Yucca Mountain's Bottom Line: The High Cost of Increased Public Safety Services

A.H. Mushkatel, Ph.D., S. Conway, Ph.D.
Urban Environmental Research LLC
10100 West Charleston Boulevard
Suite 200
Las Vegas, NV 89135, USA

I. Navis, AICP
Planning Manager
Clark County Nuclear Waste Division
Department of Comprehensive Planning
500 South Grand Central Parkway
Las Vegas, NV 89106, USA

ABSTRACT

This paper examines the projected fiscal impacts, from a 2005 study, to public safety agencies from the proposed high-level nuclear waste facility at Yucca Mountain, Nevada, as well as some of the potential uses of the information gained from these fiscal impact studies. The past and current efforts made by Clark County Nevada, to develop a fiscal model of impacts for public safety agencies are described in this paper. The efforts made by Clark County, Nevada, to develop a fiscal model of impacts for public safety agencies are also described. Some of the difficulties in constructing a fiscal model of impacts for the entire 24-year high-level nuclear waste transportation shipping campaign are identified, and a refined methodology is provided. A comparison of the fiscal impact projections for public safety agencies that Clark County developed in 2001, with those prepared in 2005 is provided and the fiscal impact cost projections for the entire 24 year transportation campaign are described. Finally, a description is provided of how information gained during the fiscal impact studies led to examining the importance of a regional emergency operations center (REOC) to Clark County in the event of a protracted emergency response. The study of the feasibility and support for an Emergency Response Center (EOC) are discussed.

INTRODUCTION

This paper reports on the 2005 public safety fiscal cost projections for Clark County and local governmental public safety agencies arising from the potential impacts of transporting high-level nuclear waste through Clark County to the Yucca Mountain Repository [1-8]. Specifically, the public safety fiscal cost projections of the planned

transportation of high-level radioactive waste (HLW) is provided for Clark County and the cities of Las Vegas, North Las Vegas, Henderson, and Mesquite. The importance of focusing on public safety agencies in this paper 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) 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 to radiological incidents.

In the 2001 reports projecting the fiscal costs on public safety agencies in each of the communities and Clark County were the subject of separate reports that examined the organizational structure of each entities public safety agencies, their current capacity, funding and the service standard they employed [2-7]. The studies were then integrated into a final report for Clark County [1] and were included as part of Clark County’s response to the DOE’s Draft Environmental Impact Statement for Yucca Mountain. This paper expands on these previous efforts to estimate the fiscal impacts on public safety agencies by providing fiscal cost projections for the public safety agencies in the communities listed above. The fiscal costs are projected over the 24-years of a transportation campaign. Additionally, the process of obtaining these fiscal cost projections resulted in the discovery of an important need beyond the scope of the fiscal cost projections. The identification of the need for a Regional Emergency Operations Center (REOC) grew out of these studies and resulted in additional research concerning the feasibility and importance of a REOC to a protracted response to an event involving, for example, high-level nuclear waste.

The fiscal impacts from transporting HLW on public safety agencies that are projected in this paper utilize a refined methodology employed in the 2001 studies, as well as the studies that were performed on Nevada state agencies from 1987 through 1998 [9,10].

This methodological 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 provided.

Importantly, what is being projected is not the total fiscal cost or the budget of Clark County or any local jurisdiction public safety agency. Rather, the projections reported are the result of focusing on the increment or any additional cost to these agencies that is directly attributable to the repository’s siting and the related HLW transportation shipping campaign. Hence, the cost estimates represent the fiscal impacts associated with public safety agencies needs to ensure public safety that are directly attributable to the transportation of HLW, and they would not be incurred by these governmental agencies in the absence of a repository or shipping campaign.

AN OVERVIEW OF FISCAL IMPACT ANALYSIS METHODS

Two types of fiscal impact analysis have dominated efforts to estimate the impacts of the growth of governmental services [11]. These same two types of fiscal impact analysis are used in the intergovernmental literature when attempting to estimate the costs of unfunded mandates [12]. 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 [13, 14]. The average costing approach focuses on population or employment multiplier after establishing an average cost per unit of service and then assesses the additional demand for that service resulting from a project. 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.

A 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 some are “lumpy” and may require new infrastructure to serve additional demand, which may have a considerably higher than average cost [11]. The series of 2001 studies examining the fiscal impact on public safety agencies in Clark County utilized a marginal costing technique based on 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 2001studies. 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 [13, 14].

A second assumption of the analysis is 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 represent the criteria by which local excess and deficient service levels will be measured. Finally, the last assumption is that local department heads and personnel are the individuals best suited and most knowledgeable about their agency’s service capacity and about the future service needs associated with new projects or mandates. In each community studied, the steps taken to implement the case study methodology in conjunction with the public service agencies are provided diagrammatically in Figure 1.

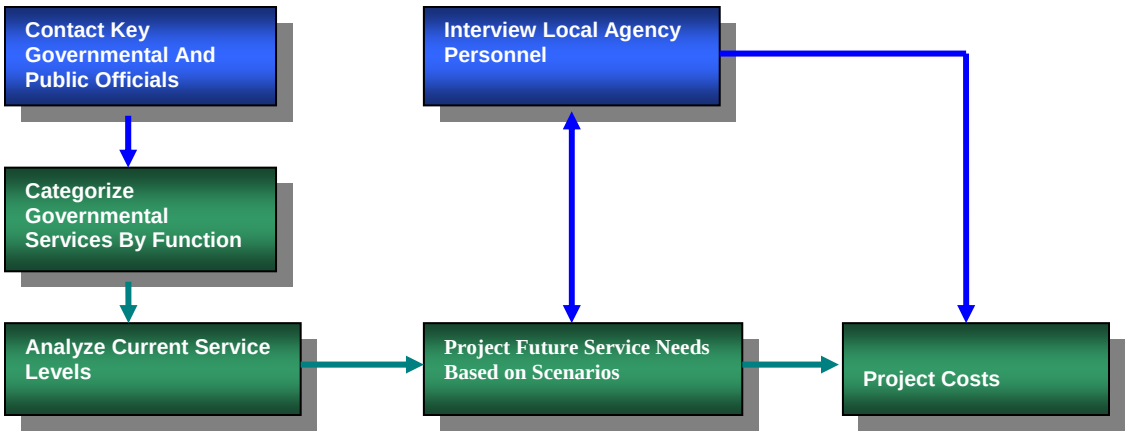

Figure 1 Methodological approach

The case study fiscal impact analysis method was used for projecting fiscal cost to public safety agencies for each of the governmental entities in this study. 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 deficient or excess 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 if deficient capacity already exists, then additional demand may have far greater impact than an average cost technique would project. In fiscal impact analysis, when a new development results in, for example a new fire station, or rescue station, the 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 relevant acts (NWPA, NWPAA) specify that the agent of these new costs be charged for the entire amount of the new capacity.

Figure 1 outlines the approach to projecting the fiscal impacts and it can be seen clearly that the process is iterative and non-linear. These steps require several contacts and interviews with agency personnel as the study progresses. Frequently, after an interview with agency personnel it is necessary to re-interview that individual for clarification or draw on their expertise to adequately project the impacts of the project. The interviews with the public safety agency personnel were not only very specific to obtaining information about the needs and costs of the agency associated with the scenarios, but also often entailed discussion of needs beyond the scope of their agency. It is in this context that the need for a REOC first materialized.

Often interviews with agency staff members results in being referred to another member of an agency’s personnel. In addition, in order to increase the comparability of the projections, interview schedules contained a basic set of questions that were developed and used for each informant interviewed. However as noted earlier, the scenarios used in this study differ substantially from those used in the 2001 studies.

Before reviewing these scenarios, an additional important observation needs to be made before concluding the discussion of the methodology. The methods utilized in this study are entirely consistent with those recommended and used by many communities participating in the Department of Homeland Security (DHS) Urban Areas Security Initiative Grant Program [16, 17]. Indeed, Clark County’s participation in the DHS Urban Area Security Initiative, and their development of an urban area strategy, included a comprehensive risk and threat assessment (comparable to our development of scenarios that are discussed below). In addition, a group of experts representing the public safety agencies was put together to assess resources needed to meet the risk and threats, as well as the cost of these needed training, equipment and personnel [18]. In short, the approach used to determine the cost of preparedness and prevention along with response and recovery for a CBRNE (Chemical, Biological, Radiological, Nuclear and Explosive) event used by Clark County and accepted by the DHS is entirely consistent with the approach we have utilized in this and similar studies projecting fiscal impacts on public safety agencies from the siting of a HLW Repository and transporting the waste to Yucca Mountain. These studies began in 1986.

THE 2005 STUDY SCENARIOS

In all of the public safety agencies examined in 2001, the current capacity was determined to be inadequate to respond to a major radiological incident or what was termed as a major reasonably foreseeable accident (MRFA). The three scenarios used in 2001 were based on the best available information at the time. The scenarios included information from both the DOE’s Draft Environmental Impact Statement for the first two scenarios, as well as information from the State of Nevada’s Nuclear Projects Office transportation expert for the third. The 2001 scenarios included a “benign” future shipping campaign beginning in 2007 entailing no accident of any kind. The second scenario used in 2001 involved an accident in which a cask containing HLW breaks free, but remains intact with no release of radiation. Finally, the third scenario entailed a serious accident in which radioactive waste materials are dispersed over a wide area. This third scenario became the MRFA for almost all of the public safety agencies involved in the 2001 series of community studies.

However, in February 2002 the DOE’s Office of Civilian Radioactive Waste Management released the Final Environmental Impact Statement for Yucca Mountain outlining what it believed was the worst accident case. In order to maintain as close a tie as possible to the DOE’s planning, this worst case was adopted into the current study as the MRFA. In past studies of the State of Nevada’s public safety agencies, two trends were noted. First, over time, as more information became available, agency personnel became far more confident in their estimates of how the Yucca Mountain project would affect their agency. Second, the scenarios that were used play an important part in their planning for the project and thus their fiscal projections [10]. Hence, the question of how the new scenarios with a change in the MRFA would affect the impact projections was an important consideration in planning this study. Eventually, it was decided that the importance of aligning the scenarios as closely with the DOE’s planning and analysis should be paramount in the fiscal impact analysis. In addition, it became clear that in addition to estimating the fiscal impact at one point in time (the estimated time shipping

would begin), it also would provide more insight in the actual projected fiscal impacts by attempting to project these costs throughout the entire 24-year shipping campaign.

The new materials were discussed with public safety personnel, along with the new MRFA (discussed below). The two scenarios contained a mostly rail shipments and a mostly truck shipments scenario (see Figure 2and 3) based on the DOE Final Environmental Impact Statement. The rail route map contained the 513 kilometer Calliente Corridor that DOE hopes will be constructed in order to by-pass the rail line through downtown Las Vegas (Figure 3). In both, the mostly rail and mostly truck, scenarios there are shipments that will pass through Clark County's urbanized population beginning in 2010. A summary of the key details of the mostly truck scenario includes:

SHIPMENTS PLANNED UNDER MOSTLY TRUCK SCENARIO

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

*THERE ARE **TWO PRINCIPAL** SHIPMENT ROUTES FOR THESE TRUCK SHIPMENTS*

For 45,919 of the legal-weight shipments:

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

For 6,867 of the legal-weight shipments:

- **I-15 entering Clark County from California at Primm to the**
- **Southern Beltway continuing on to**
- **U.S. 95 traversing the Las Vegas Pauite 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 Figure 2.

In addition, the mostly truck scenario contains 100-300 train shipments from INEEL in Idaho involving Multi Purpose Canisters that will be downloaded at an intermodal transfer facility, at or near Apex, onto heavy haul trucks. These trucks will be 200+ feet long vehicles and will be very slow moving. These vehicles will enter the I-15 at U.S. 93 or at State Route 604 (see Figure 2) to the Northern Beltway and traverse the Las Vegas Paiute Reservation.

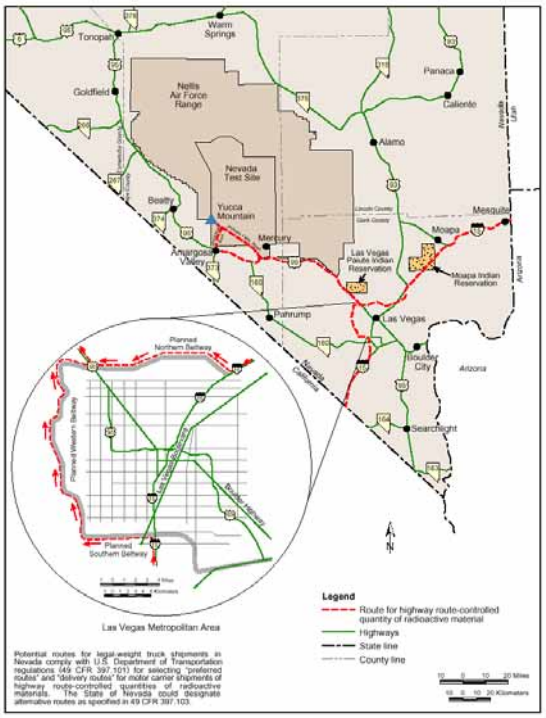

Figure 2 Potential truck routes

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 June 20th, 2005.

The major elements of the mostly rail shipments scenario includes:

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**

Principal Rail Shipment Routes

For the roughly 594 rail cask shipments:

- **Enter Clark County from CA. 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:

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

The map for the rail shipments is found in Figure 3.

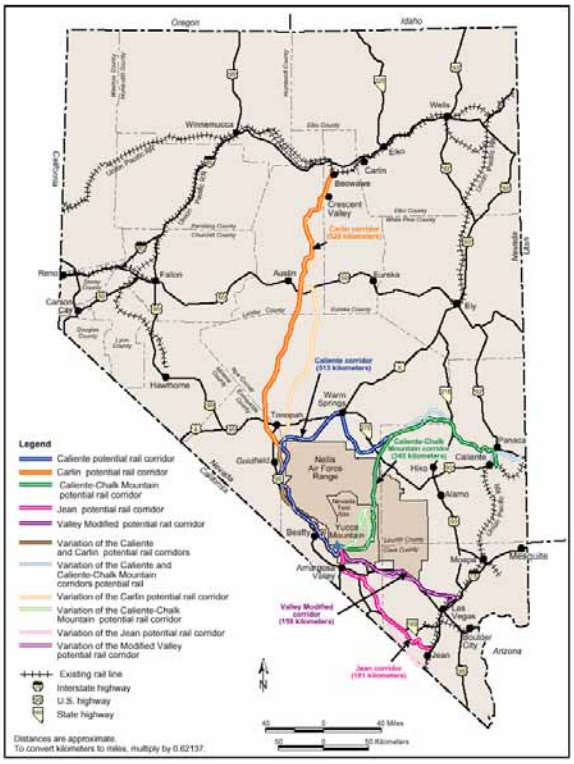

Figure 3 Potential rail routes

Source: Hinze, D. 2005. Potential Nevada Rail Routes Yucca Mountain http://www.landercountynwop.com/Maps/s-26.gif. retrieved June 20th, 2005.

In addition, the public safety personnel were provided with a discussion of the accident rates projected by both the DOE [19] as well as accident rates estimated by the transportation consultant to the Nevada Nuclear Projects Office. These estimates are provided in Table I. While accident rates are important, most of the public safety personnel in the study were focused on the MRFA [19].

Table I. Accident Estimates

Scenario	DOE Estimate	State Estimate Using DOE Data	State of NV Estimate
Mostly Truck	66 Truck	5-6 in NV	75 total
	0-1 Rail		
Mostly Rail	8 Rail	1 in NV	190 total and
	1 Truck		10-20 in NV
Most likely MRFA for both rail and truck is a long duration high-temperature fire that would engulf a cask (similar to the Baltimore Tunnel Fire). MRFA is most likely in a rural area.			

The most likely MRFA for both rail and truck, according to the DOE’s FEIS is a long duration high-temperature fire that would engulf a cask. While the DOE’s analysis suggests that such an MRFA is highly unlikely, it can not 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. It

created 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 what the “CCFD must be prepared to handle” in planning for their needs [20].

THE MODEL AND QUESTIONNAIRE

The development of a questionnaire that can be used in obtaining fiscal impact projections in the future was developed for the project. The questionnaire consists of items concerning future needs in personnel, capital equipment, training, as well as the entire range of needs identified by fire departments, police departments and emergency management agencies (the pull down questionnaire is available upon request). Once a box has been checked, the drop down populates the need area. For example, if an additional station is needed and the box checked, the drop down populates the station with personnel and equipment based on past experience and solicits from the respondent any additional needs and asks that specific items that might not be needed by the entity be identified. In this way, the per unit costs can be standardized across jurisdictions and any idiosyncratic needs identified. The questionnaire and accompanying per unit cost charts for fire, police and emergency management are available upon request and are currently being used in the 2007 update of the public safety agency and impact studies by Clark County.

In addition to the questionnaire development, a model was developed that captures all of the per unit cost for each item estimated by a public service agency. Using this model, agencies may alter their projections in a very simple fashion by using the questionnaire and the information being entered into the model.

THE FISCAL COST PROJECTIONS

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 HLW to the Repository beginning in 2010. These current projections, are put into 2010 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 HLW. 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 useable life of such equipment, the inflationary rise in cost, and build their repurchase into the estimates. Using Microsoft Excel, models were developed, with the assistance of Jeremy Aguero of Applied Analysis, of both useful life and inflationary costs were constructed for all of the items affected by these factors. The useful life schedule from the base year at specific intervals (year 5, 10, 15, 20 and 24) are available from the authors upon request as the space permitted do not allow for their attachment to this paper. In addition, it was necessary to develop cost inflation percentages projected for the same five points in time and over the 24 year shipping period. These schedules are also available from the authors.

The current fiscal impact projections are provided in FY 2010 dollars. However the model permits us to estimate these costs beginning at any point in time including the projected beginning of the shipping campaign 2010.The 2001 fiscal cost estimates were based on 2007 dollars. The current projections or the base case fiscal projections for Clark County and local jurisdictions are provided.

FIRE DEPARTMENT PROJECTIONS

Table II provides a summary of the various entities fire departments' current fiscal projections for the impacts. As can be seen from the table the current base case dollar estimates totals $331,038,970. In 2001, the fire departments estimated projections totaled $267,351,634. The 2005 estimate is $63,787,336 more than it was in 2001 or an increase of almost 27%. The increase is largely a function of the land cost for the Regional Training Center ($78 million) in the CCFD impact estimates. In short, the fiscal projections in the fire departments, using far more personnel in estimating impacts and with more current data concerning routes and the possible MRFA is converging.

Table III provides a summary of the 24-year fiscal cost projections based on the fire departments' estimates and it includes inflationary factors and useful life span of equipment and other capital expenditures. The table contains the first effort at projecting out the costs from the 24-year shipping campaign on any public safety agencies. As can be seen from Table III, for just these fire departments, a total of $3,053,423,989 is the projected fiscal impact on these fire departments. This $3+ billion represents projected costs that none of the departments would incur if not for the repository siting and the accompanying shipping campaign of HLW.

POLICE DEPARTMENT PROJECTIONS

Table II also serves as an example of what was done for each police agency in the 5 jurisdictions for the base case. The projected impacts in 2010 dollars total $31,610,989. The 2001 projection was $67,686,369. The reduction of $36+ million in projected impacts is largely the result of different working assumptions and the removal of additional substations. In addition, the issue of escorting shipments will need clarification for METRO to be more specific about some of its equipment and personnel needs. For example, the question of which agency METRO, the Nevada Highway Patrol or another police agency will have the responsibility of escorting truck shipments will have a major effect on some of the projections. Also in need of clarification, is whether the DOE uses the primarily rail or truck shipment scenario as mode of shipments will heavily affect the escorting vehicles required.

The base case and projected 24-year campaign figures for police departments are shown in Table III. The base case total for police departments is **$92,072,753**. The projected 24-year entire shipping campaign costs to police agencies participating in the study are projected to have fiscal impacts totaling **$516,592,217.** Of this total, $394,323,975 is projected just for METRO or about 76% of the total projected fiscal impacts on police departments during the 24-year shipping campaign.

EMERGENCY MANAGEMENT

Table II provides the base case estimates for the emergency management functions in the local jurisdictions and what were the first estimates of the cost of constructing and operating a REOC. The 2005 cost projections placed the REOC in the Emergency management function because of the coordinative function of such centers. However, the cost projections and the feasibility of such a facility were of a very tentative nature as reflected in both the estimated relatively small size of the facility, as well as its cost. The initial cost projections for such a REOC varied considerably among the jurisdictions, and the City of Las Vegas estimates are used here because of their relatively comprehensive nature. As can be seen from Table II, the estimate of the REOC is $15,472,500. The 2001 projections did not include such a facility.

The base case estimate for all jurisdictions is $17,760,364. This base case estimate includes the Regional EOC that was not included in the 2001 estimates. The other large increase from the 2001 estimates for emergency management is a result of the City of Las Vegas estimates which are better grounded now as they have an experienced emergency manager in place in 2005 which was not the case during the 2001 study. In addition, much of the newly estimated impact in the City of Las Vegas is directly attributable to the need for new radiation, response plans, as well as public information programs.

Table III also provides the 24-year projected fiscal impacts for the County and the local jurisdictions. As can be seen from the table, the total 24 projected cost for emergency management is $376,455,465. These projected costs are the direct result from the siting of a repository and the anticipated shipping campaign.

SUMMARY OF PROJECTED COSTS

Table II provides a summary of the 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 $331,038,969 of the total projected public safety cost estimated at $385,245,516. This total for fire represents almost 86 percent of the total projected base case cost.

Table II. Total Projected Costs for Clark County and Local Jurisdictions (Base Case 2010)

	Fire	Police *	Emergency Mgmt	Total Costs
CLARK COUNTY	$244,246,123	$31,610,989*	$15,472,500	$291,329,612
LAS VEGAS	$51,561,333	*	$1,878,000	$53,439,333
NORTH LAS VEGAS	$29,920,000	$711,022	$325,000	$30,956,022
HENDERSON	$159,764	$495,870	$74,864	$730,498
MESQUITE				
Total	$5,151,749	$3,628,302	$10,000	$8,790,051
COMBINED TOTALS	**$331,038,969**	**$36,446,183**	**$17,760,364**	**$385,245,516**

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

Table III provides the total projected 24-year cost for Clark County and the local communities by public safety function. Of the total projected $3,719,031,513, CCFD projections equal over $2 billion of this total. Fire Departments' total projected fiscal cost estimates total over $3 billion of the estimated $3.7 billion. Indeed, Clark County, including METRO account for over $2.5 billion of the more than $3.7 billion projected during the 24-year shipping campaign. These projected costs to public safety agencies resulting from the siting of the repository and 24-year anticipated shipping campaign represents the potential for significant unfunded mandates and the County and communities will need to continue to plan for their impact.

Table III. Public Safety Projected Fiscal Impacts for Clark County and Local Jurisdictions at 2010 and for 24-year Shipping Campaign

		2010 Base Case**	**24-year Totals**
Clark County	Fire	$244,246,123	$2,058,613,280
	Police*****	$31,610,989	$394,323,975
	Emergency Management	$15,472,500	$100,111,088
	Total	**$291,329,612**	**$2,553,048,343**
City of Las Vegas	Fire	$51,561,333	$526,590,127
	Police*****		
	Emergency Management	$1,878,000	$36,355,329
	Total	**$53,439,333**	**$562,945,456**
North Las Vegas	Fire	$29,920,000	$310,547,085
	Police	$711,022	$9,506,627
	Emergency Management	$325,000	$12,186,992
	Total	**$30,956,022**	**$332,240,705**
Henderson	Fire	$159,764	$6,243,993
	Police	$495,870	$14,960,709
	Emergency Management	$74,864	$664,309
	Total	**$730,498**	**$21,869,011**
Mesquite	Fire	$5,151,749	$151,079,502
	Police	$3,628,302	$97,800,906
	Emergency Management	$10,000	$47,590
	Total	**$8,790,051**	**$248,927,998**
Combined Total		**$385,245,516**	**$3,719,031,513**

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

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

THE REGIONAL EMERGENCY OPERATIONS CENTER STUDY

As the public safety fiscal cost projections study progressed, it became increasingly clear that a previously unidentified need had become of importance. Many of those interviewed during the fiscal impact study indicated that a REOC, other than the one in use in the Clark County Government Center, might be essential especially during a protracted event involving high-level nuclear waste. In the tables above, the estimate of a REOC that had been developed by the City of Las Vegas were included in the projected fiscal impacts under emergency management category for Clark County. During 2006, the Clark County Nuclear Waste Division and the office of Emergency Management along with the Nevada Department of Public Safety sponsored a study of the feasibility for Clark County and its jurisdictions to leverage and coordinate emergency response resources through the construction of a REOC. The study grew directly out of the fiscal cost or public safety study reported on above.

The REOC study first examined the research literature on the consolidation of City and County services within the context of emergency and public safety services. This literature review found mixed findings with little to suggest that a REOC would result in increased efficiency of economies of scale. However, there was widespread agreement that local capacity and coordination would be enhanced from the presence of a REOC. Interviews with public safety representatives from all of the local jurisdictions in Clark County is consistent with the literature reviewed in the report that found a good match among the cooperating jurisdictions was critical to improving local capacity through an REOC. The 911 Commission Report provided a context for the literature review carried out in the REOC Feasibility Study [22]. The Commission Report, after noting that even robust emergency response capabilities could be overwhelmed if an attack was large enough, went on to recommend that a regional focus with the emergency responder community should be developed to promote multi-jurisdictional mutual assistance compacts. Finally, the same 911 Commission Report noted that issues involving communications interoperability could be more readily addressed by a regional approach [22]. Hence, the REOC Feasibility study concluded that a REOC in Clark County might be a necessary but not sufficient condition for increased regional cooperation and collaboration.

The REOC Feasibility Study also examined the legislative and legal authority for establishing a REOC in Clark County, as well as comparing this framework for Nevada to those governing emergency management services in New York, California, Florida, Washington, and Illinois. Finally, the Feasibility Study explores the range of regional models that have been used in Clark County to provide services including the Southern Nevada Regional planning Coalition, Southern Nevada Health District, Regional Transportation Commission, Regional Flood Control District, and the Southern Nevada Water District. This portion of the feasibility study determined that a REOC was consistent with broader the authorities relating to the provision of regional services and that it appeared consistent with the spirit of the state’s emergency management policy. Perhaps as important is the finding that a REOC probably meets three criteria of political legitimacy. Namely, first that a REOC can be formed that represents those that are affected by it and charged with overseeing such a regional provider of service. Second,

that the service provided serves a bona fide purpose that is in the public interest. In this case, a REOC serves the citizens of southern Nevada by further enhancing emergency management and hence the safety of citizens in the event of a disaster. Third, it should enhance efficiency to be legitimate. As the feasibility study concludes on this point, there was found no instance where diseconomies of scale were suggested in this context or that services would not be provided at a lower cost. Thus, this section of the feasibility study determined a REOC was likely to be both consistent with the legal authorities of the state and politically legitimate as long as it received widespread support of those who are charged with overseeing the delivery of these emergency services.

The third portion of the feasibility study examined the results of a 60-question face-to-face open-ended survey that was conducted with senior emergency management personnel at six EOCs across the country, as well as with the Clark County office of Emergency Management. The purposes of the interviews were to provide information across a range of different emergency operation centers (EOCs) regarding their organization and function, construction, operations and maintenance and insight into how they provided for emergency response communication and security. By providing comparisons across the above noted characteristics, both limitations and innovations were noted. However, the study has not undertaken a cost benefit analysis or fiscal analysis as that is slated for a second phase of the study.

The fourth element of the feasibility study related directly to the issue of political legitimacy discussed above, as well as to the likelihood of increasing capacity also discussed earlier. In both cases, it was suggested that those that were charged with providing the emergency services had to support a REOC for it to be politically legitimate and to also likely result in greater capacity and effectiveness. The feasibility study undertook an additional survey of the membership of the Clark County Local Emergency Planning Committee (LEPC). It is the members of this LEPC that are the users of the current EOC facility, and will be those who make use of a REOC should it move forward. In short, their support is crucial to the feasibility of constructing a new REOC. Because the local jurisdictions’ public safety agencies are legally mandated to provide emergency services, and because these entities are the actual service providers, their responses to the brief 13 item survey were treated separately from the remaining membership of the LEPC.

The results of the survey indicate that only the Clark County Office of Emergency Management Manager believed the current EOC to be adequate and not supportive of a REOC in large part because he believed the current facility constituted a REOC and was far less costly than a new facility. The public safety agencies from the five local jurisdictions, along with the Metropolitan Police Department all supported a REOC and suggested the current facility was lacking in some major respect. Perhaps most importantly, these local jurisdictions and the METRO representatives felt that increased coordination be gained from a new REOC along with additional capacity especially communications capacity. In addition, the remaining LEPC membership that was surveyed also strongly supported the REOC with 93% expressing support (although only 14 of the 30 non-jurisdictional representatives chose to participate in the survey). Once

again, there was a belief that a new REOC would result in greater coordination and cooperation among the membership and enhance resource availability. Few members of the LEPC could identify any disadvantages to a new REOC that did not relate to political in-fighting. The LEPC membership including the jurisdictions believed such a facility needed to be inclusive of all those wishing to participate.

The study recommends an expanded and inclusive working group to study and address some of the issues identified in the report including how to leverage resource funding and determine which public safety functions should be combined with the new REOC. In addition, location criteria would need to be developed, a detailed cost estimate would be needed, a thorough legal assessment of how to create a regional agency for the REOC, and the development of a detailed funding plan. The feasibility study is a direct outgrowth of the public safety impact assessments and the methodology used in these studies. It was the public safety impact assessments associated with the development of the Yucca Mountain Repository, discussed above, that identified a key need, a REOC that contained the capacity to effectively handle a sustained high-level nuclear waste incident. This finding required Clark County to further investigate the cost of such a facility, as well as its feasibility. A working group is still examining the feasibility. Hence, one of the important outgrowths of the fiscal public safety impact assessments and the iterative methodology employed in these studies has been the identification of critical additional needs such as a REOC. Importantly, Clark County and the local jurisdictions are trying to move forward with their preparation and study of these impacts on their own

CONCLUSIONS AND NEXT STEPS

The projected public safety impacts resulting from the DOE’s proposal to ship high-level nuclear waste to Yucca Mountain will result in a significant fiscal burden to Clark County and local jurisdictions. While the Nuclear Waste Policy Act requires the DOE to assist affected units of local government with public safety related impact costs it is not likely that DOE will provide adequate compensation for these impacts. While DOE continues to move forward with transportation planning for the proposed rail corridor, the likelihood that they will be successful in implementing rail routes in the early stages of the proposed shipment campaign is questionable. Therefore, Clark County has continued to be prepared for highway shipments during the initial years of the proposed Yucca Mountain high-level nuclear waste shipment program. Furthermore, even if the DOE is eventually successful in implementing rail shipments along the Caliente rail corridor, Clark County will continue to be affected and be responsible for public safety impacts.

Thus, it is critical that Clark County continue to update their impact assessment costs on an annual basis and to continue to provide these costs to the DOE and other federal, state, and local decision makers. In addition, it is vital that Clark County continues to monitor the full range of potential public safety impacts to document Yucca Mountain related impacts for federal, state, and local decision makers. The methodology and projections presented in this paper provide the most recent efforts at utilizing a mature methodology to provide estimates of these potential impacts to public safety agencies. Finally, the utilization of this methodology continues to result in the identification of important public safety needs, like a REOC, that the County continues to examine.

REFERENCES

1. Urban Environmental Research, (2001a). *Impacts to Clark County and Local Governmental Public Safety Agencies Resulting from the Yucca Mountain Project,* (Report). Las Vegas, Nevada: Nuclear Waste Division, Clark County Department of Comprehensive Planning.
2. Urban Environmental Research, (2001b). *Impacts to Clark County Public Safety Agencies Resulting from the Yucca Mountain Project*, (Report). Las Vegas, Nevada: Nuclear Waste Division, Clark County Department of Comprehensive Planning.
3. Urban Environmental Research, (2001c). *City of Las Vegas Governmental and Fiscal Impact Report.* Las Vegas, Nevada: Nuclear Waste Division, Clark County, Department of Comprehensive Planning.
4. Urban Environmental Research, (2001d). *City of North Las Vegas Governmental and Fiscal Impact Report.* Las Vegas, Nevada: Nuclear Waste Division, Clark County Department of Comprehensive Planning.
5. Urban Environmental Research, (2001e). *City of Henderson Governmental and Fiscal Impact Report.* Las Vegas, Nevada: Nuclear Waste Division, Clark County Department of Comprehensive Planning.
6. Urban Environmental Research, (2001f). *Boulder City Governmental and Fiscal Impact Report.* Las Vegas, Nevada: Nuclear Waste Division, Clark County Department of Comprehensive Planning.
7. Urban Environmental Research, (2001g). *Moapa Band of Pauite Indians Governmental and Fiscal Impact Report.* Las Vegas, Nevada: Nuclear Waste Division, Clark County Department of Comprehensive Planning.
8. Clark County, Nevada, (2002) *Yucca Mountain Impact Assessment Report.* Las Vegas, Nevada: Nuclear Waste Division, Clark County Department of Comprehensive Planning.
9. Mushkatel, Alvin (June 1988). Nevada Division of Emergency Management,@ Phase IIIA, Yucca Mountain Socioeconomic Project Task 4.1, *Nuclear Waste Policy Act and Federal Mandate Demands and State Costs.* Nevada Nuclear Waste Project Office, Carson City, Nevada. Updated May 1989 and June 1992.
10.Planning Information Corporation and Alvin Mushkatel, (1998). *The Fiscal Effects of Proposed Transportation of Spent Nuclear Fuel on Nevada State Agencies: The Department of Transportation, The Nevada Highway Patrol, The Division of Emergency Management and the Public Service Commission.* Nevada Nuclear Waste Project Office, Carson City, Nevada.
11. Ohm, Brian, (2005). *Guide to Community Planning in Wisconsin.* At 1http://www.lic.wisc.edu/shaping dane/resources/planning/library/book/chapter04_4.htm.
12. Mushkatel, A. and D. Pijawka (1995). The Impact of the Nuclear Waste Policy Act on Nevada State Government: The Costs of Mandates and Preemption. *State of Nevada Socioeconomic Studies Biannual Report, 1993& 1995.* Carson City, Nevada: Nevada Agency for Nuclear Projects/Nuclear Waste Project Office.
13. Burchell, R. and D. Listokin, (1980). *The Fiscal Impact Guidebook: A Practioneer's Guide*. U.S. Department of Housing and Urban Development. Washington, DC: U.S. Government Printing Office
14. Burchell, R., Listokin, D. with R. Lake, F. James Jr., W. P. Beaton, and N. Edelstein, (1990). *The Fiscal Impact Guidebook: Estimating Local Costs and Revenues of land*

Development. U.S. Department of Housing and Urban Development, Washington, DC: U.S. Government Printing Office.
15. Clark County Fire Department, (2002a). *Standards of Coverage.* Las Vegas, Nevada: Clark County Fire Department.
16. U.S. Department of Homeland Security. Office of Domestic Preparedness. (2003). Urban Areas Security Initiative Grant Program Fiscal Year 2003. Program Guidelines and Application Kit. At http://www.ojp.usdoj.gov/odp/.
17. U.S. Department of Homeland Security Office of Domestic Preparedness. (2004). Urban Areas Security Initiative Grant Program Fiscal Year 2004. Program Guidelines and Application Kit. At http://www.ojp.usdoj.gov/odp/.
18. Office of Emergency Management (2003). Urban Area Security Initiative Strategy. Clark County, Nevada.
19. U.S Department of Energy, Office of Civilian Radioactive Waste Management. (2002). Final Environmental Impact Statement for a Geologic Repository for the Disposal of Spent Nuclear Fuel and High-Level Radioactive Waste at Yucca Mountain, Nye County, Nevada.
20. Geldbach-Hall, Gina, (2005 May). *Clark County Fire Department: Preparing for Nuclear Waste Transportation within Southern Nevada to the Yucca Mountain Repository.* Research Project submitted to the Clark County Fire Department as part of the Yucca Mountain Project Initiative. Mimeo, pp:1-69.
21. Clark County Fire Department, (2002b). *Commission on Fire Accreditation International: Self Assessment Document.*
22. 911 Commission Report: Final Report of the National Commission on Terrorist Attacks upon the United States of America. Official Government Edition. At http://a257.g.akamaitech.net/7/257/2422/22jul20041140/www.gpoaccess.gov/911/pdf/fullreport.pdf. pp. 397