$ Per Unit	\$1,845	\$2,185	\$1,900	\$1,900	\$1,900	\$0
HazMat In-Suit Communicator	\$ Per Unit	\$1,845	\$6,556	\$1,900	\$1,900	\$1,900	\$0

<b>PUBLIC SAFETY MODULE</b>							
<b>ENTITY REQUIREMENT SUMMARY MODEL (MULTIPLIER AND COST ASSUMPTIONS)</b>							
	<b>Units</b>	<b>Clark County</b>	<b>Las Vegas</b>	<b>North Las Vegas</b>	<b>Henderson</b>	<b>Mesquite</b>	<b>Boulder</b>
Bank Chargers	\$ Per Unit	\$861	\$2,755	\$1,013	\$887	\$887	\$0
SNACC Operating System Cost	\$ Per Unit	\$228	\$32,144	\$234	\$234	\$234	\$0
Capitol Buy-In (One time fee)	\$ Per Unit	\$1,845	\$2,787	\$1,900	\$1,900	\$1,900	\$0
Annual Telephone Cost	\$ Per Station	\$4,547	\$348	\$5,067	\$4,683	\$4,683	\$0
<b>Air Support Costs</b>							
SCBA Backpacks	\$ Per Unit	\$3,217	\$3,135	\$4,940	\$5,700	\$2,880	\$0
SCBA Bottles- 30 minute	\$ Per Unit	\$1,093	\$6,252	\$0	\$1,043	\$1,043	\$0
HazMat SCBA Backpacks	\$ Per Unit	\$2,749	\$3,135	\$0	\$5,700	\$2,306	\$0
SCBA Bottles- 1 hour	\$ Per Unit	\$1,921	\$6,252	\$1,140	\$1,454	\$1,454	\$0
SCBA Mask	\$ Per Unit	\$740	\$1,024	\$253	\$637	\$637	\$0
RIT Bags	\$ Per Unit	\$1,587	\$1,814	\$1,393	\$1,634	\$1,634	\$0
Additional yearly operating cost	\$ Per Unit	\$369	\$31,669	\$0	\$355	\$355	\$0
Supervisor for SCBA Division	Annual Cost	\$113,148	\$124,658	\$0	\$114,645	\$114,645	\$0
<b>Support Vehicle Costs</b>							
Suburban	\$ Per Unit	\$41,431	\$55,738	\$0	\$51,938	\$42,883	\$0
Sedan	\$ Per Unit	\$30,176	\$38,003	\$0	\$31,669	\$31,669	\$0
Van	\$ Per Unit	\$30,176	\$38,003	\$0	\$44,337	\$38,003	\$0
Pick-up Flat Bed Truck	\$ Per Unit	\$51,719	\$69,672	\$0	\$64,099	\$64,099	\$0
Mechanics Truck	\$ Per Unit	\$56,408	\$39,270	\$0	\$37,177	\$37,177	\$0
Unit upgrades (Code 3, Equip, etc)	\$ Per Unit	\$35,051	\$36,103	\$0	\$20,268	\$36,103	\$0
<b>Administrative Support Costs</b>							
Deputy Chief	Annual Cost	\$238,596	\$257,154	\$0	\$192,590	\$230,624	\$0
Assistant Chief	Annual Cost	\$221,377	\$220,418	\$0	\$172,374	\$214,279	\$0
Materials Controller	Annual Cost	\$115,608	\$220,418	\$0	\$114,645	\$114,645	\$0
Mechanic	Annual Cost	\$127,907	\$132,991	\$0	\$95,217	\$126,642	\$0
Public Information Officers	Annual Cost	\$17,218	\$203,756	\$0	\$178,257	\$178,257	\$0
Alarm Office Dispatcher	Annual Cost	\$110,689	\$136,500	\$0	\$114,263	\$114,263	\$0
Escort/Inspection Personnel	Annual Cost	\$153,734	\$156,808	\$0	\$158,297	\$158,297	\$0
Radiation Safety Officer	Annual Cost	\$190,630	\$225,409	\$0	\$196,007	\$196,007	\$0
<b>Miscellaneous Station-related Costs</b>							
Warehouse Inventory	\$ Per Station	\$1,106,886	\$136,811	\$0	\$1,140,093	\$1,140,093	\$0
Turnout Ensemble	\$ Per Unit	\$1,854	\$2,204	\$2,787	\$1,910	\$1,910	\$0
Cleaning/Repairing of Turnouts	\$ Per Unit	\$148	\$171	\$152	\$152	\$152	\$0
Tank Farm Operating Expenses	\$ Per Unit	\$4,919	\$14,251	\$0	\$5,067	\$5,067	\$0
Annual Training Cost	\$ Per Person	\$2,962	\$0	\$0	\$3,050	\$3,050	\$0
Annual Services and Supplies	\$ Per Station	\$310,436	\$11,528	\$0	\$319,749	\$319,749	\$0

<b>PUBLIC SAFETY MODULE</b>							
<b>ENTITY REQUIREMENT SUMMARY MODEL (MULTIPLIER AND COST ASSUMPTIONS)</b>							
	<b>Units</b>	<b>Clark County</b>	<b>Las Vegas</b>	<b>North Las Vegas</b>	<b>Henderson</b>	<b>Mesquite</b>	<b>Boulder</b>
Apparatus Maintenance Cost	\$ Per Unit	\$22,189	\$65,280	\$0	\$22,855	\$22,855	\$0
Fuel Cost	\$ Per Station	\$57,394	\$25,266	\$0	\$59,116	\$59,116	\$0
Recruit Academy Cost	\$ Per Person	\$18,849	\$31,258	\$0	\$19,414	\$19,414	\$0
<b>APCO Communications Network Cost</b>	\$ Per Network	\$30,746,847	\$31,669,252	\$31,669,252	\$31,669,252	\$31,669,252	\$0
<b>Emergency Management</b>							
<b>Facility Construction and Development Costs</b>							
Facility Square Footage	Square Feet	\$0	\$15,000	\$0	\$0	\$0	\$0
Facility Construction Costs	\$ Per Square Foot	\$0	\$443	\$0	\$0	\$0	\$0
Land Acquisition Costs	\$ Per Facility	\$0	\$3,800,310	\$0	\$0	\$0	\$0
Information Technology and Communications Infrastructure	\$ Per Facility	\$0	\$6,333,850	\$0	\$0	\$0	\$1,013,416
<b>Facility Staffing and Operational Expenses</b>							
EOC Managers	\$ Per Person	\$0	\$158,346	\$0	\$0	\$0	\$0
Emergency Management Analysts	\$ Per Person	\$0	\$139,345	\$139,345	\$139,345	\$0	\$0
Clerical/Office Specialists	\$ Per Person	\$0	\$76,006	\$76,006	\$76,006	\$0	\$0
On-site Security	\$ Per Facility	\$0	\$633,385	\$0	\$0	\$0	\$0
Personnel (unspecified)	\$ Per Person	\$0	\$0	\$69,672	\$0	\$0	\$0
General Operating Expenses	\$ Per Facility	\$0	\$316,693	\$253,354	\$253,354	\$0	\$0
<b>Training Costs</b>							
Senior & Elected Official Workshops	Annual Program Cost	\$6,149	\$6,334	\$6,334	\$6,334	\$0	\$0
Emergency Management Staff Training	Annual Program Cost	\$12,299	\$12,668	\$12,668	\$12,668	\$0	\$2,534
Public Affairs Office Staff Training	Annual Program Cost	\$6,149	\$6,334	\$6,334	\$6,334	\$0	\$0
Public Works/Field Operations Staff Training	Annual Program Cost	\$118,068	\$121,610	\$63,339	\$63,339	\$0	\$0
<b>Public Awareness Program Costs</b>							
Brochures and other public education materials	Annual Program Cost	\$614,937	\$633,385	\$316,693	\$316,693	\$0	\$1,900

<b>PUBLIC SAFETY MODULE</b>							
<b>ENTITY REQUIREMENT SUMMARY MODEL (MULTIPLIER AND COST ASSUMPTIONS)</b>							
	<b>Units</b>	<b>Clark County</b>	<b>Las Vegas</b>	<b>North Las Vegas</b>	<b>Henderson</b>	<b>Mesquite</b>	<b>Boulder</b>
Video production	Annual Program Cost	\$922,405	\$950,078	\$0	\$0	\$0	\$3,800
Community awareness courses	Annual Program Cost	\$614,937	\$633,385	\$253,354	\$253,354	\$0	\$0
<b>Ad Hoc Requirements - Fire</b>							
<b>Personnel</b>							
Deputy Chief	Annual Cost	\$238,596	\$257,154	\$230,624	\$192,590	\$230,624	\$0
Assistant Chief	Annual Cost	\$221,377	\$220,418	\$214,279	\$172,374	\$214,279	\$0
Battalion Chief	Annual Cost	\$238,596	\$290,135	\$0	\$189,418	\$218,743	\$0
Captain	Annual Cost	\$236,649	\$224,501	\$0	\$93,003	\$203,895	\$0
Captain (Instructor)	Annual Cost	\$0	\$149,500	\$0	\$93,003	\$0	\$0
Engineer	Annual Cost	\$207,672	\$177,765	\$0	\$83,299	\$179,399	\$0
Engineer (Instructor)	Annual Cost	\$0	\$149,500	\$0	\$83,299	\$0	\$0
Firefighter	Annual Cost	\$138,441	\$145,534	\$0	\$83,299	\$60,175	\$0
Firefighter (Instructor)	Annual Cost	\$0	\$149,500	\$0	\$83,299	\$0	\$0
Paramedics	Annual Cost	\$143,744	\$145,534	\$0	\$83,299	\$0	\$0
Paramedics (Instructor)	Annual Cost	\$0	\$149,500	\$0	\$83,299	\$0	\$0
Training Officers	Annual Cost	\$163,228	\$149,500	\$0	\$168,125	\$121,453	\$0
Training Instructors	Annual Cost	\$146,649	\$149,500	\$151,049	\$151,049	\$151,049	\$0
Administrative Specialist	Annual Cost	\$111,306	\$95,903	\$114,645	\$114,645	\$82,820	\$0
Public Information Officer	Annual Cost	\$172,182	\$203,756	\$178,258	\$178,258	\$178,258	\$0
Mechanics	Annual Cost	\$127,907	\$132,991	\$126,642	\$95,217	\$126,642	\$0
Materials Controller	Annual Cost	\$115,608	\$220,418	\$114,645	\$114,645	\$114,645	\$0
Dispatcher	Annual Cost	\$110,689	\$136,500	\$114,263	\$114,263	\$114,263	\$0
Alarm Office Dispatcher	Annual Cost	\$110,689	\$136,500	\$114,263	\$114,263	\$114,263	\$0
Escort/Inspection Personnel	Annual Cost	\$153,734	\$156,808	\$158,297	\$158,297	\$158,297	\$0
Radiation Safety Officer	Annual Cost	\$190,630	\$225,409	\$196,007	\$196,007	\$196,007	\$0
Warehouse Employees (Cadets)	Annual Cost	\$29,517	\$10,013	\$30,402	\$30,402	\$30,402	\$0
<b>Training</b>							
HazMat Specialty Training - Captains (Initial)	Per Person	\$0	\$28,305	\$0	\$0	\$0	\$0
HazMat Specialty	Per Person	\$0	\$27,441	\$0	\$0	\$0	\$0

<b>PUBLIC SAFETY MODULE</b>							
<b>ENTITY REQUIREMENT SUMMARY MODEL (MULTIPLIER AND COST ASSUMPTIONS)</b>							
	<b>Units</b>	<b>Clark County</b>	<b>Las Vegas</b>	<b>North Las Vegas</b>	<b>Henderson</b>	<b>Mesquite</b>	<b>Boulder</b>
Training - Paramedics (Initial)							
HazMat Specialty Training - Engineers (Initial)	Per Person	\$0	\$25,050	\$0	\$0	\$0	\$0
HazMat Specialty Training - Firefighters (Initial)	Per Person	\$0	\$21,739	\$0	\$0	\$0	\$0
HazMat Specialty Training - Battalion Chiefs (Initial)	Per Person	\$0	\$28,915	\$0	\$0	\$0	\$0
HazMat Specialty Training - Captains (Annual)	Per Person	\$0	\$9,435	\$0	\$0	\$0	\$0
HazMat Specialty Training - Paramedics (Annual)	Per Person	\$0	\$9,183	\$0	\$0	\$0	\$0
HazMat Specialty Training - Engineers (Annual)	Per Person	\$0	\$8,351	\$0	\$0	\$0	\$0
HazMat Specialty Training - Firefighters (Annual)	Per Person	\$0	\$7,247	\$0	\$0	\$0	\$0
HazMat Specialty Training - Battalion Chiefs (Annual)	Per Person	\$0	\$10,191	\$0	\$0	\$0	\$0
Hours of Recurring Radiological Training Required	# Per Person	\$0	\$24	\$0	\$24	\$0	\$0
Radiological Refresher Training - Battalion Chiefs (Annual)	\$ Per Hour	\$0	\$2,387	\$0	\$2,387	\$0	\$0
Radiological Refresher Training - Fire Training Officer (Annual)	\$ Per Hour	\$0	\$944	\$0	\$944	\$0	\$0
Radiological Refresher Training - Captain (Annual)	\$ Per Hour	\$0	\$3,594	\$0	\$3,594	\$0	\$0
Radiological Refresher Training - Paramedic (Annual)	\$ Per Hour	\$0	\$7,623	\$0	\$7,623	\$0	\$0
Radiological Refresher Training - Engineer (Annual)	\$ Per Hour	\$0	\$3,019	\$0	\$3,019	\$0	\$0
Radiological Refresher Training - Firefighter (Annual)	\$ Per Hour	\$0	\$2,949	\$0	\$2,949	\$0	\$0
Recruit Academy Training - Books	Per Person	\$0	\$1,454	\$0	\$0	\$0	\$0
Recruit Academy Training - Turnouts	Per Person	\$0	\$3,420	\$0	\$0	\$0	\$0
Recruit Academy Training - Supplies	Per Person	\$0	\$527	\$0	\$0	\$0	\$0
Recruit Academy Training - Drill Filed Costs	Per Person	\$0	\$4,375	\$0	\$0	\$0	\$0
Radiation Training	\$ Per Hour	\$0	\$264	\$0	\$6,746	\$0	\$0
Mass Evacuation Training	\$ Per Hour	\$0	\$264	\$0	\$6,746	\$0	\$0

<b>PUBLIC SAFETY MODULE</b>							
<b>ENTITY REQUIREMENT SUMMARY MODEL (MULTIPLIER AND COST ASSUMPTIONS)</b>							
	<b>Units</b>	<b>Clark County</b>	<b>Las Vegas</b>	<b>North Las Vegas</b>	<b>Henderson</b>	<b>Mesquite</b>	<b>Boulder</b>
Suppression Planning (unspecified)	\$ Per Occurrence	\$0	\$1,900	\$284,263	\$0	\$0	\$0
Training & Planning (unspecified)	\$ Per Occurrence	\$0	\$1,900	\$957,678	\$0	\$0	\$0
EMS Training (unspecified)	\$ Per Occurrence	\$0	\$1,108	\$0	\$0	\$0	\$0
One-time (unspecified)	\$ Per Hour	\$0	\$7,715	\$0	\$0	\$306	\$54,471
Recurring Training (unspecified)	\$ Per Hour	\$0	\$61	\$161,640	\$0	\$306	\$27,869
<b>Planning &amp; Administrative</b>							
Cost to Develop an Emergency Response Plan		\$12,299	\$12,668	\$19,002	\$16,976	\$12,668	\$23,815
Cost to Amend Emergency Response Plan		\$24,597	\$25,335	\$0	\$0	\$0	\$2,534
Public Information Program		\$0	\$0	\$77,859	\$77,859	\$0	\$1,900
<b>Communications Equipment</b>							
Radios (XTS-5000 Model 2 Portable)	\$ Per Unit	\$4,600	\$5,448	\$4,738	\$4,738	\$4,738	\$0
Batteries Per Radio	# Per Radio	\$2	\$2	\$2	\$2	\$2	\$0
Cost Per Battery	\$ Per Unit	\$154	\$182	\$158	\$158	\$158	\$0
Battery Analyzers Per Battery	Batteries Per Analyzer	\$50	\$50	\$50	\$50	\$50	\$0
Cost Per Battery Analyzer	\$ Per Unit	\$1,845	\$2,185	\$1,900	\$1,900	\$1,900	\$0
HazMat In-Suit Communications	\$ Per Unit	\$1,845	\$2,185	\$1,900	\$1,900	\$1,900	\$0
Bank Chargers	Batteries Per Charger	\$17	\$17	\$17	\$17	\$17	\$0
Cost Per Bank Charger	\$ Per Unit	\$861	\$1,020	\$887	\$887	\$887	\$0
SNACC Operating System (\$ Per Unit Per Year)	\$ Per Unit	\$228	\$270	\$234	\$234	\$234	\$0
Communications Towers	\$ Per Unit	\$12,299	\$14,568	\$12,668	\$12,668	\$12,668	\$0
Microwave Systems	\$ Per Unit	\$215,228	\$254,937	\$221,685	\$221,685	\$221,685	\$0
Capital Buy In (One-Time Fee)	\$ Per Unit	\$1,845	\$2,154	\$1,900	\$1,900	\$1,900	\$0
Reverse 911 Communications System	\$ Per Unit	\$0	\$21,852	\$0	\$0	\$0	\$0
Radiological Public Alert System	\$ Per System	\$0	\$1,928,657	\$0	\$0	\$0	\$0
<b>Equipment/Apparatus</b>							
Turnouts/Safety Equipment - Unit Cost	\$ Per Unit	\$1,854	\$2,203	\$2,787	\$1,910	\$1,910	\$0
Turnouts/Safety Equipment - Cleaning &	\$ Per Unit	\$148	\$323	\$152	\$152	\$152	\$0

<b>PUBLIC SAFETY MODULE</b>							
<b>ENTITY REQUIREMENT SUMMARY MODEL (MULTIPLIER AND COST ASSUMPTIONS)</b>							
	<b>Units</b>	<b>Clark County</b>	<b>Las Vegas</b>	<b>North Las Vegas</b>	<b>Henderson</b>	<b>Mesquite</b>	<b>Boulder</b>
Repair Cost							
CBRNE Engine - Apparatus	\$ Per Unit	\$634,810	\$687,856	\$696,724	\$653,855	\$653,855	\$0
CBRNE Engine - Equipment	\$ Per Unit	\$203,668	\$424,368	\$63,339	\$209,778	\$209,778	\$0
Heavy Rescue Engine - Apparatus	\$ Per Unit	\$553,443	\$655,554	\$0	\$696,724	\$570,047	\$0
Heavy Rescue Engine - Equipment	\$ Per Unit	\$245,975	\$291,357	\$0	\$253,354	\$253,354	\$0
Truck Equipment - Apparatus	\$ Per Unit	\$953,152	\$874,071	\$1,203,432	\$1,063,668	\$981,747	\$0
Truck Equipment - Equipment	\$ Per Unit	\$135,693	\$26,222	\$190,016	\$139,764	\$139,764	\$0
Rescue Equipment - Apparatus	\$ Per Unit	\$184,481	\$249,110	\$324,293	\$273,780	\$190,016	\$0
Rescue Equipment - Equipment	\$ Per Unit	\$84,708	\$93,234	\$50,671	\$87,250	\$87,250	\$0
HazMat Equipment - Apparatus	\$ Per Unit	\$614,937	\$611,850	\$0	\$696,724	\$633,385	\$0
HazMat Equipment - Equipment	\$ Per Unit	\$245,975	\$291,357	\$0	\$253,354	\$253,354	\$0
Mobile Air Unit - Apparatus	\$ Per Unit	\$356,663	\$422,468	\$633,385	\$494,040	\$367,363	\$0
Mobile Air Unit - Equipment	\$ Per Unit	\$49,195	\$58,271	\$50,671	\$50,671	\$50,671	\$0
Andros Wolverine Robot	\$ Per Unit	\$182,297	\$215,918	\$187,766	\$187,766	\$187,766	\$0
Andros F6A Robot	\$ Per Unit	\$137,079	\$162,370	\$141,192	\$141,192	\$141,192	\$0
Disaster Medical Facility	\$ Per Unit	\$1,038,383	\$1,229,964	\$1,069,534	\$1,069,534	\$1,069,534	\$0
Mobile Oxygen Storage Tanks	\$ Per Unit	\$30,747	\$36,420	\$31,669	\$31,669	\$31,669	\$0
Tx Mass Casualty Decon Unit	\$ Per Unit	\$614,937	\$182,098	\$633,385	\$633,385	\$633,385	\$0
Portable Decon Tents	\$ Per Unit	\$0	\$66,505	\$0	\$0	\$0	\$0
Semi-Trucks	\$ Per Unit	\$122,987	\$213,704	\$126,677	\$126,677	\$126,677	\$0
Flat Bed Trailer	\$ Per Unit	\$47,965	\$56,815	\$49,404	\$49,404	\$49,404	\$0
Forklift (10,000 lbs capacity)	\$ Per Unit	\$119,298	\$141,308	\$122,877	\$122,877	\$122,877	\$0
Disaster Mitigation Apparatus 1	\$ Per Unit	\$1,709,503	\$2,024,905	\$1,760,788	\$1,760,788	\$1,760,788	\$0
Disaster Mitigation Apparatus 2	\$ Per Unit	\$1,472,159	\$1,743,772	\$1,516,324	\$1,516,324	\$1,516,324	\$0
Radiological Survey Meters (Monitors)	\$ Per Unit	\$0	\$2,971	\$0	\$0	\$0	\$0
Radiological Survey Meters (Annual Calibration)	\$ Per Unit	\$0	\$285	\$0	\$0	\$0	\$0
Personal Victoreen Dosimeters (Monitors)	\$ Per Unit	\$0	\$880	\$0	\$0	\$0	\$0
Personal Victoreen Dosimeters (Annual Calibration)	\$ Per Unit	\$0	\$104	\$0	\$0	\$0	\$0
Personal Victoreen Dosimeters (Revealer Dosimeter Reader Kit)	\$ Per Unit	\$0	\$1	\$0	\$0	\$0	\$0
Cascade/Light Re-Fill Unit	\$ Per Unit	\$0	\$475,039	\$0	\$0	\$0	\$0
Ion Chamber Survey Meter	\$ Per Unit	0	0	0	\$3,395	0	0
S2 Rescue Regulator w/	\$ Per Unit	\$0	\$855	\$0	\$0	\$0	\$0

<b>PUBLIC SAFETY MODULE</b>							
<b>ENTITY REQUIREMENT SUMMARY MODEL (MULTIPLIER AND COST ASSUMPTIONS)</b>							
	<b>Units</b>	<b>Clark County</b>	<b>Las Vegas</b>	<b>North Las Vegas</b>	<b>Henderson</b>	<b>Mesquite</b>	<b>Boulder</b>
Y Conn							
Revitox Rescue Mask	\$ Per Unit	\$0	\$855	\$0	\$0	\$0	\$0
SCBA Apparatus (Not Linked to Unit Acquisitions, Unspecified)	\$ Per Unit	\$0	\$31,669	\$0	\$0	\$0	\$0
SCBA One Hour Bottles (Not Linked to Unit Acquisitions)	\$ Per Unit	\$0	\$1,708	\$0	\$0	\$0	\$0
Equipment Acquisition Cost (unspecified)	Total	\$0	\$12,668	\$4,991,074	\$0	\$1,773,478	\$0
Equipment Operations & Maintenance Cost (unspecified)	\$ Per Year	\$0	\$124,658	\$116,543	\$0	\$1,773,478	\$0
<b>Vehicles</b>							
Van	\$ Per Unit	\$30,176	\$38,003	\$38,003	\$44,337	\$38,003	\$0
Sedan and/or Pick-up Truck	\$ Per Unit	\$30,176	\$55,738	\$31,669	\$31,669	\$31,669	\$0
Suburban	\$ Per Unit	\$41,431	\$72,206	\$101,342	\$51,938	\$42,883	\$0
Flat Bed Truck- Heavy Duty	\$ Per Unit	\$51,719	\$69,672	\$64,099	\$64,099	\$64,099	\$0
Mechanics Truck	\$ Per Unit	\$56,408	\$392,699	\$37,177	\$37,177	\$37,177	\$0
Bus (40 Passenger)	\$ Per Unit	\$0	\$0	\$0	\$0	\$0	\$0
Upgrades to Vehicles	\$ Per Unit	\$35,051	\$36,103	\$36,103	\$20,268	\$36,103	\$0
<b>Related Fuel Costs</b>							
Engine	\$ Per Vehicle	\$6,670	\$9,618	\$6,870	\$6,870	\$6,870	\$0
Truck	\$ Per Vehicle	\$9,914	\$14,296	\$10,212	\$10,212	\$10,212	\$0
Rescue	\$ Per Vehicle	\$9,231	\$13,310	\$9,507	\$9,507	\$9,507	\$0
Heavy Rescue	\$ Per Vehicle	\$9,276	\$13,376	\$9,554	\$9,554	\$9,554	\$0
HazMat	\$ Per Vehicle	\$5,553	\$8,007	\$5,719	\$5,719	\$5,719	\$0
Mobile Air	\$ Per Vehicle	\$2,679	\$3,863	\$2,759	\$2,759	\$2,759	\$0
Suburban	\$ Per Vehicle	\$3,299	\$4,349	\$3,398	\$3,398	\$3,398	\$0
Sedan	\$ Per Vehicle	\$3,853	\$5,080	\$3,969	\$3,969	\$3,969	\$0
Mechanics Truck	\$ Per Vehicle	\$5,482	\$7,906	\$5,647	\$5,647	\$5,647	\$0
Flat-Bed Truck	\$ Per Vehicle	\$2,266	\$2,988	\$2,334	\$2,334	\$2,334	\$0
Bus (40 Passenger)	\$ Per Vehicle	\$216	\$310	\$222	\$222	\$222	\$0
<b>Related Air Support Costs</b>							
Air Backpacks Per Engine	# Per Engine	5	6	5	5	5	-
Air Backpacks Per Truck	# Per Truck	5	6	5	5	5	-
Air Backpacks Per Rescue	# Per Rescue	2	2	2	2	2	-
Air Backpacks Per Heavy Rescue Engine	# Per Engine	5	6	5	5	5	-
Air Backpacks Per HazMat	# Per Haz-Mat	5	5	5	5	5	-
SCBA Bottles Per Backpack	# Per Backpack	3	3	3	3	3	-
HazMat Air Pack Backpacks Per HazMat	# Per Haz-Mat	8	8	8	8	8	-
One Hour SCBA Bottles Per HazMat Backpack	# Per Haz Backpack	3	3	3	3	3	-

<b>PUBLIC SAFETY MODULE</b>							
<b>ENTITY REQUIREMENT SUMMARY MODEL (MULTIPLIER AND COST ASSUMPTIONS)</b>							
	<b>Units</b>	<b>Clark County</b>	<b>Las Vegas</b>	<b>North Las Vegas</b>	<b>Henderson</b>	<b>Mesquite</b>	<b>Boulder</b>
Mask Per Backpack	# Per Backpack	1	1	1	1	1	-
RIT Bags Per Apparatus	# Per Apparatus	1	1	1	1	1	-
S2 Rescue Regulator w/ Y Conn Per RIT Bag	# Per RIT Bag	1	1	1	1	1	-
Revitox Rescue Mask Per RIT Bag	# Per RIT Bag	1	1	1	1	1	-
Cost Per Backpack	\$ Per Unit	\$3,217	\$3,135	\$4,940	\$5,700	\$2,880	\$0
Cost Per SCBA Bottle	\$ Per Bottle	\$1,093	\$1,708	\$1,140	\$1,043	\$1,043	\$0
Cost Per HazMat Backpack	\$ Per Unit	\$2,749	\$3,135	\$2,306	\$5,700	\$2,306	\$0
Cost Per One-Hour SCBA Bottles	\$ Per Bottle	\$1,921	\$1,708	\$1,140	\$1,454	\$1,454	\$0
Cost Per Mask	\$ Per Unit	\$740	\$1,024	\$253	\$637	\$637	\$0
Cost Per RIT Bag	\$ Per Unit	\$1,587	\$1,814	\$1,393	\$1,634	\$440	\$0
Cost S2 Rescue Regulator w/ Y Conn	\$ Per Unit	\$556	\$855	\$573	\$573	\$573	\$0
Cost Revitox Rescue Mask	\$ Per Unit	\$604	\$855	\$622	\$622	\$622	\$0
SCBA Apparatus (unspecified)	Total Cost	\$0	\$31,669	\$0	\$0	\$0	\$0
<b>Ad Hoc Requirements - Police</b>							
<b>Personnel</b>							
HazMat Radiological Technicians (RAT)							
Sergeant	\$ Per Person	\$184,309		\$184,309	\$132,885	\$0	\$0
Police Officer	\$ Per Person	\$150,938		\$150,938	\$112,608	\$0	\$0
Escort Officers							
Sergeant	\$ Per Person	\$184,309		\$184,309	\$132,885	\$0	\$0
Police Officer	\$ Per Person	\$150,938		\$150,938	\$112,608	\$0	\$0
Air Support							
Pilots	\$ Per Person	\$150,938					
Mechanics	\$ Per Person	\$111,073					
Crew Chief	\$ Per Person	\$150,938					
Support Staff							
Supply Clerk	\$ Per Person	\$73,237		\$73,237	\$62,354	\$0	\$0
Fiscal Analyst	\$ Per Person	\$148,533		\$148,533	\$115,944	\$0	\$0
<b>Training</b>							
<b>General</b>							
Recruit Training Cost	\$ Per Person	\$0		\$0	\$1,330	\$0	\$0
Officer Training Cost	\$ Per Person	\$0		\$0	\$1,330	\$99,043	\$99,043
Hourly Officer Training Cost	\$ Per Person	\$0		\$0	\$1,766	\$5,503	\$5,503
<b>Academy Training</b>							
Standard Issue	\$ Per Unit	\$0		\$0	\$4,935	\$0	\$0
Physical Testing	\$ Per Unit	\$0		\$0	\$1,482	\$0	\$0
Classroom Supplies	\$ Per Unit	\$0		\$0	\$256	\$0	\$0
Outside Training Costs							

<b>PUBLIC SAFETY MODULE</b>							
<b>ENTITY REQUIREMENT SUMMARY MODEL (MULTIPLIER AND COST ASSUMPTIONS)</b>							
	<b>Units</b>	<b>Clark County</b>	<b>Las Vegas</b>	<b>North Las Vegas</b>	<b>Henderson</b>	<b>Mesquite</b>	<b>Boulder</b>
Equipment Specific Training	\$ Per Unit	\$65,239		\$65,239	\$0	\$0	\$0
HazMat Radiological Technician, Initial	\$ Per Unit	\$58,454		\$58,454	\$0	\$0	\$0
HazMat Radiological Technician, Annual	\$ Per Unit	\$10,177		\$10,177	\$0	\$0	\$0
In Service Radiological Awareness Training	\$ Per Unit	\$979		\$979	\$0	\$0	\$0
Radiological Refresher Training							
Hours Per Session	# of Hours	\$6		\$6	\$5	\$0	
Captain	\$ Per Hour	\$76		\$76	\$82	\$0	\$0
Lieutenant	\$ Per Hour	\$107		\$107	\$79	\$0	\$0
Sergeant	\$ Per Hour	\$85		\$85	\$66	\$0	\$0
Police Officer	\$ Per Hour	\$68		\$68	\$49	\$0	\$0
Communications Personnel							
Hours Per Session	# of Hours	\$6		\$6	\$5	\$0	
Supervisor	\$ Per Hour	\$62		\$62	\$76	\$0	\$0
Dispatch	\$ Per Hour	\$54		\$54	\$48	\$0	\$0
911 Dispatch	\$ Per Hour	\$54		\$54	\$42	\$0	\$0
Air Support							
Lieutenant	\$ Per Hour	\$107					
Sergeants (Pilots)	\$ Per Hour	\$85					
Pilots (POII)	\$ Per Hour	\$68					
<b>Equipment</b>							
Vehicles							
Supply Van	\$ Per Unit	\$38,003		\$38,003	\$32,303	\$0	\$0
Escort Vehicle (Expedition)	\$ Per Unit	\$64,463		\$64,463	\$0	\$0	\$0
HazMat Radiological							
Mobile Command Post/Dispatch Center	\$ Per Unit	\$1,174,296		\$1,174,296	\$0	\$0	\$0
1 Ton Diesel P/U Trucks	\$ Per Unit	\$574,100		\$574,100	\$0	\$0	\$0
Mass Decontamination Trailer	\$ Per Unit	\$69,153		\$69,153	\$0	\$0	\$0
Response Equipment Trailer	\$ Per Unit	\$41,492		\$41,492	\$0	\$0	\$0
Incident Response Vehicle	\$ Per Unit	\$652,387		\$652,387	\$0	\$0	\$0
1 Ton cargo van	\$ Per Unit	\$52,191		\$52,191	\$0	\$0	\$0
Air Support							
Bell 407	\$ Per Unit	\$3,800,310					
Equipment Cost	\$ Per Unit	\$1,383,060					
Other Equipment							
Mobile Detection System	\$ Per Unit	\$113,376		\$113,376	\$0	\$0	\$0
Radiological Response/Detection Kits	\$ Per Unit	\$82,340		\$82,340	\$0	\$0	\$0
Back Pack Radiological Detection System	\$ Per Unit	\$40,537		\$40,537	\$0	\$0	\$0
Vehicle Portal Monitoring System	\$ Per Unit	\$31,036		\$31,036	\$0	\$0	\$0
Rapid Deployment Kit w/warranty	\$ Per Unit	\$70,939		\$70,939	\$0	\$0	\$0

<b>PUBLIC SAFETY MODULE</b>							
<b>ENTITY REQUIREMENT SUMMARY MODEL (MULTIPLIER AND COST ASSUMPTIONS)</b>							
	<b>Units</b>	<b>Clark County</b>	<b>Las Vegas</b>	<b>North Las Vegas</b>	<b>Henderson</b>	<b>Mesquite</b>	<b>Boulder</b>
Personal Dosimeter	\$ Per Unit	\$4,434		\$4,434	\$0	\$0	\$0
Survey Meter Kits	\$ Per Unit	\$34,836		\$34,836	\$0	\$0	\$0
Fixed Mount Radiological Monitors	\$ Per Unit	\$525,710		\$525,710	\$0	\$0	\$0
EuroLite Protective Overgarment	\$ Per Unit	\$127		\$127	\$0	\$0	\$0
CBRN Filters	\$ Per Unit	\$53		\$53	\$0	\$0	\$0
High Purity Germanium Detector	\$ Per Unit	\$129,211		\$129,211	\$0	\$0	\$0
Ion Chambers Survey Meters	\$ Per Unit	\$1,520,124		\$1,520,124	\$3,395	\$0	\$0
Equipment Cost Per New Officer (Unspecified)	\$ Per Person	\$0		\$0	\$0	\$48,441	\$48,441
<b>Maintenance &amp; Supply Costs</b>							
Supply Van							
Vehicle Maintenance	\$ Per Unit Per Year	\$2,075		\$2,075	\$1,520	\$0	\$0
Fuel	\$ Per Unit Per Year	\$6,654		\$6,654	\$1,710	\$0	\$0
Insurance	\$ Per Unit Per Year	\$4,011		\$4,011	\$3,674	\$0	\$0
Escort Vehicles							
Vehicle Maintenance	\$ Per Unit Per Year	\$4,488		\$4,488	\$3,952	\$0	\$0
Fuel	\$ Per Unit Per Year	\$6,983		\$6,983	\$3,648	\$0	\$0
Equipment Maintenance	\$ Per Unit Per Year	\$1,245		\$1,245	\$1,140	\$0	\$0
Insurance	\$ Per Unit Per Year	\$4,011		\$4,011	\$3,674	\$0	\$0
HazMat Radiological (RAT)							
Vehicle Maintenance	\$ Per Unit Per Year	\$4,488		\$4,488	\$3,952	\$0	\$0
Fuel	\$ Per Unit Per Year	\$6,202		\$6,202	\$3,648	\$0	\$0
Equipment Maintenance	\$ Per Unit Per Year	\$1,245		\$1,245	\$1,140	\$0	\$0
Insurance	\$ Per Unit Per Year	\$4,011		\$4,011	\$3,674	\$0	\$0
Air Support							
Average Annual Hours of Operation	Annual Hours	1,000					
Operating Cost	\$ Per Hour Per Year	\$2,088					
Insurance Cost	\$ Unit Per Year	\$553,224					
hangar	\$ Unit Per Year	\$0					
Warehouse	\$ Unit Per Year	\$117,430					
Misc Maintenance & Supply Costs							
Misc Maintenance & Supply Costs	\$ Unit Per Year	\$0		\$0	\$0	\$0	\$0
<b>Administrative and Planning</b>							
HazMat Emergency Plan Update							

<b>PUBLIC SAFETY MODULE</b>							
<b>ENTITY REQUIREMENT SUMMARY MODEL (MULTIPLIER AND COST ASSUMPTIONS)</b>							
	<b>Units</b>	<b>Clark County</b>	<b>Las Vegas</b>	<b>North Las Vegas</b>	<b>Henderson</b>	<b>Mesquite</b>	<b>Boulder</b>
Lieutenant (Man Hours)	\$ Per Hour	\$107		\$107	\$79	\$0	\$0
Sergeant (Man Hours)	\$ Per Hour	\$85		\$85	\$66	\$0	\$0
LEST (Man Hours)	\$ Per Hour	\$37		\$37	\$0	\$0	\$0

## APPENDIX E Useful Life

Useful life is the length of time some equipment or other asset is expected to be useable. The following table in provides the number of years of expected use from each asset (such as a building) and the remaining years of expected use at the intervals provided (5, 10,15, and 24-years). Additionally, the table provides the projected useful life for all equipment and other assets identified in the study, as well as allowing us to identify which equipment and assets will need to be replaced (and at what time) during the anticipated 24-year DOE shipping campaign.

	<b>Base Year</b>	<b>Year 5</b>	<b>Year 10</b>	<b>Year 15</b>	<b>Year 20</b>	<b>Year 24</b>
<b>FIRE STATIONS</b>						
<b>Station Construction Cost</b>						
Estimated Station Cost	50	46	41	36	31	27
Estimated Land Cost (5 acre parcel)	100	96	91	86	81	77
Fixtures, Furnishings, & Equip	20	16	11	6	1	18
Site Development/Upgrades	50	46	41	36	31	27
Fuel Tank Farm (initial cost)	50	46	41	36	31	27
Station Construction Cost (unspecified)	50	46	41	36	31	27
<b>Station Operations &amp; Maintenance Costs (not otherwise specified)</b>	-	-	-	-	-	-
<b>Apparatus</b>						
CBRNE Engine w/ Equipment	10	6	1	7	2	9
Truck w/ Equipment	10	6	1	7	2	9
Rescue w/ Equipment	10	6	1	7	2	9
HazMat Unit w/ Equipment	10	6	1	7	2	9
Heavy Rescue Engine w/ Equip	10	6	1	7	2	9
Mobile Air Unit w/ Equipment	10	6	1	7	2	9
Disaster Mitigation Apparatus 1	10	6	1	7	2	9

	<b>Base Year</b>	<b>Year 5</b>	<b>Year 10</b>	<b>Year 15</b>	<b>Year 20</b>	<b>Year 24</b>
Disaster Mitigation Apparatus 2	10	6	1	7	2	9

### **Suppression Personnel**

Battalion Chief	-	-	-	-	-	-
Captain	-	-	-	-	-	-
Engineer	-	-	-	-	-	-
Firefighter	-	-	-	-	-	-

### **Communications**

Tower	25	21	16	11	6	2
Microwave System	25	21	16	11	6	2
Radios for all personnel	10	6	1	7	2	9
Batteries for radios	3	3	2	1	-	-
Battery Analyzer	5	1	2	3	4	-
HazMat In-Suit Communicator	5	1	2	3	4	-
Bank Chargers	5	1	2	3	4	-
SNACC Operating System Cost	-	-	-	-	-	-
Capitol Buy-In (One time fee)	10	6	1	7	2	9
Annual Telephone Cost	-	-	-	-	-	-

### **Air Support (SCBA)**

SCBA Backpacks	15	11	6	1	12	8
SCBA Bottles- 30 minute	15	11	6	1	12	8
HazMat SCBA Backpacks	15	11	6	1	12	8
SCBA Bottles- 1 hour	15	11	6	1	12	8
SCBA Mask	15	11	6	1	12	8
RIT Bags	15	11	6	1	12	8

	<b>Base Year</b>	<b>Year 5</b>	<b>Year 10</b>	<b>Year 15</b>	<b>Year 20</b>	<b>Year 24</b>
SCBA Annual Operating Costs	-	-	-	-	-	-
Supervisor for SCBA Division	-	-	-	-	-	-
<b>Support Vehicles</b>						
Suburban	7	3	6	1	4	-
Sedan	7	3	6	1	4	-
Van	7	3	6	1	4	-
Pick-up Flat Bed Truck	7	3	6	1	4	-
Mechanics Truck	7	3	6	1	4	-
Unit upgrades (Code 3, Equip, etc)	7	3	6	1	4	-
<b>Support Personnel</b>						
Deputy Chief	-	-	-	-	-	-
Assistant Chief	-	-	-	-	-	-
Materials Controller	-	-	-	-	-	-
Mechanic	-	-	-	-	-	-
Public Information Officers	-	-	-	-	-	-
Alarm Office Dispatcher	-	-	-	-	-	-
Escort/Inspection Personnel	-	-	-	-	-	-
Radiation Safety Officer	-	-	-	-	-	-
<b>Miscellaneous</b>						
Warehouse Inventory	-	-	-	-	-	-
Turnout Ensemble	7	3	6	1	4	-
Cleaning/Repairing of Turnouts	-	-	-	-	-	-

	<b>Base Year</b>	<b>Year 5</b>	<b>Year 10</b>	<b>Year 15</b>	<b>Year 20</b>	<b>Year 24</b>
Tank Farm Operating Expenses	-	-	-	-	-	-
Annual Training Cost	-	-	-	-	-	-
Annual Services and Supplies	-	-	-	-	-	-
Vehicle Maintenance Cost	-	-	-	-	-	-
Fuel Cost	-	-	-	-	-	-
Recruit Academy Cost	30	26	21	16	11	7

## **EMERGENCY MANAGEMENT**

### **Facility Construction and Development Costs**

Facility Construction Costs	50	46	41	36	31	27
Land Acquisition Costs	100	96	91	86	81	77
Information Technology and Communications Infrastructure	20	16	11	6	1	18

### **Facility Staffing and Operational Expenses**

EOC Managers	-	-	-	-	-	-
Emergency Management Analysts	-	-	-	-	-	-
Clerical/Office Specialists	-	-	-	-	-	-
On-site Security	-	-	-	-	-	-
Personnel (unspecified)	-	-	-	-	-	-
General Operating Expenses	-	-	-	-	-	-

### **Training Costs**

Senior & Elected Official Workshops	-	-	-	-	-	-
Emergency Management Staff Training	-	-	-	-	-	-
Public Affairs Office Staff	-	-	-	-	-	-

	<b>Base Year</b>	<b>Year 5</b>	<b>Year 10</b>	<b>Year 15</b>	<b>Year 20</b>	<b>Year 24</b>
Training	-	-	-	-	-	-
Public Works/Field Operations Staff Training	-	-	-	-	-	-

**Public Awareness Program Costs**

Brochures and other public education materials	-	-	-	-	-	-
Video production	-	-	-	-	-	-
Community awareness courses	-	-	-	-	-	-

**AD HOC FIRE**

**APCO Communications Network**

Estimated Facility Construction Cost	50	46	41	36	31	27
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**General Apparatus/Equipment**

Turnouts/Safety Equipment	7	3	6	1	4	-
CBRNE Engine	10	6	1	7	2	9
Heavy Rescue Engine	10	6	1	7	2	9
Truck Equipment	10	6	1	7	2	9
Rescue Equipment	10	6	1	7	2	9
HazMat Equipment	10	6	1	7	2	9
Mobile Air Unit	10	6	1	7	2	9
Andros Wolverine Robot	10	6	1	7	2	9
Andros F6A Robot	10	6	1	7	2	9
Disaster Medical Facility	10	6	1	7	2	9
Mobile Oxygen Storage Tanks	10	6	1	7	2	9
Tx Mass Casualty Decon Unit	10	6	1	7	2	9
Portable Decon Tents						

	<b>Base Year</b>	<b>Year 5</b>	<b>Year 10</b>	<b>Year 15</b>	<b>Year 20</b>	<b>Year 24</b>
	10	6	1	7	2	9
Semi-Trucks	10	6	1	7	2	9
Flat Bed Trailer	10	6	1	7	2	9
Forklift (10,000 lbs capacity)	10	6	1	7	2	9
Disaster Mitigation Apparatus 1	10	6	1	7	2	9
Disaster Mitigation Apparatus 2	10	6	1	7	2	9
Radiological Survey Meters (Monitors)	10	6	1	7	2	9
Radiological Survey Meters (Annual Calibration)	10	6	1	7	2	9
Personal Victoreen Dosimeters (Monitors)	10	6	1	7	2	9
Personal Victoreen Dosimeters (Annual Calibration)	10	6	1	7	2	9
Personal Victoreen Dosimeters (Revealer Dosimeter Reader Kit)	10	6	1	7	2	9
Cascade/Light Re-Fill Unit (One Time)	10	6	1	7	2	9
Equipment Acquisition Costs (unspecified)	10	6	1	7	2	9
Equipment Operations and Maintenance Costs (unspecified)	10	6	1	7	2	9

### Helicopters

Equipment	-	-	-	-	-	-
Bell Augusta AB 139	30	26	21	16	11	7
Equipment Cost	30	26	21	16	11	7
Personnel	-	-	-	-	-	-
Pilots	-	-	-	-	-	-
Mechanics	-	-	-	-	-	-
Crew Chief	-	-	-	-	-	-
Annual Training Costs						

	<b>Base Year</b>	<b>Year 5</b>	<b>Year 10</b>	<b>Year 15</b>	<b>Year 20</b>	<b>Year 24</b>
	-	-	-	-	-	-
Crew Training	-	-	-	-	-	-
FAA / Aircraft Recertification	-	-	-	-	-	-
Annual Operations Costs	-	-	-	-	-	-
Operating Cost	-	-	-	-	-	-
Insurance Cost	-	-	-	-	-	-
Annual Storage Costs	-	-	-	-	-	-
Hanger Cost	-	-	-	-	-	-
Warehouse Cost	-	-	-	-	-	-

#### **General Communications Requirements**

Tower	25	21	16	11	6	2
Microwave System	25	21	16	11	6	2
Radios for all personnel	10	6	1	7	2	9
Batteries for radios	3	3	2	1	-	-
Battery Analyzer	5	1	2	3	4	-
Bank Chargers	5	1	2	3	4	-
SNACC Operating System Cost	5	1	2	3	4	-
Capitol Buy-In (One time fee)	-	-	-	-	-	-
HazMat In-Suit Communications	10	6	1	7	2	9
Reverse 911 Notification System	15	11	6	1	12	8
Radiological Public Alert System	15	11	6	1	12	8

#### **General Personnel Requirements**

Deputy Chief	-	-	-	-	-	-
Assistant Chief	-	-	-	-	-	-

	<b>Base Year</b>	<b>Year 5</b>	<b>Year 10</b>	<b>Year 15</b>	<b>Year 20</b>	<b>Year 24</b>
	-	-	-	-	-	-
Battalion Chief	-	-	-	-	-	-
Captain	-	-	-	-	-	-
Captain (Instructor)	-	-	-	-	-	-
Engineer	-	-	-	-	-	-
Engineer (Instructor)	-	-	-	-	-	-
Firefighter	-	-	-	-	-	-
Firefighter (Instructor)	-	-	-	-	-	-
Paramedics	-	-	-	-	-	-
Paramedics (Instructor)	-	-	-	-	-	-
Training Officers	-	-	-	-	-	-
Training Instructors	-	-	-	-	-	-
Administrative Specialist	-	-	-	-	-	-
Public Information Officer	-	-	-	-	-	-
Mechanics	-	-	-	-	-	-
Materials Controller	-	-	-	-	-	-
Dispatcher	-	-	-	-	-	-
Alarm Office Dispatcher	-	-	-	-	-	-
Escort/Inspection Personnel	-	-	-	-	-	-
Radiation Safety Officer	-	-	-	-	-	-
Warehouse Employees (Cadets)	-	-	-	-	-	-

**Staff Training Requirements**

HazMat Specialty Training - Captains (Initial)	100	96	91	86	81	77
HazMat Specialty Training - Paramedics (Initial)	100	96	91	86	81	77

	<b>Base Year</b>	<b>Year 5</b>	<b>Year 10</b>	<b>Year 15</b>	<b>Year 20</b>	<b>Year 24</b>
HazMat Specialty Training - Engineers (Initial)	100	96	91	86	81	77
HazMat Specialty Training - Firefighters (Initial)	100	96	91	86	81	77
HazMat Specialty Training - Battalion Chiefs (Initial)	100	96	91	86	81	77
HazMat Specialty Training - Captains (Annual)	-	-	-	-	-	-
HazMat Specialty Training - Paramedics (Annual)	-	-	-	-	-	-
HazMat Specialty Training - Engineers (Annual)	-	-	-	-	-	-
HazMat Specialty Training - Firefighters (Annual)	-	-	-	-	-	-
HazMat Specialty Training - Battalion Chiefs (Annual)	-	-	-	-	-	-
Radiological Refresher Training - Battalion Chiefs (Annual)	-	-	-	-	-	-
Radiological Refresher Training - Fire Training Officer (Annual)	-	-	-	-	-	-
Radiological Refresher Training - Captain (Annual)	-	-	-	-	-	-
Radiological Refresher Training - Paramedic (Annual)	-	-	-	-	-	-
Radiological Refresher Training - Engineer (Annual)	-	-	-	-	-	-
Radiological Refresher Training - Firefighter (Annual)	-	-	-	-	-	-
Recruit Academy Training - Books	100	96	91	86	81	77
Recruit Academy Training - Turnouts	100	96	91	86	81	77
Recruit Academy Training - Supplies	100	96	91	86	81	77
Recruit Academy Training - Drill Filed Costs	100	96	91	86	81	77
Recruit Academy Training - Books	100	96	91	86	81	77
Recruit Academy Training - Turnouts	100	96	91	86	81	77
Recruit Academy Training - Supplies	100	96	91	86	81	77

	<b>Base Year</b>	<b>Year 5</b>	<b>Year 10</b>	<b>Year 15</b>	<b>Year 20</b>	<b>Year 24</b>
Recruit Academy Training - Drill Filed Costs	100	96	91	86	81	77
Radiation Training	-	-	-	-	-	-
Mass Evacuation Training	-	-	-	-	-	-
Suppression Planning (unspecified)	-	-	-	-	-	-
Training & Planning (unspecified)	-	-	-	-	-	-
One-time (Initial) Training Hours (Unspecified)	100	96	91	86	81	77
Recurring (Annual) Training (Hours) (Unspecified)	-	-	-	-	-	-

**Planning & Administrative Costs**

Development of Emergency Response Plan	10	6	1	7	2	9
Amendment of Emergency Response Plan	-	-	-	-	-	-
Public Information Program	-	-	-	-	-	-

**Support Personnel Vehicles**

Flat-Bed Truck, Heavy Duty	7	3	6	1	4	-
Mechanic Truck	7	3	6	1	4	-
Bus	7	3	6	1	4	-
Van	7	3	6	1	4	-
Suburban	7	3	6	1	4	-
Sedan	7	3	6	1	4	-
Unit upgrades (Code 3, Equip, etc)	7	3	6	1	4	-

**Related Annual Fuel Costs**

Engine	-	-	-	-	-	-
Truck	-	-	-	-	-	-

	<b>Base Year</b>	<b>Year 5</b>	<b>Year 10</b>	<b>Year 15</b>	<b>Year 20</b>	<b>Year 24</b>
Rescue	-	-	-	-	-	-
Heavy Rescue	-	-	-	-	-	-
HazMat	-	-	-	-	-	-
Mobile Air	-	-	-	-	-	-
Suburban	-	-	-	-	-	-
Sedan	-	-	-	-	-	-
Mechanics Truck	-	-	-	-	-	-
Flat-Bed Truck	-	-	-	-	-	-
Bus (40 Passenger)	-	-	-	-	-	-

**Related SBCA Air Support Costs**

Air Pack Backpacks	15	11	6	1	12	8
SCBA Bottles	15	11	6	1	12	8
HazMat Air Pack Backpacks	15	11	6	1	12	8
One Hour SCBA Bottles	15	11	6	1	12	8
SCBA Air Mask	15	11	6	1	12	8
RIT Bags	15	11	6	1	12	8
S2 Rescue Regulator w/ Y Conn	15	11	6	1	12	8
Revitox Rescue Mask	15	11	6	1	12	8
SBCA Apparatus (unspecified)	15	11	6	1	12	8

**POLICE**

**Police Training Requiems**

Staff Salaries	-	-	-	-	-	-
Training Costs	-	-	-	-	-	-

<b>Base Year</b>	<b>Year 5</b>	<b>Year 10</b>	<b>Year 15</b>	<b>Year 20</b>	<b>Year 24</b>
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**Police Equipment Requirements**

Equipment Costs - Ion Chambers Survey Meter	15	11	6	1	12	8
Equipment Costs - General	-	-	-	-	-	-

## APPENDIX F Cost Inflation Rate Table

Projected inflation rates are provided for equipment and operating costs in the following table for years 5, 10, 20, and 24 of the proposed DOE shipping campaign.

	Base Year	Year 5	Year 10	Year 15	Year 20	Year 24
<b>FIRE STATIONS</b>						
<b>Station Construction Cost</b>						
Estimated Station Cost	100%	113%	130%	151%	175%	197%
Estimated Land Cost (5 acre parcel)	100%	113%	130%	151%	175%	197%
Fixtures, Furnishings, & Equip	100%	113%	130%	151%	175%	197%
Site Development/Upgrades	100%	113%	130%	151%	175%	197%
Fuel Tank Farm (initial cost)	100%	113%	130%	151%	175%	197%
Station Construction Cost (unspecified)	100%	113%	130%	151%	175%	197%
<b>Station Operations &amp; Maintenance Costs (not otherwise specified)</b>	100%	113%	130%	151%	175%	197%
<b>Apparatus</b>						
CBRNE Engine w/ Equipment	100%	113%	130%	151%	175%	197%
Truck w/ Equipment	100%	113%	130%	151%	175%	197%
Rescue w/ Equipment	100%	113%	130%	151%	175%	197%
HazMat Unit w/ Equipment	100%	113%	130%	151%	175%	197%
Heavy Rescue Engine w/ Equip	100%	113%	130%	151%	175%	197%
Mobile Air Unit w/ Equipment	100%	113%	130%	151%	175%	197%
Disaster Mitigation Apparatus 1	100%	113%	130%	151%	175%	197%
Disaster Mitigation Apparatus 2	100%	113%	130%	151%	175%	197%
<b>Suppression Personnel</b>						
Battalion Chief	100%	113%	130%	151%	175%	197%
Captain	100%	113%	130%	151%	175%	197%
Engineer	100%	113%	130%	151%	175%	197%
Firefighter	100%	113%	130%	151%	175%	197%
<b>Communications</b>						
Tower	100%	113%	130%	151%	175%	197%
Microwave System	100%	113%	130%	151%	175%	197%
Radios for all personnel	100%	113%	130%	151%	175%	197%
Batteries for radios	100%	113%	130%	151%	175%	197%
Battery Analyzer	100%	113%	130%	151%	175%	197%
HazMat In-Suit Communicator	100%	113%	130%	151%	175%	197%

	<b>Base Year</b>	<b>Year 5</b>	<b>Year 10</b>	<b>Year 15</b>	<b>Year 20</b>	<b>Year 24</b>
Bank Chargers	100%	113%	130%	151%	175%	197%
SNACC Operating System Cost	100%	113%	130%	151%	175%	197%
Capitol Buy-In (One time fee)	100%	113%	130%	151%	175%	197%
Annual Telephone Cost	100%	113%	130%	151%	175%	197%
<b>Air Support (SCBA)</b>						
SCBA Backpacks	100%	113%	130%	151%	175%	197%
SCBA Bottles- 30 minute	100%	113%	130%	151%	175%	197%
HazMat SCBA Backpacks	100%	113%	130%	151%	175%	197%
SCBA Bottles- 1 hour	100%	113%	130%	151%	175%	197%
SCBA Mask	100%	113%	130%	151%	175%	197%
RIT Bags	100%	113%	130%	151%	175%	197%
SCBA Annual Operating Costs	100%	113%	130%	151%	175%	197%
Supervisor for SCBA Division	100%	113%	130%	151%	175%	197%
<b>Support Vehicles</b>						
Suburban	100%	113%	130%	151%	175%	197%
Sedan	100%	113%	130%	151%	175%	197%
Van	100%	113%	130%	151%	175%	197%
Pick-up Flat Bed Truck	100%	113%	130%	151%	175%	197%
Mechanics Truck	100%	113%	130%	151%	175%	197%
Unit upgrades (Code 3, Equip, etc)	100%	113%	130%	151%	175%	197%
<b>Support Personnel</b>						
Deputy Chief	100%	113%	130%	151%	175%	197%
Assistant Chief	100%	113%	130%	151%	175%	197%
Materials Controller	100%	113%	130%	151%	175%	197%
Mechanic	100%	113%	130%	151%	175%	197%
Public Information Officers	100%	113%	130%	151%	175%	197%
Alarm Office Dispatcher	100%	113%	130%	151%	175%	197%
Escort/Inspection Personnel	100%	113%	130%	151%	175%	197%
Radiation Safety Officer	100%	113%	130%	151%	175%	197%
<b>Miscellaneous</b>						
Warehouse Inventory	100%	113%	130%	151%	175%	197%
Turnout Ensemble	100%	113%	130%	151%	175%	197%
Cleaning/Repairing of Turnouts	100%	113%	130%	151%	175%	197%
Tank Farm Operating Expenses	100%	113%	130%	151%	175%	197%
Annual Training Cost	100%	113%	130%	151%	175%	197%
Annual Services and Supplies	100%	113%	130%	151%	175%	197%
Vehicle Maintenance Cost	100%	113%	130%	151%	175%	197%

	<b>Base Year</b>	<b>Year 5</b>	<b>Year 10</b>	<b>Year 15</b>	<b>Year 20</b>	<b>Year 24</b>
Fuel Cost	100%	113%	130%	151%	175%	197%
Recruit Academy Cost	100%	113%	130%	151%	175%	197%

## **EMERGENCY MANAGEMENT**

### **Facility Construction and Development Costs**

Facility Construction Costs	100%	113%	130%	151%	175%	197%
Land Acquisition Costs	100%	113%	130%	151%	175%	197%
Information Technology and Communications Infrastructure	100%	113%	130%	151%	175%	197%

### **Facility Staffing and Operational Expenses**

EOC Managers	100%	113%	130%	151%	175%	197%
Emergency Management Analysts	100%	113%	130%	151%	175%	197%
Clerical/Office Specialists	100%	113%	130%	151%	175%	197%
On-site Security	100%	113%	130%	151%	175%	197%
Personnel (unspecified)	100%	113%	130%	151%	175%	197%
General Operating Expenses	100%	113%	130%	151%	175%	197%

### **Training Costs**

Senior & Elected Official Workshops	100%	113%	130%	151%	175%	197%
Emergency Management Staff Training	100%	113%	130%	151%	175%	197%
Public Affairs Office Staff Training	100%	113%	130%	151%	175%	197%
Public Works/Field Operations Staff Training	100%	113%	130%	151%	175%	197%

### **Public Awareness Program Costs**

Brochures and other public education materials	100%	113%	130%	151%	175%	197%
Video production	100%	113%	130%	151%	175%	197%
Community awareness courses	100%	113%	130%	151%	175%	197%

## **AD HOC FIRE**

### **APCO Communications Network**

Estimated Facility Construction Cost	100%	113%	130%	151%	175%	197%
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	<b>Base Year</b>	<b>Year 5</b>	<b>Year 10</b>	<b>Year 15</b>	<b>Year 20</b>	<b>Year 24</b>
<b>General Apparatus/Equipment</b>						
Turnouts/Safety Equipment	100%	113%	130%	151%	175%	197%
CBRNE Engine	100%	113%	130%	151%	175%	197%
Heavy Rescue Engine	100%	113%	130%	151%	175%	197%
Truck Equipment	100%	113%	130%	151%	175%	197%
Rescue Equipment	100%	113%	130%	151%	175%	197%
HazMat Equipment	100%	113%	130%	151%	175%	197%
Mobile Air Unit	100%	113%	130%	151%	175%	197%
Andros Wolverine Robot	100%	113%	130%	151%	175%	197%
Andros F6A Robot	100%	113%	130%	151%	175%	197%
Disaster Medical Facility	100%	113%	130%	151%	175%	197%
Mobile Oxygen Storage Tanks	100%	113%	130%	151%	175%	197%
Tx Mass Casualty Decon Unit	100%	113%	130%	151%	175%	197%
Portable Decon Tents	100%	113%	130%	151%	175%	197%
Semi-Trucks	100%	113%	130%	151%	175%	197%
Flat Bed Trailer	100%	113%	130%	151%	175%	197%
Forklift (10,000 lbs capacity)	100%	113%	130%	151%	175%	197%
Disaster Mitigation Apparatus 1	100%	113%	130%	151%	175%	197%
Disaster Mitigation Apparatus 2	100%	113%	130%	151%	175%	197%
Radiological Survey Meters (Monitors)	100%	113%	130%	151%	175%	197%
Radiological Survey Meters (Annual Calibration)	100%	113%	130%	151%	175%	197%
Personal Victoreen Dosimeters (Monitors)	100%	113%	130%	151%	175%	197%
Personal Victoreen Dosimeters (Annual Calibration)	100%	113%	130%	151%	175%	197%
Personal Victoreen Dosimeters (Revealer Dosimeter Reader Kit)	100%	113%	130%	151%	175%	197%
Cascade/Light Re-Fill Unit (One Time)	100%	113%	130%	151%	175%	197%
Equipment Acquisition Costs (unspecified)	100%	113%	130%	151%	175%	197%
Equipment Operations and Maintenance Costs (unspecified)	100%	113%	130%	151%	175%	197%

### **Helicopters**

<b>Equipment</b>						
Bell Augusta AB 139	100%	113%	130%	151%	211%	197%
Equipment Cost	100%	113%	130%	151%	211%	197%
<b>Personnel</b>						
Pilot(s)	100%	113%	130%	151%	211%	197%
Mechanics	100%	113%	130%	151%	211%	197%
Crew Chief	100%	113%	130%	151%	211%	197%
Annual Training Costs						

	<b>Base Year</b>	<b>Year 5</b>	<b>Year 10</b>	<b>Year 15</b>	<b>Year 20</b>	<b>Year 24</b>
Crew Training	100%	113%	130%	151%	211%	197%
FAA/ Aircraft Recertification	100%	113%	130%	151%	211%	197%
<b>Annual Operations Costs</b>						
Operating Cost	100%	113%	130%	151%	211%	197%
Insurance Cost	100%	113%	130%	151%	211%	197%
<b>Annual Storage Costs</b>						
Hanger Cost	100%	113%	130%	151%	211%	197%
Warehouse Cost	100%	113%	130%	151%	211%	197%

**General Communications  
Requirements**

Tower	100%	113%	130%	151%	175%	197%
Microwave System	100%	113%	130%	151%	175%	197%
Radios for all personnel	100%	113%	130%	151%	175%	197%
Batteries for radios	100%	113%	130%	151%	175%	197%
Battery Analyzer	100%	113%	130%	151%	175%	197%
Bank Chargers	100%	113%	130%	151%	175%	197%
SNACC Operating System Cost	100%	113%	130%	151%	175%	197%
Capitol Buy-In (One time fee)	100%	113%	130%	151%	175%	197%
HazMat In-Suit Communications	100%	113%	130%	151%	175%	197%
Reverse 911 Notification System	100%	113%	130%	151%	175%	197%
Radiological Public Alert System	100%	113%	130%	151%	175%	197%

**General Personnel Requirements**

Deputy Chief	100%	113%	130%	151%	175%	197%
Assistant Chief	100%	113%	130%	151%	175%	197%
Battalion Chief	100%	113%	130%	151%	175%	197%
Captain	100%	113%	130%	151%	175%	197%
Captain (Instructor)	100%	113%	130%	151%	175%	197%
Engineer	100%	113%	130%	151%	175%	197%
Engineer (Instructor)	100%	113%	130%	151%	175%	197%
Firefighter	100%	113%	130%	151%	175%	197%
Firefighter (Instructor)	100%	113%	130%	151%	175%	197%
Paramedics	100%	113%	130%	151%	175%	197%
Paramedics (Instructor)	100%	113%	130%	151%	175%	197%
Training Officers	100%	113%	130%	151%	175%	197%
Training Instructors	100%	113%	130%	151%	175%	197%
Administrative Specialist	100%	113%	130%	151%	175%	197%
Public Information Officer	100%	113%	130%	151%	175%	197%
Mechanics	100%	113%	130%	151%	175%	197%
Materials Controller	100%	113%	130%	151%	175%	197%
Dispatcher	100%	113%	130%	151%	175%	197%
Alarm Office Dispatcher	100%	113%	130%	151%	175%	197%

	<b>Base Year</b>	<b>Year 5</b>	<b>Year 10</b>	<b>Year 15</b>	<b>Year 20</b>	<b>Year 24</b>
Escort/Inspection Personnel	100%	113%	130%	151%	175%	197%
Radiation Safety Officer	100%	113%	130%	151%	175%	197%
Warehouse Employees (Cadets)	100%	113%	130%	151%	175%	197%

**Staff Training Requirements**

HazMat Specialty Training - Captains (Initial)	100%	113%	130%	151%	175%	197%
HazMat Specialty Training - Paramedics (Initial)	100%	113%	130%	151%	175%	197%
HazMat Specialty Training - Engineers (Initial)	100%	113%	130%	151%	175%	197%
HazMat Specialty Training - Firefighters (Initial)	100%	113%	130%	151%	175%	197%
HazMat Specialty Training - Battalion Chiefs (Initial)	100%	113%	130%	151%	175%	197%
HazMat Specialty Training - Captains (Annual)	100%	113%	130%	151%	175%	197%
HazMat Specialty Training - Paramedics (Annual)	100%	113%	130%	151%	175%	197%
HazMat Specialty Training - Engineers (Annual)	100%	113%	130%	151%	175%	197%
HazMat Specialty Training - Firefighters (Annual)	100%	113%	130%	151%	175%	197%
HazMat Specialty Training - Battalion Chiefs (Annual)	100%	113%	130%	151%	175%	197%
Radiological Refresher Training - Battalion Chiefs (Annual)	100%	113%	130%	151%	175%	197%
Radiological Refresher Training - Fire Training Officer (Annual)	100%	113%	130%	151%	175%	197%
Radiological Refresher Training - Captain (Annual)	100%	113%	130%	151%	175%	197%
Radiological Refresher Training - Paramedic (Annual)	100%	113%	130%	151%	175%	197%
Radiological Refresher Training - Engineer (Annual)	100%	113%	130%	151%	175%	197%
Radiological Refresher Training - Firefighter (Annual)	100%	113%	130%	151%	175%	197%
Recruit Academy Training - Books	100%	113%	130%	151%	175%	197%
Recruit Academy Training - Turnouts	100%	113%	130%	151%	175%	197%
Recruit Academy Training - Supplies	100%	113%	130%	151%	175%	197%
Recruit Academy Training - Drill	100%	113%	130%	151%	175%	197%
Filed Costs	100%	113%	130%	151%	175%	197%
Recruit Academy Training - Books	100%	113%	130%	151%	175%	197%
Recruit Academy Training - Turnouts	100%	113%	130%	151%	175%	197%
Recruit Academy Training - Supplies	100%	113%	130%	151%	175%	197%
Recruit Academy Training - Drill	100%	113%	130%	151%	175%	197%
Filed Costs	100%	113%	130%	151%	175%	197%

	<b>Base Year</b>	<b>Year 5</b>	<b>Year 10</b>	<b>Year 15</b>	<b>Year 20</b>	<b>Year 24</b>
Radiation Training	100%	113%	130%	151%	175%	197%
Mass Evacuation Training	100%	113%	130%	151%	175%	197%
Suppression Planning (unspecified)	100%	113%	130%	151%	175%	197%
Training & Planning (unspecified)	100%	113%	130%	151%	175%	197%
One-time (Initial) Training Hours (Unspecified)	100%	113%	130%	151%	175%	197%
Recurring (Annual) Training (Hours) (Unspecified)	100%	113%	130%	151%	175%	197%
<b>Planning &amp; Administrative Costs</b>						
Development of Emergency Response Plan	100%	113%	130%	151%	175%	197%
Amendment of Emergency Response Plan	100%	113%	130%	151%	175%	197%
Public Information Program	100%	113%	130%	151%	175%	197%
<b>Support Personnel Vehicles</b>						
Flat-Bed Truck, Heavy Duty	100%	113%	130%	151%	175%	197%
Mechanic Truck	100%	113%	130%	151%	175%	197%
Bus	100%	113%	130%	151%	175%	197%
Van	100%	113%	130%	151%	175%	197%
Suburban	100%	113%	130%	151%	175%	197%
Sedan	100%	113%	130%	151%	175%	197%
Unit upgrades (Code 3, Equip, etc)	100%	113%	130%	151%	175%	197%
<b>Related Annual Fuel Costs</b>						
Engine	100%	113%	130%	151%	175%	197%
Truck	100%	113%	130%	151%	175%	197%
Rescue	100%	113%	130%	151%	175%	197%
Heavy Rescue	100%	113%	130%	151%	175%	197%
HazMat	100%	113%	130%	151%	175%	197%
Mobile Air	100%	113%	130%	151%	175%	197%
Suburban	100%	113%	130%	151%	175%	197%
Sedan	100%	113%	130%	151%	175%	197%
Mechanics Truck	100%	113%	130%	151%	175%	197%
Flat-Bed Truck	100%	113%	130%	151%	175%	197%
Bus (40 Passenger)	100%	113%	130%	151%	175%	197%
<b>Related SBCA Air Support Costs</b>						
Air Pack Backpacks	100%	113%	130%	151%	175%	197%
SCBA Bottles	100%	113%	130%	151%	175%	197%

	<b>Base Year</b>	<b>Year 5</b>	<b>Year 10</b>	<b>Year 15</b>	<b>Year 20</b>	<b>Year 24</b>
HazMat Air Pack Backpacks	100%	113%	130%	151%	175%	197%
One Hour SCBA Bottles	100%	113%	130%	151%	175%	197%
SCBA Air Mask	100%	113%	130%	151%	175%	197%
RIT Bags	100%	113%	130%	151%	175%	197%
S2 Rescue Regulator w/ Y Conn	100%	113%	130%	151%	175%	197%
Revitox Rescue Mask	100%	113%	130%	151%	175%	197%
SBCA Apparatus (unspecified)	100%	113%	130%	151%	175%	197%

## **POLICE**

### **Police Training Requiems**

Staff Salaries	100%	113%	130%	151%	175%	197%
Training Costs	100%	113%	130%	151%	175%	197%

### **Police Equipment Requirements**

Equipment Costs - Ion Chambers Survey Meter	100%	113%	130%	151%	175%	197%
Equipment Costs - General	100%	113%	130%	151%	175%	197%