

**APPENDIX VI**

**ADDENDUM TO THE REPORT ON THE FISCAL EFFECTS  
OF PROPOSED TRANSPORTATION OF SPENT NUCLEAR FUEL  
ON NEVADA STATE AGENCIES**



**ADDENDUM TO THE REPORT ON FISCAL IMPACTS OF THE PROPOSED  
TRANSPORTATION OF SPENT NUCLEAR FUEL TO A YUCCA MOUNTAIN  
REPOSITORY ON STATE OF NEVADA AGENCIES:  
INTEGRATED PROJECTIONS FOR STATE AND  
CLARK COUNTY PUBLIC SAFETY ENTITIES**

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## 1. Introduction

Beginning in 1987, the State of Nevada through the Agency for Nuclear Projects funded a series of studies designed to project the fiscal impacts on Nevada State agencies from the siting of the high-level nuclear waste (HLW) repository at Yucca Mountain. While the studies employed a combination of methods, the basic methodology for these studies included a mandate driven approach that utilized scenarios in order to project impacts and their fiscal costs to state agencies (Mushkatel and Pijawka, 1995). This method was combined with the more traditional fiscal impact analysis used by municipalities in forecasting the public costs resulting from increased demands caused by growth. Fiscal impact analysis, as discussed in the earlier Task 3 report, also is used to estimate the public costs from a particular or group of private projects of significant size to determine fiscal impacts so communities may levy concomitant impact fees (Advisory Commission on Intergovernmental Relations, 1992; Ross and Thorpe, 2000; Urban Environmental Research, 2001a). The basic approach is a marginal costing case study approach to estimating fiscal impacts.

All of the mandate driven fiscal cost projection studies that have examined Nevada State agencies have utilized the same methodological approach. This same methodological approach also has been utilized in studies performed for the Clark County Nuclear Waste Division. These Clark County funded studies over the past two years have projected fiscal impacts on the County public safety agencies, as well as for many of the local community public safety agencies. The entities in Clark County for which public safety impacts and fiscal costs were projected include not only the County, but also the City of Las Vegas, Boulder City, Henderson, North Las Vegas, Mesquite and the Moapa Band of Pauties.

The purpose of this addendum is neither to review the methodology, nor all of the findings from these many mandate fiscal cost projection studies. Rather, it is to summarize: 1.) cost projections for all of the State agencies that have been studied, 2.) cost projections for the Clark County public safety agencies, and 3.) provide an integrated cost projection for all of these studies. In order to accomplish these three purposes several explanatory and cautionary notes need to be discussed.

## 2. Explanatory Discussion

Several explanatory points must be understood to better interpret and understand the cost projections provided below. First, all of the fiscal impact studies reported on do not attempt to project the total costs to State agencies or to local public safety agencies from the Department of Energy's (DOE) shipping of HLW. Rather, only the incremental or additional cost to governmental entities that would be directly attributable to the siting at Yucca Mountain and subsequent shipping campaign are projected. These fiscal cost projections are driven by the mandates associated with the Nuclear Waste Policy Act, the Nuclear Waste Policy Act Amendments, other federal acts requiring the State of Nevada to take various actions, or because a State agency mission requires an agency to act in order to ensure the health, safety and welfare of Nevada residents (For a more complete discussion of this point and the methodology, see for example: Lovell and Tobin, 1981; Hanus, 1983; Mountain West Research, 1989; Fabricus, 1991; Mushkatel and Pijawka, 1995; Planning Information Corporation and Mushkatel, 1998; Burchell and Listokin, 1989; Ross and Thorpe, 2000; Urban Environmental Research, 2001a,b,c). In each study individuals were interviewed who were knowledgeable about agency mission and operations. Often these individuals were familiar with fiscal impact analysis, and they were provided a scenario(s) and then were asked questions concerning their agency's specific responses to the scenario described. In each case and across all studies agency personnel were asked to provide details about the agency's operations, personnel needed to perform various necessary functions, equipment and facility needs/capital costs, and any training. While some of the studies used more categories and other collapsed the cost categories differently, usually at least personnel, equipment/capital costs, and training costs can be identified. For some agencies, infrastructure costs are paramount and these costs in Table 1 have been collapsed into equipment/capital costs.

The second explanatory point entails a note of caution. The studies reported in this addendum were often completed at different times, and the scenarios that were utilized in the research sometimes were different. For example, the first studies of the mandate driven fiscal costs at the State level completed in 1987 – 1992 were based largely what was referred to as the

“DOE benign scenario” (Mountain West Research 1989; Mushkatel, 1988; Mushkatel and Atkinson, 1987). The benign scenario that was used is similar to the “benign scenario” used in the Clark County public safety studies of 2000 and 2001 that are based on the DOE’s Draft Environmental Impact Statement (DOE, 1999). Yet, they are not identical because by 1999 various activities resulted in better estimates of the potential number of truck shipments of waste that would enter Nevada based on assumptions concerning modal mix and the size of the trucks and casks. In addition, the 1998 study by Planning Information Corporation (PIC) and Mushkatel reflecting the Congressional debate over Senate Bill 104 and House Bill 1270 in the 105<sup>th</sup> Congress, projected fiscal effects on four State agencies/entities using a scenario based on interim storage at the Nevada Test Site. The base case scenario for transportation did differ from the earlier studies (number of heavy haul and truck shipments), and also differed from the later transportation shipment projections used in the Clark County public safety study and the most recent State agency study.

These differences in scenarios are sometimes very slight, as in the case of the early rounds of State agency studies, and in the first of the three scenarios used in the Clark County public safety research. For example, the nature of the waste remains constant, and the number of shipments to the State in the scenarios are usually are very close. The constant in the scenarios (except for two of the three Clark County scenarios) is the description of the DOE shipping campaign. That is, while the number of shipments projected display minor variations, and one study contains an interim storage shipment scenario as opposed to a Yucca Mountain scenario, none of these scenarios contain any major shipping incident or an accident involving release of radioactive material (except for two of the Clark County scenarios). Hence, care will be taken to inform the reader concerning these differences in scenarios when providing integrated cost projections.

Another cautionary note is that the fiscal cost projections were completed at different points in time. There are 14 years separating the earliest projections for some State agencies and those for Clark County public safety entities that were projected in 2001. When cost projections are provided, they will be transformed into 2007 dollars (the proposed beginning of the HLW shipments used most frequently) when ever feasible. The assumptions underlying these

transformations will be explicitly provided as capital costs, equipment and personnel costs have different annual increases associated with them.

A final challenge to obtaining an integrated fiscal cost projection from these studies of mandate driven impacts is that during one of the major series of studies projecting impacts the dollar cost estimates were not obtained. Instead, different types of impacts were identified for each State agency examined, and the extent of the likely impact was noted. For the State agencies included in these studies, no dollar projections of fiscal effects can be provided unless later studies were conducted on the agencies. Where appropriate, State agencies will be identified that have no fiscal cost projections available but only have some projection of the degree of the impact on the agency from the siting of the HLW repository. With these explanatory and cautionary notes in mind, we can now turn to the actual fiscal impact projections.

### **3. State Agency Fiscal Cost Projections**

#### **3.1 The 2001 Agency Cost Projections**

The array of State agency cost projections will begin with the most recent studies and work back in time toward the first mandate fiscal cost projections. The 2001 study examined the Bureau of Federal Facilities (BFF) located in the Division of Environmental Protection is a part of the Nevada the Department of Conservation and Natural Resources, and the Radiological Health Section (RH) within the Bureau of Health protection Services located in the Nevada State Health Division within the Nevada Department of Human Resources. The scenario used for these projections was the “benign scenario” also used in the Clark County public safety projections that contained no incident (see appendix A). The fiscal cost projections beginning in 2007 are provided in Table 1.

The Division of Environmental Protection (DEP) within which the BFF is housed is responsible for statewide regulatory programs and for the “protection of the health and welfare and environment of the public”. Programmatically, the DEP is responsible for air quality, water

quality, hazardous and solid waste, mining reclamation, highly hazardous chemicals and alternative fuels, and federal facilities and waste management. The Nevada Health Division is designated as the State radiation control agency authorized to take all actions necessary or appropriate to protect the public's health and safety from this hazard. The RH is required (mandated) to develop and implement programs for the evaluation and response to hazards associated with the use of sources of ionizing radiation (e.g. machine-made radiation such as X-rays, airport scanners etc.). Under NRS 459 the NHD is designated as the State radiation control agency and is responsible to respond in the State to any radiological emergency, non-emergency or incident. The RH section within the Bureau of Health protection is the lead technical entity providing technical assistance to local governments, counties, federal and other state agencies responding to or planning for an event. Because Nevada is an *agreement state* it has exclusive jurisdiction over use of radioactive materials in the State *not under exclusive federal jurisdiction*.

The rates for inflation used to compute both the cost at the year 2007, and to compute the cost over the 30 year cycle of operation for the project is 3% per annum for personnel, and 5% per annum for equipment and training. These figures are consistent with what is used by both the State and Clark County in making their own projections. Using the most conservative assumptions for these two State entities, for example the BFF uses the Agreement in Principle between the State and DOE used to oversee DOE/NV operations as a model, still results in costs in excess of \$2.1 million for the BFF, and \$1.1 million for RH. These costs are projected to be **ANNUAL** fiscal impacts on these two State entities. If these annual costs are projected out over the thirty-year operating cycle of the repository they result in a total costs of \$156+million for the two State agencies. The BFF incurs most of its costs from monitoring activities of wells and environmental conditions on and off-site, as well as coordinating the State environmental permit process. The RH's projected costs result in large part from the new personnel needed to monitor the HLW shipments at Ports of Entry. The detailed agency needs resulting in these projections can be found in the main body of the Task 3 Report that this Addendum augments.

In addition to these state agencies' fiscal impacts computed in 2001, an additional set of impacts were projected for several State level activities. These impacts were not broken down as finely as the others just reported on and often do not fit neatly into the categories of

equipment/capital costs, training and personnel. Interviews with the Nevada Agency for Nuclear Projects personnel resulted in a set of projections for this agency and some of the activities that the state must implement. For the expansion of continuing technical and regulatory oversight efforts the Office of the Governor's Agency for Nuclear Projects would need \$10 million a year beginning in 2007. When these 2001 dollars are converted at a 3% rate of inflation per annum into 2007 dollars the total for this activity is \$13,145,700 (see Table 1). These monies are necessary for the Agency to continue to carry-out its mandated responsibilities of overseeing any siting and operation of a high-level nuclear waste repository.

In addition, two critical health effects monitoring studies will be need to be carried out to make certain adequate monitoring of the health impacts on Nevada citizens is overseen. While the State agency location is unclear for these oversight activities, for now they have been placed within the Nevada Agency for Nuclear Projects. As can be seen from Table 1, the Clark County health effects monitoring program has both start-up costs and annual costs. By year 2006, the developmental and start-up costs are estimated to have been \$2,957,782, and annual costs also beginning in 2006 are projected to be \$725,565 for personnel and equipment (Interview Joe Strolin, NV Agency for Nuclear Projects). The rural health monitoring studies are also placed under the Nevada Agency for Nuclear Projects and as is noted in Table 1 it will cover 15 Nevada rural counties. The start-up costs for this study are estimated to be \$1,971,855 in 2006 dollars. In addition, annual implementation of the studies will cost an additional \$938,978. Finally, it is projected that the statewide integration and administration of these rural studies will cost \$250,394 annually beginning in 2006 (Interview, Joe Strolin, NV Agency for Nuclear Projects).

### 3.2 The 1998 State Agency Fiscal Cost Projections

The 1998 examination of four State entities by Planning Information Corporation (PIC) and Mushkatel examined four State entities:

1. Nevada Department of Transportation,
2. Nevada Highway Patrol,
3. Division of Emergency management, and
4. Public Service Commission.

This study used the base case scenario involving Interim Storage that was being proposed in two Congressional Bills at the time of the study. This fiscal impact study contained a detailed transportation base case scenario that assumed shipments of waste from 80 reactor and defense sites would enter Nevada either through highway shipments (including heavy haul shipments of rail casks) would be required to use interstate highways (unless the State designated alternative routes), and rail shipments would use Class A railroads (PIC and Mushkatel, 1998; PIC, 1996). The base case scenario further projected that the number of truck shipments that the State would receive in the first year was 2600 (an average of 50 per week), and 64 rail shipment (an average of 1.2 per week). Projections of the number and mix of shipments, and fiscal impacts and costs to the four Nevada agencies were done for each of the first three years of the proposed interim storage shipping campaign.

The NDOT supervises or conducts the planning, financing, construction, maintenance and analysis of major highway systems in the State. It is responsible for the design, construction and maintenance of roadways; and the permitting of oversize and overweight vehicles.

To be consistent with the other projections of fiscal impacts being presented here, only the first year cost projections are noted for these agencies in Table 1. The fiscal cost projections have been increased to reflect a start date of 2007 rather than the originally contemplated 1999 (although the figures used to be conservative have been brought forward from 2002). The first agency from the 1998 study listed in Table 1 is the Nevada Department of Transportation (NDOT). Two major cost drivers contribute to the projected fiscal costs to this agency. First, a number of costly infrastructure improvements to the State highways. These include for example: construction of climbing lanes on US 93 between Caliente and Crystal Springs; development of a bypass to the Spaghetti Bowl interchange at I-15 and US 95 in Las Vegas (due to geometric considerations at the exchange); construction of turnout areas at least every 25 miles on US 93 from Crystal Springs to the I-15 interchange allowing backed-up traffic to pass slow moving heavy haul trucks on this two-lane highway; and improvements for the interchange at US 93 and I-15 allowing heavy haul trucks to negotiate the entrance onto I-15 southbound (for loaded shipments) and onto US 93 northbound (for return trips) (PIC and Mushkatel 1998). The cost of

this infrastructure development to prepare the State for the shipments and meet current State and Federal requirements is estimated at \$500,302,372 (allowing for a 5% increase per year from 2002 to 2007).

The second major cost driver for NDOT's fiscal projections entails the construction of Ports of Entry (POE). While the Nevada Highway Patrol within the Department of Public Safety and Motor Vehicles would have primary responsibility for staffing, operating and maintaining the Ports, NDOT would be responsible for their construction. The 1998 study utilized data from California for the construction of a four-bay POE that was to open in 2001, and estimated the cost of each POE at \$13.8 million in 2002 dollars or \$35,225,371 million in 2007 dollars for two facilities at Nevada's southern and eastern ports of entry. In Table 1 both the POEs and the highway infrastructure costs are placed under the Equipment/capital costs category. Two additional personnel will be needed to manage increased contractor activities and planning, but it is assumed that the State would execute a contract for management of all construction work, and day-to-day oversight. The cost of these personnel (beginning in 2007 but actually hired prior to this) is \$156,273. The total fiscal cost projected to NDOT as a result of this base case scenario just until 2007 and without annual reoccurring expenses is \$535,689,759.

The Nevada Highway Patrol (NHP) is a division within the Department of Motor Vehicles and Public Safety. NHP is responsible for policing public highways, enforcing Nevada's traffic laws and investigating highway accidents. This Division has responsibility for enforcing laws related to the transportation of radioactive materials and other hazardous waste. With regard to the transportation of HLW in Nevada, the NHP duties would relate to the establishment and maintenance of POE, hiring, equipping and training personnel to staff the Ports Of Entry (POE) (the exception to this is for radiological personnel that would fall under the jurisdiction of the RH), escorts for shipments in the State, emergency communication (a responsibility shared with NDOT), and emergency response to accidents involving shipments on state highways.

**Table 1 The 2001 and 1998 State Fiscal Cost Projections**

Agency	Personnel	Training	Equip./Capital Costs	Purpose/Impact
DEP (Bureau Fed. Facilities) (2001 study)	\$1,677,643		\$505,566	Annual cost beginning 2007-monitoring site-AIP is Model \$103 million over 30 years
NHD (Radiological Health Section) (2001)	1,051,439		71,829	Annual Cost beginning 2007-Monitor POE-total has \$15,545 of miscellaneous-\$53 million over 30 years
Agency for Nuclear Projects (2001)			13,145,700	Continuing technical and regulatory oversight-per annum cost computed at 3% increases from 2001
			2,957,782	Urban Health Effects Monitoring-Clark County-start-up and development costs
	591,556		134,009	Annual costs of the Clark County health effects monitoring beginning 2006
			1,971,855	Rural Health Effects monitoring for 15 counties @100,000 per community start-up
			938,978	Annual cost or rural health effects monitoring studies beginning 2006
	125,197		250,394	State-wide integration & administration for rural monitoring programs-startup and annual cost of \$250,394 beginning 2006
NDOT (1998)	156,273		500,302,372	Highway infrastructure upgrades
			35,225,371	Construction of 2 Ports of Entry
			5,743	Equipment for additional personnel
NHP (1998)	3,166,389	2,164,473	2,053,095	Escorts for shipments and POS personnel
			1,818,538	Annual operating expenses-reoccurring
NHP and/or NDOT	152,118		30,224,698	Emergency Communications System including annual operations costs
NDEM (1998)	501,821	1,619,984	36,298,679	Radiological detection equipment
			522,730	HAZ/MAT vans &equipment
			247,550	Space and operations
PSC (1998)	72,248			One additional rail inspector
Education (1988)			1,727,675	Not all equipment-some ED driven costs
Human Resrcs (1988)			11,920,958	Not all equipment-some ED driven costs
Emplymt Secur. (1988)			1,727,675	Not all equipment-some ED driven costs
Taxation (1988)			3,714,501	Additional programs and personnel

All of the studies of this Division have resulted in the finding that they will insist upon escorts for the truck shipments for both heavy haul vehicles should they be permitted, as well as legal weight shipments. They will require sworn Nevada NHP officers accompany each shipment. In addition, NHP will man the two POE. Table 1 provides the breakdown of the projected fiscal costs for carrying out these duties. The NHP fiscal cost projection totals \$9,202,495. Importantly, most of these projected fiscal impacts will require **annual expenditures** by the State as they are not one-time impacts but reoccurring. In addition, Table 1 arrays the fiscal costs for an emergency communications system that will either be the responsibility of NHP, NDOT or both as it was not clear when the 1998 report was completed as to which agency would have responsibility for it. The two agencies in 1998 had differing perspectives on how best to meet emergency communication needs, but both of their estimates were similar. The NHP estimate for providing an emergency communication system capable of integrating a large number of agencies communication systems and allowing for a fully coordinated response to incidents in both rural and urban areas is for \$30,224,698. The majority of this cost is for equipment including microwave antennas.

The Nevada Division of Emergency Management (DEM) is the State coordinating agency for all emergency services, with responsibility for disaster preparedness, response, recovery and mitigation. Any successful siting of a high-level nuclear waste repository in Nevada results in a long list of responsibilities for DEM. A cursory list includes: modification of emergency plans and coordination should safe parking areas be permitted during bad weather, development of mutual aid agreements, coordination of communication needs and systems, recommendations of procedures for inspections to NHP and NDOT, update of all plans and coordination of a State Radiological Transportation Plan, training exercises, evaluation of the State response and preparedness programs, etc. Should an emergency incident occur as posited in the second and third scenarios used for Clark County, this State agency would have responsibility for coordination of the application of state and federal resources.

The major fiscal impact to the DEM is for radiological detection equipment and its calibration (\$36,298,679). The estimate includes ion chamber survey meters for law enforcement responders, and a variety of other radiation detection equipment (PIC and Mushkatel, 1998:31).

Training costs for this agency are over \$1.6 million dollars as they deliver first responder awareness training to State public safety personnel. The direct personnel cost to this agency is projected to be \$501,821, and much of this fiscal impact will be reoccurring. The total projected fiscal impact to the DEM to just be prepared for the beginning of a shipping campaign in the year 2007 is estimated to be \$38,420,484.

The Nevada Public Service Commission (PSC) has responsibility for regulating public utilities in the State. In the 1997 General Assembly, PSC's responsibilities were reassigned to two agencies: the Public Utilities commission and the public transportation Commission. It is unclear just how much responsibility the PSC would have if shipments of high-level nuclear waste because of the 1997 reorganization and more recent reallocations of responsibilities for rail shipment inspections with the Nevada Department of Motor Vehicles and Public Safety. The 1998 study did not project any administrative, planning, training or operational costs, but it did project the fiscal cost of one additional rail inspector. The pay for a rail inspector as of 2002 was \$62,500 (estimate), or with a 3% inflation factor \$78,248 in 2007.

### 3.2 The Impacted State Agencies From 1987 Through 1994: No Cost Projections

The mandate driven fiscal impact studies from 1987 through 1994 were carried out in three distinct investigations that culminated in a report in 1995 that simply identified State agencies that already had or would likely be impacted by a repository siting (Mushkatel and Pijawka, 1995). This 1995 summary deviated substantially from previous and future efforts in that it attempted to project the likely types of mandate impacts that would affect State agencies rather than actually projecting dollar impacts. The previous studies, as well as those that followed all attempted to project dollar impacts from a siting. Yet, the 1995 summary report is helpful in that it allows us to better understand just how many State agencies are likely to be affected, in what manner, and for what a small number of agencies that we actually have dollar estimates.

The three distinct investigations during this period were organized as follows:

1. the 1987 study designed to identify those agencies already impacted, had undertaken some planning, responded to DOE plans. This study used intensive face-to-face interviewing and did make dollar estimates for impacts already sustained, and provided estimates of costs to the agency if the siting were to be completed. Finally, in the for the first and only time State agency impacts were also traced down to local governments as they worked their way through the system.
2. the 1988-1989 study extended the earlier 1987 study by including a number of additional agencies in the investigation, as well as updating information for the agencies studied in 1987. The same methodology was used entailing case studies and marginal cost analysis using intensive interviews.
3. the 1994 round of agency studies that once again updated the cost projections for selected agencies thought to be critical in any State efforts at preparedness. In addition, for the only time actual dollar projections were not obtained for the impacts to State agencies. Instead the likely impacts to State agencies were categorized.

These series of studies identified over thirty State agencies where impacts were likely from the siting. The 1994 study divided these types of impacts into categories reflecting the different types of activities that they required State agencies to engage in that were associated with different types of costs (Lovell and Tobin, 1981). These categories included: 1). programmatic costs or those associated with what activity had to be or should be undertaken, 2). procedural costs involving requirements as to *how* something should be done. Procedural costs can further be divided into costs associated with reporting, performance, fiscal, personnel, planning and evaluation, and record keeping. Table 2 contains the projected types of costs by State agency that resulted from the 1994 study. The procedural record keeping type of cost and reporting cost have been dropped from the table because of at the time of the studies the infrequency it was identified as an impact. Table 2 containing these different types of costs and the agencies that would incur them has been slightly modified from the original table results, and some caution in its interpretation is necessary.

First, some of the agencies and/or their administrative divisions and bureaus have obviously changed since the study was completed in 1994. Hence, some agencies functions and missions may no longer be accurately reflected in the table. Second, some of the agencies listed in the table were studied again as part of the 1998 or 2001 studies. These newer studies better reflect the potential impacts from a repository siting on these agencies. Finally, there are 33 agencies, bureaus, sections, and commissions that are listed in Table 2. Yet, even this does not reflect the entire scope of the State agency impacts that should be expected. For example, some additional 4-5 agencies were examined in 1994, but no impacts were discovered. Whether this lack of impact to these agencies is still the case can not be determined as data is lacking. In addition, some impacts not listed in Table 2 were discovered later for such agencies as the Division of Emergency Management and for the Bureau of Federal Facilities. What is clear from the table is that the number of agencies that are projected to be impacted by the siting is very large indeed. While the planning and evaluation impact is most often projected, personnel and fiscal impacts are also quite prevalent. The nature and scope of these impacts are consistent through all of the studies.

**Table 2 The Affected State Agencies by Type of Impact**

Agency	Programmatic	Fiscal	Personnel	Planning/Eval
I. Department of Transportation	I	I	I	I
II. Conservation & Natural Resources				
Division of Environmental Protection	I	I	I	I
Division of Forestry		I	I	I
Agency for Nuclear Projects (reorganized into Governor's Office)	I	I	I	I
Division of Water Resources etc.		I	I	I
Bureau Federal Facilities				I
Bureau Waste Management				
Bureau of Air Quality		I	I	I
III. Department of Library Museum etc.				I
IV. Department of Motor Vehicles and Public Safety				
Division of Emergency Management	I		I	I
Highway Patrol Division	I	I	I	I
Data Processing	?	I	I	I
Registration Division/Motor Carrier	I	I	I	I
State Emergency Response Commission		I	I	I
State Fire Marshal		I	I	I

V. Department of Human Resources				
Radiological Health Section	I	I	I	I
Division Mental Hygiene and Mental Retardation			I	I
VI. Department of Business and Industry—Division of Minerals				P
VII. Nevada Energy Office				?
VIII. Division of Industrial Relations: Occupational Health & Safety Section			?	I
IX. Mine Safety & Training Section				I
X. Division of Agriculture				I
XI. Department of Taxation		I	I	I
XII. Public Service Commission	?	I	I	I
XIII. Attorney General's Office		I	?	I
XIV. Department of Administration		?	I	I
XV. Nevada University System	G			
XVI. State Legislature Budget Office and Various Committees				I
XVII. Indian Commission			?	I
XVIII. Department of Education			I	I

I= Already incurred projected impact; P = possible projected impact; ? = unclear at this time; G = currently receiving direct grants from DOE for research and other activities

### 3.3 The Impacted State Agencies 1987-1994: Cost Projections

The 1987 through 1994 State fiscal impact studies (mandate driven) did attempt to project fiscal costs from the siting. These fiscal cost estimates were accomplished for the studies completed from 1987- 1992. Many of the agencies fiscal cost projections were obtained for were also studied and reported on in both the 1998 and 2001 studies. Never the less, some agencies were not reexamined. In other cases where agencies were examined more than once it provides us with the opportunity to see how consistent the projections were over time. Finally, these early studies provided a range of dollar estimates from low to high. The low dollar estimates were based on responses to a scenario where the siting and shipments all proceeded according to the DOE plans. The high estimates assumed that the State agency might have to increase its preparedness, planning, and response capacity because of unforeseen threats to the State's health, safety and welfare (Mushkatel, 1988a, b, c) Table 1 contains the results of these early studies on agencies not already reported on earlier.

Some of these early studies did not break the estimated impact costs into the training, personnel and equipment (including capital costs) used later in the studies (see earlier discussion). For example, the estimate of \$3.2 million dollars for the Department of Education in impacts through the year 2010, does not break these estimated costs into categories like personnel, training, or equipment. Hence, the adjusted 2007 number reported on in Table 1 for the Department of Education is listed under equipment (category includes capital acquisitions) that has a 5% annual inflation factor associated with it. The placement into this category is done because it will reduce the total for the Department by the largest amount (5% per annum from 2010 to 2007), and not because all of the costs to this agency are projected as equipment. A similar problem appears for the Human Resources Department, the Department of Taxation, and the Department of Employment Security, where the categories used to project fiscal cost impact are not consistent with the categories being used now. In addition another problem emerges for these cost projections, namely they are projected as a range from low to high as discussed above. To be consistent with the other State fiscal cost projection studies, the low range estimate is used here. The high range figure, it should be noted, might conform very well to the projections obtained for Clark County public safety agencies (see below) where the maximum reasonable foreseeable accident was used in the third scenario to obtain projections. Once again these three Department's cost projections are placed under the equipment category, and the 5% per annum figure is used to obtain a low cost projection (see Table 1). The reader should note that the costs for the Departments of Economic Security and Human Resources are also largely driven by economic demographic factors rather than by mandates.

The remaining departments that were studied during the 1988-1992 period that have cost projections were all included in the later studies for which more recent fiscal cost projections have been given in Table 1. Interestingly, the estimate in 1988 for the Nevada Department of Transportation had a high projection of about \$800 million dollars. The more recent 1998 estimate was for just under \$536 million dollars but did not include some substantial road infrastructure work, or estimates for the Beltway's improvement. The 1988 figure and the 1998 figure are actually quite close to each other when the road infrastructure work is brought into tandem. The fiscal impact picture that has emerged, whether it is in the actual dollar projections provided in Table 1 or the number of agencies and types of impacts provided in Table 2, clearly

indicates that Nevada State governmental agencies will be severely and negatively fiscally impacted by any repository siting. The fiscal impacts for public safety agencies in Clark County for provide similarly negative fiscal impacts as shown below.

### 3.4 The Fiscal Impacts to Clark County Public Safety Agencies

The same technique used for estimating the State agency fiscal impacts (referred to as the mandate approach at the State level) that utilizes marginal cost analysis through a case study technique was applied to the public safety agencies in Clark County. Once again the focus of the study was on only the incremental or additional costs to public safety entities within Clark County that would be directly attributable to the siting of the repository at Yucca Mountain and the subsequent shipping campaign. Three scenarios were presented to public safety personnel in the County that described the “future” shipping campaign, and asked the public safety personnel to describe how the events in each scenario would affect their agency. The major characteristics of each scenario can be found in Table 3.

**Table 3 The Scenarios Major Characteristics**

Scenarios	Description
1	No accident of any kind has occurred. However, anti-nuclear environmental groups and property owners along the route (who claim that their property values will decrease) have generated considerable publicity.
2	Shipments of nuclear waste to the Yucca Mountain repository site have progressed for several years without incident. Three days after New Year’s Day 2010, the driver of a truck transporting nuclear waste loses control of the vehicle and runs into the median of Interstate 15. The cask containing the nuclear waste breaks away from the trailer and skids 50 yards along the median of I-15 in North Las Vegas. The cask remains intact and no radiation is released, but the national media covers the event heavily.
3	An accident involving a truck carrying spent nuclear fuel and a gasoline tanker on I-15 near the Las Vegas Strip. The accident triggers a chain reaction collision. Twenty-seven civilians, four sheriff’s deputies, and seven firefighters are hospitalized after exposure to radiation at the site of accident. Another 1,000 or more persons are exposed to radiation from the fire’s radioactive plume. Experts indicate that 5 to 200 latent cancer fatalities may result from the accident. The affected highway and several access ramps are closed for four days. The two drivers of the spent fuel hauler and the gasoline tanker, and one driver-escort, died from head injuries and burns. Six months later, the cleanup effort is still under way, and thousands of lawsuits have been filed. Preliminary reports estimate cleanup costs and economic losses in excess of \$1 billion.

**Source: State of Nevada, Nuclear Waste Project Office.**

The major characteristics of each scenario are rooted within the DOE Draft Environmental Impact statement. The first scenario is the “benign” one in which shipping of the high-level waste goes as planned and without incident (Urban Environmental Research, 2001). A second scenario was used that described an incident that did not result in any release of radioactive materials, and the third scenario contained a serious accident and a release of radioactive materials resulting from a fire and radioactive plume. The location of the accident varied depending on which community was being studied. Public safety officials consisting of firefighters, police officers, and emergency management personnel from Clark County, the City of Las Vegas, Henderson, North Las Vegas, Boulder City, Mesquite and the Moapa Band participated in the study (Urban Environmental Research, 2001a, b, c, d, e, f, g). Additional data on the vulnerability and capacity of hospitals in southern Nevada were also collected but no fiscal cost estimate was projected for them.

The results of the series of studies reveal major negative impacts on the public safety agencies within Clark County and its local jurisdictions. One important finding is that none of the public safety agencies studied is currently adequately prepared, or equipped to respond to any of the three HLW shipping scenarios used in the study. This lack of adequate preparation is consistent with the 1995 Public safety Advisory Committee’s report examining public safety needs in the county. Table 4 provides a summary of the projected fiscal impacts from the maximum reasonably foreseeable accident (MRFA) (Scenario 3) on the police departments in the entities being examined. Most importantly for comparative purposes, it must be remembered that the State level cost projections were done assuming the benign scenario would be applicable. The cost projections in Table 4 are based on what is believed necessary to be prepared for a Scenario 3 event. Hence, the fiscal cost projections for the State agencies are much lower than would be the case if the MRFA had been used in their study. Despite these differences, the dollar projections can be used together if one recalls that the State fiscal cost projections will tend to be very conservative projections of the fiscal impacts.

**Table 4 Projected Fiscal Impacts Costs on Police Departments in Clark County**

	Personnel	Training	Equipment	Cost
<b>Clark County</b>	\$17,582,464	\$8,080,604	\$42,023,301**	\$67,686,369
<b>Las Vegas</b>	*	*	*	*
<b>North Las Vegas</b>	0	711,021	0	711,021
<b>Henderson</b>	510,195	0	442,232	952,427
<b>Mesquite</b>	1,876,446	34,754	917,760	2,828,960
<b>Boulder City</b>	186,000	18,880	200,000	404,880
<b>Moapa</b>	0	0	0	0
<b>Totals</b>	<b>\$20,155,105</b>	<b>\$8,845,259</b>	<b>\$43,583,293</b>	<b>\$72,583,657</b>

\* Las Vegas Metro provides services to both Clark County and the City of Las Vegas

\*\* Equipment includes capital costs

Source: *Impacts to Clark County and Local Governmental Safety Agencies Resulting from the Yucca Mountain Project*. A Clark County Nuclear Waste Division, Comprehensive Planning Department Report, prepared by Urban Environmental Research LLC: 2001.

As can be seen from Table 4, the major impact on police departments is on the Las Vegas Metro Department that is the largest force in the State. The projected impacts for this Department sum to over \$67 million. The total for all of the police forces examined is more than \$72.5 million (for details see Urban Environmental Research, 2001a, and the series of reports issued by Clark County on each of these entities public safety projected fiscal impacts).

Table 5 presents the projected fiscal impacts on fire departments in Clark County should a Scenario 3 event be the MRFA that these agencies must be prepared to contend with. As can be seen from the table, Clark County's Fire Department estimates fiscal impacts of over \$195.8 million dollars. This estimate of costs is in part driven by the large size of the County's jurisdiction much of it remote that the Fire Department must be prepared to service. The total projected fire departments' cost is projected to be over \$275 million.

**Table 5 Projected Fiscal Impact Costs on Fire Departments in Clark County**

	Personnel	Training	Equipment	Cost
<b>Clark County</b>	\$25,991,241	\$13,615,031	\$156,289,783**	\$195,896,055
<b>Las Vegas</b>	5,711,370	4,044,588	34,840,835	44,596,793
<b>North Las Vegas</b>	3,851,129	5,121,073	13,449,200	22,421,402
<b>Henderson</b>	140,592	70,296	75,045	285,933
<b>Mesquite</b>	1,874,429	333,133	1,943,889	4,151,451
<b>Boulder City</b>	0	0	0	0
<b>Moapa</b>	1,791,292	94,584	6,152,768	8,038,644
<b>Totals</b>	<b>\$39,360,053</b>	<b>\$23,278,705</b>	<b>\$212,751,520</b>	<b>\$275,390,278</b>

\*\* Equipment includes capital costs

Source: *Impacts to Clark County and Local Governmental Safety Agencies Resulting from the Yucca Mountain Project*. A Clark County Nuclear Waste Division, Comprehensive Planning Department Report, prepared by Urban Environmental Research LLC: 2001.

The projected fiscal costs on the Offices of Emergency Management in Clark County can be found in Table 6. Frequently, emergency management functions are housed within fire departments in smaller jurisdictions, or in cities. These offices still often maintain identifiable staff and functions separate from the larger fire department. As can be seen from the table, the estimated projected fiscal impacts from the siting on emergency management offices just to be prepared for a MRFA event by the year 2007 is just over \$12 million. Once again, Clark County the largest jurisdiction is the driving force in this estimate. In part this is the case because of the necessity of providing an adequate emergency operations center (EOC) as the current County EOC is totally inadequate for a sustained event. The City of Las Vegas emergency manager also believed such a EOC was needed in the City of Las Vegas which also appears to be largely inadequate for the type of event described in the MRFA and Scenario 3. While the cost of an EOC for the City was not included in this estimate, the events in New York City surrounding the September 11, 2001 terrorist event patently point out the necessity of built-in redundancy.

**Table 6 Projected Fiscal Impact Costs on Offices of Emergency Management**

	Personnel	Training	Equipment	Cost
<b>Clark County</b>	\$340,340	\$9,552	\$10,264,493**	\$10,614,385
<b>Las Vegas</b>	561,265	0	0	561,265
<b>North Las Vegas</b>	0	207,623	0	207,623
<b>Henderson</b>	61,463	13,401	73,705	148,569
<b>Mesquite</b>	0	0	0	0
<b>Boulder City</b>	0	0	0	0
<b>Moapa</b>	203,353	0	277,500	480,853
<b>Totals</b>	<b>\$1,166,421</b>	<b>\$230,576</b>	<b>\$10,615,698</b>	<b>\$12,012,695</b>

\*\* Equipment includes capital costs

Source: *Impacts to Clark County and Local Governmental Safety Agencies Resulting from the Yucca Mountain Project*. A Clark County Nuclear Waste Division, Comprehensive Planning Department Report, prepared by Urban Environmental Research LLC: 2001.

Table 7 provides the overall projected costs to these Clark County public safety entities along with the Moapa Band. As can be seen from the table, the fiscal impacts from a siting on the public safety agencies is extraordinary. In 2007 dollars, the total cost to the Community/County public safety agencies is projected to be \$359,986,630. This projected fiscal impact is just to be adequately prepared to be able to effectively respond to a Scenario 3 event. The projected cost of just under \$360 million does not include costs that will be incurred annually that result from the continued operation of a repository and the transportation of HLW.

Indeed, there will be additional costs for training, maintenance of equipment, personnel etc. The \$359 million is simply the projected fiscal impact until 2007 when operations are (were) to begin. Once again, these estimates do not include the fiscal impacts to the southern Nevada hospitals that are not adequately prepared in terms of training, decontamination facilities and other necessary personnel and equipment. The magnitude of the projected public safety impacts in Clark County and the Moapa Band is large, but certainly consistent with experience in other programs such as the Army/FEMA's Chemical Stockpile Emergency Preparedness Program where over \$100 million has already been given and \$40 million more promised to Alabama and several counties to ensure their preparedness as the agencies go forward with the destruction of chemical weapons stored at a fixed facility at the Anniston Army depot.

**Table 7 Total Projected Costs by Community/County**

	Police	Fire	Emergency Management	Cost
<b>Clark County</b>	\$67,686,369	\$195,896,055	\$10,614,385	\$274,196,809
<b>Las Vegas</b>	*	44,596,793	561,265	\$45,158,058
<b>North Las Vegas</b>	711,021	22,421,402	207,623	\$23,340,046
<b>Henderson</b>	952,427	285,933	148,569	\$1,386,929
<b>Mesquite</b>	2,828,960	4,151,451	***	\$6,980,411
<b>Boulder City</b>	404,880	**	**	\$404,880
<b>Moapa</b>	N/A	8,038,644	480,853	\$8,519,497
<b>Totals</b>	<b>\$72,583,657</b>	<b>\$275,390,278</b>	<b>\$12,012,695</b>	<b>\$359,986,630</b>

\* Las Vegas Metro provides services to both Clark County and the City of Las Vegas.

\*\* Because of the projected distance to the HLW shipment corridor, Boulder City estimated impacts only for the Police Department.

\*\*\* In Mesquite, Emergency Management is a function of the Fire Department and thus costs are combined under Fire.

Source: *Impacts to Clark County and Local Governmental Safety Agencies Resulting from the Yucca Mountain Project*. A Clark County Nuclear Waste Division, Comprehensive Planning Department Report, prepared by Urban Environmental Research LLC: 2001.

Table 8 The Integrated Nevada Projected Governmental Fiscal Impacts

1. Agency	2. Source	3. Data Base	4. Information	5. Major Results	6. Type & Range of Impacts	7. Degree of Potential Impacts
Bureau Federal Facilities	Urban Environmental Research (UER, 2001a)	Mandate Fiscal Impact Projection-Agency Interviews	Benign Scenario to determine impacts on agency	\$2,183,209 in personnel & equipment costs start 2007 (see Table 1)	Annual Major impacts to Bureau	Personnel, monitoring and permitting
Radiological Health Section	UER, 2001a	Same	Same	\$1,123,268 beginning 2007, \$53 million over 30 years	Annual Major impacts-Monitoring Ports of Entry	Personnel, monitoring
Agency for Nuclear Projects	UER, 2001a	Mandate Fiscal Impact Projection-Agency Interviews	Same Benign Scenario	\$19,176,493 in Monitoring Health Effects in Clark Co. and Rural Counties, personnel, equipment and start-up costs, annual costs high	Severe Impacts-Health effects Monitoring studies are Annual costs-see Table 1. Regulatory Oversight	Oversight mandate involves agency in a wide variety of activities
Nevada Department of Transportation	PIC & Mushkatel, 1998	Mandate Fiscal Impact Projection Agency interviews	Interim Storage Scenario--no accidents	\$535,689,759 projected fiscal impacts in infrastructure	Severe Impacts equipment, Engineering costs-personnel	
Nevada Highway Patrol	PIC & Mushkatel, 1998	Same	Interim Storage Scenario-no accidents	\$39,579,311 projected fiscal impacts	Severe Impacts-included State Emergency Communication System	Escort Vehicles and personnel, training, annual operating expenses occurring
Nevada Division Emergency Management	PIC & Mushkatel, 1998	Same	Interim Storage Scenario-no accidents	\$39,190,764 Projected fiscal impacts	Severe Impacts-Rad Detection Equipment Training, Haz/Mat Van	See Table 1
Public Service Commission	PIC & Mushkatel	Same	Interim Scenario No accident	\$72,248 fiscal impacts	Minor	Mission changing
Clark County Fire Dept.						



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